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## ASSESSMENT OF SDG 3.6: AN ANALYSIS OF GHANA'S ROAD SAFETY POLICIES AND STRATEGIES IN RELATION TO THE GLOBAL PLAN FOR THE DECADE OF ACTION FOR ROAD SAFETY 2011-2020

BY

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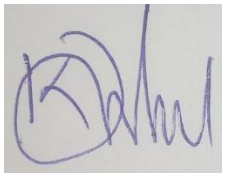
## DECLARATION

I, Bernard Agbemor Tsokpo, do hereby declare that this dissertation is the product of an original research that I undertook under the supervision of Dr. Innocent Badasu. That, this work has never been submitted partially or wholly elsewhere for any award and that all sources used have been duly acknowledged.



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**DATE** 18/01/2022 …… **DATE** 18/01/2022 ……

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# DEDICATION

I wholeheartedly dedicate this work to the Almighty God for making it possible for me to go a step further in the journey of education. Also to my cousin, Isaac Tsokpo, of all the things you could use your money for, you decided to finance this course. I am forever grateful Sir.

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I also take this opportunity to thank my respondents whose knowledge and experiences made this work a success.

To the Leciad faculty, I thank you for sharing your hard-earned knowledge and experiences with us. The profession you have chosen demands a lot of sacrifice and patience, thank you for your selflessness. To my year group, I thank you all for sharing what you knew with me, and correcting me in various ways throughout our study. I am happy to have gone through this learning experience with your all.

Finally to everyone who supported me in one way of the other, I say God bless you.

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# LIST OF ABBREVIATIONS AND ACCRONYMS

| | |
|---|---|
| AU | African Union |
| BAC | Blood Alcohol Concentration |
| BRRI | Building and Road Research Institute |
| CSIR | Council for Scientific and Industrial Research |
| CSOs | Civil Society Organizations |
| DFR | Department of Feeder Roads |
| DUR | Department of Urban Roads |
| DVLA | Driver and Vehicle Licensing Authority |
| ECOWAS | Economic Community of West Africa States |
| EMT | Emergency Medical Technician |
| GHA | Ghana Highway Authority |
| GHS | Ghana Health Service |
| GPDARS | Global Plan for the Decade of Action for Road Safety |
| GPRTU | Ghana Private Road Transport Union |
| GSRRS | Global Status Report on Road Safety |
| HIC | High Income Countries |
| HIVAIDS | Human Immunodeficiency Virus, Acquired Immunodeficiency Syndrome |
| ITF | International Transport Forum |
| LI | Legislative Instrument |
| LMIC | Low-and Middle-Income Countries |
| MDG | Millennium Development Goals |
| MTTD | Motor Transport and Traffic Directorate |

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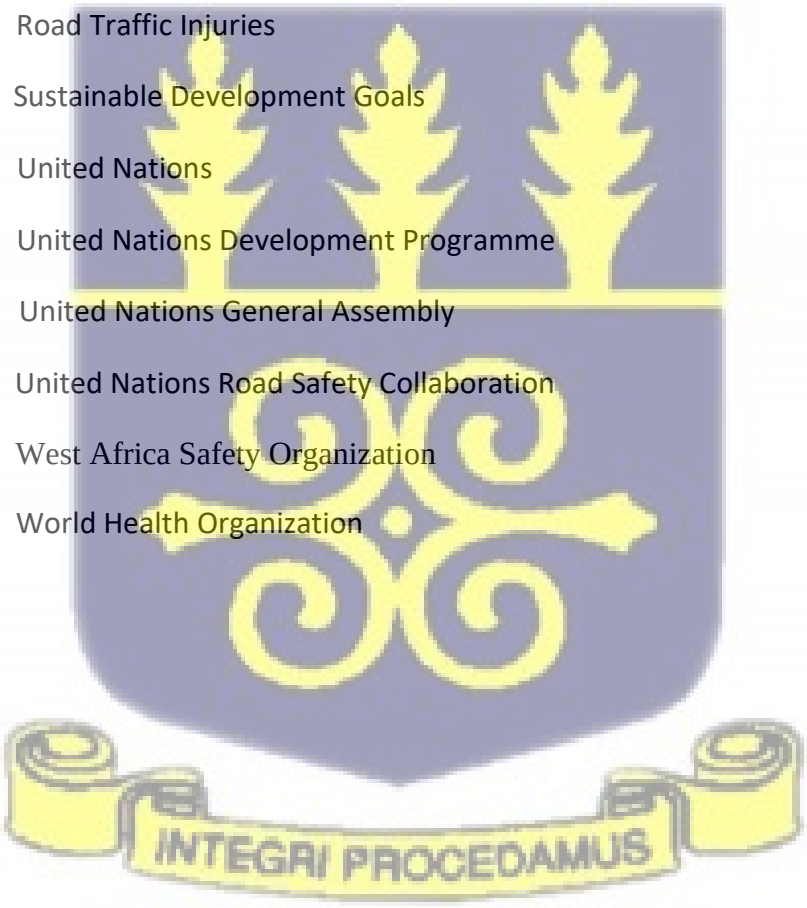
| | |
|---|---|
| NAS | National Ambulance Service |
| NGOs | Non-Governmental Organizations |
| NRSA | National Road Safety Authority |
| NRSS III | National Road Safety Strategy Three |
| NRSC | National Road Safety Commission |
| OECD | Organization for Economic Co-operation and Development |
| RTC | Road Traffic Crashes |
| RTD | Road Traffic Deaths |
| RTF | Road Traffic Fatalities |
| RTI | Road Traffic Injuries |
| SDGs | Sustainable Development Goals |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNGA | United Nations General Assembly |
| UNRSC | United Nations Road Safety Collaboration |
| WARSO | West Africa Safety Organization |
| WHO | World Health Organization |



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# ABSTRACT

Road traffic Injury has become a public health concern globally, killing 1.35 million people every year. In Ghana, RTI rates are unreasonably high; ironically, the country has committed to international objectives to significantly reduce RTIs and has designed strategies to meet those objectives. This study therefore assessed Ghana's performance on SDG 3.6 and the targets of the Global Decade of Action for Road Safety 2011-2020. This necessitated an analysis of Ghana's road safety policy and strategies aimed at achieving the goal and target, in relation to the Global Plan for the Decade of Action for Road Safety 2011-2020. The study also highlighted the challenges in road traffic injury prevention in Ghana.

This is a qualitative research that adopted an analytical approach. The study relied on both primary and secondary data. Primary data was purposively collected from road safety experts and personnel through semi-structured interview. Secondary sources included journal articles, reports, internet sources, books, etc. Data obtained was analyzed using content analyses. Key findings indicate that Ghana could not meet SDG 3.6 and the targets of the decade. The current trend of road traffic injuries and fatalities show a significant increase instead of decline, although there was initial decline in the early years of the decade. Ghana, through the NRSA and stakeholder institutions prepared a strategy and action plans based on the Global Plan for the Decade of Action for Road Safety. It was found that the objectives of the strategy aligned with the five pillars of road safety as presented in Global Plan for the Decade of Action for Road Safety 2011-2020. The study also revealed that Ghana is gradually embracing the safe systems approach to fighting RTIs by strengthening the entire road transport system. The pitfalls were in the implementation of the strategy; where financial inadequacies, centralization of implementation, and lack of oversight affected the implementation of the strategy and action plans. Core challenges in RTI prevention were identified to be lack of regulation of road transport sector, bad road network, corruption, inadequate funding, and low enforcement of road traffic regulations.

