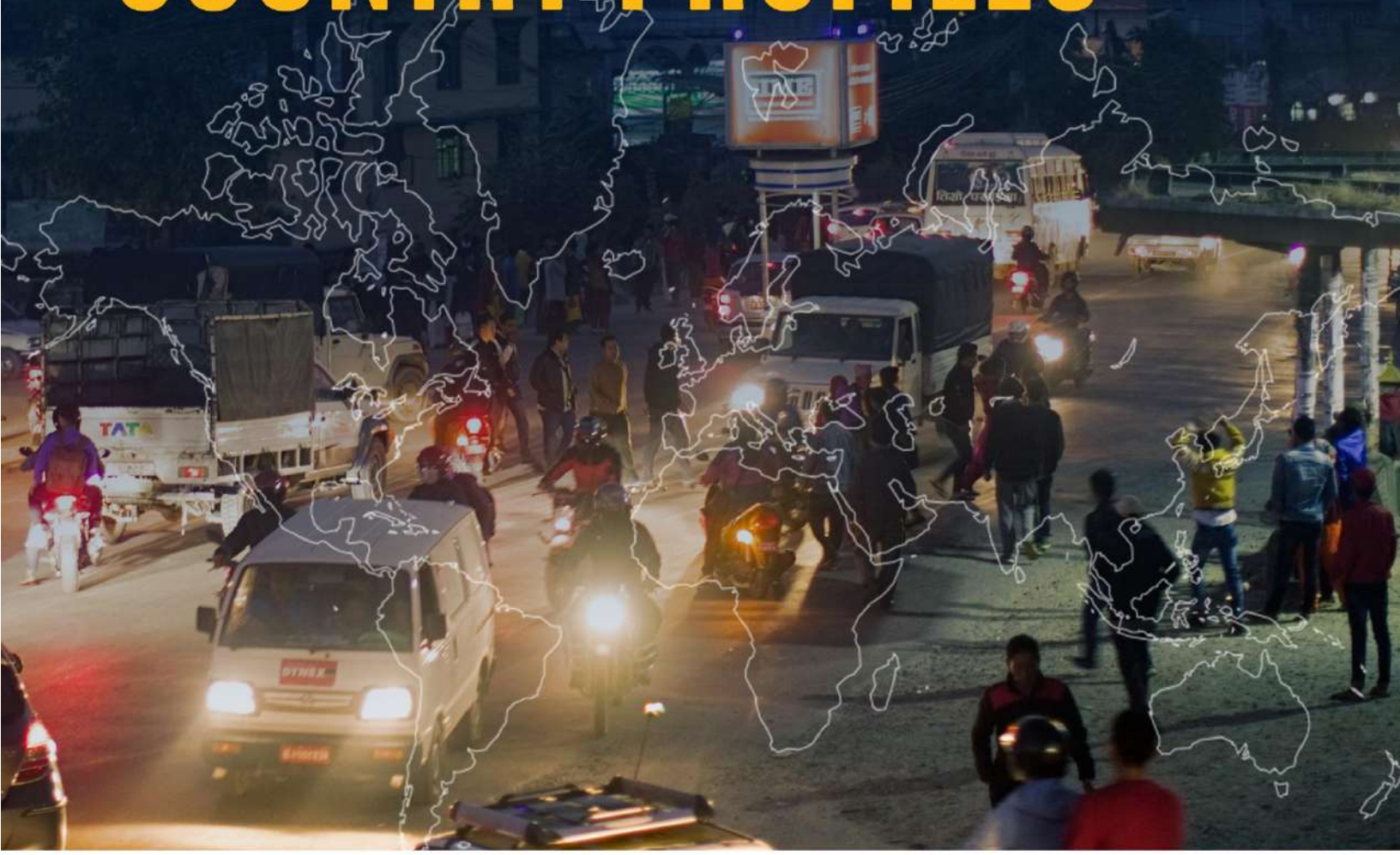
GUIDE FOR

ROAD SAFETY OPPORTUNITIES AND CHALLENGES:

LOW-AND MIDDLE-INCOME

COUNTRY PROFILES



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The report draws significantly on several sources, which are most gratefully acknowledged and detailed in the report, including especially:

- Global Status Reports on Road Safety, World Health Organization (WHO)
- Global Burden of Disease Studies, Institute for Health Metrics and Evaluation (IHME).
- Road Infrastructure Assessments and Investment Cases, International Road Assessment Programme (iRAP).
- Used Vehicle Studies, United Nations Environment Programme (UNEP).

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FOREWORD

Every year, 1.35 million lives are lost and 50 million people are seriously injured in traffic crashes. This is a continuing challenge facing particularly Low- and Middle-income Countries (LMICs) where 93% of deaths occur. The UN Decade of Action for Road Safety 2011–2020 has seen significant progress. Nonetheless, the targets set in 2011 are far from being realized with the decade ending this year. As we enter a next decade, it is critical to take stock of our past achievements as well as lessons learned in order to tackle this global challenge in stabilizing and reducing the traffic fatalities and serious injuries.

This **Guide for Road Safety Opportunities and Challenges: Low- and middle-income Country Profiles**, is a very important tool to facilitate that. It is the first data report to cover all 125 LMICs with comprehensive road safety country profiles. The profiles present information on each pillar of road safety—management, roads, speed, vehicles, road users, and post-crash care—, to help countries and development practitioners identify challenges and opportunities, and monitor of progress. The guide gives a precise assessment on the magnitude and complexity of road safety challenges faced by LMICs and helps policy makers understand the road safety framework in context of their own country systems and performance.

This valuable report responds to the critical need for collecting and documenting accurate road safety performance data. It assembles information from multiple important and high-quality sources to take stock of any given country's past achievements on road safety, establishing a baseline for the next decade of action across many areas of policy and performance.

The guide was developed by the Global Road Safety Facility (GRSF) together with the World Bank, with funding support from UK Aid. GRSF has been vigorously pushing the global road safety agenda and plays a vital role in providing guidance, leadership, and funding to LMICs, international partner organizations, academia, and NGOs via a wide range of research studies, guidance documents and technical support.

As the road safety challenge moves into a new decade, I encourage you to take full advantage of the information provided in this guide and utilize it for policy dialogue and strategic planning at the local, regional and national levels. The guide is meant as a living document, that will be continuously updated and improved, to serve as a tool that promotes and guides sustainable improvement in road safety outcomes in LMICs.

Sincerely,

Guangzhe Chen
Global Director, Transport Global Practice,
World Bank

EXECUTIVE SUMMARY

Low- and middle-income countries (LMICs) are facing a major challenge in road safety. Each year, 1.35 million people are killed on the worlds' roads, and a further 50 million are injured, with the vast majority of these (over 90 percent) occurring in LMICs. There is an upward trend in road crash fatalities and injuries, causing human suffering, grief, and loss, and retarding the economic growth of LMICs.

One major barrier to improving this situation is a lack of understanding of the current problem due to deficient information. Many vital metrics of road safety performance are not measured effectively in most LMICs, including critical intermediate outcomes which guide road safety interventions and the most fundamental outcome measures: actual number of road crash fatalities and injuries. This situation generates limitations in every aspect of road safety management and delivery, including resource allocation, advocacy, intervention selection, and prioritization of resources.

The globally accepted best-practice approach to addressing the road safety crisis is the Safe System approach. This consists of a system of "pillars" working together to eliminate death and serious injury. Information is required on progress against each of these pillars in order to understand current deficiencies and opportunities in road safety activity, to plan a response to the crisis, to help set ambitious targets for improvement, and to monitor progress towards these targets and thus develop advocacy for and commitment to the interventions which work. This report provides country profiles with information across each Safe System pillar from LMICs in order to directly address these issues. The data to provide these reports were collected from multiple sources, as documented in this report, and are provided for each LMIC and region where available.

Country profiles contain information on the scale of the road safety problem in each country and region, including information on fatalities, estimates of serious injuries, and the estimated cost of these severe outcomes, including costs as a percentage of gross domestic product (GDP). Comparison information is also provided on the relative performance on these issues against peer groups.

Further information is provided on each of the Safe System pillars, including:

- Road safety management activity (presence of a lead agency, and development of road safety targets and strategy);
- Safe roads and roadsides (road audit and star rating scores and investment potential to improve roads in a cost-effective manner);
- Safe speeds (application of speed limits and their enforcement, as well as infrastructure to support compliance with these speeds);
- Safe vehicles (vehicle registration, standards, and regulations);
- Safe road users (laws relating to seat belt use, helmet wearing, and drink driving); and
- Post-crash care (access to care and health coverage).

The need for a larger set of indicators is acknowledged and identified for future development.

Some of the key findings from analysis of country profile data include:

- Road crashes in LMICs result in more than 19.63 million deaths and serious injuries, and cost economies 1.7 trillion dollars and over 6.5 percent of GDP;
- Less than three-quarters of LMICs have a funded lead agency for road safety, while a similar proportion have a national road safety strategy (though only about half of low-income countries (LICs) have a strategy. Only half of LMICs have road safety targets;
- More than three-quarters of LMICs have some form of audit or star rating for safety of new roads, but only about half have inspections or star ratings for existing roads. About two-thirds have investment allocated to upgrade high-risk locations;
- Most LMICs have national speed limit laws, but most of these are set above recommended limits;
- Many LMICs (70 percent) have regulations on import of used vehicles, but very few LMICs have periodic vehicle inspections or are fully compliant with United Nations (UN) vehicle safety regulations;
- Most LMICs have some form of seatbelt law (90 percent), but only half have laws covering all occupants. Around three quarters of LMICs have blood alcohol content (BAC)-based drink driving laws and similar numbers have random breath testing in some form;
- About three-quarters of LMICs have a national access number to alert medical responders, while slightly fewer (68 percent) have a trauma registry system; and
- Across nearly all these measures, MICs perform substantially better than LICs.

Along with information on the current status for each country and region, extensive information is provided on key risk factors, issues and opportunities. As with the country profile material, this guidance is presented by each of the Safe System pillars (one chapter for each). For those who have specific problem areas that need addressing, clear advice and references to further information are provided on robust policies and other interventions. This information allows countries to take direct action to address priority issues and seize identified opportunities, highlighting the interventions that work.

The information collated, analyzed, and presented is evolving and advancing. This guide is a living document, intended as a baseline for monitoring as well as guiding progress across a range of potential pillars of action. The intention is to update, and as opportunities arise- expand, the information provided in future years. This will enable countries themselves and international agencies to monitor LMIC progress in road safety and to put in place actions that will lead to sustainable improvements in fatal and serious crash outcomes.

The Country Profiles report can also be found on the GRSF website: bit.ly/GlobalRoadSafetyFacility. Country Profile data may be updated in future. Further details will be announced on the GRSF website.

1. INTRODUCTION

Background

Low- and middle-income countries (LMICs) are facing a major challenge in road safety: the upward trend of road crash fatalities and injuries, causing human suffering, grief, and loss, and retarding the economic growth of LMICs.[1] Efforts to implement road safety interventions are largely fragmented, lack coordination, and are often not data-driven or evidence-based. A clear understanding of the current road safety situation is a critical step in the reduction of road crash fatalities and injuries through data-driven evidence-based interventions.

Many vital metrics of road safety performance are not measured effectively in developing countries: this includes the actual number of road crash fatalities and injuries, specific road safety problems (for example, helmet wearing, speed, hazardous roadsides, and pedestrians without footpaths), and the current capacities of societies and authorities.[2]

The absence of valid, representative data presents profound challenges to developing an understanding of the nature of the problem and to developing and implementing the necessary countermeasures and implementation strategies to address the actual burden of road crash fatalities and injuries.

Based on World Health Organization (WHO) estimates of deaths for each country, on average official data in low-income countries (LICs) globally are missing 84 percent of the deaths occurring in the LICs, and 51 percent for middle-income countries (MICs). Based on estimates made in this report, the omission of serious injuries is often even larger, ranging from 20 to 80 percent.[3]

This situation generates limitations for every aspect of road safety management and delivery, including resource allocation, advocacy, intervention selection (type and location), prioritization of resources, and determining the impact of interventions.

These considerations, along with the need for better global monitoring, are among the many reasons for the World Bank's and the Global Road Safety Facility's commitments to develop Road Safety Observatories, which aim to help all LMICs develop and share better data systems (also see Chapter 3).

Objectives of the Country Profiles for LMICs

Based on multiple sources of information, this document brings together key metrics for determining road safety activity, performance and monitoring of progress. For each LMIC and respective regions, a two page "Country Profile" report has been created. The format for these profiles is aligned to the Safe System pillars. The Safe System is the globally accepted best-practice approach to addressing the road safety crisis and has been accepted by key international institutions (for example, the World Bank, WHO, the

[1] World Bank. 2017. The High Toll of Traffic Injuries: Unacceptable and Preventable. A World Bank Study. Advisory Services and Analytics Technical Report P155310. Washington, DC: World Bank.
[2] Yannis, G. (2018). Do we need an African Road Safety Observatory? SaferAfrica Newsletter, African-European Dialogue Platform on Road Safety.
[3] Elvik, R., & Mysen, A. (1999). Incomplete accident reporting: meta-analysis of studies made in 13 countries. Transportation research record, 1665(1), 133-140.

Organisation for Economic Co-operation and Development International Transport Forum (OECD-ITF), and PIARC, the World Road Association) and by many countries as the required approach to effectively address road trauma. The approach consists of a system of "pillars" all working together to help eliminate death and serious injury. Information is required on progress against each of these pillars in order to understand current risks and deficiencies in road safety activity, to plan a response to these risks, to help set ambitious targets for improvement, and to monitor progress towards these targets.

The country profiles contain information on the scale of the road safety problem in each country and region as well as key metrics for each of the Safe System pillars. Comparative data for peer groups is provided, along with information on trends. These country profiles:

- Cover progress against all pillars of road safety systematically, to the extent of accessible data available in comparable form for many LMICs;
- Present a snapshot of road safety challenges and opportunities for improvement for LMICs;
- Provide a code to identify the sources of the information, calculation of new metrics, and guidelines on the interpretation of the snapshots;
- Provide a regional snapshot of road safety, aggregating individual country data to assess the performance of the regions; and
- Offer commentaries on all pillars of road safety based on these analyses, providing references to resources that can be utilized by LMICs for improvements under each pillar.

As well as improving and guiding road safety activity, the information presented in this report may be used to increase the appreciation of the value for road safety of sound crash and other data. Although the ultimate aim is for every country to collect required road safety data, until such time as this occurs, the information provided here provides an important summary of the current situation. These profiles are designed to be living documents, delivering a breadth of monitoring of progress across a range of final outcome and intermediate outcome measures, through regular updates as policies, programs, and performance evolve. Further, as road safety monitoring increases in sophistication and agreed uniformity, the range of factors being measured and monitored for progress will expand.

The report draws on, and gratefully acknowledges, the many data sources from which information was obtained, especially including the 2018 WHO Global Status of Road Safety Report,[4] the Institute for Health Metrics and Evaluation (IHME) Global Burden of Disease data[5], the International Road Assessment Programme (iRAP) Vaccines for Roads Big Data Tool,[6] and used-vehicle data from the United Nations Environment Programme (UNEP), in addition to many other sources.

In addition to providing country profile information, this report also provides comprehensive information on each of the Safe System pillars. One chapter is provided on each of the Safe System pillars. This information identifies the key risks relating to each pillar, as well as key interventions that have been

[4] World Health Organization. (WHO, 2018). Global status report on road safety 2018 (No. WHO/NMH/NVI/18.20).
[5] Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015. Available from http://ghdx.healthdata.org/gbd-results-tool.
[6] International Road Assessment Programme. (2018). Vaccines for Roads. Fourth Edition. iRAP's Big Data Tool. Available from https://www.vaccinesforroads.org/because-every-life-counts/

shown to be effective for improving road safety outcomes. This information can be used in combination with the country profile findings to help countries and relevant agencies identify the most effective solutions for addressing high priority issues.

Given this content this report is designed for a wide audience. This includes senior policy makers and officials within LMICs who have a role in addressing road safety issues, such as those in health and transport, police, treasury, and other parts of governments. It will also be a valuable resource for those working outside of government to facilitate advocacy within countries or across regions. Beyond the individual country content, the information provided in this document provides a useful resource and will be of high interest to those working to improve road safety at regional and global levels.

Structure of this report

Following this introduction, an overview is provided on road safety (Chapter 2). This provides an introduction to the Safe System approach and its individual pillars, providing structure to the later chapters as well as to the individual country profiles. It also provides details on the issues of under-reporting of road crash fatalities and injuries (of importance when interpreting the country profile results); the relationship between fatalities and serious injury (used to calculate figures in the country profiles); and the burden of road death and injury. Chapters 3 to 8 cover key pillars of the Safe System as follows:

- Chapter 3 – Road Safety Management Pillar
- Chapter 4 – Safe Roads and Roadsides Pillar
- Chapter 5 – Safe Speeds Pillar
- Chapter 6 – Safe Vehicles Pillar
- Chapter 7 – Safe Road Users Pillar
- Chapter 8 – Post-crash Care Pillar

The content of these chapters on Safe System pillars provides vital information on successful implementation of road safety as this relates to each pillar, provides interpretative guidance on issues highlighted in the country profiles, and offers solutions to address key risks that have been identified.

Chapter 9 provides guidance on interpreting the country profiles, with information on the sources of information as well as definitions. Chapters 10 and 11 provide profiles for World Bank regions and countries respectively.

An overall summary of the World Bank GRSF program is contained in Box 1.1 below.

Box 1.1: The World Bank and the Global Road Safety Facility (GRSF)

The World Bank, alongside its twin goals of ending extreme poverty and promoting shared prosperity, is working to promote sustainable mobility around the world, focusing on four priority goals:

- Improve the access of all to economic and social opportunities through greater mobility
- Increase the efficiency of mobility solutions
- Improve the safety of mobility, especially road safety, which contributes 97 percent of all transport-related injury deaths[7]
- Respond to the climate imperative—as set out in the Paris Agreement on climate change—by reducing the carbon footprint of the sector (mitigation) and enhancing climate resilience (adaptation).

World Bank transport commitments from the International Bank for Reconstruction and Development/International Development Association (IBRD/IDA) overall as of financial year 2019 were 180 active Bank projects with total net commitments of $37.5 billion, representing over 14.8 percent of the Bank's total lending portfolio.[7]

GRSF has been hosted at the World Bank since its inception. The objective of GRSF is to help address the growing crisis of road crash deaths and injuries in low-and middle-income countries (LMICs). GRSF delivers funding and knowledge development through research, knowledge transfer, advocacy, and technical assistance to scale-up and improve road safety delivery in LMICs. The present report and analyses of countries' road safety status and opportunities are funded by the World Bank and by GRSF (employing donor funding from UK Aid).

The World Bank's long-standing concern with global road safety has been reinvigorated through a series of key developments in recent years. First, there is increasing appreciation of the significant impacts of road crash fatalities and injuries on economic growth for LMICs based on the GRSF analysis of these impacts (for details see Section 2.4 below), and the role of crashes in driving families into poverty resulting from the loss of the family income earner due to fatality or disability. Thus, road crashes directly impact the Bank's twin goals of reducing poverty and increasing shared prosperity, as well as its focus on growing human capital.

Second, road safety is part of the Environmental and Social Framework of the Bank (ESF) through the Environmental and Social Standard 4 (ESS4). The ESF, which took effect in October 2018, requires that road safety is considered in projects and addressed wherever it is relevant.

Third, a Good Practice Note has been prepared to guide the implementation of the road safety requirements of the ESF.[8]

[7] World Bank. (2019). Overview of Transport Strategy and Commitments. Retrieved August 28, 2019, from https://www.worldbank.org/en/topic/transport/overview
[8] World Bank (2019). *Environment & Social Framework for IPF Operations Road Safety Good Practice Note*. Washington, DC: World Bank.

Fourth, the Transport Global Practice of the Bank has recently expanded the road safety requirements for relevant projects. The requirement for a road safety indicator (monitoring the road safety components of the project) in road projects was expanded in 2019 to include urban mobility projects.

Finally, the Transport Global Practice and GRSF have also developed two tools to facilitate the delivery of road safety in collaboration with the International Road Assessment Programme (iRAP). GRSF partnered with iRAP to develop the *Star Rating for Designs* tool,[9] which was launched in November 2018 and is available for use at no charge. This tool was developed to enable Star Rating to be easily incorporated into the road design process.

The second tool, the Road Safety Screening & Appraisal Tool (RSSAT), allows assessment of the road safety impacts of planned projects early in project development, allowing for refinement of projects to improve road safety delivery before the project is well advanced and road safety interventions are more challenging to include. The Transport Global Practice has implemented a policy requiring the use of RSSAT on roads and urban mobility projects.

[9] https://www.irap.org/project/star-rating-for-designs/

2. ROAD SAFETY OVERVIEW

Introduction

The first part of this chapter provides context concerning the global road safety problem. This content is followed by a summary of the Safe System approach with its underlying pillars. These pillars form the basis of the country profiles, so it is important to understand what each covers in order to fully interpret these summaries. The following chapters within this document use these pillars to outline key risks and solutions that can be read in association with the results from the country profiles.

The Safe System content is followed by a discussion on the under-reporting of crash data, particularly in LMICs. This highlights the deficiencies with existing crash-based data, and the need for alternatives to better manage safety until such time that systems can be improved.

A section is also provided within this chapter on "serious" injury. There is little objective data on the extent of serious injury in LMICs, and so information is provided on this issue, and an estimate is made of the ratio of crash fatalities (where there are reliable estimates) and serious injuries. Along with information on under-reporting, this is of importance in determining total severe road trauma and costs.

The last part of this chapter provides information on the cost burden of fatal and serious injuries in LMICs. Every year, more than 1.35 million lives are lost, and more than 50 million people are injured. As of 2016, road crash injuries became the number one cause of fatalities for children and young adults in the age group of 5 to 29.[4,10] Road crash fatalities and injuries not only devastate families emotionally and financially, but they also take a toll on the path to development for many LMICs. Ninety-three percent of road crash fatalities occur in LMICs. These crashes and injuries disproportionately affect the young, economically productive age groups which make up a significant proportion of the population in LMICs – nearly 90 percent of the global population under 30 years of age live in LMICs.[11] It is quite clear that road safety is a key development challenge.

The Global Plan of Action for Road Safety

The Global Plan for the Decade of Action for Road Safety 2011-2020 sets out five pillars for action: (i) building capacity in road safety management; (ii) improving the safety of road infrastructure and broader transport networks; (iii) further developing the safety of vehicles; (iv) enhancing the behavior of road users; and (v) improving post-crash response and developed indicators to measure the progress.[5]

Safe Speed - The Additional Necessary Pillar

Speed is a vital aspect of road safety, which must be at the forefront of global actions for road safety. In this regard, the World Bank/GRSF suggests the inclusion of **"Safe Speed"** as an additional pillar in the future global planning of action on road safety**.** High-quality studies have consistently revealed the significant impacts of

[10] World Health Organization. (2015). Global status report on road safety 2015. World Health Organization.
[11] O'Carroll, L. G. (2018). The Next Generation: Youth Populations and the Demographic Dividend Window. The Chicago Council on Global Affairs. Retrieved November 20, 2019,
from https://www.thechicagocouncil.org/blog/global-food-thought/next-generation-youth-populations-and-demographic-dividend-window

speed on road safety – with syntheses of the research showing that each 1 percent decrease in speed generates a 4 percent decrease in deaths and a 3 percent decrease in serious crash risk.[12,13]

Speed management offers at a low cost more rapidly implementable effective interventions for road safety than do most areas of action.[14] A distinct pillar for safe speeds allows for the full range of interventions which can be implemented to manage speeds, including road engineering (such as speed humps, roundabouts, and raised platform crossings), vehicle measures (such as speed limiting and intelligent speed adaptation), as well as the usual focus on road users through enforcement and promotion.[14]

Vital opportunities for the management of speed are not visible in many plans because speed management is presented as just one element of the Safe Road Users Pillar, resulting in focusing interventions on education, enforcement, and other methods for changing road user behavior, and downplaying road and vehicle engineering opportunities.

With this addition, the six pillars of road safety action are:

1. Road Safety Management
2. Safe Roads
3. Safe Speed
4. Safe Vehicles
5. Safe Road Users
6. Post-crash Response

Road Safety Trends

Despite progress, which has greatly flattened the increase in road crash fatalities, there is general agreement that neither the Decade of Action target nor the Sustainable Development Goal (SDG) Target 3.6, of halving fatalities by 2020, will be met.[15] Road safety interventions require more funding and must be more rigorously selected based on sound evidence for success.

The flattening of road crash fatalities is a substantial achievement, saving hundreds of thousands of lives. At the beginning of the decade, the toll by 2020 was projected to be 1.9 million fatalities, but projecting the increase from 2013 to 2016 (the latest available data from WHO) produces an estimate of less than 1.6 million fatalities. This is not sufficient progress, though it is progress pointing to our capacity to manage the issue globally. The result should be a redoubling of efforts and increased commitment of resources rather than abandoning the fight.

Analysis of the trend of road crash fatalities per 100,000 population in developing countries between 2013 and 2016 shows an average reduction of 3.5 percent in road crash fatalities. However, some countries have increasing road crash fatality trends as high 25 percent. Figure 2.1 shows the road crash fatality trends in developing countries according to the regions covered in this report.

Vulnerable Road Users

Vulnerable road users (pedestrians, cyclists, and motorcyclists) account for more than half of the

[12] Finch D. J., Kompfner P., Lockwood C. R., Maycock G. (1994). Speed, speed limits and accidents. Project Report 58. Crowthorne, United Kingdom. Retrieved August 13, 2019 from https://trl.co.uk/sites/default/files/PR058.pdf

[13] Cameron, M. H., & Elvik, R. (2010). Nilsson's Power Model connecting speed and road trauma: Applicability by road type and alternative models for urban roads. Accident Analysis & Prevention, 42(6), 1908-1915.

[14] Job, R. F. S. & Sakashita, S. (2016). Management of speed: The low-cost, rapidly implementable effective road safety action to deliver the 2020 road safety targets. *Journal of the Australasian College of Road Safety, May 2016*, 65-70.

[15] This prediction has been made by the GRSF, the Global Network for Road Safety Legislators, and most recently WHO:
Job, R. F. S (2018). Perspective on road safety: Safe speeds part 1: Political decisions and the limited adoption of speed management for road safety. Journal of the Australasian College of Road Safety, 29(3), 65.
Global Network for Road Safety Legislators (2018). Manifesto for Road Safety. London, UK: Global Network for Road Safety Legislators.
WHO (2018). Global Status Report on Road Safety 2018. Geneva: WHO.

global road crash fatalities. Road infrastructure in many countries worldwide is still designed without consideration of these vulnerable groups, prioritizing cars and other motorized transport. Developing countries have the highest proportion of fatalities for vulnerable road users as shown in the comparison in Figure 2.2. The actual burden of road crashes on vulnerable users is unknown because of the significant under-reporting of road crash data in LMICs (see Section 2.2). However, the lower reporting rate of vulnerable road user crashes means that the actual proportion of fatalities is likely to be significantly higher than 50 percent.

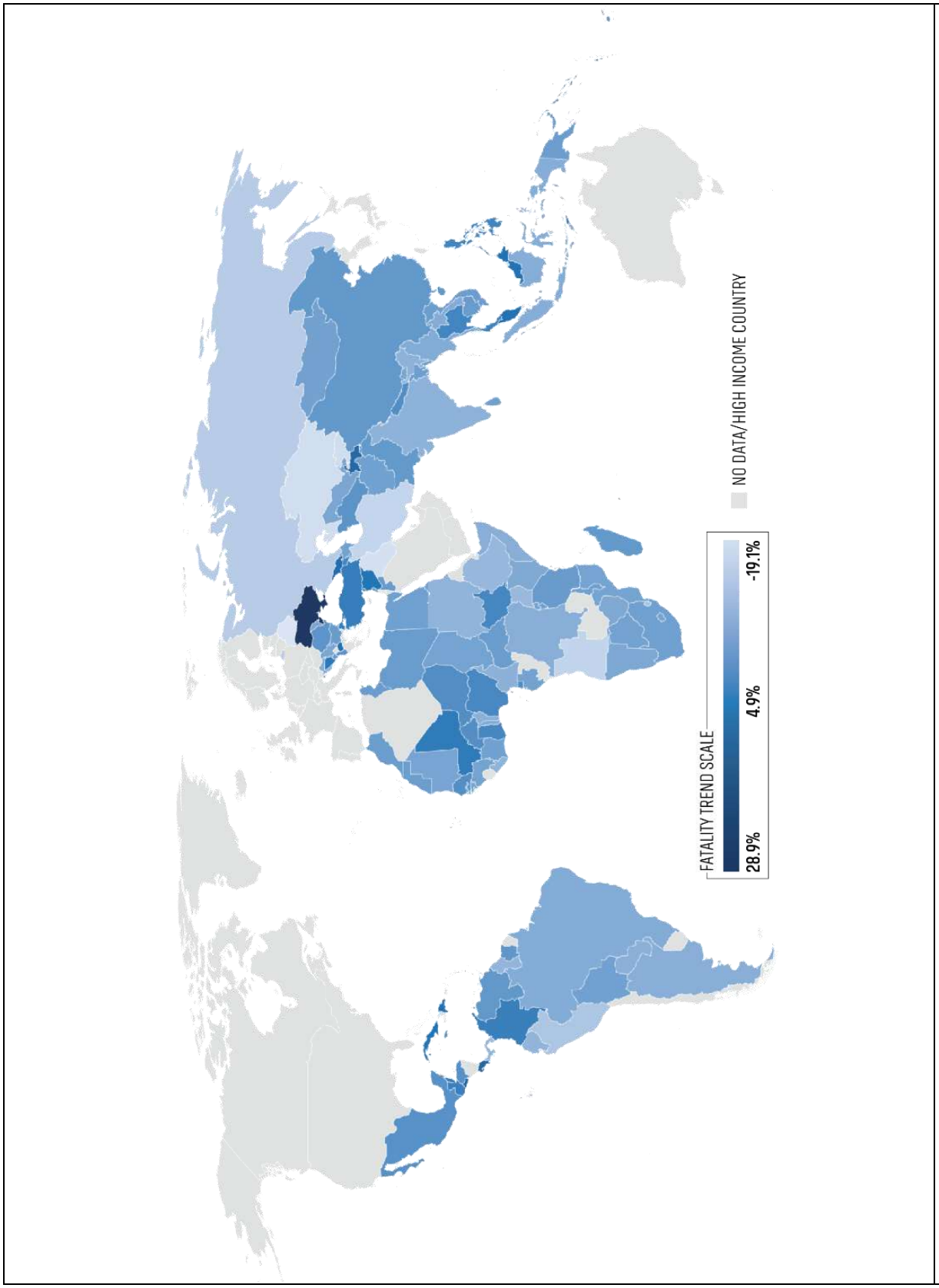


Figure 2.1: Road Safety Trends in Low- and Middle-Income Countries

Note: Trend calculated from a comparison of the GBD estimated road crash fatalities between 2013 and 2016

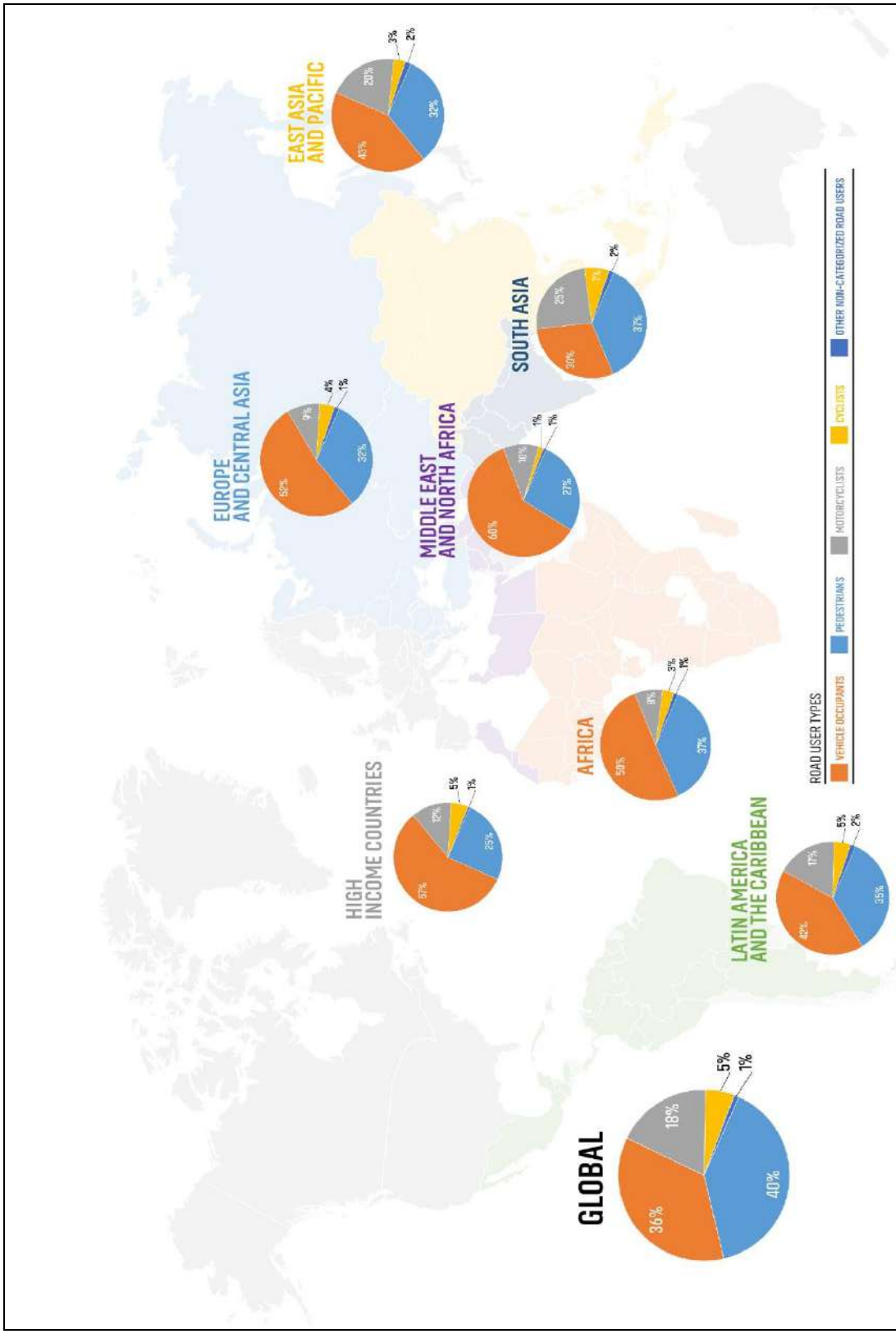


Figure 2.2: Distribution of Road Crash Fatalities in Low- and Middle-Income Countries

Note: Developed using Global Burden of Disease data (IHME), 2016

2.1. The Safe Systems Approach to Road Safety

Introduction

The Safe System approach to road safety, conceptualized in Sweden as a road safety policy tool "Vision Zero", is based on the ethical imperative that no fatalities and serious injuries are acceptable as people move through the transport system.[16]

Over recent decades, the Safe System approach to road safety has been continuously improved and refined through intervention monitoring and evaluation processes in the regions, countries, and cities that have adopted a Safe System approach to road safety, for example, Sweden, Netherlands, Australia, New Zealand, New York City, and Mexico City. [17]

The Safe System approach shifts the blame of road crash fatalities and injuries from road user behavior and choices to a system of shared responsibility with human fragility at the center. All the elements of the road system should be "forgiving" to road users who are accepted as being prone to error. The approach places focus on four critical causal factors that determine the forces during the crash to reduce the severity of the crash outcome: safe roads and roadsides, safe speeds, safe vehicles, and safe road users (as shown in Figure 2.3 and Figure 2.4).[18]

The Safe System approach is more effective in the reduction of road crash fatalities and injuries compared to the traditional approach which primarily focused on narrowly-implemented

Figure 2.3: Safe System Approach

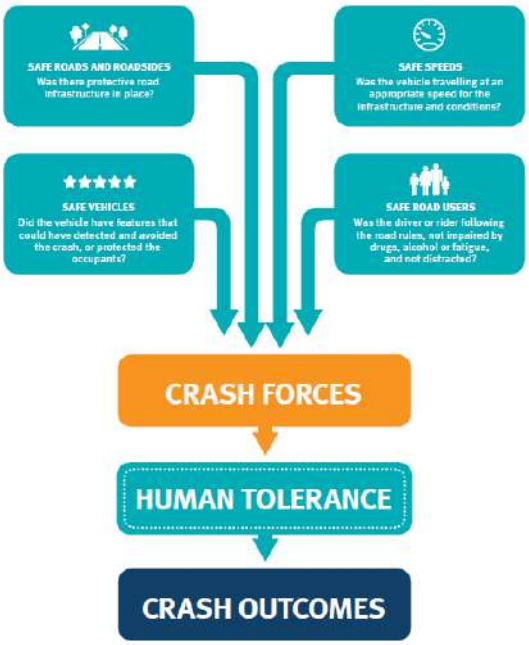


Figure 2.4: Safe System Factors and Impact on Crash Outcome

(Adopted from Queensland's Road Safety Strategy 2015–21[18])

[16] Belin, M. Å., Tillgren, P., & Vedung, E. (2012). Vision Zero–a road safety policy innovation. International journal of injury control and safety promotion, 19(2), 171-179.
[17] Mooren, L, Grzebieta, R., Job, R. F. S. Williamson, A. (2011). Safe System – International Comparisons of this Approach. *A Safe System- making it happen: Proceedings of the Australasian College of Road Safety Conference, Melbourne, 2011*.
[18] State of Queensland (Transport and Main Roads). (2015). Safer Roads, Safer Queensland – Queensland's Road Safety Strategy 2015-21.

interventions such as education and enforcement, leaving out design, infrastructure, and systemic issues. This narrow approach significantly inhibited the effectiveness of road safety measures, leading to a misguided understanding of the relationship between road safety measures and their outcomes.

The Safe System approach supports a broader approach implemented in a multifaceted manner for maximal effectiveness. Figure 2.5 shows the principles, core elements, and action areas of the Safe Systems Approach.

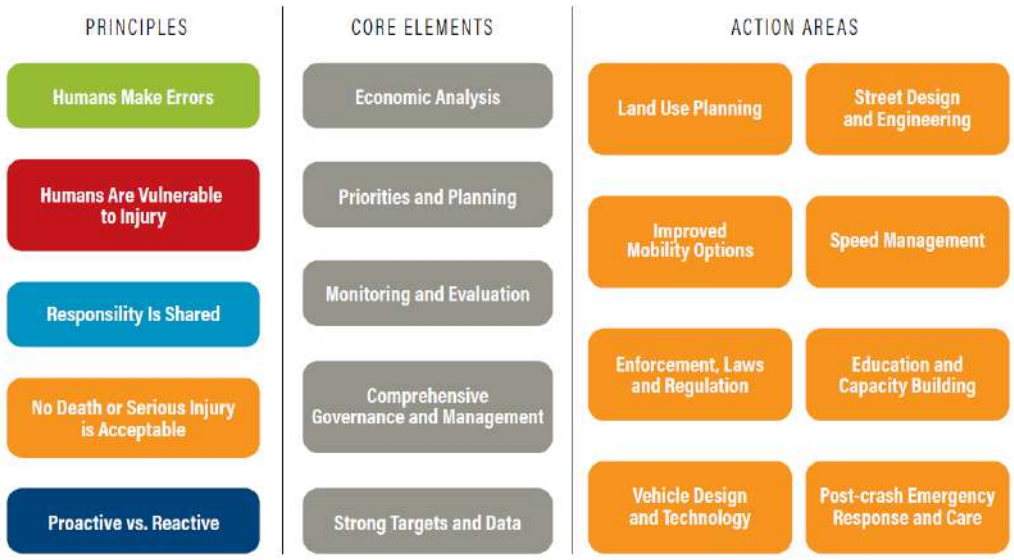


Figure 2.5: Principles, Core Elements and Action Areas of the Safe System Approach

Adopted from Safe and Sustainable: A Vision and Guidance for Zero Road Deaths (WRI & GRSF joint publication)

Developing Countries - Current Practices

The traditional approach to road safety has had limited success in reducing road crash fatalities and injuries in developing countries. A systematic review of road safety interventions in LMICs[19] found that approximately 90 percent of all comprehensive studies on road safety interventions were based on legislation and education strategies. Barriers to the adoption of the Safe System approach have been identified along with recommendations on how to overcome these barriers.

It is therefore critical for developing countries to adopt a Safe System approach using internationally developed knowledge, to complement it with region- or country-specific factors[20] (cost, feasibility, sustainability, and barriers) informed by evidence-based research, and to stop implementation of unproven interventions.[21] This approach has been successful in developed countries that had a high burden of road crash fatalities and injuries but managed to reduce it through well-developed, organized, and continuous efforts through a Safe

[19] Staton, C., Vissoci, J., Gong, E., Toomey, N., Wafula, R., Abdelgadir, J. … & Ratliff, C. D. (2016). Correction: Road traffic injury prevention initiatives: a systematic review and meta-summary of effectiveness in low- and middle-income countries. PloS one, 11(2), e0150150.

[20] Forjuoh, S. N. (2003). Traffic-related injury prevention interventions for low-income countries. Injury Control and safety promotion, 10(1-2), 109-118.

[21] Davies, G. R., & Roberts, I. (2014). Is road safety being driven in the wrong direction? International journal of epidemiology, 43(5), 1615-1623.

System approach tailored to their specific road safety challenges.

Interventions should be multifaceted, not only focusing on one aspect of road safety but using a clearly defined Safe System approach, closely monitored and evaluated to refine the approach's responsiveness to road safety challenges in LMICs - thereby increasing the impact in the reduction of road crash fatalities and injuries.

This report provides an in-depth, cross-cutting analysis of the core elements and actions of a Safe System approach to road safety in the context of LMICs. One of the identified barriers to adoption of the Safe System is the perception that it is prohibitively expensive, and indeed, no high income country (HIC) has yet spent the resources to achieve a safe road system.[9] Messages to address this barrier may include:

1. The principles of a Safe System are correct and valuable for road safety, even if the resources to fully deliver a Safe System are not (yet) available.
2. Even with limited resources, Safe System principles can guide sound investments for better road safety outcomes. Examples of strong successes arising from selected investments in road engineering for safety, rather than a continuing unwarranted focus on education and behavior change, can be persuasive.
3. The multiple and often unknown behavioral contributors to crashes which must be addressed, versus the singularity of an engineering solution for many locations, can be compelling as a core argument. For example, multiple serious crashes with cars leaving the road on the outside of a curve on a rural highway may be caused by speeding, fatigue, misjudgment of the curve, drink-driving, drug driving, inattention/distraction, medical episodes, or in rarer cases vehicle problems. To address all of these is a huge undertaking, yet all these crashes, regardless of cause, may be addressed by installing an effective safety barrier on the outside of the curve.[9]

Adopting Evidence

The *raison d'etre* of the World Bank is the eradication of poverty and the promotion of shared prosperity. Thus, this report is focused on LMICs. This generates an important discussion on the issues related to acceptance and use of evidence in road safety. Commonly, in LMICs and sometimes in HICs, the extensive scientific evidence base of road safety interventions is not employed in vital decisions regarding road safety. The successful Safe System approach is often not adopted, and the irrefutable evidence of the road safety value of lowering speeds, using speed cameras, employing traffic calming, and exercising general deterrence is often ignored. There is also clear evidence for weak or non-existent effects on road safety from skills-based driver training and general school-based education.

One of the reasons most commonly offered for this is the belief that evidence from other countries, especially HIC, is not applicable in LMICs. Most of the available evidence on what works in road safety comes from HICs. As we see in this report, crash data and other data are often not available or not reliably reported in LMICs. Thus, it is difficult to provide rigorous scientific evidence about which interventions worked and which did not in LMICs. Nonetheless, there are sound studies in LMICs to which this report refers where we have found them. However, potentially valuable generalizability from HICs to LMICs is often dismissed based on quick judgments that there are clear differences. This debate deserves further attention.

Indeed, a case for the lack of generalizability can be made in a fundamental sense, although deeper analysis shows that this basis is often misleading. There are immediately obvious differences between LICs and HICs on road safety: HICs have better vehicles, more effective enforcement processes including unavoidable penalties delivering general deterrence, better roads, better post-crash care with well-equipped well-funded ambulances and emergency departments, and more comprehensive education systems. In addition, each country does have distinct cultural features, often combined with distinct geographical, political, and religious differences. These are commonly presented as a sound basis for not considering the adoption of solutions known to work in other countries, especially HICs.

The dismissal of proven solutions from other countries may be too hasty. Many vital factors run counter to this dismissal, essentially because in road safety, despite all our wonderful diversity, **we have more in common than separates us**.

Most fundamental to road safety are the universal laws of physics which determine crash forces, and the effects of speed. All countries have speeds of travel that allow for physical forces which can cause deaths or disabilities in the event of a crash. All countries have roads that mix vehicles and vulnerable road users, and roads that allow head-on crashes by separating oncoming traffic with only thin lines of paint or even less.

Humans are fundamentally similar: we are all vulnerable to physical force which may kill or disable us in crashes, we all make mistakes, and we are all vulnerable to the impairing effects of drugs, alcohol, fatigue, and distraction. Most of us are optimistic about our futures and overconfident of our driving, generating feelings of invulnerability to serious crashes. For this reason, messages based on crash risk have limited impact, whereas strong general deterrence (through effective enforcement) is effective in changing behavior.

Thus, regardless of all our differences, some changes inevitably improve road safety, including reducing speeds (especially where vulnerable road users are present), separating oncoming traffic with barriers, and using general deterrence to change behavior. To achieve these interventions, all countries must provide genuine funding for road safety.[22]

Nonetheless, culture, religion, geography, and other distinctive circumstances remain vitally relevant to road safety. The art in developing and implementing strong road safety policy and programs lies in accepting vital evidence from elsewhere, using that evidence to prioritize the interventions most effective in addressing local road safety challenges, understanding the distinctive local circumstances, and refining implementation, narratives, and communications to address these distinctive local circumstances. Interventions must be chosen based on evidence, but the interventions and/or the messages employed to support them in the community must be tailored to local culture and beliefs.

As indicated above, the Safe System pillars form the basic structure for the country profiles (Chapters 10 and 11). Details on how to interpret the content (including risks) for each pillar, as well as information on interventions to reduce any risks identified, can be found in the following chapters relevant to each pillar (Chapters 3 to 9).

[22] For a discussion on funding for road safety, see Turner, B., Job, S. & Howard, E. (in press), Funding road safety programs: strategies and tools for decision-makers and practitioners. Washington, DC: World Bank, and Bose, D., Marquez, P. V., & Job, S. (2018). The Cost of Inaction: Can We Afford Not to Invest in Road Safety? World Bank Group Connections Note 2018-1. Washington, DC: World Bank.

2.2. Under-reporting and Systemic Omissions of Road Crash Fatalities and Injuries

Introduction

The under-reporting of road crash fatalities and injuries is a significant problem globally – affecting both developed and developing countries. It is a critical inhibiting factor in understanding the scale and impact of the road safety challenge, more so with the rising trend of fatalities and serious injuries globally.[4] Not only does the under-reporting cause under-estimates of the problem, but it also causes systematic errors in the nature and location of the problem because unreported crashes and fatalities differ systematically from reported crashes.

Under-reporting impacts the identification of vulnerable road users, the setting of priorities among public health issues, and the development and implementation of cost-effective interventions for promoting road safety.[23] It significantly increases the uncertainty of the effects of road safety interventions in reducing road crash fatalities and injuries.[3]

For countries to reduce the burden of road crash fatalities and injuries in line with the goals and targets in the UN Decade of Action for Road Safety, it is a vital step to analyze and create a framework to eliminate the disproportionate gap between reported and unreported road crash fatalities and injuries.

Cases of Under-reporting and Omissions

A comparison between government-reported road crash fatalities and WHO-estimated fatalities in 2016[4] indicates profound under-reporting, with the highest under-reporting occurring in LMICs, as shown in Table 2.1.

Surveys and studies in both developed and developing countries give a substantial account of the disparity of reported and unreported data. The studies also investigated the existence of factors creating a bias in the reporting trends in the various countries. The probability of reporting of road crash fatalities and injuries is proportionate to the severity of the injuries and the rate of motorization, irrespective of the country's development level. The less severe the injuries, the less likely they will be reported; and the higher the rate of motorization in a country, the higher the fatalities and injuries under-reporting gap.[3]

Table 2.1: Percentage of Under-reporting in High, Middle- and Low-Income Countries (Analysis by GRSF based on WHO data)

Country Classification	Percentage Under-reporting of Road Crash Fatalities
Low-Income	84%
Middle-Income	51%
High-Income	11%

The reporting levels of hospital-treated injuries in 13 high-income countries vary from 21 percent to 88 percent, which shows that many injuries – from serious to minor – go unreported. There was a small reporting bias for vehicle occupants and a serious reporting bias for cyclist-related crashes, especially single vehicle-cyclist crashes. In the

[23] Singh, P., Lakshmi, P. M., Prinja, S., & Khanduja, P. (2018). Under-reporting of road traffic accidents in traffic police records-a cross sectional study from North India. International Journal of Community Medicine and Public Health, 5(2), 579-584.

European Union (EU), police records only capture approximately 70 percent of the vulnerable road user casualties because of high under-reporting for cyclists, pedestrians, and motorcyclists.[24]
Males, young people, and injured victims from road crashes occurring in remote and inner regional areas are also likely to be under-reported. This is a critical under-reporting bias since rural areas experience approximately twice the fatal crash incidence density of road crashes as compared to urban areas – even with the lower human and vehicle population.[25]

Comparisons between data from traffic police and hospital registries (using a "capture-recapture" method.[26]) showed that both sources of data did not provide accurate coverage of road crash fatalities and injuries. Both systems need to be strengthened to increase the accuracy of reported data. The main difference between data from the police and the hospital registry was that the police crash data were more likely to involve multiple vehicle crashes, vehicle driver casualties, males, and pedestrians as compared to vehicle passenger victims. In some cases, road crash incidences were 60 percent higher than the calculated incidences from police crash and hospital registry data.[27,28]

Discussion

LMICs rely heavily on police recorded road crash fatalities and injuries data, as indicated in the reviewed studies. Police recorded data are limited quantitatively and qualitatively (Figure 2.6), due to other conflicting duties police must perform and to reporting biases, including biases in what is reported to the police. However, police recorded road crash data are essential in providing an overall outlook of road crash fatalities, including details of crash locations and other information which can only be determined by attending the scene for the crash. Thus, health-based crash data cannot inform road safety management to the same extent as sound police data. However, linkages to other data sources, such as health-based systems, improve the accuracy, completeness, and quality of road crash fatalities and injuries data in a country. [29,30]

Figure 2.6: Sources of Error and Data Loss in Official Crash Records

Adopted from Handbook of Road Safety Measures[31]

The sole use of incomplete police road crash fatalities and injuries data misguides transport professionals during the critical stage of prioritizing road safety interventions. Transport experts draw incomplete conclusions on road crash causal factors leading to the selection of ineffective road safety interventions.[32] For example, officials often underestimate the positive

[24] Bauer, R., Steiner, M., Kühnelt-Leddhin, A., Lyons, R., Turner, S., Walters, W, & Rogmans, W. (2017). Scope and patterns of under-reporting of vulnerable road users in official road accident statistics. European Journal of Public Health, 27 (suppl_3).
[25] Zwerling, C. S., Peek-Asa, C., Whitten, P. S., Choi, S., Sprince, N. L., & Jones, M. P. (2005). Fatal motor vehicle crashes in rural and urban areas: decomposing rates into contributing factors. Injury prevention: Journal of the International Society for Child and Adolescent Injury Prevention, 11 1, 24-8 .
[26] Tercero, F, & Andersson R (2004) Measuring transport injuries in a developing country: an application of the capture-recapture method. Accident Analysis and Prevention 36: 13–20.
[27] Abegaz, T, Berhane, Y, Worku, A, Assrat, A, & Assefa, A. (2014) Road Traffic Deaths and Injuries Are Under-Reported in Ethiopia: A Capture-Recapture Method. PLoS ONE 9(7): e103001. doi:10.1371/journal.pone.0103001
[28] Samuel, J. C., Sankhulani, E., Qureshi, J. S., Baloyi, P., Thupi, C., Lee, C. N.,, et al. (2012) Under-Reporting of Road Traffic Mortality in Developing Countries: Application of a Capture-Recapture Statistical Model to Refine Mortality Estimates. PLoS ONE 7(2): e31091. https://doi.org/10.1371/journal.pone.0031091
[29] Dovile, A., Graziella, J., Henk, S., & Heather, W. (2018) PIN Flash 35. An Overview of Road Death Data Collection in the EU, European Transport Safety Council, (ETSC).
[30] WHO (2010) Data Systems: A road safety manual for decision-makers and practitioners. WHO: Geneva.
[31] Elvik, R., Høye, A., Vaa, T., & Sørensen, M. (2009). The handbook of road safety measures. Bingley. UK: Emerald Group Publishing Limited.
[32] Abay, K. (2015). Investigating the nature and impact of reporting bias in road crash data. Transportation Research Part A: Policy and Practice, 71, 31-45

impact in seat belt use for vehicle occupants – which is recommended as a best practice because seat belts greatly reduce the fatality risk for all vehicle occupants.[33,34]

The extent of under-reporting in developing countries is also difficult to estimate since most countries lack an organized trauma care system, which is critical in the review of police-recorded road crash fatalities and injuries data. Trauma care systems that have prompt communications and responses and that have exhaustive documentation of injury data are an essential complementary tool in the process of reducing the under-reporting gap.[28]

Next Steps

Based on the experience with the nature of the problem and guidance[29] on under-reporting, the key steps recommended as being critical in the context of developing countries include:

1. Dedication of necessary financial and human resources to the traffic police and including as part of their mandate registration and follow-up of all serious road crash for within 30 days;
2. Training of police in the importance of crash data and processes to collect it accurately;
3. Contingencies which increase the motivation of the community to report all injury and fatal crashes to police;
4. Estimation of the proportion of road crash fatalities reported by the traffic police using complementary sources such as death certificates and hospital injury data; and
5. Developing linkage frameworks and a single platform with the institutions handling the supplementary sources of information (that is, health and justice institutions) to improve the completeness and quality of the data.

Under-reporting of crash data, particularly in LMICs, is a significant issue and impedes the successful management of road safety. This section has identified the deficiencies with existing crash-based data. This highlights the need for requirements for improved crash data, as well as the need for alternative sources of data to better manage safety until such time that systems can be improved.

[33] Raftery, S. J., & Wundersitz, L. N. (2011). No restraint? Understanding differences in seat belt use between fatal crashes and observational surveys. Adelaide: CASR090 March 2011.

[34] Evans, L. (1996). Safety-belt effectiveness: The influence of crash severity and selective recruitment. Accident Analysis & Prevention, 28(4), 423-433.

2.3. The Relationship between Road Crash Fatalities and Serious Injuries

Introduction

Over the last decade, monitoring of road crash fatalities has been at the forefront of road safety activities – significant proportions of road crash data and activity around the world are focused only on road crash fatalities, giving little significance to road crash serious injuries.[35] The greater accuracy and suffering generally occasioned by fatalities warrants that these should be a point of focus. However, the much larger numbers and economic costs of serious injuries[36] are neglected. The actual burden of road crash serious injuries is unknown in many developed and developing countries. The most viable (though imperfect) solution is to estimate injuries from fatalities. Relating road crash serious injuries to road crash fatalities is therefore essential, given that data on road crash fatalities is more accurate and complete. Establishing an estimate of the burden of road crash serious injuries will enable countries to better appreciate the nature and extent of the problem, better allocate resources, and develop more effective strategies to address the challenge.

The road crash fatality data from WHO are estimated by supplementing the government-reported fatalities with data from the Ministries of Health of the individual countries in which the health data are ascertained to be of high quality.

In countries without valid complementing sources of data, the road crash fatality estimates are based on various covariates (that is, from surveys and published sources)

Road crash injuries are difficult to estimate since it is difficult to identify any complementing data that can be used in determining the proportion of unreported injuries in trauma centers. This challenge is amplified in developing countries, especially because of the poor state or lack of trauma registries in those countries, whereas injury surveillance systems are important parts of well-developed and distributed trauma centers.[37]

Estimation of Serious Injuries

A report on the valuation of life and the cost of serious injuries suggested that serious injuries could be estimated as ten times the number of fatalities.[38] This methodology is supported by the inference made in a systematic analysis of population health data[39,40] that for every fatality there are 20 injured persons in need of medical treatment. However, in developed countries, this ratio is estimated to be as high as 50.[41] Given that serious injuries are a proportion of all injuries, it follows that the ratio of fatalities to serious injuries

[35] Amorós, E., Brosnan, M., Wegman, F., Perez, C., & Segui, M. (2011). Reporting on serious road traffic casualties. In combining and using different data sources to improve understanding of non-fatal road traffic crashes. Paris: International Transport Forum.

[36] There are various definitions for serious injury in road safety, although it often refers to more severe injuries that involve hospitalization. This can range from relatively minor and short-lived incapacitation, through to permanent life altering injury. For a detailed discussion on definitions, see ref[35].

[37] Juillard, C., Kouo Ngamby, M., Ekeke Monono, M., Etoundi Mballa, G., Dicker, R., Stevens, K., & Hyder, A. (2017). Exploring data sources for road traffic injury in Cameroon: Collection and completeness of police records, newspaper reports, and a hospital trauma registry. Surgery, 162(6), S24-S31.

[38] McMahon, K. & Dahdah, S. (2008) The True Cost of Road Crashes: Valuing Life and the Cost of a Serious Injury. International Road Assessment Programme.

[39] Patton, G. & Coffey, C. & Sawyer, S. & Viner, R. & Haller, D. & Bose, K. & Vos, T. & Ferguson, J. & D Mathers, C. (2009). Global patterns of mortality in young people: A systematic analysis of population health data. Lancet. 374. 881-92. 10.1016/S0140-6736(09)60741-8.

[40] Banza, Leonard & Gallaher, Jared & Dybvik, Eva & Charles, Anthony & Hallan, Geir & Gjertsen, Jan-Erik & Mkandawire, Nyengo & Varela, Carlos & Young, Sven. (2017). The rise in road traffic injuries in Lilongwe, Malawi: A snapshot of the growing epidemic of trauma in low income countries. International Journal of Surgery Open. 10. 55-60. 10.1016/j.ijso.2017.11.004.

[41] Jamison, D. T., Breman, J. G., Measham, A. R., Alleyne, G., Claeson, M., Evans, D. B., ... & Musgrove, P. (Eds.). (2006). Disease control priorities in developing countries. The World Bank.

will be lower as compared to the ratio of fatalities to all injuries.

Limitations in Serious Injuries Data Collection

The limitations in the collection of road crash serious injuries data are three-fold: [42]

1. Variation in definition of serious injuries (in both developing and developed countries);
2. Low reliability of serious injuries data (quantitatively and qualitatively); and
3. Misrepresentation of the severity of injuries in countries with inadequate data collection systems and those with a higher distribution of pedestrians, cyclists, and motorcyclists.

The common variation between the definition of serious injuries also arises from the difference in methodologies used in obtaining the number of maximum abbreviated injury scale (MAIS3+)[43] injuries in different countries and regions.

Recent Studies on Serious Injuries

There is a disparity between the rate of reduction of fatalities and the rate of decrease in serious injuries. In some countries, road crash fatalities are on a downward trend, while serious injuries are on an upward trend, especially for vulnerable road users – further emphasizing the need to investigate and understand the relation between road crash fatalities and serious injuries.[44]

A review of the road crash fatalities and injuries in a sample of OECD[45] countries reveals that the rate of reduction of road crash fatalities is approximately twice the rate of reduction of road crash injuries and six times that of hospitalized injuries. This shows that the decline in road crash fatalities is not proportional to the decrease in road crash injuries (Table 2.2). An examination of Disability-Adjusted Life Years (DALYs), Years of Life Lost (YLL), and Years Lost due to Disability (YLDs) due to road crashes across 187 countries for 20 years concludes that the relationship is indeed non-linear, and that further research is required to develop more effective road safety interventions. The disparity in the reduction of fatalities and serious injuries is a global issue and is not limited to developed or developing countries. [46]

Analysis of the relation between road crash fatalities and injuries in 23 OECD countries (Table 2.3) shows the scale of the burden of road crash injuries. On average, 46 road crash injuries occur for every road crash fatality, and six serious road crash injuries occur for every road crash fatality.

The actual ratio may be significantly higher because of the under-reporting and lack of complete data, especially for injuries (see Section 2.2).

Table 2.2: Percentage Change in Road Crash Fatalities and Injuries in a sample of OECD Countries (Analysis of OECD IRTAD 2019 Road Safety Annual Report by GRSF)

	Change from 2010 to 2015/6/7		
	Fatalities	All Injuries	Hospitalized Injuries
Mean	-19%	-10%	-3%

[42] Weijermars, W., Bos, N., Schoeters, A., Meunier, J.-C., Nuyttens, N., Dupont, E., … Thomas, P. (2018). Serious Road Traffic Injuries in Europe, Lessons from the EU Research Project SafetyCube. Transportation Research Record, 2672(32), 1–9. https://doi.org/10.1177/0361198118758055

[43] Serious road injuries are defined as nonfatal road traffic casualties with an injury severity level of MAIS3+ (Maximum Abbreviated Injury Scale)

[44] Beck, B. & Cameron, P. & Fitzgerald, M. & Judson, R. & Teague, W. & Lyons, R. & J Gabbe, B. (2017). Road safety: serious injuries remain a major unsolved problem. The Medical journal of Australia. 207. 244-249. 10.5694/mja17.00015.

[45] International Traffic Safety Data and Analysis (IRTAD) Group, (2019), Road Safety Annual Report 2019, International Transport Forum, OECD.

[46] Lin, Y. C. (2016). The global distribution of the burden of road traffic injuries: Evolution and intra-distribution mobility. Journal of transport geography, 56, 77-91.

Table 2.3: Ratio of Road Crash Fatalities to Injuries in 23 OECD Countries (Analysis of OECD IRTAD 2018 Road Safety Annual Report by GRSF)

Ratio of Road Crash Fatalities to -	All Injuries	Hospitalized Injuries/National Definitions	Injuries with MAIS3+
Mean	46	9	6
Upper Limit	96	31	18
Lower Limit	5	2	2

Serious Injuries in Developing Countries

There are few national and regional studies undertaken to establish the burden of road crash serious injuries for developing countries because the coverage of surveillance systems is limited in LMICs, mostly covering urban areas with only limited coverage of rural areas.[47] Many studies on road crash serious injuries are not undertaken at a national level but at a lower level - in some cases at a trauma center level. These studies, as critical as they are in showing the magnitude of serious injuries in developing countries, may be limited in their applicability at a national and regional level.

The estimated ratio of road crash fatalities to injuries in developing countries ranges from 1:66 to 1:4.[48,49] In some regions with hospitalized crash casualty data, the estimated ratio of road crash fatalities to the hospitalized road crash casualties was approximately 1:8. The more significant under-reporting of injuries compared to fatalities, combined with the treatment of injuries outside the hospital setting, means that these ratios are an under-estimate. In both cases, a large proportion of crashes involved vulnerable road users.

The significant difference in ratios can be attributed to the variation of under-reporting of crash injuries, the nonuniform definition of serious injuries in different countries,[50] and the lack of proper post-crash care systems *(see Chapter 8)*.

Conclusions

Changes in the nature of motorization and the numbers of deaths in recent years point to the necessity of re-estimating the ratio between road crash fatalities and serious injuries, and possibly developing separate ratios for different country classifications, to give a clearer picture of the magnitude and impact of road crash injuries globally.

The data reveals a wide variation of the relation of road crash fatalities and serious injuries in developed countries. If some national definitions of serious injuries are of the same accuracy as the MAIS3+ definition, the relation may be as high as 31 serious injuries for each fatality (Table 2.3) and even significantly higher considering the under-reporting of road crash injuries.

Given that the actual burden of serious injuries is difficult to estimate for both HICs and LMICs, an approximate estimate may be developed using data from 23 OECD countries, considering the under-reporting of road crash fatalities that exists. We can develop two estimates using the different levels of under-reporting in HICs, ranging from 30 percent to 50 percent (See Section 2.2), and applying it to the average ratio of road crash fatalities to serious injuries.

For this estimate, we will consider national definitions of hospitalized injuries to be serious

[47] P. Puvanachandra, C. Hoe, H. F. El-Sayed, R. Saad, N. Al-Gasseer, M. Bakr & A. A. Hyder (2012) Road Traffic Injuries and Data Systems in Egypt: Addressing the Challenges, Traffic Injury Prevention, 13:sup1, 44-56, DOI: 10.1080/15389588.2011.639417

[48] Jac Wismans, Ingrid Skogsmo, Anna Nilsson-Ehle, Anders Lie, Marie Thynell & Gunnar Lindberg (2016) Commentary: Status of road safety in Asia, Traffic Injury Prevention, 17:3, 217-225, DOI: 10.1080/15389588.2015.1066498

[49] Adeloye, Davies & Y Thompson, Jacqueline & Ayokunle, Akanbi & Azuh, Dominic & Samuel, Victoria & Omoregbe, Nicholas & Ayo, Charles. (2016). The burden of road traffic crashes, injuries and deaths in Africa: A systematic review and meta-analysis. Bulletin of the World Health Organization. 94. 510-521A. 10.2471/BLT.15.163121.

[50] Yannis, G., Papadimitriou, E., Chaziris, A., & Broughton, J. (2014). Modeling road accident injury under-reporting in Europe. European transport research review, 6(4), 425-438.

injuries in the 23 OECD countries that have this data. Applying a correction for under-reporting of 30 percent and 50 percent places the mean ratio of 9:1 between 13:1 and 18:1 respectively. Taking this into account, the ratio of road crash fatalities to serious injuries of 15:1 is a reasonable estimate.

Next Steps in Estimation of Serious Injuries

There are significant limitations in serious injury reporting arising from a number of sources, including under-reporting and systemic omissions in police recorded data (refer to Section 2.2), and the inadequate health infrastructure/trauma registration systems in developing countries.[51] The recommendations arising from this analysis are:

1. Recognition of the human, social, and economic significance of road crash injuries is needed, along with stronger efforts to collect sound data on this across LMICs and even HICs.

2. In the absence of sound crash data on serious injuries and in recognition of the extensive under-reporting of them, a reasonable estimate of the extent of serious injuries may be derived from employing a ratio of 15 serious injuries per fatality. This ratio is employed in the present report.

[51] Nantulya, V. M., & Reich, M. R. (2002). The neglected epidemic: road traffic injuries in developing countries. Bmj, 324(7346), 1139-1141.

2.4. The Cost Burden of Road Crash Fatalities and Serious Injuries

Introduction

The actual burden of road crash fatalities and serious injuries in the world is unknown. It is difficult to estimate the extensive social and economic effects road crashes cause, more so because there are many intangible costs (indirect costs) which are difficult to determine as compared to tangible costs (direct costs).[52] Some of the areas of costs are provided in Box 2.1. The high levels of underreporting further exacerbate the problem since a large proportion of road crashes and injuries go unreported, especially in LMICs (see Section 2.2).

It is critical to obtain the social and economic cost of road crashes, especially for developing countries, to raise the profile of road safety among policymakers. Understanding of the economic implications of inaction in road safety will ensure prioritization and result in adequate reallocation of resources for road safety from a national to a regional level. Understanding the economic cost of crashes also improves the ability to conceptualize more cost-effective road safety measures.[53]

An analysis was undertaken as part of this study across data from all LMICs. The results indicate that there were an estimated 19.63 million deaths and serious injuries in LMICs in 2016. These road crash fatalities and serious injuries cost developing counties approximately $1.7 trillion, which is in total more than 6.5 percent of the developing economies' GDP.[4,38,54] This is a significant challenge for countries which are in the process of growing their economies. It is forecast that more than 50 million fatalities and 500 million injuries will be attributed to road crash injuries between 2001 to 2050 if significant global efforts to solve the issue of road safety aren't prioritized[55] – showing that the cost of inaction is high.

The group of the population most affected by road crash fatalities and injuries is between the ages of 15 to 64 years.[10] This economically active age group is on average involved in 72 percent[52] of the road crash fatalities in developing countries. This causes a significant macroeconomic ripple effect in the developing countries' economies, considering also that it affects males, who are the primary source of family income in some societies in developing countries, more than women at a ratio of 3:1.[1]

Road crash serious injuries cause a greater impact on countries' economies compared to road crash fatalities on average four times more in terms of aggregate cost.[54] They cost developed countries up to 2.7 percent of their GDP because about 75 percent of the victims with MAIS3+ casualties take more than three years to fully recover - increasing the impact and burden of serious injuries.[56] Given the underreporting of road crashes, the cost may be higher than estimated, and significantly higher for developing countries considering both underreporting and the poor state of post-crash care.

[52] Mock, C. N., Nugent, R., Kobusingye, O., & Smith, K. R. (Eds.). (2017). Disease Control Priorities, (Volume 7): Injury Prevention and Environmental Health. The World Bank.
[53] Silcock, R. (2003). Guidelines for estimating the cost of road crashes in developing countries. London, Department for International Development Project, 7780, 2003.
[54] GRSF Estimate using WHO data and iRAP Methodology
[55] Bhalla, K., Shahraz, S., Naghavi, M., & Murray, C. (2008). Estimating the potential impact of safety policies on road traffic death rates in developing countries. In Ninth World Conference on Injury Prevention and Safety Promotion, Merida, Mexico.
[56] Pérez, K., Weijermars, W., Amoros, E., Bauer, R., Bos, N., Dupont, E., Filtness, A., Houwing, S., Johannsen, H., Leskovsek, B. Machata, K., Martin, J. L., Nuyttens, N., Olabarria, M., Pascal, L., & Van den Berghe, W., (2016), Practical guidelines for the registration and monitoring of serious traffic injuries, D7.1 of the H2020 project SafetyCube.

Box 2.1: The Areas of Cost of Crashes

Human costs Loss of labor in workplace due to deaths Loss of labor in workplace due to permanent and temporary disabilities Additional labor in household Reduced quality of life with pain, suffering, and disability Workplace productivity losses and additional processes - hiring of new temporary or permanent employees, training Funeral Grief and associated disruptions
Medical and rescue Hospital and medical Ambulance Rehabilitation Long term care Fire and emergency services
Legal costs Police Coronial processes Legal fees in civil and criminal proceedings Correctional services/jail
Vehicle costs Repairs Unavailability/loss of vehicles Towing
General costs Travel delays (human time, crash generated congestion, additional GHG emissions, health costs of pollution) Insurance administration for property damage and injuries Non vehicle property damage Crash site clean up

Methods of Costing Road Crash Fatalities and Injuries

There are different methods for costing road crashes, including for example, Willingness-To-Pay (WTP), Human Capital (HC), and General Equilibrium approaches (52).[57,58] Worldwide, the WTP and HC methods are the most commonly used. The WTP method estimates the cost from the road user's point of view using their willingness to pay to minimize/eliminate the potential risk of fatality, injuries, and property damage from a crash. The HC method estimates the cost of road crashes in terms of lost earnings resulting from the casualties and other costs.[57]

Both the WTP and HC methods have their limitations: the WTP method requires sophisticated survey techniques and data which are not readily available in developing countries, and the HC method lacks adequate strategies of measuring pain and suffering from road crash fatalities and injuries. The Human Capital method is preferred for developing countries because of its structured nature and cost categorization: the cost categorizations include property damage, administrative, and casualty-related costs.

A guide for estimating costs in the absence of comprehensive data, formulated by iRAP, uses data from both the HC and WTP methods as obtained from various countries to develop estimates reflecting the level of income of the specific country. The advantage of this approach is that it ensures consistency and avoids bias from surveys in different countries, making the estimates comparable. Table 2.4 summarizes iRAP's economic appraisal model.[38]

[57] Ahadi, M. R., & Razi-Ardakani, H. (2015). Estimating the cost of road traffic accidents in Iran using human capital method. International Journal of Transportation Engineering, 2(3), 163-178.

[58] Risbey, T., de Silva, H., & Tong, A. (2007). Road crash cost estimation: A proposal incorporating a decade of conceptual and empirical developments. In 30th Australasian Transport Research Forum.

Table 2.4: iRAP Economic Appraisal Model – Central Values

	Central Values
Value of Fatality	$70 \times GDP/Capita$
Value of Serious Injury	$17.5 \times GDP/Capita$ (25% VSL)
Number of Serious Injuries to number of Fatalities	10*

** 15 used herein- see text in Section 2.3*

The GRSF estimates of the burden of road crash fatalities and injuries presented in this report are calculated employing WHO-estimated road crash fatalities and the iRAP economic appraisal model, except that the GRSF-estimated ratio of road crash fatalities to serious injuries of 1:15 is applied (see Section 2.3 for the rationale for this ratio). Figure 2.7 and Figure 2.8 show the distribution of road crash serious injuries and the economic burden of road crash fatalities and serious injuries in developing countries, respectively.

Next Steps in Estimating the Actual Burden of Road Crashes

In developing countries, few studies have been conducted to estimate the actual burden of road crash fatalities and injuries. Two typical limitations in the studies in developing countries are:

1. They are limited to a group of national/sub-national hospitals within the country; and
2. They do not include all costs, especially indirect costs and other direct costs, where there are scarce data sources.

These limitations make the estimated burden of road crash fatalities and injuries unsuitable for use in economic analysis, for prioritization of road safety interventions, and for comparison with other countries, since they do not represent the national burden of road crashes and have variations in the cost-related data inclusion.[52]

A guideline on the estimate of the costs of road crashes in developing countries[53] recommends that the first step in estimating the burden of road crash fatalities and injuries should be the collation of national data on the total annual number of crashes and casualties for each severity of crash, with all data sources and assumptions indicated where necessary. This process should include the collection of official police data and comparison with other complementary data sources to consider any instances of under-reporting.

The calculation of the national annual crash costs can then be made using the crash-related costs and casualty-related costs with an additional cost to reflect human costs (that is, pain, grief, and suffering).

Each of the country profiles provides information on the cost of crashes. This includes information on the estimated cost of fatal and serious injuries as well as the cost as a percentage of GDP. Guidance on how to interpret this information, including sources of data, can be found in Chapter 9.

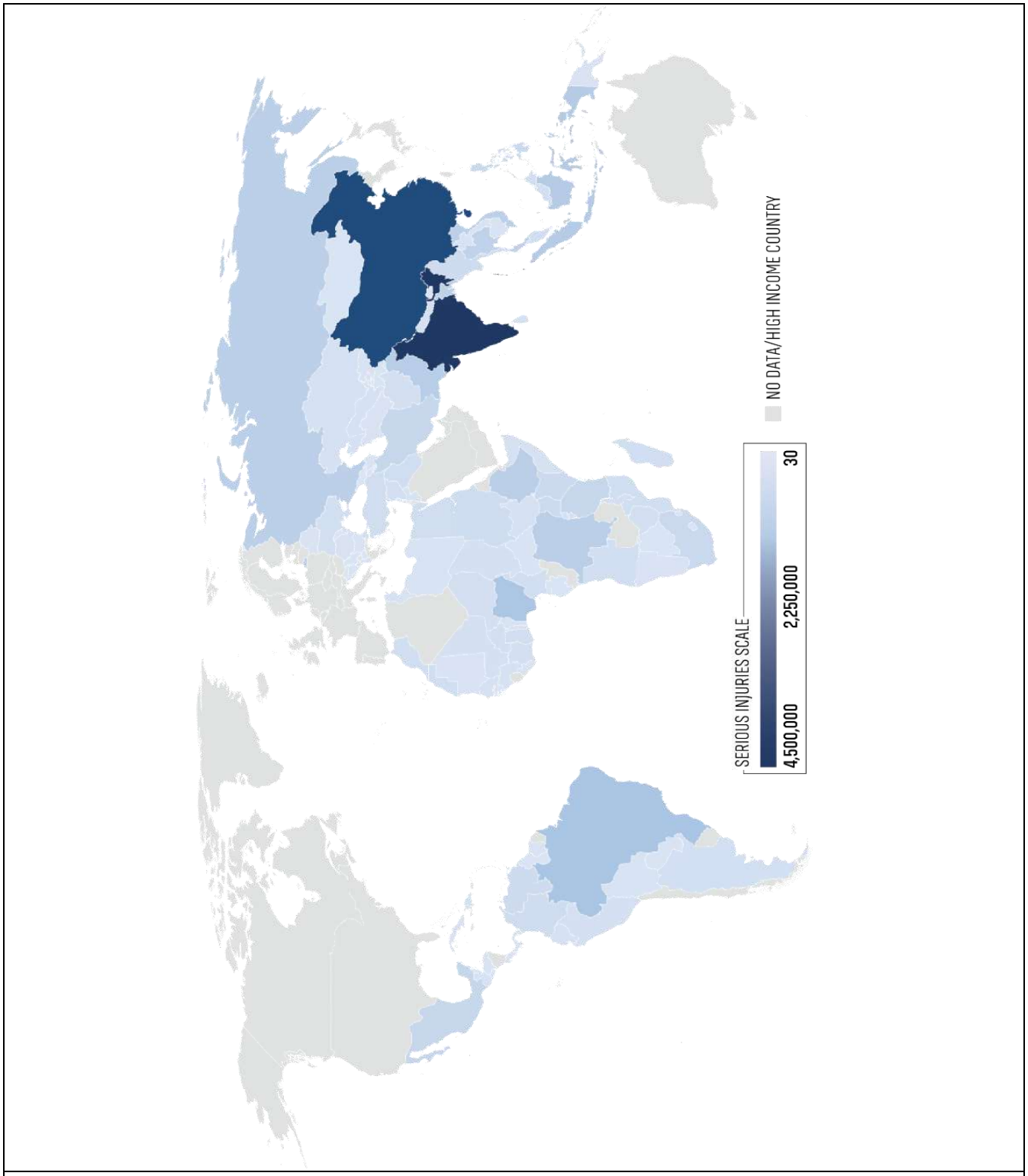


Figure 2.7: Road Crash Serious Injuries in Developing Countries

GRSF Estimate using a Revision of iRAP's Relation of Road Crash Fatalities and Serious Injuries

Figure 2.8: Estimated Cost of Road Crash Fatalities and Serious Injuries in Developing Countries

These percentages and estimated cost of road crashes fatalities and injuries have been calculated with the iRAP methodology using 2016 World Bank GDP Data and the 2016 WHO-estimated road crash fatalities and serious injuries calculated assuming a ratio of 15:1 (15 serious injuries for every fatality). This estimate broadly falls in the range of 30:1 in high-income countries to possibly lower but generally unknown ratios in low- and middle-income countries, since crashes may tend to generate more fatalities in the latter context. The percentages have been weighted according to the population in each country.

3. ROAD SAFETY MANAGEMENT (PILLAR 1)

Introduction and Summary of Country Profile Data

This chapter, and the following chapters, provide information on specific Safe System pillars. This information is provided to help interpret the information in the country profiles, and to identify gaps or risks. It also provides details about effective interventions that can be used to address issues that are identified. This first chapter provides information on the Road Safety Management Pillar.

The summary below (Table 3.1) provides information from the country profiles on this issue. It is clear that improvements are required in regard to road safety management, and the remainder of this chapter provides advice on this issue.

Table 3.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with a funded lead agency	67%	74%	73%
% of countries with national road safety strategy	56%	82%	76%
% of countries with partial or full funding for national road safety strategy	52%	77%	71%
% of countries with road safety targets	30%	63%	56%

Road Safety Management

Road safety management is a systematic process aimed at reducing the number and severity of road-related crashes.[59] Road safety management is often given a low priority, generating a fragmented, unsystematic approach to road safety.[60] The building of institutional management capacity in developing countries is critical because the fragmented approach to road safety in most of these countries creates a structural barrier in implementation of systematic, sustained, and accountable road safety interventions.[60] This in turn inhibits the development and implementation of effective, evidence-based, properly funded, and appropriately prioritized interventions to reduce road crash trauma.

Road safety is a manageable product, produced through a management system with three inter-related elements: (i) institutional management functions that (ii) produce interventions that (iii) deliver results.[61] Figure 3.1 shows the version of the road safety management system model, refined and updated by the World Bank/GRSF[62] to include “Leadership and Target Setting” as an additional institutional management function, and to also include the new intervention of “Safe Speeds”, which is a critical intervention with direct and measurable impacts on fatalities and injuries. A further revision is planned to include “minimizing road use” for a similar reason.[62]

[59] Organisation for Economic Co-operation and Development. (2002). Road Safety: What’s the Vision?.
[60] Kavi Bhalla & Marc Shotten (2019) Building Road Safety Institutions in Low- and Middle-Income Countries: The Case of Argentina, Health Systems & Reform, 5:2, 121-133, DOI: 10.1080/23288604.2019.1565061
[61] Bliss,T. and Breen, J. (2009) Implementing the Recommendations of The World Report on Road Traffic Injury Prevention Country guidelines for the conduct of road safety management capacity reviews and the related specification of lead agency reforms, investment strategies and safety programs and projects, Global Road Safety Facility, World Bank, Washington.
[62] Bliss, A, Breen, J, Job, R. F. S., & Rouse, R. (2020) *Road Safety Management System Review and Investment Strategy Guidelines (2020 Edition)*. Washington: Global Road Safety Facility & Multi-Lateral Development Banks Road Safety Working Group.

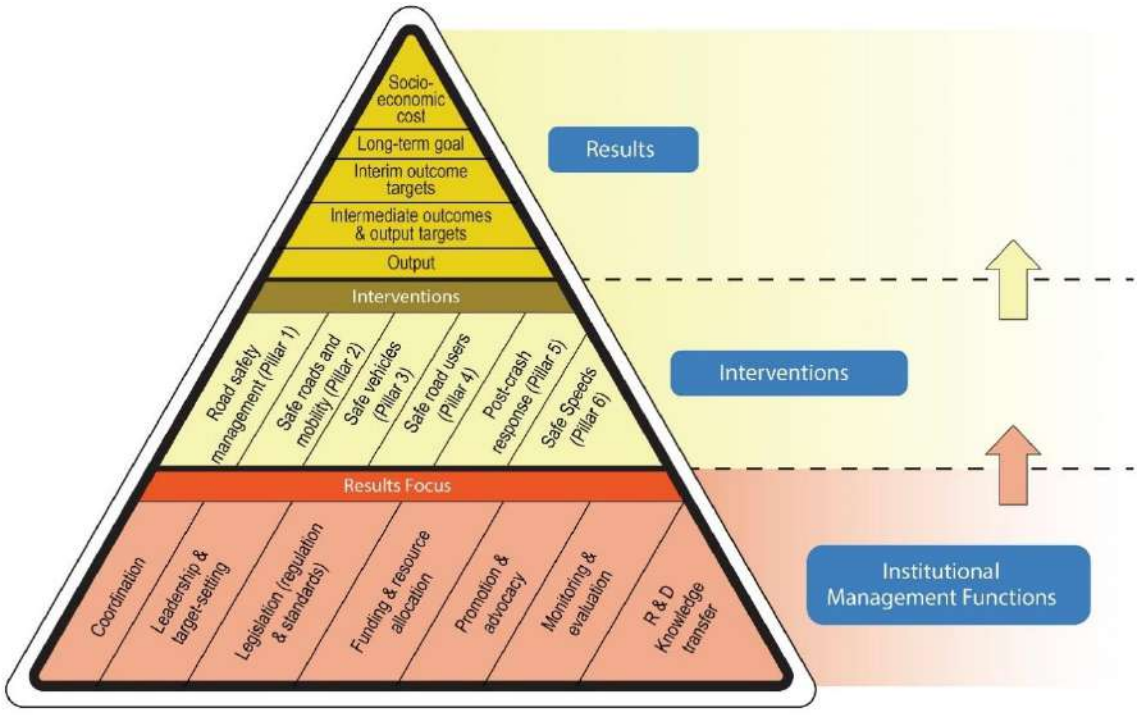


Figure 3.1: Road Safety Management System Model

Under development by GRSF for the Road Safety Training Course

Effective Management of Road Safety

The success and effectiveness of road safety lead agencies (RSLAs) in coordinating preventative road safety interventions in developing countries is dependent on the following key elements:[61,63,64]

- Lead agency which has full-time expert staff, legally endowed powers, permanent funding, political support, and access to relevant data
- Road safety strategies with clear intermediate and final targets and outcomes
- Funding dedicated to road safety
- Road crash and other complementary data
- Understanding of the causes and circumstances at the locations of road crashes

Data and the Regional Road Safety Observatories

Regional road safety observatories offer an opportunity for countries to improve their collection, storage, management, analysis, and use of crash databases and other road safety data. Improvement occurs through collaboration, learning from each other, learning from global experts in larger gatherings, increased appreciation of the size and nature of the problem, and the motivations created by friendly competition between the member countries.

[63] Junaid A. Bhatti & Aizaz Ahmed (2014) Evaluating performance of a Lead Road Safety Agency (LRSA) in a low-income country: a case study from Pakistan, International Journal of Injury Control and Safety Promotion, 21:2, 136-143, DOI: 10.1080/17457300.2013.792282

[64] Khademi, Navid & Choupani, Abdoul-Ahad. (2017). Investigating the road safety management capacity: Toward a lead agency reform. IATSS Research. 10.1016/j.iatssr.2017.08.001.

The evidence-based information developed by the road safety observatories should facilitate the design, implementation, and evaluation of road safety policies and interventions that will drive the reduction of road crash fatalities and injuries. An example of how the development of a road safety observatory has created successful results is in the European Union (EU),[65] where there has been a rapid reduction of road crash fatalities within the last decade.

The protocols developed in the EU included harmonized methods to collate national level road crash data, disaggregated exposure data, safety performance indicators, and in-depth crash and injury data. Additionally, the program developed more advanced and accurate statistical processes to standardize road crash data analysis, which became a knowledge base for safety policy support, and improved the EU road crash database.

The World Bank and GRSF have supported the development of the now well-established road safety observatory for Latin America (called the Observatorio Iberoamericano de Seguridad Vial, or OISEVI) along with partners such as the International Transport Forum-International Traffic Safety Data and Analysis Group (ITF-IRTAD), the Development Bank of Latin America (CAF), the Inter-American Development Bank (IADB), and the Pan American Health Organization (PAHO). In addition, the World Bank, GRSF (with UK Aid funding), the Africa Transport Policy Program (SSATP), the International Automobile Federation (FIA), ITF-IRTAD, and the United Nations Economic Commission for Africa (UNECA) have partnered with many countries to successfully develop the Africa Road Safety Observatory, which was launched in South Africa in June 2019. Development is now underway for the World Bank and GRSF (again with UK Aid support) to support the development of a similar observatory for the Asia-Pacific region, along with partners UNESCAP, the Asian Development Bank (ADB), ITF-IRTAD, FIA, and WHO, among others. (See also the description in Box 3.1 of the World Bank/Philippines Data for Road Incident Visualization, Evaluation, and Reporting (DRIVER) system.)

Improvement of road crash data is one of the main objectives of road safety observatories. The EU's Community Road Accident Database (CARE) and the OISEVI database are successful Regional Road Safety Observatory databases that collect data from participating member states and collate them into one database for identification and quantification of road safety problems, evaluation of the efficiency of road safety measures, and analysis to facilitate the exchange of experiences between the member states.[66,67]

For countries to improve data quality, a situational assessment of the current data system needs to be undertaken. This should be done through stakeholder analysis, assessment of data sources, use of existing systems, end-user needs assessments, and environmental analysis.[68] In addition to making these changes in policy, implementation of technology, assessments and training can be utilized to improve road safety data.

Safety data should include other data-sets other than road crash data in order to improve the overall effectiveness of the data. Transport

[65] Loughborough University (2014) The development of the European Road Safety Observatory and the impact on safety policy-making. Research Excellence Framework. Retrieved August 16, 2019 from https://ref2014impact.azurewebsites.net/casestudies2/refservice.svc/GetCaseStudyPDF/42395

[66] Observatorio Iberoamericano de Seguridad Vial, OISEVI (2012) Conceptual Document – 'La información para la gestión de las políticas de seguridad vial: Información para salvar vidas'.

[67] CARE: Community Road Accident Database. Retrived August 15, 2019 from https://ec.europa.eu/idabc/en/document/2281/5926.html

[68] World Health Organization, FIA Foundation for the Automobile and Society, Global Road Safety Partnership & World Bank. (2010). Data systems: a road safety manual for decision-makers and practitioners. World Health Organization. https://apps.who.int/iris/handle/10665/44256

professionals will be able to identify areas and strategies with high potential for road safety improvement. Examples of other complementary data-sets include crash volume data and road data, as shown in Figure 3.2.[69] Crash data in this context should include road crash fatality and injury data from different complementary sources (that is police-recorded data, hospital-recorded injury data, and so forth).

Information on road safety management-related performance can be found in the country profiles. Key factors relating to the Road Safety Management Pillar include whether there is a funded lead agency, whether there is a national road safety strategy, and the existence of road safety targets. The information in the country profiles should be reviewed in conjunction with the information in this chapter, particularly for those profiles where there are gaps or deficiencies. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 2 for information on road safety management).

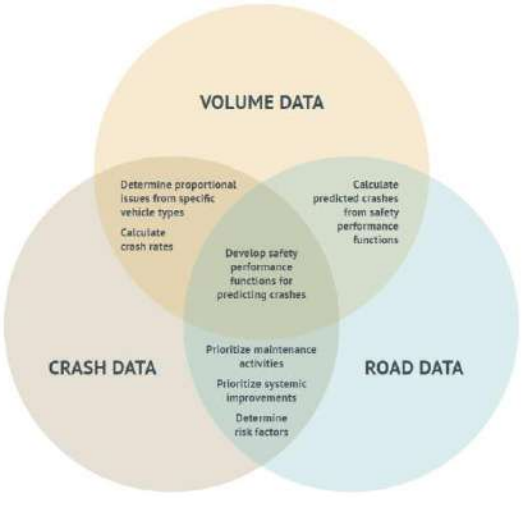


Figure 3.2: Road Safety Data-Sets

Adopted from FHWA Road Safety Manual

Box 3.1: Data for Road Incident Visualization, Evaluation, and Reporting (DRIVER) system

The World Bank, working with the Philippines government, developed and deployed a web-based and open-source system for geo-spatially recording and analyzing road crashes - the Data for Road Incident Visualization, Evaluation, and Reporting (DRIVER) system.[70]

The system links multiple agencies involved in recording road crash data (that is, local government units, the police, and the health system), standardizes terms and definitions for reporting, and provides analytical tools to support evidence-based investments and policies and monitoring of the impact of interventions. To access the platform and basic data, a simple login with a Google account is necessary.

DRIVER is currently being scaled-up to a national level in the Philippines, with support from the Bloomberg Initiative for Global Road Safety (BIGRS) and the Quality Infrastructure Investment (QII) Partnership between the World Bank and the Government of Japan. Based on requests from different cities and/or countries where funding was available, DRIVER pilots are currently under implementation in Laos, Mumbai (India), São Paulo, and Brazil.

[69] Federal Highway Administration. (2017). Road Safety Fundamentals: Concepts, Strategies, and Practices that Reduce Fatalities and Injuries on the Road. Unit 3: Measuring Safety. U.S. Department of Transportation.
[70] www.roadsafety.gov.ph.

4. SAFE ROADS AND ROADSIDES (PILLAR 2)

Introduction and summary of country profile data

This chapter provides information on safe roads and roadsides, including describing risk-related factors and ways to mitigate them. The content should be read in conjunction with the Pillar 2 material of the country profiles. The following summary (Table 4.1) provides key information on this pillar from the country profile reports.

Table 4.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with partial audit/star rating for new roads	74%	82%	80%
% of countries with inspection/star rating for existing roads	44%	60%	57%
% of countries with investment allocated to upgrade high risk locations	48%	66%	62%

Safe roads and roadsides

Improved road safety infrastructure provides reliable, well-understood, and well-researched road crash and injury reduction outcomes and is critical for obtaining, consistent with the Safe Systems approach, sustainable reductions in road crash fatalities and reductions in injuries.

Well-designed and well-constructed roads and roadsides reduce crash risk and injury severity levels.[71]

Well-designed high performing infrastructure treatments can lead to a reduction of road crash fatalities by up to 90 percent,[72,73,74] and investments in road safety infrastructure treatments have an average benefit-cost ratio of more than 15:1 in developing countries.[75] Well-designed infrastructure addresses many aspects of road safety by reducing the risk of injury in the event of a crash, eliminating certain risky behaviors (by making them impossible), and reduces the risk of road user error.[76]

An assessment of 358,000 km of roads across 54 countries found that road features elevate the risk and severity of road crashes significantly, especially when designed without considerations of road safety aspects. Figure 4.1 shows the increased risk to vulnerable road users from unsafe road conditions.[77]

[71] McInerney, R., & Smith, G. (2009). Saving lives through investment in safer roads: The iRAP partnership. Proceedings of the 13th Road Engineering Association of Asia and Australasia, 23-26.
[72] Bureau of Infrastructure, Transport and Regional Economics. (2012). Evaluation of the National Black Spot Program. Volume 1, Report no. 126, BITRE, Canberra, ACT.
[73] Larsson, M., Candappa, N., & Corben, B. (2003). Flexible barrier systems along high-speed roads: a lifesaving opportunity.
[74] Steinmetz L., Aumann P. (2017). Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings. Austroads.
[75] International Road Assessment Programme. The Business Case for Safer Roads. Retrieved September 4, 2019 from https://www.vaccinesforroads.org/business-case-for-safer-roads/
[76] Turner, B., Jurewicz, C., & Makwasha, T. (2017). What works when providing safe road infrastructure? 10 treatments that need to be used more. Road & Transport Research: A Journal of Australian and New Zealand Research and Practice, 26(3), 36.
[77] International Road Assessment Programme. How Safe are the World's Roads? Retrieved September 4, 2019 from https://www.vaccinesforroads.org/how-safe-are-the-worlds-roads/

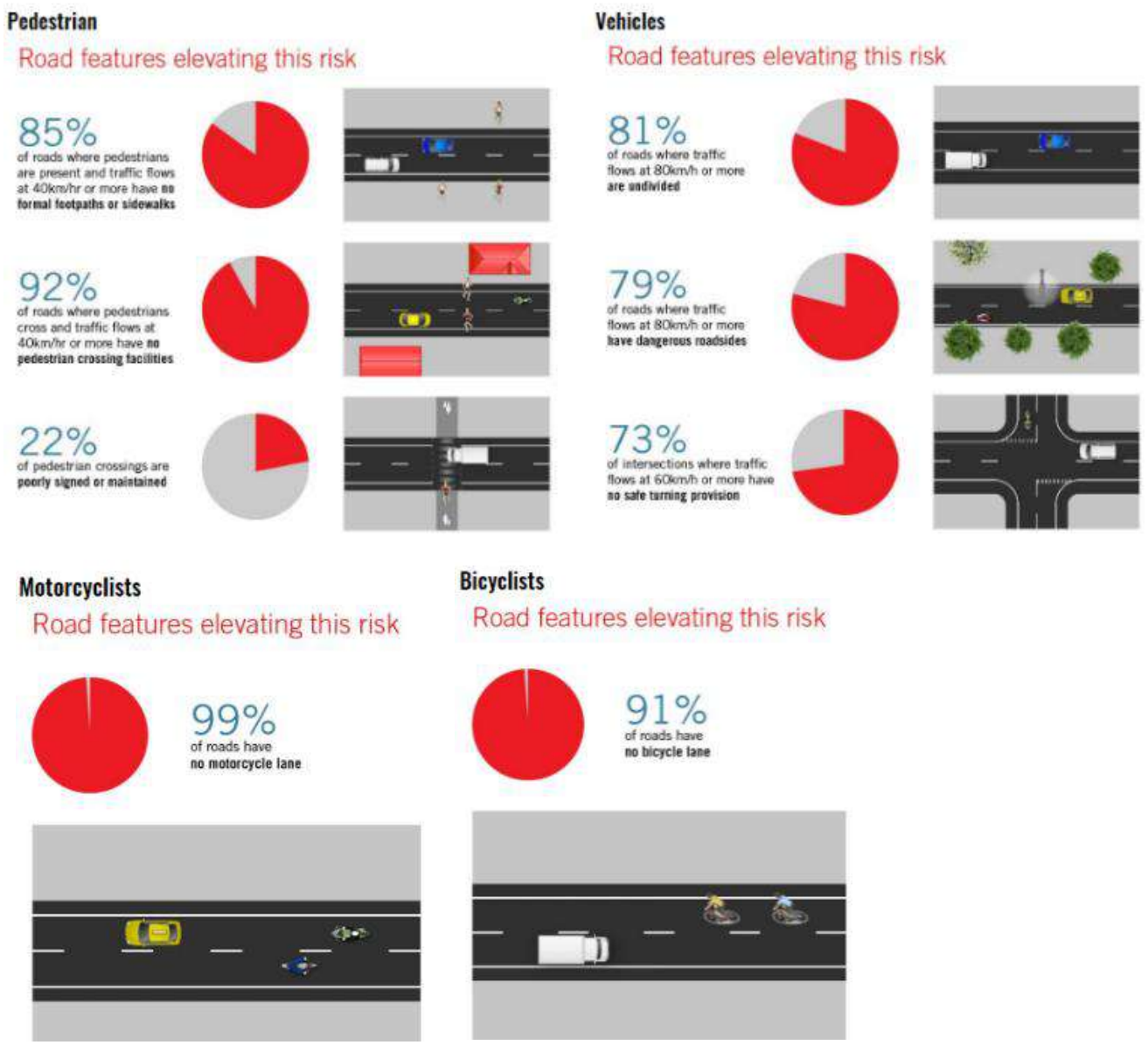


Figure 4.1: Percentage of Road Features Elevating Road Crash Risk (Adopted from iRAP)

Road Star Rating and the Business Case for Safer Road Infrastructure

iRAP provides road star ratings that give a simple and objective measure on the level of safety, which is "built-in" to the road for the road users. (See Box 4.1 on GRSF/iRAP developments). 5 Star roads are the safest, while 1 star roads are the least safe.

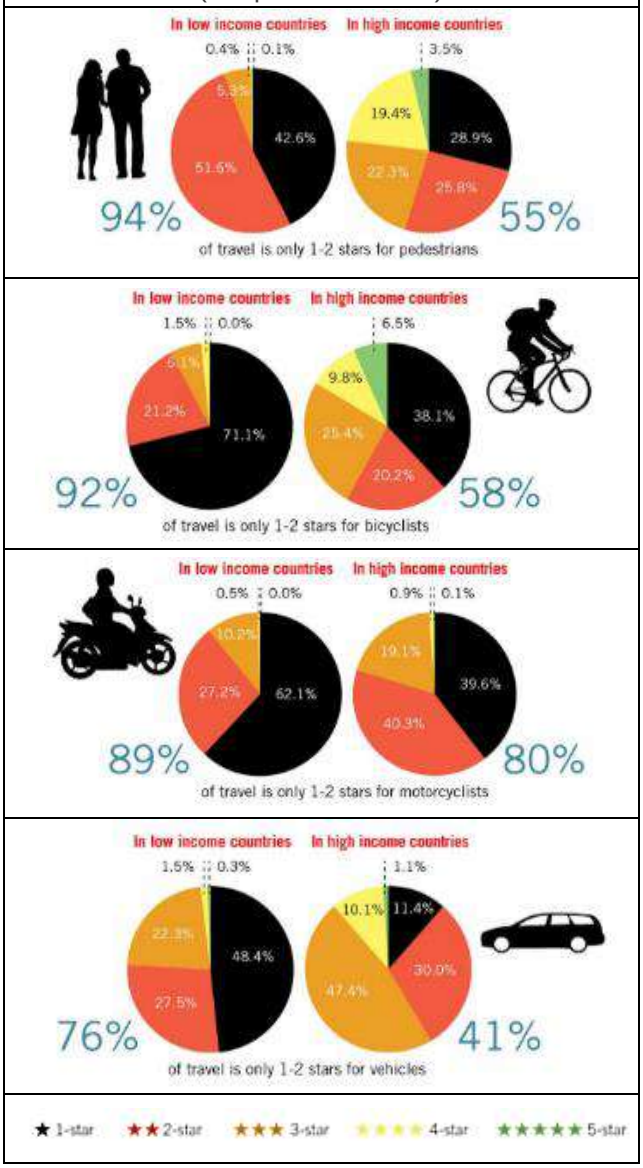
Star Ratings are embedded in the UN Global Road Safety Performance Targets, providing a common standard to benchmark the safety of the world's roads. The two targets are:

1. All new roads are to achieve technical standards for all road users that take into account road safety, or meet a three-star rating or better; and

2. More than 75 percent of travel on existing roads is on roads that meet technical standards for all road users that consider road safety by 2030.

If the targets are met it is estimated that a total of 467,000 lives will be saved a year; 100 million deaths and serious injuries will be saved over 20 years, and $8 of savings will be made for every $1 invested in road safety infrastructure.[75, 76, 77]

Figure 4.2: Difference in Star Ratings between Low- and High-income Countries
(Adopted from iRAP)



Developing countries have a significant deficiency in road safety infrastructure, mainly due to the lack of proper road safety management, which leads to the low prioritization of road safety as a national agenda and low resource allocation to road safety infrastructure interventions. This can be observed from the comparison of the road star ratings in low-income countries and high-income countries (Figure 4.2). Vulnerable road users have significantly increased exposure to high-risk roads during their travel

Box 4.1: GRSF/iRAP Developments to Improve Safe Road Infrastructure

Star Rating for Design (SR4D)

SR4D is a web application developed by iRAP, through GRSF funding, to enable Star Ratings to be easily incorporated into the road design process.

The application empowers designers to assess the road safety of a design and improve its safety star rating before the road is constructed, thus saving lives and preventing serious injury from the onset.

SR4D enables road engineers and designers, municipalities, road authorities, funding agencies, and governments to carry out the coding of road designs for a length of road. The application further enables the user to submit the coding data to ViDA's (Vaccines for Roads Big Data Tool) application programming interface (API) for a star rating to be generated. Any trained engineer or road safety practitioner can carry out a design Star Rating, ensuring improved safety at the design phase, and can thus maximize safety in road safety infrastructure. SR4D is available free of charge on the ViDA API.[78]

It empowers designers to assess the safety of a road design and to improve its star rating

[78] https://vida.irap.org/

before the road is constructed, thus saving lives and preventing serious injury. Star Rating for Designs strengthens the road safety audit process, complementing it with an objective, replicable qualification of road user risk.

The Road Safety Screening and Appraisal Tool (RSSAT)

The World Bank and GRSF, working with iRAP inputs, developed the Road Safety Screening and Appraisal Tool (RSSAT). The key objective of the tool is to guide and inform countries and World Bank teams of the projected safety implications due to the road infrastructure designs implemented during Bank projects.

RSSAT is simple and fast to use because it does not require video or photograph analysis. The results from RSSAT guide the adjustment of designs during project appraisal to ensure improved road safety outcomes. The tool takes into consideration the projected growth of traffic and changes in operating speeds and their projected impact on road safety. The tool can be used primarily during project planning to compare project scenarios with the baseline conditions and has the potential to be used as an evaluation tool to assess the project's safety rating and overall safety benefit over a period of years.

Road Infrastructure Safety Management (RISM)

RISM refers to procedures used by road authorities to inform decisions on road safety improvement of the road network in the country or region.[79] The critical objective of road infrastructure safety management is risk identification in the planning, design, construction, and operation phases of road infrastructure to assess, remove, or mitigate the risks.[80] The management of road safety infrastructure through road safety audits, assessments, inspections, and other strategies have cost-benefit ratios of up to 200[81] and road crash fatality reductions of up to 25 percent[79] – showing they are effective in the reduction of road crash fatalities and injuries. Infrastructure engineering is a systematic approach to improve road infrastructure safety by:[82]

- Applying **preventative** strategies
- Applying **reactive** strategies
- **Integrating safety** in all phases of planning design, and operation of road infrastructure

Preventative strategies are implemented to avert potential road crashes using evidence-based measures, while reactive strategies are implemented to prevent more crashes at high-risk locations of the road network, identified using actual crash data. Both preventative and reactive strategies are essential in assuring proper road infrastructure safety management at different phases of the life of road infrastructure.

A report on road infrastructure safety management in IRTAD countries documented the road safety procedures in each stage of the road infrastructure development process, as shown in Figure 4.3. A project in Nepal to install roadside crash barriers is described in Box 4.2

[79] International Traffic Safety Data and Analysis Group. (2015). Road Infrastructure Safety Management, Research Report. International Transport Forum. OECD.
[80] Jamroz, K., Budzyński, M., Kustra, W., Michalski, L., & Gaca, S. (2014). Tools for road infrastructure safety management–Polish experiences. Transportation Research Procedia, 3, 730-739.
[81] Elvik, R. (2000). How much do road accidents cost the national economy?. Accident Analysis & Prevention, 32(6), 849-851.
[82] GRSF Road Safety Training 2019

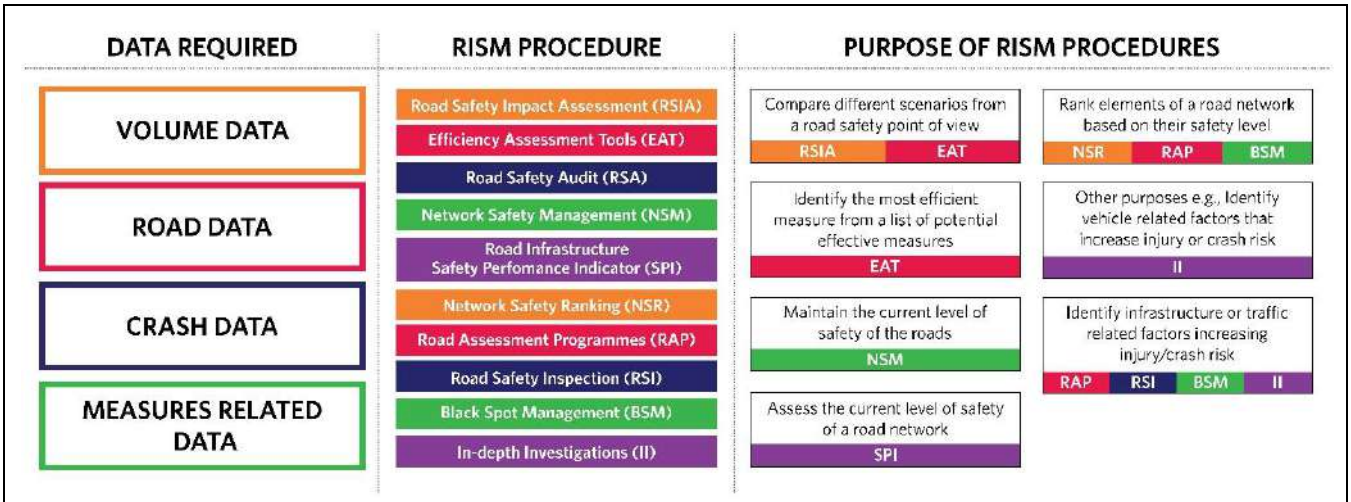


Figure 4.3: Data, Procedure, and Purposes of Road Infrastructure Safety Management Tools

Box 4.2: Road Crash Barriers for Open Roads

In Nepal, under the World Bank Road Sector Development Project (RSDP) GRSF funded 73,000 meters of crash barriers installed on selected sections of the roads targeted under the project (based on the recommendations of a Road Safety Audit. (See Figure 4.4). These represented 76 percent of the high-risk locations under the project. UK Aid funding for this work is gratefully acknowledged.

It was estimated that the project would reduce the incidence of fatalities by 30 percent and that of serious injuries by 25 percent. A simplified impact evaluation conducted at project closure of the crash-barrier installations indicated that at least seven hits were recorded and that vehicles carrying a total of 270 passengers were protected from departing the roadway and potentially falling into the valley. Given the terrain, many of the 270 passengers would have died if these vehicles had left the road and fallen down the cliff. If similar rates continued in future years, it is estimated that 3,450 lives could be saved over a 20-year period.

The project substantially improved road safety, saved lives, and reduced poverty in vulnerable families among road users. It also highlighted the importance of road safety policy and decision making in Nepal.

Figure 4.4: Roadside Barriers in Nepal. The GRSF funded construction of roadside barriers on cliff-side roads in Nepal, showing in order the road without barriers, during construction, at completion, as well as an example of a bus which was prevented from going over the cliff by the barrier

Recommendations in developing RISM Tools

A global report on road infrastructure safety management recommends that each country should develop country- or region-specific RISM tools that will be effective in its context while using good practice knowledge to inform the development process.[79]

The report gives broad recommendations on the steps (Box 4.3) that road safety authorities need to follow to develop an effective and sustainable RISM system that will reduce the burden of road crash fatalities and injuries.

Box 4.3: Recommendations to develop an effective RISM system (Adopted from IRTAD Research Report on RISM)

1. Benchmark road infrastructure against good practices in other countries.
2. Implement new minimum safety standards for road infrastructure – in this case, 3 stars or better.
3. Continue evaluation and research to quantify the safety impacts of planning decisions.
4. Implement suitable Road Infrastructure Safety Management procedures for each stage of road development, including planning design, preopening, and full operation.
5. Make Road Infrastructure Safety Management procedures legally binding.
6. Involve both road and health authorities when developing road crash data boxes.
7. Assure adequate institutional management capacity and investment levels.
8. Use existing tools and guidelines; adopt second-best solutions where state-of-the-art solutions are not feasible.
9. Identify the Road Infrastructure Safety Management procedures that fit specific needs and identify barriers to implementation.
10. Share good practices of Road Infrastructure Safety Management procedures and intervention measures.
11. Monitor the safety performance of road infrastructure.
12. Develop self-explaining and forgiving roads.

Road Safety Infrastructure Selection and Investment

The selection of road safety infrastructure interventions should take into consideration all road users – with priority being given first to vulnerable road users. Interventions must be implemented to solve clearly identified problems through analysis of safety data or issues that were previously identified through a form of risk assessment.

The primary considerations in selecting and prioritizing road safety infrastructure interventions should include cost-effectiveness, maximum safety benefits, and minimum adverse effects. The benefits of the interventions should outweigh the costs and any adverse effects.[83] The safety effect (that is expected reduction in target crashes or fatalities after implementation of the intervention) and the intervention implementation costs can be used to make a simple prioritization table and chart (Table 4.2). It should be noted that this should only guide the preliminary stages of selection. Selection and prioritization of the final interventions require mandatory consideration of country- or region-specific conditions and implementation costs in order to ensure maximum effectiveness of the interventions, which can only be achieved through in-depth optimization.

It is crucial to consider both the safety effect and the benefit-cost ratios of interventions to ensure that the interventions selected are cost-effective, which is an important factor in developing countries with limited resources.[84]

Detailed information on safe roads and roadsides and related performance can be found in the country profiles. The information in the country profiles should be reviewed in conjunction with the information in this chapter, particularly for those

[83] World Road Association, PIARC. Road safety Manual: Road safety Management. Retrieved September 6th 2019 from https://roadsafety.piarc.org/en/road-safety-management-safe-system-approach/safe-system-elements

[84] Yannis, G., Evgenikos, P., & Papadimitriou, E. (2009). Best practice for cost-effective road safety infrastructure investments. Conference of European Directors of Road (CEDR).

where there are gaps or deficiencies on this issue. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 3 content for information on safe roads and roadsides).

Table 4.2: Percentage Reduction in Crashes and Cost of Road Safety Infrastructure Interventions (Adopted from PIARC Catalogue of Design Safety Problems and Countermeasures)

Road Features	Cost	Percentage Reduction in Crashes
Road Standard	$ - $$$$	19% – 33%
Horizontal Alignment	$$$	20% - 80%
Vertical Alignment	$$$ - $$$$	10% - 56%
Road Structure	$ - $$$	10% - 74%
Junction Design	$$ - $$$	10% - 95%
Traffic Control	$ - $$$	10% - 92%
Visibility	$ - $$	2% - 75%
Crash Amelioration	$ - $$	14% - 60%
Pedestrian Facilities	$ - $$	13% - 90%
Cycling Facilities	$ - $$	10% - 56%
Rail Crossings	$ - $$	73% - 93%
Traffic Calming	$$	10% - 80%

5. SAFE SPEEDS (PILLAR 3)

Introduction and Summary of Country Profile Data

Chapter 5 provides information on the importance of safe speeds, including risk-related factors and ways to mitigate these. The content should be read in conjunction with the Pillar 3 material of the country profiles. The summary below (Table 5.1) provides information on performance across all LMICs on this issue.

Table 5.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with national speed limit law	89%	97%	95%
% of countries with speed limits <=30kph in urban roads	0%	3%	3%
% of countries with speed limits <=70kph in rural roads	12%	17%	17%
% of countries with speed limits <=90kph in motorways	33%	11%	14%

Safe Speeds

Safe speeds are a critical component of the Safe System approach offering powerful, inexpensive opportunities to save lives and debilitating injuries (Box 5.1). Higher speeds reliably and substantially increase crash severity, which is well recognized. Less well recognized is that higher speeds also increase crash probability through several mechanisms: by reducing the capacity to stop in time; by reducing maneuverability in evading a problem; by making it impossible to negotiate curves and corners at speeds which are too high for the friction available; and causing others to misjudge gaps. For example, a vehicle traveling above the speed limit allows pedestrians less of a gap to cross the road than expected for the distance between the pedestrian and the vehicle.[85]

Box 5.1: Features of Speed Management. Speed management offers a most powerful opportunity for road safety because it uniquely has all the following features (Adopted from Job & Sakashita, 2016)

1. Speed is the toxin in road crashes, contributing to both crash occurrence and crash severity.
2. The laws of physics apply in all countries, and thus there is no region, country, state, province, or municipality in which the effects of speed do not apply.
3. A focus on speed management is precisely aligned with the successful Safe System approach.
4. The beneficial effects of managing speed are immediate.
5. For management purposes, the benefits of speed reductions on deaths and injuries are sufficiently quantified by research to allow prediction of the level of change in travel speed required to deliver a specific road safety target.

[85] Job, R. F. S., & Sakashita, S. (2016). Management of speed: The low-cost, rapidly implementable effective road safety action to deliver the 2020 road safety targets. *Journal of the Australasian College of Road Safety, May 2016*, 65-70.

6. Speed reductions provide strong benefits for all road users, including vulnerable road users who are at risk (pedestrians, cyclists, motorcyclists), allowing for advocacy by a wide range of stakeholders.
7. The management of speed entails all the pillars of the road safety management system, allowing for multiple targeted, effective actions by all stakeholders.
8. Substantial reductions in speed are possible within the limited budgets likely to be available and within tight timeframes.
9. Reduced speeds will provide synergistic benefits in other areas of global priority (reducing fossil fuel use, reducing emissions, reducing climate change effects of transport, reducing noise pollution, and increasing access and equity for those who cannot afford a car but must cross or walk along high-speed roads).

The management of speeds provides significant road safety benefits and sustainable transport co-benefits.[86,87,88] Further support arises from the identification of speed as a factor in over 50 percent of road crashes in Africa[89,90] especially noting that speed is often overlooked as a factor in crashes.[91]

Speed and its Relation to Crash Risk

Several studies estimate the effect of changes in speed on road safety (exposure, risk, and consequences). Most notably, the Nilsson's Power Model was developed using many cross-sectional studies for validation. It describes the effect of change in average speeds on the crash frequency and severity using six equations with different exponent relations to estimate the number of fatal and injured casualties and the number of crashes involving fatal and injured casualties.[92]

The Power Model was further refined through systematic studies that developed better exponential values for different crashes and injury severity, and considered different variations of road conditions, for example, urban, rural and inter-urban road conditions (Table 5.2). These studies demonstrate that speed and road safety have a law-like and causal relationship which is applicable universally, although not methodologically perfect[93,94,95,96,] with the Power Model providing an appropriate estimate of the relationship (Figure 5.1). [13,97,98]

[86] Pei, X., Wong, S. C., & Sze, N. N. (2012). The roles of exposure and speed in road safety analysis. Accident Analysis & Prevention, 48, 464-471.
[87] Job, R. F. S., & Sakashita, S. (2016). Management of speed: The low-cost, rapidly implementable effective road safety action to deliver the 2020 road safety targets. *Journal of the Australasian College of Road Safety, May 2016*, 65-70.
[88] Perez-Prada, F., & Monzon, A. (2017). Ex-post environmental and traffic assessment of a speed reduction strategy in Madrid's inner ring-road. Journal of Transport Geography, 58, 256-268.
[89] Afukaar, F. K. (2003). Speed control in developing countries: issues, challenges and opportunities in reducing road traffic injuries. *Injury control and safety promotion*, 10(1-2), 77-81.
[90] Chen, G. (2010). Road traffic safety in African countries–status, trend, contributing factors, countermeasures and challenges. *International journal of injury control and safety promotion*, 17(4), 247-255.
[91] Job, R. F. S., & Sakashita, S. (2016). Management of speed: The low-cost, rapidly implementable effective road safety action to deliver the 2020 road safety targets. *Journal of the Australasian College of Road Safety, May 2016*, 65-70.
[92] Nilsson, G. (2004). Traffic Safety dimensions and the Power Model to describe the effect of speed on safety, Bulletin, 221. Lund Institute of Technology, Department of Technology and Society, Traffic Engineering, Lund.
[93] Baruya, A. (1998). MASTER: Speed-accident relationship on European roads. In Working Paper R 1.1. 3, Deliverable D7. Technical Research Centre of Finland VTT Espoo.
[94] Taylor, M. C., Lynam, D. A., & Baruya, A. (2000). The effects of drivers' speed on the frequency of road accidents. Crowthorne: Transport Research Laboratory.
[95] Taylor, M. C., Baruya, A., & Kennedy, J. V. (2002). The relationship between speed and accidents on rural single-carriageway roads (Vol. 511). TRL.
[96] Allsop, R. E. (1998). Summary of research area 1: Basis for appraisal of effects of different levels of speed (Vol. 1, p. 1). MASTER working paper.
[97] Elvik, R., Christensen, P., & Amundsen, A. (2004). Speed and road accidents. An evaluation of the Power Model. TØI report, 740, 2004.
[98] Elvik, R. (2009). The power model of the relationship between speed and road safety: update and new analysis–TOI Report 1034/2009. Institute of Transport Economics Oslo.

Table 5.2: Nilsson's Power Model Exponential Values for Different Road Conditions

Crash/Injury Severity	Exponents for different crash environments		
	Rural roads	Urban roads	All roads
Fatal crashes	4.1	2.6	3.5
Fatalities	4.6	3.0	4.3
Serious injury crashes	2.6	1.5	2.0
Seriously injured road users	3.5	2.0	3.0
All injury crashes	1.6	1.2	1.5
All injured road users	2.2	1.4	2.0

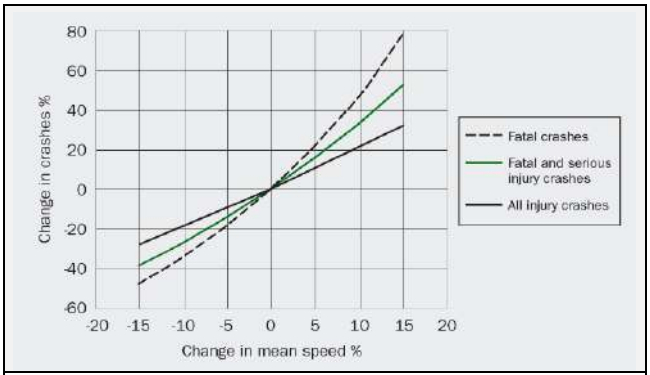


Figure 5.1: Illustration of the Power Model
Adopted from WHO Speed Management Manual[99]

Speed Management - the Broader Picture

The significant variation in the objective rationalization of optimal speeds by road users makes a strong case for ensuring effective, structured, continuous, and network-wide speed management. Effective speed management should achieve optimal speeds appropriate for safety, keeping in mind road function, design, and use.[100,101] It is ideally applied throughout the road network with the objective of reducing road crashes, fatalities, and severity of injuries.[102]

The main action areas of speed management include:

- A robust and agreed-upon road classification system that reflects safe road use (including for vulnerable road users)
- Road infrastructure engineering
- Vehicle measures (for example Intelligent Speed Adaptation – ISA)
- Speed enforcement and adjudication
- Road user education and campaigns, especially those promoting the enforcement risk

Speed Limits and Effective Enforcement

Over 50 percent of the developing countries do not follow the Safe System approach in setting speed limits. The high speeds increase the overall crash risk eight-fold in some developing countries (GRSF Estimate using the Power Model).

Speed limits must be set based on harm reduction principles. Lower speeds are crucial in **increasing** hazard perception time, road users' ability to judge vehicle speed, time to collision, and ability to possibly avoid the collision. Lower speeds also **reduce** reaction time and braking distances to hazards, the likelihood of loss of control, and the severity of impact forces in the event of a crash, thereby reducing injury severity.

Speed enforcement is an effective measure in reducing speeding. Well-managed, automated enforcement is an effective process including both

[99] World Health Organization. (2008). Speed management: a road safety manual for decision-makers and practitioners.
[100] Fildes, B., Langford, J., Andrea, D., & Scully, J. (2005). Balance between harm reduction and mobility in setting speed limits: a feasibility study. Austroads, Sydney, Australia.
[101] New Zealand Transport Agency. (2016). Speed management guide. First Edition.
[102] European Road Safety Observatory. (2015) Speed and Speed Management. European Commission.

detection and adjudication of violators through fines or license demerit points to act as a strong deterrent to future violators.[103] The management systems and level of skill required to operate these systems effectively is substantial. Speed enforcement is highly effective when applied through a sound speed camera program, including several speed cameras for a longer section of the road network, which detect the average speed of travel over a distance (that is, average speed enforcement).[104,105]

Traffic Calming - Speed Reduction by Road Design

There is much that can be done to influence the speed of vehicles through appropriate design of the road network. This is most commonly seen through direct infrastructure measures to calm traffic. Traffic calming is one of the most effective strategies for reducing speed and thus road crashes, especially those involving vulnerable road users. Road engineering measures aimed at lowering speeds are applicable in both urban and some rural settings where vehicular traffic crash interacts with vulnerable road users.

There are two general approaches to traffic calming: localized calming (improving road safety in specific high-risk sections); and the area-wide approach (improving the whole road network environment).[106]

The localized approach is typically more effective in the reduction of speeds and severity of crash outcomes since its main focus is on concentrated improvements of road safety. The area-wide approach, which has a more holistic approach, focusing on improvement of the road environment, as well as road safety, has also achieved substantial collision reductions of up to 42 percent.[107,108]

There are now a large number of established traffic calming measures that have been successfully applied on local and arterial (high volume) roads, including at intersections (for instance, roundabouts and raised platforms), at curves, on approaches to townships (for example "gateway" treatments) and on routes (including road narrowing and centerline treatments).

Table 5.3 and Table 5.4 provide examples of possible traffic calming measures and their relative performance.[107] Several of these measures are included in the country profile reports.

In summary, lower speeds reduce the likelihood and severity of road crash fatalities involving vulnerable road users, especially pedestrians and cyclists, because of increased peripheral vision and higher vulnerable user road crash survival rates. This allows pedestrians more time between vehicles to cross, increases maneuverability, and reduces stopping times. In addition to this, lower speed limits only marginally increase trip times, due to increased speed heterogeneity, and they foster healthier communities by creating a more comfortable environment for vulnerable road users.[109,110]

[103] Wijers P. (2017). The Automated Enforcement Chain, Making Traffic Safer. Retrieved October 15, 2019 from https://making-traffic-safer.com/automated-enforcement-chain/
[104] Elvik, R. (2012). Speed limits, enforcement, and health consequences. Annual review of public health, 33, 225-238.
[105] Soole, D. W., Watson, B. C., & Fleiter, J. J. (2013). Effects of average speed enforcement on speed compliance and crashes: A review of the literature. Accident Analysis & Prevention, 54, 46-56.
[106] National Collaborating Centre for Healthy Public Policy. (2012). Urban Traffic Calming and Road Safety: Effects and Implications for Practice. Quebec.
[107] Calming, T. (2007). Local Transport Note 1/07. Department for Transport, Department for Regional Development (Northern Ireland), Scottish Executives, Welsh Assembly Government, published by TSO.
[108] Elvik, R. (2001). Area-wide urban traffic calming schemes: a meta-analysis of safety effects. Accident Analysis & Prevention, 33(3), 327-336.
[109] Job, R. F. S., & Sakashita, S. (2016). Management of speed: The low-cost, rapidly implementable effective road safety action to deliver the 2020 road safety targets. *Journal of the Australasian College of Road Safety, May 2016*, 65-70.
[110] Sharpin A. B., Banerjee S. R., Adriazola-Steil C., & Welle B. (2017) The Need for (Safe) Speed: 4 Surprising Ways Slower Driving Creates Better Cities. Retrieved Decemer 31, 2019 from https://www.wri.org/blog/2017/05/need-safe-speed-4-surprising-ways-slower-driving-creates-better-cities

Broad reductions in travel speed often also reduce emissions and increase fuel efficiency (especially on high speed roads,[111] but also in a stop-start setting). However, isolated reductions in speed through singular uses of traffic calming devices can increase emissions.

Information on country performances in relation to safe speeds can be found in the country profiles. This country profile information should be reviewed in conjunction with the information in this chapter, particularly for those profiles where there are gaps or deficiencies on this issue. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 4 content for information on safe speeds).

Table 5.3: Summary of Traffic Calming Measures and their Relative Performance
Adopted from Traffic Calming Local Transport Note, Department of Transport, Northern Ireland.[107]

Measures	Impact on			Public acceptability[2]	Impact on Emissions[3]
	Traffic Speeds[1]	Traffic Flow[1]	Injury Crashes[1]		
Narrowing: e.g., islands and pinch points	S - L	S - M	S - M	LA	SI
Vertical Deflections: e.g., road humps	M - L	L	M - L	MA - HA	MI – HI
Horizontal Deflections: e.g., chicanes and mini-roundabouts	M - L	S - M	M	LA - MA	MI - HI
Blocking or Restricting Access: e.g., street closures	M - L	M - L	M - L	LA	MI – HI
Road markings, signs, and furniture, e.g., colored surfacing	S	S	S	HA	-

Notes:
1. Small Reduction – S; Medium Reduction – M; Large Reduction – L
2. Low Acceptability – LA; Medium Acceptability - MA; High Acceptability – HA
3. Small Increase – SI; Medium Increase – MI; High Increase – HI

[111] Hosseinlou, M. D., Kheyrabadi, S. A., & Zolfaghari, A. (2015). Determining optimal speed limits in traffic networks. *International Association of Traffic and Safety Sciences*, 39(1):36-41.

Table 5.4: Traffic Calming Measures and their Relative Performance

Adopted from Traffic Calming Local Transport Note, Department of Transport, Northern Ireland.[107]

Type of measure	Impact on traffic speeds	Impact on traffic flows	Impact on injury accidents	Relative public acceptability	Impact on vehicle emissions
	* * * = largest reduction			* * * = most acceptable	* * * =smallest increase
Road hump					
Round-top	* * *	* * *	* * *	* * *	* *
Flat-top	* * *	* * *	* * *	* * *	*
Raised junction	* * *	* * *	* * *	* * *	*
Sinusoidal	* * *	* * *	* * *	* * *	-
'H' hump	* *	* * *	* * *	* * *	-
'S' hump	* *	* * *	* * *	* * *	-
Thump	* *	* * *	* *	* *	-
Cushion	* *	* * *	* * *	* *	* *
Rumble device					
Area	*	*	* *	* *	-
Strip	*	*	* *	*	-
Narrowing					
Island	*	*	*	-	-
Pinch point/build-out	* to * * *	* to * *	* to * *	*	* *
Chicane					
Single lane	* * *	* *	* *	*	*
Two-way	* *	*	* *	* *	-
Gateway	* *	*	* *	* *	-
Mini-roundabout	* *	*	* *	*	* * *
Vehicle activated device					
Vehicle activated signs	* *	*	* *	-	-
Speed cameras	* *	*	* *	* * *	-
Road markings, traffic signs, and furniture					
Roundels	*	*	*	* * *	-
Colored surfacing	*	*	*	-	-

6. SAFE VEHICLES (PILLAR 4)

Introduction and Summary of Country Profile Data

This chapter addresses issues relating to the Safe Vehicles Pillar and provides information on related risk factors as well as ways to mitigate this risk. The information provides context to the material within country profiles on this issue, and should be read in association with content on performance for regions and countries. The summary below (Table 6.1) provides information from across all countries included in this study, highlighting some of the key issues relating to this pillar.

Table 6.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with regulation on import of used vehicles	52%	76%	70%
% of countries with periodic vehicle inspections	0%	4%	3%
% of countries fully compliant with UN vehicle safety regulations	0	3%	2%

Safe Vehicles

Motor vehicle crashes account for 97 percent of transport-related crash fatalities, surpassing crash deaths in all other transport modes.[112] Vehicles are a critical contributor to risk factors before and during road crashes. Vehicles include safety features in four broad respects. First, they allow the driver to exercise control to avoid crashes through brakes, steering, and so forth. Second, they may actively engage to avoid a crash without driver action (for example, autonomous braking, electronic stability control, Intelligent Speed Adaptation-ISA). Third, vehicles may provide "passive" protection of occupants, and even those outside the vehicles, in the event of a crash. Examples include seat belts and anchorages, "crumple zones", airbags, and pedestrian protection mechanisms, which soften impacts on pedestrians. Finally, vehicles may include emergency notification systems that alert rescue services when the vehicle is involved in a crash. The value of the latter depends on action by emergency services, which may be restricted by alerts that do not involve injury and the need for emergency services.

Failure to maintain these systems may lead to crashes and may also increase the severity of the crashes – inevitably sometimes causing fatalities.[113]

The Global Plan for the *UN Decade of Action for Road Safety 2011 – 2020* encourages the global adoption of improved vehicle safety technologies (passive and active) through harmonization of relevant global standards, consumer information schemes, and incentives to vehicle manufacturers and countries to accelerate the uptake of new technologies.[114] Increasing standards for vehicle safety features is a powerful tool for road safety. The requirement recently adopted in Europe for vehicles to have an ISA system installed is an important safety step.

[112] Sustainable Mobility for All (2017). *Global Mobility Report 2017*. Sustainable Mobility for All: Washington, DC.
[113] Herbert, H. K., Hyder, A. A., Butchart, A., & Norton, R. (2011). *Global Health: Injuries and Violence*. Infectious Disease Clinics of North America 25 (3): 653–68.
[114] UN Road Safety Collaboration (2011). Global Plan for the Decade of Action for Road Safety 2011-2020. World Health Organization www.Who.int/roadsafety/decade_of_action.

Motorization - Impact on Road Safety

Motorization rates in the world are rapidly rising. The motorization rate in 2015, as reported by the International Organization of Motor Vehicle Manufacturers (OICA),[115] was an average of 182 vehicles per 1,000 population, which was an increase of 27 percent from 2005. The most substantial increments are observed in developing regions: 141 percent in Asia, 60 percent in Latin America, and 35 percent in Africa.

In contrast, developed regions have the highest motorization rates but experience minimal increases compared to developing countries (Figure 6.1). On average developed countries have five times the motorization rate in developing countries, but developing countries are experiencing an increase of about four times that in developed countries.[115]

Inadequate vehicle safety regulations and inadequate vehicle inspections in many LMICs are causing road crash fatalities and injuries. In some developing countries, vehicles with the lowest safety rating are the best-sellers in the market.[52] Global New Car Assessment Programs (GlobalNCAP) are creating important gains in vehicle safety in LMICs.