The study recommends that a national strategy inspired by the Global Plan of Action for Road Safety 2021-2030 which reflects the realities of the Ghanaian context be developed to fight RTI. Other recommendations include improving public transport; separating trunk roads from settlement areas; conducting road safety audits at various stages of road design and construction; constructing more trauma centers, and regulating the road transport sector.



**Key Words**

Road Transport  Road Traffic Injuries  Sustainable Development Goals

Safe Systems Approach  Global Plan


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# CHAPTER ONE
# INTRODUCTION

## 1.1 Background to the Study

Road safety is at the heart of every country, and it is a key component of its socioeconomic agenda, especially in Africa where road is the predominant means of transportation. Road traffic crash is a global health concern; it is the only non- disease related phenomenon listed among the top ten causes of deaths. The World Health Organization's Global Status Report on Road Safety (2018) classifies road traffic crashes as the 8th leading cause of death for people of all ages. About 1.35 million people the world over die each year as a result of road traffic crashes and about 20 to 50 million others sustain various degrees of injuries (WHO, 2018). Injuries could result in loss of vital organs of the body such as arms, legs, eyes, etc., and in most cases, victims become disabled and incapacitated. The data suggests a global rise in road traffic fatalities, from 1.24 million in 2013 to the current figures of 1.35 million (Boateng 2021). Despite the rise in the absolute figures, data from the global status report indicates a stable death per population rate; remaining at 18 deaths per 100,000 population, While the death per number of motor vehicles have declined from 135 deaths to 64 deaths per 100,000 vehicles between the years 2000 to 2016. Road traffic crash has surpassed all types of diseases to become the leading cause of death among children and young people aged 5-29 years; and among the top three causes of deaths among people between the ages of 15-44 years old (Adeloye et al., 2016). Road traffic crashes now kill more people than diseases like HIV/AIDS, tuberculosis, diarrhea, etc. (WHO, 2018). Despite these worrying trends, some studies, example (Heydari et al., 2019, Adeloye et. al., 2016) have suggested an under reporting of road traffic fatalities and injuries. According to the

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WHO's estimates, averagely 88%, 77%, 52% and 17% of road fatalities are reported to officials in higher income, middle income, lower-middle income, and low-income countries respectively (Heydari et al., 2019). Salmon and Lenné, (2015), estimate that road crashes could be the 5th leading cause of global death by 2030 if measures are not put in place to deal with the menace.

The global financial cost associated with road traffic injuries is also alarming. Globally, some estimated US$ 518 billion is spent annually on road traffic collision related expenses (Odonkor et al., 2020), and most countries spend about 3% of their gross domestic product on road traffic accidents (WHO 2018). In addition to the cost associated with trauma and emergency care, billions of dollars are lost due to the death and incapacity or inability of crash victims to contribute to productivity, and also as a result of loss of property. Road traffic accidents have killed several breadwinners, leaving many children orphaned, and making families more distressed.

The seriousness of the problem led to the declaration of the decade 2011-2020 as the Decade of Action for Road Safety by the United Nations General Assembly, and the inclusion of road safety in the global development goals; the Sustainable Development Goals in 2015, with the target of reducing road traffic fatalities and serious injuries by fifty percent by 2020. In view of this, a document called the Global Plan for the Decade of Action for Road Safety 2011-2020 was prepared by the WHO and the United Nations Regional Commissions (UNRC) in cooperation with the United Nations Road Safety Collaboration and other stakeholders to guide the implementation of the objectives of the decade. The current decade, 2021-2022 has also been declared the Second Decade of Action for Road Safety by the UN General Assembly, with a similar target of reducing at least by 50% global deaths and serious injuries by 2030. This

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declaration was necessary in order to consolidate the gains made from the first decade, after the 2020 goals were not met.

Boateng (2021) describes Africa as "the global capital of road trauma" (Boateng, 2021, p. 2). The continent records more road traffic crashes than any other region of the world. According to the WHO (2018), even though they have less than 60% of registered vehicles globally, LMIC contribute over 90% of global road traffic fatalities, with Africa being the highest contributor with the highest fatality per population rate of 26.6 deaths per 100,000 people; that is thrice the rate of Europe (Boateng 2021). In the WHO's 2013 Global Status Report, 12 of the 20-road traffic accident prone countries were in Sub Saharan Africa (Odonkor et al., 2020). Within the African region, there are variations in the rates of fatalities; middle income countries have a relatively lower rate of 23.6 deaths per 100,000 population as compared to 29.3 per 100,000 population for low income countries.

Ghana, a middle-income West African country has a serious problem with road safety fatalities. Due to the high cost or unavailability of rail and air travel, road remains the predominant means of transport in Ghana and in other Sub-Saharan African countries. Over 95% of passenger and freight travel is by road (Ministry of Transport, 2011); yet travelling by road is almost becoming a death trap due to the high risks of road accident. Almost every day there are media reports about road crashes. It is estimated that 8 people die every day in Ghana through road accidents. In the year 2001, the road traffic deaths to population rate was 73 deaths per 1000 population, making the Ghana the second unsafe country in the group of six West African States sampled (Odonkor et al., 2020). According to a 2016 report provided by the national road safety authority, the body mandated to ensure road safety in Ghana, 2084 people died that same year through road traffic accidents, with over 10,000 sustaining various degrees of

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injuries (NRSC, 2016). According to Blankson and Lartey (2020), 62% percent of all deaths at the casualty unit of the emergency department of the Korle-Bu teaching hospital resulted from road traffic accidents. The Motor Transport and Traffic Department (MTTD) of the Ghana Police Service reported that 2,126 people died through road traffic crashes in the first nine months of this year, which is an increase of 16.37% of the figure for 2020 (Ghana Web, October 8, 2021). Road traffic crashes are among the top ten causes of deaths in Ghana (CDC, 2019).

As at 2006, road traffic collisions caused the country 1.6% of its GDP (Boateng, 2020), and this figure is expected to increase with the rising cases of road traffic accidents. Blankson and Lartey (2020) stated that Ghanaian households spend an average of US$ 1867.65 on direct and indirect costs associated with road traffic traumas. The National Road Safety Authority is the lead agency for road safety in Ghana. In collaboration with other stakeholders, the authority develops strategies to reduce TRIs. The current strategy which was developed in line with the UN decade of action for road safety is the National Road Safety Strategy III 2011-2020 which was aimed at halting the unacceptable levels of road traffic fatalities and injuries by 2015, and thereafter reducing it by 50% by 2020.

## 1.2 Problem Statement

In 2015, the United Nations (UN) General Assembly adopted the Sustainable Development Goals (SDGs) to serve as a policy framework for the development of member states. There are 17 Goals in all, comprising 169 targets. As topical as road safety was and given that the SDGs were adopted in a decade declared for road safety, the United Nations reaffirmed its commitment to fighting road traffic casualties by including it in the SDGs. Target 6 of Goal 3 sought to 'halve the number of road traffic deaths and injuries by 2020' (WHO, 2015). This goal was in line with

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the aim of the decade of action for road safety, which is to halve the number of road traffic deaths and injuries by 2020.

Deaths and injuries from road traffic accidents continue to be on the rise in the Ghana despite all the global, regional, and national commitments that have been made to curb the menace. Eight people die every day through road traffic crashes, and about five times that number sustains non-fatal injuries. The increasing rates of road traffic injuries further puts a great burden on the already deficient health facilities and personnel. Ghana has a very high road traffic death rate of 24.5 per 100,000 according to the WHO estimates. Given that the Decade of Action for Road Safety and the Sustainable Development Goal 3.6 ended last year 2020, it is imperative to assess Ghana's performance on SDG 3.6, and to analyze the national policies and strategies on reducing road traffic deaths and injuries in relation to the Global Plan for the Decade of Action for Road Safety 2011-2020, which outlines various activities states are to carryout to achieve road safety objectives. This study therefore seeks to assess Ghana's performance on these global commitments to fight RTI and analyze in relation to the Global Plan for the Decade of Road Safety 2011-2020 the policy and strategies that were adopted to meet the targets of the decade and achieve the SDG 3.6 as this will help improve the next set of strategies on addressing road safety issues aimed at achieving the goals of the second decade of action for road safety (2021-2030).

Ghana being the de facto business hub of the continent through the hosting of the secretariat of the African Continental Free Trade Area means there is going to be more movement of cargo and people across the country as well as across its borders. There is therefore the need to ensure maximum road safety for commuters, so that the need to do business would not be hampered by the fear of traveling as a result of RTI.

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## 1.3 Objectives

This research aims to:

1. Discuss the state of road safety in Ghana

2. Analyze Ghana's Road Safety policy and strategies in relation to the Global Plan for the Decade of Action for Road Safety 2011-2020

3. Ascertain the challenges undermining Ghana's strive to preventing road traffic deaths and injuries.

## 1.4 Research Questions

This research answers the following questions:

1. What is the state of road safety in Ghana?

2. Do Ghana's road safety policy and strategies measure up to Global Plan for the Decade of Action for Road Safety?

3. What are the challenges undermining Ghana's strive to preventing road traffic deaths and injuries?

## 1.5 Scope of the Study

This research is limited to Ghana's road safety policies and strategies from 2011 to 2020. This is the period of the decade of action for road safety. Also the implementation of the United Nations' Sustainable Development Goals took effect from 2015, and Target 6 of Goal 3 was due in 2020. The study was conducted in the year 2021, and lasted for six months; from July to December 2021.

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## 1.6 Rationale of the Study

Each year, millions of Cedis are spent on road safety. Recent studies and reports have suggested that Ghana's road safety measures have focused on education/campaigns, and enforcement; and these have not yielded the desired outcome given the continuous rise in incidents of road traffic crashes. Such measures have sought to deal with indiscipline on the part of road users, particularly drivers and motorcyclists; and also cure road users of the ignorance of traffic rules and regulations. The purpose of this research is to ascertain whether these measures have been adequate in ensuring safety on the road. This study seeks to provide a strong empirical foundation for discussions on road safety among various stakeholders. The findings of this study will help the agencies in ensuring road safety, such as the National Road Safety Authority, the Driver and Vehicle Licensing Authority, and the Motor Transport and Traffic Directorate of the Ghana Police Service to come up with effective and efficient evidence-based strategies to reduce road traffic deaths and injuries, and improve road safety in Ghana.

## 1.7 Conceptual Framework

The conceptual framework underpinning this study is Human Security, which is often associated with the United Nations Development Program's 1994 Human Development report on Human Security and championed by Mahbub ul Haq. (Alkire, 2003). Although not a new concept, this approach to security gained prominence at the end of the cold war, which period also saw a rise in intrastate conflict, violence, human rights violations, and other humanitarian crises that traditional state security became inadequate to address (Shepherd, 2013, Wilson, 2008). The report defines human security as "Safety from chronic threats such as hunger, disease and repression; Protection from sudden and hurtful disruptions in the patterns of daily life – whether in jobs, in homes or in communities" (UNDP, 1994).

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The concept of human security represents a shift in focus from the traditional view of security, which emphasized the security of a state; that is the protection of the state against external and internal threats, often militarily, by securing the territory of the state. Human security places emphasis on the individual, and the focus is to protect the individual from both traditional (military) and nontraditional threats such as hunger, diseases, poverty, economic hardship etc. This approach is premised on the notion that the individual can be insecure in a secure state (Hami,1998), therefore the need to pay attention to those needs and issues that can cause insecurity to the individual, thereby securing the state in the end

According to Gregoratti (2007), the move towards human security is not a replacement of, but rather a complement to state security, as human insecurity can be detrimental to the peace and stability within and between states. The objective of human security is to seek and improve the wellbeing and welfare of individuals and their communities, which culminates in the security of the state. This is done by addressing human needs such as food, shelter, health, education, and environment.

Human security is in seven dimensions, these are economic security, food security, health security, environmental security, personal security, community security, and political security. Health Security focuses on health promotion and safety from diseases, protecting the individual from anything that poses a threat to their health and wellbeing, including communicable and non-communicable diseases, as well as injuries that may cause disability to the individual, like road traffic injuries. Freedom from fear and freedom from want are the two broad domains of the concept of human security. Freedom from fear highlights protecting people from threats to their security. Such threats could be violence and conflict, diseases, and in the case of this research,

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road accidents. This view is captured in the safe systems approach to be discussed later in this study, which recognizes that lives and health should not be compromised by the need to travel.

Human security is central to this research and for that matter road traffic death and injuries because it brings to bear factors inherent in communities and among individuals that undermine their survival, dignity, and livelihood. Although death is inevitable, some deaths, such as those labeled 'premature' are preventable. Such deaths include deaths through conflict and war, terrorism, diseases, famine, and motor traffic accidents; because actions could be taken by governments and other institutions to prevent them (Alkire 2003). Road traffic accidents undermine freedom from premature death and injury. It is causing a lot of preventable deaths, and endangering the dignity and livelihood of several people in communities. The impact of road traffic accidents is multisectoral; it affects the wellbeing of victims as well as their family relations, it affects finances of individuals and families, it affects the education of the young victims, and it also affects relationships. As a perceived strength of this theory, governments and other institutions can prioritize extant crises, to make those crises security issues (Benedek 2008) so as to direct maximum resources and political will into addressing them.

Human security has often been criticized for being too vague, too broad, and lacking precision, which makes it difficult to measure (King and Murray 2001: 591, Shepherd, 2013, Paris, 2001). The critics argue that there is no clearly defined criterion for what becomes a human security issue. Paris, (2001) argues that human security is nothing new, but just "the glue that holds together a jumbled coalition of 'middle power' states, development agencies and NGOs, all of which seek to shift attention and resources away from conventional security issues and toward goals that have traditionally fallen under the rubric of international development". (Paris 2001: 88, cited in Shepherd 2013). To vindicate its critics, even the proponents of the concept have

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taken different strands as to what human security should concern itself with; while the UN approaches the concept more broadly to include issues of access to education, health, conflict, fair trade, hunger and famine, etc., the human security network has favored a narrower view to concern itself with the removal and or reduction in the use or threat of force from a people (Shepherd 2013: 25, Krause 2007: 4). Nevertheless, as noted by Alkire (2003), although human wellbeing is too broad for institutions to protect, human security seeks the protection of at least the vital core of human lives and these vital cores include survival, livelihood, and dignity.

## 1.8 Literature Review

Under this section, the works of various scholars related to road traffic crashes and road safety that are relevant to the present study are reviewed.