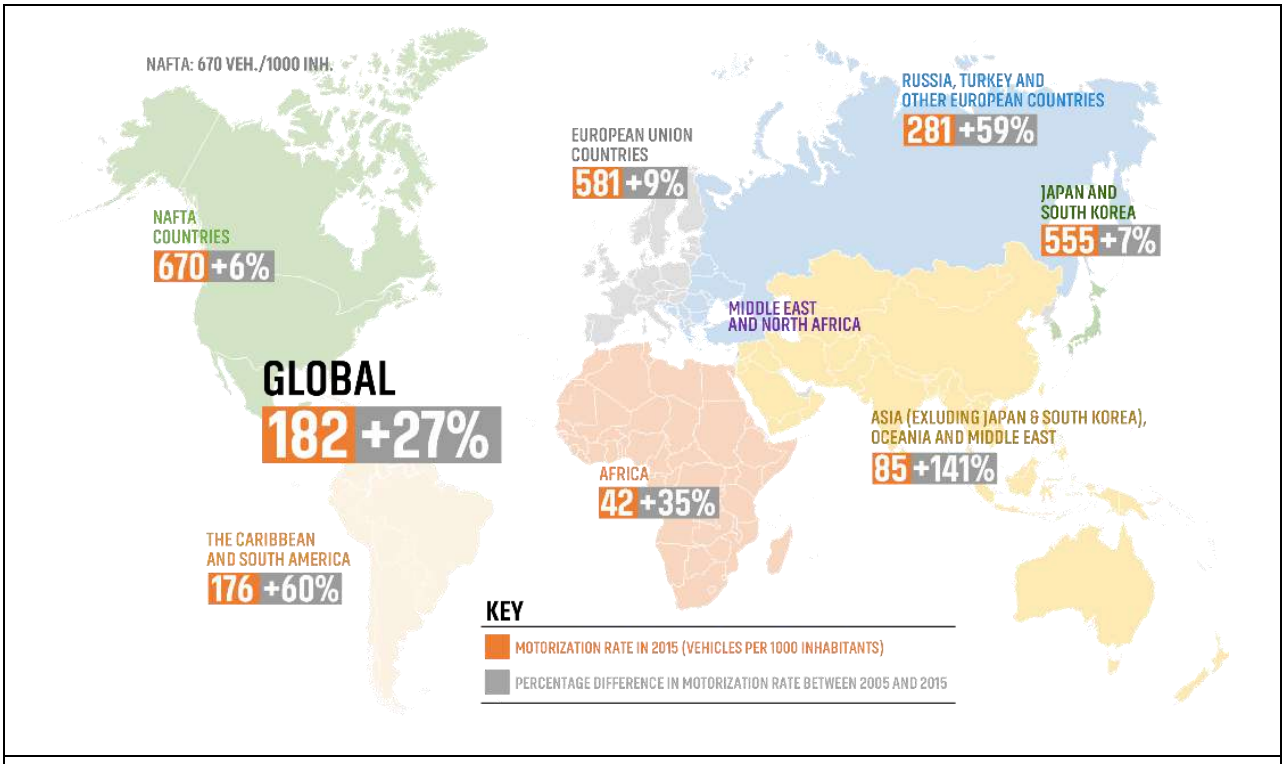


Figure 6.1: Motorization Rates and Changes from 2005 to 2015 (Adopted from OICA)

[115] International Organization of Motor Vehicle Manufacturers, OICA (2015) Motorization Rate 2015 – Worldwide. Retrieved August 14, 2019 from http://www.oica.net/category/vehicles-in-use/

Two- and Three-wheelers - the New Challenge for LMICs

Motorcyclists have 16 to 26 times the risk of fatality in a road crash compared with vehicle occupants.[116,117] Motorcycles are an inherently risky form of transport due to the combination of poor protection of occupants, high-speed capability, and instability, adding to crash risk. Thus, the trend of increasing motorcycle fleets compared with motor vehicles is an alarming road safety issue.

The increase in the number of two- and three-wheelers as a form of personal and commercial transport is a major emerging issue in developing countries. For example, two capital cities in Africa, Kampala (Uganda) and Lagos (Nigeria), have motorcycle modal share values of more than 40 percent - showing the increasing shift to use two- and three-wheelers in developing countries.[118]

In Chile the motorcycle population has increased by 500 percent in the last decade compared to motor-vehicles, with an 84 percent increase.[119] It is critical for national and local authorities in developing countries to recognize and address this issue. Opportunities for addressing the risk include providing improved regulation (including mandating anti-lock braking systems), stronger enforcement of helmet wearing, increasing the age required before being allowed to ride a motorcycle, and requiring use of daytime running lights. However, even with all these features, motorcycles remain much more dangerous than cars. Therefore, perhaps the most powerful measures are those which discourage motorcycle use, especially the use of motorcycles as taxis (mototaxis).

Interventions which may be used to reduce motorcycle use include the following: banning of mototaxis (which has occurred in many cities), banning motorcycles from cities (for example, the ban in Yangon is quite effective and should be sustained, as well as expanded to other cities); provision of viable mass transit opportunities for city commuting as an alternative to motorcycles (such as the many Bus Rapid Transit -BRT- systems being developed in LMICs); and better regulation and enforcement to prevent the parking of motorcycles on footpaths and other locations which maximize convenience to the motorcyclist but create inconvenience and risk for others, especially pedestrians who are forced to walk on the road in many LMIC cities.

Used vehicles - Are They Part of the Problem?

Used vehicle imports make up a large proportion of the vehicle fleet in developing countries; it is estimated that at least 8 out of 10 imported vehicles are used vehicles.[120] The main factor driving the purchase of used vehicles by consumers in developing countries is affordability. The factors driving the export of used vehicles to developing countries are strict emission standards, vehicle inspections, road taxation, and the expensive recycling and disposal costs in developed countries, which make replacement of the current vehicle fleet more attractive than reconditioning of used vehicles.[121] In part, this is also a result of the inadequate vehicle

[116] NHTSA. (2018). Traffic Safety Facts – Motorcycles. U.S. Department of Transportation. Retrieved December 27, 2019 from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812492

[117] A Comprehensive Approach to Motorcycle Safety. Retrieved December 27, 2019 from https://one.nhtsa.gov/people/injury/pedbimot/motorcycle/safebike/approach.html

[118] Kumar, A. (2011). Understanding the emerging role of motorcycles in African cities. Sub-Saharan Africa Transport Policy Program.

[119] Comisión Nacional de Seguridad del Tráfico, CONASET (2015) National Road Safety Plan for Motorcycles, Chile. Retrieved August 16, 2019 from http://www.oisevi.org/a/archivos/documentos/Plan-Nacional-de-Seguridad-Vial-para-Motocicletas-2015-CONASET-Chile.pdf

[120] Deloitte (2016) Navigating the African Automotive Sector: Ethiopia, Kenya and Nigeria. Deloitte Africa Automotive Insights. Retrieved August 15, 2019 from https://www2.deloitte.com/za/en/pages/manufacturing/articles/navigating-the-african-automotive-sector--ethiopia--kenya-and-ni.html#

[121] United Nations Environment Programme, UNEP (2016) ITC Background Paper on Used Vehicles: Global Overview. Retrieved August 15, 2019 from https://www.unece.org/fileadmin/DAM/trans/doc/2017/itc/UNEP-ITC_Background_Paper-Used_Vehicle_Global_Overview.pdf

manufacturing capability of developing countries, leading to high import rates.

The largely unregulated importation of used vehicles in developing countries leads to the importation of used vehicles with obsolete and outdated vehicle technology in terms of emission standards, and most relevant to current concerns, vehicle safety.[122] Vehicle age is also a significant issue, with the average age of the vehicle fleet in many LMICs exceeding 15 to 20 years.

A UNEP report on the African used vehicle market, suggests four categories for the status of used vehicles:[123] (i) banned; (ii) strong (age restrictions or high tax for vehicles over five years); (iii) fair (age restrictions or incremental tax for vehicles over nine years); and (iv) poor (age restrictions or graduated penalty for vehicles over ten years) or no regulations (no age limit). The classifications have been used to develop Figure 6.2, showing the import regulations in all developing countries.

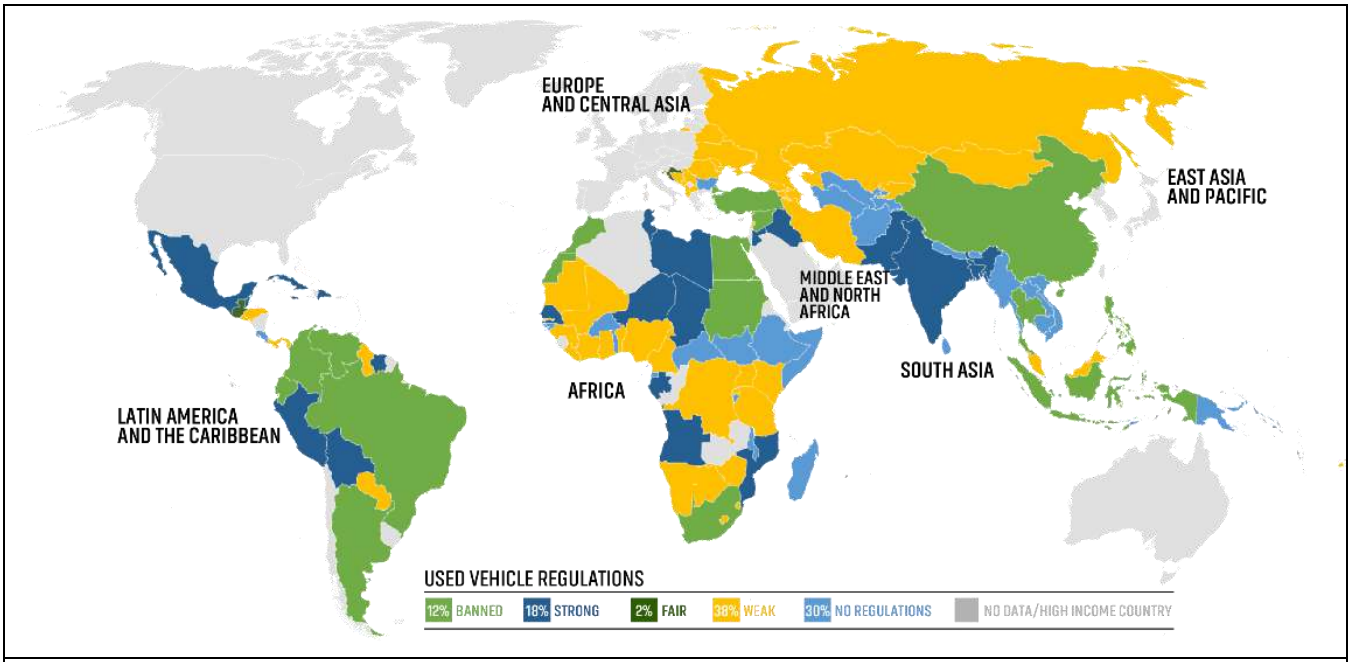


Figure 6.2: Import Regulations in Developed Countries (Developed Using Data from UNEP)

From the chart, in total 30 percent of LMICs have no used vehicle regulations, and more than 65 percent of LMICs have either poor or no regulations for used vehicle import. Only 30 percent of LMICs have strong regulations or used vehicle bans in place. This shows that there is a large regulation gap, propagating the increased import of unsafe used vehicles into the vehicle fleets of LMICs.

The introduction of strict roadworthiness regulations is a critical first step in addressing the adverse effects of the used vehicle market. Exporting and importing countries need to ensure vehicles comply with the minimum safety requirements by: [122]

1. Scrapping and banning of all zero-star NCAP rated vehicles;

[122] United Nations Environment Programme, UNEP (2019) Addressing the Used Vehicle Market: Potential Strategies for Importing and Exporting Countries to Improve Safety, Fuel Economy and Emissions Impacts. Retrieved August 15, 2019 from https://wedocs.unep.org/handle/20.500.11822/27789

[123] Baskin A. (2018) Africa Used Vehicle Report. African Clean Mobility Weak. United Nations Environment Programme, UNEP. Retrieved August 15, 2019 from https://wedocs.unep.org/bitstream/handle/20.500.11822/25233/AfricaUsedVehicleReport.pdf

2. Banning export or import of vehicles with a history of crashes that affected the structural integrity of the vehicle;
3. Ensuring good functioning of key vehicle safety features (both passive and active safety features); and
4. Ensuring intact vehicle identifiers.

Other essential strategies include ensuring compliance with emissions policies, providing end-of-life recycling processes, setting vehicle age and mileage limits at both national and regional levels, and encouraging aftermarket support from dealers of exported or imported vehicles.

Vehicle Inspection Schemes in Developing Countries

Vehicle inspection schemes are vital in ensuring compliance with international standards of vehicles being imported into a country. Periodic inspections of the existing vehicle fleet are also important to ensure ongoing roadworthiness, and because a high proportion of vehicle owners do not periodically maintain their vehicles at a roadworthy standard.[124] Box 6.1 describes the example of the vehicle inspection system instituted in Togo.

It is estimated that the role of vehicle defects in causing road crashes ranges from 3 percent to 50 percent[125,126,127,128,129]. Strong inspection schemes can lead to a decrease in road crash rates of up to 8 percent.[125] The creation of effective periodic inspections with regulatory consequences to motivate repairs will have significantly larger safety benefits in LMICs where vehicle maintenance is currently less effective. The roadworthiness of a vehicle affects the pre-crash, crash, and post-crash events since the vehicle safety features and standards must be functioning properly to reduce the risk of the crash (pre-crash) or severity of the crash and consequences (crash and post-crash).[130]

Periodic inspection systems should be clearly defined to suit the country context. Figure 6.3 shows the different ways in which periodic inspection schemes can be achieved in assuring roadworthiness.[131] Different measures should be used to ensure regulation and enforcement to prevent the entry and existence of unsafe vehicles in the country's fleet.

Information on safe vehicles and related performance for regions and countries can be found in the country profiles. This information should be reviewed in conjunction with the guidance in this chapter, particularly for those where there are gaps or deficiencies on this issue. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 5 content for information on safe vehicles).

[124] AUTOFORE. (2006). Current Situation and Trends in Roadworthiness Enforcement. Study on the Future Options for Roadworthiness Enforcement in the European Union. Retrieved August 15, 2019 from https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/pdf/projects_sources/autofore_final_report.pdf
[125] Keall, M., Stephan, K., Watson, K., & Newstead, S., (2012). Road Safety Benefits of Vehicle Roadworthiness Inspections in New Zealand and Victoria. Report No. 314. Accident Research Centre. Monash University.
[126] van Schoor, O., van Niekerk J. L.., & Grobbelaar, B. (2001). Mechanical failures as a contributing cause to motor vehicle accidents — South Africa, Accident Analysis & Prevention 33:pp. 713-721.
[127] Tanaboriboon, Y., Kronprasert, N., Khompratya, T., Suanpaga, V., Chanwannnakul, T., & Taneerananon P. (2005). An evaluation of the effectiveness of the private vehicle inspection process in Thailand, Journal of Eastern Asia Society for Transportation Studies 6:pp. 3482-3496.
[128] Boada, B. L., Boada, M. J. L., Ramirez, M., & Diaz, V. (2014). Study of van roadworthiness considering their maintenance and periodic inspection. The Spanish case. Transportation letters, 6(4), 173-184.
[129] Rechnitzer, G., Haworth, N., & Kowadlo, N. (2000). The effect of vehicle roadworthiness on crash incidence and severity. Monash University Accident Research Centre. Report nº 164. Retrieved August 15, 2019 from https://pdfs.semanticscholar.org/61de/d41a48afe8c2fed592010e7a48126c02c339.pdf
[130] Krueger, L. (2005). Roadworthiness Enforcement Different Concepts and their Assessment. Dissertation. Horb am Neckar, Germany.
[131] Jakimovska, D. D. K., & Duboka, Č. APPLICATION OF FUZZY AHP METHOD FOR VEHICLE ROADWORTHINESS EVALUATION.

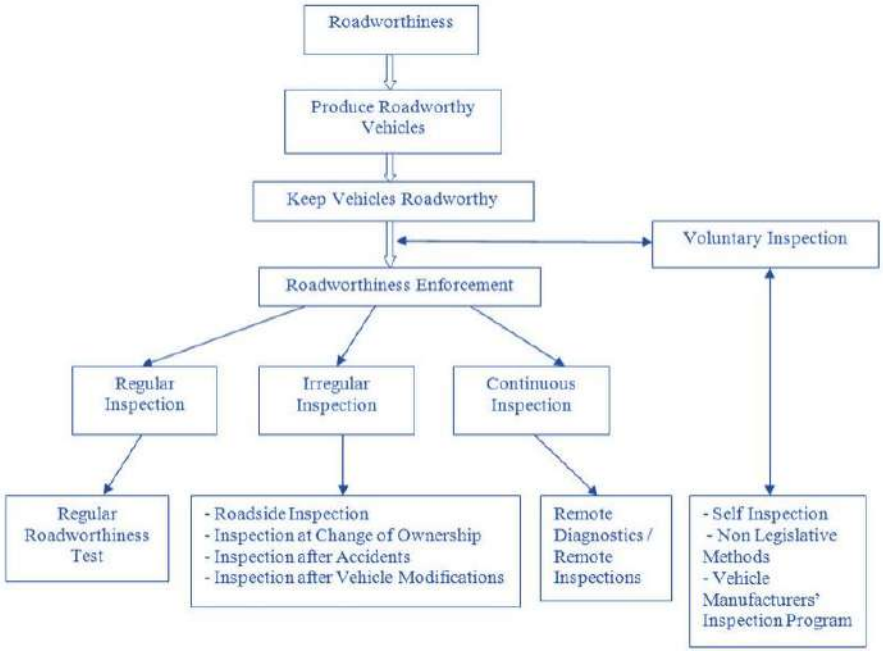


Figure 6.3: Assuring Roadworthiness
(Adopted from a Report on Vehicle Roadworthiness Evaluation[131])

Box 6.1: Vehicle Inspection System in Togo[132]

The World Bank/GRSF, in recognition of the importance of vehicle inspection schemes, worked in collaboration with the International Motor Vehicle Inspection Committee (CITA) in piloting an Assessment of Vehicle Inspection System (AVIS) with the aim of upgrading the vehicle technical inspection system by assessing the current state of vehicle inspection and importation systems and in proposing a strategy to improve the systems.

A successful pilot study has already been conducted in Togo in 2017, where the current situation in Togo regarding vehicle inspection was analyzed. Resulting recommendations were divided into three categories of essential activity:

1. Imposing requirements for vehicles entering the country and carrying out inspections to check that these requirements are met;
2. Capacity-building for the government to manage periodic technical inspections; and
3. Upgrading of the existing inspection stations, including the expansion of the network.

[132] Khalifi A., Subit D. (2018). Vehicle Type-Approval and Road Worthiness Test in Togo. Mission Report. Retrieved November 20, 2019 from http://pubdocs.worldbank.org/en/490021530247456981/Togo-Report-Final-EN-Final.pdf

7. SAFE ROAD USERS (PILLAR 5)

Introduction and summary of country profile data

Chapter 7 provides information on safe road user issues, including risk-related factors and ways to mitigate them. The content should be read in conjunction with the Pillar 5 material of the country profiles. The summary below (Table 7.1) indicates some of the key issues faced by LMICs in relation to this pillar.

Table 7.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with a national seatbelt law	74%	95%	90%
% with national driver, front and back seatbelt laws	22%	56%	49%
%countries with a BAC-based drink-driving law	63%	76%	73%
% of countries with a national helmet law	85%	97%	94%
% of countries with random breath testing	52%	82%	75%

Safe Road Users

Safe road user behavior is a critical factor in both crash occurrence and severity of crash outcomes. While road users would ideally operate within the boundaries set by the road system designers, as discussed in the section on Safe System, humans will always make mistakes. Thus, even when the key causal factor may be seen as human behavior, the best solution may not be aiming to change the behavior of human road users. For example, many serious leave-the-road car crashes occur on particular curves. One solution might be to aim to have drivers be less distracted while driving. Even if we could effectively address this risky behavior, it may only be a small proportion of the curve-related crashes. Other behavioral factors related to curve crashes include speeding, drink-driving, fatigue, drug driving, and misjudgment of the curves. We could attempt to address all these one by one over many years with quite limited success. However, the Safe System approach offers more effective solutions, such as installing safety barriers on the relevant curves. Crashes will still occur, but deaths and serious injuries will be virtually eliminated regardless of the behavioral factor which led the driver to go off the road.

> **Even if human behavior is identified as the main cause, we should not assume that fixing the human is the best (or even a viable) solution. Designing or fixing the system to accommodate human error is often less costly and more effective.**

The critical behavioral risk factors for road crash injuries include speeding (which is addressed in the separate Safe Speed Pillar), drink driving, nonuse of helmets, seat belts, child restraints and other personal protective equipment (PPE), fatigue, distraction, and non-compliance with other road regulations (especially stop signs, Give Way or Yield signs, and red light signals).

This chapter briefly notes the evidence base for behavioral change interventions for road safety, then presents examples of two key behaviors to be addressed.

The Evidence Base for What Works and What Does Not in Behavior Change for Road Safety

Establishing and rigorously enforcing laws to address key risk behaviors is effective in reducing road crash fatalities and injuries. Enforcement is especially effective and more likely to be sustained if the laws are strongly promoted in the community in terms of their safety value, and if communications are adopted which increase general deterrence (such as promoting the high level of detection, the unpredictability of enforcement and genuinely deterring unavoidable penalties).[133] Such communications have repeatedly been proven to be a vital part of the impact of enforcement,[134] although the efficacy of these specific enforcement messages should not be used to minimize the broader importance of education and promotion of road safety generally.

Despite its intuitive logic, the education of road users, which aims to change behavior through the threat of a crash and its consequences, is consistently shown to have minimal value in affecting behavior change. For example, high fear events, such as a serious crash, are shown to fail completely or be less effective than low fear events, such as a fine, in changing behavior.[135] Campaigns based on enforcement are well established in meta-analyses to be more effective than campaigns with messages not based on enforcement.[136] Strong laws on drink-driving, combined with effective enforcement, have saved many thousands of lives,[137] as have laws on other aspects of road safety.[138]

There is sound evidence on the psychological reasons for these counter-intuitive results. First, most drivers believe that they are better drivers than average and that they are therefore much less likely to cause a crash (even when they speed). This driver overconfidence is part of a broader psychological effect called “optimism bias”: the bias that most of us think we will have a better future than our peers.[139] Most of us believe that we are less likely to have bad things happen to us than others (such as having cancer, or dying early of a heart attack, and so forth) and that we are more likely to have good things happen to us (such as winning an award or having a happy long term relationship). These psychological biases extend to driver overconfidence.[140] [141] When Australian drivers were asked if they are much better drivers than average, better than average, equal to average, worse than average, or much worse than average, most drivers reported believing that they are in the categories of better than average, with few reporting that they are worse than average.[142] The results are shown in Figure 7.1.

[133] Job, R. F. S., Sakashita, S., & Watson, B (2013). *Policing for Road Safety- A Guide for Effective Enforcement.* Adelaide, Australia: South Australia Police & Motor Accident Commission.
[134] Job, R. F. S. (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health, 78*, 163-167.
[135] Job, R. F. S. (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health, 78*, 163-167.
[136] Phillips, R. O., Ulleberg, P, & Truls Vaa, T. (2011) Meta-analysis of the effect of road safety campaigns on accidents. Accident Analysis and Prevention 43, 1204–1218.
[137] Job, R. F. S., Prabhakar, T., & Lee, S.H.V. (1997). The long term benefits of random breath testing in NSW (Australia): Deterrence and social disapproval of drink-driving. In C. Mercier-Guyon (Ed.), *Proceedings of the 14th. International Conference on Alcohol, Drugs and Traffic Safety, Annecy, 1997*. (pp. 841-848), France: CERMT.
[138] Miller, T. R., Levy, D. T., & Swedler, D. I., (2018). Lives saved by laws and regulations that resulted from the Bloomberg road safety program. *Accident Analysis and Prevention, 113,* 131-136.
[139] Weinstein, N. D. (1984) Why it won't happen to me: Perceptions of risk factors and susceptibility. *Health Psychology, 3(5),* 431-457.
[140] Job, R. F. S. (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis and Prevention, 22*, 97-107.
[141] DeJoy, D. M. (1989). The optimism bias and traffic accident risk perception. *Accident Analysis & Prevention 21(4):* 333-340.
[142] Job, R. F. S. (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis and Prevention, 22*, 97-107.

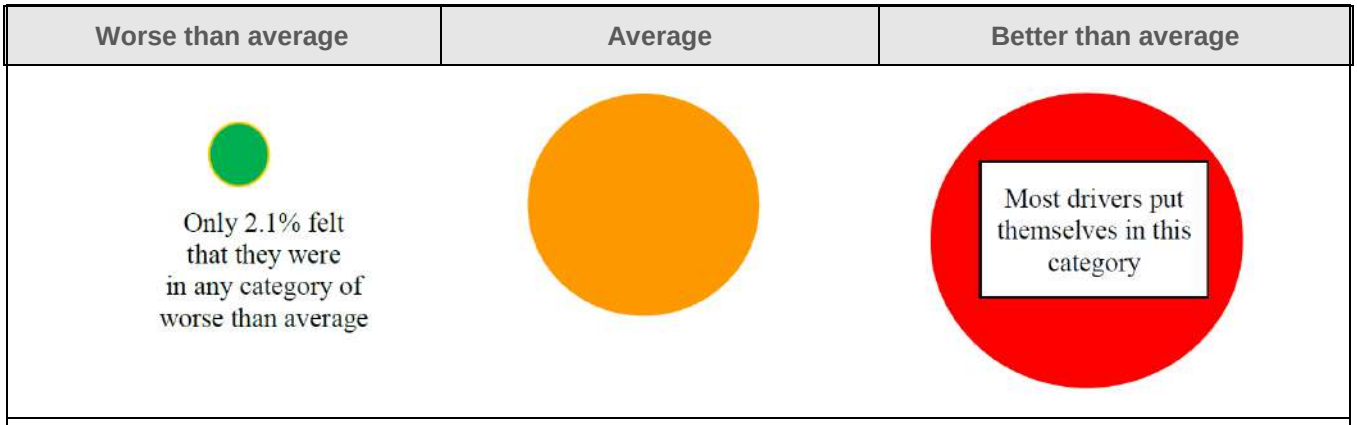


Figure 7.1: Driver Overconfidence- Most drivers Believe That They Are Better Drivers than Average and so Less Likely to Cause a Crash (Source: Adapted from Job, 1990)

These biases have profound effects on risk-perception and risk-taking.[143,144] Over-confident drivers are unlikely to be influenced by messages about crashes because they do not believe that they will have a crash anyway (except if caused by some other – poorer - driver). In addition, these beliefs mean that they feel there is little need for precautions such as safety belt or helmet use. However, regardless of how safe drivers may think they are while speeding, or drink-driving, they may still be caught and punished. Thus, a key advantage of enforcement and messages about enforcement is that they can largely neutralize driver over-confidence. Driver over-confidence and optimism bias also have profound effects on driver training, as covered later in this chapter.

Finally, and even more oddly, for psychological reasons related to sensation-seeking and risk-taking, some road users may be more likely to take the exact risk we are aiming to remove when crash risk messages are shown.[145]

These psychological effects lie behind the evidence that enforcement-related promotion is more effective than crash-related messaging.

Seatbelt Laws - Beyond Legislation

Vehicle occupants, on average, account for more than 45 percent of road crash fatalities. Seat belts are a vital aspect of vehicle safety. Consistent with Safe System principles, they both reduce the severity of injuries and prevent fatalities.[146,147, 148]

Front seat occupants wearing seat belts are at a 45-50 percent lower risk of fatality and serious injury, and rear seat occupants are at a 25 percent lower risk.[149,150] Vehicle occupants not wearing seat belts are 30 times more likely to be ejected from a motor vehicle during a road crash event,

[143]Weinstein, N. D. (1988). The precaution adoption process. *Health Psychology, 7(4),* 355-386.

[144] Prabhakar, T., Lee, S. H. V., & Job, R. F. S., 1996. Risk Taking, optimism bias and risk utility in young drivers. L. St.John (Ed.), *Proceedings of the Road Safety Research and Enforcement Conference.* (pp.61-68). Sydney, NSW: Roads & Traffic Authority of NSW

[145] Hatfield, J, Fernandes, R., & Job, R. F. S., (2014) Thrill and adventure seeking as a modifier of the relationship of perceived risk with risky driving among young drivers. *Accident Analysis & Prevention. 2014 Jan;62*: 23-9.

[146] Dept of Transportation (US), National Highway Traffic Safety Administration (NHTSA). (2010). Traffic Safety Facts: Highlights of 2009 Motor Vehicle Crashes. Washington (DC): NHTSA. Retrieved August 20, 2019 from http://www-nrd.nhtsa.dot.gov/Pubs/811363.pdf

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[148] Evans (1996). Seat belt effectiveness: the influence of crash severity and selective recruitment. *Accident Analysis and Prevention, 28*:423–433.

[149] House, Darlene & Huffman, Gretchen & D.H. Walthall, Jennifer. (2012). Emergency Department Transport Rates of Children From the Scene of Motor Vehicle Collisions: Do Booster Seats Make a Difference?. Pediatric emergency care. 28. 10.1097/PEC.0b013e318271c0ef.

[150] Dept of Transportation (US), National Highway Traffic Safety Administration (NHTSA). (2009). Traffic Safety Facts: Children. Washington (DC): NHTSA. Retrieved August 20, 2019 from http://www-nrd.nhtsa.dot.gov/Pubs/811387.pdfCdc-pdf

thereby reducing their probability of survival by more than 75 percent.[151] Seat belts are estimated to have saved a total of 255,000 lives in the United States alone since 1975.[146].

Ninety percent of developing countries have mandatory seat belt legislation,[4] although these do not reliably include rear-seat passengers. Surveys of seat belt and child restraint use in LMICs typically show poor rates of people wearing seat belts and that children were commonly not restrained.[152,153,154,155,156,157,158]

Mandatory seat belt legislation, covering both front and rear seat occupants, must be accompanied by complementary efforts to ensure public compliance with the use of seat belts. Police leadership in sustained enforcement and focused public promotion campaigns (as opposed to singular trial events) are among the interventions that lead to an increase in rates of wearing seat belt. Other success factors include the introduction of strict vehicle inspection and maintenance systems, (which can also reduce the number of vehicles imported without seatbelts and also reduce the size of the vehicle fleet not having effective seat belts), and the use of enhanced seat belt reminders on all vehicles.[159] A guide on best practice seat belt use allows for improved seat belt programs.[160]

Primary enforcement laws (laws that allow a police officer to stop a vehicle solely because the occupants are not wearing seat belts) are more successful than secondary enforcement. Therefore, the increase in enforcement should be targeted at strengthening primary seat belt laws. Enhanced enforcement may involve the increase in police presence to find violators or the introduction of seat-belt checkpoints.[161]

Although most of these approaches come from evidence and experience in developed countries, they are largely applicable in LMICs and are highly cost-effective.[162]

Helmet Laws - Beyond Legislation

Motorcyclists are one of the most vulnerable groups of road users. Unlike vehicle occupants, who are significantly protected from harm by the vehicle's crashworthiness and occupant protection characteristics in the event of a crash, motorcyclists have virtually no protective features from the motorcycle and are also at a greater risk of being separated from the motorcycle during a crash. In addition, motorcycles are less stable and less visible. These features increase the motorcycle injury rate by 12 to 28 times that of vehicle occupants.[31,163,164]

[151] Dept of Transportation (US), National Highway Traffic Safety Administration (NHTSA). (2009). Traffic Safety Facts: Occupant Protection. Washington (DC): NHTSA. Retrieved August 20, 2019 from http://www-nrd.nhtsa.dot.gov/Pubs/811160.pdfCdc-pdf
[152] Ojo, T. K. (2018). Seat belt and child restraint use in a developing country metropolitan city. Accident Analysis & Prevention, 113, 325-329.
[153] Sangowawa, A. O., Alagh, B. T., Ekanem, S. E., Ebong, I. P., Faseru, B., Adekunle, B. J., & Uchendu, O. C. (2010). An observational study of seatbelt use among vehicle occupants in Nigeria. Injury Prevention, 16(2), 85-89.
[154] Iribhogbe, Pius & Osime, Clement. (2008). Compliance with seat belt use in Benin City, Nigeria. Prehospital and disaster medicine. 23. 16-9. 10.1017/S1049023X00005495.
[155] Van Hoving, D. J., Hendrikse, C., Gerber, R. J., Sinclair, M., & Wallis, L. A. (2014). Injury severity in relation to seatbelt use in Cape Town, South Africa: A pilot study. South African Medical Journal, 104(7), 488-492.
[156] Janeway, H., O'Reilly, G., Schmachtenberg, F., Kharva, N., & Wachira, B, (2019). Characterizing injury at a tertiary referral hospital in Kenya. PLoS ONE 14 (7): e0220179. https://doi.org/10.1371/journal.pone.0220179
[157] Rajapaksha, R. W. M. A. L., Kumbukgolle, K. G. V., & Dharmaratne, S. D. (2010). Seat belt usage pattern in a developing country: Sri Lanka, which is about to implement new regulations. Injury Prevention, 16(Suppl 1), A244-A244.
[158] Pérez-Núñez, R., Chandran, A., Híjar, M., Celis, A., Carmona-Lozano, M. S., Lunnen, J. C., & Hyder, A. A. (2013). The use of seatbelts and child restraints in three Mexican cities. International journal of injury control and safety promotion, 20(4), 385-393.
[159] Farmer, C. M., & Wells, J. K. (2010). Effect of enhanced seat belt reminders on driver fatality risk. Journal of safety research, 41(1), 53-57.
[160] FIA (2009). *Seat-belts and child restraints: a road safety manual for decision-makers and practitioners.* London, FIA Foundation for the Automobile and Society.
[161] Dinh-Zarr, T. B., Sleet, D. A., Shults, R. A., Zaza, S., Elder, R. W., Nichols, J. L., ... & Task Force on Community Preventive Services. (2001). Reviews of evidence regarding interventions to increase the use of safety belts. American Journal of Preventive Medicine, 21(4), 48-65.
[162] Stevenson, M., Yu, J., Hendrie, D., Li, L. P., Ivers, R., Zhou, Y., ... & Norton, R. (2008). Reducing the burden of road traffic injury: translating high-income country interventions to middle-income and low-income countries. Injury prevention, 14(5), 284-289.
[163] Lee, C., Pino, J., & Schultz, D. (2015). Measuring the Use of Motorcycle Helmets. Transportation Research Record, 2520(1), 157-164.
[164] National Highway Traffic Safety Administration, NHTSA (2018). Motorcycle Traffic Safety Facts – 2016 Data.

Two and three-wheelers (motorcycles) currently account for approximately 13 percent of road crash fatalities in developing countries (according to reported crash data, noting the systematic bias that motorcycle crashes may be less reliably reported than car crashes). However, that proportion varies from region to region, with some countries in the Asian region having motorcyclists accounting for more than 25 percent of road crash fatalities.[165] Given the increasing trend of both road crash fatalities and the motorcycle population in developing countries, it is likely that road crash fatalities and injuries involving motorcyclists will continue to increase unless effective interventions are widely implemented.

The use of motorcycle helmets is one of the most effective measures in reducing road crash fatalities and the severity of injuries involving motorcyclists. This is because head injuries cause more than 50 percent of motorcyclist road crash fatalities. Therefore, the correct use of a standard helmet would decrease the incidence of fatal head injuries and the severity of non-lethal head injuries among motorcyclists.[166,167] Helmeted motorcyclists have a 28-73 percent lower fatality rate and a 46-85 percent reduced severity of injuries.[168] Nonetheless, even with a helmet, motorcycle drivers still have many times the death rate of car drivers.

The adoption of national helmet laws is an essential step for countries in reducing motorcycle road crash fatalities and injuries. The adoption of helmet laws is directly related to an increase in helmet-wearing rates and a reduction of motorcyclists' fatalities and injuries. This trend has been observed in developed countries, for example, in Spain and the United States.[169] In developing countries, due to the lack of nationwide strict enforcement and possibly other region-specific factors, the increase in helmet-wearing rates and reduction of motorcyclist fatalities and injuries is only observed in some urban areas and not in smaller towns, on secondary roads, and in areas with lower enforcement.[170,171,172]

With less than half of developing countries having fully adopted motorcycle laws and helmet standards, this can be one of the factors leading to the variations in motorcyclist fatalities and injuries. The legislation of helmet laws should be comprehensive and not partial. As suggested by the WHO, the laws should meet five criteria: the law should (i) be universal nationally; (ii) apply to both drivers and passengers; (iii) apply to all road and engine types; (iv) specify fastening of the helmets; and (v) specify standards for helmets.

Developing countries are facing two main challenges:

(i) Some countries which have adopted motorcycle helmet laws are not experiencing an increase in wearing rates and a reduction in fatalities and injuries, which indicates that laws without effective enforcement are of limited value; and

(ii) Countries that have successfully adopted helmet laws and have a higher wearing rate are still experiencing significant numbers of fatalities and injuries.[173,174]

[165] Mohan, D., Tsimhoni, O., Sivak, M., & Flannagan, M. J. (2009). Road safety in India: challenges and opportunities.
[166] MacLeod, J. B., DiGiacomo, J. C., & Tinkoff, G. (2010). An evidence-based review: helmet efficacy to reduce head injury and mortality in motorcycle crashes: EAST practice management guidelines. Journal of Trauma and Acute Care Surgery, 69(5), 1101-1111.
[167] Ambak, K., Ismail, R., Abdullah, R. A., & Borhan, M. N. (2011). Using structural equation modeling and the behavioral sciences theories in predicting helmet use. International Journal on Advanced Science, Engineering and Information Technology, 1(6), 639-645.
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[170] Keng, S. H. (2005). Helmet use and motorcycle fatalities in Taiwan. Accident Analysis & Prevention, 37(2), 349-355.
[171] Hung, D. V., Stevenson, M. R., & Ivers, R. Q. (2006). Prevalence of helmet use among motorcycle riders in Vietnam. Injury prevention, 12(6), 409-413.
[172] Li, L. P., Li, G. L., Cai, Q. E., Zhang, A. L., & Lo, S. K. (2008). Improper motorcycle helmet use in provincial areas of a developing country. Accident Analysis & Prevention, 40(6), 1937-1942.
[173] Jaafar, T. R., Mustafa, M. F., Kemin, S., & Kasiran, R. (2003). Kemalangan jalan raya: Analisis data membabitkan pengguna motosikal. Jurnal Teknologi, 38(1), 1-14.
[174] Rosli, N. (2017). An intervention for motorcycle helmet usage based on technology acceptance model.

To tackle these challenges, developing countries may valuably complement the adoption of legislative laws on motorcycle helmets with additional region- or country-specific interventions. There is a significant information gap on motorcycle crash-related injury patterns and severity in developing countries, which limits the development of effective motorcycle safety interventions.[169] Possible measures to improve motorcycle safety include: [175,176,177]

- Strict enforcement of motorcycle safety, including helmets and their standards, driver licensing, vehicle registration, and maintenance, along with the promotion of enforcement. Investment in police and judicial infrastructure would also be needed to assure effectiveness.
- Research in the regional and national profiles of motorcycle-related injuries to inform additional intervention development.
- Introduction of motorcycle safety-oriented strategies, for example, infrastructure improvement and mandatory motorcycle safety systems requirements.

Driver Training and Licensing Systems - What Will Work in LMICs?

Formal driver licensing systems, and some quite specific forms of driver training, have been found to have significant road safety benefits, especially with younger drivers. The evidence indicates that ensuring that younger drivers have many hours of supervised on-road practice is the key to improving road safety via training.[178] Off-road, skid pan, and other forms of driver training have been shown to be ineffective, or even harmful to road safety.[179,180] This failure is most likely because skills training increases driver over-confidence and thus more risk-taking.[181] Motorcycle rider training is similarly ineffective in improving safety.[182] Policy on driver training must be based on actual evidence of what improves road safety, and not just on intuition, that certain forms of training might work. Similarly, evidence in the form of participants in training courses reporting that they liked the course or believe that they are now better drivers does not constitute evidence for safety benefits. This may be evidence for exactly the opposite - increased over-confidence.

The integration of graduated release from restrictions over a number of years for novice drivers (Graduated Driver Licensing) provides more significant benefits, as considered below.[183,184]

The road safety challenge in many LMICs can in some part be attributed to unregulated driver licensing systems, leading to a significantly high population of young (sometimes under-age) novice drivers of motor vehicles and motorcycles who start their driving careers outside the system by obtaining licenses illegitimately, or even driving without a license. The problem is further exacerbated by the increasing use of motorcycles as a primary form of transport in many developing

[175] He, J., Shi, X., Xu, Z., & Hang, W. (2012). Investigation and Analysis of Motorcycle Safety in Rural China: Case Study of Linyi, Shandong Province. Transportation Research Record, 2317(1), 97–103. https://doi.org/10.3141/2317-12
[176] Li, G. L., Li, L. P., & Cai, Q. E. (2008). Motorcycle helmet use in Southern China: An observational study. Traffic injury prevention, 9(2), 125-128.
[177] McDavid, J. C., Lohrmann, B. A., & Lohrmann, G. (1989). Does motorcycle training reduce accidents? Evidence from a longitudinal quasi-experimental study. Journal of Safety Research, 20(2), 61-72.
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[180] Lund, A. K., and A. F. Williams (1985). A review of the literature evaluating the defensive driving course. *Accident Analysis & Prevention 17(6):* 449-460.
[181] Katila, A., Keskinen, O., Hatakka, M., & Laapotti, S. (2004). Does increased confidence among novice drivers imply a decrease in safety? The effects of skid training on slippery road accidents. *Accident Analysis & Prevention*, *36 (4)*, 543–550.
[182] For review and recent research see: Ivers, R. Q., Sakashita, C., Senserrick, T., Elkington, J., Lo, S., Boufous, S., & de Rome, L. (2016). Does an on-road motorcycle coaching program reduce crashes in novice riders? A randomised control trial. *Accident Analysis & Prevention, 86,* 40-46.
[183] Mayhew, D. R., Simpson, H. M., Williams, A. F., & Ferguson, S. A. (1998). Effectiveness and role of driver education and training in a graduated licensing system. Journal of public health policy, 19(1), 51-67.
[184] Williams, A. F., & Mayhew, D. R. (2008). Graduated licensing and beyond. American journal of preventive medicine, 35(3), S324-S333.

countries, with the laxity in motorcycle regulations making motorcycles more easily accessible to young novice riders.[185]

Young drivers are at greater risk not only due to inexperience but also due to age itself. Sixteen-year-old novices have three times the per-mile crash rate compared to 18-year-old drivers and ten times the crash rate compared to experienced adult drivers. It has been found that the majority of crashes involving young drivers are due to their failure to employ routine safe operating practices and their low awareness of the repercussions of doing so.[186] Older licensing ages provide significant benefits to the reduction of road crash fatalities and injuries, reflecting the direct effect of age, not just experience.[187] The safety benefits of age arise from brain development. Parts of the brain vital for impulse control may not be fully developed until the early 20s or even until age 25.[188,189]

Certain strict enforced driver licensing systems can be effective countermeasures to reduce the vulnerability of road users to crashes. The Graduated Driver Licensing (GDL) system, pioneered in Australia and now in use in USA, Canada and New Zealand[190] improves safety by limiting novice drivers in terms of speeds, nighttime driving, and passengers until they are older and pass additional tests. This gives younger drivers a more extended period to gain experience driving compared with licensing policies that provide a full and unrestricted license as the first license.[185] There has been a reduction in crash involvement in young novice drivers who have spent a longer period practicing, who have received adequate driver education with professional instruction in theory and practice, and who have gone through proper licensing tests.[191] The GDL also means that drivers are older and thus their neural development is more complete by the time they are able to obtain an unrestricted license.

Figure 7.2 provides a schema of the highly successful GDL implemented in the state of New South Wales, Australia.[192] The scheme begins with a knowledge test before a learner driver starts to drive, and requires that a total of four tests be passed before a full license is reached (at minimum at age 20 years). Each stage includes specific restrictions, including a maximum speed limit which is gradually increased, a zero blood alcohol limits, restrictions on the number of passengers at night, and zero tolerance of speeding (any speeding offense results in license suspension, as well as a fine). Consistent with the evidence noted above for crash reduction effects of on-road supervised practice, 120 hours of logged on-road supervised practice is required before a learner driver can sit for the test to move to the Provisional 1 license.

[185] Verma, A., Velumurugan, S., Chakrabarty, N., & Srinivas, S. (2011). Recommendations for driver licensing and traffic law enforcement in India aiming to improve road safety. Current Science (Bangalore), 100(9), 1373-1385.
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[189] Casey, B.J., Jones, R. M. & Hare, T. A. (2008), The Adolescent Brain. *Annals of the New York Academy of Sciences, 1124*: 111–126.
[190] Ecola, L., Rohr, C., Zmud, J., Kuhnimhof, T., & Phleps, P. (2014). The future of driving in developing countries. Rand Corporation.
[191] Nyberg, A. (2007). The potential of driver education to reduce traffic crashes involving young drivers (Doctoral dissertation, Institutionen för hälsa och samhälle).
[192] Job, R. F. S., Lancelot, E., Gauthier, G., de Melo e Silva, F., Howard, E., Ledesma, R., & Carneiro, E. (2015) *Federative Republic of Brazil: National Road Safety Management Capacity Review.* (Report No: AUS13128) November 2015. Washington, DC: GRSF World Bank.

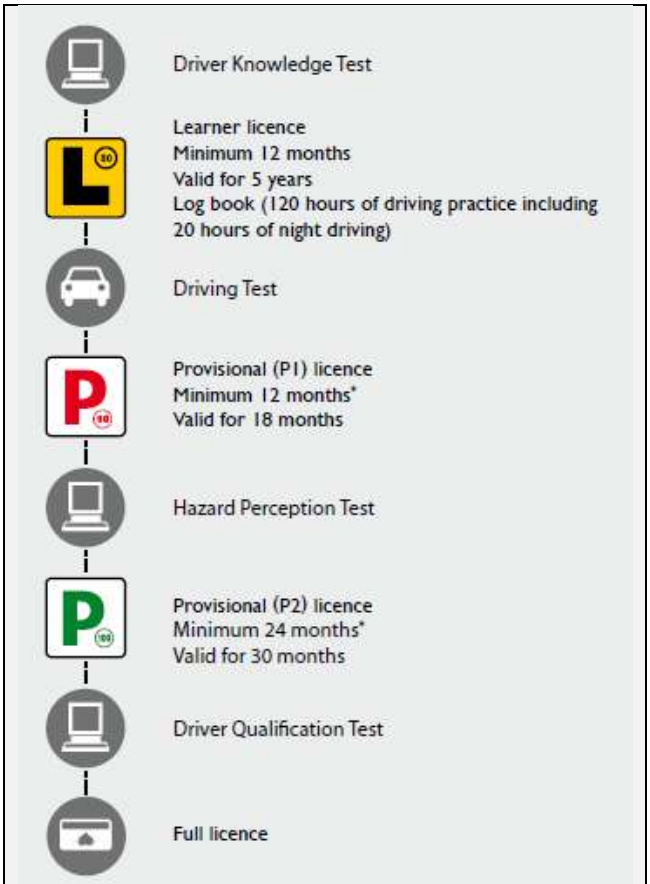


Figure 7.2: Graduated Driver Licensing Scheme Implemented in New South Wales, Australia (Source: Job et al., 2015)

The GDL system focuses on practice and experience to improve higher-order skills of young novice drivers, helping them search the road environment and perceive hazards effectively. This contributes to reducing the number of road crash fatalities and injuries involving young drivers. Strong GDL programs have reduced road crash fatalities among young drivers by 7 percent to 20 percent, with the reduction being as high as 55 percent in Ontario, Canada.[193,194]

Information on safe people and related performance for regions and countries can be found in the country profiles. This information should be reviewed in conjunction with the guidance in this chapter, particular for those countries where there are gaps or deficiencies on this issue. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 6 content for information on safe people).

[193] Barua, S., Sidawi, B., & Hoque, S. (2014). Assessment of the Role of Training and Licensing Systems in Changing the Young Driver's Behavior. International Journal of Transportation Science and Technology, 3(1), 63-78.

[194] Baldock, M. (2000). A literature review for Graduated Driver Licensing. Graduated Driver Licensing in South Australia. CARS Report.

8. POST-CRASH CARE (PILLAR 6)

Introduction and Summary of Country Profile Data

This chapter provides information on the Post-crash Care Pillar of the Safe System, highlighting issues and risk-related factors as well as ways to mitigate these. The content should be read in conjunction with the Pillar 6 material of the country profiles. A summary across all of the data from LMICs on this pillar is provided below (Table 8.1).

Table 8.1: Summary from Country Profile Data

	LICs	MICs	Total
% of countries with national access number(s)	56%	79%	74%
% of countries with a trauma registry system	74%	66%	68%
Average health service coverage from WHO health statistics	40%	61%	57%
Average expenditure on healthcare as a % of GDP	6.1%	6.1%	6.1%

Post-crash Care

Post-crash response is the chain of care provided after a road crash, with the aim of reducing the severity of the injury consequences sustained by the road users involved, including avoiding death.[195] Figure 8.1 shows the key components of post-crash care, categorized into three phases: (i) pre-hospital care (at the scene of the crash); (ii) hospital care (at the treatment facility); and (iii) follow up (after initial treatment). These components fit within the broader trauma system.

Improvement of trauma systems in developing countries is a critical step in the reduction of the burden of road crash fatalities and injuries. This should be done with evidence-based and systematically-implemented measures aimed at improving all phases of the system.[196] It is estimated that more than a million lives, approximately 30 percent of all injury deaths, could be saved in developing countries through improvements in trauma care.[197]

Pre-hospital Trauma Care

The morbidity outcome of road crash serious injuries in developing countries is high. A large proportion of the fatalities occur in the pre-hospital setting, which may be as high as 50 percent of casualties.[198] The lack of well-developed emergency medical response systems is the leading cause of these fatalities, given that pre-hospital care and transportation to trauma centers in most crashes – in some countries more than 60 percent – are administered by other road users and bystanders.[199]

The *"Golden Hour"*, the first hour after a road crash, is crucial for survival of road crash victims and for limiting the extent of injuries sustained by them. Severely injured road crash victims should be placed under advanced trauma care in an

[195] Nemeckova, M. (2018). An overview of post-collision response and emergency care in the EU. European TransportSafety Council.
[196] World Health Organization. (2016). Post-crash response: supporting those affected by road traffic crashes (No. WHO/NMH/NVI/16.9). World Health Organization. Regional Office for South-East Asia.
[197] Mock, C., Joshipura, M., Arreola-Risa, C., & Quansah, R. (2012). An estimate of the number of lives that could be saved through improvements in trauma care globally. World journal of surgery, 36(5), 959-963.
[198] Mock, C. N., Jurkovich, G. J., Arreola-Risa, C., & Maier, R. V. (1998). Trauma mortality patterns in three nations at different economic levels: implications for global trauma system development. Journal of Trauma and Acute Care Surgery, 44(5), 804-814.
[199] Vissoci, J., Shogilev, D. J., Krebs, E., Andrade, L., Vieira, I. F., Toomey, N., … Staton, C. A. (2017). Road traffic injury in sub-Saharan African countries: A systematic review and summary of observational studies. Traffic injury prevention, 18(7), 767–773. doi:10.1080/15389588.2017.1314470

appropriate facility within one hour after the road crash. However, this is not the case in many developing countries. Improved understanding of trauma care beyond the golden hour has led to an appreciation that every minute counts. Early effective treatment can not only increase survival but also reduce the extent of disability suffered by survivors. In Spain, a 10-minute reduction in response time may lead to a reduction in deaths by one-third.[200]

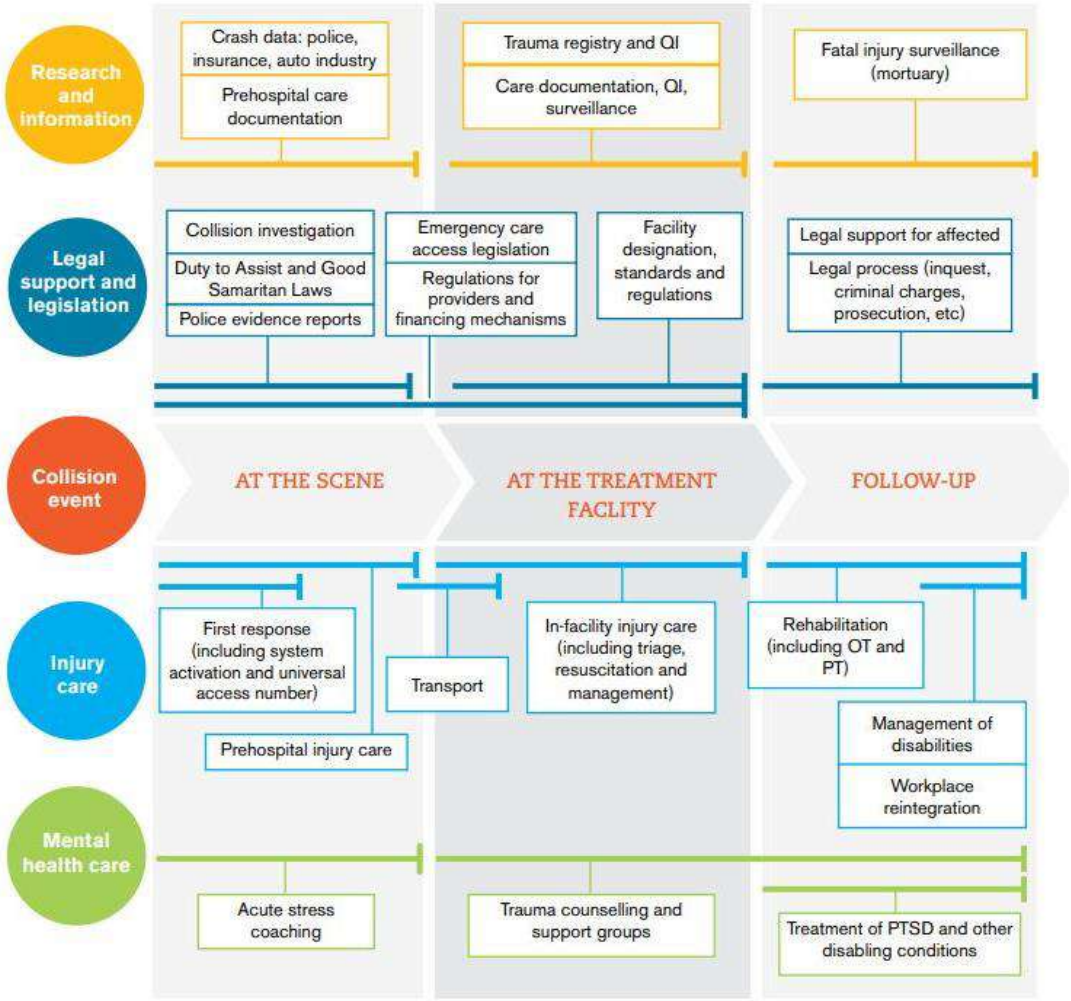


Figure 8.1: Key Components of the Post-crash Response
(Adopted from WHO Report on Post-crash Response [196])

[200] Sánchez-Mangas, R., et al. (2010). The probability of death in road traffic accidents. How important is a quick medical response? Accident Analysis & Prevention. doi:10.1016/j.aap.2009.12.012

It is therefore critical for systematic improvement of the pre-hospital care systems to limit the proportion of fatalities experienced in the pre-hospital setting. Pre-hospital care should be viewed as an integral part of the total trauma treatment system.[201] Adequate training in prehospital care, scene management, rescue, stabilization, and transport are essential to achieve an improved prehospital trauma care system.

Reducing the time between a collision and the response from emergency services can be achieved in several ways, including establishment of a national call number, better logistical coordination of response, and improved telecommunications. Ensuring that those injured in collisions are provided appropriate care (that is, transport to an adequate trauma center, and development of detailed triage arrangements operating in hospitals and activated on the journey from roadside to the hospital) will also ensure that the appropriate level of trauma treatment is provided.

Given that many developing countries lack a formal Emergency Medical Service system, short-term improvements can be made to the pre-hospital trauma care system by building on existing, although informal, patterns of crash response and prehospital transport.[202] This can be in the form of providing specific courses on first aid and road crash response to laypersons and the community at large. These short-term improvement measures should be done in parallel with the development of a structured and adequately resourced emergency medical service.[203] "Good Samaritan" laws that protect bystanders who render assistance from lawsuits are also helpful in some LMICs.

Trauma Centers in Developing Countries

In developing countries, trauma centers are experiencing approximately six times the mortality rate compared to developed countries. The main challenges facing trauma centers in developing countries are listed below:[204,205,206,207,208]

- Lack of infrastructure within healthcare facilities
- Lack of vital medical equipment
- Lack of medical staff with trauma training
- Lack of research on the nature of trauma in developing countries
- Lack of adequate funding for the development of fully functional trauma centers

The inadequacies of the health infrastructure in developing countries not only put road crash casualties at a high risk of fatality, but also further exacerbates the problem in two ways: first, these inadequacies increase the burdens of disability since lack of prompt care being given to road crash casualties compromises their recovery and at times results in long-term disability; and second, they significantly reduce the quality of injury data collected in the trauma center.[209,210]

[201] Coats, T. J., & Davies, G. (2002). Prehospital care for road traffic casualties. Bmj, 324(7346), 1135-1138.
[202] Mock, C. N., Tiska, M., Adu-Ampofo, M., & Boakye, G. (2002). Improvements in prehospital trauma care in an African country with no formal emergency medical services. Journal of Trauma and Acute Care Surgery, 53(1), 90-97.
[203] Reynolds, T. A., Stewart, B., Drewett, I., Salerno, S., Sawe, H. R., Toroyan, T., & Mock, C. (2017). The impact of trauma care systems in low- and middle-income countries. Annual review of public health, 38, 507-532.
[204] London, J. A., Mock, C. N., Quansah, R. E., Abantanga, F. A., & Jurkovich, G. J. (2001). Priorities for improving hospital-based trauma care in an African city. Journal of Trauma and Acute Care Surgery, 51(4), 747-753.
[205] Quansah, R. (2001). Availability of emergency medical services along major highways. Ghana Medical Journal, 35(1), 8-10.
[206] Mock, C., Arreola-Risa, C., & Quansah, R. (2003). Strengthening care for injured persons in less developed countries: a case study of Ghana and Mexico. Injury control and safety promotion, 10(1-2), 45-51.
[207] Joshipura, M. K., Shah, H. S., Patel, P. R., Divatia, P. A., & Desai, P. M. (2003). Trauma care systems in India. Injury, 34(9), 686-692.
[208] Hofman, K., Primack, A., Keusch, G., & Hrynkow, S. (2005). Addressing the growing burden of trauma and injury in low-and middle-income countries. American journal of public health, 95(1), 13-17.
[209] Trunkey, D. D. (1990). Trauma: A public health problem. En: Moore EE. Early care of the injured patient. 4th ed BC Decker Inc.
[210] Elechi, E., & Etawo, S.U. (1990). Pilot study of injured patients seen in the University of Port Harcourt Teaching Hospital, Nigeria. Injury, 21 4, 234-8.

Quality-improvement programs for trauma care systems, as piloted in a few developing countries, are widely applicable, have been effective, and have been offered at a low cost.[203] Quality-improvement programs are a form of standardized trauma protocols which have been very successful in improving trauma care in developed countries. Quality-improvement considers the financial and logistical challenges facing developing countries in developing strategies to strengthen the spectrum of injury control that will be cost-effective and implementable with the local resources available. This can include both enhanced training and encouraging retention for those already skilled in trauma care.[211,212]

The implementation of a trauma registry is also a critical component of making improvements in the overall trauma system. Context-appropriate trauma registry systems in resource-constrained settings are highly effective and provide critical data to inform better development and implementation of quality improvement programs.[213]

Information on the post-crash care-related performance for different regions and countries can be found in the country profiles. This information should be reviewed in conjunction with the information in this chapter, particular for those countries where there are gaps or deficiencies on this topic. Information on interpreting the information in the country reports can be found in Chapter 9 (see Part 7 content for information on post-crash care).

[211] Kesinger, M. R., Puyana, J. C., & Rubiano, A. M. (2014). Improving trauma care in low-and middle-income countries by implementing a standardized trauma protocol. World journal of surgery, 38(8), 1869-1874.
[212] Mock, C., Kobusingye, O., Anh, L. V., Afukaar, F., & Arreola-Risa, C. (2005). Human resources for the control of road traffic injury. Bulletin of the world Health Organization, 83, 294-300.
[213] Chichom-Mefire, A., Nwanna-Nzewunwa, O. C., Siysi, V. V., Feldhaus, I., Dicker, R., & Juillard, C. (2017). Key findings from a prospective trauma registry at a regional hospital in Southwest Cameroon. PLoS one, 12(7), e0180784.

9. INTERPRETATION GUIDELINE

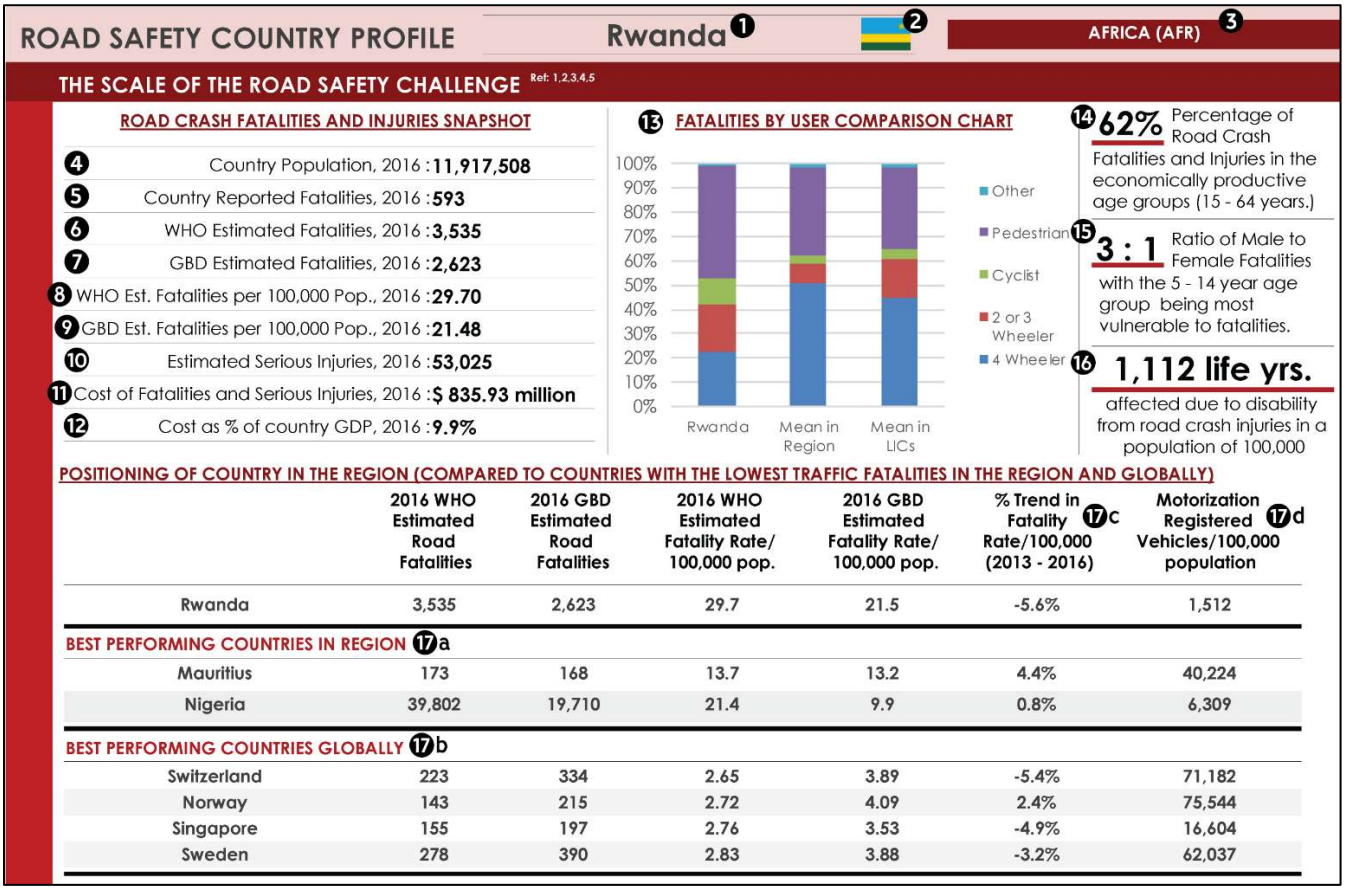
The Country Profiles and Regional Profiles provided herein are designed to give a double-page snapshot of the road safety situation in each LMIC, covering key risks and opportunities across all pillars for remedial action. This chapter provides a key explaining how to interpret the information that is provided. Information is also provided on the calculations made, and the data sources employed for the country and regional profiles provided in this report.

Example data is presented as well as interpretations. Each “panel” from the country profile is presented in turn, along with a table indicating each element along with a description of it (in some cases quite detailed) and, where relevant, references.

The following key sources were extensively employed in the production of country profiles, and we are very grateful to authors and individuals for making this information available:

1. World Health Organization. (WHO, 2018). Global status report on road safety 2018 (No. WHO/NMH/NVI/18.20).
2. Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington, 2016. Available from vizhub.healthdata.org/gbd-compare.
3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimate broadly falls in the range of 30:1 in high income countries and in the range of 10:1 in low- and middle-income countries since road crashes tend to be more fatal in those countries.
4. McMahon, K., & Dahdah, S. (2008). The true cost of road crashes: valuing life and the cost of a serious injury. London: iRAP.
5. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from www.vaccinesforroads.org;
6. World Bank Databank for Development Indicators;
7. Cameron, M. H., & Elvik, R. (2010). Nilsson's Power Model connecting speed and road trauma: Applicability by road type and alternative models for urban roads. Accident Analysis & Prevention, 42(6), 1908-1915.
8. New Zealand Transport Agency. (2016). Speed Management Guide. First Edition.
9. United Nations Environment Programme, UNEP (2016) ITC Background Paper on Used Vehicles: Global Overview and Various Media Sources (Wikipedia and vehicle import websites);
10. World Health Organization. (2016). World Health Statistics 2016: Monitoring health for the SDGs sustainable development goals. World Health Organization.

Part 1: THE SCALE OF THE ROAD SAFETY CHALLENGE



No.	Description	Ref./ Source
❶	Country name	
❷	Country flag	
❸	World Bank region name and acronym	
❹	Country population in 2016	1
❺	Reported road crash fatalities in 2016 as reported by government authorities	1
❻	Estimated number of road crash fatalities in 2016 by World Health Organization	1
❼	Estimated number of road crash fatalities in 2016 by Global Burden of Disease study	2
❽	Estimated rate of road crash fatalities per 100,000 population in 2016 by WHO	1
❾	Estimated rate of road crash fatalities per 100,000 population in 2016 by GBD	2
❿	Estimated number of serious injuries from road crashes. This is an estimate by GRSF using the WHO-estimated road crash fatalities and the relationship of 15 serious injuries for each 1 road crash fatality. $$Serious\ Injuries = 15 \times WHO\ Estimated\ Road\ Crash\ Fatalities \quad (6)$$	3

⓫	Estimated cost of road crash fatalities and serious injuries. Calculated using iRAP methodology with WHO-estimated road crash fatalities (6) and estimated serious injuries adopted herein (10) $$Cost\ of\ fatalities = No.of\ fatalities\ \times\ 70\ \times Country\ GDP\ per\ Capita$$ $$Cost\ of\ serious\ injuries = No.of\ serious\ injuries\ \times\ 17.5\ \times Country\ GDP\ per\ Capita$$	4
⓬	Cost of road crash fatalities and serious injuries expressed as a percentage of the country's GDP in 2016.	6
⓭	Comparison chart of road crash fatalities by road user categories: • 4-Wheeler • 2/3-Wheeler or Motorcyclists • Cyclists • Pedestrians • Other forms of transport – mostly from unclassified data in countries. The chart compares this distribution of road crash fatalities for: • The specific country • Mean distribution in the region the county lies in • Mean distribution in the income category of the country lies (LICs for Low-Income Countries and MICs for Middle-Income Countries)	2
⓮	Percentage of road crash fatalities and injuries that involve people in the economically productive age groups, between 15 to 64 years	2
⓯	The ratio of male to female road crash fatalities in the country using estimated fatality data from GBD in the year 2016	2
⓰	Disability-adjusted life years (DALYs) from road crash injuries in the country per 100,000 population	2
⓱	a. List of the two best performing countries in the region the country lies in – according to the WHO-estimated fatality rate b. List of the best performing countries globally according to the WHO-estimated fatality rates. These are Switzerland, Norway, Singapore, and Sweden (standard in all country profiles) c. Trend in road crash fatality rate per 100,000 population from 2013 to 2016, using WHO-estimated road crash fatality rates d. Motorization – Registered vehicles per 100,000 population using data submitted to WHO	1

Part 2: PILLAR 1 - ROAD SAFETY MANAGEMENT

No.	Description	Ref.
❶	Name of road safety lead agency in the country • Green Tick: A national road safety lead agency is present in the country • Red Cross: No national road safety lead agency is present in the country	1
❷	Status of funding for the road safety lead agency in the national budget	1
❸	Presence of a road safety strategy in the country	1
❹	Status of funding for the road safety strategy • Fully funded • Partially funded • Not funded	1
❺	Function of the road safety lead agency • Coordination • Legislation • Monitoring and Evaluation	1
❻	Presence of a road safety target and description of the target with the target years	1

For further interpretation and guidance, see content in Chapter 3.