### 1.8.1 Global Disparity in RTC and Achieving SDG 3.6

Although road traffic fatalities and injuries are a global concern, the problem is disproportionately borne by the various regions and countries of the world. Income level seems to be the major distinguishing factor among countries in terms of road traffic fatalities and injuries. While higher income countries have the lowest fatality rates and have made significant gains in reducing further the rate, lower income countries have the highest rate, and no country within this income bracket has been able to reduce the rate of fatalities since 2013. According to the WHO's 2018 Global Status Report on Road Safety, the rate of fatalities in lower income countries is thrice that of HIC, in spite of the fact that the former has only one percent of the world's vehicles. The report further indicates that lower- and middle-income countries account for over 90% of the world's road traffic fatalities and injuries (WHO GSRRS, 2018). According to the WHO estimates, there was a 10% rise in the annual number of deaths through road accidents since 1990, which rise is attributed to a surge in road traffic fatalities in lower- and

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middle-income countries in North Africa, Latin America and the Caribbean, the Middle East, and Asia. (Peden et al., 2004). Some studies (Morais Neto et al.2016) etc. have attributed the surge in road traffic crashes in lower- and middle-income countries to increased motorization in especially middle-income countries, with disproportionate improvement in safety measures.

Esther Oh (2020) identifies some challenges that will hinder the achievement of SDG 3.6. First, she realizes that the different capacity of the states in the UN is a challenge to achieving SGD 3.6. State capacity is determined by their respective governance system, stability, financial and technological capabilities (Brieba, 2018). High income countries with their quality human resources and advanced technology are more capable of reaching the SDG than low- and middle-income countries. Global road casualty trends indicate that while most HIC are experiencing reduction, fatalities and injuries keep rising at significant rates in LMIC. This implies that in this same period, LMIC need to work towards a halt in the levels of fatalities and casualties before realizing any possible decrease. The level of efforts; financial investment, capacity building, and political will, etc., needed to do this far exceeds what HIC who are already on the reduction would need. Although the international community put in measures to support LMIC, an example being the United Nations Road Safety Fund, SDG 3.6 appeared too ambitious and unrealistic.

Another important theme is that decreasing road traffic accidents is a shared responsibility, which a single organization cannot handle. As governments build management capacity, regulate manufacturing to improve vehicle safety, establish a post-crash care system, individuals must also be responsible for improving their behavior as road users. (The Lancet Global Health, 2019). The media has a key role of using their various platforms for road safety campaigns, as private sector businesses can also hold their drivers to respect road traffic regulations, and also

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contribute financially to road safety campaigns, especially in LMIC where funding is a major challenge to designing and implementing road safety policies. Road safety should then be made an issue of societal concern, where Governments, civil society Organizations (CSOs), Non-Governmental Organizations (NGOs), the media, religious bodies, and individuals can play various roles to make progress.

Despite the improvement made by some countries (40% of countries had a reduction or stable road safety fatalities and injuries), SDG 3.6 looks highly unattainable. The goal itself seems too ambitious and unreliable. It is too ambitious a goal of halving the number of road traffic deaths and injuries in five years, in the face of all the limitations and challenges.

Ameratunga and Hijar (2006), assert that not only are numbers and rates of road traffic fatalities and injuries higher in lower-and-middle-income countries, but also surveillance in these countries is generally low, which makes it challenging to access reliable data and to also assess the effectiveness of intervention policies which further facilitates the global disparity. The study also shows that other road users such as pedestrians, cyclists, and motor cyclists continue to be vulnerable to road traffic crashes in low-and-middle income countries. This means that road safety organizations and agencies must prioritize the adoption, implementation, and assessment of policies that will be relevant in lower-and middle-income countries, and also protect vulnerable road users, in order to address the problem universally. Though the researchers noted a reduction in road traffic deaths in higher income countries, there was no equivalent reduction in non-fatal outcomes, rather, injuries leading to permanent impairment and disability have increased. This implies that road safety strategies in higher income countries have been effective in reducing fatalities but not injuries.

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Wegnam, (2016), discusses the global disparities in road traffic casualties and road safety, as well as how to achieve a universal decline in road safety fatalities. The study points out that, per the rates of road traffic data, the projections of increase, and the commitment level of governments, SDG 3.6 is not attainable.

Although there is still not adequate understanding of how countries make substantial progress in road safety, high income countries and OECD countries have made great gains in reducing road traffic fatalities due to their mature road safety approaches. On the contrary, the rates of road traffic deaths and injuries have been rising in low- and middle-income countries. There seem to be a perceived unpreparedness of these countries in addressing the road traffic menace, which is manifested in lack of leadership, political priority, funding, and expertise on road safety in these countries, all of which are necessary for effective road safety strategies (Wegnam, 2016).

According to this study, most of the high-income countries that want to make further improvements in road safety will be moving from the traditional approach which has been described as 'reactive' to a safe system approach; a technological approach that is more tolerant to human error. Low- and middle-income countries however need to learn from the successes of HICs., which will speed up the improvements in road safety than it happened in HIC. However, differences in local conditions will not permit a wholesale adoption of strategies. Individual countries must therefore produce their own priority areas and action plan to suit local conditions.

A later study by Jadaan et al., (2018), identifies reasons for the differences in road safety in developed and developing countries that are consistent with those identified in the earlier studies that have been discussed above. The main reason for discrepancies in traffic safety level between

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developed and developing countries is whether traffic safety is made a political priority or not" (Jadaan et al., 2018, p. 2).

Road safety in European countries as well as high-income countries has been prioritized and has received adequate research and funding needed to develop and implement effective policies which have caused significant reduction in the number of road fatalities. However, the number of traffic fatalities and injuries keep increasing in developing countries due to the lack of preference given to the issue by various governments. This lack of political preference for road safety in low-and-middle-income countries predisposes road safety to a couple of challenges, including the absence of road safety goals and policies, and most importantly inadequate funding for road safety research and activities (Figueira and Albuquerque, 2013).

In developing countries however, there is either the absence of or low enforcement of traffic laws. Standards of road-user (driver) behavior in low-and-middle income countries are found to be poor, as a result of relatively unequipped traffic police to enforce road traffic regulations, as there are in developed countries. This finding is however contrary to what other researchers (Boateng, 2021) observed that policies of developing countries, like those in Sub-Saharan Africa have mainly focused on education and enforcement/prosecution of deviant road users.

### 1.8.2 Effectiveness of RTI Prevention Techniques

Staton et al., (2016) analyzed through a systematic review the effectiveness of road traffic injury prevention initiatives in low-and- middle- income countries. Peer-reviewed articles on road traffic injury that evaluated a prevention-related intervention on an outcome, which could be crash, injury or death. The review revealed 18 interventions, notably Legislation, Enforcement, Public Awareness/Education, Speed Control, and Road Improvement. Most interventions were

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aimed at death reduction, followed by crash reduction, and then injury reduction. Furthermore, although there were evidences of effectiveness of all the interventions listed above with the exception of road improvement, on death, injury, and crash reductions, legislation had the strongest evidence of reduction on outcome, however, this was influenced by enforcement, as in most cases where enforcement was withdrawn, impact of the intervention was short-lived (Poli de Figueiredo L.F, 2001, Ameratunga et al., 2006). Legislations on blood-alcohol concentration level, helmet, seatbelt, and mobile phone usage directly translated into death reduction in motorcyclists, occupants of commercial vehicles and drivers.

Education/public awareness creation is the most common intervention initiative in LMIC, due to its cost effectiveness, however, evidence from Staton et al., (2016) shows that the effectiveness of education intervention initiatives was rather limited. For instance, no significant difference was noticed in injury trends, crashes as well as alcohol usage in motorcycle riders after an education program on the application of the WHO's safe community model in Iran (Spinks A., et al., 2005). Education and public awareness campaigns seem to be more effective when combined with other interventions such as legislation and/or enforcement. This means that LMIC must not put much weight on only public awareness campaigns, as these are not likely to lead to the desired outcome, rather such campaigns must accompany other interventions to make them more effective.

Road improvement as employed in Staton et al., (2016) basically meant improvement in road surface. It was found that road improvement rather had a negative effect on RTI. In most countries, road and highway improvement often led to higher vehicular speeds, which then increased the rates and intensity of injuries. For instance, a Tanzanian study compared RTI in two communities, before and after one of the communities tarred a road. The results of this study

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showed that, although there was an increase in RTI in the after studies, this increase was significant in the community with the tarred road (Zimmermann et al., 2015). This means that as most LMIC are improving their roads to improve road traffic and reduce travel time, such interventions must be accompanied by speed control measures, in order not to worsen the high rates of RTI and RTD in these countries.

A limitation of the articles reviewed in this study and for that matter the study itself is that, it is difficult to evaluate a single road safety intervention in isolation, as in most countries, a couple of road safety initiatives are being implemented at a particular time, as a result, the improvement or not of road safety outcomes cannot be entirely attributed to a particular safety initiative.

### 1.8.3 Challenges of RTI Prevention in Ghana

In the works of Odonkor et al., (2020), challenges of road safety in Ghana can be grouped into six; Institutional, Executional, Managerial and Operational, Attitudinal, Collision Reporting, and Financial and Investment. Several Government ministries have some form of responsibility for road safety, such as the Ministry of Road that oversees the construction and development of roads; the Ministry of Transport, the Ministry of Health that is in charge of post-crash care; the Ministry of Interior in charge of traffic management mostly in the urban centers as well as emergency response; and Ministry of Education that takes care of education and sensitization. These ministries perform their responsibilities through various Agencies which are under them; however, there seems to be little or no collaboration among these institutions in order to build a holistic safety framework. A critical observation was the disagreement among the various ministries as to which one has the main or oversight responsibility for road safety. Another issue tied to the institutional challenge as indicated by this study is the lack of consideration or priority given to road safety (Wegnam, 2016). Ghana records high numbers of road collision, especially

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in the two major cities of Accra and Kumasi, yet not much has been done in terms of policies and strategies to deal with the issue effectively (Agyei Boateng, 2013).

Execution of road traffic safety strategies and projects is also a major problem. Many road safety projects do not get to be completed; they are abandoned due to financial constraints or lack of expertise to carryout projects to completion (Damoah & Asamoah 2020). This is linked to gaps between project planning and implementation. Also critical is the problem of lack of supervision of ongoing road projects, which contributes to crashes on the country's roads. It is not uncommon to find heaps of sand and stones on roads and highways as a result of ongoing road projects which have been abandoned. The road engineering system is also an issue identified which the researchers classified under the theme of managerial and operational. Construction of major road projects and highways are often given to foreign constructors, however a common problem identified among both local and foreign constructors is the low prioritization of safety measures during road engineering (Gumah, 2015). There were highways passing through major cities and towns that did not have footbridges or speed calming devices, and this has caused the death of several people including school children and market women through traffic collisions (Mends Brew et al., 2018).

The three other issues of road safety identified in the study have also been discussed in other studies. These issues are attitude and behaviors of road users, collision reporting, and the problem of funding of road safety initiatives. The problem of behavioral misfit of motorists cannot be looked at in isolation; rather it is tied to other factors such as road network and other structural challenges as discussed in the work of (Boateng, 2021). Data is essential in order to fully appreciate and understand the issue of RTIs, and to come up with effective interventions, however, a major problem identified not only in Ghana but many LMIC is poor collision data.

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Although Ghana has a computerized system that records collision information, the problem has been the timely reporting of collisions by the police. Salifu and Ackaah, (2012) have found that unrecorded or under-recorded crashes constituted 27% of all crashes. This lack of reliable data inhibits research on road safety, which is necessary for the designing of effective interventions. The challenge of unreliable collision data results from "ineffective car collision reporting procedures, unqualified or inexperienced staff, outdated method of recording or collecting car traffic collision data, incomplete reporting, and unfinished statement" (Odonkor et al., 2020, p. 7)

Boateng (2021) analyses the embracement of what he describes as 'penal populism' basically the punishment of rogue road users as well as education as safety approaches to RTC among African countries with a focus on Ghana. The researcher found a mismatch between the structural causes of road accidents in Ghana and the safety approaches that are adopted. The study recognizes that the road transport problems of Ghana are both internal and external. Successive Ghanaian governments have done little in investing in rail and public transport and other road infrastructure systems that will enable the safe use of non-motorized transport such as bicycle lanes, as a result, road remains the main means of transportation. For external factors, market liberalization as a result of loan conditions given by Bretton Woods to the PNDC government, led to the liberalization of key sectors including transport, and has also led to the importation of mostly second-hand vehicles into the Ghanaian market. (Obeng-Odoom, 2013).

The resulting problem of the poor ineffective public transport system of Ghana is the overdependence on privately run deregulated commercial transport. Commercial vehicle owners and transport companies take advantage of the high rates of unemployment and underemployment in the country to exploit drivers by demanding that they make unreasonable

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sales within a period. The effect of this is the risky driving behaviors that drivers exhibit on the road (Dotse et al. 2019).

Boateng (2021) concludes that, risky driving in Ghana as well as many African countries are not attitudinal, or gross indiscipline on the part of these road users, for which punitive measures would have been effective at curbing, rather these driving behaviors result from structural factors such as ineffective public transport, overdependence on road transport, high importation of over-aged vehicles, land-use patterns that induce traffic congestion, police corruption, unemployment, among others. Fixing these structural problems requires more than the traditional safety approaches that focuses on education/public awareness creation and enforcement of road traffic regulations by punishing offenders.

In a similar study, Salmon et al., (2019) accessed the reasons why drivers engage in the five fatal driving behaviors; drink and drug driving, distraction and inattention, speeding, fatigued driving, and not wearing seatbelt. This study was done on the back of argument by some researchers in the field of road safety that the traditional road safety approach that basically consists of the three Es; Education, Enforcement, and Engineering are inadequate, and could not address those contributory factors that are outside of the driver, vehicle, and road infrastructure (Hughes et al., 2016; Newman and Goode, 2015).

It revealed that, both drivers and experts identified the contributory factors of drivers engaging in fatal behaviors to be embedded in the larger societal and road transport system in different levels that transcend the driver characteristics, although much of the factors identified by the drivers were driver-centered. Factors such as budgetary constraints, the media and social media, infrastructure and vehicle design, road rules and regulations, enforcement, work-related driving,

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research, and advancement in technology were all factors that are embedded in various levels in road transport system such as parliament and legislation; government agencies, user groups, industry associations, courts; operational delivery and management; local management and supervision; and operation process and environment, as well as societal issues such as increase alcohol and drug addiction. Boateng, (2021) and Salmon et al., (2019) challenge the present narrative that about 90% of crashes can be attributed to the driver. This implies that road safety interventions must be designed holistically to capture all levels of the road transport system. An Improvement in road safety gains in the country as well as other African countries would require an integrated public health, urban planning, and traffic safety approach (McClure et al., 2015). This current study therefore provides an analysis of Ghana's road safety policy holistically over the past decade. This will contribute to the much-needed knowledge in the field of road safety, and help improve policy for achieving the objectives of the second decade of road safety.