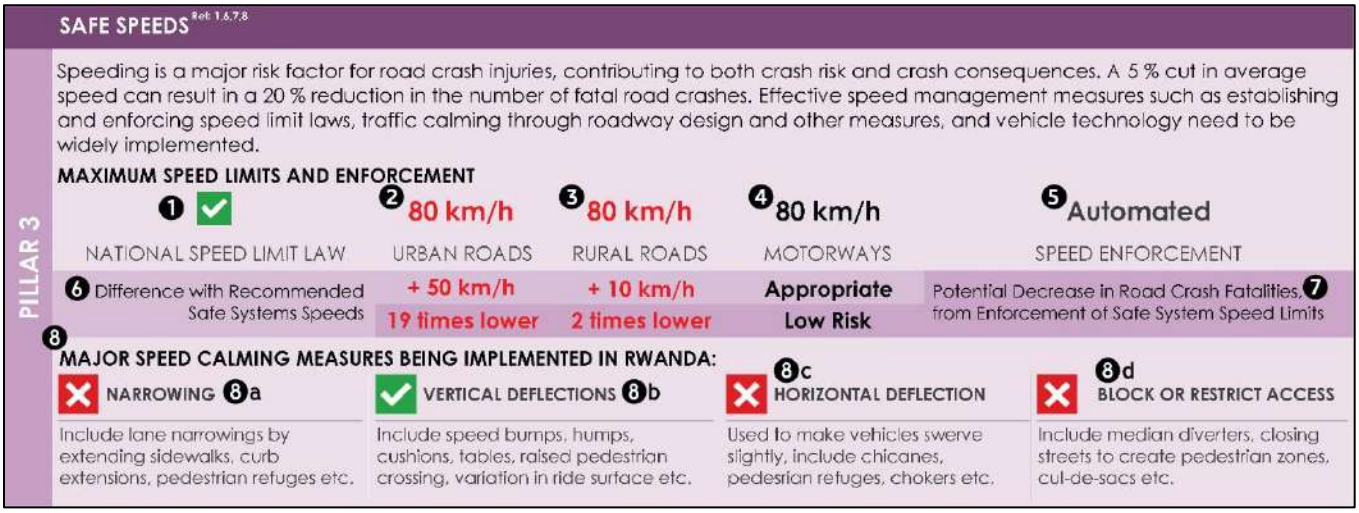
Part 3: PILLAR 2 - SAFE ROADS AND ROADSIDES

No.	Description	Ref.
❶	Availability of road assessment survey data from iRAP	5
❷	Road assessment survey carriageway statistics: • Percentage of surveyed network with no formal pedestrian footpaths • Percentage of surveyed network with no pedestrian crossings • Percentage of surveyed network with undivided carriageways with vehicles speeds of 80 km/h or more	5

❸	Road user kilometers of travel covered in the road assessment survey • Vehicle occupant travel kilometers covered by the road assessment survey • Pedestrian travel kilometers covered by the road assessment survey • Cyclist travel kilometers covered by the road assessment survey	5
❹	Road assessment survey statistics from iRAP – presented in form of a multi-colored chart showing the star rating results for each road user group (Motor vehicle occupants, Motorized 2/3 wheelers, Cyclists, and Pedestrians) • Star Rating 5 – Safest road for road user • Star Rating 4 • Star Rating 3 • Star Rating 2 • Star Rating 1 – Least safe road for road user	5
❺	Country data on procedures in design and maintenance of road infrastructure • Requirement for audit/star rating for new road infrastructure • Requirement for inspection/star rating for existing roads • Allocation of investment to upgrade high risk locations	1
❻	Business Case for Safer Roads – Benefit cost analysis for investment into road safety infrastructure a. Required investment in road safety infrastructure and speed management to achieve safer roads (3 Star or better) b. Annual investment required as a percentage of the country's GDP between 2019 to 2030 c. Reduction in road crash fatalities (per year) resulting from the improvement of road infrastructure and speed management measures d. Approximate reduction in road crash fatalities and serious injuries because of the road infrastructure improvement and speed management over a period of 20 years e. Economic benefit from the reduction in road crash fatalities and serious injuries which would be achieved by bringing roads to 3 star safety rating f. Benefit Cost Ratio of the road infrastructure improvements and speed management $$Benefit\ Cost\ Ratio = \frac{Economic\ Benefit\ (6e)}{Infrastructure\ Investment\ Required\ (6a)}$$	5

For further interpretation and guidance, see content in Chapter 4.

Part 4: PILLAR 3 - SAFE SPEEDS

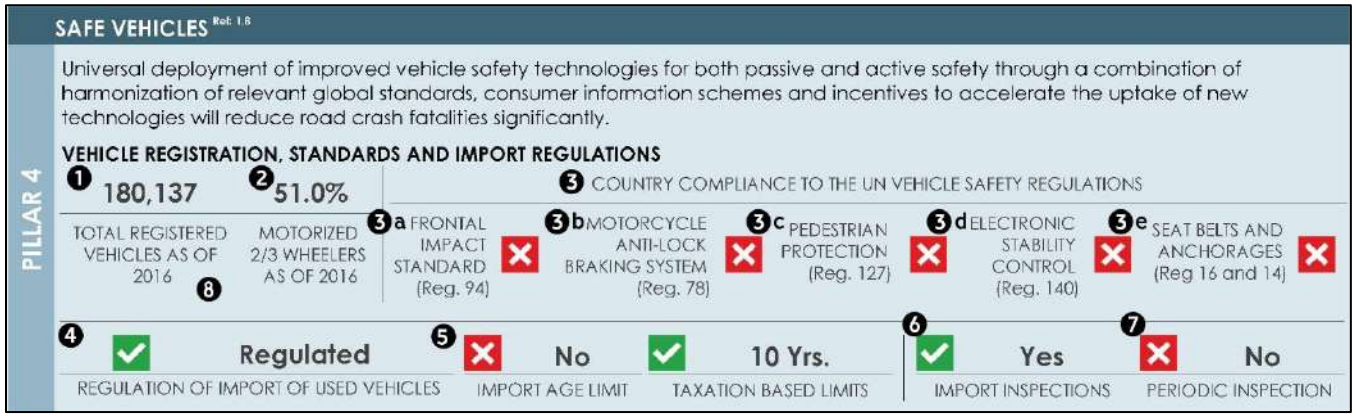


No.	Description	Ref.
❶	Presence of a national speed limit law in the country • Green Tick: National speed limit law present • Red Cross: No national speed limit law enacted in country	1
❷	Maximum urban road speed limit enforced in the country	1
❸	Maximum rural road speed limit enforced in the country	1
❹	Maximum motorway/highway speed limits enforced in the country	1
❺	Speed enforcement strategies widely used in the country • Manual Enforcement • Manual and Automated Enforcement • Automated Enforcement	1
❻	Difference of speed limits with the recommended Safe System speeds • Recommended speed limit on urban roads – 30 km/h (except on Urban Arterials) • Recommended speed limit on rural roads – 70 km/h (rural undivided) • Recommended speed limit on motorways/highways – 90 km/h (divided) If the speed is within the recommended speed limit it is marked as ***"Appropriate"*** If the speed is not within the recommended speed limit the speed difference is indicated (for example "***+50 km/h")***	8
❼	Potential decrease in road crash fatalities from enforcement of the recommended speed limits Using calculation based on the Power Model[13] relating speed and road trauma	7

	$$Potential\ factor\ decrease\ in\ fatalities = \left(\frac{Current\ Speed\ Limit}{Recommended\ Speed\ Limit}\right)^{x}$$ The value, $\boldsymbol{x}$, varies for different road conditions: 3.60 (Urban arterial); 5.90 (Rural highway); 4.84 (Residential road); (5.33) Freeway; and 4.26 (All areas). If the speed is within the recommended speed limit it is marked as ***"Low Risk"*** If the speed is not within the recommended speed limit, the potential crash risk reduction if the recommended safe speeds are adopted is calculated using the Power Model (for example ***"19 times lower")***	
❽	Speed Calming Measures adopted widely in the country (from a review of Internet articles/media sources and any study evidence found) a. Used/not used or almost never used in narrowing speed calming infrastructure – includes lane narrowing by extending sidewalks, curb extensions and pedestrian refugees b. Used/not used or almost never used in vertical deflection speed calming infrastructure – includes speed bumps, speed humps, speed cushions, speed tables, raised pedestrian crossings and variations in ride surfaces c. Used/not used or almost never used in horizontal deflection speed calming infrastructure – used to make vehicles swerve slightly: include chicanes, pedestrian refuges and chokers d. Used/not used or almost never used in blocking/restriction of access speed calming infrastructure – includes median diverters and closing of streets for creation of pedestrian zones and cul-de-sacs • Green Tick: Speed calming measures are present • Red Cross: Speed calming measures not present/almost not present	

For further interpretation and guidance, see content in Chapter 5.

Part 5: PILLAR 4 - SAFE VEHICLES

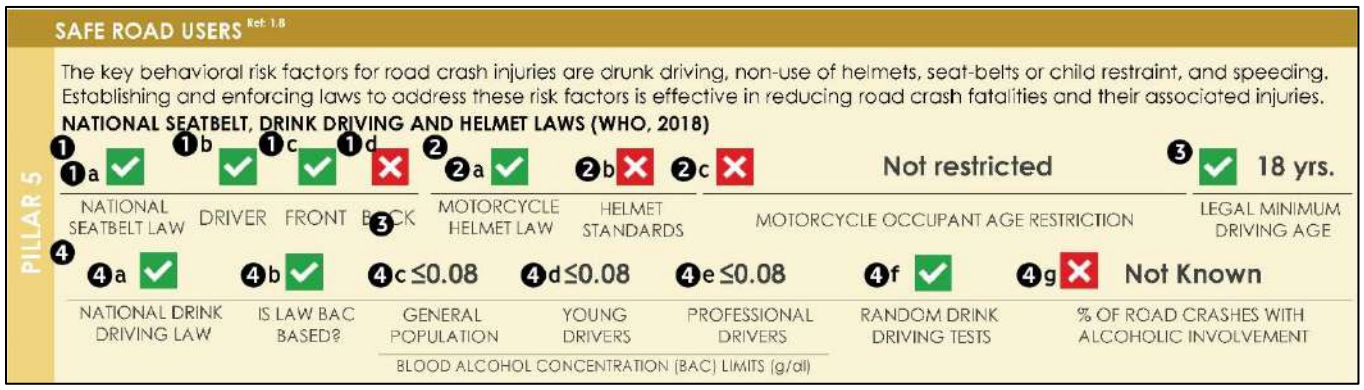


No.	Description	Ref.
❶	Total vehicles registered reported by the country as of 2016. This includes all types of vehicles: • Cars and 4-wheeled light vehicles • Motorized 2- and 3-wheelers • Heavy trucks • Buses. • Any other motorized form of transport	1
❷	Percentage of 2- and 3-wheelers from the total registered vehicles (1)	1
❸	Country adoption of the UN Vehicle Safety Regulations. a. Compliance/Non-compliance of frontal impact standards (Reg. 94) b. Compliance/Non-compliance of motorcycle anti-lock braking system (Reg. 78) c. Compliance/Non-compliance of pedestrian protection (Reg. 127) d. Compliance/Non-compliance of electronic stability control (Reg. 140) e. Compliance/Non-compliance of seat belts and anchorages (Reg. 16 and 14) • Green Tick: UN vehicle safety regulations adopted • Red Cross: UN vehicle safety regulations not adopted	1
❹	Presence of regulations for the import of used vehicles into the country • Banned: Import of used vehicles is prohibited in the country (Green Tick) • Regulated: Import of used vehicles is regulated by age limit or taxation-based limits (Green Tick) • Not Regulated: Import of used vehicles not regulated (Red Cross) Data obtained from UNEP-ITC Background Paper on Used Vehicles Globally, Policy Handbook for the Regulation of Imported Second-Hand Vehicles - Working Paper 7, Autos Trade Barriers, 2011 and Various Media Sources (Vehicle Import Websites)	9

❺	Import age limit as per the regulations of imported used cars in the country • Strong Regulations: 3 Years and below (Green Tick) • Good Regulations: 5 Years and below (Green Tick) • Fair Regulations: 8 Years and below (Green Tick) • Poor Regulations: 10 Years and below (Red Cross) • No Regulations: No Age Limit (Red Cross)	9
❻	Presence/No presence of import inspections of vehicles being imported into the country • Green Tick: Presence of import inspections of vehicle imports • Red Cross: No presence of import inspections of vehicle imports	9
❼	Presence/No presence of periodic inspections of registered vehicles in the country • Green Tick: Presence of periodic inspections of vehicle imports • Red Cross: No presence of periodic inspections of vehicle imports	9

For further interpretation and guidance, see content in Chapter 6.

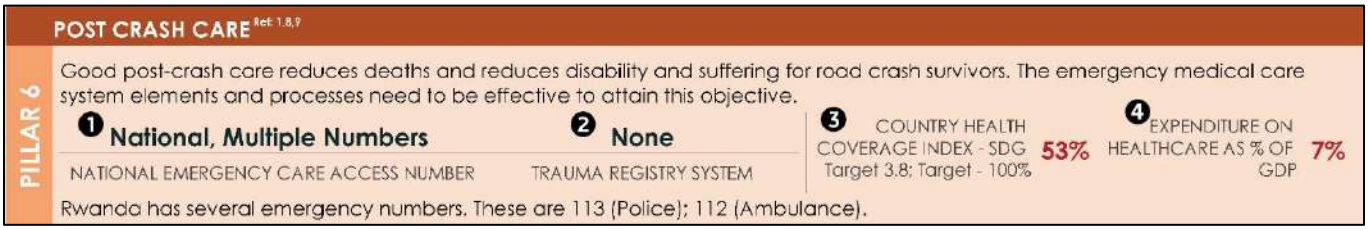
Part 6: PILLAR 5 - SAFE ROAD USERS



No.	Description	Ref.
❶	National seatbelt legislation in the country a. **Presence/No presence** of national seatbelt law in legislation of the country b. Seatbelt law applies to vehicle driver **(Yes/No)** c. Seatbelt law applies to vehicle front passengers **(Yes/No)** d. Seatbelt law applies to vehicle back/rear passengers **(Yes/No)**	1
❷	Motorcycle safety legislation in the country: a. **Presence/No presence** of national motorcycle helmet b. law in the legislation of the country c. **Presence/No Presence** of defined helmet standards in motorcycle laws d. **Presence/No Presence** of motorcycle occupant age restriction in motorcycle laws	1
❸	Legal minimum driving age for motor-vehicles in the country. (Various Media Sources) • Recommended: Minimum driving age above 18 Years **(Green Tick)** • Weak regulation: Minimum driving age below 18 Years **(Red Cross)**	
❹	National drink-driving legislation in the country a. **Presence/No presence** of national drink-driving law in legislation of the country b. Drink-driving law based on blood alcohol concentration (BAC) **(Yes/No)** c. Blood alcohol concentration limits for general population (all drivers) d. Blood alcohol concentration limits for young drivers (if present) e. Blood alcohol concentration limits for professional and commercial drivers (if present) f. **Presence/No presence** of random drink-driving tests by police in the country **(Yes/No)** g. Percentage of road crashes reported with alcoholic involvement	1
• **Green Tick: "Yes"** or "**Presence"** • **Red Cross: "No"** or "**No Presence"**		

For further interpretation and guidance, see content in Chapter 7.

Part 7: PILLAR 6 - POST-CRASH CARE



No.	Description	Ref.
❶	Presence/No presence of a national emergency care access number – emergency numbers casualties or any individual at the scene of the crash can reach to request an emergency response to the scene • National, Multiple Numbers – Country has several emergency numbers (Police or Ambulance and General Emergency Numbers) that are functional nationally • National, Single Number – Country has one emergency number (General/Police/Ambulance) that is functional nationally • Partial, Multiple Numbers – Country has several emergency numbers (Police or Ambulance and General Emergency Numbers) that are functional only in specific parts of the country • Partial, Single Number – Country has one emergency number (General/Police/Ambulance) that is functional only in specific parts of the country • None – Country has no emergency number List of specific country emergency numbers listed (Wikipedia, Various online sources)	1
❷	Presence/No presence of a trauma registry system in the country or hospitals within the country • National – Country has a national trauma registry system, which receives road crash trauma information from all trauma centers in the country • Sub-national – Country has a trauma registry system, covering only several trauma centers in the country or a whole sub-region within the country • Some facilities – Country has a trauma registry system within some trauma facilities only, with no connection • None – Country does not have a trauma registry system	1
❸	Country's Health Coverage Index The index is based on SDG indicator 3.8.1 - Coverage of essential health services, defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn, and child health; infectious diseases; noncommunicable diseases; and service capacity and access; among the general and the most disadvantaged population.	6,10

	It is presented on a scale of 0 to 100. High index values are associated with higher life expectancies as the index correlates with under-5 mortality rates, life expectancy and the Human Development Index. A country whose index is greater than or equal to 80 has this value presented as 80 since the current index does not adequately distinguish between countries with the highest level of service coverage provision.	
❹	Country's Expenditure on Healthcare (as a percentage of GDP) Indicates the level of current health expenditure (healthcare goods and services consumed during each year) expressed as a percentage of GDP.	6,10

For further interpretation and guidance, see content in Chapter 8.

10. REGIONAL ROAD SAFETY PROFILES

The regional road safety profiles aggregate data from all the countries within the six World Bank regions and provide an overview of how the region is performing in all the six Safe System pillars according to the metrics used in the road safety country profiles.

The regional profiles are arranged (alphabetically) as follows:

1	Africa Region (AFR)
2	East Asia and Pacific Region (EAP)
3	Europe and Central Asia Region (ECA)
4	Latin America and the Caribbean Region (LAC)
5	Middle East and North Africa Region (MENA)
6	South Asia Region (SAR)

ROAD SAFETY REGION PROFILE

AFRICA (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE AFRICA REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**1.01 billion**
Government Reported Fatalities, 2016 :	**57,856**
WHO Estimated Fatalities, 2016 :	**270,284**
GBD Estimated Fatalities, 2016 :	**166,620**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.64**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**19.72**
Estimated Serious Injuries, 2016 :	**4,054,260**

Cost of Fatalities and Serious Injuries, 2016

$ 128 billion

Cost as % of region average GDP, 2016

9.0 % of GDP

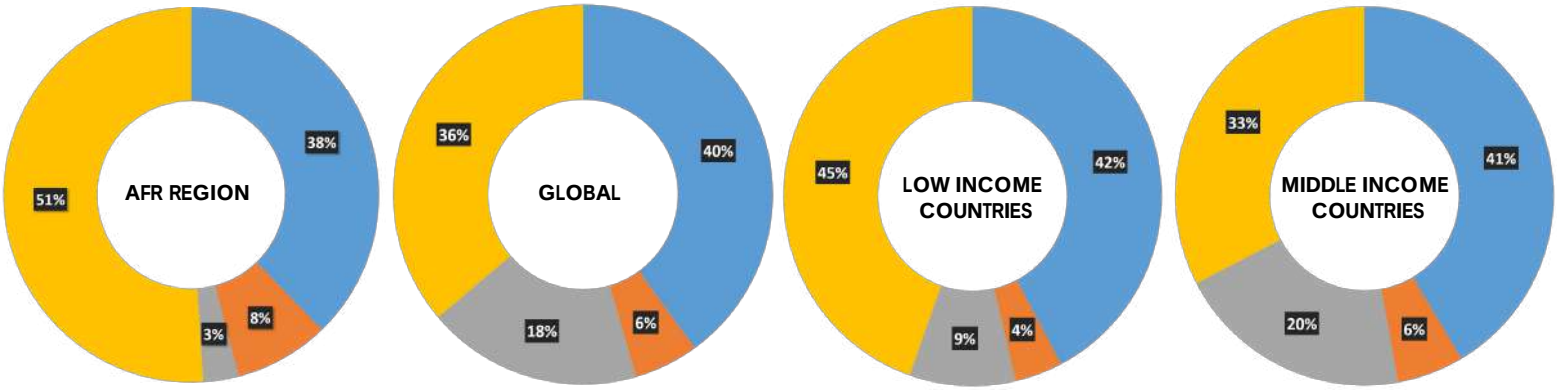
2 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

65% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

1,149 life years

affected due to disability from road crash injuries in a population of 100,000 people

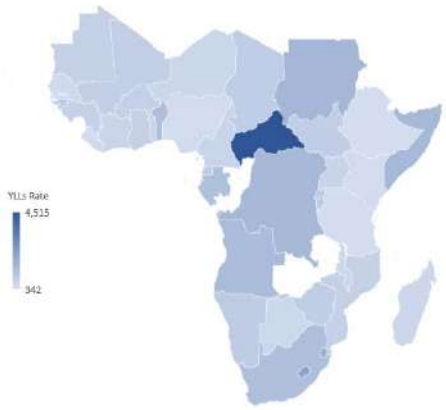
COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY



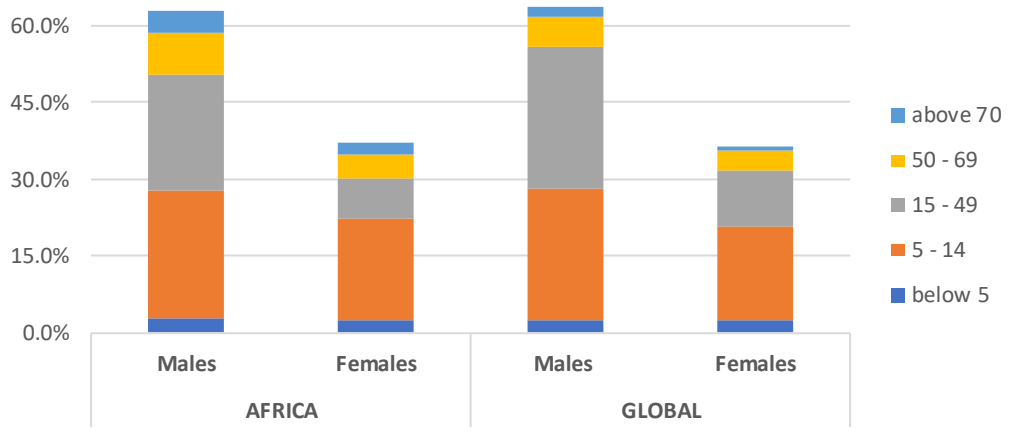
POSITIONING OF THE AFRICA REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
AFR	**Africa**	**270,284**	**166,620**	**27.64**	**19.72**	**-4.9%**	**6,920.5**
ECA	Europe and Central Asia	60,024	57,535	12.53	11.02	-2.4%	25,428.5
SAR	South Asia	364,718	302,390	14.55	15.80	-4.5%	12,800.3
EAP	East Asia and Pacific	371,979	386,908	15.81	17.74	-2.4%	22,662.6
LAC	Latin America and the Caribbean	107,057	110,560	19.05	17.24	-1.4%	25,735.4
MENA	Middle East and North Africa	53,094	68,097	19.37	16.82	-5.8%	21,261.2

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE AFR REGION



VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The World Bank in partnership with the Fédération Internationale de l'Automobile (FIA), the International Transport Forum (ITF) and other partners are working to establish the African Road Safety Observatory.

90% of countries report they have a lead agency, with 75% of them reporting to be fully funded.

85% of the agencies guide, implement and monitor road safety interventions

40% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

AFRICA (AFR)

PILLAR 2 — SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

		Vehicle Occupant Star Rating Results						Pedestrian Star Rating Results					
18.9 billion kilometres	total vehicle occupant travel surveyed by iRAP	**1.7%**	4/5 Star	**18.7%**	3 Star	**79.6%**	1/2 Star	**0.4%**	4/5 Star	**4.1%**	3 Star	**95.6%**	1/2 Star
		Motorcyclist Star Rating Results						Bicyclist Star Rating Results					
8.8 billion kilometres	total pedestrian travel surveyed by iRAP	**0.7%**	4/5 Star	**12.3%**	3 Star	**86.9%**	1/2 Star	**0.9%**	4/5 Star	**3.6%**	3 Star	**95.4%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required	**$ 55 billion**	Annual Investment as a % of GDP (2019-2030)	**0.28%**	Reduction in fatalities per year	**99,459**

Reduction in fatalities and serious injuries (FSI) over 20 years: **21 million** | Economic Benefit in Region: **$ 530 billion** | Benefit Cost Ratio: **20**

PILLAR 3 — SAFE SPEEDS [Ref: 1,6]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

90% countries with national speed limit laws

14% countries with urban speed limits of 30 km/h or less; Range: 40 - 100 km/h; Mean - 57 km/h;

27% countries with rural speed limits of 70 km/h or less; Range: 56 - 120 km/h; Mean - 94 km/h;

52% countries with motorway speed limits of 90 km/h or less; Range: 72 - 120 km/h; Mean - 107 km/h;

The enforcement distribution in the Africa Region is - Manual Enforcement: 68%; Manual and Automated Enforcement: 7%; Fully Automated Enforcement: 2%; No Enforcement: 23%. 50% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES

0% countries with narrowing measures

100% countries with vertical deflections

0% countries with horizontal deflections

0% countries with blocking or restriction of access

PILLAR 4 — SAFE VEHICLES [Ref: 1,6]

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

6,921 veh/100,000 people mean vehicle population

18% mean percentage of motorized 2/3 wheelers

0% of countries have adopted the Global NCAP Standards

15% Countries with strong import regulations

0% countries with periodic inspection schemes

PILLAR 5 — SAFE ROAD USERS [Ref: 1,6]

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

90% countries with a national seatbelt law

90% countries with a national motor cycle helmet law

100% countries with a national drink driving law. 75% BAC Based.

25% countries with BAC Limit equal or lower than 0.05 g/dl.

85% countries with legal minimum driving age at or above 18 yrs.

PILLAR 6 — POST CRASH CARE [Ref: 1,7]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

60% countries with a national emergency care access number

15% countries with a national trauma registry system

22 - 68 range of country health service coverage index - SDG Target 3.8 Mean - 44; Target - 100

5.6% mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

ROAD SAFETY REGION PROFILE

EAST ASIA AND PACIFIC (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE EAST ASIA AND PACIFIC REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**2.1 billion**
Government Reported Fatalities, 2016 :	**145,290**
WHO Estimated Fatalities, 2016 :	**371,979**
GBD Estimated Fatalities, 2016 :	**386,908**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.81**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.74**
Estimated Serious Injuries, 2016 :	**5,579,685**

Cost of Fatalities and Serious Injuries, 2016

$ 833 billion

Cost as % of region average GDP, 2016

6.1 % of GDP

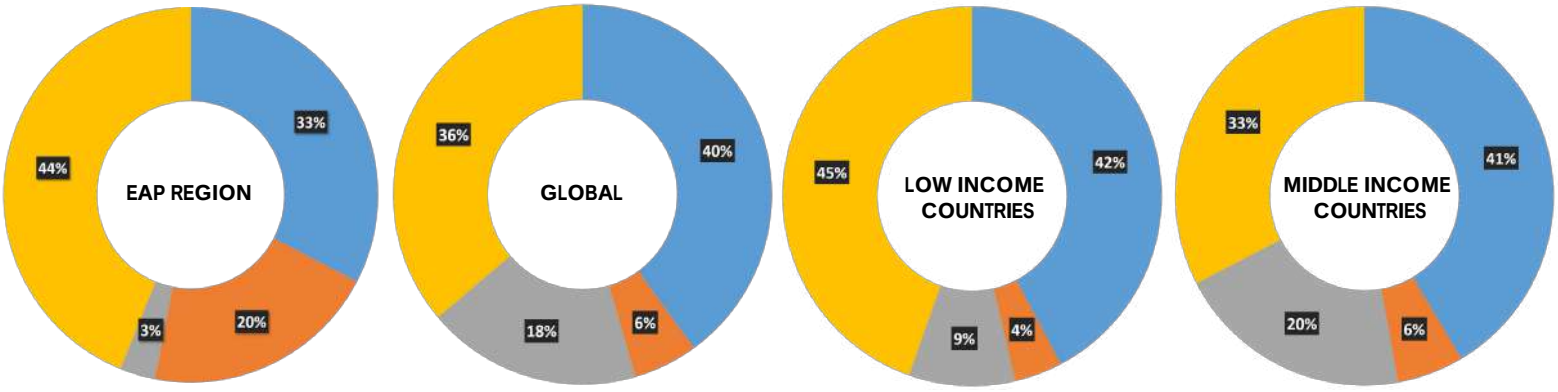
3 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

78% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

1,017 life years

affected due to disability from road crash injuries in a population of 100,000 people

COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY



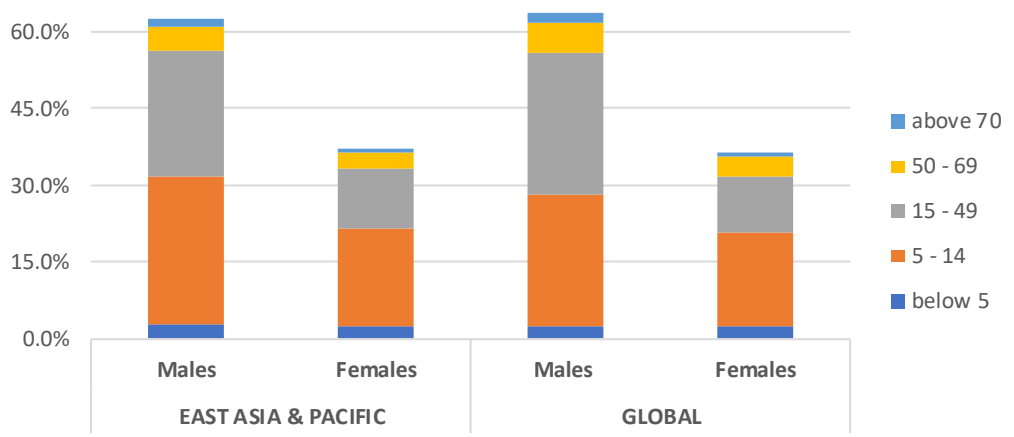
USER CATEGORIES: Pedestrians | Vehicle Occupants | Motorcyclist | Cyclist

POSITIONING OF THE EAST ASIA AND PACIFIC REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
EAP	**East Asia and Pacific**	**371,979**	**386,908**	**15.81**	**17.74**	**-2.4%**	**22,662.6**
ECA	Europe and Central Asia	60,024	57,535	12.53	11.02	-2.4%	25,428.5
SAR	South Asia	364,718	302,390	14.55	15.80	-4.5%	12,800.3
LAC	Latin America and the Caribbean	107,057	110,560	19.05	17.24	-1.4%	25,735.4
MENA	Middle East and North Africa	53,094	68,097	19.37	16.82	-5.8%	21,261.2
AFR	Africa	270,284	166,620	27.64	19.72	-4.9%	6,920.5

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE EAP REGION

VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The World Bank in partnership with the Asian Development Bank (ADB), the International Transport Forum (ITF) and Fédération Internationale de l'Automobile (FIA) is in the process of developing a framework for the Asian Road Safety Observatory.

85% of countries report they have a lead agency, with 90% of them reporting to be fully funded.

80% of the agencies guide, implement and monitor road safety interventions

65% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

EAST ASIA AND PACIFIC (EAP)

SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

		Vehicle Occupant Star Rating Results						Pedestrian Star Rating Results					
90 billion kilometres	total vehicle occupant travel surveyed by iRAP	**34.8%**	4/5 Star	**31.9%**	3 Star	**33.4%**	1/2 Star	**2.0%**	4/5 Star	**13.6%**	3 Star	**84.4%**	1/2 Star
5.7 billion kilometres	total pedestrian travel surveyed by iRAP	Motorcyclist Star Rating Results						Bicyclist Star Rating Results					
		4.9%	4/5 Star	**22.2%**	3 Star	**72.9%**	1/2 Star	**3.1%**	4/5 Star	**20.9%**	3 Star	**76.0%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required	**$ 165 billion**	Annual Investment as a % of GDP (2019-2030)	**0.23%**	Reduction in fatalities per year	**143,510**

Reduction in fatalities and serious injuries (FSI) over 20 years: **31 million** | Economic Benefit in Region: **$ 3.7 trillion** | Benefit Cost Ratio: **14**

SAFE SPEEDS [Ref: 1,6]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

90% countries with national speed limit laws

11% countries with urban speed limits of 30 km/h or less; Range: 40 - 90 km/h; Mean - 53 km/h;

37% countries with rural speed limits of 70 km/h or less; Range: 40 - 90 km/h; Mean - 77 km/h;

58% countries with motorway speed limits of 90 km/h or less; Range: 40 - 120 km/h; Mean - 96 km/h;

The enforcement distribution in the East Asia and Pacific Region is - Manual Enforcement: 63%; Manual and Automated Enforcement: 16%; Fully Automated Enforcement: 11%; No Enforcement: 11%. 30% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES

5% countries with narrowing measures

100% countries with vertical deflections

5% countries with horizontal deflections

0% countries with blocking or restriction of access

SAFE VEHICLES [Ref: 1,6]

PILLAR 4

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

22,663 veh/100,000 people mean vehicle population

33% mean percentage of motorized 2/3 wheelers

5% of countries have adopted the Global NCAP Standards

20% Countries with strong import regulations

0% countries with periodic inspection schemes

SAFE ROAD USERS [Ref: 1,6]

PILLAR 5

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

80% countries with a national seatbelt law

100% countries with a national motor cycle helmet law

100% countries with a national drink driving law. 70% BAC Based.

75% countries with BAC Limit equal or lower than 0.05 g/dl.

70% countries with legal minimum driving age at or above 18 yrs.

POST CRASH CARE [Ref: 1,7]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

75% countries with a national emergency care access number

45% countries with a national trauma registry system

40 - 76 range of country health service coverage index - SDG Target 3.8 Mean - 58; Target - 100

5.7% mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

ROAD SAFETY REGION PROFILE

EUROPE AND CENTRAL ASIA (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE EUROPE AND CENTRAL ASIA REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**420 million**
Government Reported Fatalities, 2016 :	**46,074**
WHO Estimated Fatalities, 2016 :	**60,024**
GBD Estimated Fatalities, 2016 :	**57,535**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**12.53**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**11.02**
Estimated Serious Injuries, 2016 :	**900,360**

Cost of Fatalities and Serious Injuries, 2016

$ 146 billion

Cost as % of region average GDP, 2016

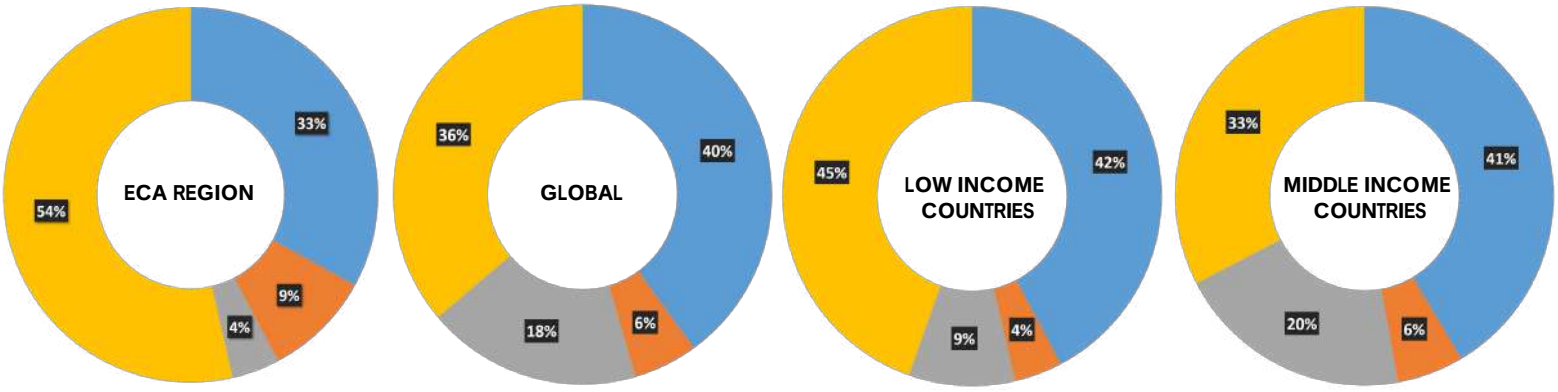
4.8 % of GDP

3 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

76% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

695 life years affected due to disability from road crash injuries in a population of 100,000 people

COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY

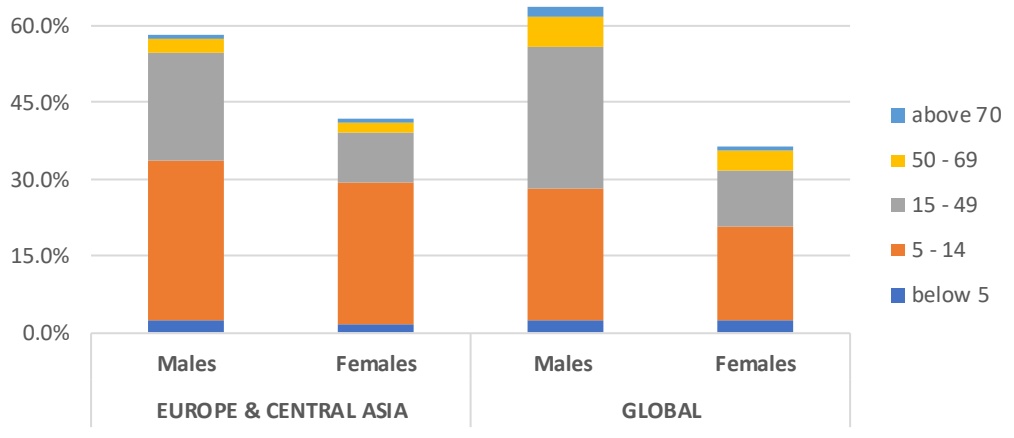


POSITIONING OF THE EUROPE AND CENTRAL ASIA REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
ECA	**Europe and Central Asia**	**60,024**	**57,535**	**12.53**	**11.02**	**-2.4%**	**25,428.5**
SAR	South Asia	364,718	302,390	14.55	15.80	-4.5%	12,800.3
EAP	East Asia and Pacific	371,979	386,908	15.81	17.74	-2.4%	22,662.6
LAC	Latin America and the Caribbean	107,057	110,560	19.05	17.24	-1.4%	25,735.4
MENA	Middle East and North Africa	53,094	68,097	19.37	16.82	-5.8%	21,261.2
AFR	Africa	270,284	166,620	27.64	19.72	-4.9%	6,920.5

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE ECA REGION

VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The European Road Safety Observatory under the European Commission supports all aspects of road safety policies at a regional and national level. The Asian Road Safety Observatory framework is also being developed by World bank and other partners.

85% of countries report they have a lead agency, with 80% of them reporting to be fully funded.

80% of the agencies guide, implement and monitor road safety interventions

60% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

EUROPE AND CENTRAL ASIA (ECA)

PILLAR 2 — SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

		Vehicle Occupant Star Rating Results						Pedestrian Star Rating Results					
14 billion kilometres	total vehicle occupant travel surveyed by iRAP	**3.1%**	4/5 Star	**38.7%**	3 Star	**58.3%**	1/2 Star	**2.4%**	4/5 Star	**10.6%**	3 Star	**87.1%**	1/2 Star
		Motorcyclist Star Rating Results						Bicyclist Star Rating Results					
3.02 billion kilometres	total pedestrian travel surveyed by iRAP	**0.7%**	4/5 Star	**9.1%**	3 Star	**90.2%**	1/2 Star	**3.3%**	4/5 Star	**10.3%**	3 Star	**86.3%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required	Annual Investment as a % of GDP (2019-2030)	Reduction in fatalities per year
	$ 105 billion	**0.27%**	**18,712**

Reduction in fatalities and serious injuries (FSI) over 20 years: **4 million** | Economic Benefit in Region: **$ 541 billion** | Benefit Cost Ratio: **7**

PILLAR 3 — SAFE SPEEDS [Ref: 1,6]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

100%	countries with national speed limit laws	**0%**	countries with urban speed limits of 30 km/h or less; Range: 40 - 90 km/h; Mean - 57 km/h;	**0%**	countries with rural speed limits of 70 km/h or less; Range: 80 - 110 km/h; Mean - 92 km/h;	**5%**	countries with motorway speed limits of 90 km/h or less; Range: 110 - 140 km/h; Mean - 120 km/h;

The enforcement distribution in the Europe and Central Asia Region is - Manual Enforcement: 29%; Manual and Automated Enforcement: 38%; Fully Automated Enforcement: 29%; No Enforcement: 5%. 35% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES						
0%	countries with narrowing measures	**100%**	countries with vertical deflections	**75%**	countries with horizontal deflections	**0%** countries with blocking or restriction of access

PILLAR 4 — SAFE VEHICLES [Ref: 1,6]

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

25,429 veh/100,000 people	mean vehicle population	**4%**	mean percentage of motorized 2/3 wheelers	**20%**	of countries have adopted the Global NCAP Standards	**0%**	Countries with strong import regulations	**10%**	countries with periodic inspection schemes

PILLAR 5 — SAFE ROAD USERS [Ref: 1,6]

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

90%	countries with a national seatbelt law	**100%**	countries with a national motor cycle helmet law	**100%**	countries with a national drink driving law. 80% BAC Based.	**90%**	countries with BAC Limit equal or lower than 0.05 g/dl.	**80%**	countries with legal minimum driving age at or above 18 yrs.

PILLAR 6 — POST CRASH CARE [Ref: 1,7]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

100%	countries with a national emergency care access number	**25%**	countries with a national trauma registry system	**54 - 74**	range of country health service coverage index - SDG Target 3.8 Mean - 66; Target - 100	**6.9%**	mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

ROAD SAFETY REGION PROFILE

LATIN AMERICA AND THE CARIBBEAN (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE LATIN AMERICA AND THE CARIBBEAN REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**600 million**
Government Reported Fatalities, 2016 :	**92,957**
WHO Estimated Fatalities, 2016 :	**107,057**
GBD Estimated Fatalities, 2016 :	**110,560**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**19.05**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.24**
Estimated Serious Injuries, 2016 :	**1,605,855**

Cost of Fatalities and Serious Injuries, 2016

$ 312 billion

Cost as % of region average GDP, 2016

6.0 % of GDP

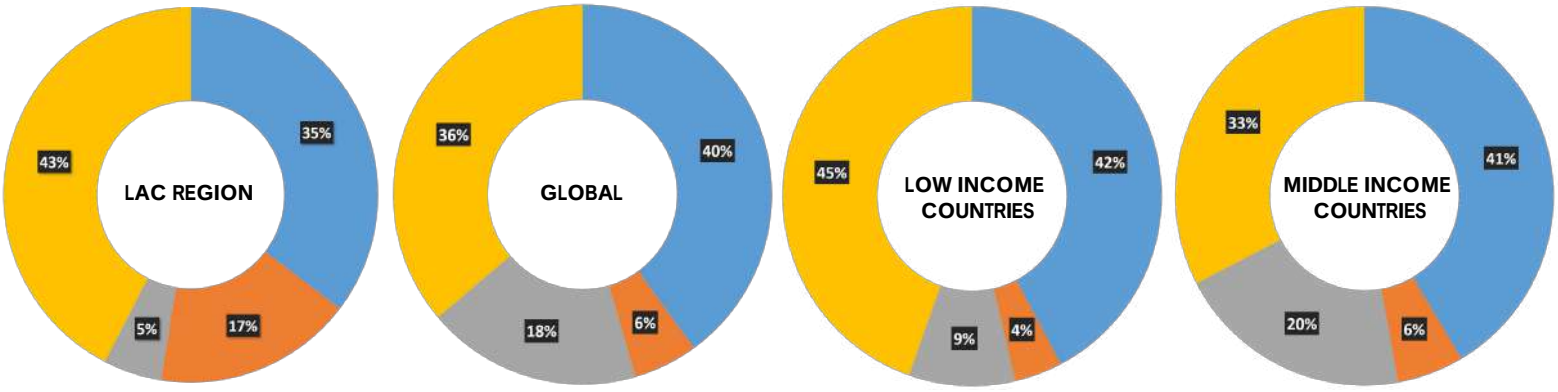
3 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

77% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

878 life years

affected due to disability from road crash injuries in a population of 100,000 people

COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY



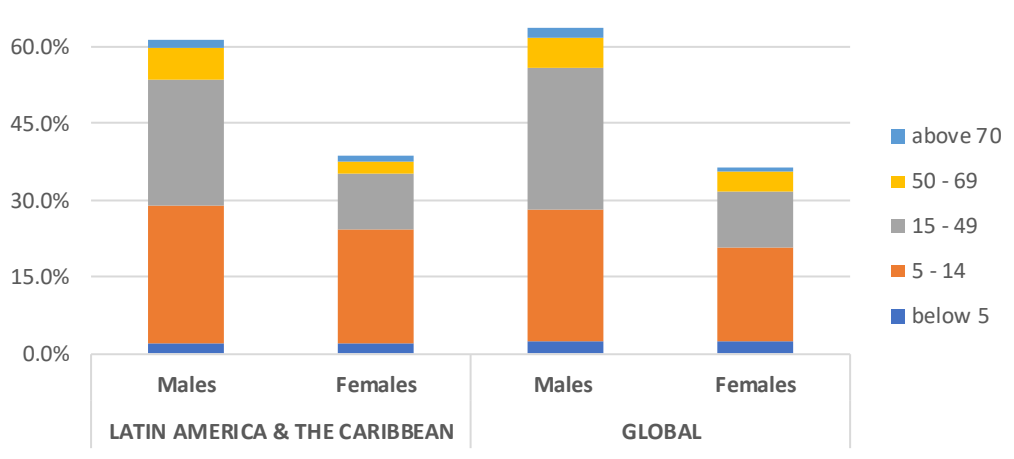
USER CATEGORIES: Pedestrians | Vehicle Occupants | Motorcyclist | Cyclist

POSITIONING OF THE LATIN AMERICA AND THE CARIBBEAN REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
LAC	**Latin America and the Caribbean**	**107,057**	**110,560**	**19.05**	**17.24**	**-1.4%**	**25,735.4**
ECA	Europe and Central Asia	60,024	57,535	12.53	11.02	-2.4%	25,428.5
SAR	South Asia	364,718	302,390	14.55	15.80	-4.5%	12,800.3
EAP	East Asia and Pacific	371,979	386,908	15.81	17.74	-2.4%	22,662.6
MENA	Middle East and North Africa	53,094	68,097	19.37	16.82	-5.8%	21,261.2
AFR	Africa	270,284	166,620	27.64	19.72	-4.9%	6,920.5

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE LAC REGION

VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The Latin America Region has a regional observatory, OISEVI, created in 2011 to foster broader cooperation regarding road safety. The observatory has a total of 18 member countries and is also supported by a regional road safety database, IRTAD LAC.

95% of countries report they have a lead agency, with 85% of them reporting to be fully funded.

90% of the agencies guide, implement and monitor road safety interventions

65% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

LATIN AMERICA AND THE CARIBBEAN (LAC)

SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

260 billion kilometres total vehicle occupant travel surveyed by iRAP

2.64 billion kilometres total pedestrian travel surveyed by iRAP

Vehicle Occupant Star Rating Results					
7.3%	4/5 Star	**46.9%**	3 Star	**45.8%**	1/2 Star

Pedestrian Star Rating Results					
4.2%	4/5 Star	**15.8%**	3 Star	**80.0%**	1/2 Star

Motorcyclist Star Rating Results					
5.0%	4/5 Star	**34.6%**	3 Star	**60.4%**	1/2 Star

Bicyclist Star Rating Results					
7.4%	4/5 Star	**31.7%**	3 Star	**60.9%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required	Annual Investment as a % of GDP (2019-2030)	Reduction in fatalities per year
	$ 95 billion	**0.20%**	**36,533**

Reduction in fatalities and serious injuries (FSI) over 20 years: **8 million**

Economic Benefit in Region: **$ 1.1 trillion**

Benefit Cost Ratio: **16**

SAFE SPEEDS [Ref: 1,6]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

80% countries with national speed limit laws

17% countries with urban speed limits of 30 km/h or less; Range: 24 - 80 km/h; Mean - 55 km/h;

43% countries with rural speed limits of 70 km/h or less; Range: 24 - 120 km/h; Mean - 82 km/h;

52% countries with motorway speed limits of 90 km/h or less; Range: 56 - 135 km/h; Mean - 104 km/h;

The enforcement distribution in the Latin America and the Caribbean Region is - Manual Enforcement: 70%; Manual and Automated Enforcement: 22%; Fully Automated Enforcement: 4%; No Enforcement: 4%. 35% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES

0% countries with narrowing measures

100% countries with vertical deflections

0% countries with horizontal deflections

0% countries with blocking or restriction of access

SAFE VEHICLES [Ref: 1,6]

PILLAR 4

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

25,735 veh/100,000 people mean vehicle population

22% mean percentage of motorized 2/3 wheelers

5% of countries have adopted the Global NCAP Standards

25% Countries with strong import regulations

0% countries with periodic inspection schemes

SAFE ROAD USERS [Ref: 1,6]

PILLAR 5

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

95% countries with a national seatbelt law

85% countries with a national motor cycle helmet law

100% countries with a national drink driving law. 80% BAC Based.

60% countries with BAC Limit equal or lower than 0.05 g/dl.

60% countries with legal minimum driving age at or above 18 yrs.

POST CRASH CARE [Ref: 1,7]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

65% countries with a national emergency care access number

35% countries with a national trauma registry system

57 - 78 range of country health service coverage index - SDG Target 3.8 Mean - 71; Target - 100

6.7% mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

ROAD SAFETY REGION PROFILE

MIDDLE EAST AND NORTH AFRICA (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE MIDDLE EAST AND NORTH AFRICA REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**305 million**
Government Reported Fatalities, 2016 :	**38,118**
WHO Estimated Fatalities, 2016 :	**53,094**
GBD Estimated Fatalities, 2016 :	**68,097**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**19.37**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.82**
Estimated Serious Injuries, 2016 :	**796,410**

Cost of Fatalities and Serious Injuries, 2016

$ 72 billion

Cost as % of region average GDP, 2016

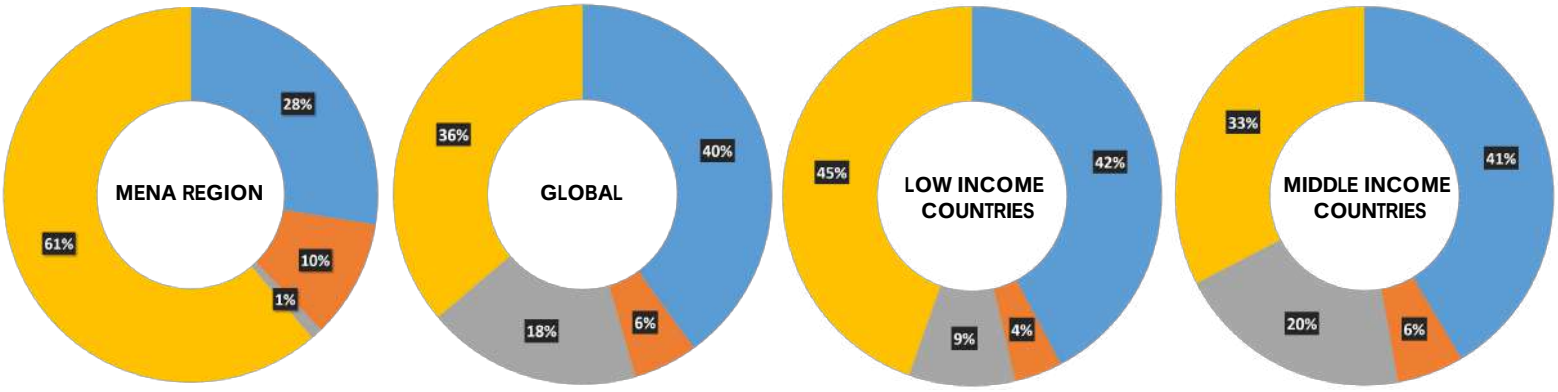
5.5 % of GDP

2 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

73% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

910 life years affected due to disability from road crash injuries in a population of 100,000 people

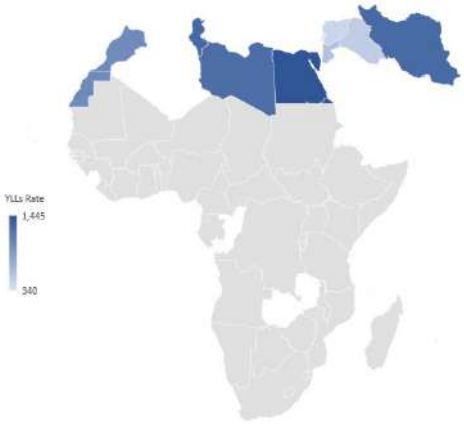
COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY



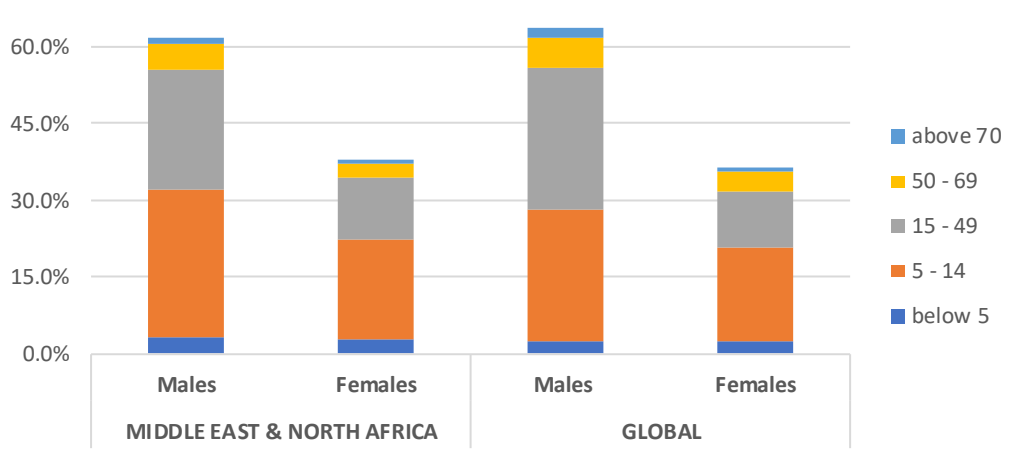
POSITIONING OF THE MIDDLE EAST AND NORTH AFRICA REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
MENA	**Middle East and North Africa**	**53,094**	**68,097**	**19.37**	**16.82**	**-5.8%**	**21,261.2**
ECA	Europe and Central Asia	60,024	57,535	12.53	11.02	-2.4%	25,428.5
SAR	South Asia	364,718	302,390	14.55	15.80	-4.5%	12,800.3
EAP	East Asia and Pacific	371,979	386,908	15.81	17.74	-2.4%	22,662.6
LAC	Latin America and the Caribbean	107,057	110,560	19.05	17.24	-1.4%	25,735.4
AFR	Africa	270,284	166,620	27.64	19.72	-4.9%	6,920.5

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE MENA REGION



VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The World Bank in partnership with the Fédération Internationale de l'Automobile (FIA), the International Transport Forum (ITF) are working to establish the African Road Safety Observatory; information on an observatory in the Middle East isn't available.

90% of countries report they have a lead agency, with 40% of them reporting to be fully funded.

80% of the agencies guide, implement and monitor road safety interventions

40% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

MIDDLE EAST AND NORTH AFRICA (MENA)

SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

6.7 billion kilometres total vehicle occupant travel surveyed by iRAP

17.46 million total pedestrian travel surveyed by iRAP

Vehicle Occupant Star Rating Results					
5.0%	4/5 Star	**35.0%**	3 Star	**59.0%**	1/2 Star

Pedestrian Star Rating Results					
0.0%	4/5 Star	**4.0%**	3 Star	**96.0%**	1/2 Star

Motorcyclist Star Rating Results					
0.0%	4/5 Star	**0.0%**	3 Star	**0.0%**	1/2 Star

Bicyclist Star Rating Results					
4.0%	4/5 Star	**4.0%**	3 Star	**94.0%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required **$ 20 billion**	Annual Investment as a % of GDP (2019-2030) **0.13%**	Reduction in fatalities per year **22,488**

Reduction in fatalities and serious injuries (FSI) over 20 years: **4 million** | Economic Benefit in Region: **$ 355 billion** | Benefit Cost Ratio: **29**

SAFE SPEEDS [Ref: 1,6]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

100% countries with national speed limit laws

10% countries with urban speed limits of 30 km/h or less; Range: 50 - 90 km/h; Mean - 59 km/h;

20% countries with rural speed limits of 70 km/h or less; Range: 70 - 120 km/h; Mean - 92 km/h;

10% countries with motorway speed limits of 90 km/h or less; Range: 100 - 120 km/h; Mean - 111 km/h;

The enforcement distribution in the Middle East and North Africa Region is - Manual Enforcement: 40%; Manual and Automated Enforcement: 60%; Fully Automated Enforcement: 0%; No Enforcement: 0%. 60% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES

0% countries with narrowing measures

100% countries with vertical deflections

0% countries with horizontal deflections

0% countries with blocking or restriction of access

SAFE VEHICLES [Ref: 1,6]

PILLAR 4

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

21,261 veh/100,000 people mean vehicle population

11% mean percentage of motorized 2/3 wheelers

5% of countries have adopted the Global NCAP Standards

40% Countries with strong import regulations

0% countries with periodic inspection schemes

SAFE ROAD USERS [Ref: 1,6]

PILLAR 5

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

100% countries with a national seatbelt law

100% countries with a national motor cycle helmet law

100% countries with a national drink driving law. 40% BAC Based.

75% countries with BAC Limit equal or lower than 0.05 g/dl.

100% countries with legal minimum driving age at or above 18 yrs.

POST CRASH CARE [Ref: 1,7]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

90% countries with a national emergency care access number

20% countries with a national trauma registry system

60 - 70 range of country health service coverage index - SDG Target 3.8 Mean - 65; Target - 100

6.0% mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

ROAD SAFETY REGION PROFILE

SOUTH ASIA (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE

SNAPSHOT OF THE SOUTH ASIA REGION (AS PER COUNTRY PROFILES):

Region Total Population, 2016 :	**1.8 billion**
Government Reported Fatalities, 2016 :	**164,312**
WHO Estimated Fatalities, 2016 :	**364,718**
GBD Estimated Fatalities, 2016 :	**302,390**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.55**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.80**
Estimated Serious Injuries, 2016 :	**5,470,770**

Cost of Fatalities and Serious Injuries, 2016

$ 202 billion

Cost as % of region average GDP, 2016

6.9 % of GDP

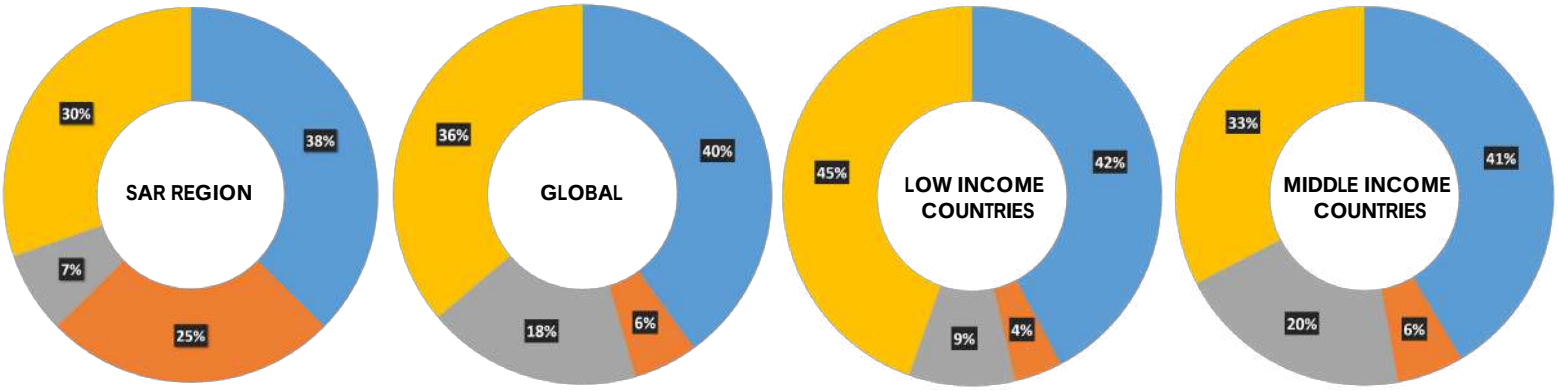
3 : 1 Ratio of Male to Female Road Crash Fatalities in the Region

74% Percentage of Road Crash Fatalities and Injuries in the economically productive age group (15 - 64 years)

863 life years

affected due to disability from road crash injuries in a population of 100,000 people

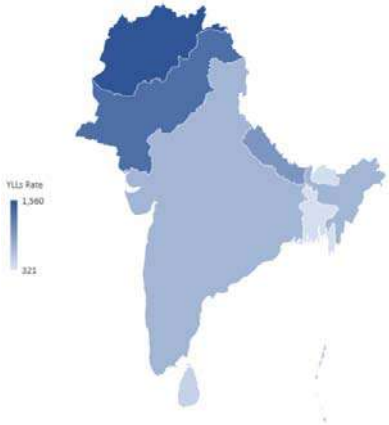
COMPARISON CHARTS OF ROAD CRASH FATALITIES BY USER CATEGORY



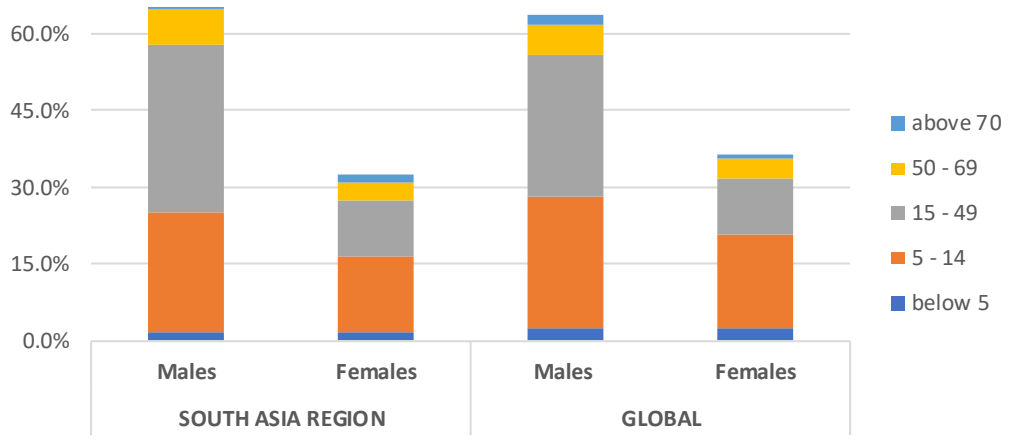
POSITIONING OF THE SOUTH ASIA REGION COMPARED TO OTHER WORLD BANK GROUP REGIONS:

Region		2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
SAR	**South Asia**	**364,718**	**302,390**	**14.55**	**15.80**	**-4.5%**	**12,800.3**
ECA	Europe and Central Asia	60,024	57,535	12.53	11.02	-2.4%	25,428.5
EAP	East Asia and Pacific	371,979	386,908	15.81	17.74	-2.4%	22,662.6
LAC	Latin America and the Caribbean	107,057	110,560	19.05	17.24	-1.4%	25,735.4
MENA	Middle East and North Africa	53,094	68,097	19.37	16.82	-5.8%	21,261.2
AFR	Africa	270,284	166,620	27.64	19.72	-4.9%	6,920.5

YEARS OF LIFE LOST PER 100,000 POPULATION IN THE SAR REGION



VULNERABLE ROAD USERS - FATALITIES BY AGE AND SEX (REGIONAL AND GLOBAL COMPARISON)



ROAD SAFETY MANAGEMENT

PILLAR 1

Regional road safety observatories are a key driver in successful implementation of road safety strategies in the region's countries. The World Bank in partnership with the Asian Development Bank (ADB), the International Transport Forum (ITF) and Fédération Internationale de l'Automobile (FIA) is in the process of developing a framework for the Asian Road Safety Observatory.

85% of countries report they have a lead agency, with 70% of them reporting to be fully funded.

85% of the agencies guide, implement and monitor road safety interventions

50% of the agencies have a road safety target.