## 1.9 Research Methodology

According to Ahmed et al. (2016) Methodology refers to the philosophy and framework that are fundamentally related to the entire process of research. Research methodology provides a guide to the research, in terms of the techniques, the means of data collection, and data analysis.

### 1.9.1 Design and Method

This is an analytical research that sought to evaluate information on the effectiveness of Ghana's road safety policies and strategies. This study employed a qualitative design. To Kvale (1983), a qualitative research is one "whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena". Qualitative design provides in-depth information by answering the 'why' and 'how' questions. The design was best suited for this study because it allowed the researcher to ask questions and

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seek clarification from respondents, so that the information gathered was valid and in-depth to answer the research questions. The complexities of road traffic crashes and the multiplicity of the factors accounting for them require a comprehensive investigation in order to have a better appreciation of the problem to proffer adequate and efficient solutions. Qualitative design better serves this purpose. Qualitative design gives detailed description of the values, behaviors, perceptions, and interpretation that people give to events Hakim (2012). This helps explain the reasons for the success or otherwise of Ghana's road safety strategies, and the adjustments to be made.

### 1.9.2 Sources of Data

The study relied on both primary and secondary sources of data.

***Primary Sources of Data***

The primary data was derived from the interviews conducted with the various stakeholders in the road safety enterprise in Ghana. The method for primary data collection was specifically a semi structured interview, which allows for follow-up questions to be asked. Interviews are however relatively costly and time consuming, especially for studies conducted in shorter time frame and without research assistants. Again, there is a high tendency of bias on the part of both the interviewer and respondents, and the study could also suffer from the researcher's subjectivity. That notwithstanding, the researcher tried to be objective in obtaining the information and analyzing the information received.

***Secondary Sources of Data***

For secondary data, the researcher accessed reports from Ghana's National Road Safety Authority on road accidents and road safety. These reports were produced within the period that

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the study covers. National Road Safety Policy document, National Road Safety Strategy III and three action plans, and National Transport Policy were also accessed. As key as the media is in reporting incidences of crash, media reports were also accessed through a thorough online search. Also, country data from the WHO's Global Status Report on Road Safety covering the period were and various published and student papers were accessed and analyzed.

### 1.9.3 Research Participants

The population of this study comprises all actors and institutions that are directly and indirectly charged with or involved in ensuring and maintaining road safety in Ghana. These include the National Road Safety Authority (NRSA), The Driver and Vehicle Licensing Authority (DVLA), Motor Traffic and Transport Department (MTTD) of the Ghana Police Service, Ghana Highway Authority (GHA), Department of Urban Roads (DUR), Department of Feeder Roads (DFR), The Building and Road Research Institute (BRRI), under the Center for Scientific and Industrial Research (CSIR), Ghana Private Road Transport Union (GPRTU), National Ambulance Service (NAS), Ghana Health Service (GHS), Ghana Red Cross Society (GRCS), Citi FM; a widely listened to private media outlet, and individual road safety consultants.

### 1.9.4 Sampling

The sample is a portion of the wider population that research data is taken from. The sample size is the sum of entities from the population that is deemed to be sufficient and capable of representing the characteristics of the population. Eight (8) participants were sampled, one each from the following institutions: NRSA, MTTD, GHA, GPRTU, DVLA, NAS, GHS, BRRI, and an Academic. The purposive sampling technique was used. This technique is used when a researcher selects participants based on their ability to elucidate a specific theme, concept, or phenomenon. Tongco (2007) explained purposive sampling as the deliberate choice of an

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informant due to the quality of information that the informant possesses. It is a nonprobability sampling technique that does not need an underlying theory or a particular number of respondents (Tongco, 2007), rather the researcher decides what needs to be known and looks for the appropriate persons to provide that information based on knowledge or experience (Bernard, 2002, cited in Tongco, 2007). Although purposive sampling and to a large extent all nonprobability sampling techniques are subjective in choosing the research sample and thus not good in having a representative sample, it is a useful technique when a researcher has limited resource and time (Etikan, 2016). Purposive sampling technique is recommended for qualitative study employing interviews when data can only be collected from specific persons within the population.

### 1.9.5 Data Collection

Introductory letters were taken from the center and sent to the various institutions where data was to be collected. Follow ups were made, from which interview schedules were made. Average response time was twenty-one (21) days. Face to face as well as phone interviews were conducted with the participants and recorded using an audio recording device. A trip was also made to Kumasi for an interview and to obtain secondary data from the BRRI.

### 1.9.6 Data Analysis

The audio recordings from the interview were transcribed verbatim. The text was analyzed using content analysis. This method allows the researcher to read and systematically code information based on specific themes (Fraenkel et al. 2012). In research from DİNÇER (2018, p. 177) content analysis was defined as "a complied scientific method where written materials are analyzed systematically, and then, grouped based on specific criteria in order to make

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information obtained available and finally, to provide a ground for future research". Content analysis was also used to analyze the various secondary data that were accessed.

## 1.10 Ethical Considerations.

Approval for this study was first obtained from the University of Ghana through the Legon Center for International Affairs and Diplomacy. Participants were briefed on the purpose of the study, and consent was sought from the participants. Participation in the study through the interview was voluntary, and participants were allowed to opt out of the study at any time. Participants were assured of confidentiality and anonymity, and such was adhered to in reporting findings. Data received from the participants will only serve the purpose of this study.

## 1.11 Limitations of the Study

A major challenge encountered in the course of the study was difficulty in getting information from some relevant institutions. Some institutions were reluctant in providing information and responding to the issues raised in the study, while there was also a financial obligation to access data from some institutions. As a result, the study relied heavily on secondary data. There was also a financial and time limitation to conduct an in-depth analysis into the identified themes, and to also expand the scope of the study. Despite these limitations, the study endeavored to address all questions raised in the research to achieve the aforementioned objectives.

## 1.12 Arrangements of Chapters

The study comprises four Chapters. The first chapter comprises an introduction to the study which provides a brief overview through the background of the study. It also highlights the problem to be investigated, the research objectives, research questions as well as the rationale of

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the study. It further provides conceptual underpinning of the study, literature review on SDG 3.6, comparison of road safety efforts in HIC and LMIC, as well as road safety issues in Ghana.

The research methodology employed, the sampling size, sources and collection of data, and the analysis of data are also included in this chapter

Chapter two begins with a discussion on causes of road accidents globally and in Ghana. It then provides an overview of SDG 3.6 and Plan of Action for Road Safety 2011-2020, road safety approaches, and some global, regional, and sub-regional road safety initiatives. Chapter three presents an analysis of Ghana's performance on SDG 3.3 and the Decade of Action of Road Safety 2011-2020; Ghana's road safety policies and strategies based on identified themes, and the challenges of RTI prevention in Ghana.

The final chapter presents the Summary of Findings, Conclusions and Recommendations.

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# CHAPTER TWO
# OVERVIEW OF SDG 3.6 AND GLOBAL PLAN OF ACTION OF ROAD SAFETY 2011-2020

## 2.0 Introduction

This chapter discusses the causes of road accident globally and in Ghana, It also provides an overview of SDG 3.6 and the Global Plan of Action for Road Safety 2011-2020. Some road safety approaches were also discussed and finally, some global, regional, and sub-regional initiatives on road safety were discussed.

## 2.1 Risk Factors of Road Accidents Globally

The core risk factors of road accidents are discussed below

### 2.1.1 Speeding

Speeding has been recognized as a major cause of road accidents globally. Research and data provided by experts show that an increase in average speed is directly related to the possibility of crash occurring and also the severity of the consequences of the crash in the event that it occurs (WHO 2021). According to the WHO (2021), every 1 percent increase in speed results in 4 percent increase in fatal crash risk and a 3 percent increase in serious crash risk. According to the United States department of Transport, speeding contributed to a third of all motor vehicle fatalities, and in 2020 was a contributing factor in 29% of all fatalities. Speeding does not only endanger the life of only the speeder, but also all other road users around them. The chances that a pedestrian would die when hit by car fronts rises rapidly; 4.5 times from 50 km/h to 65 km/h (WHO 2021). Indeed in Ghana, speeding is a cause of several pedestrian deaths (Afukaar & Damsere-Derry, 2010). The consequences of speeding are far-ranging; there is a greater potential

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for loss of vehicle control, it reduces the effectiveness of protection equipment, it also increases the stopping distance in case a threat is perceived on the road, and increases the severity of the consequences of a crash.

Reducing speed has been made a policy issue by the WHO, and this has been incorporated into the national road safety strategies of many countries, by adopting speed limits for various sections of the road. Under activity 2 of Pillar 4 of the Global Plan for the Decade of Action for Road Safety, countries are tasked to set and seek compliance with speed limits so as to reduce speed related crashes and injuries. However, according to the 2018 Global Status Report on Road Safety, although 169 countries have set national speed limit laws, only 46% of all those countries have laws that meet best practices. For the 2021 day of remembrance of road traffic victims, which is a day set aside by the UN to remember road traffic victims, the spotlight was placed on speed reduction as a way of reducing road traffic deaths and injuries (United Nations, 2021).

### 2.1.2 Driving under the influence of alcohol and other psychoactive substances

Driving under the influence of alcohol and other psychoactive drugs also increases the risk of a crash leading to death and serious injuries. The blood alcohol content (BAC) is a measure of alcohol in the blood as a percentage, and calculated in grams per 100 m. According to the WHO (2021) the risk of road traffic crash increases significantly when a driver's BAC level is $\geq 0.04$ g/dl. In the case of drug-driving, risk of a crash increases depending on which psychoactive drug was used. The risk of fatal crash among amphetamine users is five times higher than those who have not used the drug (WHO 2021). According to the 2018 Global Status Report on Road Safety, between 5% and 35% of all road deaths are reported as alcohol-related. Just as speeding, drink and drug-driving also increases the possibility of crash and severity of its consequences,

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because the driver's consciousness has been altered. The report also indicates that although BAC limit of 0.02g/dl is recommended for young and novice drivers, and commercial drivers, only 48 and 53 countries have policies agreeing with these two recommendations respectively. BAC levels for the general population for some countries are also set beyond 0.04 g/dl. Enforcing drink-driving laws requires that law enforcers have access to breathalyzers for random testing of drivers, which according to the WHO is more effective than testing only at certain times and in certain areas. However, availability of these devices is not adequate for use by law enforcers, especially in LMIC.

### 2.1.3 Nonuse of motorcycle helmets, seat-belts, and child restraints

Another important road accident risk factor is the nonuse of motorcycle helmets, seat-belts, and child restraints. The use of motorcycles has increased significantly in the past decade. In the ten countries that use two-and-three the most, motor vehicles make up more than 70% of national vehicle fleet (Global Status Report on Road Safety, 2018). For the users of these vehicles, head injury has been identified as the major cause of death and major trauma. Correct use of helmet can reduce the risk of fatal head injuries by 42% and the risk of head injury by 69% (WHO 2021). Although almost all countries have laws on helmet use, enforcement of such laws has been generally week, as reported in the Global Status Report.

Similarly, the use of seatbelts can reduce the risk of death among drivers and front-seat occupants by 50% and among the occupants of rear seats by 30% (Global Status Report on Road Safety, 2018). The report recognizes that seat belt laws in low income countries do not meet international best practices, most deaths resulting from nonuse of seat-belts are reported from these countries. As state earlier RTI is the major cause of death among children and young

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people between 5-29 years. Child restraints use is an effective way of reducing deaths among child occupants, with the Global Status Report indicating that up to 60% of child deaths through RTI can be reduced by the use of child restraints, However, only 84 countries were identified to have child restraint laws, out of which on only 9% meet international standards.

### 2.1.4 Distracted Driving

Although distracted driving can take many forms such as listening to radio, songs, or listening to passengers, the most notable one is the use of mobile phone when driving. The Global Status Report identified the use of mobile phone while driving to be widespread among novice and young drivers, and it is also growing among motorcyclist. The behavior reduces reaction time by 50%, notably applying brake, reacting to traffic signs. It also makes it difficult to be in the right lane. According to the (WHO 2021) the use of hands-free phones has not been proven to be much safer than the use of hand-held devices. Mobile phone use while driving, whether hands-free or not increases the risk of crash by 4 times, while texting increases the risk of crash by 23 times (Global Status Report on Road Safety, 2018). In the report, though 150 countries have mobile phone laws in place, enforcement, with majority 145 of those prohibiting the use of such hand-held phones while driving, enforcement of such laws has been identified to be a challenge.

### 2.1.5 Unsafe Road Infrastructure

Road design has a significant impact on safety, and the state of road infrastructure is a major determining factor of safety. A safe road is one designed in consideration to the safety needs of all road users. This implies that adequate facilities are provided for pedestrians, cyclists, and motorcyclists, as well as traffic calming measures (WHO 2021) .Such facilities include footpaths, cycle lanes, and zebra crossings. The lack of these infrastructures however leaves

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pedestrians, cyclists and motor cyclists vulnerable to road crashes. Undivided roads have been identified as a major cause of head-on collision, while lack of safe crossings and separate lanes are causing of several crashes among pedestrians, cyclists, and motorcyclists. According to the Global Status Report 2018, 88% of pedestrian travels, 86% of bicycle travels, and 67% of motorcycle travels occur on unsafe roads.

### 2.1.6 Unsafe Vehicles

Unsafe vehicles have also contributed significantly to road crashes. The United Nations has developed vehicle safety standards that are to be implemented by countries to reduce the risk of road traffic crashes or reduce the effects of crashes resulting from unsafe vehicles. These include requiring vehicle manufacturers to meet front and side impact regulations, to include electronic stability control (to prevent over-steering) and to ensure airbags and seat-belts are fitted in all vehicles Eight of such standards have been outlined. Report however shows that only 40 countries have implemented 7 or 8 of those standards, while 124 countries have applied either none or just 1 of those standards.

### 2.1.7 Inadequate post-crash care

Crashes are sometimes unavoidable, but their impact could be reduced with adequate post-crash response. Delay in detecting and responding to crashes can increase the severity of injuries. Pre-hospital post-crash response must therefore be timely and swift and must be of quality, same as hospital care. The quality of post-crash care is determined by not only facilities and equipment, but also adequately trained personnel to give care. In the event of a crash, care at the scene is very important, and the quality of care determines the possibility of survival, however in many LMIC, several people die before hospital care due to the delay in responding to crashes and also

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inadequately trained bystanders and personnel. As at 2018, only 55% of countries have a formal process to train pre-hospital care providers (Global Status Report on Road Safety, 2018). Training drivers, police, and community leaders in appropriate ways of handling victims at accident scenes could reduce the risk of death

These risk factors together with inadequate enforcement of various traffic laws necessitated the declaration of the decade 2011-2020 as the decade of action for road safety, with the objective of reducing RTIs by 50% by the end of the decade. To achieve this objective, the WHO and other stakeholders developed the Global Plan for the Decade of Action for Road Safety 2011-2020 as a guiding document for the attainment of objectives of the decade. Indeed a careful study of the document shows that the above 8 risk factors as identified make up the five pillars of road safety. This document is discussed in more depth in sub-heading 2.3

## 2.2 Causes of road accidents in Ghana

The causes of road crashes are grouped and discussed below.