ROAD SAFETY REGION PROFILE

SOUTH ASIA (SAR)

PILLAR 2 — SAFE ROADS AND ROADSIDES: Infrastructure Assessment and Business Case for Safer Roads (iRAP) [Ref: 4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. Road Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

		Vehicle Occupant Star Rating Results						Pedestrian Star Rating Results					
962.3 million	total vehicle occupant travel surveyed by iRAP	**1.0%**	4/5 Star	**8.0%**	3 Star	**92.0%**	1/2 Star	**0.0%**	4/5 Star	**4.5%**	3 Star	**95.5%**	1/2 Star
		Motorcyclist Star Rating Results						Bicyclist Star Rating Results					
122.3 million	total pedestrian travel surveyed by iRAP	**0.0%**	4/5 Star	**3.0%**	3 Star	**97.0%**	1/2 Star	**0.0%**	4/5 Star	**3.0%**	3 Star	**97.0%**	1/2 Star

Business Case for Road Safety	Infrastructure and Speed Mgmt. Investment required	Annual Investment as a % of GDP (2019-2030)	Reduction in fatalities per year
	$ 105 billion	**0.22%**	**108,436**

Reduction in fatalities and serious injuries (FSI) over 20 years: **23 million** | Economic Benefit in Region: **$ 682 billion** | Benefit Cost Ratio: **38**

PILLAR 3 — SAFE SPEEDS [Ref: 1,6]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20% reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

100% countries with national speed limit laws

25% countries with urban speed limits of 30 km/h or less; Range: 30 - 112 km/h; Mean - 68 km/h;

38% countries with rural speed limits of 70 km/h or less; Range: 30 - 112 km/h; Mean - 80 km/h;

50% countries with motorway speed limits of 90 km/h or less; Range: 50 - 130 km/h; Mean - 95 km/h;

The enforcement distribution in the South Asia Region is - Manual Enforcement: 88%; Manual and Automated Enforcement: 0%; Fully Automated Enforcement: 0%; No Enforcement: 13%. 25% of local authorities can modify speeds in their jurisdiction.

SPEED CALMING MEASURES

0% countries with narrowing measures

100% countries with vertical deflections

0% countries with horizontal deflections

0% countries with blocking or restriction of access

PILLAR 4 — SAFE VEHICLES [Ref: 1,6]

Regional bodies should supplement country efforts in deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies to reduce road crash fatalities.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

12,800 veh/100,000 people mean vehicle population

57% mean percentage of motorized 2/3 wheelers

10% of countries have adopted the Global NCAP Standards

25% Countries with strong import regulations

0% countries with periodic inspection schemes

PILLAR 5 — SAFE ROAD USERS [Ref: 1,6]

The key behavioral risk factors for road crash injuries are drink driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

60% countries with a national seatbelt law

85% countries with a national motor cycle helmet law

85% countries with a national drink driving law. 40% BAC Based.

30% countries with BAC Limit equal or lower than 0.05 g/dl.

85% countries with legal minimum driving age at or above 18 yrs.

PILLAR 6 — POST CRASH CARE [Ref: 1,7]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

35% countries with a national emergency care access number

0% countries with a national trauma registry system

34 - 62 range of country health service coverage index - SDG Target 3.8 Mean - 50; Target - 100

5.4% mean current expenditure on healthcare (% GDP)

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. Various Media Sources; 7. 2018 World Health Statistics, WHO.

11. COUNTRY ROAD SAFETY PROFILES

The country road safety profiles aggregate data from various sources to provide an in-depth analysis of all of a country's six Safe System pillars according to the metrics as listed in the guideline (Chapter 8).

The country profiles are arranged (alphabetically) as follows:

ROAD SAFETY COUNTRY PROFILE — Afghanistan

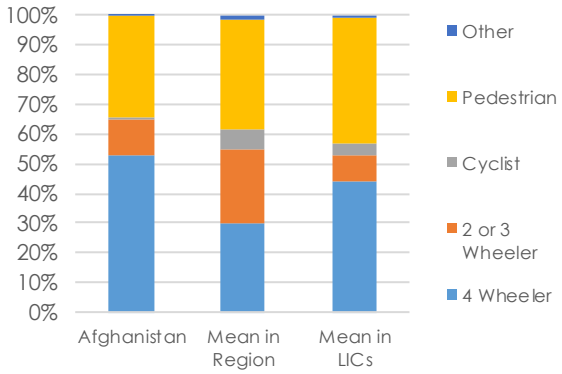
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**34,656,032**
Country Reported Fatalities, 2016 :	**1,565**
WHO Estimated Fatalities, 2016 :	**5,230**
GBD Estimated Fatalities, 2016 :	**8,507**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**26.77**
Estimated Serious Injuries, 2016 :	**78,450**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 955.71 million**
Cost as % of country GDP, 2016 :	**5.0%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,636 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Afghanistan	5,230	8,507	15.1	26.8	-4.8%	1,891
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

AFGHANISTAN HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR AFGHANISTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Afghanistan:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 547.95 million**
Annual Investment as a % of GDP (2019-2030):	**0.20%**
Reduction in fatalities per year:	**2,090**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**460,000**
Economic Benefit: **$ 4.25 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Afghanistan

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	90 km/h	90 km/h	None

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 60 km/h	+ 20 km/h	Appropriate	
	17 times lower	3 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN AFGHANISTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
655,357	10.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✗	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	34	10%

Afghanistan has several emergency numbers. These are 119 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

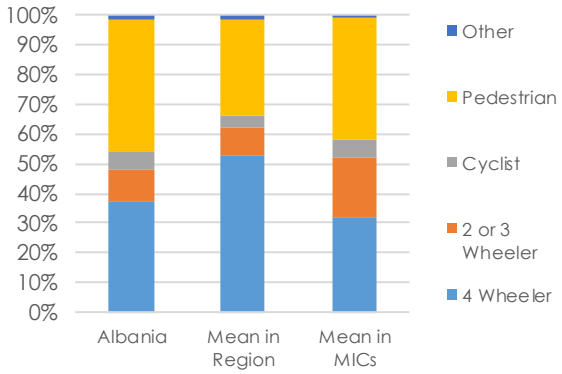
ROAD SAFETY COUNTRY PROFILE — Albania — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,926,348**
Country Reported Fatalities, 2016 :	**269**
WHO Estimated Fatalities, 2016 :	**399**
GBD Estimated Fatalities, 2016 :	**251**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.04**
Estimated Serious Injuries, 2016 :	**5,985**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 548.17 million**
Cost as % of country GDP, 2016 :	**4.6%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

645 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Albania	399	251	13.6	9.0	-1.6%	19,243
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Albania has a lead agency present, Inter-ministerial Committee for Road Safety, Ministry of Transport and Infrastructure, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2009 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Albania

Surveyed Road Statistics: **93%** with no formal footpaths; **98%** with no pedestrian crossings; **73%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 900,707,183 km; Pedestrian Travel: 58,608,962 km; Motorcyclist Travel: 5,815,545 km; Cyclist Travel: 27,856,923 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 585 million**
Annual Investment as a % of GDP (2019-2030):	**0.35%**
Reduction in fatalities per year:	**176**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**40,000**

Economic Benefit: **$ 2.88 billion** B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Albania

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	40 km/h URBAN ROADS	80 km/h RURAL ROADS	110 km/h MOTORWAYS	Manual and Automated SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 10 km/h	+ 10 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	2 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ALBANIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✓ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

563,106 TOTAL REGISTERED VEHICLES AS OF 2016	6.4% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✗ No IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✓ Yes IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✓ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	≤0.05 GENERAL POPULATION	≤0.05 YOUNG DRIVERS	≤0.05 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	Approx. 5.2% % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Single Number NATIONAL EMERGENCY CARE ACCESS NUMBER	Subnational TRAUMA REGISTRY SYSTEM

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	62	EXPENDITURE ON HEALTHCARE AS % OF GDP	7%

Albania has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Angola

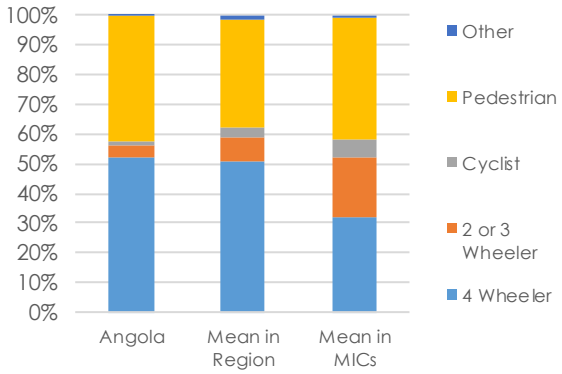
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**28,813,464**
Country Reported Fatalities, 2016 :	**2,845**
WHO Estimated Fatalities, 2016 :	**6,797**
GBD Estimated Fatalities, 2016 :	**6,769**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.61**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**24.82**
Estimated Serious Injuries, 2016 :	**101,955**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 7.93 billion**
Cost as % of country GDP, 2016 :	**7.8%**

FATALITIES BY USER COMPARISON CHART



64% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,670 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Angola	6,797	6,769	23.6	24.8	-15.9%	2,708
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Angola has a lead agency present, National Council of Road Traffic Planning (CNVOT), which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ANGOLA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Angola:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.67 billion**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**2,125**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**470,000**
Economic Benefit: **$ 33.71 billion**	B/C Ratio: **20**

ROAD SAFETY COUNTRY PROFILE

Angola

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ANGOLA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
581,530	17.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 3 Yrs	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.06	≤ 0.06	≤ 0.06	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	36	3%

Angola has several emergency numbers. These are 113 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Argentina

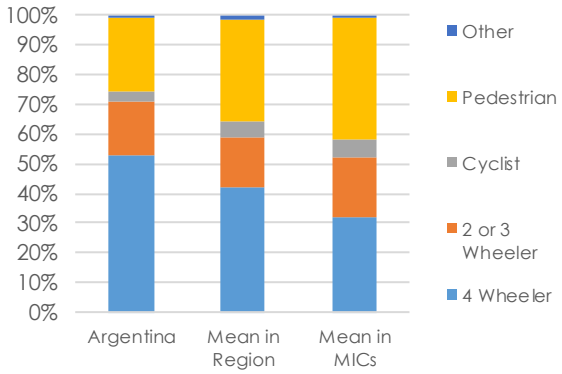
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**43,847,432**
Country Reported Fatalities, 2016 :	**5,530**
WHO Estimated Fatalities, 2016 :	**6,119**
GBD Estimated Fatalities, 2016 :	**6,508**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.00**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**14.85**
Estimated Serious Injuries, 2016 :	**91,785**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 25.75 billion**
Cost as % of country GDP, 2016 :	**4.6%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

795 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Argentina	6,119	6,508	14.0	14.8	-7.7%	49,338
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Argentina has a lead agency present, National Road Safety Agency (ANSV), Ministry of Transportation, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 30% with a timeline of 2016 - 2026.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ARGENTINA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Argentina:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 7.52 billion**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**2,070**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**460,000**
Economic Benefit: **$ 98.86 billion**	B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Argentina

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	130 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ARGENTINA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
21,633,587	32.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✗	✗	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	0.00	✓	Approx. 17.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	76	8%

Argentina has several emergency numbers. These are 911 (General); 101 (Police); 107 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Armenia

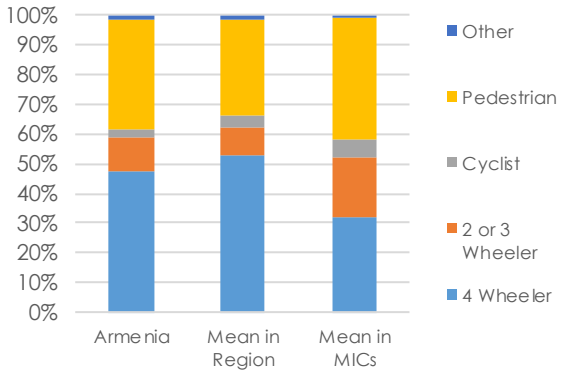
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,924,816**
Country Reported Fatalities, 2016 :	**267**
WHO Estimated Fatalities, 2016 :	**499**
GBD Estimated Fatalities, 2016 :	**248**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**17.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**8.18**
Estimated Serious Injuries, 2016 :	**7,485**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 598.26 million**
Cost as % of country GDP, 2016 :	**5.7%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

479 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Armenia	499	248	17.1	8.2	1.4%	0
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Armenia has a lead agency present, National Road Safety Council, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ARMENIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Armenia:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 151.94 million**
Annual Investment as a % of GDP (2019-2030):	**0.11%**
Reduction in fatalities per year:	**218**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 2.8 billion**	B/C Ratio: **18**

ROAD SAFETY COUNTRY PROFILE

Armenia

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	90 km/h	110 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 60 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	17 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ARMENIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
Not Known	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ Yes	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.04	≤0.04	≤0.04	✓	Approx. 1.9%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	67	10%

Armenia has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Azerbaijan

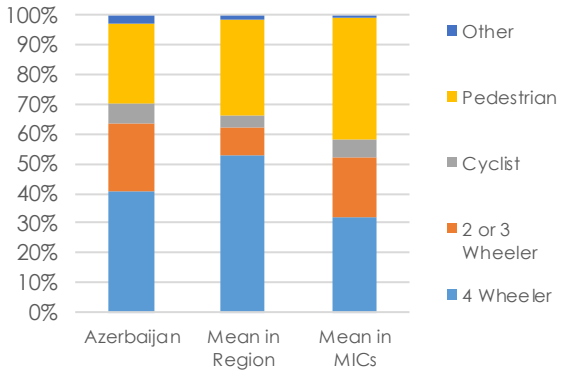
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**9,725,376**
Country Reported Fatalities, 2016 :	**759**
WHO Estimated Fatalities, 2016 :	**845**
GBD Estimated Fatalities, 2016 :	**639**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**8.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**6.32**
Estimated Serious Injuries, 2016 :	**12,675**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.09 billion**
Cost as % of country GDP, 2016 :	**2.9%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

416 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Azerbaijan	845	639	8.7	6.3	-5.2%	13,681
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Azerbaijan has a lead agency present, No Lead Agency, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR AZERBAIJAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Azerbaijan:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.72 billion**
Annual Investment as a % of GDP (2019-2030):	**0.33%**
Reduction in fatalities per year:	**347**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**80,000**

Economic Benefit: **$ 5.14 billion** B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Azerbaijan

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN AZERBAIJAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,330,551	0.2%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ Yes	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✗	✗	✗	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 15.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	64	7%

Azerbaijan has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Bangladesh

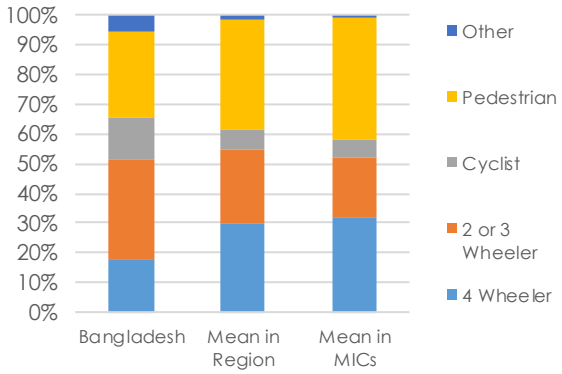
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**162,951,552**
Country Reported Fatalities, 2016 :	**2,376**
WHO Estimated Fatalities, 2016 :	**24,954**
GBD Estimated Fatalities, 2016 :	**11,825**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.61**
Estimated Serious Injuries, 2016 :	**374,310**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 11.27 billion**
Cost as % of country GDP, 2016 :	**5.1%**

FATALITIES BY USER COMPARISON CHART



67% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

5 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

417 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Bangladesh	24,954	11,825	15.3	7.6	-4.4%	1,767
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Bangladesh has a lead agency present, National Road Safety Council (NRSC), Ministry of Road Transport and Bridges, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BANGLADESH IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Bangladesh:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 276.5 million**
Annual Investment as a % of GDP (2019-2030):	**0.01%**
Reduction in fatalities per year:	**9,411**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,070,000**
Economic Benefit: **$ 52 billion**	B/C Ratio: **188**

ROAD SAFETY COUNTRY PROFILE

Bangladesh

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	112 km/h	112 km/h	112 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 82 km/h	+ 42 km/h	+ 22 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	31 times lower	7 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BANGLADESH:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,879,708	68.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 4 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	46	2%

Bangladesh has a single emergency number. This is 999.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Belarus

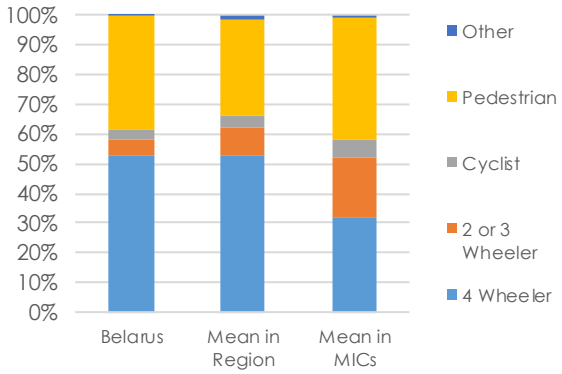
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**9,480,042**
Country Reported Fatalities, 2016 :	**588**
WHO Estimated Fatalities, 2016 :	**841**
GBD Estimated Fatalities, 2016 :	**995**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**8.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.46**
Estimated Serious Injuries, 2016 :	**12,615**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.41 billion**
Cost as % of country GDP, 2016 :	**2.9%**

FATALITIES BY USER COMPARISON CHART



78% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

653 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Belarus	841	995	8.9	10.5	-19.1%	44,222
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Belarus has a lead agency present, The Permanent Commission of the Ensuring Traffic Safety under the Council of Ministers of the Republicof Belarus, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country only has a fatal road safety target, to reduce fatalities by 20% with a timeline of 2016 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BELARUS IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Belarus:

Audit/Star Rating is not Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.81 billion**
Annual Investment as a % of GDP (2019-2030):	**0.43%**
Reduction in fatalities per year:	**472**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**100,000**
Economic Benefit: **$ 9.04 billion**	B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Belarus

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BELARUS:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
4,192,291	9.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.03	<0.03	<0.03	✓	Approx. 14.3%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	74	6%

Belarus has a single emergency number. This is 102.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Belize

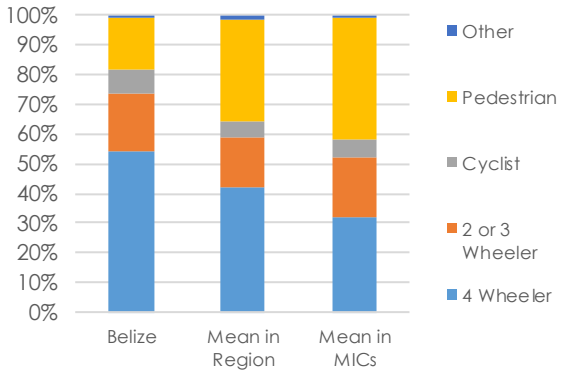
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**366,954**
Country Reported Fatalities, 2016 :	**101**
WHO Estimated Fatalities, 2016 :	**104**
GBD Estimated Fatalities, 2016 :	**71**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**28.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.31**
Estimated Serious Injuries, 2016 :	**1,560**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 170.25 million**
Cost as % of country GDP, 2016 :	**9.4%**

FATALITIES BY USER COMPARISON CHART



86% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,007 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Belize	104	71	28.3	18.3	2.6%	15,286
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Belize has a lead agency present, National Road Safety Committee, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 100% with a timeline of 2016 - 2030.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BELIZE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Belize:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 93.28 million**
Annual Investment as a % of GDP (2019-2030):	**0.41%**
Reduction in fatalities per year:	**30**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 474.5 million**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Belize

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	88 km/h	88 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 10 km/h	+ 18 km/h	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	3 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BELIZE:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
56,094	4.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	61	6%

Belize has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

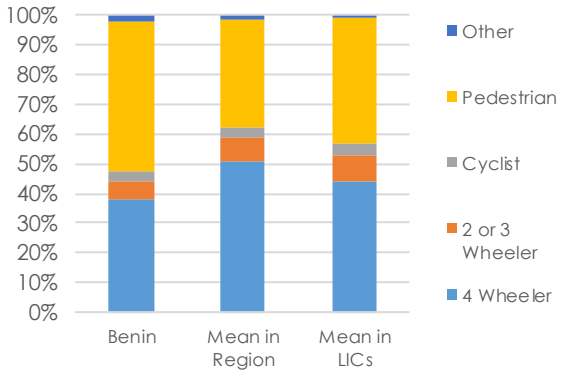
ROAD SAFETY COUNTRY PROFILE — Benin — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**10,872,298**
Country Reported Fatalities, 2016 :	**637**
WHO Estimated Fatalities, 2016 :	**2,986**
GBD Estimated Fatalities, 2016 :	**3,098**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**27.55**
Estimated Serious Injuries, 2016 :	**44,790**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 782.89 million**
Cost as % of country GDP, 2016 :	**9.1%**

FATALITIES BY USER COMPARISON CHART



58% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,546 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Benin	2,986	3,098	27.5	27.5	-8.3%	4,321
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Benin has a lead agency present, National Centre for Road Safety (CNSR), Ministry of Infrastructure and Transport, which isn't funded in the national budget. The functions of the agency include coordination and monitoring and evaluation of road safety strategies without legislation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BENIN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Benin:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 208 million**
Annual Investment as a % of GDP (2019-2030):	**0.16%**
Reduction in fatalities per year:	**1,260**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**280,000**
Economic Benefit: **$ 3.28 billion**	B/C Ratio: **18**

ROAD SAFETY COUNTRY PROFILE

Benin

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	None
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BENIN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
469,761	41.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	41	4%

Benin has several emergency numbers. These are 117 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Bhutan

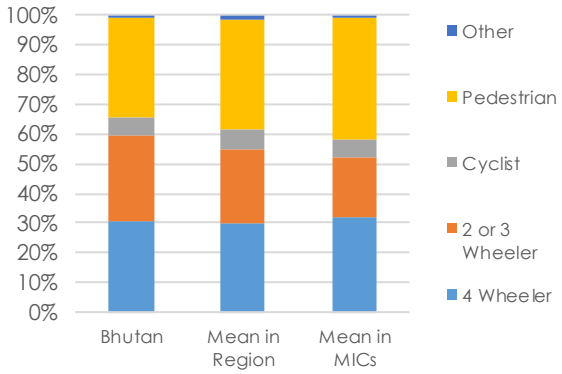
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**797,765**
Country Reported Fatalities, 2016 :	**125**
WHO Estimated Fatalities, 2016 :	**139**
GBD Estimated Fatalities, 2016 :	**71**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**17.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.51**
Estimated Serious Injuries, 2016 :	**2,085**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 128.59 million**
Cost as % of country GDP, 2016 :	**5.8%**

FATALITIES BY USER COMPARISON CHART



79% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

456 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Bhutan	139	71	17.4	7.5	-5.9%	10,903
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Bhutan has a lead agency present, Road Safety and Transport Authority (RSTA), Ministry of Information and Communications (MoIC), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities to less than 8 fatalities per 10,000 vehicles annually with a timeline of 2013 - 2018.

PILLAR 2

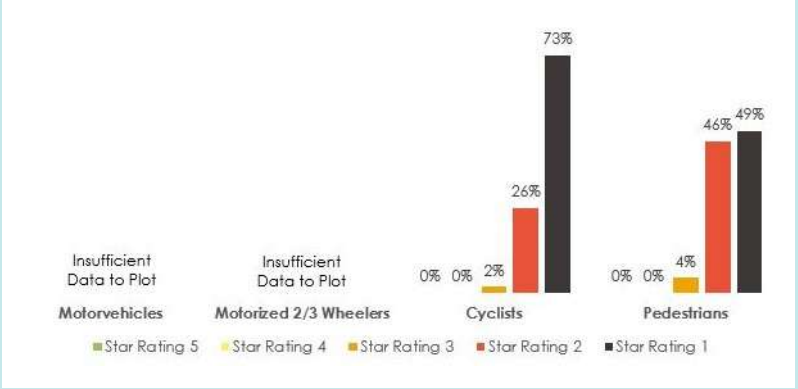
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Bhutan

Surveyed Road Statistics: **100%** with no formal footpaths; **100%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 0 km; Pedestrian Travel: 11,953,568 km; Motorcyclist Travel: 0 km; Cyclist Travel: 4,373,430 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 206.27 million**
Annual Investment as a % of GDP (2019-2030):	**0.65%**
Reduction in fatalities per year:	**46**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 488.5 million**	B/C Ratio: **2**

ROAD SAFETY COUNTRY PROFILE

Bhutan

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	30 km/h	50 km/h	50 km/h	Manual
Difference with Recommended Safe Systems Speeds	Appropriate Low Risk	Appropriate Low Risk	Appropriate Low Risk	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BHUTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
86,981	11.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.08	0.00	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	59	3%

Bhutan has several emergency numbers. These are 113 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Bolivia

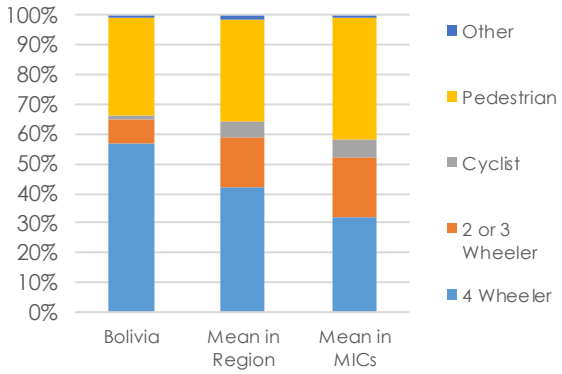
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**10,887,882**
Country Reported Fatalities, 2016 :	**1,259**
WHO Estimated Fatalities, 2016 :	**1,687**
GBD Estimated Fatalities, 2016 :	**2,120**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.70**
Estimated Serious Injuries, 2016 :	**25,305**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.75 billion**
Cost as % of country GDP, 2016 :	**5.2%**

FATALITIES BY USER COMPARISON CHART



66% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

912 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Bolivia	1,687	2,120	15.5	18.7	-4.8%	15,715
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Bolivia has a lead agency present, Vice Ministry of Public Safety, Ministry of Government, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 10% with a timeline of 2014 - 2018.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BOLIVIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Bolivia:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.57 billion**
Annual Investment as a % of GDP (2019-2030):	**0.32%**
Reduction in fatalities per year:	**990**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**220,000**
Economic Benefit: **$ 12.03 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Bolivia

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	80 km/h	80 km/h	Manual

Difference with Recommended Safe Systems Speeds				
	+ 10 km/h	+ 10 km/h	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	2 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BOLIVIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,711,005	22.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.05	✓	Approx. 6.4%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Subnational	60	7%

Bolivia has several emergency numbers. These are 911 (General); 110 (Police); 118 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Bosnia and Herzegovina

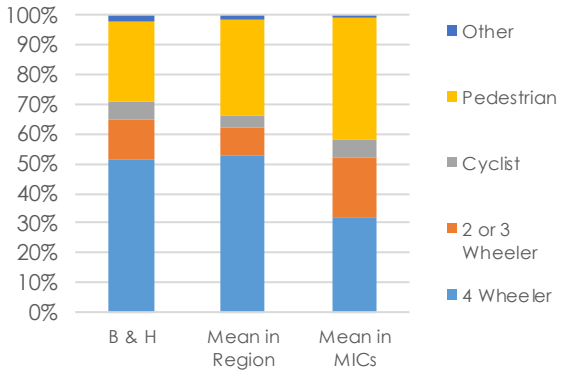
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**3,516,816**
Country Reported Fatalities, 2016 :	**318**
WHO Estimated Fatalities, 2016 :	**552**
GBD Estimated Fatalities, 2016 :	**276**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.99**
Estimated Serious Injuries, 2016 :	**8,280**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 882.58 million**
Cost as % of country GDP, 2016 :	**5.2%**

FATALITIES BY USER COMPARISON CHART



65% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

555 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Bosnia and Herzegovina	552	276	15.7	8.0	4.1%	27,816
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Bosnia and Herzegovina has a lead agency present, Agency for Traffic Safety of the Republic of Srpska, Ministry of Communications and Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2013 - 2022.

PILLAR 2

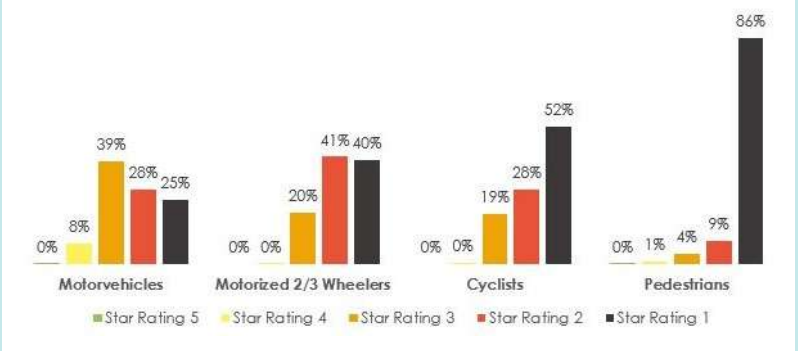
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Bosnia and Herzegovina

Surveyed Road Statistics: **74%** with no formal footpaths; **96%** with no pedestrian crossings; **71%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 996,914,080 km; Pedestrian Travel: 121,381,654 km; Motorcyclist Travel: 61,759,019 km; Cyclist Travel: 11,978,328 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 745.1 million**
Annual Investment as a % of GDP (2019-2030):	**0.33%**
Reduction in fatalities per year:	**249**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 4.01 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Bosnia and Herzegovina

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	130 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BOSNIA AND HERZEGOVINA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
978,229	1.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.03	0.00	0.00	✓	Approx. 20.8%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	57	9%

Bosnia and Herzegovina has several emergency numbers. These are 112 (General); 122 (Police); 124 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Botswana

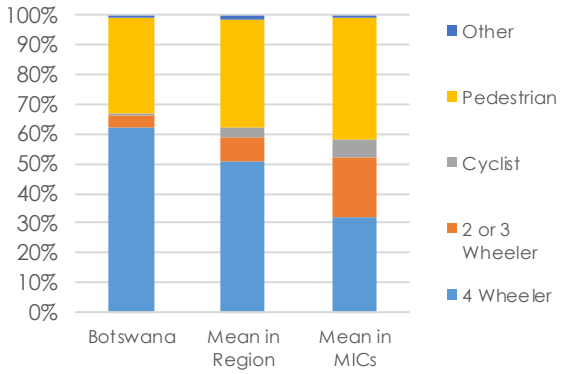
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,250,260**
Country Reported Fatalities, 2016 :	**450**
WHO Estimated Fatalities, 2016 :	**535**
GBD Estimated Fatalities, 2016 :	**299**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.80**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.33**
Estimated Serious Injuries, 2016 :	**8,025**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.24 billion**
Cost as % of country GDP, 2016 :	**7.9%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

787 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Botswana	535	299	23.8	13.3	-5.1%	29,031
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Botswana has a lead agency present, National Road Safety Committee (NRSC), which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BOTSWANA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Botswana:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 582.27 million**
Annual Investment as a % of GDP (2019-2030):	**0.28%**
Reduction in fatalities per year:	**176**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**40,000**
Economic Benefit: **$ 4.65 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Botswana

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	80 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 10 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	2 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BOTSWANA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
653,274	0.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.025	✓	Approx. 3.8%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	60	5%

Botswana has several emergency numbers. These are 911 (General); 999 (Police); 997 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Brazil

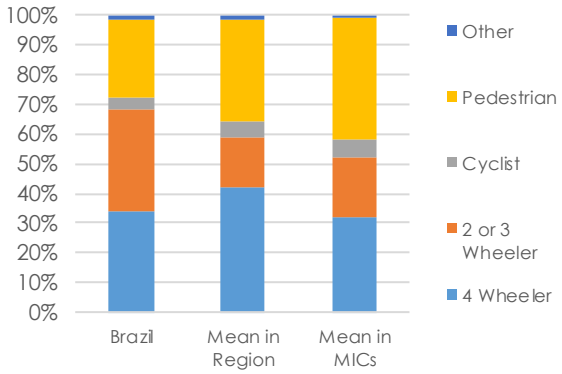
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**207,652,864**
Country Reported Fatalities, 2016 :	**38,651**
WHO Estimated Fatalities, 2016 :	**41,007**
GBD Estimated Fatalities, 2016 :	**46,009**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**19.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.90**
Estimated Serious Injuries, 2016 :	**615,105**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 117.95 billion**
Cost as % of country GDP, 2016 :	**6.6%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,140 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Brazil	41,007	46,009	19.7	21.9	-7.2%	45,204
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Brazil has a lead agency present, National Traffic Department (DENATRAN), Ministry of Cities, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Brazil

Surveyed Road Statistics: **68%** with no formal footpaths; **69%** with no pedestrian crossings; **75%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 28.4 billion km; Pedestrian Travel: 213,928,872 km; Motorcyclist Travel: 1.3 billion km; Cyclist Travel: 46,299,885 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 51.38 billion**
Annual Investment as a % of GDP (2019-2030):	**0.19%**
Reduction in fatalities per year:	**17,292**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**3,800,000**

Economic Benefit: **$ 605.4 billion** B/C Ratio: **12**

ROAD SAFETY COUNTRY PROFILE

Brazil

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	80 km/h	60 km/h	110 km/h	Automated

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 50 km/h	Appropriate	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	13 times lower	Low Risk	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BRAZIL:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

93,867,016	27.0%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✓	✗	✗	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 7 yrs	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	0.00	0.00	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	77	12%

Brazil has a single emergency number. This is 190.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Bulgaria

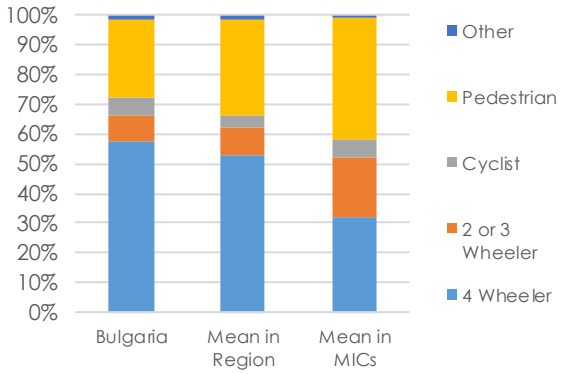
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**7,131,494**
Country Reported Fatalities, 2016 :	**708**
WHO Estimated Fatalities, 2016 :	**730**
GBD Estimated Fatalities, 2016 :	**730**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**10.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.28**
Estimated Serious Injuries, 2016 :	**10,950**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.81 billion**
Cost as % of country GDP, 2016 :	**3.4%**

FATALITIES BY USER COMPARISON CHART



70% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

707 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Bulgaria	730	730	10.2	10.3	-3.7%	56,534
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Bulgaria has a lead agency present, State-public Consultative Commission on the Problems of Road Safety, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Bulgaria

Surveyed Road Statistics: **90%** with no formal footpaths; **98%** with no pedestrian crossings; **90%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 3.3 billion km; Pedestrian Travel: 27,669,738 km; Motorcyclist Travel: 103,289,050 km; Cyclist Travel: 9,596,580 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 634.14 million**
Annual Investment as a % of GDP (2019-2030):	**0.09%**
Reduction in fatalities per year:	**221**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 6.42 billion**	B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Bulgaria

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	140 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 50 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	5 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BULGARIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✓ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
4,031,748	4.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✓	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.05	✓	Approx. 0.9%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	64	8%

Bulgaria has several emergency numbers. These are 112 (General); 166 (Police); 150 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

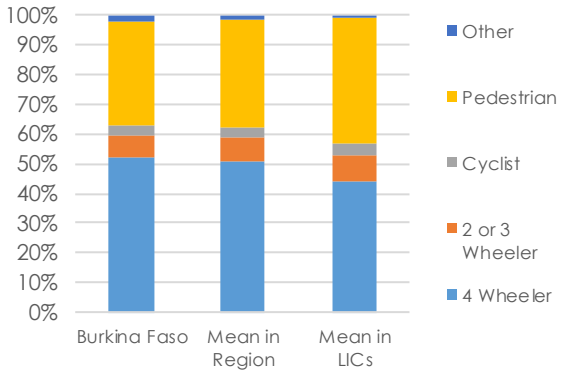
ROAD SAFETY COUNTRY PROFILE — Burkina Flag — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**18,646,432**
Country Reported Fatalities, 2016 :	**878**
WHO Estimated Fatalities, 2016 :	**5,686**
GBD Estimated Fatalities, 2016 :	**3,464**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**30.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.93**
Estimated Serious Injuries, 2016 :	**85,290**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.1 billion**
Cost as % of country GDP, 2016 :	**10.1%**

FATALITIES BY USER COMPARISON CHART



54% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

969 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Burkina Faso	5,686	3,464	30.5	16.9	-0.9%	11,296
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Burkina Faso has a lead agency present, National Oce for Road Safety (ONASER), Ministry of Transport, Urban Mobility and Road Safety (MTMUSR), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 25% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BURKINA FASO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Burkina Faso:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 198.54 million**
Annual Investment as a % of GDP (2019-2030):	**0.11%**
Reduction in fatalities per year:	**2,239**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**490,000**
Economic Benefit: **$ 5.62 billion**	B/C Ratio: **28**

ROAD SAFETY COUNTRY PROFILE

Burkina Faso

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BURKINA FASO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,106,292	84.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 5 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.02	≤0.02	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	39	7%

Burkina Faso has several emergency numbers. These are 17 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

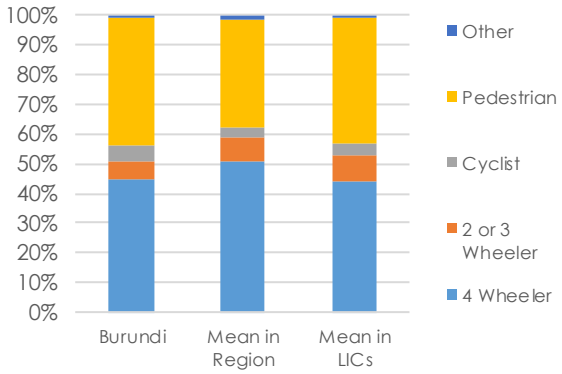
ROAD SAFETY COUNTRY PROFILE — Burundi — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**10,524,117**
Country Reported Fatalities, 2016 :	**112**
WHO Estimated Fatalities, 2016 :	**3,651**
GBD Estimated Fatalities, 2016 :	**2,228**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**34.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.12**
Estimated Serious Injuries, 2016 :	**54,765**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 341.34 million**
Cost as % of country GDP, 2016 :	**11.5%**

FATALITIES BY USER COMPARISON CHART



65% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,176 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Burundi	3,651	2,228	34.7	21.1	-4.5%	1,057
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Burundi has a lead agency present, Traffic and Road Safety Police, Ministry of Public Security, which is funded in the national budget. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR BURUNDI IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Burundi:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Burundi

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	100 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 30 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	4 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN BURUNDI:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
111,236	25.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	43	6%

Burundi has several emergency numbers. These are 117 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Cambodia

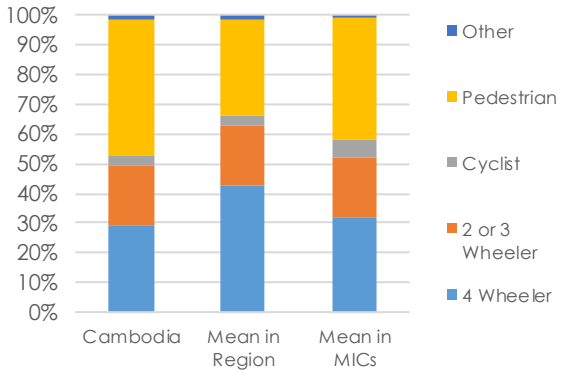
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**15,762,370**
Country Reported Fatalities, 2016 :	**1,852**
WHO Estimated Fatalities, 2016 :	**2,803**
GBD Estimated Fatalities, 2016 :	**3,995**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**17.80**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**25.13**
Estimated Serious Injuries, 2016 :	**42,045**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.18 billion**
Cost as % of country GDP, 2016 :	**5.9%**

FATALITIES BY USER COMPARISON CHART



78% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,332 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Cambodia	2,803	3,995	17.8	25.1	-3.6%	23,802
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Cambodia has a lead agency present, National Road Safety Committee (NRSC), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CAMBODIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Cambodia:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 581.22 million**
Annual Investment as a % of GDP (2019-2030):	**0.20%**
Reduction in fatalities per year:	**1,163**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**260,000**
Economic Benefit: **$ 5.79 billion**	B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Cambodia

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	90 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 10 km/h	+ 20 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	3 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CAMBODIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
3,751,715	72.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.05	✓	Approx. 13.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	55	6%

Cambodia has several emergency numbers. These are 117 (Police); 118 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

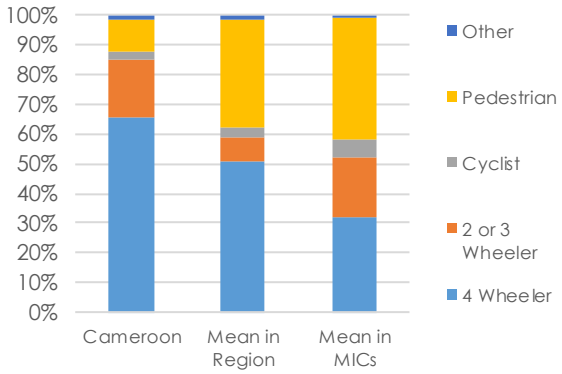
ROAD SAFETY COUNTRY PROFILE — Cameroon — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**23,439,188**
Country Reported Fatalities, 2016 :	**1,879**
WHO Estimated Fatalities, 2016 :	**7,066**
GBD Estimated Fatalities, 2016 :	**4,120**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**30.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.27**
Estimated Serious Injuries, 2016 :	**105,990**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.27 billion**
Cost as % of country GDP, 2016 :	**10.0%**

FATALITIES BY USER COMPARISON CHART



64% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

848 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Cameroon	7,066	4,120	30.1	15.3	-8.3%	3,235
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Cameroon does not have a lead agency. However Cameroon has a road safety strategy which is partially funded. The functions of the agency are not defined. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CAMEROON IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Cameroon:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1 billion**
Annual Investment as a % of GDP (2019-2030):	**0.25%**
Reduction in fatalities per year:	**2,454**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**540,000**

Economic Benefit: **$ 10.86 billion** B/C Ratio: **11**

ROAD SAFETY COUNTRY PROFILE

Cameroon

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CAMEROON:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
758,145	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 7 Yrs	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✗ 16 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	44	5%

Cameroon has several emergency numbers. These are 112 (General); 117 (Police); 119 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Cape Verde

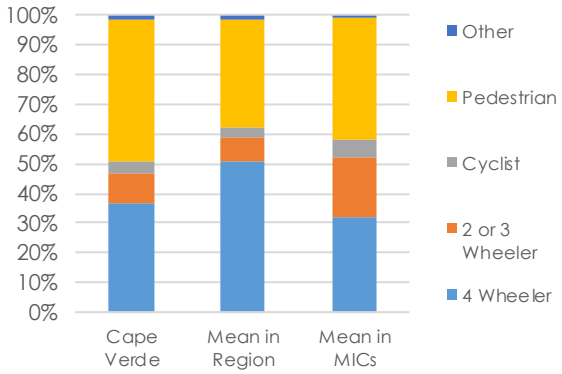
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**539,560**
Country Reported Fatalities, 2016 :	**41**
WHO Estimated Fatalities, 2016 :	**135**
GBD Estimated Fatalities, 2016 :	**43**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**25.00**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.86**
Estimated Serious Injuries, 2016 :	**2,025**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 138.35 million**
Cost as % of country GDP, 2016 :	**8.3%**

FATALITIES BY USER COMPARISON CHART



67% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

417 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Cape Verde	135	43	25.0	7.9	-0.1%	12,039
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Cape Verde has a lead agency present, General Directorate of Road Transport (DGTR), Ministry of Internal Administration, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CAPE VERDE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Cape Verde:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 26.33 million**
Annual Investment as a % of GDP (2019-2030):	**0.12%**
Reduction in fatalities per year:	**52**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 594.2 million**	B/C Ratio: **23**

ROAD SAFETY COUNTRY PROFILE

Cape Verde

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CAPE VERDE:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
64,955	11.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 4 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	62	5%

Cape Verde has several emergency numbers. These are 132 (Police); 131 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

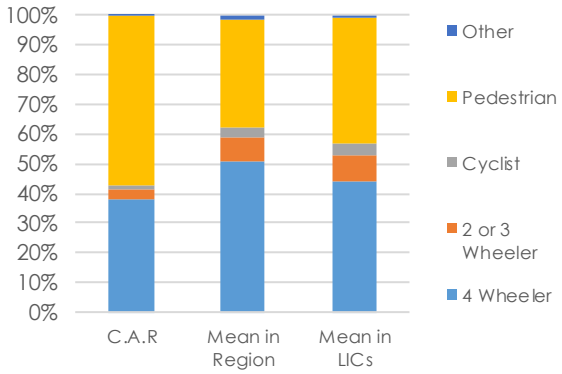
ROAD SAFETY COUNTRY PROFILE — Central African Rep. — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,594,621**
Country Reported Fatalities, 2016 :	**193**
WHO Estimated Fatalities, 2016 :	**1,546**
GBD Estimated Fatalities, 2016 :	**3,470**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**33.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**76.46**
Estimated Serious Injuries, 2016 :	**23,190**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 196.4 million**
Cost as % of country GDP, 2016 :	**11.2%**

FATALITIES BY USER COMPARISON CHART



68% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

4,713 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Central African Rep.	1,546	3,470	33.6	76.5	-3.8%	816
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Central African Rep. has a lead agency present, National Committee of Road Safety, Ministry of Transport, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CENTRAL AFRICAN REP. IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Central African Rep.:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 263.61 million**
Annual Investment as a % of GDP (2019-2030):	**0.98%**
Reduction in fatalities per year:	**660**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**150,000**
Economic Benefit: **$ 965.9 million**	B/C Ratio: **4**

ROAD SAFETY COUNTRY PROFILE

Central African Rep.

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CENTRAL AFRICAN REP.:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
37,475	13.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	33	4%

Central African Rep. has several emergency numbers. These are 117 (Police); 1220 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

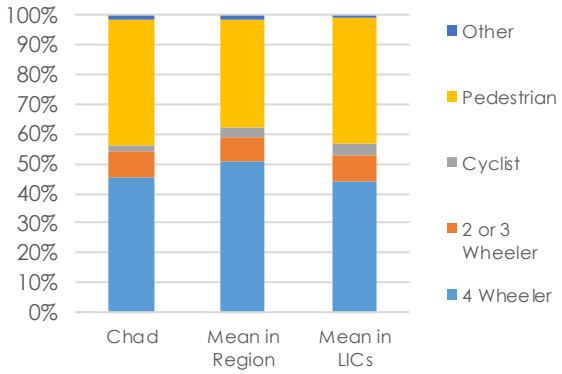
ROAD SAFETY COUNTRY PROFILE — Chad — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**14,452,543**
Country Reported Fatalities, 2016 :	**1,122**
WHO Estimated Fatalities, 2016 :	**3,990**
GBD Estimated Fatalities, 2016 :	**2,565**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.47**
Estimated Serious Injuries, 2016 :	**59,850**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 926.3 million**
Cost as % of country GDP, 2016 :	**9.2%**

FATALITIES BY USER COMPARISON CHART



49% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,076 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Chad	3,990	2,565	27.6	17.5	-5.5%	7,777
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Chad has a lead agency present, Ministry of Infrastructure, Transport and Civil Aviation, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country has both a fatal and non-fatal road safety target, to reduce fatality rate from 4.4% to 2% with a timeline of 2018 (Expired).

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CHAD IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Chad:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 520 million**
Annual Investment as a % of GDP (2019-2030):	**0.43%**
Reduction in fatalities per year:	**1,364**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**300,000**
Economic Benefit: **$ 3.68 billion**	B/C Ratio: **7**

ROAD SAFETY COUNTRY PROFILE

Chad

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CHAD:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,124,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 3 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	29	5%

Chad has several emergency numbers. These are 17 (Police); (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

China

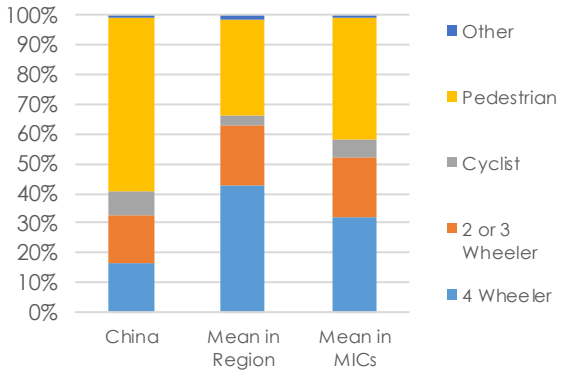
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,411,415,375**
Country Reported Fatalities, 2016 :	**58,022**
WHO Estimated Fatalities, 2016 :	**256,180**
GBD Estimated Fatalities, 2016 :	**272,069**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**18.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**19.38**
Estimated Serious Injuries, 2016 :	**3,842,700**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 691.43 billion**
Cost as % of country GDP, 2016 :	**6.2%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

990 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
China	256,180	272,069	18.2	19.4	-2.9%	17,723
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

China has a lead agency present, Inter-ministerial Convention on Road Traffic Safety, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatality rate per 10,000 vehicles by 6% with a timeline of 2016 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - China

Surveyed Road Statistics: **55%** with no formal footpaths; **66%** with no pedestrian crossings; **68%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 2 billion km; Pedestrian Travel: 70,486,245 km; Motorcyclist Travel: 233,959,580 km; Cyclist Travel: 59,615,815 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 133.46 billion**
Annual Investment as a % of GDP (2019-2030):	**0.08%**
Reduction in fatalities per year:	**96,295**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**21,180,000**
Economic Benefit: **$ 3 trillion**	B/C Ratio: **23**

ROAD SAFETY COUNTRY PROFILE

China

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	70 km/h	120 km/h	Automated

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 20 km/h	Appropriate	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	Low Risk	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CHINA:

✓ NARROWING	✓ VERTICAL DEFLECTIONS	✓ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
250,138,212	38.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✗	✗	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.02	<0.02	<0.02	✓	Approx. 0.4%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	76	5%

China has several emergency numbers. These are 110 (General); 122 (Police); 120 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Colombia

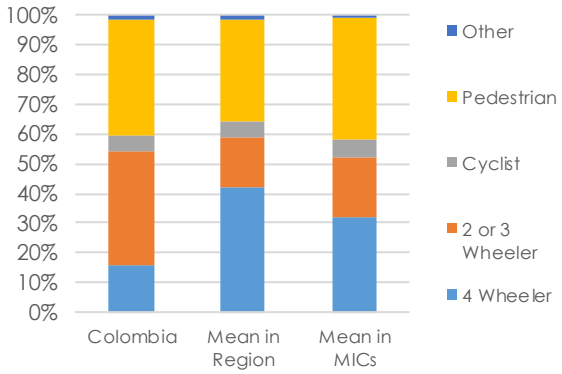
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**48,653,420**
Country Reported Fatalities, 2016 :	**7,158**
WHO Estimated Fatalities, 2016 :	**8,987**
GBD Estimated Fatalities, 2016 :	**7,447**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**18.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**14.88**
Estimated Serious Injuries, 2016 :	**134,805**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 17.37 billion**
Cost as % of country GDP, 2016 :	**6.1%**

FATALITIES BY USER COMPARISON CHART



76% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

753 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Colombia	8,987	7,447	18.5	14.9	2.8%	27,702
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Colombia has a lead agency present, National Road Safety Agency, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 26% with a timeline of 2011 - 2021.

PILLAR 2

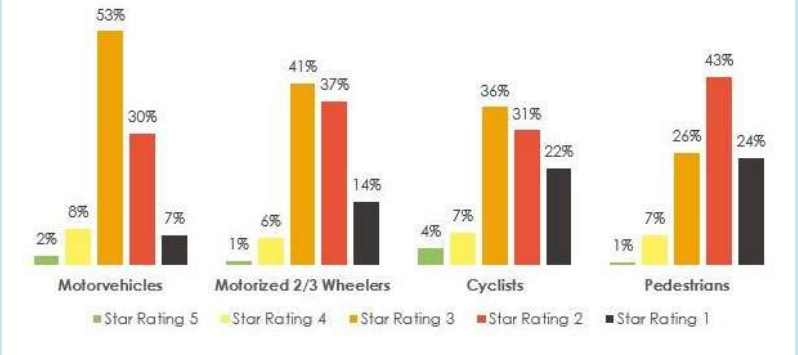
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Colombia

Surveyed Road Statistics: **83%** with no formal footpaths; **82%** with no pedestrian crossings; **93%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 21.6 billion km; Pedestrian Travel: 485,907,345 km; Motorcyclist Travel: 7.6 billion km; Cyclist Travel: 187,282,595 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 6.66 billion**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**2,987**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**660,000**
Economic Benefit: **$ 64.37 billion**	B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Colombia

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	80 km/h URBAN ROADS	120 km/h RURAL ROADS	120 km/h MOTORWAYS	Manual and Automated SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 50 km/h	+ 50 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	13 times lower	9 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN COLOMBIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

13,477,996 TOTAL REGISTERED VEHICLES AS OF 2016	55.7% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

✗ FRONTAL AND SIDE IMPACT (Reg. 94, 95)	✗ MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	✗ PEDESTRIAN PROTECTION (Reg. 127)	✗ ELECTRONIC STABILITY CONTROL (Reg. 140)	✗ SEAT BELTS AND ANCHORAGES (Reg. 16, 14)

✓ Banned REGULATION OF IMPORT OF USED VEHICLES	✓ New IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✗ No IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✓ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✗ 16 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	<0.02 GENERAL POPULATION	<0.02 YOUNG DRIVERS	<0.02 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	✗ Not Known % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

Partial Coverage NATIONAL EMERGENCY CARE ACCESS NUMBER	National TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	76	EXPENDITURE ON HEALTHCARE AS % OF GDP	6%

Colombia has several emergency numbers. These are 123 (General); 112 (Police); 125 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Comoros

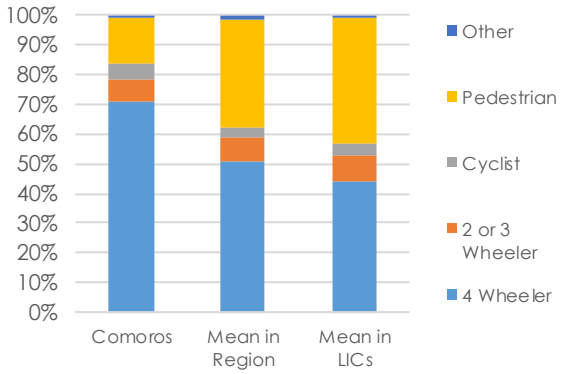
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**795,601**
Country Reported Fatalities, 2016 :	**23**
WHO Estimated Fatalities, 2016 :	**211**
GBD Estimated Fatalities, 2016 :	**112**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.79**
Estimated Serious Injuries, 2016 :	**3,165**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 90.32 million**
Cost as % of country GDP, 2016 :	**8.8%**

FATALITIES BY USER COMPARISON CHART



62% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

812 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Comoros	211	112	26.5	15.8	-2.6%	4,386
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Comoros has a lead agency present, National Multi-sectoral Committee on Road Safety, which isn't funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR COMOROS IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Comoros:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Comoros

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN COMOROS:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
34,898	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ Not Known	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✗	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	47	8%

Comoros has several emergency numbers. These are 17 (Police); (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

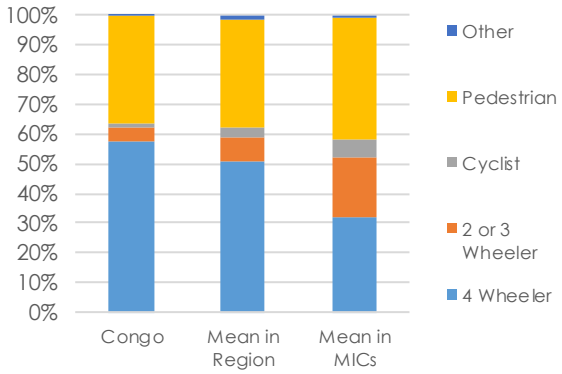
ROAD SAFETY COUNTRY PROFILE — Congo — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**5,125,821**
Country Reported Fatalities, 2016 :	**308**
WHO Estimated Fatalities, 2016 :	**1,405**
GBD Estimated Fatalities, 2016 :	**1,210**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**25.13**
Estimated Serious Injuries, 2016 :	**21,075**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 823.52 million**
Cost as % of country GDP, 2016 :	**9.1%**

FATALITIES BY USER COMPARISON CHART



74% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,557 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Congo	1,405	1,210	27.4	25.1	-5.4%	2,483
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Congo has a lead agency present, General Directorate of Land Transport (DGTT), which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 20% with a timeline of 2017 - 2018.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CONGO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Congo:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 195 million**
Annual Investment as a % of GDP (2019-2030):	**0.20%**
Reduction in fatalities per year:	**470**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**100,000**
Economic Benefit: **$ 2.79 billion**	B/C Ratio: **14**

ROAD SAFETY COUNTRY PROFILE

Congo

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CONGO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
110,438	75.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 7 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✗ 17 yrs

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	38	5%

Congo has a single emergency number. This is 117.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Costa Rica

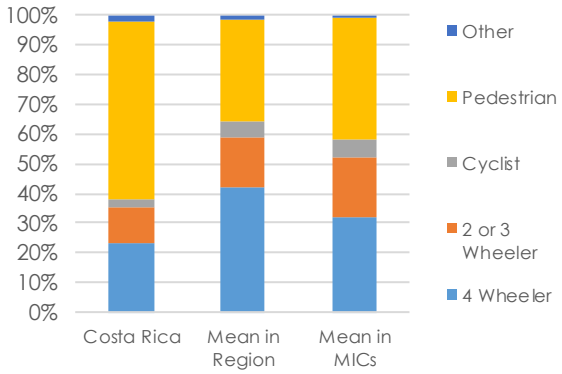
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,857,274**
Country Reported Fatalities, 2016 :	**795**
WHO Estimated Fatalities, 2016 :	**812**
GBD Estimated Fatalities, 2016 :	**778**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.84**
Estimated Serious Injuries, 2016 :	**12,180**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.18 billion**
Cost as % of country GDP, 2016 :	**5.6%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

794 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Costa Rica	812	778	16.7	16.8	10.4%	40,998
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Costa Rica has a lead agency present, Road Safety Council (COSEVI), Ministry of Public Works and Transportation, which isn't funded in the national budget but has a road safety strategy which is fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 20% with a timeline of 2015 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR COSTA RICA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Costa Rica:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.27 billion**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**249**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 10.07 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Costa Rica

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	60 km/h	Not Known	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 20 km/h	Appropriate	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	Low Risk	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN COSTA RICA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,991,398	0.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 5 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	≤ 0.02	≤ 0.02	✓	Approx. 31.2%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Single Number	Some Facilities		75		8%

Costa Rica has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

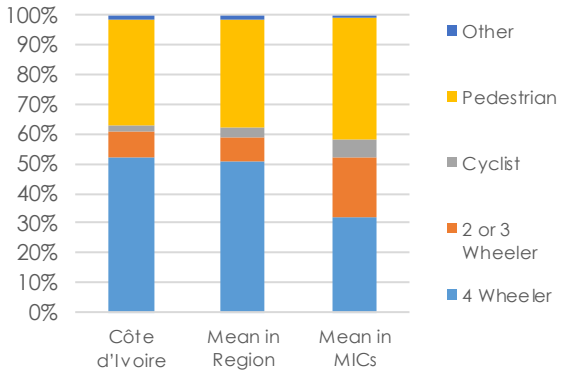
ROAD SAFETY COUNTRY PROFILE — Côte d'Ivoire — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**23,695,920**
Country Reported Fatalities, 2016 :	**991**
WHO Estimated Fatalities, 2016 :	**5,582**
GBD Estimated Fatalities, 2016 :	**3,670**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.00**
Estimated Serious Injuries, 2016 :	**83,730**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.77 billion**
Cost as % of country GDP, 2016 :	**7.8%**

FATALITIES BY USER COMPARISON CHART



63% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

865 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Côte d'Ivoire	5,582	3,670	23.6	15.0	-5.0%	3,821
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Côte d'Ivoire has a lead agency present, Road Safety Oce (OSER), Ministry of Transport, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2016 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Côte d'Ivoire

Surveyed Road Statistics: **74%** with no formal footpaths; **93%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 804,925,594 km; Pedestrian Travel: 20,749,338 km; Motorcyclist Travel: 24,894,606 km; Cyclist Travel: 1,132,778 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.6 billion**
Annual Investment as a % of GDP (2019-2030):	**0.29%**
Reduction in fatalities per year:	**1,970**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**430,000**

Economic Benefit: **$ 11.63 billion** B/C Ratio: **7**

ROAD SAFETY COUNTRY PROFILE

Côte d'Ivoire

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CÔTE D'IVOIRE:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
905,537	18.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 7 Yrs.	✓ 10 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	44	4%

Côte d'Ivoire has several emergency numbers. These are 111 (General); 170 (Police); 180 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Croatia

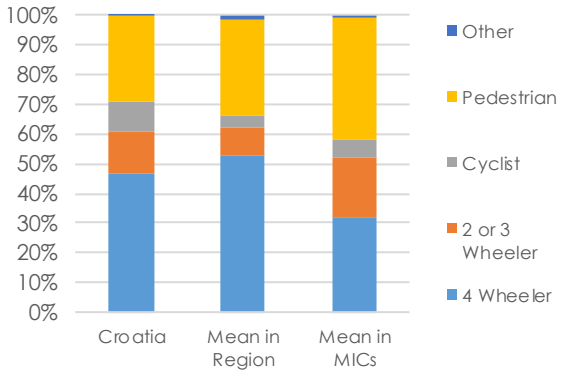
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,213,265**
Country Reported Fatalities, 2016 :	**307**
WHO Estimated Fatalities, 2016 :	**340**
GBD Estimated Fatalities, 2016 :	**388**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**8.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.04**
Estimated Serious Injuries, 2016 :	**5,100**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.4 billion**
Cost as % of country GDP, 2016 :	**2.7%**

FATALITIES BY USER COMPARISON CHART



66% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

702 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Croatia	340	388	8.1	9.0	-7.4%	47,376
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Croatia does not have a lead agency. However Croatia has a road safety strategy which is fully funded. The functions of the agency are not defined. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Croatia

Surveyed Road Statistics: **79%** with no formal footpaths; **92%** with no pedestrian crossings; **50%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 1.2 billion km; Pedestrian Travel: 58,892,337 km; Motorcyclist Travel: 36,683,633 km; Cyclist Travel: 17,744,352 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.4 billion**
Annual Investment as a % of GDP (2019-2030):	**0.20%**
Reduction in fatalities per year:	**127**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**30,000**

Economic Benefit: **$ 5.89 billion** B/C Ratio: **4**

ROAD SAFETY COUNTRY PROFILE

Croatia

Europe and Central Asia (ECA)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	130 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CROATIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,996,056	7.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✓	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 7 Yrs.	✗ No	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	0.00	0.00	✓	Approx. 23.8%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	69	7%

Croatia has several emergency numbers. These are 112 (General); 192 (Police); 194 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Cuba

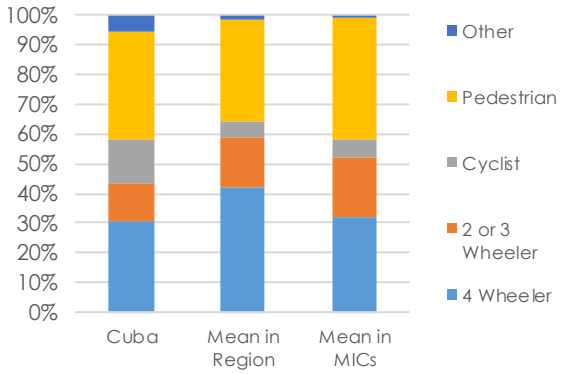
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**11,475,982**
Country Reported Fatalities, 2016 :	**750**
WHO Estimated Fatalities, 2016 :	**975**
GBD Estimated Fatalities, 2016 :	**1,124**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**8.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.86**
Estimated Serious Injuries, 2016 :	**14,625**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.58 billion**
Cost as % of country GDP, 2016 :	**2.8%**

FATALITIES BY USER COMPARISON CHART



69% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

432 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Cuba	975	1,124	8.5	9.9	4.9%	5,519
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Cuba has a lead agency present, National Road Safety Commission (CNSV), which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities to 5 fatalities per 100,000 population with a timeline of 2010 - 2025.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR CUBA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Cuba:

Audit/Star Rating is not Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.98 billion**
Annual Investment as a % of GDP (2019-2030):	**0.18%**
Reduction in fatalities per year:	**309**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**70,000**
Economic Benefit: **$ 8.76 billion**	B/C Ratio: **4**

ROAD SAFETY COUNTRY PROFILE

Cuba

Latin America and Caribbean (LAC)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN CUBA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
633,369	34.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 4 Yrs.	✗ No	✗ No	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.01	0.00	0.00	✓	Approx. 33.3%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	78	12%

Cuba has a single emergency number. This is 106.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

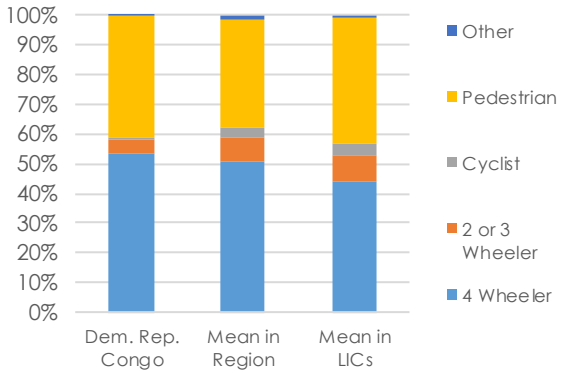
ROAD SAFETY COUNTRY PROFILE — Dem. Rep. Congo — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**78,736,152**
Country Reported Fatalities, 2016 :	**385**
WHO Estimated Fatalities, 2016 :	**26,529**
GBD Estimated Fatalities, 2016 :	**20,521**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**33.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**26.06**
Estimated Serious Injuries, 2016 :	**397,935**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 4.16 billion**
Cost as % of country GDP, 2016 :	**11.2%**

FATALITIES BY USER COMPARISON CHART



62% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,728 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Dem. Rep. Congo	26,529	20,521	33.7	26.1	-7.7%	518
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Dem. Rep. Congo has a lead agency present, National Program for Road Safety (CNPR), Ministry of Transport and Communication Channels, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR DEM. REP. CONGO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Dem. Rep. Congo:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2 billion**
Annual Investment as a % of GDP (2019-2030):	**0.40%**
Reduction in fatalities per year:	**9,898**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,180,000**
Economic Benefit: **$ 15.37 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Dem. Rep. Congo

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	120 km/h	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN DEM. REP. CONGO:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
350,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.10	<0.10	<0.10	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	68	4%

Dem. Rep. Congo has several emergency numbers. These are 112 (Police); 118 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Dominica

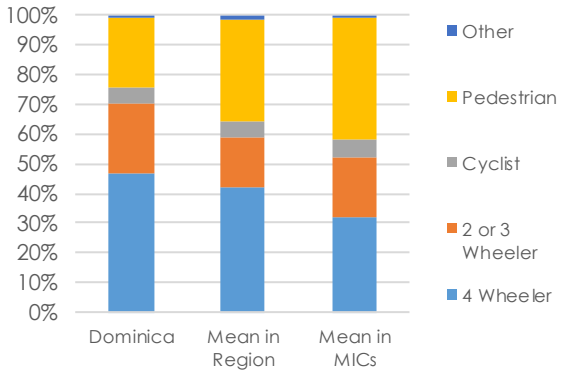
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**73,543**
Country Reported Fatalities, 2016 :	**10**
WHO Estimated Fatalities, 2016 :	**8**
GBD Estimated Fatalities, 2016 :	**12**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**10.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.81**
Estimated Serious Injuries, 2016 :	**120**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 20.81 million**
Cost as % of country GDP, 2016 :	**3.6%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

857 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Dominica	8	12	10.9	16.8	-0.7%	48,674
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Dominica has a lead agency present, Transport Board, Ministry of Justice, Immigration and National Security, which isn't funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR DOMINICA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Dominica:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 49.14 million**
Annual Investment as a % of GDP (2019-2030):	**0.65%**
Reduction in fatalities per year:	**4**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**900**

Economic Benefit: **$ 120.8 million** B/C Ratio: **2**

ROAD SAFETY COUNTRY PROFILE

Dominica

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	None
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN DOMINICA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
35,796	7.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✓ Yes	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✗	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	0	5%

Dominica has a single emergency number. This is 999.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Dominican Republic

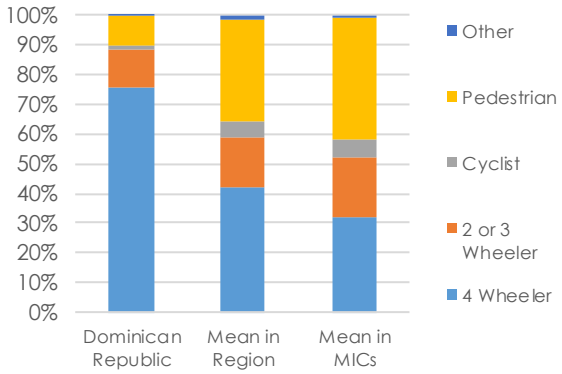
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**10,648,791**
Country Reported Fatalities, 2016 :	**3,118**
WHO Estimated Fatalities, 2016 :	**3,684**
GBD Estimated Fatalities, 2016 :	**3,184**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**34.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**30.77**
Estimated Serious Injuries, 2016 :	**55,260**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 8.32 billion**
Cost as % of country GDP, 2016 :	**11.5%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,563 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Dominican Republic	3,684	3,184	34.6	30.8	5.9%	36,192
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Dominican Republic has a lead agency present, Presidential Commission for Road Safety and National Institute of Trac and Land Transport (INTRANT), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 30% with a timeline of 2017 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Dominican Republic

Surveyed Road Statistics: **8%** with no formal footpaths; **91%** with no pedestrian crossings; **84%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 409,711,073 km; Pedestrian Travel: 31,116,068 km; Motorcyclist Travel: 194,207,214 km; Cyclist Travel: 0 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 640.41 million**
Annual Investment as a % of GDP (2019-2030):	**0.07%**
Reduction in fatalities per year:	**1,124**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**250,000**
Economic Benefit: **$ 28.95 billion**	B/C Ratio: **45**

ROAD SAFETY COUNTRY PROFILE — Dominican Republic

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	60 km/h	120 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 30 km/h	Appropriate	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	Low Risk	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN DOMINICAN REPUBLIC:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
3,854,038	54.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 8 yrs	✗ 16 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	0.00	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	National	74	6%

Dominican Republic has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Ecuador

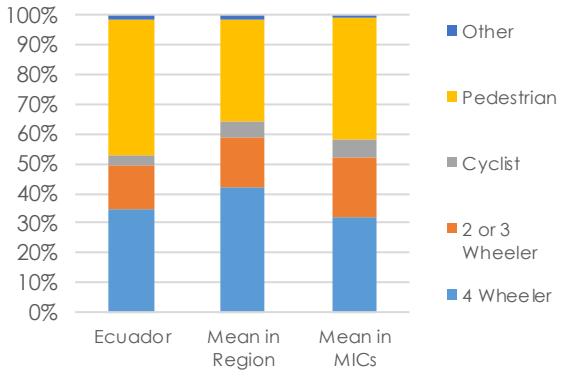
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**16,385,068**
Country Reported Fatalities, 2016 :	**2,894**
WHO Estimated Fatalities, 2016 :	**3,490**
GBD Estimated Fatalities, 2016 :	**4,474**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**21.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**27.21**
Estimated Serious Injuries, 2016 :	**52,350**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 7.08 billion**
Cost as % of country GDP, 2016 :	**7.1%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,394 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Ecuador	3,490	4,474	21.3	27.2	-9.1%	11,751
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Ecuador has a lead agency present, National Traffic Agency, Ministry of Transport and Public Works, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 40% with a timeline of 2015 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ECUADOR IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Ecuador:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.42 billion**
Annual Investment as a % of GDP (2019-2030):	**0.12%**
Reduction in fatalities per year:	**1,166**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**260,000**
Economic Benefit: **$ 22.73 billion**	B/C Ratio: **16**

ROAD SAFETY COUNTRY PROFILE

Ecuador

Latin America and Caribbean (LAC)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	120 km/h	135 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 50 km/h	+ 45 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	9 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ECUADOR:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,925,368	22.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✗	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✗ No	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.03	≤ 0.03	≤ 0.01	✓	Approx. 6.8%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	75	8%

Ecuador has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Egypt

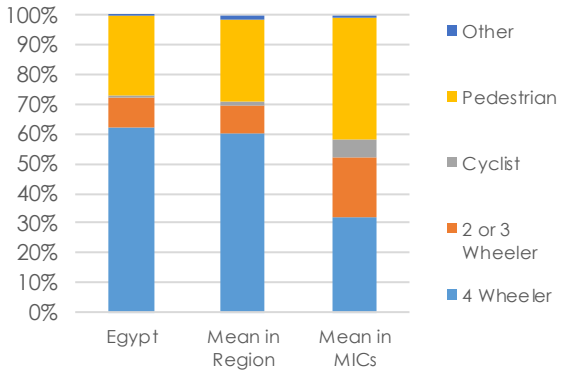
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**95,688,680**
Country Reported Fatalities, 2016 :	**8,211**
WHO Estimated Fatalities, 2016 :	**9,287**
GBD Estimated Fatalities, 2016 :	**26,925**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**9.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**28.43**
Estimated Serious Injuries, 2016 :	**139,305**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 10.74 billion**
Cost as % of country GDP, 2016 :	**3.2%**

FATALITIES BY USER COMPARISON CHART



76% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,580 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Egypt has a lead agency present, National Council for Road Safety, Ministry of Interior, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country only has a fatal road safety target, to reduce fatalities by 2 - 5% with a timeline of 2011 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Egypt

Surveyed Road Statistics: **78%** with no formal footpaths; **97%** with no pedestrian crossings; **38%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 6.7 billion km; Pedestrian Travel: 17,460,140 km; Motorcyclist Travel: 0 km; Cyclist Travel: 19,136,038 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.68 billion**
Annual Investment as a % of GDP (2019-2030):	**0.07%**
Reduction in fatalities per year:	**4,186**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**920,000**

Economic Benefit: **$ 51.36 billion** B/C Ratio: **19**

ROAD SAFETY COUNTRY PROFILE

Egypt

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓	60 km/h	90 km/h	100 km/h	Manual and Automated
NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN EGYPT:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

8,412,673	35.3%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✓	✓	✓

✓ Banned	✓ New	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.
NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE

✓	✗	✗	✗	✗	✗	✗ Not Known
NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS	RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	National
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100: **68**

EXPENDITURE ON HEALTHCARE AS % OF GDP: **5%**

Egypt has several emergency numbers. These are 122 (Police); 123 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

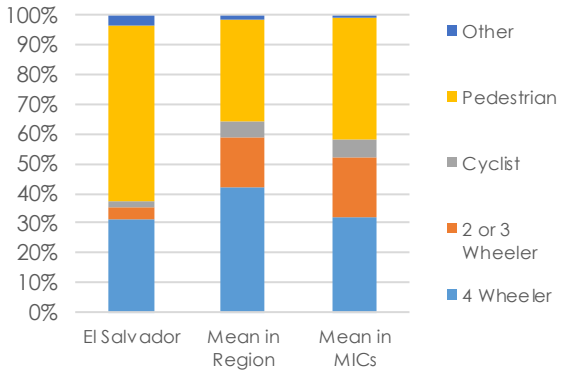
ROAD SAFETY COUNTRY PROFILE — El Salvador — Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**6,344,722**
Country Reported Fatalities, 2016 :	**1,215**
WHO Estimated Fatalities, 2016 :	**1,411**
GBD Estimated Fatalities, 2016 :	**1,276**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**22.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.04**
Estimated Serious Injuries, 2016 :	**21,165**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.77 billion**
Cost as % of country GDP, 2016 :	**7.4%**

FATALITIES BY USER COMPARISON CHART



71% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

929 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
El Salvador	1,411	1,276	22.2	21.0	10.3%	15,888
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ El Salvador has a lead agency present, Vice Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - El Salvador

Surveyed Road Statistics: **90%** with no formal footpaths; **83%** with no pedestrian crossings; **24%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 101,461,737 km; Pedestrian Travel: 4,872,202 km; Motorcyclist Travel: 0 km; Cyclist Travel: 1,915,885 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 134.9 million**
Annual Investment as a % of GDP (2019-2030):	**0.04%**
Reduction in fatalities per year:	**536**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**120,000**
Economic Benefit: **$ 8.02 billion**	B/C Ratio: **59**

ROAD SAFETY COUNTRY PROFILE

El Salvador

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN EL SALVADOR:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,008,080	20.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ Yes	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✗ 15 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.05	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	77	7%

El Salvador has several emergency numbers. These are 911 (Police); 132 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Equatorial Guinea

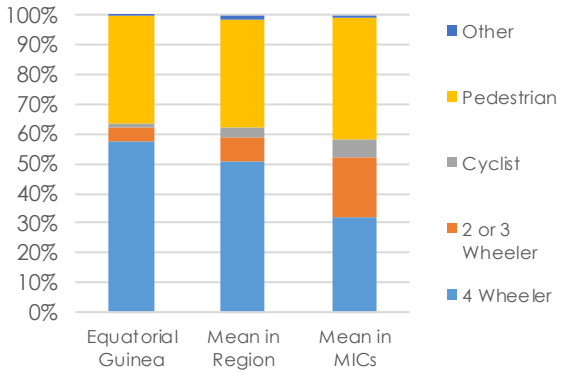
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,221,490**
Country Reported Fatalities, 2016 :	**41**
WHO Estimated Fatalities, 2016 :	**300**
GBD Estimated Fatalities, 2016 :	**217**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**24.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.69**
Estimated Serious Injuries, 2016 :	**4,500**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 919.59 million**
Cost as % of country GDP, 2016 :	**8.2%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,094 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Equatorial Guinea	300	217	24.6	16.7	-0.3%	11,707
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Equatorial Guinea has a lead agency present, General Directorate of Traffic andRoad Safety, Ministry of the Interior and Local Corporations, which is funded in the national budget. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR EQUATORIAL GUINEA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Equatorial Guinea:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Equatorial Guinea

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN EQUATORIAL GUINEA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
143,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	45	3%

Equatorial Guinea has several emergency numbers. These are 114 (General); 116 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

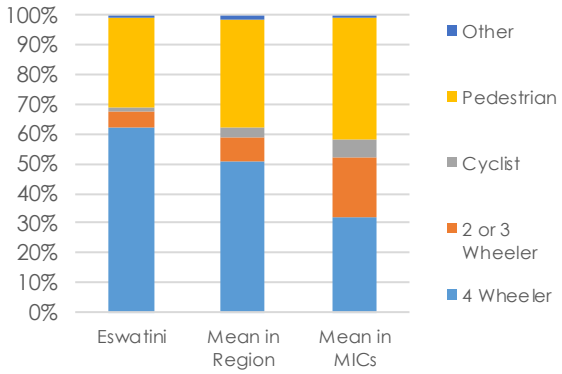
ROAD SAFETY COUNTRY PROFILE — Eswatini — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,343,098**
Country Reported Fatalities, 2016 :	**203**
WHO Estimated Fatalities, 2016 :	**361**
GBD Estimated Fatalities, 2016 :	**386**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**34.68**
Estimated Serious Injuries, 2016 :	**5,415**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 341.16 million**
Cost as % of country GDP, 2016 :	**8.9%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

2,042 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Eswatini	361	386	26.9	34.7	-13.1%	7,433
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Eswatini has a lead agency present, Road Safety Council, Ministry of Works and Transport, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ESWATINI IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Eswatini:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 70.08 million**
Annual Investment as a % of GDP (2019-2030):	**0.15%**
Reduction in fatalities per year:	**121**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**30,000**
Economic Benefit: **$ 1.4 billion**	B/C Ratio: **20**

ROAD SAFETY COUNTRY PROFILE

Eswatini

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	100 km/h	100 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 70 km/h	+ 30 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	23 times lower	4 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ESWATINI:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
99,830	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 12 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.02	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	58	8%

Eswatini has several emergency numbers. These are 999 (Police); 933 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

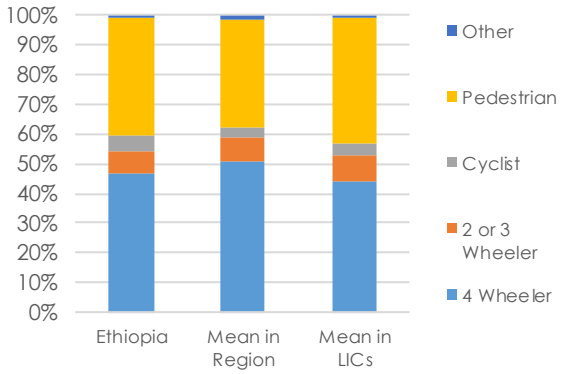
ROAD SAFETY COUNTRY PROFILE — Ethiopia — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**102,403,200**
Country Reported Fatalities, 2016 :	**4,352**
WHO Estimated Fatalities, 2016 :	**27,326**
GBD Estimated Fatalities, 2016 :	**9,639**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.60**
Estimated Serious Injuries, 2016 :	**409,890**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 6.48 billion**
Cost as % of country GDP, 2016 :	**8.9%**

FATALITIES BY USER COMPARISON CHART



60% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

550 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Ethiopia	27,326	9,639	26.7	9.6	-10.0%	692
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Ethiopia has a lead agency present, Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

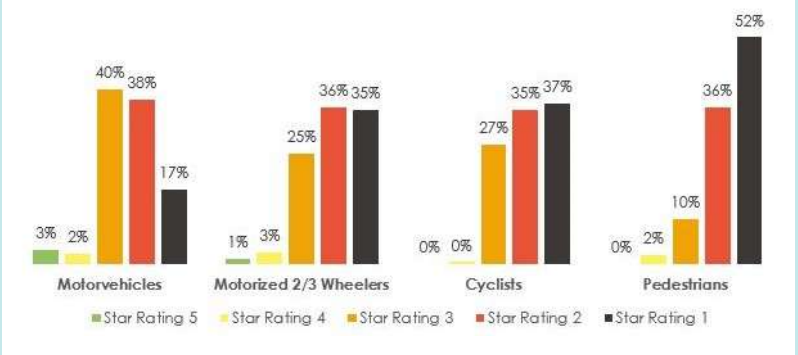
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Ethiopia

Surveyed Road Statistics: **-** with no formal footpaths; **27%** with no pedestrian crossings; **72%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 595,414,090 km; Pedestrian Travel: 134,900,631 km; Motorcyclist Travel: 18,414,869 km; Cyclist Travel: 1,348,373 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.44 billion**
Annual Investment as a % of GDP (2019-2030):	**0.14%**
Reduction in fatalities per year:	**10,524**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,320,000**

Economic Benefit: **$ 32.5 billion** B/C Ratio: **23**

ROAD SAFETY COUNTRY PROFILE

Ethiopia

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	70 km/h	100 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 30 km/h	Appropriate	+ 10 km/h	
	6 times lower	Low Risk	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ETHIOPIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
708,416	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.08	≤ 0.08	≤ 0.08	✓	Approx. 4.3%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Multiple Numbers	Some Facilities		39		4%

Ethiopia has several emergency numbers. These are 911 (General); 991 (Police); 907 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Fiji

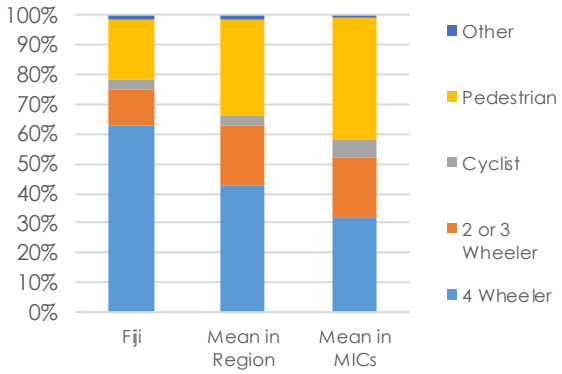
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**898,760**
Country Reported Fatalities, 2016 :	**60**
WHO Estimated Fatalities, 2016 :	**86**
GBD Estimated Fatalities, 2016 :	**85**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**9.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.37**
Estimated Serious Injuries, 2016 :	**1,290**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 148.62 million**
Cost as % of country GDP, 2016 :	**3.2%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

587 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Fiji	86	85	9.6	9.4	-2.2%	12,324
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Fiji has a lead agency present, Land Transport Authority, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Fiji

Surveyed Road Statistics: **84%** with no formal footpaths; **98%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 642,649,624 km; Pedestrian Travel: 25,257,452 km; Motorcyclist Travel: 0 km; Cyclist Travel: 0 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 111.8 million**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**19**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**4,100**
Economic Benefit: **$ 382.5 million**	B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Fiji

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	Not Known	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN FIJI:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
110,763	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 8 yrs.	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	0.00	0.00	✓	Approx. 5.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	66	3%

Fiji has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Gabon

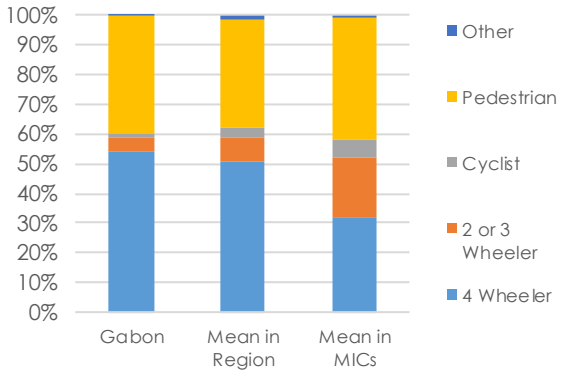
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,979,786**
Country Reported Fatalities, 2016 :	**54**
WHO Estimated Fatalities, 2016 :	**460**
GBD Estimated Fatalities, 2016 :	**438**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**26.15**
Estimated Serious Injuries, 2016 :	**6,900**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.08 billion**
Cost as % of country GDP, 2016 :	**7.7%**

FATALITIES BY USER COMPARISON CHART



76% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,568 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Gabon	460	438	23.2	26.2	-5.2%	9,850
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Gabon has a lead agency present, General Directorate of Road Safety (DGSR), Ministry of Transport and Logistics, which is funded in the national budget, and has a road safety strategy which is not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GABON IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Gabon:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 298.03 million**
Annual Investment as a % of GDP (2019-2030):	**0.16%**
Reduction in fatalities per year:	**141**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**30,000**
Economic Benefit: **$ 3.76 billion**	B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Gabon

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GABON:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
195,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 4 Yrs.	✗ No	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 5 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	52	3%

Gabon has several emergency numbers. These are 1730 (Police); 18 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Georgia

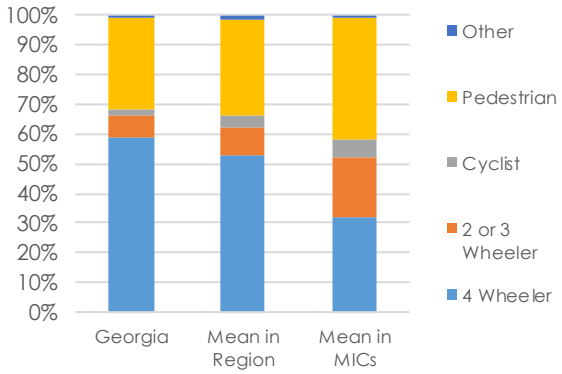
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**3,925,405**
Country Reported Fatalities, 2016 :	**581**
WHO Estimated Fatalities, 2016 :	**599**
GBD Estimated Fatalities, 2016 :	**748**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**20.06**
Estimated Serious Injuries, 2016 :	**8,985**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 768.24 million**
Cost as % of country GDP, 2016 :	**5.3%**

FATALITIES BY USER COMPARISON CHART



79% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,064 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Georgia	599	748	15.3	20.1	8.2%	28,697
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Georgia has a lead agency present, Ministry of Economy and Sustainable Development of Georgia, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GEORGIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Georgia:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 372.63 million**
Annual Investment as a % of GDP (2019-2030):	**0.19%**
Reduction in fatalities per year:	**206**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 3.1 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Georgia

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GEORGIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,126,470	5.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ Yes	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 12 yrs	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.03	≤ 0.03	≤ 0.03	✓	Approx. 9.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	66	8%

Georgia has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

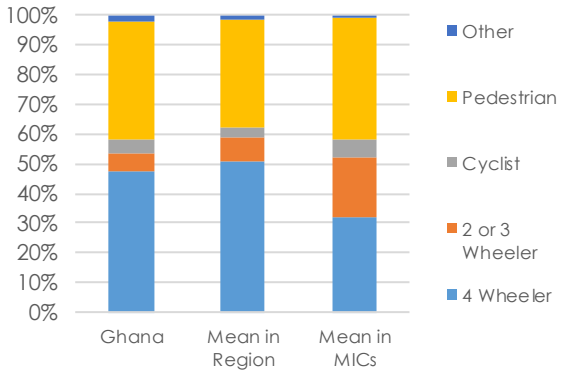
ROAD SAFETY COUNTRY PROFILE — Ghana — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**28,206,728**
Country Reported Fatalities, 2016 :	**1,802**
WHO Estimated Fatalities, 2016 :	**7,018**
GBD Estimated Fatalities, 2016 :	**5,387**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**24.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.29**
Estimated Serious Injuries, 2016 :	**105,270**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 4.55 billion**
Cost as % of country GDP, 2016 :	**8.3%**

FATALITIES BY USER COMPARISON CHART



70% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

976 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Ghana	7,018	5,387	24.9	18.3	1.1%	7,328
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Ghana has a lead agency present, National Road Safety Commission (NRSC), Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Ghana

Surveyed Road Statistics: **26%** with no formal footpaths; **77%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 441,939,673 km; Pedestrian Travel: 76,895,462 km; Motorcyclist Travel: 13,668,237 km; Cyclist Travel: 1,205,595 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.14 billion**
Annual Investment as a % of GDP (2019-2030):	**0.36%**
Reduction in fatalities per year:	**2,716**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**600,000**
Economic Benefit: **$ 15.35 billion**	B/C Ratio: **7**

ROAD SAFETY COUNTRY PROFILE

Ghana

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓	50 km/h	90 km/h	100 km/h	Manual
NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GHANA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

2,066,943	24.9%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated	✗ No	✓ 5 Yrs	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.
NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE

✓	✓	≤ 0.08	≤ 0.08	≤ 0.08	✓	✗ Not Known
NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS	RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	Some Facilities	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	45	EXPENDITURE ON HEALTHCARE AS % OF GDP	4%
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM				

Ghana has several emergency numbers. These are 999 (General); 191 (Police); 193 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Grenada

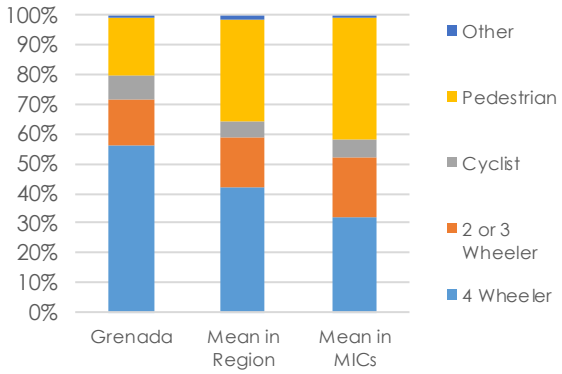
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**107,317**
Country Reported Fatalities, 2016 :	**10**
WHO Estimated Fatalities, 2016 :	**10**
GBD Estimated Fatalities, 2016 :	**12**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**9.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.65**
Estimated Serious Injuries, 2016 :	**150**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 32.89 million**
Cost as % of country GDP, 2016 :	**3.1%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

507 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Grenada has a lead agency present, National Transport Board, Ministry of Works, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GRENADA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Grenada:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Grenada

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	32 km/h	64 km/h	Not Known	Manual

Difference with Recommended Safe Systems Speeds	+ 2 km/h	Appropriate	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	1 times lower	Low Risk	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GRENADA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
27,266	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	72	5%

Grenada has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Guatemala

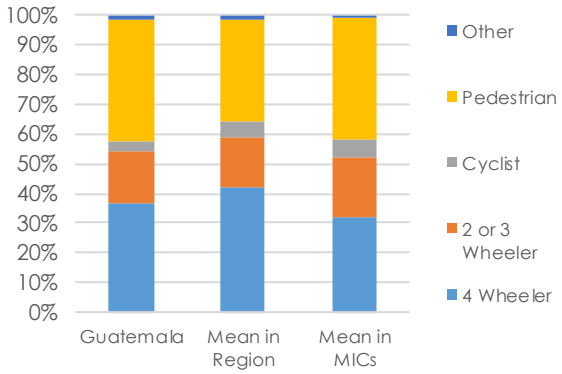
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**16,582,469**
Country Reported Fatalities, 2016 :	**2,058**
WHO Estimated Fatalities, 2016 :	**2,758**
GBD Estimated Fatalities, 2016 :	**2,635**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.92**
Estimated Serious Injuries, 2016 :	**41,370**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.8 billion**
Cost as % of country GDP, 2016 :	**5.5%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

863 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Guatemala	2,758	2,635	16.6	15.9	2.6%	19,600
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Guatemala has a lead agency present, Transit Department, Ministry of Government, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 5.5% fatalities per 100,000 population with a timeline of 2017 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GUATEMALA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Guatemala:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 337.97 million**
Annual Investment as a % of GDP (2019-2030):	**0.04%**
Reduction in fatalities per year:	**1,176**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**260,000**
Economic Benefit: **$ 16.91 billion**	B/C Ratio: **50**

ROAD SAFETY COUNTRY PROFILE

Guatemala

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	60 km/h URBAN ROADS	80 km/h RURAL ROADS	100 km/h MOTORWAYS	Manual SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GUATEMALA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

3,250,194 TOTAL REGISTERED VEHICLES AS OF 2016	37.8% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✓ 7 Yrs. IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✗ No IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✗ BACK	✓ MOTORCYCLE HELMET LAW	✗ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✗ 16 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✗ IS LAW BAC BASED?	✗ GENERAL POPULATION	✗ YOUNG DRIVERS	✗ PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	✗ Not Known % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers NATIONAL EMERGENCY CARE ACCESS NUMBER	Some Facilities TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	57	EXPENDITURE ON HEALTHCARE AS % OF GDP	6%

Guatemala has several emergency numbers. These are 120 (Police); 128 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

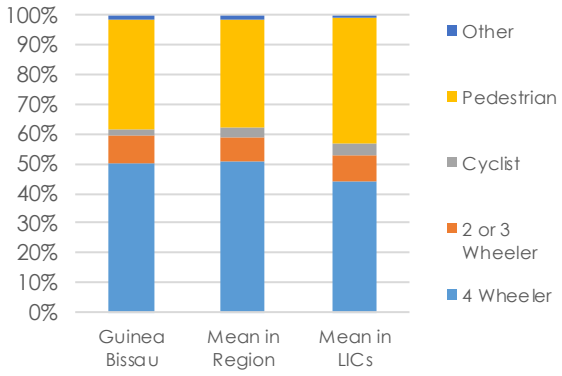
ROAD SAFETY COUNTRY PROFILE — Guinea-Bissau — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,815,698**
Country Reported Fatalities, 2016 :	**122**
WHO Estimated Fatalities, 2016 :	**565**
GBD Estimated Fatalities, 2016 :	**390**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**31.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.50**
Estimated Serious Injuries, 2016 :	**8,475**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 121.9 million**
Cost as % of country GDP, 2016 :	**10.3%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,202 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Guinea-Bissau	565	390	31.1	21.5	-5.7%	3,428
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

GUINEA-BISSAU HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GUINEA-BISSAU IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Guinea-Bissau:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 44.92 million**
Annual Investment as a % of GDP (2019-2030):	**0.26%**
Reduction in fatalities per year:	**207**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**

Economic Benefit: **$ 572.3 million** B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Guinea-Bissau

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GUINEA-BISSAU:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
62,239	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✓ Prohibited under 6 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.05	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	39	6%

Guinea-Bissau has a single emergency number. This is 117.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

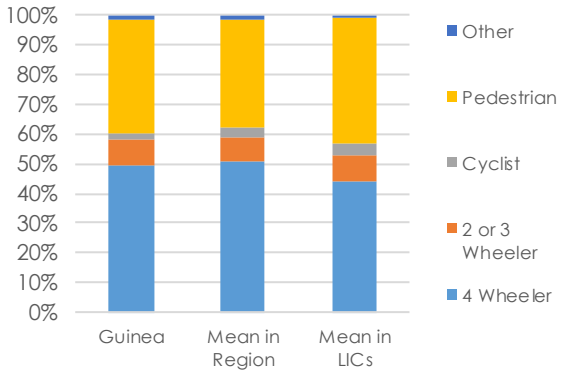
ROAD SAFETY COUNTRY PROFILE — Guinea — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**12,395,924**
Country Reported Fatalities, 2016 :	**458**
WHO Estimated Fatalities, 2016 :	**3,490**
GBD Estimated Fatalities, 2016 :	**1,985**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**28.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.22**
Estimated Serious Injuries, 2016 :	**52,350**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 813.91 million**
Cost as % of country GDP, 2016 :	**9.4%**

FATALITIES BY USER COMPARISON CHART



55% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

956 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Guinea	3,490	1,985	28.2	17.2	-5.5%	2,095
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Guinea has a lead agency present, National Program to Combat Trauma and Violence, which isn't funded in the national budget. The function of the agency is coordination of road safety strategies without legislation and monitoring and evaluation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GUINEA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Guinea:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 576.52 million**
Annual Investment as a % of GDP (2019-2030):	**0.49%**
Reduction in fatalities per year:	**1,418**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**310,000**
Economic Benefit: **$ 3.5 billion**	B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE

Guinea

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GUINEA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
259,731	27.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Subnational	35	5%

Guinea has several emergency numbers. These are 117 (Police); 18 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Guyana

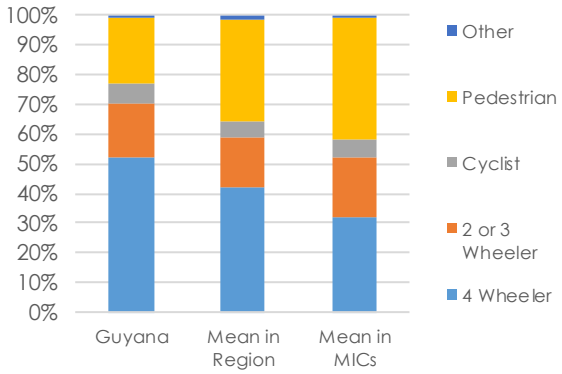
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**773,303**
Country Reported Fatalities, 2016 :	**128**
WHO Estimated Fatalities, 2016 :	**190**
GBD Estimated Fatalities, 2016 :	**121**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**24.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.27**
Estimated Serious Injuries, 2016 :	**2,850**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 286.26 million**
Cost as % of country GDP, 2016 :	**8.2%**

FATALITIES BY USER COMPARISON CHART



85% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

856 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Guyana	190	121	24.6	16.3	-9.3%	2,029
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Guyana has a lead agency present, Ministry of Public Security, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR GUYANA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Guyana:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 155.42 million**
Annual Investment as a % of GDP (2019-2030):	**0.35%**
Reduction in fatalities per year:	**55**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 885.3 million**	B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE

Guyana

Latin America and Caribbean (LAC)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	64 km/h	64 km/h	Not Known	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 34 km/h	Appropriate	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	7 times lower	Low Risk	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN GUYANA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

15,694	22.3%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 5 Yrs.	✗ No	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✗	✗	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.08	≤ 0.08	≤ 0.08	✓	Approx. 17.0%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	68	4%

Guyana has several emergency numbers. These are 999 (General); 911 (Police); 913 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Honduras

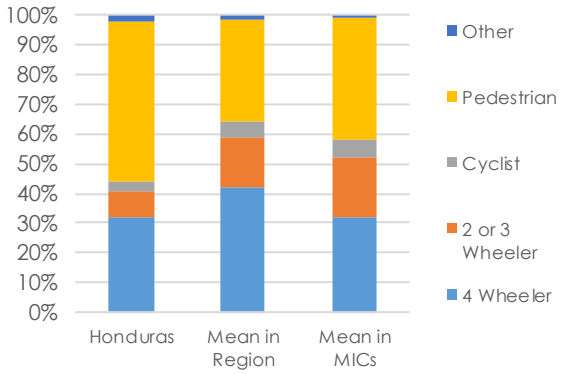
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**9,112,867**
Country Reported Fatalities, 2016 :	**1,407**
WHO Estimated Fatalities, 2016 :	**1,525**
GBD Estimated Fatalities, 2016 :	**1,276**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.76**
Estimated Serious Injuries, 2016 :	**22,875**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.2 billion**
Cost as % of country GDP, 2016 :	**5.6%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

698 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Honduras	1,525	1,276	16.7	13.8	-1.2%	18,595
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Honduras has a lead agency present, National Directorate of Roads and Transportation, Secretariat for Security, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR HONDURAS IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Honduras:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 287.47 million**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**563**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**120,000**
Economic Benefit: **$ 5.24 billion**	B/C Ratio: **18**

ROAD SAFETY COUNTRY PROFILE

Honduras

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN HONDURAS:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,694,504	35.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 7 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.07	<0.07	<0.07	✓	Approx. 6.8%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	64	8%

Honduras has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

India

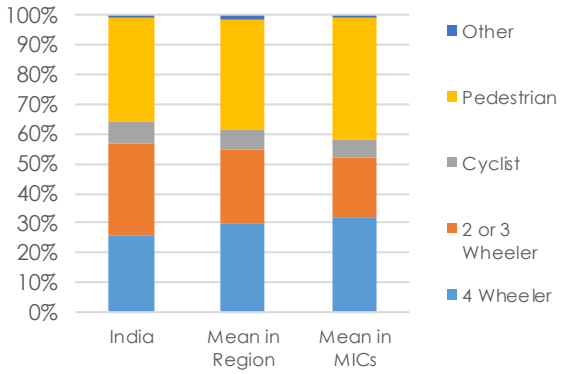
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,324,171,392**
Country Reported Fatalities, 2016 :	**150,785**
WHO Estimated Fatalities, 2016 :	**299,091**
GBD Estimated Fatalities, 2016 :	**219,670**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**22.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.10**
Estimated Serious Injuries, 2016 :	**4,486,365**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 172.02 billion**
Cost as % of country GDP, 2016 :	**7.5%**

FATALITIES BY USER COMPARISON CHART



78% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

820 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
India	299,091	219,670	22.6	16.1	-8.5%	15,861
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ India has a lead agency present, Ministry of Road Transport and Highways, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR INDIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in India:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 91.63 billion**
Annual Investment as a % of GDP (2019-2030):	**0.29%**
Reduction in fatalities per year:	**83,020**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**18,260,000**
Economic Benefit: **$ 549.9 billion**	B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE

India

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	100 km/h	100 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 70 km/h	+ 30 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	23 times lower	4 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN INDIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
210,023,289	73.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✓	✓	✗	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.03	≤ 0.03	≤ 0.03	✓	Approx. 4.1%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
Partial Coverage	Some Facilities		56		4%

India has several emergency numbers. These are 112 (General); 100 (Police); 102 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Indonesia

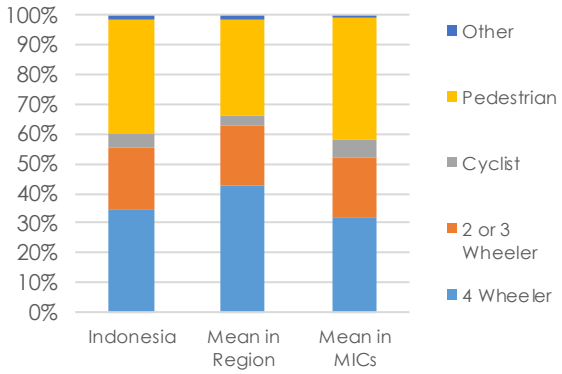
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**261,115,456**
Country Reported Fatalities, 2016 :	**31,282**
WHO Estimated Fatalities, 2016 :	**31,726**
GBD Estimated Fatalities, 2016 :	**35,692**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**12.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.94**
Estimated Serious Injuries, 2016 :	**475,890**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 37.65 billion**
Cost as % of country GDP, 2016 :	**4.0%**

FATALITIES BY USER COMPARISON CHART



76% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

832 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Indonesia	31,726	35,692	12.2	13.9	-7.6%	49,173
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Indonesia has a lead agency present, National Planning Agency (Badan Perencanaan Pembangunan Nasional - BAPPENAS), which is funded in the national budget, and has a road safety strategy which is partially funded. The function of the agency is coordination of road safety strategies without legislation and monitoring and evaluation. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Indonesia

Surveyed Road Statistics: **91%** with no formal footpaths; **91%** with no pedestrian crossings; **82%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 64 billion km; Pedestrian Travel: 1.5 billion km; Motorcyclist Travel: 11.7 billion km; Cyclist Travel: 309,800,320 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 9.68 billion**
Annual Investment as a % of GDP (2019-2030):	**0.07%**
Reduction in fatalities per year:	**15,312**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**3,370,000**

Economic Benefit: **$ 209.86 billion** B/C Ratio: **22**

ROAD SAFETY COUNTRY PROFILE

Indonesia

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN INDONESIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
128,398,594	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	49	3%

Indonesia has several emergency numbers. These are 110 (Police); 119 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Iran

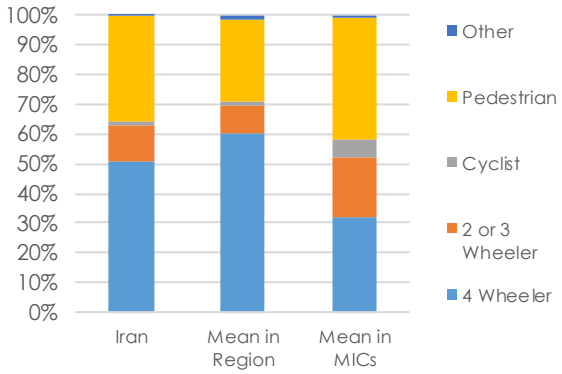
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**80,277,424**
Country Reported Fatalities, 2016 :	**15,932**
WHO Estimated Fatalities, 2016 :	**16,426**
GBD Estimated Fatalities, 2016 :	**21,397**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**20.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**26.27**
Estimated Serious Injuries, 2016 :	**246,390**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 28.5 billion**
Cost as % of country GDP, 2016 :	**6.8%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,436 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Iran	16,426	21,397	20.5	26.3	-16.0%	37,840
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Iran has a lead agency present, Road Safety Commission, Ministry of Road and Urban Development, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 10% annually with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR IRAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Iran:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 6.46 billion**
Annual Investment as a % of GDP (2019-2030):	**0.14%**
Reduction in fatalities per year:	**9,172**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,020,000**
Economic Benefit: **$ 147.75 billion**	B/C Ratio: **23**

ROAD SAFETY COUNTRY PROFILE

Iran

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	95 km/h	120 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 25 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN IRAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
30,377,065	38.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 1.7%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Subnational	65	8%

Iran has several emergency numbers. These are 110 (Police); 110 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Iraq

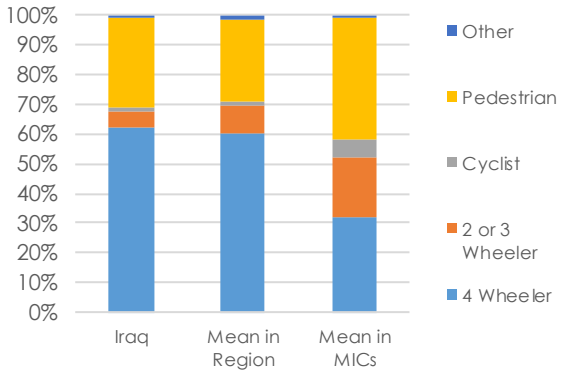
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**37,202,572**
Country Reported Fatalities, 2016 :	**4,134**
WHO Estimated Fatalities, 2016 :	**7,686**
GBD Estimated Fatalities, 2016 :	**3,733**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**20.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**8.85**
Estimated Serious Injuries, 2016 :	**115,290**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 11.72 billion**
Cost as % of country GDP, 2016 :	**6.9%**

FATALITIES BY USER COMPARISON CHART



66% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

573 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Iraq	7,686	3,733	20.7	8.9	-18.5%	15,525
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Iraq has a lead agency present, Supreme Council for Road Safety, Ministry of Interior, which isn't funded in the national budget. Iraq has a road safety strategy which is also not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR IRAQ IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Iraq:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.94 billion**
Annual Investment as a % of GDP (2019-2030):	**0.08%**
Reduction in fatalities per year:	**2,515**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**550,000**

Economic Benefit: **$ 42.63 billion** B/C Ratio: **22**

ROAD SAFETY COUNTRY PROFILE

Iraq

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	100 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 30 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	4 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN IRAQ:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
5,775,777	2.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 2 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✗	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	63	3%

Iraq has several emergency numbers. These are 112 (General); 104 (Police); 122 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Jamaica

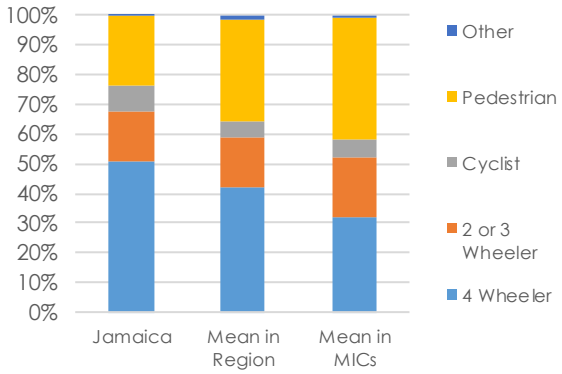
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,881,355**
Country Reported Fatalities, 2016 :	**379**
WHO Estimated Fatalities, 2016 :	**391**
GBD Estimated Fatalities, 2016 :	**282**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.15**
Estimated Serious Injuries, 2016 :	**5,865**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 634.94 million**
Cost as % of country GDP, 2016 :	**4.5%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

505 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Jamaica	391	282	13.6	10.1	-0.3%	18,787
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Jamaica has a lead agency present, National Road Safety Council (NRSC), which is funded in the national budget, and has a road safety strategy which is partially funded. The function of the agency is coordination of road safety strategies without legislation and monitoring and evaluation. The country only has a fatal road safety target, to reduce fatalities to less than 300 fatalities with a timeline of 2016 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR JAMAICA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Jamaica:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 718.93 million**
Annual Investment as a % of GDP (2019-2030):	**0.40%**
Reduction in fatalities per year:	**118**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**30,000**
Economic Benefit: **$ 2.05 billion**	B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Jamaica

Latin America and Caribbean (LAC)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	48 km/h	80 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 18 km/h	+ 10 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	3 times lower	2 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN JAMAICA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
541,316	2.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.08	≤ 0.08	≤ 0.08	✓	✗ Not Known

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	60	6%

Jamaica has a single emergency number. This is 119.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Jordan

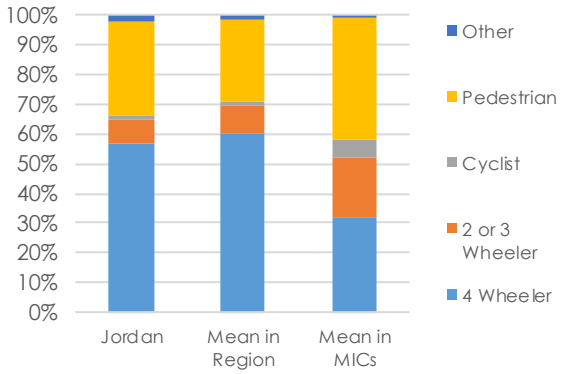
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**9,455,802**
Country Reported Fatalities, 2016 :	**750**
WHO Estimated Fatalities, 2016 :	**2,306**
GBD Estimated Fatalities, 2016 :	**1,076**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**24.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.53**
Estimated Serious Injuries, 2016 :	**34,590**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.13 billion**
Cost as % of country GDP, 2016 :	**8.1%**

FATALITIES BY USER COMPARISON CHART



68% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

656 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Jordan	2,306	1,076	24.4	10.5	-3.5%	15,889
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

JORDAN HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR JORDAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Jordan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 234.1 million**
Annual Investment as a % of GDP (2019-2030):	**0.05%**
Reduction in fatalities per year:	**705**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**160,000**
Economic Benefit: **$ 13.7 billion**	B/C Ratio: **59**

ROAD SAFETY COUNTRY PROFILE

Jordan

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	120 km/h	120 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 60 km/h	+ 50 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	17 times lower	9 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN JORDAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,502,420	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	70	5%

Jordan has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Kazakhstan

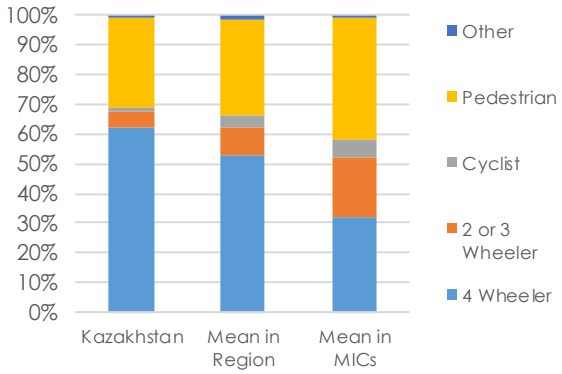
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**17,987,736**
Country Reported Fatalities, 2016 :	**2,625**
WHO Estimated Fatalities, 2016 :	**3,158**
GBD Estimated Fatalities, 2016 :	**2,780**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**17.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.73**
Estimated Serious Injuries, 2016 :	**47,370**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 8.1 billion**
Cost as % of country GDP, 2016 :	**5.9%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

969 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Kazakhstan	3,158	2,780	17.6	15.7	-17.5%	24,367
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Kazakhstan has a lead agency present, Internal Affairs Ministry of the Republic of Kazakhstan, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatality rate to less than 12 per 100,000 population with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR KAZAKHSTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Kazakhstan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 3.17 billion**
Annual Investment as a % of GDP (2019-2030):	**0.15%**
Reduction in fatalities per year:	**1,467**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**320,000**
Economic Benefit: **$ 45.07 billion**	B/C Ratio: **14**

ROAD SAFETY COUNTRY PROFILE

Kazakhstan

Europe and Central Asia (ECA)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	110 km/h	140 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 40 km/h	+ 50 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	6 times lower	5 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN KAZAKHSTAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
4,383,120	0.2%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.05	✗	Approx. 0.3%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	71	4%

Kazakhstan has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Kenya

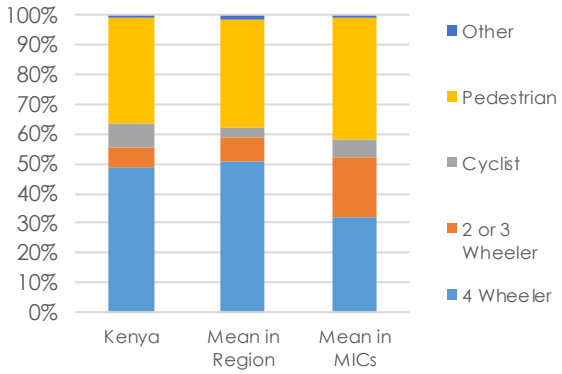
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**48,461,568**
Country Reported Fatalities, 2016 :	**2,965**
WHO Estimated Fatalities, 2016 :	**13,463**
GBD Estimated Fatalities, 2016 :	**5,416**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.80**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**11.47**
Estimated Serious Injuries, 2016 :	**201,945**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 6.55 billion**
Cost as % of country GDP, 2016 :	**9.2%**

FATALITIES BY USER COMPARISON CHART



67% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

636 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Kenya	13,463	5,416	27.8	11.5	-6.7%	4,536
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Kenya has a lead agency present, National Transport and Safety Authority, Ministry of Transport, Infrastructure, Housing and Urban Development, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Kenya

Surveyed Road Statistics: **98%** with no formal footpaths; **100%** with no pedestrian crossings; **97%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 3.3 billion km; Pedestrian Travel: 960,036,688 km; Motorcyclist Travel: 95,781,749 km; Cyclist Travel: 1.5 billion km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.09 billion**
Annual Investment as a % of GDP (2019-2030):	**0.20%**
Reduction in fatalities per year:	**5,691**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,250,000**

Economic Benefit: **$ 33.92 billion** B/C Ratio: **16**

ROAD SAFETY COUNTRY PROFILE

Kenya

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	100 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 30 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	4 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN KENYA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,011,972	36.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✓ 3 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	57	5%

Kenya has a single emergency number. This is 999.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Kiribati

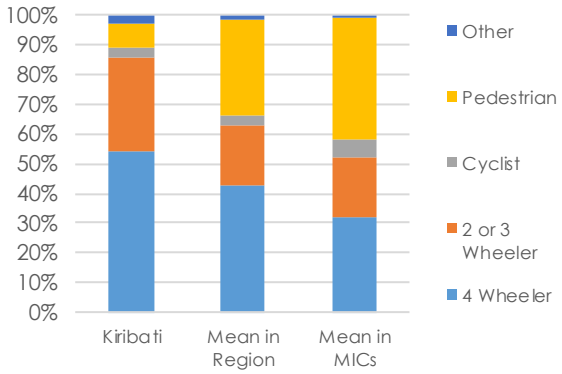
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**114,395**
Country Reported Fatalities, 2016 :	**5**
WHO Estimated Fatalities, 2016 :	**5**
GBD Estimated Fatalities, 2016 :	**12**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**4.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.40**
Estimated Serious Injuries, 2016 :	**75**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.59 million**
Cost as % of country GDP, 2016 :	**1.5%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

666 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Kiribati does not have a lead agency. However Kiribati has a road safety strategy which is partially funded. The functions of the agency are not defined. The country has both a fatal and non-fatal road safety target, to reduce fatalities to zero with a timeline of 2016 - 2019.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR KIRIBATI IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Kiribati:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 13.07 million**
Annual Investment as a % of GDP (2019-2030):	**0.56%**
Reduction in fatalities per year:	**1**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**270**

Economic Benefit: **$ 6.7 million** B/C Ratio: **1**

ROAD SAFETY COUNTRY PROFILE

Kiribati

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	60 km/h	60 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 10 km/h	Appropriate	Appropriate	
	2 times lower	Low Risk	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN KIRIBATI:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

3,706	20.4%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	0.00	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	National	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	40	EXPENDITURE ON HEALTHCARE AS % OF GDP	12%
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM				

Kiribati has several emergency numbers. These are 999 (General); 192 (Police); 194 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

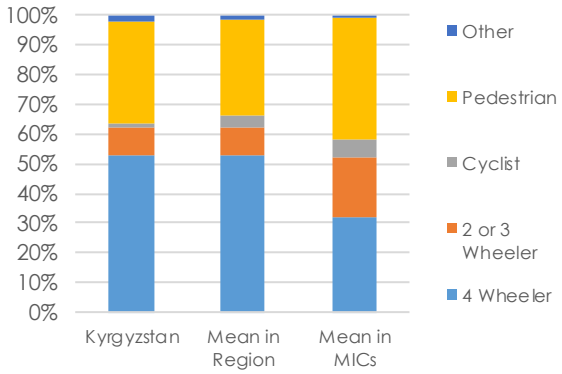
ROAD SAFETY COUNTRY PROFILE — Kyrgyzstan — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**5,955,734**
Country Reported Fatalities, 2016 :	**812**
WHO Estimated Fatalities, 2016 :	**916**
GBD Estimated Fatalities, 2016 :	**901**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**14.38**
Estimated Serious Injuries, 2016 :	**13,740**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 341.32 million**
Cost as % of country GDP, 2016 :	**5.0%**

FATALITIES BY USER COMPARISON CHART



84% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

844 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Kyrgyzstan	916	901	15.4	14.4	-17.6%	17,272
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Kyrgyzstan has a lead agency present, Commission for Road Safety, under leadership of the Prime Minister , which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 156 with a timeline of 2007 - 2016.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR KYRGYZSTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Kyrgyzstan:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 442 million**
Annual Investment as a % of GDP (2019-2030):	**0.51%**
Reduction in fatalities per year:	**539**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**120,000**
Economic Benefit: **$ 2.08 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Kyrgyzstan

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN KYRGYZSTAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
958,187	2.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✗	✗	✗	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	66	7%

Kyrgyzstan has several emergency numbers. These are 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Lao PDR

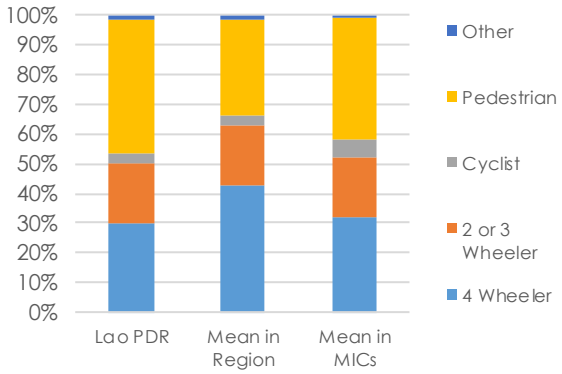
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**6,758,353**
Country Reported Fatalities, 2016 :	**1,086**
WHO Estimated Fatalities, 2016 :	**1,120**
GBD Estimated Fatalities, 2016 :	**1,717**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**24.96**
Estimated Serious Injuries, 2016 :	**16,800**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 870.93 million**
Cost as % of country GDP, 2016 :	**5.5%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,502 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Lao PDR	1,120	1,717	16.6	25.0	-7.2%	27,374
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Lao PDR has a lead agency present, National Road Safety Committee (NRSC), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR LAO PDR IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Lao PDR:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 771.93 million**
Annual Investment as a % of GDP (2019-2030):	**0.34%**
Reduction in fatalities per year:	**388**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**90,000**
Economic Benefit: **$ 3.56 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Lao PDR

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	90 km/h	Not Known	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 10 km/h	+ 20 km/h	-	
	2 times lower	3 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN LAO PDR:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,850,020	76.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	48	2%

Lao PDR has several emergency numbers. These are 191 (Police); 190 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Lebanon

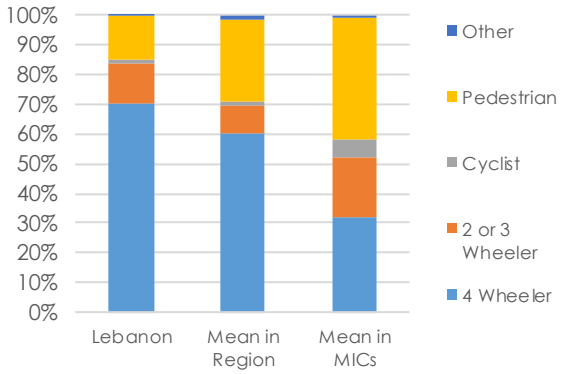
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**6,006,668**
Country Reported Fatalities, 2016 :	**576**
WHO Estimated Fatalities, 2016 :	**1,090**
GBD Estimated Fatalities, 2016 :	**559**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**18.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**6.68**
Estimated Serious Injuries, 2016 :	**16,350**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.11 billion**
Cost as % of country GDP, 2016 :	**6.0%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

5 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

419 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Lebanon	1,090	559	18.1	6.7	-3.4%	31,072
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Lebanon has a lead agency present, National Road Safety Counci, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR LEBANON IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Lebanon:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 226.53 million**
Annual Investment as a % of GDP (2019-2030):	**0.03%**
Reduction in fatalities per year:	**401**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**90,000**
Economic Benefit: **$ 16.13 billion**	B/C Ratio: **71**

ROAD SAFETY COUNTRY PROFILE

Lebanon

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	70 km/h	100 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 20 km/h	Appropriate	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	Low Risk	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN LEBANON:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,866,407	6.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 10 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	0.00	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	68	8%

Lebanon has several emergency numbers. These are 112 (General); 160 (Police); 175 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

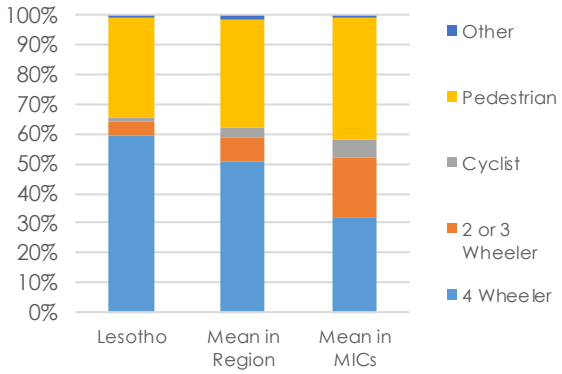
ROAD SAFETY COUNTRY PROFILE — Lesotho — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,203,821**
Country Reported Fatalities, 2016 :	**318**
WHO Estimated Fatalities, 2016 :	**638**
GBD Estimated Fatalities, 2016 :	**831**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**28.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**42.86**
Estimated Serious Injuries, 2016 :	**9,570**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 223.65 million**
Cost as % of country GDP, 2016 :	**9.6%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

2,424 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Lesotho	638	831	28.9	42.9	-5.8%	5,581
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Lesotho has a lead agency present, Department of Road Safety, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR LESOTHO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Lesotho:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Lesotho

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN LESOTHO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
122,997	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	Approx. 60.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	45	8%

Lesotho has several emergency numbers. These are 123 (Police); 121 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

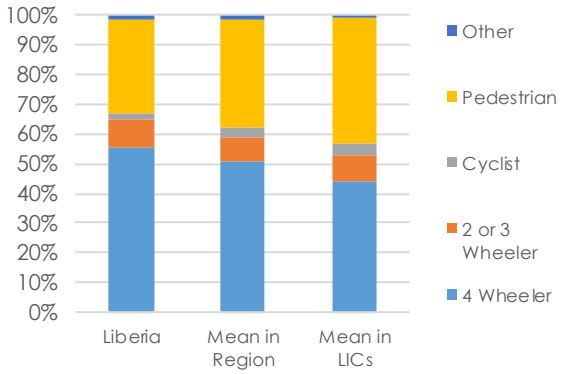
ROAD SAFETY COUNTRY PROFILE — Liberia — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,613,823**
Country Reported Fatalities, 2016 :	**175**
WHO Estimated Fatalities, 2016 :	**1,657**
GBD Estimated Fatalities, 2016 :	**502**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**35.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.86**
Estimated Serious Injuries, 2016 :	**24,855**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 391.42 million**
Cost as % of country GDP, 2016 :	**11.9%**

FATALITIES BY USER COMPARISON CHART



61% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

626 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Liberia	1,657	502	35.9	10.9	-8.8%	23,518
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

LIBERIA HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR LIBERIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Liberia:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 137.8 million**
Annual Investment as a % of GDP (2019-2030):	**0.52%**
Reduction in fatalities per year:	**639**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**140,000**
Economic Benefit: **$ 1 billion**	B/C Ratio: **7**

ROAD SAFETY COUNTRY PROFILE

Liberia

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	56 km/h	72 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 10 km/h	Appropriate	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	Low Risk	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN LIBERIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,085,075	0.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 12 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✗	✓ Prohibited under 13 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.15	<0.15	<0.15	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	34	10%

Liberia has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Libya

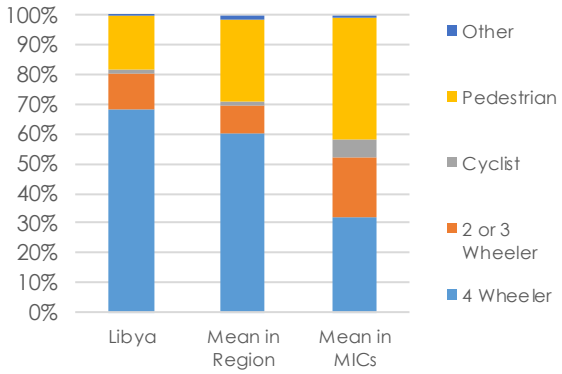
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**6,293,253**
Country Reported Fatalities, 2016 :	**2,414**
WHO Estimated Fatalities, 2016 :	**1,645**
GBD Estimated Fatalities, 2016 :	**1,680**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**24.63**
Estimated Serious Injuries, 2016 :	**24,675**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.28 billion**
Cost as % of country GDP, 2016 :	**8.7%**

FATALITIES BY USER COMPARISON CHART



83% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,373 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Libya	1,645	1,680	26.1	24.6	-3.7%	56,465
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Libya has a lead agency present, Department of Trac and Licenses, Ministry of Interior, which isn't funded in the national budget. Libya has a road safety strategy which is also not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 3 - 5 % (renewed every three years) with a timeline of 2017 - 2019.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR LIBYA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Libya:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 3.25 billion**
Annual Investment as a % of GDP (2019-2030):	**0.57%**
Reduction in fatalities per year:	**1,678**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**370,000**
Economic Benefit: **$ 40.74 billion**	B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Libya

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	85 km/h	100 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 15 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN LIBYA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
3,553,497	0.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	Approx. 1.2%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	63	0%

Libya has a single emergency number. This is 1515.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

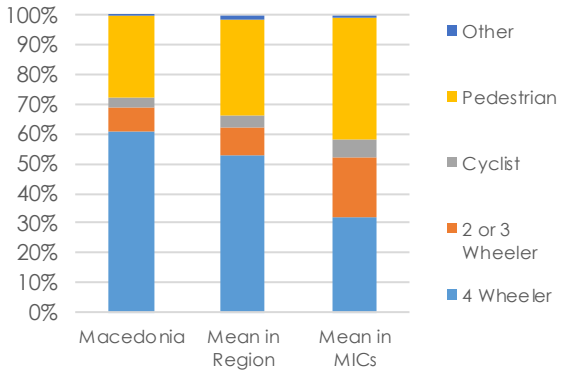
ROAD SAFETY COUNTRY PROFILE — Macedonia — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,081,206**
Country Reported Fatalities, 2016 :	**148**
WHO Estimated Fatalities, 2016 :	**134**
GBD Estimated Fatalities, 2016 :	**164**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**6.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.55**
Estimated Serious Injuries, 2016 :	**2,010**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 228.48 million**
Cost as % of country GDP, 2016 :	**2.1%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

568 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Macedonia	134	164	6.4	7.5	5.8%	21,284
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Macedonia has a lead agency present, Republic Council on Road Traffic Safety and Coordination Body of the Government of Republic of Macedonia, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities to EU average, young driver fatalities by 30%, and child victims to zero with a timeline of 2015 - 2020.

PILLAR 2

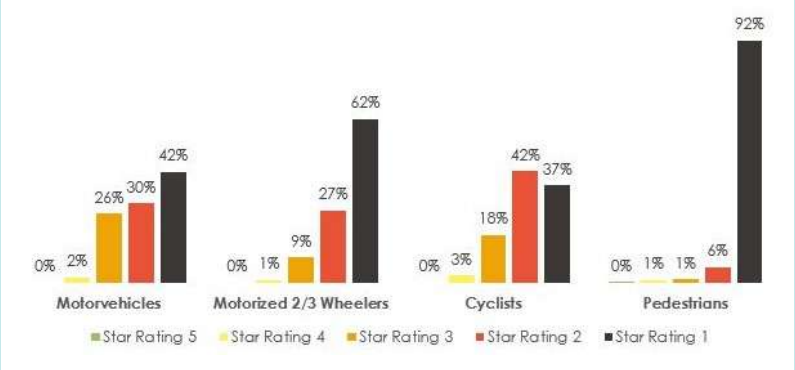
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Macedonia

Surveyed Road Statistics: **93%** with no formal footpaths; **98%** with no pedestrian crossings; **49%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 697,509,391 km; Pedestrian Travel: 38,478,300 km; Motorcyclist Travel: 21,572,455 km; Cyclist Travel: 3,648,540 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 460.92 million**
Annual Investment as a % of GDP (2019-2030):	**0.31%**
Reduction in fatalities per year:	**73**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**20,000**

Economic Benefit: **$ 1.44 billion** B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Macedonia

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	50 km/h URBAN ROADS	90 km/h RURAL ROADS	130 km/h MOTORWAYS	Manual SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MACEDONIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✓ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

442,962 TOTAL REGISTERED VEHICLES AS OF 2016	2.3% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✗ No IMPORT AGE LIMIT	✓ Yes TAXATION BASED LIMITS	✓ Yes IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✓ BACK	✓ MOTORCYCLE HELMET LAW	✗ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✗ 16 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	≤0.05 GENERAL POPULATION	< 0.01 YOUNG DRIVERS	≤0.009 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	Approx. 1.4% % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers NATIONAL EMERGENCY CARE ACCESS NUMBER	National TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	70	EXPENDITURE ON HEALTHCARE AS % OF GDP	6%

Macedonia has several emergency numbers. These are 112 (General); 192 (Police); 194 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

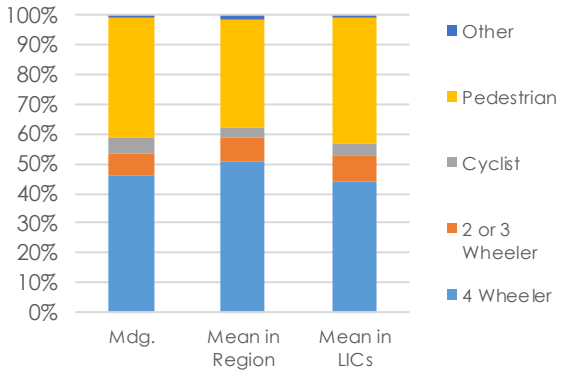
ROAD SAFETY COUNTRY PROFILE — Madagascar — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**24,894,552**
Country Reported Fatalities, 2016 :	**340**
WHO Estimated Fatalities, 2016 :	**7,108**
GBD Estimated Fatalities, 2016 :	**3,416**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**28.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.46**
Estimated Serious Injuries, 2016 :	**106,620**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 949.48 million**
Cost as % of country GDP, 2016 :	**9.5%**

FATALITIES BY USER COMPARISON CHART



69% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

786 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Madagascar	7,108	3,416	28.6	13.5	-3.1%	952
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Madagascar has a lead agency present, Intersectoral Committee for Road Safety (CISR), Ministry of Transport and Meteorology, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 5% with a timeline of 2015 - 2017 (Expired).

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MADAGASCAR IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Madagascar:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 487.19 million**
Annual Investment as a % of GDP (2019-2030):	**0.36%**
Reduction in fatalities per year:	**2,872**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**630,000**
Economic Benefit: **$ 4.05 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Madagascar

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	Not Known	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 20 km/h	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MADAGASCAR:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
236,979	18.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	30	6%

Madagascar has several emergency numbers. These are 117 (General); 3600 (Police); 124 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

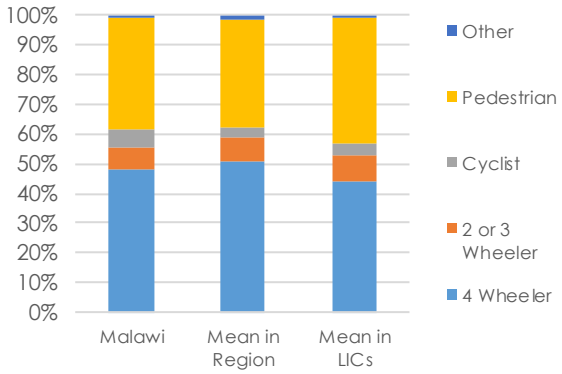
ROAD SAFETY COUNTRY PROFILE — Malawi — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**18,091,576**
Country Reported Fatalities, 2016 :	**1,122**
WHO Estimated Fatalities, 2016 :	**5,601**
GBD Estimated Fatalities, 2016 :	**2,217**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**31.00**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.23**
Estimated Serious Injuries, 2016 :	**84,015**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 559.27 million**
Cost as % of country GDP, 2016 :	**10.3%**

FATALITIES BY USER COMPARISON CHART



62% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

726 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Malawi	5,601	2,217	31.0	13.2	-4.7%	2,673
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Malawi has a lead agency present, Directorate of Road Traffic and Safety Services, Ministry of Transport and Public Works, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 20% with a timeline of 2015 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MALAWI IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Malawi:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 200.85 million**
Annual Investment as a % of GDP (2019-2030):	**0.25%**
Reduction in fatalities per year:	**2,531**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**560,000**
Economic Benefit: **$ 2.88 billion**	B/C Ratio: **14**

ROAD SAFETY COUNTRY PROFILE

Malawi

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MALAWI:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
437,416	5.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✓	✗ Not Known

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	44	10%

Malawi has several emergency numbers. These are 990 (General); 997 (Police); 999 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Malaysia

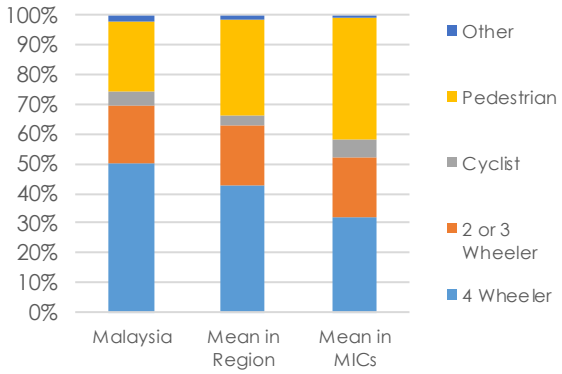
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**31,187,264**
Country Reported Fatalities, 2016 :	**7,152**
WHO Estimated Fatalities, 2016 :	**7,374**
GBD Estimated Fatalities, 2016 :	**6,809**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**22.48**
Estimated Serious Injuries, 2016 :	**110,610**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 23.33 billion**
Cost as % of country GDP, 2016 :	**7.9%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,209 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Malaysia	7,374	6,809	23.6	22.5	5.5%	88,540
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Malaysia has a lead agency present, Road Safety Department, Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2014 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MALAYSIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Malaysia:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 4.69 billion**
Annual Investment as a % of GDP (2019-2030):	**0.11%**
Reduction in fatalities per year:	**2,627**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**580,000**
Economic Benefit: **$ 91.74 billion**	B/C Ratio: **20**

ROAD SAFETY COUNTRY PROFILE

Malaysia

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	90 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 60 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	17 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MALAYSIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
27,613,120	45.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	Approx. 0.1%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	70	4%

Malaysia has a single emergency number. This is 999.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Maldives

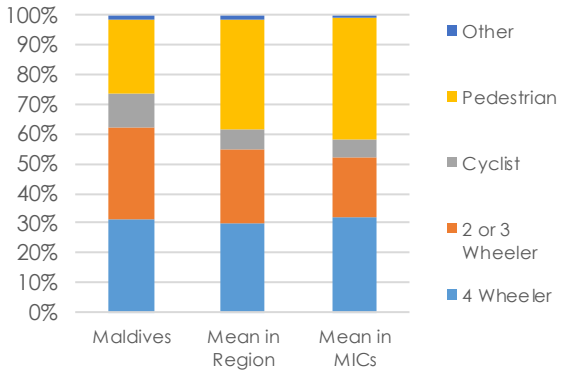
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**427,756**
Country Reported Fatalities, 2016 :	**4**
WHO Estimated Fatalities, 2016 :	**4**
GBD Estimated Fatalities, 2016 :	**32**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**0.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.25**
Estimated Serious Injuries, 2016 :	**60**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 13.72 million**
Cost as % of country GDP, 2016 :	**0.3%**

FATALITIES BY USER COMPARISON CHART



74% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

429 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Maldives	4	32	0.9	7.3	-4.0%	21,737
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Maldives has a lead agency present, Transport Authority, Ministry of Economic Development, which is funded in the national budget, and has a road safety strategy which is not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MALDIVES IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Maldives:

Audit/Star Rating is not Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Maldives

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	30 km/h	30 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	Appropriate Low Risk	Appropriate Low Risk	- -	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MALDIVES:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
92,983	80.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✗	✗	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✗	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	55	11%

Maldives has several emergency numbers. These are 119 (General); 191 (Police); 102 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

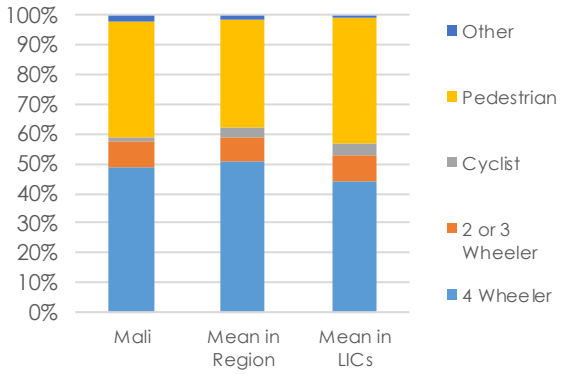
ROAD SAFETY COUNTRY PROFILE — Mali — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**17,994,836**
Country Reported Fatalities, 2016 :	**541**
WHO Estimated Fatalities, 2016 :	**4,159**
GBD Estimated Fatalities, 2016 :	**3,090**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.82**
Estimated Serious Injuries, 2016 :	**62,385**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.08 billion**
Cost as % of country GDP, 2016 :	**7.7%**

FATALITIES BY USER COMPARISON CHART



42% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,026 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mali	4,159	3,090	23.1	15.8	3.7%	1,914
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Mali has a lead agency present, National Agency for Road Safety (ANASER), Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MALI IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Mali:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 292.16 million**
Annual Investment as a % of GDP (2019-2030):	**0.15%**
Reduction in fatalities per year:	**1,731**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**380,000**
Economic Benefit: **$ 4.82 billion**	B/C Ratio: **17**

ROAD SAFETY COUNTRY PROFILE

Mali

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MALI:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
344,345	16.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 10 Yrs.	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✗	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.03	<0.03	<0.03	✓	Approx. 0.4%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	32	4%

Mali has several emergency numbers. These are 17 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

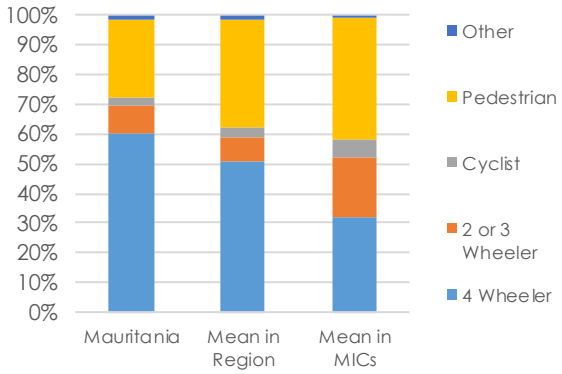
ROAD SAFETY COUNTRY PROFILE — Mauritania — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,301,018**
Country Reported Fatalities, 2016 :	**184**
WHO Estimated Fatalities, 2016 :	**1,064**
GBD Estimated Fatalities, 2016 :	**672**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**24.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.55**
Estimated Serious Injuries, 2016 :	**15,960**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 389.83 million**
Cost as % of country GDP, 2016 :	**8.2%**

FATALITIES BY USER COMPARISON CHART



63% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

948 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mauritania	1,064	672	24.7	17.5	-5.7%	9,677
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Mauritania has a lead agency present, Directorate of Road Safety, General Directorate of Land Transport (DGTT), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 25% with a timeline of 2012 - 2016.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MAURITANIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Mauritania:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 207.25 million**
Annual Investment as a % of GDP (2019-2030):	**0.34%**
Reduction in fatalities per year:	**381**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**80,000**
Economic Benefit: **$ 1.62 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Mauritania

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	80 km/h	100 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 50 km/h	+ 30 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	13 times lower	4 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MAURITANIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
416,190	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	33	4%

Mauritania has several emergency numbers. These are 117 (General); 119 (Police); 101 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

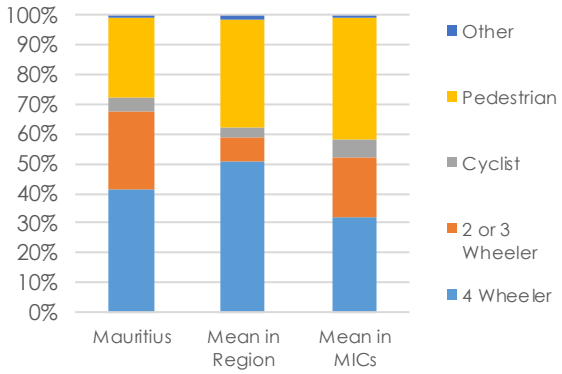
ROAD SAFETY COUNTRY PROFILE — Mauritius — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,262,132**
Country Reported Fatalities, 2016 :	**144**
WHO Estimated Fatalities, 2016 :	**173**
GBD Estimated Fatalities, 2016 :	**168**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.22**
Estimated Serious Injuries, 2016 :	**2,595**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 556.91 million**
Cost as % of country GDP, 2016 :	**4.6%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

5 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

727 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mauritius	173	168	13.7	13.2	4.4%	40,224
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Mauritius has a lead agency present, Traffic Management and Road Safety Unit, Ministry of Public Infrastructure and Land Transport, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2016 - 2025.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MAURITIUS IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Mauritius:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 69.84 million**
Annual Investment as a % of GDP (2019-2030):	**0.05%**
Reduction in fatalities per year:	**56**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 1.88 billion**	B/C Ratio: **27**

ROAD SAFETY COUNTRY PROFILE

Mauritius

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	90 km/h	110 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 60 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	17 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MAURITIUS:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
507,676	39.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 3 Yrs.	✗ No	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.05	✓	Approx. 23.6%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Multiple Numbers	Subnational		64		6%

Mauritius has several emergency numbers. These are 999 (General); 112 (Police); 114 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Mexico

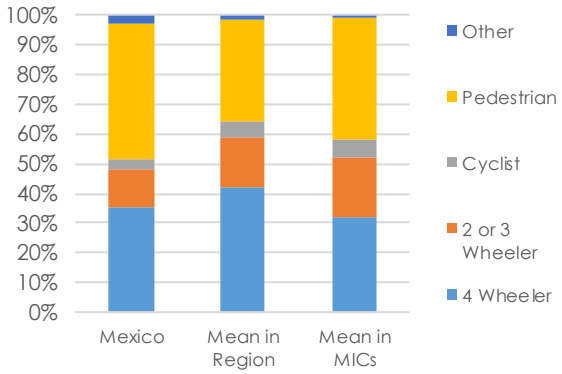
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**127,540,424**
Country Reported Fatalities, 2016 :	**16,039**
WHO Estimated Fatalities, 2016 :	**16,725**
GBD Estimated Fatalities, 2016 :	**19,676**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.73**
Estimated Serious Injuries, 2016 :	**250,875**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 46.99 billion**
Cost as % of country GDP, 2016 :	**4.4%**

FATALITIES BY USER COMPARISON CHART



78% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

847 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mexico	16,725	19,676	13.1	15.7	-1.4%	31,524
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Mexico has a lead agency present, National Council for Accident Prevention through its Secretariat (STCONAPRA), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Mexico

Surveyed Road Statistics: **65%** with no formal footpaths; **84%** with no pedestrian crossings; **86%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 207.3 billion km; Pedestrian Travel: 1.9 billion km; Motorcyclist Travel: 4.3 billion km; Cyclist Travel: 467,974,895 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 12.27 billion**
Annual Investment as a % of GDP (2019-2030):	**0.08%**
Reduction in fatalities per year:	**5,549**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,220,000**

Economic Benefit: **$ 185.15 billion** B/C Ratio: **15**

ROAD SAFETY COUNTRY PROFILE

Mexico

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	70 km/h URBAN ROADS	90 km/h RURAL ROADS	110 km/h MOTORWAYS	Manual and Automated SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 40 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	9 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MEXICO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

40,205,671 TOTAL REGISTERED VEHICLES AS OF 2016	6.5% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✓ 5 Yrs. IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✗ No IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✗ NATIONAL SEATBELT LAW	✗ DRIVER	✗ FRONT	✗ BACK	✗ MOTORCYCLE HELMET LAW	✗ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✗ 16 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✗ IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			✓ RANDOM DRINK DRIVING TESTS	Approx. 19.5% % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		✗ GENERAL POPULATION	✗ YOUNG DRIVERS	✗ PROFESSIONAL DRIVERS		

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Single Number NATIONAL EMERGENCY CARE ACCESS NUMBER	National TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	76	EXPENDITURE ON HEALTHCARE AS % OF GDP	5%

Mexico has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Micronesia

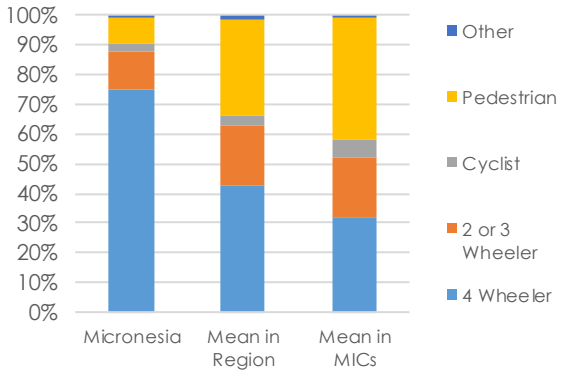
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**104,937**
Country Reported Fatalities, 2016 :	**2**
WHO Estimated Fatalities, 2016 :	**2**
GBD Estimated Fatalities, 2016 :	**16**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**1.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.66**
Estimated Serious Injuries, 2016 :	**30**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.09 million**
Cost as % of country GDP, 2016 :	**0.6%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

933 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Micronesia	2	16	1.9	15.7	-0.3%	5,406
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

MICRONESIA HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MICRONESIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Micronesia:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 7.57 million**
Annual Investment as a % of GDP (2019-2030):	**0.19%**
Reduction in fatalities per year:	**1**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**180**
Economic Benefit: **$ 8.8 million**	B/C Ratio: **1**

ROAD SAFETY COUNTRY PROFILE

Micronesia

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	40 km/h	40 km/h	Manual

Difference with Recommended Safe Systems Speeds			
	+ 10 km/h	Appropriate	Appropriate
	2 times lower	Low Risk	Low Risk

Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MICRONESIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
5,673	0.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	Approx. 100.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	60	13%

Micronesia has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Moldova

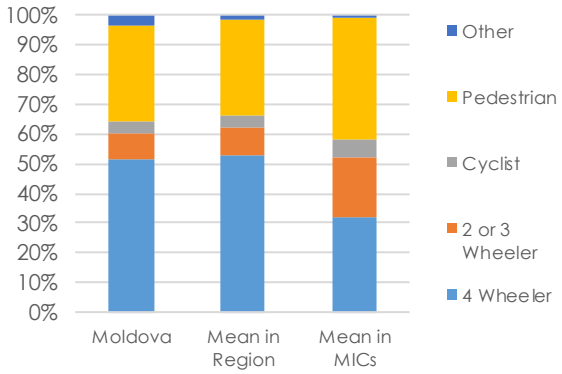
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,059,608**
Country Reported Fatalities, 2016 :	**346**
WHO Estimated Fatalities, 2016 :	**394**
GBD Estimated Fatalities, 2016 :	**465**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**9.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**12.43**
Estimated Serious Injuries, 2016 :	**5,910**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 250.64 million**
Cost as % of country GDP, 2016 :	**3.7%**

FATALITIES BY USER COMPARISON CHART



81% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

736 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Moldova	394	465	9.7	12.4	-6.1%	22,028
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Moldova has a lead agency present, The National Committee on Road Safety, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Moldova

Surveyed Road Statistics: **99%** with no formal footpaths; **90%** with no pedestrian crossings; **99%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 2.4 billion km; Pedestrian Travel: 2.4 billion km; Motorcyclist Travel: 74,625,756 km; Cyclist Travel: 2.6 billion km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 182.36 million**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**175**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**40,000**
Economic Benefit: **$ 1.43 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Moldova

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	110 km/h	110 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 40 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	6 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MOLDOVA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
894,253	4.2%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✓ 3 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.03	≤ 0.03	≤ 0.03	✓	Approx. 9.4%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Single Number	Some Facilities		65		9%

Moldova has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Mongolia

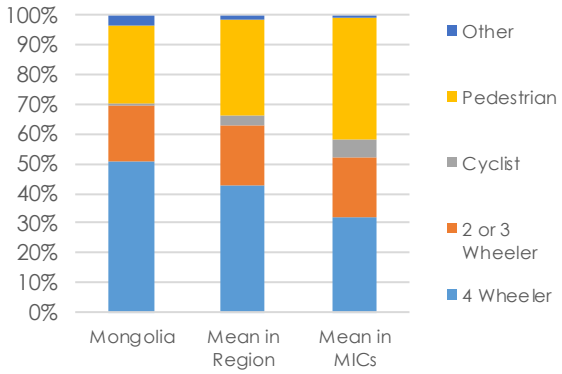
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**3,027,398**
Country Reported Fatalities, 2016 :	**484**
WHO Estimated Fatalities, 2016 :	**499**
GBD Estimated Fatalities, 2016 :	**541**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.95**
Estimated Serious Injuries, 2016 :	**7,485**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 613.09 million**
Cost as % of country GDP, 2016 :	**5.5%**

FATALITIES BY USER COMPARISON CHART



84% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,037 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mongolia	499	541	16.5	16.9	-5.0%	27,797
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Mongolia has a lead agency present, Ministry of Road and Transport Development, The National Committee, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2012 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MONGOLIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Mongolia:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 960.36 million**
Annual Investment as a % of GDP (2019-2030):	**0.69%**
Reduction in fatalities per year:	**239**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 2.96 billion**	B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Mongolia

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	80 km/h	100 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MONGOLIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
841,537	5.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.04	<0.04	<0.04	✓	Approx. 25.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	63	4%

Mongolia has several emergency numbers. These are 105 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

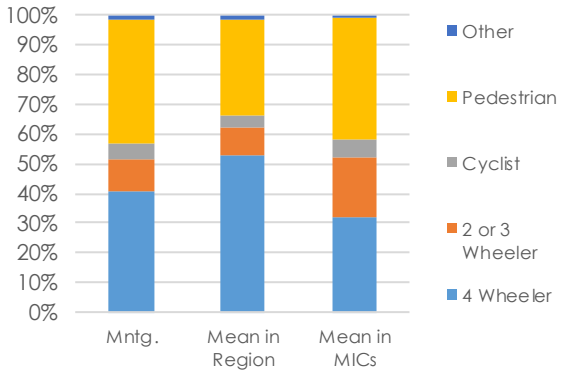
ROAD SAFETY COUNTRY PROFILE — Montenegro — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**628,615**
Country Reported Fatalities, 2016 :	**65**
WHO Estimated Fatalities, 2016 :	**67**
GBD Estimated Fatalities, 2016 :	**57**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**10.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.15**
Estimated Serious Injuries, 2016 :	**1,005**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 156.59 million**
Cost as % of country GDP, 2016 :	**3.6%**

FATALITIES BY USER COMPARISON CHART



68% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

636 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Montenegro	67	57	10.7	9.2	-3.0%	33,601
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Montenegro has a lead agency present, Coordination Body for monitoring the implementation of Strategy for the improvement of Road Safety, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2010 - 2019.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

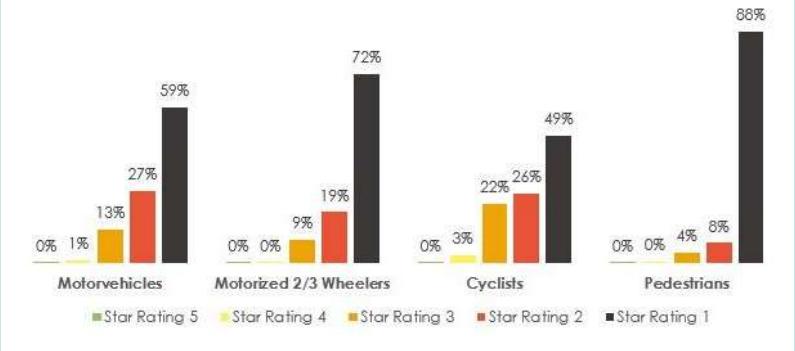
PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Montenegro

Surveyed Road Statistics: **86%** with no formal footpaths; **94%** with no pedestrian crossings; **98%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 1.1 billion km; Pedestrian Travel: 57,285,655 km; Motorcyclist Travel: 33,817,068 km; Cyclist Travel: 4,669,080 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 252.27 million**
Annual Investment as a % of GDP (2019-2030):	**0.44%**
Reduction in fatalities per year:	**27**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**

Economic Benefit: **$ 692 million** B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Montenegro

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	130 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MONTENEGRO:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
211,219	0.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.03	0.00	≤0.03	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	54	0%

Montenegro has several emergency numbers. These are 112 (General); 122 (Police); 124 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Morocco

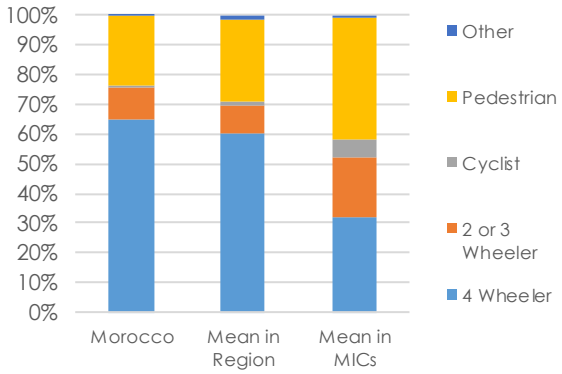
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**35,276,784**
Country Reported Fatalities, 2016 :	**3,785**
WHO Estimated Fatalities, 2016 :	**6,917**
GBD Estimated Fatalities, 2016 :	**7,320**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**19.60**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**20.80**
Estimated Serious Injuries, 2016 :	**103,755**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 6.64 billion**
Cost as % of country GDP, 2016 :	**6.4%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

5 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,143 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Morocco	6,917	7,320	19.6	20.8	-4.0%	10,748
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Morocco has a lead agency present, Directorate of Road Transport and Road Safety, Ministry of Equipment, Transport, Logistics and Water, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 20% and 50% respectively with a timeline of 2017 - 2020 and 2017 - 2026.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MOROCCO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Morocco:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.14 billion**
Annual Investment as a % of GDP (2019-2030):	**0.08%**
Reduction in fatalities per year:	**2,748**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**600,000**
Economic Benefit: **$ 30.82 billion**	B/C Ratio: **27**

ROAD SAFETY COUNTRY PROFILE

Morocco

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	60 km/h URBAN ROADS	100 km/h RURAL ROADS	120 km/h MOTORWAYS	Manual and Automated SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 30 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	4 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MOROCCO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

3,791,469	1.5%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Banned	✓ New	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✗ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	<0.02 GENERAL POPULATION	<0.02 YOUNG DRIVERS	<0.02 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	Approx. 3.7% % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)				

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Single Number	None	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	65	EXPENDITURE ON HEALTHCARE AS % OF GDP	6%
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM				

Morocco has a single emergency number. This is 19.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

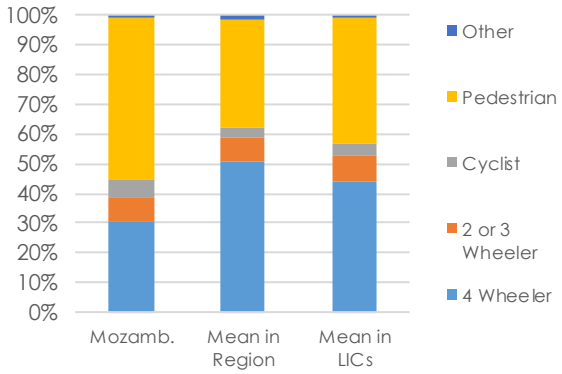
ROAD SAFETY COUNTRY PROFILE — Mozambique — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**28,829,476**
Country Reported Fatalities, 2016 :	**1,379**
WHO Estimated Fatalities, 2016 :	**8,665**
GBD Estimated Fatalities, 2016 :	**5,054**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**30.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.42**
Estimated Serious Injuries, 2016 :	**129,975**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.1 billion**
Cost as % of country GDP, 2016 :	**10.0%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

970 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Mozambique	8,665	5,054	30.1	17.4	-5.6%	2,424
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Mozambique has a lead agency present, National Land Transport Institute (INATTER), Ministry of Transport and Communications, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MOZAMBIQUE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Mozambique:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 394.3 million**
Annual Investment as a % of GDP (2019-2030):	**0.22%**
Reduction in fatalities per year:	**3,608**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**790,000**

Economic Benefit: **$ 5.84 billion** B/C Ratio: **15**

ROAD SAFETY COUNTRY PROFILE

Mozambique

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	120 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 50 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	9 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MOZAMBIQUE:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
698,864	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.06	<0.06	<0.06	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Multiple Numbers	Some Facilities		42		5%

Mozambique has several emergency numbers. These are 119 (Police); 198 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Myanmar

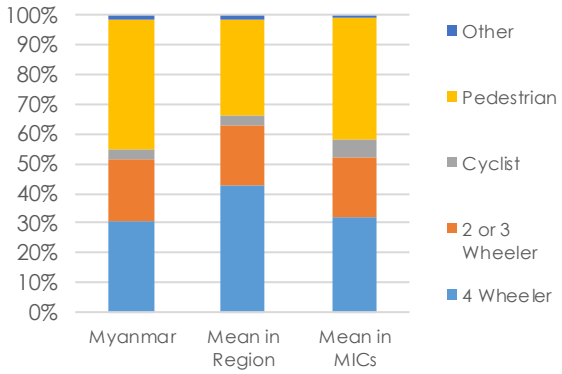
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**52,885,224**
Country Reported Fatalities, 2016 :	**4,887**
WHO Estimated Fatalities, 2016 :	**10,540**
GBD Estimated Fatalities, 2016 :	**11,075**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**19.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.12**
Estimated Serious Injuries, 2016 :	**158,100**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 4.19 billion**
Cost as % of country GDP, 2016 :	**6.6%**

FATALITIES BY USER COMPARISON CHART



83% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,158 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Myanmar	10,540	11,075	19.9	21.1	-7.1%	12,066
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Myanmar has a lead agency present, National Road Safety Council (NRSC), Ministry of Transport and Communications, which isn't funded in the national budget. Myanmar has a road safety strategy which is also not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR MYANMAR IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Myanmar:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 446.9 million**
Annual Investment as a % of GDP (2019-2030):	**0.05%**
Reduction in fatalities per year:	**4,772**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,050,000**
Economic Benefit: **$ 22.18 billion**	B/C Ratio: **50**

ROAD SAFETY COUNTRY PROFILE

Myanmar

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	48 km/h	80 km/h	Not Known	Automated
Difference with Recommended Safe Systems Speeds	+ 18 km/h	+ 10 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	3 times lower	2 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN MYANMAR:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
6,381,136	84.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs / 145 cm	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 21.4%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	60	5%

Myanmar has several emergency numbers. These are 199 (Police); 192 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

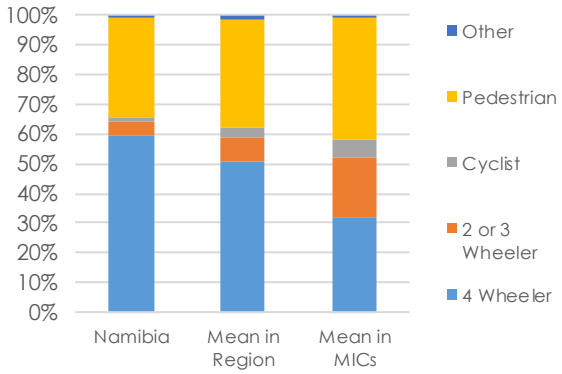
ROAD SAFETY COUNTRY PROFILE — Namibia — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,479,713**
Country Reported Fatalities, 2016 :	**731**
WHO Estimated Fatalities, 2016 :	**754**
GBD Estimated Fatalities, 2016 :	**447**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**30.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**19.30**
Estimated Serious Injuries, 2016 :	**11,310**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.14 billion**
Cost as % of country GDP, 2016 :	**10.1%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,127 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Namibia	754	447	30.4	19.3	-6.5%	14,973
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Namibia has a lead agency present, National Road Safety Council (NRSC), Ministry of Works and Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination and monitoring and evaluation of road safety strategies without legislation. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR NAMIBIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Namibia:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.43 billion**
Annual Investment as a % of GDP (2019-2030):	**0.90%**
Reduction in fatalities per year:	**203**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**40,000**
Economic Benefit: **$ 3.8 billion**	B/C Ratio: **3**

ROAD SAFETY COUNTRY PROFILE

Namibia

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	120 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 50 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	9 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN NAMIBIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
371,281	1.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.079	≤0.079	≤0.079	✓	Approx. 3.9%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	59	9%

Namibia has a single emergency number. This is .

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Nepal

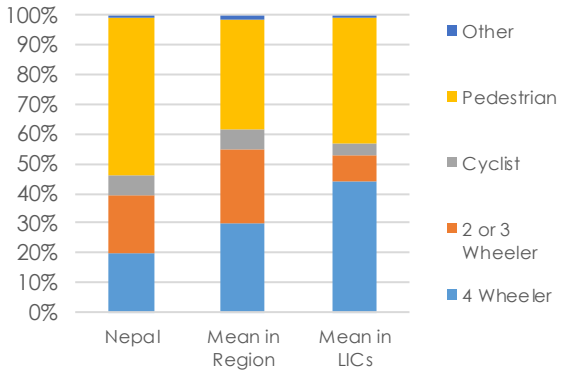
South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**28,982,772**
Country Reported Fatalities, 2016 :	**2,006**
WHO Estimated Fatalities, 2016 :	**4,622**
GBD Estimated Fatalities, 2016 :	**6,765**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**22.88**
Estimated Serious Injuries, 2016 :	**69,330**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.12 billion**
Cost as % of country GDP, 2016 :	**5.3%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,084 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Nepal	4,622	6,765	15.9	22.9	-0.6%	8,071
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Nepal has a lead agency present, Ministry of Physical Infrastructure and Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Nepal

Surveyed Road Statistics: **93%** with no formal footpaths; **97%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 962,347,801 km; Pedestrian Travel: 110,315,410 km; Motorcyclist Travel: 397,281,817 km; Cyclist Travel: 64,175,030 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 140.97 million**
Annual Investment as a % of GDP (2019-2030):	**0.05%**
Reduction in fatalities per year:	**2,081**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**460,000**
Economic Benefit: **$ 6.12 billion**	B/C Ratio: **43**

ROAD SAFETY COUNTRY PROFILE

Nepal

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	80 km/h	80 km/h	Manual

Difference with Recommended Safe Systems Speeds				
	+ 10 km/h	+ 10 km/h	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	2 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN NEPAL:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,339,169	66.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	46	6%

Nepal has several emergency numbers. These are 100 (General); 103 (Police); 102 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

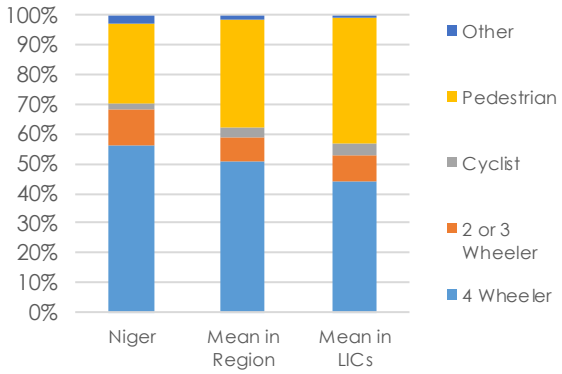
ROAD SAFETY COUNTRY PROFILE — Niger — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**20,672,988**
Country Reported Fatalities, 2016 :	**978**
WHO Estimated Fatalities, 2016 :	**5,414**
GBD Estimated Fatalities, 2016 :	**2,514**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**12.21**
Estimated Serious Injuries, 2016 :	**81,210**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 655.55 million**
Cost as % of country GDP, 2016 :	**8.7%**

FATALITIES BY USER COMPARISON CHART



50% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

776 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Niger	5,414	2,514	26.2	12.2	-0.5%	2,111
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Niger has a lead agency present, Directorate of Traffic and Road Safety (DC/SR), Ministry of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a non-fatal road safety target, to No with a timeline of No.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR NIGER IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Niger:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 246.34 million**
Annual Investment as a % of GDP (2019-2030):	**0.24%**
Reduction in fatalities per year:	**2,078**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**460,000**
Economic Benefit: **$ 3.09 billion**	B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Niger

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN NIGER:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
436,420	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	33	6%

Niger has several emergency numbers. These are 17 (Police); 15 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

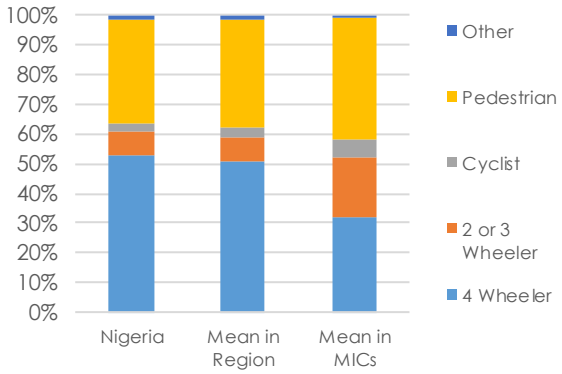
ROAD SAFETY COUNTRY PROFILE — Nigeria — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**185,989,632**
Country Reported Fatalities, 2016 :	**5,053**
WHO Estimated Fatalities, 2016 :	**39,802**
GBD Estimated Fatalities, 2016 :	**19,710**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**21.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.86**
Estimated Serious Injuries, 2016 :	**597,030**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 28.79 billion**
Cost as % of country GDP, 2016 :	**7.1%**

FATALITIES BY USER COMPARISON CHART



45% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

631 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Nigeria has a lead agency present, Federal Road Safety Corps, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 25% with a timeline of 2014 - 2018 (Expired).

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR NIGERIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Nigeria:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 3.77 billion**
Annual Investment as a % of GDP (2019-2030):	**0.07%**
Reduction in fatalities per year:	**14,256**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**3,140,000**
Economic Benefit: **$ 112.79 billion**	B/C Ratio: **30**

ROAD SAFETY COUNTRY PROFILE

Nigeria

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	100 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN NIGERIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
11,733,425	11.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 12 Yrs.	✗ No	✓ Yes	✓ Yes

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.002	≤0.00	✓	Approx. 0.5%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	39	4%

Nigeria has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

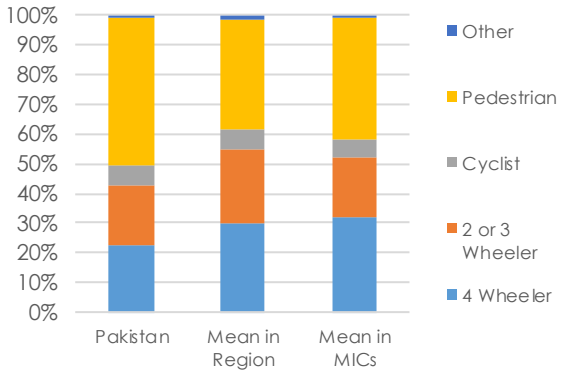
ROAD SAFETY COUNTRY PROFILE — Pakistan — South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**193,203,472**
Country Reported Fatalities, 2016 :	**4,448**
WHO Estimated Fatalities, 2016 :	**27,582**
GBD Estimated Fatalities, 2016 :	**52,708**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**25.16**
Estimated Serious Injuries, 2016 :	**413,730**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 13.23 billion**
Cost as % of country GDP, 2016 :	**4.7%**

FATALITIES BY USER COMPARISON CHART



75% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,461 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Pakistan has a lead agency present, Ministry of Communication, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR PAKISTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Pakistan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 5.15 billion**
Annual Investment as a % of GDP (2019-2030):	**0.15%**
Reduction in fatalities per year:	**10,312**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,270,000**
Economic Benefit: **$ 49.48 billion**	B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Pakistan

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	90 km/h	110 km/h	130 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 60 km/h	+ 40 km/h	+ 40 km/h	
	17 times lower	6 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PAKISTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
18,352,500	73.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 3 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✗	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Subnational	40	3%

Pakistan has several emergency numbers. These are 1915 (Police); 1122 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Panama

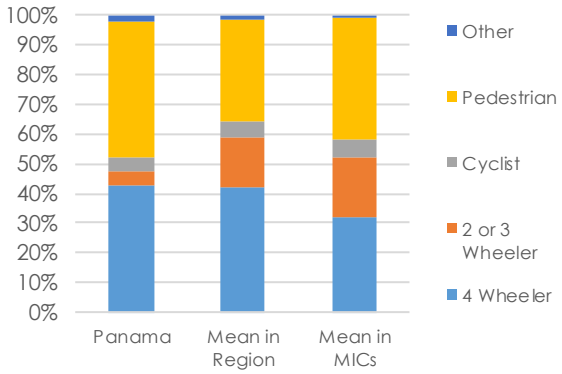
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,034,119**
Country Reported Fatalities, 2016 :	**440**
WHO Estimated Fatalities, 2016 :	**575**
GBD Estimated Fatalities, 2016 :	**506**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.11**
Estimated Serious Injuries, 2016 :	**8,625**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.75 billion**
Cost as % of country GDP, 2016 :	**4.7%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

659 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Panama	575	506	14.3	13.1	-9.7%	31,942
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Panama has a lead agency present, Traffic and Ground Transport Authority (ATTT), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatality rate by 15% per 100,000 population with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR PANAMA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Panama:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 491.95 million**
Annual Investment as a % of GDP (2019-2030):	**0.06%**
Reduction in fatalities per year:	**142**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**30,000**
Economic Benefit: **$ 7.25 billion**	B/C Ratio: **15**

ROAD SAFETY COUNTRY PROFILE

Panama

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	80 km/h	100 km/h	120 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 50 km/h	+ 30 km/h	+ 30 km/h	
	13 times lower	4 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PANAMA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,288,573	4.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 10 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✗ 16 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	≤ 0.05	≤ 0.05	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	75	7%

Panama has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Papua New Guinea

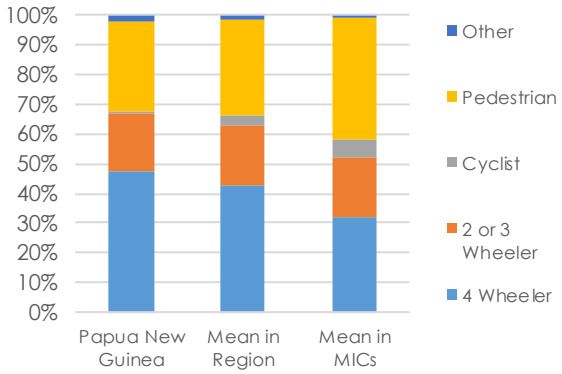
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**8,084,991**
Country Reported Fatalities, 2016 :	**158**
WHO Estimated Fatalities, 2016 :	**1,145**
GBD Estimated Fatalities, 2016 :	**2,788**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**31.06**
Estimated Serious Injuries, 2016 :	**17,175**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 896.01 million**
Cost as % of country GDP, 2016 :	**4.7%**

FATALITIES BY USER COMPARISON CHART



90% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,777 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Papua New Guinea	1,145	2,788	14.2	31.1	-4.1%	1,249
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Papua New Guinea has a lead agency present, Road Traffic Authority (RTA), Ministry of Transport and Infrastructure , which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Papua New Guinea

Surveyed Road Statistics: **100%** with no formal footpaths; **99%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 970,195,806 km; Pedestrian Travel: 176,583,715 km; Motorcyclist Travel: 0 km; Cyclist Travel: 0 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 182.31 million**
Annual Investment as a % of GDP (2019-2030):	**0.07%**
Reduction in fatalities per year:	**493**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**110,000**
Economic Benefit: **$ 4.57 billion**	B/C Ratio: **25**

ROAD SAFETY COUNTRY PROFILE

Papua New Guinea

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	75 km/h	Not Known	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 5 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	1 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PAPUA NEW GUINEA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
100,993	1.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	Approx. 56.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	41	2%

Papua New Guinea has several emergency numbers. These are 112 (Police); 110 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Paraguay

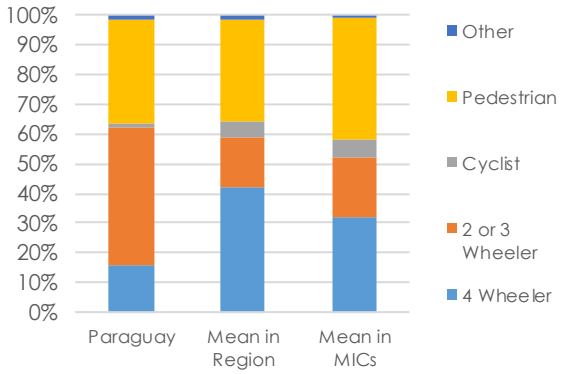
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**6,725,308**
Country Reported Fatalities, 2016 :	**1,202**
WHO Estimated Fatalities, 2016 :	**1,529**
GBD Estimated Fatalities, 2016 :	**1,494**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**22.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.90**
Estimated Serious Injuries, 2016 :	**22,935**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.73 billion**
Cost as % of country GDP, 2016 :	**7.6%**

FATALITIES BY USER COMPARISON CHART



84% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,167 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Paraguay	1,529	1,494	22.7	21.9	-8.0%	27,834
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Paraguay has a lead agency present, National Transit and Road Safety Agency, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 20% with a timeline of 2013 - 2018 (Expired).

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR PARAGUAY IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Paraguay:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 625.15 million**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**563**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**120,000**
Economic Benefit: **$ 8.12 billion**	B/C Ratio: **13**

ROAD SAFETY COUNTRY PROFILE

Paraguay

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	50 km/h URBAN ROADS	110 km/h RURAL ROADS	110 km/h MOTORWAYS	Manual SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 40 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	6 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PARAGUAY:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

1,871,947 TOTAL REGISTERED VEHICLES AS OF 2016	33.3% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✓ 10 Yrs. IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✗ No IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✓ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✓ Prohibited under 12 yrs MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	0.00 GENERAL POPULATION	0.00 YOUNG DRIVERS	0.00 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	✗ Not Known % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Single Number NATIONAL EMERGENCY CARE ACCESS NUMBER	National TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100: 69	EXPENDITURE ON HEALTHCARE AS % OF GDP: 8%

Paraguay has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Peru

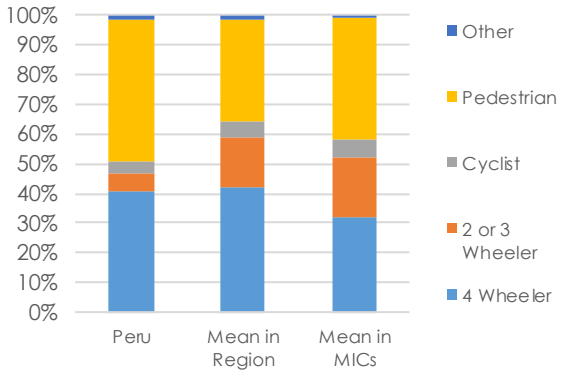
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**31,773,840**
Country Reported Fatalities, 2016 :	**2,696**
WHO Estimated Fatalities, 2016 :	**4,286**
GBD Estimated Fatalities, 2016 :	**4,555**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.95**
Estimated Serious Injuries, 2016 :	**64,290**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 8.6 billion**
Cost as % of country GDP, 2016 :	**4.5%**

FATALITIES BY USER COMPARISON CHART



71% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

697 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Peru	4,286	4,555	13.5	14.0	-12.7%	17,640
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Peru has a lead agency present, National Road Safety Council, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities from 10 to 6 deaths per 100,000 population with a timeline of 2016 - 2021.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Peru

Surveyed Road Statistics: **95%** with no formal footpaths; **99%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 0 km; Pedestrian Travel: 2,497,878 km; Motorcyclist Travel: 0 km; Cyclist Travel: 0 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 4.57 billion**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**1,560**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**340,000**
Economic Benefit: **$ 35.8 billion**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Peru

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	60 km/h	100 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 30 km/h	Appropriate	+ 10 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	Low Risk	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PERU:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
5,604,789	52.5%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤ 0.025	✓	Approx. 9.3%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	National	78	5%

Peru has several emergency numbers. These are 911 (General); 105 (Police); 106 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Philippines

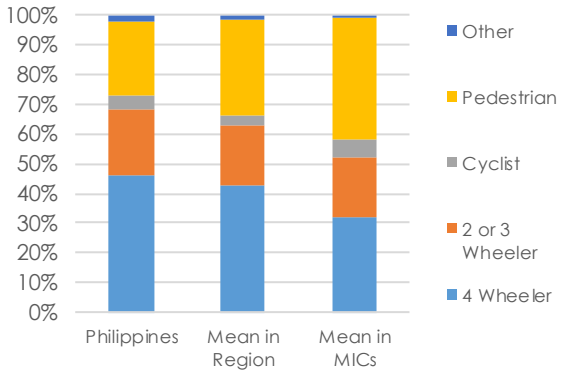
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**103,320,224**
Country Reported Fatalities, 2016 :	**10,012**
WHO Estimated Fatalities, 2016 :	**12,690**
GBD Estimated Fatalities, 2016 :	**11,089**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**12.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.83**
Estimated Serious Injuries, 2016 :	**190,350**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 12.45 billion**
Cost as % of country GDP, 2016 :	**4.1%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

635 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Philippines	12,690	11,089	12.3	10.8	1.5%	8,954
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Philippines has a lead agency present, Department of Transportation (DOTr), which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

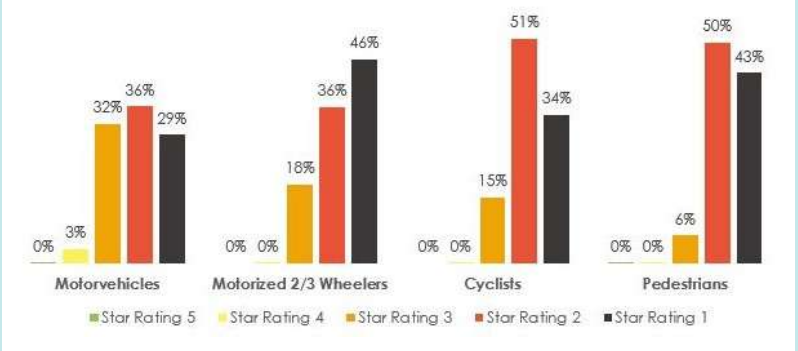
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Philippines

Surveyed Road Statistics: **93%** with no formal footpaths; **89%** with no pedestrian crossings; **100%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 15.6 billion km; Pedestrian Travel: 3.3 billion km; Motorcyclist Travel: 2.9 billion km; Cyclist Travel: 2.8 billion km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 4.22 billion**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**4,152**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**910,000**
Economic Benefit: **$ 45.63 billion**	B/C Ratio: **11**

ROAD SAFETY COUNTRY PROFILE

Philippines

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	80 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 10 km/h	+ 10 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	2 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN PHILIPPINES:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
9,251,565	57.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	0.00	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	58	4%

Philippines has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Romania

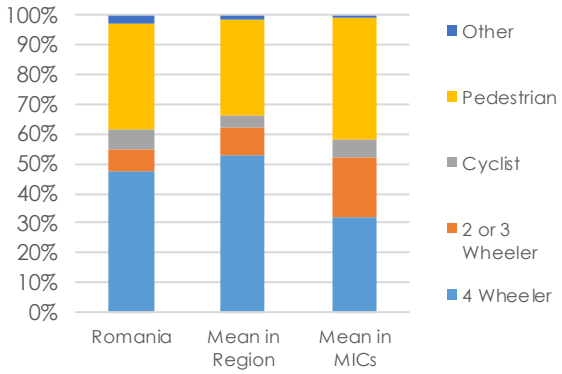
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**19,778,084**
Country Reported Fatalities, 2016 :	**1,913**
WHO Estimated Fatalities, 2016 :	**2,044**
GBD Estimated Fatalities, 2016 :	**2,208**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**10.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**11.28**
Estimated Serious Injuries, 2016 :	**30,660**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 6.5 billion**
Cost as % of country GDP, 2016 :	**3.4%**

FATALITIES BY USER COMPARISON CHART



69% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

723 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Romania	2,044	2,208	10.3	11.3	-2.1%	35,467
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Romania has a lead agency present, Interministerial Council for Road Safety, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Romania

Surveyed Road Statistics: **87%** with no formal footpaths; **97%** with no pedestrian crossings; **63%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 2.8 billion km; Pedestrian Travel: 11,213,165 km; Motorcyclist Travel: 86,992,275 km; Cyclist Travel: 3,768,990 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.74 billion**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**693**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**150,000**
Economic Benefit: **$ 27.27 billion**	B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Romania

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	130 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ROMANIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
7,014,661	1.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✓	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✓ Yes	✓ Yes	✓ Yes

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 14 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.08	≤ 0.08	≤ 0.08	✓	Approx. 5.6%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	None	72	5%

Romania has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Russia

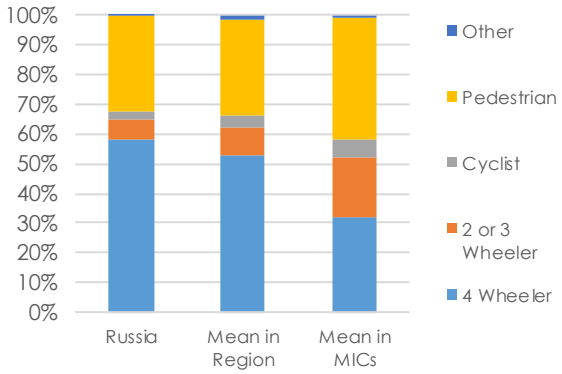
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**143,964,512**
Country Reported Fatalities, 2016 :	**20,308**
WHO Estimated Fatalities, 2016 :	**25,969**
GBD Estimated Fatalities, 2016 :	**24,864**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**18.00**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.01**
Estimated Serious Injuries, 2016 :	**389,535**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 75.51 billion**
Cost as % of country GDP, 2016 :	**5.9%**

FATALITIES BY USER COMPARISON CHART



83% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,024 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Russia	25,969	24,864	18.0	17.0	-14.4%	37,519
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Russia has a lead agency present, The Governmental Commission on Road Safety, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 8000 with a timeline of 2012 - 2020.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Russia

Surveyed Road Statistics: **86%** with no formal footpaths; **89%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 564,201,504 km; Pedestrian Travel: 235,773,610 km; Motorcyclist Travel: 0 km; Cyclist Travel: 10,329,880 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 66.74 billion**
Annual Investment as a % of GDP (2019-2030):	**0.37%**
Reduction in fatalities per year:	**8,673**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,910,000**

Economic Benefit: **$ 306.96 billion** B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Russia

Europe and Central Asia (ECA)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN RUSSIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
54,014,259	4.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ Yes	✓ Yes	✓ Yes

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.03	≤0.03	≤0.03	✓	Approx. 22.9%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Multiple Numbers	Some Facilities		63		5%

Russia has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

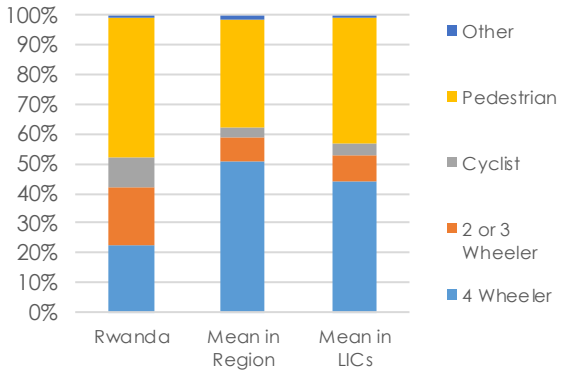
ROAD SAFETY COUNTRY PROFILE — Rwanda — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**11,917,508**
Country Reported Fatalities, 2016 :	**593**
WHO Estimated Fatalities, 2016 :	**3,535**
GBD Estimated Fatalities, 2016 :	**2,623**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**21.48**
Estimated Serious Injuries, 2016 :	**53,025**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 835.93 million**
Cost as % of country GDP, 2016 :	**9.9%**

FATALITIES BY USER COMPARISON CHART



62% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,138 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Rwanda	3,535	2,623	29.7	21.5	-5.6%	1,512
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Rwanda has a lead agency present, National Road Safety Committee, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a non-fatal road safety target, to No with a timeline of No.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR RWANDA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Rwanda:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 61.1 million**
Annual Investment as a % of GDP (2019-2030):	**0.05%**
Reduction in fatalities per year:	**1,670**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**370,000**
Economic Benefit: **$ 4.32 billion**	B/C Ratio: **71**

ROAD SAFETY COUNTRY PROFILE

Rwanda

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	80 km/h	80 km/h	80 km/h	Automated
Difference with Recommended Safe Systems Speeds	+ 50 km/h	+ 10 km/h	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	13 times lower	2 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN RWANDA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
180,137	51.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 10 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	53	7%

Rwanda has several emergency numbers. These are 112 (General); 113 (Police); 912 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Saint Lucia

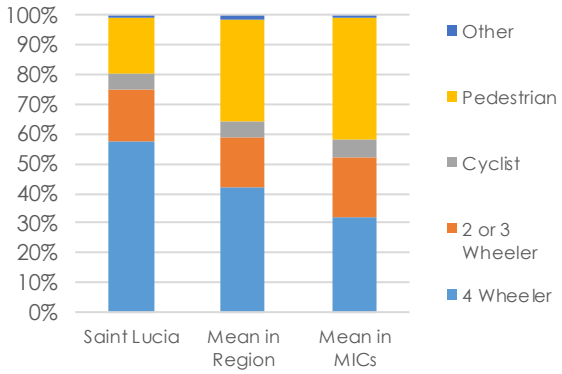
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**178,015**
Country Reported Fatalities, 2016 :	**15**
WHO Estimated Fatalities, 2016 :	**63**
GBD Estimated Fatalities, 2016 :	**25**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**35.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**14.13**
Estimated Serious Injuries, 2016 :	**945**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 192.47 million**
Cost as % of country GDP, 2016 :	**11.8%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

700 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Saint Lucia	63	25	35.4	14.1	1.9%	20,044
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Saint Lucia has a lead agency present, Saint Lucia Road Transport Board, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SAINT LUCIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Saint Lucia:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 39.33 million**
Annual Investment as a % of GDP (2019-2030):	**0.18%**
Reduction in fatalities per year:	**12**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**0**

Economic Benefit: **$ 407.7 million** B/C Ratio: **10**

ROAD SAFETY COUNTRY PROFILE

Saint Lucia

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	24 km/h	24 km/h	56 km/h	Not Known
Difference with Recommended Safe Systems Speeds	Appropriate Low Risk	Appropriate Low Risk	Appropriate Low Risk	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SAINT LUCIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
35,681	0.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Not Known	69	5%

Saint Lucia has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Samoa

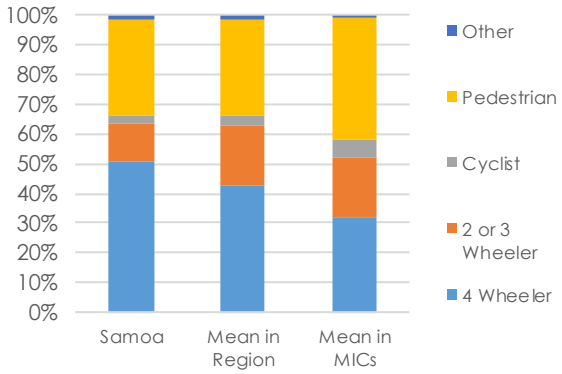
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**195,125**
Country Reported Fatalities, 2016 :	**17**
WHO Estimated Fatalities, 2016 :	**22**
GBD Estimated Fatalities, 2016 :	**18**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**11.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.10**
Estimated Serious Injuries, 2016 :	**330**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 29.49 million**
Cost as % of country GDP, 2016 :	**3.7%**

FATALITIES BY USER COMPARISON CHART



71% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

551 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Samoa	22	18	11.3	9.1	-1.8%	12,933
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Samoa has a lead agency present, Ministry of Works, Transport Infrastructure (MWTI), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to No with a timeline of No.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SAMOA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Samoa:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 45.57 million**
Annual Investment as a % of GDP (2019-2030):	**0.44%**
Reduction in fatalities per year:	**12**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**2,650**
Economic Benefit: **$ 175.3 million**	B/C Ratio: **4**

ROAD SAFETY COUNTRY PROFILE

Samoa

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	56 km/h	56 km/h	Not Known	Manual

Difference with Recommended Safe Systems Speeds	+ 26 km/h	Appropriate	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	5 times lower	Low Risk	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SAMOA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
25,235	0.4%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 8 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✗ 16 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	≤0.08	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	56	6%

Samoa has several emergency numbers. These are 999 (General); 995 (Police); 996 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Sao Tome and Principe

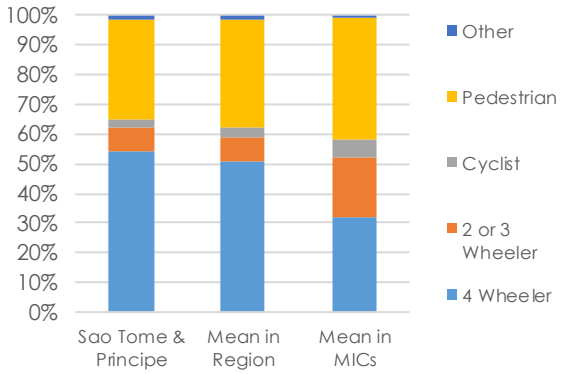
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**199,910**
Country Reported Fatalities, 2016 :	**23**
WHO Estimated Fatalities, 2016 :	**55**
GBD Estimated Fatalities, 2016 :	**24**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**11.95**
Estimated Serious Injuries, 2016 :	**825**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 32.41 million**
Cost as % of country GDP, 2016 :	**9.1%**

FATALITIES BY USER COMPARISON CHART



68% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

673 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Sao Tome and Principe	55	24	27.5	12.0	-8.0%	17,033
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Sao Tome and Principe has a lead agency present, Department of Land Transport, Ministry of Infrastructure, Natural Resources and Environment, which isn't funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SAO TOME AND PRINCIPE IS PUBLICLY AVAILABLE ON THE iRAP WEBSIT

Information on Infrastructure in Sao Tome and Principe

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 6.24 million**
Annual Investment as a % of GDP (2019-2030):	**0.13%**
Reduction in fatalities per year:	**24**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**

Economic Benefit: **$ 149.9 million** B/C Ratio: **24**

ROAD SAFETY COUNTRY PROFILE

Sao Tome and Principe

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	120 km/h	None
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SAO TOME AND PRINCIPE:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
34,050	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✓ Prohibited under 7 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.12	<0.12	<0.12	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM
National, Single Number	National

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
54	6%

Sao Tome and Principe has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

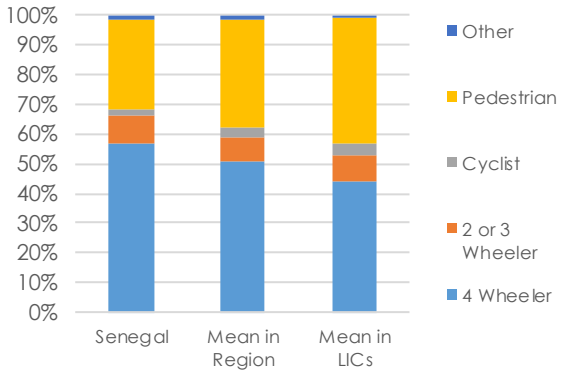
ROAD SAFETY COUNTRY PROFILE — Senegal — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**15,411,614**
Country Reported Fatalities, 2016 :	**604**
WHO Estimated Fatalities, 2016 :	**3,609**
GBD Estimated Fatalities, 2016 :	**1,775**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**23.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**12.36**
Estimated Serious Injuries, 2016 :	**54,135**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.48 billion**
Cost as % of country GDP, 2016 :	**7.8%**

FATALITIES BY USER COMPARISON CHART



60% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

669 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Senegal	3,609	1,775	23.4	12.4	-0.9%	3,037
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Senegal has a lead agency present, Directorate of Land Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 35% with a timeline of 2011 - 2020.

PILLAR 2

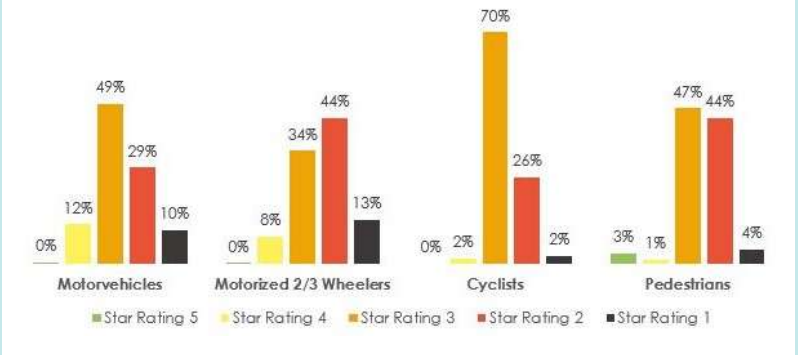
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Senegal

Surveyed Road Statistics: **96%** with no formal footpaths; **85%** with no pedestrian crossings; **-** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 180,196,248 km; Pedestrian Travel: 165,158,668 km; Motorcyclist Travel: 28,594,702 km; Cyclist Travel: 15,630,212 km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 292.5 million**
Annual Investment as a % of GDP (2019-2030):	**0.14%**
Reduction in fatalities per year:	**1,538**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**340,000**
Economic Benefit: **$ 5.53 billion**	B/C Ratio: **19**

ROAD SAFETY COUNTRY PROFILE

Senegal

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	90 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	-	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SENEGAL:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
468,051	8.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 4 Yrs.	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	41	6%

Senegal has several emergency numbers. These are 17 (Police); 1515 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Serbia

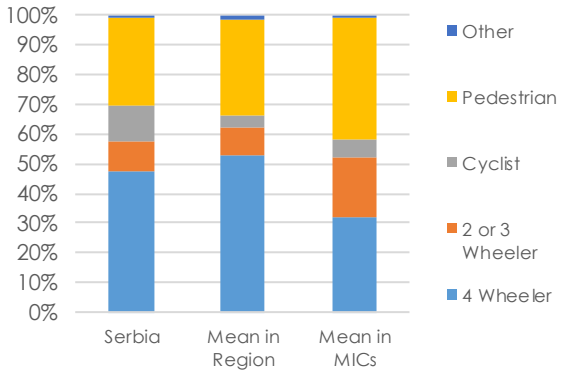
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**8,820,083**
Country Reported Fatalities, 2016 :	**607**
WHO Estimated Fatalities, 2016 :	**649**
GBD Estimated Fatalities, 2016 :	**797**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**7.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**8.94**
Estimated Serious Injuries, 2016 :	**9,735**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.17 billion**
Cost as % of country GDP, 2016 :	**3.1%**

FATALITIES BY USER COMPARISON CHART



65% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

584 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Serbia has a lead agency present, Coordination Body for Road Traffic Safety, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SERBIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Serbia:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.44 billion**
Annual Investment as a % of GDP (2019-2030):	**0.28%**
Reduction in fatalities per year:	**271**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**60,000**
Economic Benefit: **$ 5.46 billion**	B/C Ratio: **4**

ROAD SAFETY COUNTRY PROFILE

Serbia

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	100 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 30 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	4 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SERBIA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,282,401	2.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.03	0.00	0.00	✓	Approx. 17.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	65	9%

Serbia has several emergency numbers. These are 192 (Police); 193 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Solomon Islands

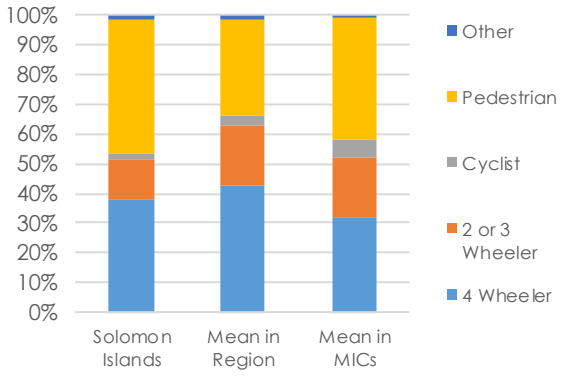
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**599,419**
Country Reported Fatalities, 2016 :	**11**
WHO Estimated Fatalities, 2016 :	**104**
GBD Estimated Fatalities, 2016 :	**116**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**17.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.58**
Estimated Serious Injuries, 2016 :	**1,560**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 71.11 million**
Cost as % of country GDP, 2016 :	**5.8%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,130 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Solomon Islands	104	116	17.4	18.6	-2.9%	7,507
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Solomon Islands has a lead agency present, Traffic Unit, Ministry of Infrastructure and Development and Ministry of Police Correctional Services, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SOLOMON ISLANDS IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Solomon Islands:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 27.11 million**
Annual Investment as a % of GDP (2019-2030):	**0.16%**
Reduction in fatalities per year:	**43**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**
Economic Benefit: **$ 314.7 million**	B/C Ratio: **12**

ROAD SAFETY COUNTRY PROFILE

Solomon Islands

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SOLOMON ISLANDS:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
45,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.05	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	50	17%

Solomon Islands has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

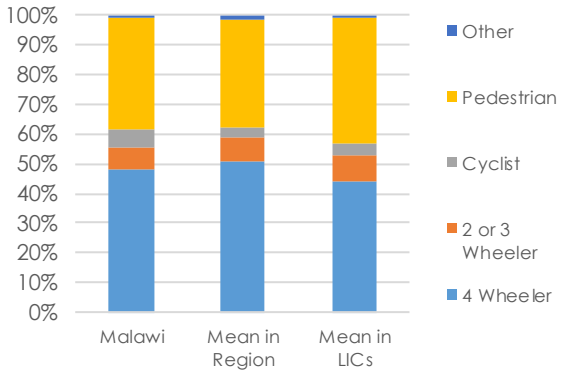
ROAD SAFETY COUNTRY PROFILE — Somalia — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**14,317,996**
Country Reported Fatalities, 2016 :	**165**
WHO Estimated Fatalities, 2016 :	**3,884**
GBD Estimated Fatalities, 2016 :	**5,101**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**27.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**31.20**
Estimated Serious Injuries, 2016 :	**58,260**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 609.91 million**
Cost as % of country GDP, 2016 :	**9.0%**

FATALITIES BY USER COMPARISON CHART



63% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,732 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Somalia	3,884	5,101	27.1	31.2	-7.7%	415
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Somalia has a lead agency present, Road Safety Management, Ministry of Public Works, Housing and Transport, which is funded in the national budget, and has a road safety strategy which is not funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SOMALIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Somalia:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 287.3 million**
Annual Investment as a % of GDP (2019-2030):	**0.35%**
Reduction in fatalities per year:	**1,176**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**260,000**
Economic Benefit: **$ 1.76 billion**	B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE — Somalia

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	Not Known	Not Known	None

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 10 km/h	-	-	
	2 times lower	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SOMALIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
59,457	1.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✗	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	None	22	5%

Somalia has several emergency numbers. These are 888 (General); 777 (Police); 999 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

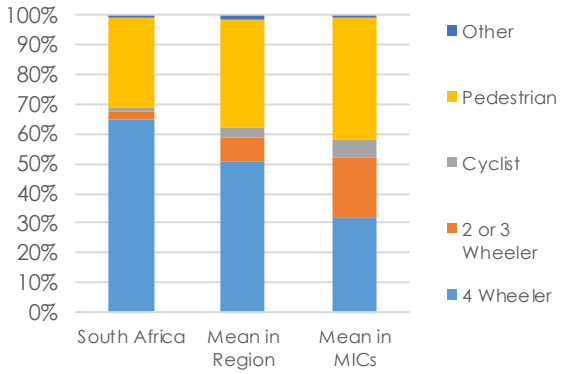
ROAD SAFETY COUNTRY PROFILE — South Africa — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**56,015,472**
Country Reported Fatalities, 2016 :	**14,071**
WHO Estimated Fatalities, 2016 :	**14,507**
GBD Estimated Fatalities, 2016 :	**15,099**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**25.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**27.79**
Estimated Serious Injuries, 2016 :	**217,605**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 25.47 billion**
Cost as % of country GDP, 2016 :	**8.6%**

FATALITIES BY USER COMPARISON CHART



83% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,509 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
South Africa	14,507	15,099	25.9	27.8	-4.7%	17,691
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

South Africa has a lead agency present, Road Traffic Management Corporation (RTMC), Department of Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2010 - 2020.

PILLAR 2

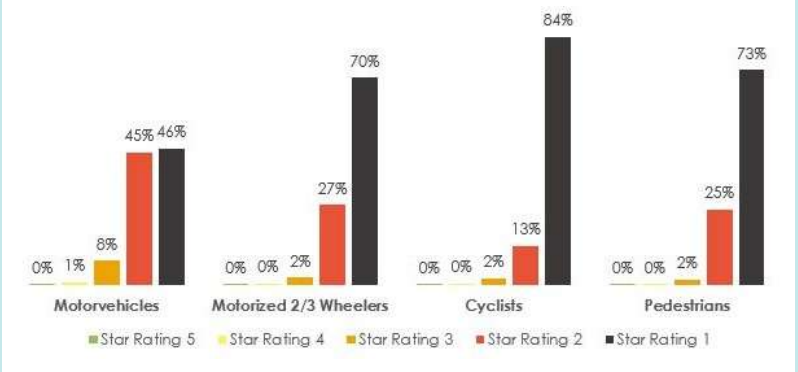
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - South Africa

Surveyed Road Statistics: **93%** with no formal footpaths; **92%** with no pedestrian crossings; **100%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 7.7 billion km; Pedestrian Travel: 3.4 billion km; Motorcyclist Travel: 213,985,557 km; Cyclist Travel: 2.6 billion km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 24.28 billion**
Annual Investment as a % of GDP (2019-2030):	**0.56%**
Reduction in fatalities per year:	**4,890**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,080,000**
Economic Benefit:	**$ 102.44 billion**
B/C Ratio:	**4**

ROAD SAFETY COUNTRY PROFILE

South Africa

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	100 km/h	120 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 30 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	4 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SOUTH AFRICA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
9,909,923	3.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✗ 17 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.05	<0.05	<0.02	✓	Approx. 57.5%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Multiple Numbers	National		67		8%

South Africa has several emergency numbers. These are (Police); (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

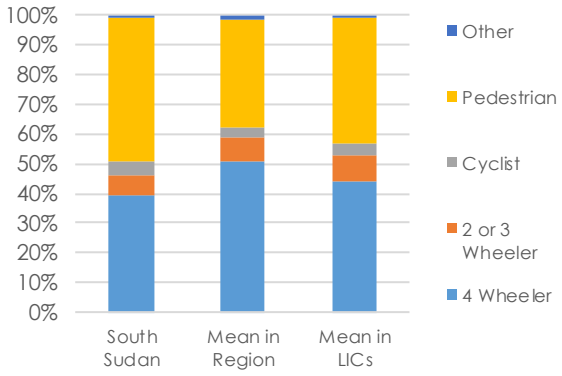
ROAD SAFETY COUNTRY PROFILE — South Sudan — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**12,230,730**
Country Reported Fatalities, 2016 :	**130**
WHO Estimated Fatalities, 2016 :	**3,661**
GBD Estimated Fatalities, 2016 :	**1,745**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.01**
Estimated Serious Injuries, 2016 :	**54,915**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 289.04 million**
Cost as % of country GDP, 2016 :	**10.0%**

FATALITIES BY USER COMPARISON CHART



59% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,072 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
South Sudan	3,661	1,745	29.9	18.0	1.0%	569
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ South Sudan has a lead agency present, Traffic Police, Ministry of Interior, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SOUTH SUDAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in South Sudan:

Audit/Star Rating is not Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

South Sudan

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SOUTH SUDAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
69,647	39.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✗	✗	✗	✗	✗	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Some Facilities	30	0%

South Sudan has a single emergency number. This is 999.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

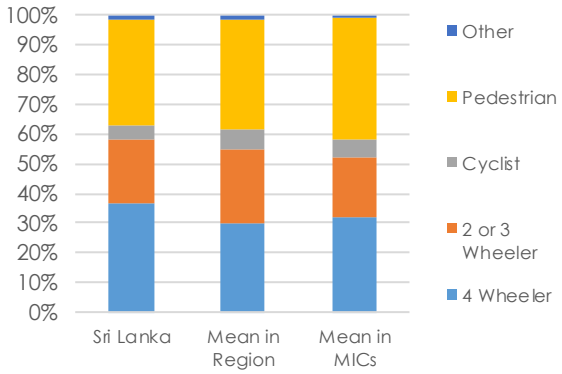
ROAD SAFETY COUNTRY PROFILE — Sri Lanka — South Asia (SAR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**20,798,492**
Country Reported Fatalities, 2016 :	**3,003**
WHO Estimated Fatalities, 2016 :	**3,096**
GBD Estimated Fatalities, 2016 :	**2,811**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.09**
Estimated Serious Injuries, 2016 :	**46,440**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.97 billion**
Cost as % of country GDP, 2016 :	**4.9%**

FATALITIES BY USER COMPARISON CHART



63% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

598 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Sri Lanka	3,096	2,811	14.9	13.1	-4.8%	32,673
BEST PERFORMING COUNTRIES IN REGION						
Maldives	4	32	0.9	7.3	-4.0%	21,737
Pakistan	27,582	52,708	14.3	25.2	-3.1%	9,499
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Sri Lanka has a lead agency present, National Council for Road Safety (NCRS), Ministry of Transport and Civil Aviation, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SRI LANKA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Sri Lanka:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 2.22 billion**
Annual Investment as a % of GDP (2019-2030):	**0.21%**
Reduction in fatalities per year:	**1,476**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**320,000**
Economic Benefit: **$ 19.91 billion**	B/C Ratio: **9**

ROAD SAFETY COUNTRY PROFILE

Sri Lanka

South Asia (SAR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	70 km/h	100 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 20 km/h	Appropriate	+ 10 km/h	
	4 times lower	Low Risk	1 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SRI LANKA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

6,795,469	70.9%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✗ 17 yrs,

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	< 0.08	< 0.08	< 0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

Partial Coverage	Some Facilities
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	62	EXPENDITURE ON HEALTHCARE AS % OF GDP	4%

Sri Lanka has several emergency numbers. These are 119 (Police); 110 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

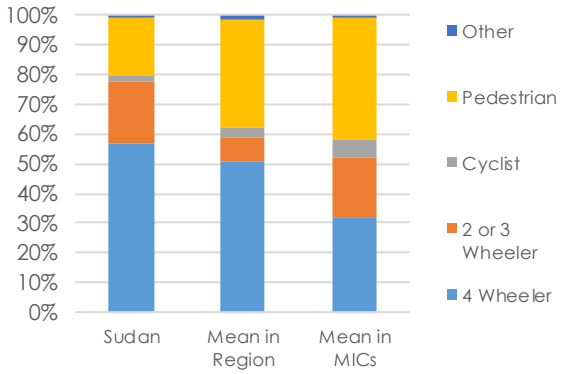
ROAD SAFETY COUNTRY PROFILE — Sudan — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**39,578,828**
Country Reported Fatalities, 2016 :	**2,311**
WHO Estimated Fatalities, 2016 :	**10,178**
GBD Estimated Fatalities, 2016 :	**10,798**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**25.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**27.41**
Estimated Serious Injuries, 2016 :	**152,670**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 8.17 billion**
Cost as % of country GDP, 2016 :	**8.6%**

FATALITIES BY USER COMPARISON CHART



61% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,749 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Sudan	10,178	10,798	25.7	27.4	-9.0%	3,165
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Sudan has a lead agency present, Road Safety Coordination Council, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 20% with a timeline of 2017 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SUDAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Sudan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 232.05 million**
Annual Investment as a % of GDP (2019-2030):	**0.01%**
Reduction in fatalities per year:	**3,688**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**810,000**
Economic Benefit: **$ 42.48 billion**	B/C Ratio: **183**

ROAD SAFETY COUNTRY PROFILE

Sudan

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	Not Known	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SUDAN:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,252,740	12.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 0.3%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	Subnational	43	6%

Sudan has a single emergency number. This is .

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Suriname

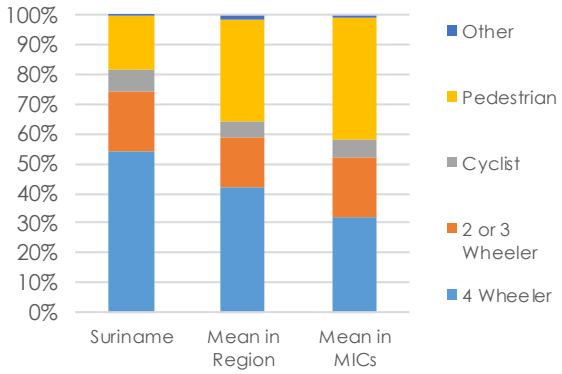
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**558,368**
Country Reported Fatalities, 2016 :	**74**
WHO Estimated Fatalities, 2016 :	**81**
GBD Estimated Fatalities, 2016 :	**98**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**17.15**
Estimated Serious Injuries, 2016 :	**1,215**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 152.04 million**
Cost as % of country GDP, 2016 :	**4.8%**

FATALITIES BY USER COMPARISON CHART



80% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

882 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Suriname	81	98	14.5	17.2	-2.5%	40,903
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

SURINAME HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SURINAME IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Suriname:

Audit/Star Rating is not Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 139.88 million**
Annual Investment as a % of GDP (2019-2030):	**0.29%**
Reduction in fatalities per year:	**38**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**10,000**

Economic Benefit: **$ 874.7 million** B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE

Suriname

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	40 km/h	80 km/h	80 km/h	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 10 km/h	+ 10 km/h	Appropriate	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	2 times lower	2 times lower	Low Risk	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SURINAME:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
228,388	18.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✓ 5 Yrs.	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	≤ 0.05	≤ 0.05	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Some Facilities	68	6%

Suriname has several emergency numbers. These are 115 (Police); 113 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Syrian Arab Republic

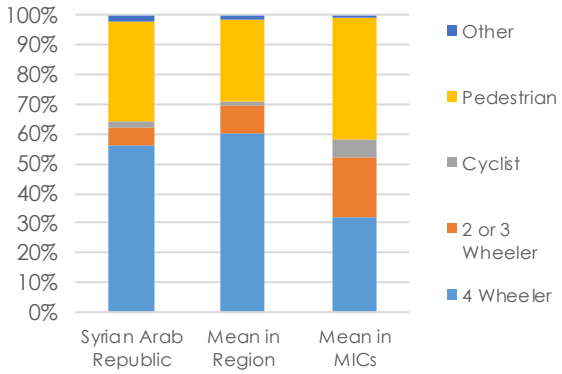
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**18,430,452**
Country Reported Fatalities, 2016 :	**714**
WHO Estimated Fatalities, 2016 :	**4,890**
GBD Estimated Fatalities, 2016 :	**1,726**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.60**
Estimated Serious Injuries, 2016 :	**73,350**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.28 billion**
Cost as % of country GDP, 2016 :	**4.5%**

FATALITIES BY USER COMPARISON CHART



66% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

497 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Syrian Arab Republic	4,890	1,726	26.5	9.6	4.8%	13,003
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Syrian Arab Republic has a lead agency present, National Committee for Road Safety, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR SYRIAN ARAB REPUBLIC IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Syrian Arab Republic:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Syrian Arab Republic

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	Not Known	Not Known	Manual and Automated
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN SYRIAN ARAB REPUBLIC:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

2,396,544	19.5%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Banned	✓ New	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✗ BACK	✓ MOTORCYCLE HELMET LAW	✗ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✗ IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			✓ RANDOM DRINK DRIVING TESTS	✗ Not Known % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION ✗	YOUNG DRIVERS ✗	PROFESSIONAL DRIVERS ✗		

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

Partial Coverage	Subnational	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	60	EXPENDITURE ON HEALTHCARE AS % OF GDP	0%
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM				

Syrian Arab Republic has several emergency numbers. These are 112 (Police); 113 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Tajikistan

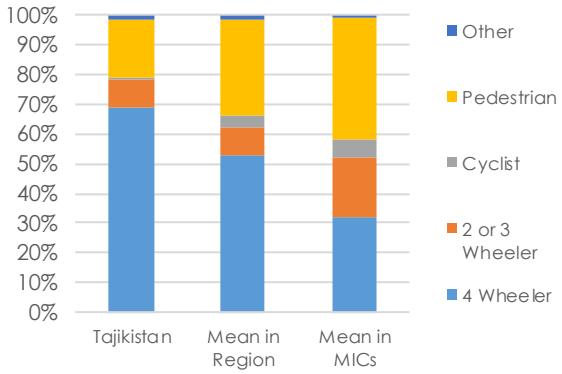
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**8,734,951**
Country Reported Fatalities, 2016 :	**427**
WHO Estimated Fatalities, 2016 :	**1,577**
GBD Estimated Fatalities, 2016 :	**648**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**18.10**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**7.18**
Estimated Serious Injuries, 2016 :	**23,655**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 417.36 million**
Cost as % of country GDP, 2016 :	**6.0%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

468 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Tajikistan	1,577	648	18.1	7.2	10.4%	5,037
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Tajikistan has a lead agency present, Department of the State Automobile Inspection, Ministry of Internal Affairs, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TAJIKISTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Tajikistan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 360.97 million**
Annual Investment as a % of GDP (2019-2030):	**0.42%**
Reduction in fatalities per year:	**681**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**150,000**
Economic Benefit: **$ 1.79 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Tajikistan

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TAJIKISTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
439,972	1.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 4.2%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	65	7%

Tajikistan has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

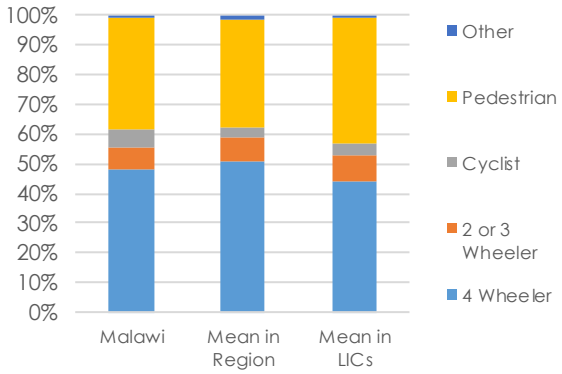
ROAD SAFETY COUNTRY PROFILE — Tanzania — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**55,572,200**
Country Reported Fatalities, 2016 :	**3,256**
WHO Estimated Fatalities, 2016 :	**16,252**
GBD Estimated Fatalities, 2016 :	**5,496**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.46**
Estimated Serious Injuries, 2016 :	**243,780**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 4.99 billion**
Cost as % of country GDP, 2016 :	**10.0%**

FATALITIES BY USER COMPARISON CHART



57% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

605 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Tanzania	16,252	5,496	29.2	10.5	-3.6%	3,893
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

ROAD SAFETY MANAGEMENT [Ref: 1]

PILLAR 1

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Tanzania has a lead agency present, National Road Safety Council (NRSC), Ministry of Home Affairs, which isn't funded in the national budget but has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to No with a timeline of No.

SAFE ROADS AND ROADSIDES [Ref: 1,4]

PILLAR 2

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Tanzania

Surveyed Road Statistics: **96%** with no formal footpaths; **99%** with no pedestrian crossings; **100%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 3 billion km; Pedestrian Travel: 2.3 billion km; Motorcyclist Travel: 135,710,468 km; Cyclist Travel: 1 billion km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.12 billion**
Annual Investment as a % of GDP (2019-2030):	**0.17%**
Reduction in fatalities per year:	**7,157**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,570,000**

Economic Benefit: **$ 26.65 billion** B/C Ratio: **24**

ROAD SAFETY COUNTRY PROFILE

Tanzania

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TANZANIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
2,163,623	59.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 8 Yrs.	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	0.00	✓	Approx. 1.0%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Subnational	39	4%

Tanzania has several emergency numbers. These are 999 (General); 112 (Police); 114 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Thailand

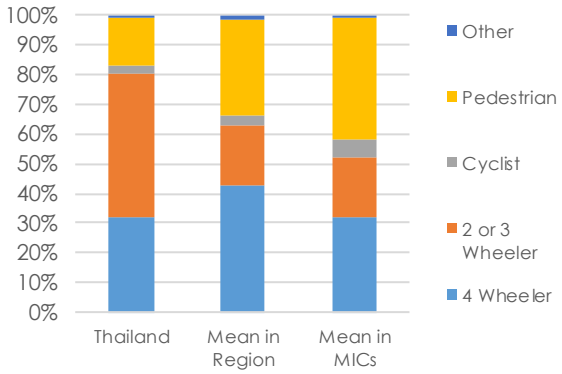
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**68,863,512**
Country Reported Fatalities, 2016 :	**21,745**
WHO Estimated Fatalities, 2016 :	**22,491**
GBD Estimated Fatalities, 2016 :	**19,110**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**32.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**27.14**
Estimated Serious Injuries, 2016 :	**337,365**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 44.71 billion**
Cost as % of country GDP, 2016 :	**10.9%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,494 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Thailand	22,491	19,110	32.7	27.1	1.5%	54,220
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Thailand has a lead agency present, Department of Disaster Prevention and Mitigation, Ministry of Interior, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatality rate to less than 10 fatalities per 100,000 population with a timeline of 2010 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Thailand

Surveyed Road Statistics: **74%** with no formal footpaths; **76%** with no pedestrian crossings; **45%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 1.5 billion km; Pedestrian Travel: 275,307,272 km; Motorcyclist Travel: 774,631,420 km; Cyclist Travel: 3,456,185 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 5.85 billion**
Annual Investment as a % of GDP (2019-2030):	**0.10%**
Reduction in fatalities per year:	**8,930**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,960,000**

Economic Benefit: **$ 200.54 billion** B/C Ratio: **34**

ROAD SAFETY COUNTRY PROFILE

Thailand

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	80 km/h	90 km/h	120 km/h	Manual

Difference with Recommended Safe Systems Speeds	URBAN ROADS	RURAL ROADS	MOTORWAYS	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	+ 50 km/h	+ 20 km/h	+ 30 km/h	
	13 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN THAILAND:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

37,338,139	54.9%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✓	✗	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	≤ 0.02	0.00	✓	Approx. 14.1%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	Some Facilities	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	75	EXPENDITURE ON HEALTHCARE AS % OF GDP	4%
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM				

Thailand has several emergency numbers. These are 191 (Police); 1669 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

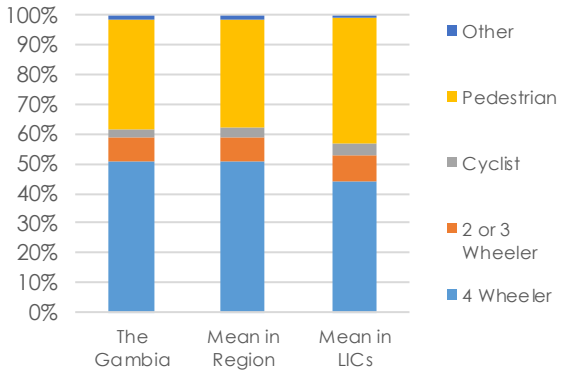
ROAD SAFETY COUNTRY PROFILE — The Gambia — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**2,038,501**
Country Reported Fatalities, 2016 :	**139**
WHO Estimated Fatalities, 2016 :	**605**
GBD Estimated Fatalities, 2016 :	**282**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**13.55**
Estimated Serious Injuries, 2016 :	**9,075**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 142.33 million**
Cost as % of country GDP, 2016 :	**9.9%**

FATALITIES BY USER COMPARISON CHART



60% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

713 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
The Gambia	605	282	29.7	13.5	-4.0%	4,168
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ The Gambia has a lead agency present, Directorate of Planning, Ministry of Transport, Works and nfrastructure, which is funded in the national budget. The function of the agency is coordination of road safety strategies without legislation and monitoring and evaluation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR THE GAMBIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in The Gambia:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 48.62 million**
Annual Investment as a % of GDP (2019-2030):	**0.37%**
Reduction in fatalities per year:	**240**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**50,000**
Economic Benefit: **$ 398.6 million**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

The Gambia

Africa (AFR)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN THE GAMBIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
84,963	33.1%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 10 Yrs.	✓ Yes	✗ No

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	Approx. 2.1%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
Partial Coverage	Subnational	46	4%

The Gambia has several emergency numbers. These are 112 (General); 117 (Police); 116 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Timor-Leste

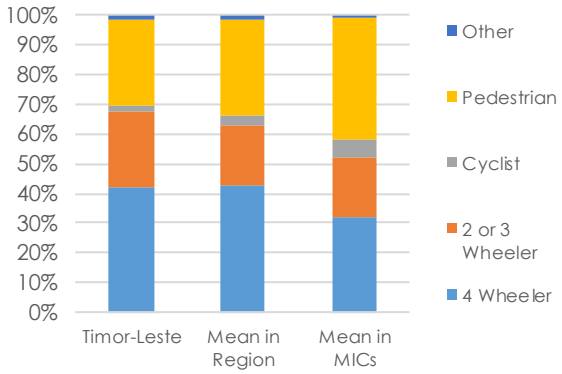
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**1,268,671**
Country Reported Fatalities, 2016 :	**71**
WHO Estimated Fatalities, 2016 :	**161**
GBD Estimated Fatalities, 2016 :	**115**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**12.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**9.09**
Estimated Serious Injuries, 2016 :	**2,415**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 106.38 million**
Cost as % of country GDP, 2016 :	**4.2%**

FATALITIES BY USER COMPARISON CHART



68% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

571 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Timor-Leste	161	115	12.7	9.1	2.7%	11,555
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Timor-Leste has a lead agency present, National Directorate of Transport, Ministry of Interior, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TIMOR-LESTE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Timor-Leste:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 117.78 million**
Annual Investment as a % of GDP (2019-2030):	**0.35%**
Reduction in fatalities per year:	**75**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**20,000**

Economic Benefit: **$ 560.9 million** B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Timor-Leste

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	90 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TIMOR-LESTE:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
146,596	74.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.05	≤ 0.05	≤ 0.05	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	47	4%

Timor-Leste has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Togo

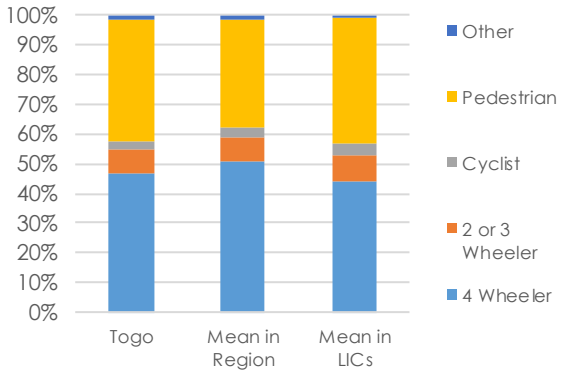
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**7,606,374**
Country Reported Fatalities, 2016 :	**514**
WHO Estimated Fatalities, 2016 :	**2,224**
GBD Estimated Fatalities, 2016 :	**1,130**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.20**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.36**
Estimated Serious Injuries, 2016 :	**33,360**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 433.37 million**
Cost as % of country GDP, 2016 :	**9.7%**

FATALITIES BY USER COMPARISON CHART



71% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

829 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Togo	2,224	1,130	29.2	15.4	-7.0%	843
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Togo has a lead agency present, National Oce of Road Safety (ONSR), Ministry of Infrastructure and Transport (MIT), which isn't funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TOGO IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Togo:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 151.48 million**
Annual Investment as a % of GDP (2019-2030):	**0.24%**
Reduction in fatalities per year:	**937**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**210,000**
Economic Benefit: **$ 2.11 billion**	B/C Ratio: **14**

ROAD SAFETY COUNTRY PROFILE

Togo

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TOGO:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
64,118	70.7%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	National	42	7%

Togo has several emergency numbers. These are 117 (Police); 8200 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Tonga

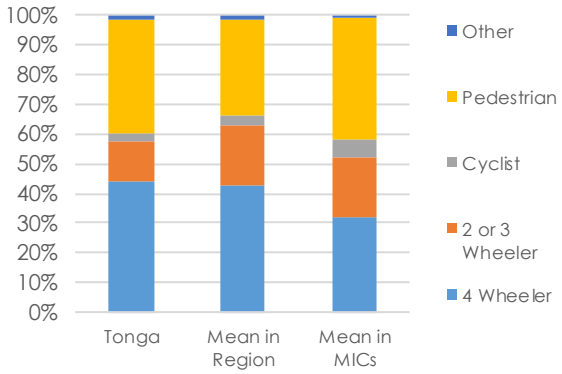
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**107,122**
Country Reported Fatalities, 2016 :	**18**
WHO Estimated Fatalities, 2016 :	**18**
GBD Estimated Fatalities, 2016 :	**12**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**16.80**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**11.15**
Estimated Serious Injuries, 2016 :	**270**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 22.41 million**
Cost as % of country GDP, 2016 :	**5.6%**

FATALITIES BY USER COMPARISON CHART



69% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

658 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Tonga	18	12	16.8	11.2	-1.6%	7,612
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Tonga has a lead agency present, Ministry of Police (Department of Traffic) and Ministry of Infrastructure, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatality rate per 100,000 population by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TONGA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Tonga:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 22.1 million**
Annual Investment as a % of GDP (2019-2030):	**0.42%**
Reduction in fatalities per year:	**3**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**650**

Economic Benefit: **$ 40.9 million** B/C Ratio: **2**

ROAD SAFETY COUNTRY PROFILE

Tonga

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓	50 km/h	70 km/h	70 km/h	Manual
NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT

Difference with Recommended Safe Systems Speeds	+ 20 km/h	Appropriate	Appropriate
	4 times lower	Low Risk	Low Risk

Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TONGA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

8,154	2.3%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✗	✗	✗	✗	✓	✓	✗ Not restricted	✓ 18 yrs.
NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE

✓	✓	<0.03	<0.03	<0.03	✓	Approx. 77.0%
NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS	RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	None
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100: **62**

EXPENDITURE ON HEALTHCARE AS % OF GDP: **5%**

Tonga has several emergency numbers. These are 911 (General); 922 (Police); 933 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Tunisia

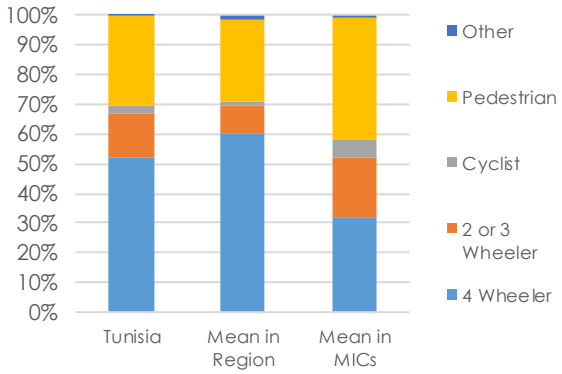
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**11,403,248**
Country Reported Fatalities, 2016 :	**1,443**
WHO Estimated Fatalities, 2016 :	**2,595**
GBD Estimated Fatalities, 2016 :	**3,681**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**22.80**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**32.39**
Estimated Serious Injuries, 2016 :	**38,925**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 3.16 billion**
Cost as % of country GDP, 2016 :	**7.6%**

FATALITIES BY USER COMPARISON CHART



72% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,418 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Tunisia	2,595	3,681	22.8	32.4	-3.8%	17,676
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Tunisia has a lead agency present, National Observatory for Information, Training, Documentation and Studies on Road Safety, Ministry of Interior, which is funded in the national budget. The functions of the agency include coordination and monitoring and evaluation of road safety strategies without legislation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TUNISIA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Tunisia:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 631.09 million**
Annual Investment as a % of GDP (2019-2030):	**0.13%**
Reduction in fatalities per year:	**987**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**220,000**
Economic Benefit: **$ 11.27 billion**	B/C Ratio: **18**

ROAD SAFETY COUNTRY PROFILE

Tunisia

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	50 km/h URBAN ROADS	90 km/h RURAL ROADS	110 km/h MOTORWAYS	Manual SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TUNISIA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

2,015,601 TOTAL REGISTERED VEHICLES AS OF 2016	0.8% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✓ Regulated REGULATION OF IMPORT OF USED VEHICLES	✓ 5 Yrs. IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✓ Yes IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✓ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✓ Prohibited under 6 yrs MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	<0.03 GENERAL POPULATION	0.00 YOUNG DRIVERS	0.00 PROFESSIONAL DRIVERS	✗ RANDOM DRINK DRIVING TESTS	Approx. 1.6% % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers NATIONAL EMERGENCY CARE ACCESS NUMBER	None TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	65	EXPENDITURE ON HEALTHCARE AS % OF GDP	7%

Tunisia has several emergency numbers. These are 197 (Police); 190 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

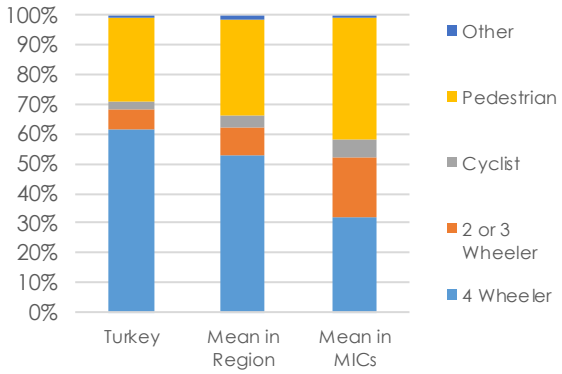
ROAD SAFETY COUNTRY PROFILE — Turkey — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**79,512,424**
Country Reported Fatalities, 2016 :	**7,300**
WHO Estimated Fatalities, 2016 :	**9,782**
GBD Estimated Fatalities, 2016 :	**8,727**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**12.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**10.96**
Estimated Serious Injuries, 2016 :	**146,730**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 35.33 billion**
Cost as % of country GDP, 2016 :	**4.1%**

FATALITIES BY USER COMPARISON CHART



73% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

600 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Turkey	9,782	8,727	12.3	11.0	3.1%	26,525
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Turkey has a lead agency present, Higher Board of Road Safety, Ministry of Interior, which isn't funded in the national budget but has a road safety strategy which is fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has both a fatal and non-fatal road safety target, to reduce fatalities by 50% with a timeline of 2011 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TURKEY IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Turkey:

Partial Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 12.54 billion**
Annual Investment as a % of GDP (2019-2030):	**0.12%**
Reduction in fatalities per year:	**2,464**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**540,000**
Economic Benefit: **$ 91.26 billion**	B/C Ratio: **7**

ROAD SAFETY COUNTRY PROFILE

Turkey

Europe and Central Asia (ECA)

PILLAR 3

SAFE SPEEDS [Ref: 1,6,7,8]

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	110 km/h	120 km/h	Manual and Automated
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 40 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	6 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TURKEY:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

PILLAR 4

SAFE VEHICLES [Ref: 1,8]

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
21,090,424	14.2%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✓	✗	✓	✓	✓

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✓ Yes	✓ Yes

PILLAR 5

SAFE ROAD USERS [Ref: 1,8]

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.05	≤0.05	≤0.02	✓	Approx. 3.3%

PILLAR 6

POST CRASH CARE [Ref: 1,8,9]

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100		EXPENDITURE ON HEALTHCARE AS % OF GDP	
National, Single Number	Some Facilities		71		4%

Turkey has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

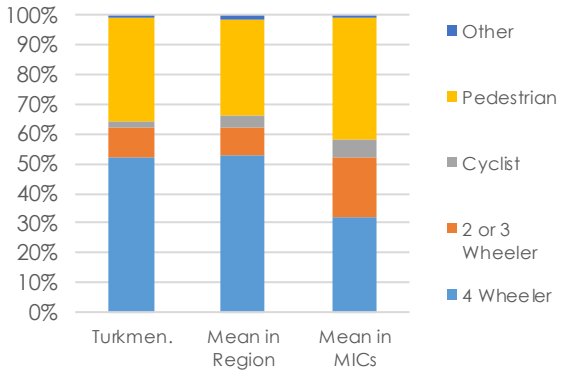
ROAD SAFETY COUNTRY PROFILE — Turkmenistan — Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**5,662,544**
Country Reported Fatalities, 2016 :	**543**
WHO Estimated Fatalities, 2016 :	**823**
GBD Estimated Fatalities, 2016 :	**326**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**14.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**6.62**
Estimated Serious Injuries, 2016 :	**12,345**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 1.75 billion**
Cost as % of country GDP, 2016 :	**4.8%**

FATALITIES BY USER COMPARISON CHART



86% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

466 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Turkmenistan	823	326	14.5	6.6	-1.9%	14,973
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Turkmenistan has a lead agency present, Ministry of Health and Medical Industry of Turkmenistan, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR TURKMENISTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Turkmenistan:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.9 billion**
Annual Investment as a % of GDP (2019-2030):	**0.34%**
Reduction in fatalities per year:	**337**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**70,000**
Economic Benefit: **$ 9.28 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Turkmenistan

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓	60 km/h	90 km/h	110 km/h	Manual and Automated
NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT

Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN TURKMENISTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

847,874	4.4%
TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No
REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs	✗ 17 yrs.
NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE

✓	✓	< 0.05	< 0.05	< 0.05	✓	✗ Not Known
NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS	RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

National, Multiple Numbers	Some Facilities
NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM

COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100: **67**

EXPENDITURE ON HEALTHCARE AS % OF GDP: **7%**

Turkmenistan has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Uganda

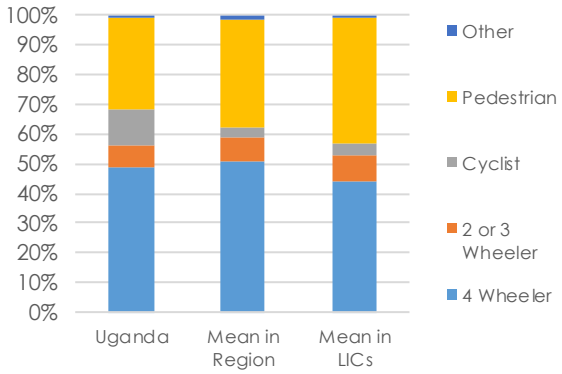
Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**41,487,964**
Country Reported Fatalities, 2016 :	**3,503**
WHO Estimated Fatalities, 2016 :	**12,036**
GBD Estimated Fatalities, 2016 :	**5,769**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**29.00**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**15.15**
Estimated Serious Injuries, 2016 :	**180,540**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.33 billion**
Cost as % of country GDP, 2016 :	**9.6%**

FATALITIES BY USER COMPARISON CHART



61% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

869 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Uganda	12,036	5,769	29.0	15.2	-10.2%	3,844
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

Uganda has a lead agency present, National Road Safety Council (NRSC), Ministry of Works and Transport, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 50% with a timeline of 2014 - 2022.

PILLAR 2

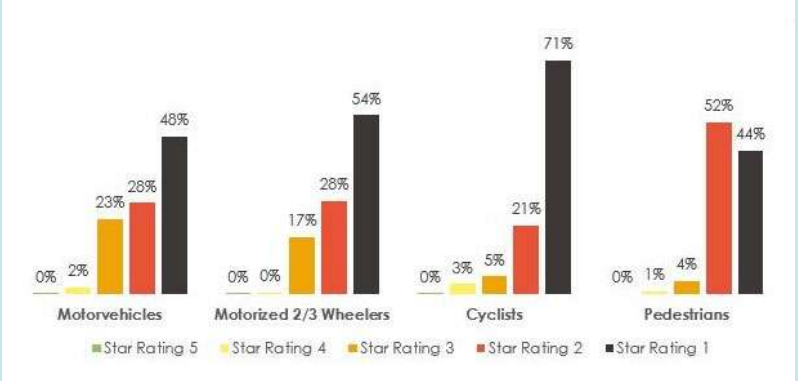
SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Uganda

Surveyed Road Statistics: **96%** with no formal footpaths; **100%** with no pedestrian crossings; **4%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 2.8 billion km; Pedestrian Travel: 1.7 billion km; Motorcyclist Travel: 260,722,876 km; Cyclist Travel: 1.2 billion km



Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 260 million**
Annual Investment as a % of GDP (2019-2030):	**0.08%**
Reduction in fatalities per year:	**4,539**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,000,000**
Economic Benefit: **$ 11.04 billion**	B/C Ratio: **42**

ROAD SAFETY COUNTRY PROFILE

Uganda

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	100 km/h	Not Known	Manual

	URBAN ROADS	RURAL ROADS	MOTORWAYS	
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 30 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	4 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN UGANDA:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,594,962	59.3%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 5 Yrs.	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤0.08	≤0.08	0.00	✓	Approx. 0.8%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Some Facilities	44	6%

Uganda has several emergency numbers. These are 999 (Police); 112 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE

Ukraine

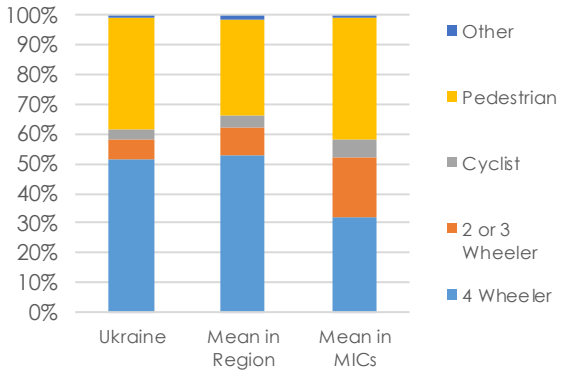
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**44,438,624**
Country Reported Fatalities, 2016 :	**4,687**
WHO Estimated Fatalities, 2016 :	**6,089**
GBD Estimated Fatalities, 2016 :	**7,308**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**13.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**16.25**
Estimated Serious Injuries, 2016 :	**91,335**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 4.43 billion**
Cost as % of country GDP, 2016 :	**4.7%**

FATALITIES BY USER COMPARISON CHART



86% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,003 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Ukraine	6,089	7,308	13.7	16.2	28.9%	32,480
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

UKRAINE HAS NO ROAD SAFETY LEAD AGENCY, NATIONAL ROAD SAFETY STRATEGY AND ROAD SAFETY TARGETS.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR UKRAINE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Ukraine:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Ukraine

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	90 km/h	130 km/h	None
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 40 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	4 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN UKRAINE:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✓	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
14,433,709	12.0%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 12 yrs / 145 cm	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	≤ 0.02	≤ 0.02	≤0.02	✗	Approx. 6.7%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	63	7%

Ukraine has several emergency numbers. These are 112 (General); 102 (Police); 103 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Uzbekistan

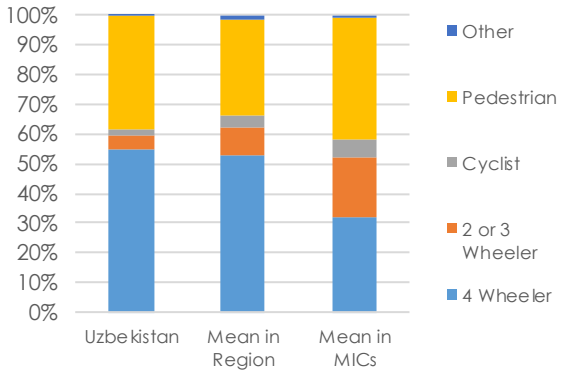
Europe and Central Asia (ECA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**31,446,796**
Country Reported Fatalities, 2016 :	**2,496**
WHO Estimated Fatalities, 2016 :	**3,617**
GBD Estimated Fatalities, 2016 :	**4,015**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**11.50**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**12.63**
Estimated Serious Injuries, 2016 :	**54,255**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.55 billion**
Cost as % of country GDP, 2016 :	**3.8%**

FATALITIES BY USER COMPARISON CHART



84% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

760 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Uzbekistan	3,617	4,015	11.5	12.6	-6.1%	0
BEST PERFORMING COUNTRIES IN REGION						
Macedonia	134	164	6.4	7.5	5.8%	21,284
Serbia	649	797	7.4	8.9	-6.1%	25,877
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Uzbekistan has a lead agency present, State Service on Traffic Safety, Ministry of Internal Affairs of Republic of Uzbekistan, which is funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR UZBEKISTAN IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Uzbekistan:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.69 billion**
Annual Investment as a % of GDP (2019-2030):	**0.21%**
Reduction in fatalities per year:	**1,296**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**290,000**
Economic Benefit: **$ 9.14 billion**	B/C Ratio: **5**

ROAD SAFETY COUNTRY PROFILE

Uzbekistan

Europe and Central Asia (ECA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	70 km/h	100 km/h	Not Known	Manual
Difference with Recommended Safe Systems Speeds	+ 40 km/h	+ 30 km/h	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	9 times lower	4 times lower	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN UZBEKISTAN:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
Not Known	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✗	✗	✓	✗	✓ Prohibited under 12 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	Approx. 3.6%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	Not Known	72	6%

Uzbekistan has several emergency numbers. These are 102 (Police); 101 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Vanuatu

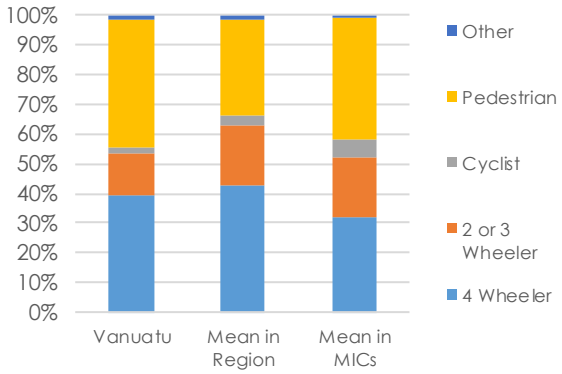
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**270,402**
Country Reported Fatalities, 2016 :	**9**
WHO Estimated Fatalities, 2016 :	**43**
GBD Estimated Fatalities, 2016 :	**51**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**15.90**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.16**
Estimated Serious Injuries, 2016 :	**645**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 41.66 million**
Cost as % of country GDP, 2016 :	**5.3%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,111 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Vanuatu	43	51	15.9	18.2	-0.4%	5,539
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Vanuatu has a lead agency present, Vanuatu Police Force, Ministry of Internal Affairs, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination and legislation of road safety strategies without monitoring and evaluation. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR VANUATU IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Vanuatu:

Partial Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 20.87 million**
Annual Investment as a % of GDP (2019-2030):	**0.19%**
Reduction in fatalities per year:	**17**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**3,700**
Economic Benefit: **$ 173.9 million**	B/C Ratio: **8**

ROAD SAFETY COUNTRY PROFILE

Vanuatu

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	None
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN VANUATU:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
14,000	Not Known

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ No Restrictions	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✗	Approx. 67.0%

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	56	4%

Vanuatu has a single emergency number. This is 112.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Venezuela

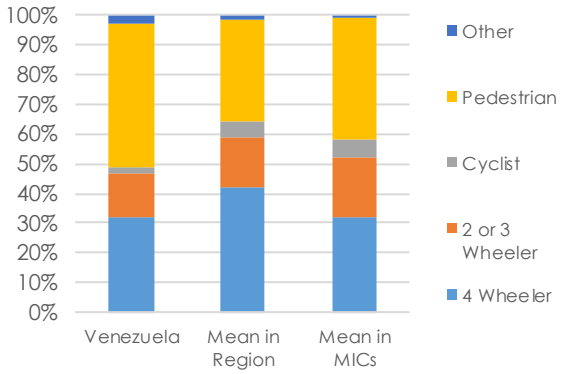
Latin America and Caribbean (LAC)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**31,568,180**
Country Reported Fatalities, 2016 :	**7,028**
WHO Estimated Fatalities, 2016 :	**10,640**
GBD Estimated Fatalities, 2016 :	**6,881**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**33.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**22.62**
Estimated Serious Injuries, 2016 :	**159,600**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 55.52 billion**
Cost as % of country GDP, 2016 :	**11.5%**

FATALITIES BY USER COMPARISON CHART



84% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,230 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Venezuela	10,640	6,881	33.7	22.6	-2.7%	25,341
BEST PERFORMING COUNTRIES IN REGION						
Cuba	975	1,124	8.5	9.9	4.9%	5,519
Grenada	10	12	9.3	10.6	4.5%	25,407
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Venezuela has a lead agency present, National Institute of Land Transport, Ministry of People's Power for Land Transport, which is funded in the national budget, and also has a road safety strategy which is also fully funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR VENEZUELA IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Venezuela:

Audit/Star Rating Required for New Road Infrastructure;

No Inspection/Star Rating Required for Existing Roads;

Investment is not Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**Not Assessed**
Annual Investment as a % of GDP (2019-2030):	**Not Assessed**
Reduction in fatalities per year:	**Not Assessed**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**Not Assessed**

Economic Benefit: **Not Assessed** B/C Ratio: **N.A**

ROAD SAFETY COUNTRY PROFILE

Venezuela

Latin America and Caribbean (LAC)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✗	Not Known	Not Known	Not Known	Manual
Difference with Recommended Safe Systems Speeds	-	-	-	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	-	-	-	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN VENEZUELA:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
7,999,760	15.8%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Banned	✓ New	✗ No	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✗	✓ Prohibited under 10 yrs	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Single Number	National	73	3%

Venezuela has a single emergency number. This is 911.

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — Vietnam

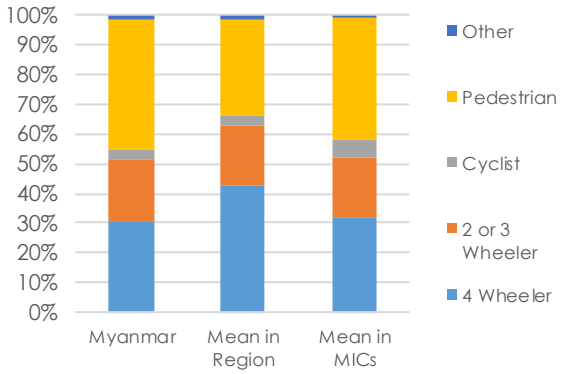
East Asia and Pacific (EAP)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**94,569,072**
Country Reported Fatalities, 2016 :	**8,417**
WHO Estimated Fatalities, 2016 :	**24,970**
GBD Estimated Fatalities, 2016 :	**21,599**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**26.40**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**22.65**
Estimated Serious Injuries, 2016 :	**374,550**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 18.02 billion**
Cost as % of country GDP, 2016 :	**8.8%**

FATALITIES BY USER COMPARISON CHART



82% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

3 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,157 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Vietnam	24,970	21,599	26.4	22.7	-4.2%	53,577
BEST PERFORMING COUNTRIES IN REGION						
Micronesia	2	16	1.9	15.7	-0.3%	5,406
Kiribati	5	12	4.4	10.4	-5.2%	3,240
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ Vietnam has a lead agency present, National Traffic Safety Committee (NTSC), which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country only has a fatal road safety target, to reduce fatalities by 5 - 10% annually with a timeline of 2012 - 2020.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results - Vietnam

Surveyed Road Statistics: **94%** with no formal footpaths; **91%** with no pedestrian crossings; **23%** undivided with veh. speeds > 80 kph

Vehicle Occupant Travel: 5.1 billion km; Pedestrian Travel: 353,003,545 km; Motorcyclist Travel: 9.2 billion km; Cyclist Travel: 211,921,920 km

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 3.81 billion**
Annual Investment as a % of GDP (2019-2030):	**0.14%**
Reduction in fatalities per year:	**8,968**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**1,970,000**
Economic Benefit:	**$ 74.09 billion**
B/C Ratio:	**19**

ROAD SAFETY COUNTRY PROFILE

Vietnam

East Asia and Pacific (EAP)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

✓ NATIONAL SPEED LIMIT LAW	60 km/h URBAN ROADS	90 km/h RURAL ROADS	120 km/h MOTORWAYS	Manual and Automated SPEED ENFORCEMENT
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 20 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	3 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN VIETNAM:

✗ NARROWING	✓ VERTICAL DEFLECTIONS	✗ HORIZONTAL DEFLECTION	✗ BLOCK OR RESTRICT ACCESS
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

50,666,855 TOTAL REGISTERED VEHICLES AS OF 2016	93.0% MOTORIZED 2/3 WHEELERS AS OF 2016

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

✗ FRONTAL AND SIDE IMPACT (Reg. 94, 95)	✗ MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	✗ PEDESTRIAN PROTECTION (Reg. 127)	✗ ELECTRONIC STABILITY CONTROL (Reg. 140)	✗ SEAT BELTS AND ANCHORAGES (Reg. 16, 14)

✗ No Restrictions REGULATION OF IMPORT OF USED VEHICLES	✗ No IMPORT AGE LIMIT	✗ No TAXATION BASED LIMITS	✓ Yes IMPORT INSPECTIONS	✗ No PERIODIC INSPECTION

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

✓ NATIONAL SEATBELT LAW	✓ DRIVER	✓ FRONT	✗ BACK	✓ MOTORCYCLE HELMET LAW	✓ HELMET STANDARDS	✗ Not restricted MOTORCYCLE OCCUPANT AGE RESTRICTION	✓ 18 yrs. LEGAL MINIMUM DRIVING AGE

✓ NATIONAL DRINK DRIVING LAW	✓ IS LAW BAC BASED?	≤0.05 GENERAL POPULATION	≤0.05 YOUNG DRIVERS	≤0.05 PROFESSIONAL DRIVERS	✓ RANDOM DRINK DRIVING TESTS	✗ Not Known % OF ROAD CRASH FATALITIES INVOLVING ALCOHOL

BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

Partial Coverage NATIONAL EMERGENCY CARE ACCESS NUMBER	National TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	73	EXPENDITURE ON HEALTHCARE AS % OF GDP	6%

Vietnam has several emergency numbers. These are 113 (Police); 114 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

ROAD SAFETY COUNTRY PROFILE — West Bank

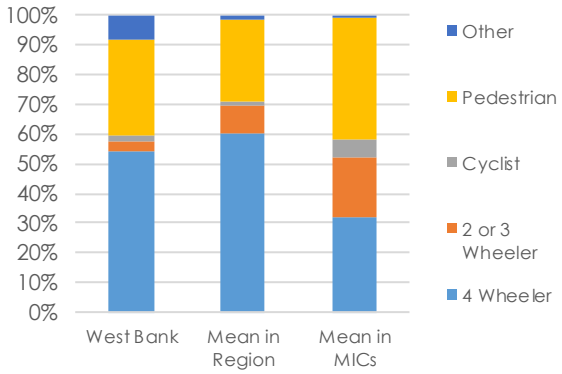
Middle East and North Africa (MENA)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**4,790,705**
Country Reported Fatalities, 2016 :	**159**
WHO Estimated Fatalities, 2016 :	**252**
GBD Estimated Fatalities, 2016 :	**-**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**5.30**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**-**
Estimated Serious Injuries, 2016 :	**3,780**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 247.15 million**
Cost as % of country GDP, 2016 :	**1.8%**

FATALITIES BY USER COMPARISON CHART



65% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

2 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

Not Known affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
West Bank	252	-	5.3	-	-5.4%	5,602
BEST PERFORMING COUNTRIES IN REGION						
West Bank	252	-	5.3	-	-5.4%	5,602
Egypt	9,287	26,925	9.7	28.4	-4.7%	8,792
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✓ West Bank has a lead agency present, Higher Traffic Council, which is funded in the national budget, and has a road safety strategy which is partially funded. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR WEST BANK IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in West Bank:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 91.38 million**
Annual Investment as a % of GDP (2019-2030):	**0.06%**
Reduction in fatalities per year:	**96**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**20,000**
Economic Benefit: **$ 1.06 billion**	B/C Ratio: **12**

ROAD SAFETY COUNTRY PROFILE

West Bank

Middle East and North Africa (MENA)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	50 km/h	80 km/h	110 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 20 km/h	+ 10 km/h	+ 20 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	4 times lower	2 times lower	2 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN WEST BANK:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
268,365	0.6%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✗ Not Known	✗ No	✗ No	✓ Yes	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✓	✓	✓	✗ Not restricted	✓ 18 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✗	✗	✗	✗	✓	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	0	0%

West Bank has several emergency numbers. These are 100 (Police); 101 (Ambulance).

REFERENCES

1. Global Status Report on Road Safety 2018. World Health Organization; 2. Institute for Health Metrics and Evaluation (IHME). GBD Results Tool. Seattle, WA: IHME, University of Washington, 2015; 3. Serious injuries have been calculated assuming a ratio of 15:1 (15 serious injuries for every death). This estimation broadly falls in the range of 30:1 in high income countries to 10:1 in low- and middle-income countries as crashes tend to be more fatal in the later context. 4. Vaccines for Roads, International Road Assessment Programme (iRAP). Available from https://www.vaccinesforroads.org/; 5. World Bank Databank for Development Indicators; 6. M.H. Cameron, R. Elvik. 2010. Nilsson's Power Model connecting speed and road trauma; 7. Austroads. Balance between harm reduction and mobility in setting speed limits; 8. UNEP-ITC Background Paper on Used Vehicles Globally and Various Media Sources (Wikipedia and vehicle import websites); 9. 2018 World Health Statistics, WHO.

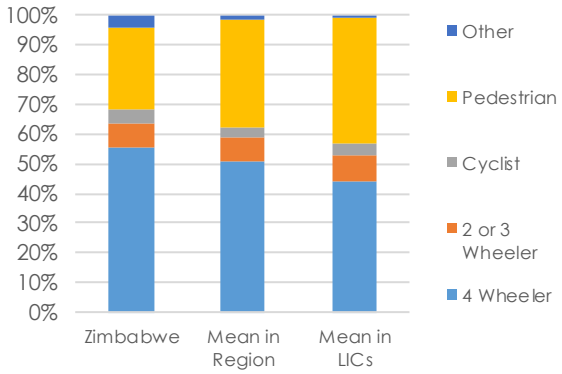
ROAD SAFETY COUNTRY PROFILE — Zimbabwe — Africa (AFR)

THE SCALE OF THE ROAD SAFETY CHALLENGE [Ref: 1,2,3,4,5]

ROAD CRASH FATALITIES AND INJURIES SNAPSHOT

Country Population, 2016 :	**16,150,362**
Country Reported Fatalities, 2016 :	**1,721**
WHO Estimated Fatalities, 2016 :	**5,601**
GBD Estimated Fatalities, 2016 :	**2,731**
WHO Est. Fatalities per 100,000 Pop., 2016 :	**34.70**
GBD Est. Fatalities per 100,000 Pop., 2016 :	**18.91**
Estimated Serious Injuries, 2016 :	**84,015**
Cost of Fatalities and Serious Injuries, 2016 :	**$ 2.37 billion**
Cost as % of country GDP, 2016 :	**11.5%**

FATALITIES BY USER COMPARISON CHART



77% Percentage of Road Crash Fatalities and Injuries in the economically productive age groups (15 - 64 years.)

4 : 1 Ratio of Male to Female Fatalities with the 15 - 49 year age group being most vulnerable to fatalities

1,044 life yrs. affected due to disability from road crash injuries per 100,000 people

POSITIONING OF COUNTRY IN THE REGION (COMPARED TO COUNTRIES WITH THE LOWEST TRAFFIC FATALITIES IN THE REGION AND GLOBALLY)

	2016 WHO Estimated Road Fatalities	2016 GBD Estimated Road Fatalities	2016 WHO Estimated Fatality Rate/ 100,000 pop.	2016 GBD Estimated Fatality Rate/ 100,000 pop.	% Trend in Fatality Rate/100,000 (2013 - 2016)	Motorization Registered Vehicles/100,000 population
Zimbabwe	5,601	2,731	34.7	18.9	-6.7%	7,421
BEST PERFORMING COUNTRIES IN REGION						
Mauritius	173	168	13.7	13.2	4.4%	40,224
Nigeria	39,802	19,710	21.4	9.9	0.8%	6,309
BEST PERFORMING COUNTRIES GLOBALLY						
Switzerland	223	334	2.65	3.89	-5.4%	71,182
Norway	143	215	2.72	4.09	2.4%	75,544
Singapore	155	197	2.76	3.53	-4.9%	16,604
Sweden	278	390	2.83	3.88	-3.2%	62,037

PILLAR 1

ROAD SAFETY MANAGEMENT [Ref: 1]

To produce positive road safety outcomes, strong management in all aspects of road safety is key. Presence of a funded lead agency to guide the national road safety effort and implement a Safe Systems approach is recommended.

✗ Zimbabwe has a lead agency present, Traffic Safety Council of Zimbabwe, Ministry of Transport and Infrastructural Development, which isn't funded in the national budget. The functions of the agency include coordination, legislation and monitoring and evaluation of road safety strategies. The country has no known road safety target.

PILLAR 2

SAFE ROADS AND ROADSIDES [Ref: 1,4]

Improved infrastructure provides solid and well understood crash and injury reduction outcomes and are critical for long term and sustainable trauma reduction in line with the Safe Systems Approach. The International Road Safety Assessment Programme (iRAP) provide a business case for safer roads and road star ratings which give a simple and objective measure on the level of safety which is 'built-in' to the road for the road users. 5 Star roads are the safest while 1 star roads are the least safe.

Road Infrastrucure Star Rating Results

NO ROAD ASSESSMENT SURVEY DATA FOR ZIMBABWE IS PUBLICLY AVAILABLE ON THE iRAP WEBSITE.

Information on Infrastructure in Zimbabwe:

Audit/Star Rating Required for New Road Infrastructure;

Inspection/Star Rating Required for Existing Roads;

Investment Allocated to Upgrade High Risk Locations

Business Case for Safer Roads

Infrastructure and Speed Management Investment required:	**$ 1.26 billion**
Annual Investment as a % of GDP (2019-2030):	**0.56%**
Reduction in fatalities per year:	**1,759**
Approximate reduction in fatalities and serious injuries (FSI) over 20 years:	**390,000**
Economic Benefit: **$ 7.26 billion**	B/C Ratio: **6**

ROAD SAFETY COUNTRY PROFILE

Zimbabwe

Africa (AFR)

SAFE SPEEDS [Ref: 1,6,7,8]

PILLAR 3

Speeding is a major risk factor for road crash injuries, contributing to both crash risk and crash consequences. A 5 % cut in average speed can result in a 20 % reduction in the number of fatal road crashes. Effective speed management measures such as establishing and enforcing speed limit laws, traffic calming through roadway design and other measures, and vehicle technology need to be widely implemented.

MAXIMUM SPEED LIMITS AND ENFORCEMENT

NATIONAL SPEED LIMIT LAW	URBAN ROADS	RURAL ROADS	MOTORWAYS	SPEED ENFORCEMENT
✓	60 km/h	80 km/h	120 km/h	Manual
Difference with Recommended Safe Systems Speeds	+ 30 km/h	+ 10 km/h	+ 30 km/h	Potential Decrease in Fatal Road Crashes from Enforcement of Safe System Speed Limits
	6 times lower	2 times lower	3 times lower	

MAJOR SPEED CALMING MEASURES BEING IMPLEMENTED IN ZIMBABWE:

NARROWING	VERTICAL DEFLECTIONS	HORIZONTAL DEFLECTION	BLOCK OR RESTRICT ACCESS
✗	✓	✗	✗
Include lane narrowings by extending sidewalks, curb extensions, pedestrian refuges etc.	Include speed bumps, humps, cushions, tables, raised pedestrian crossing, variation in ride surface etc.	Used to make vehicles swerve slightly, include chicanes, pedesrian refuges, chokers etc.	Include median diverters, closing streets to create pedestrian zones, cul-de-sacs etc.

SAFE VEHICLES [Ref: 1,8]

PILLAR 4

Universal deployment of improved vehicle safety technologies for both passive and active safety through a combination of harmonization of relevant global standards, consumer information schemes and incentives to accelerate the uptake of new technologies will reduce road crash fatalities significantly.

VEHICLE REGISTRATION, STANDARDS AND IMPORT REGULATIONS

TOTAL REGISTERED VEHICLES AS OF 2016	MOTORIZED 2/3 WHEELERS AS OF 2016
1,198,584	3.9%

COUNTRY COMPLIANCE TO THE UN VEHICLE SAFETY REGULATIONS

FRONTAL AND SIDE IMPACT (Reg. 94, 95)	MOTORCYCLE ANTI-LOCK BRAKING SYSTEM (Reg. 78)	PEDESTRIAN PROTECTION (Reg. 127)	ELECTRONIC STABILITY CONTROL (Reg. 140)	SEAT BELTS AND ANCHORAGES (Reg. 16, 14)
✗	✗	✗	✗	✗

REGULATION OF IMPORT OF USED VEHICLES	IMPORT AGE LIMIT	TAXATION BASED LIMITS	IMPORT INSPECTIONS	PERIODIC INSPECTION
✓ Regulated	✗ No	✓ 5 Yrs.	✗ No	✗ No

SAFE ROAD USERS [Ref: 1,8]

PILLAR 5

The key behavioral risk factors for road crash injuries are drunk driving, non-use of helmets, seat-belts or child restraint, and speeding. Establishing and enforcing laws to address these risk factors is effective in reducing road crash fatalities and their associated injuries.

NATIONAL SEATBELT, DRINK DRIVING AND HELMET LAWS (WHO, 2018)

NATIONAL SEATBELT LAW	DRIVER	FRONT	BACK	MOTORCYCLE HELMET LAW	HELMET STANDARDS	MOTORCYCLE OCCUPANT AGE RESTRICTION	LEGAL MINIMUM DRIVING AGE
✓	✓	✓	✗	✓	✓	✗ Not restricted	✗ 16 yrs.

NATIONAL DRINK DRIVING LAW	IS LAW BAC BASED?	BLOOD ALCOHOL CONCENTRATION (BAC) LIMITS (g/dl)			RANDOM DRINK DRIVING TESTS	% OF ROAD CRASH FATALITIES INVOLVING ALCOHOL
		GENERAL POPULATION	YOUNG DRIVERS	PROFESSIONAL DRIVERS		
✓	✓	<0.08	<0.08	<0.08	✗	✗ Not Known

POST CRASH CARE [Ref: 1,8,9]

PILLAR 6

Good post-crash care reduces deaths and reduces disability and suffering for road crash survivors. The emergency medical care system elements and processes need to be effective to attain this objective.

NATIONAL EMERGENCY CARE ACCESS NUMBER	TRAUMA REGISTRY SYSTEM	COUNTRY HEALTH COVERAGE INDEX - SDG Target 3.8; Target - 100	EXPENDITURE ON HEALTHCARE AS % OF GDP
National, Multiple Numbers	None	55	9%

Zimbabwe has several emergency numbers. These are 999 (General); 995 (Police); 994 (Ambulance).

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ABOUT GRSF AND THE WORLD BANK GROUP

The Global Road Safety Facility (GRSF), a global partnership program administered by the World Bank, was established in 2006 with a mission to help address the growing crisis of road traffic deaths and injuries in low and middle-income countries (LMICs). GRSF provides funding, knowledge, and technical assistance designed to scale-up the efforts of LMICs to build their scientific, technological, managerial and delivery capacities.

Since its inception, the GRSF has received total donor pledges of $74 million and has expanded to 78 countries, improving road safety outcomes through technical assistance and grant-funded activities.

THE WORLD BANK

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Global Road Safety Facility

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