### 2.2.1 State of Road Infrastructure

In Ghana, just as in many African countries, the road network is a major contributor to road crashes. Ghana, and to a large extent Africa is noted for bad roads; the country has many unpaved roads, and even for those that are paved, their lifespan is a cause for concern. According to the Ministry of Roads and Highways, only 23.5% of the road network is paved. Most of these roads, even highways, develop a lot of portholes a few years or even months after construction. Attempts by drivers to avoid situations like portholes or use the sides of the roads that are better often result in collisions. Results from the Road Infrastructure Card indicate that most roads in Ghana were poorly built, and deteriorated very early (Gyima 2020), as a result of

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the use of sub-standard road construction materials, lack of periodic supervision of ongoing road projects and lack of maintenance of already constructed roads. Weather conditions contribute to the increasing pace of road deterioration. Higher temperatures, which is often the case in this geographical region, as well as severe storms and flooding affect road infrastructure, and increase the rate of road deterioration. This implies that only materials that are resistant to the tropical climate of the sub-region must be used in road construction.

Carriageway and lane width is also relational to the rate of occurrence of road accidents. The width of carriageway and lane indicates whether a road user can regain control and get back on track after they had lost control, that is, the room for maneuver for road users. Road users are able to regain control or get an out-of-control vehicle back on track if the room for maneuver is big and vice versa (Opoku, 2019). Some studies have found an inverse relationship between carriageway and lane width and the number of road traffic accidents (Hadi, Aruldhas et al. 1995, Karlaftis & Golias 2002). According to a 2021 report by the Building and Road Research Institute (BRRI), head-on collision is the second contributor to fatalities after pedestrian crashes (BRRI, 2021). Greater sections of major highways in the country, including inter-city highways are still single carriageways. Higher traffic on these highways, coupled with high speeds result in fatal crashes. These highways are also plied by slow-moving vehicles, such as heavy goods vehicles that transport goods from the country's ports to other parts of the country and land-locked neighboring countries. Not only is the number of traffic accidents relational to the width of the road but also the width of the shoulders of the road. The shoulder of a road or highway is very important, serving as safety for disabled vehicles to take refuge, and in emergency situations to avoid head-on collisions. In Ghana, most intra-city commercial drivers load their vehicles and drop passengers on the shoulders of the roads, while some traders and hawkers also

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engage in their trading activities on the shoulders of the road. Some studies have suggested that the number of road traffic accidents decrease as the width of the shoulder increases (Hadi, Aruldhas et al. 1995, Lee, Mannering 2002, Polus, Pollatschek et al. 2005). Improvement in road standards, for instance dualizing major highways in the country will contribute greatly to the reduction of road traffic crashes, even though road factors are not judged to be the major causes of crashes (Odonkor et al., 2020).

It is worth noting that there has been some improvement in the road sector. Major road works could be seen all over the country, others too have seen a facelift, all in an attempt to ensure easy and fast travel, which is expected to translate into economic benefits. It is however imperative that roads are designed and constructed to some level of safety and functional standards, which would not only result in safe travel, but also long-term economic benefits. In developed countries that have seen great improvement in traffic safety, robust road safety strategies that include improvement in road design and architecture were implemented.

***Table 2. 1: Road Network by Surface Type by Length as at 2015***

| Road Agency | Rigid | Asphaltic Concrete | Surface Treated | Gravel | Earth | Total Paved | Total Unpaved |
|---|---|---|---|---|---|---|---|
| **GHA** | 38.6 | 2,356.0 | 6,671.8 | 5,807.3 | - | 9,066.4 | 5,807.3 |
| **DFR** | - | - | 1,927.78 | 27,231.2 | 12,886.20 | 1,927.78 | 40,117.40 |
| **DUR** | 3.29 | 956.37 | 5,044.48 | 5,225.98 | 4,231.65 | 6,004.14 | 9,457.63 |
| **Total** | **41** | **3,312** | **13,644** | **38,264** | **17,117** | **16,998** | **55,382** |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **% Percentage** | **0.06** | **4.58** | **18.85** | **52.87** | **23.48** | **23.48** | **76.51** |

**National Transport Policy**

### 2.2.2 Lack of Pedestrian Facilities

Pedestrian facilities are the application of engineering and physical measures designed to protect vulnerable road users, especially pedestrians, notable ones include footbridges, roadside pavement and pedestrian crossings. The zebra crossing is the most common pedestrian crossing in Ghana. Legally, Pedestrians are given priority over vehicles at the zebra crossing. This means that once a pedestrian step on the zebra crossing, other road users are obliged to stop for the pedestrian to cross (Gyima, 2020). While there are many roads all over the country without pedestrian crossing facilities, the respect for pedestrians is generally low. Concequentl, Pedestrians constitute the greater percentage of road traffic crash victims in Ghana; according to the World Health Organization's 2018 Global Status Report, 46% of all road traffic crash victims were pedestrians. Other vulnerable road users include street hawkers, cyclists, and riders of motorized 2- and 3- wheelers. Women and children are the most vulnerable to pedestrian casualties. In one study conducted in northern Ghana, even though males contributed the most to road traffic accident victims, females were more likely to die as pedestrians (9%) than as drivers or riders (Damsere Derry et al., 2017). The lack of pedestrian infrastructure and disrespect for pedestrians by other road users is a cause for concern.

There are major highways in Ghana that were constructed without pedestrian crossing and footbridges; as a result, many run into vehicles while crossing the highway. In 2018 for instance, it took protests by some residents of Madina, a suburb of Accra the capital of Ghana following

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the killing of some students and residents in an attempt to cross the highway, to get the government to construct footbridges. There are many roads in the cities of Ghana that were constructed without pavements to ensure the safety of pedestrians, so pedestrians share the same road space with vehicles to the detriment of pedestrians (Damsere-Derry et al., 2019. There are roads especially in rural Ghana without speed-calming measures, and there are many others without road signs (Agbonkhese et al, 2013), all causing dangerous threats to safe travel (Afukaar and Damsere-Derry 2010).

### 2.2.3 Driver Attributes

Risky driving is considered the most common cause of road accidents; some studies have suggested that about 95% of all road traffic crashes can be attributed to driver behaviors (Mousavi Bazzaz et al., 2015). Driver attributes are the feelings and thought of the driver/rider, which reflect in their behavior when they are behind the wheel. The behavior of the driver is influenced by a number of factors; age, sex, experience, education etc. Salmon et al., (2019) have identified five fatal driving behaviors; driving under the influence of alcohol and drugs, distraction and inattention, speeding, fatigued and drowsy driving, and not wearing seatbelt and child-restraints. Another important behavior identified in the work of Mekonnen et al., (2019) is Highway Code violation. These factors, as well as others such as over loading of vehicles and inappropriate overtaking have caused many crashes, and various rules have been made to address them in order to reduce road traffic collisions. According to Boateng (2021), these driver behaviors are rather effects of "structural factors underpinning road safety" (Boateng, 2021, p. 1). Although some road users are indiscipline and have an inherent attitude of engaging in risky driving behaviors, engaging in risky driving behaviors could also result from transport systems of a setting, and other social factors (Salmon et al., 2019). Several other factors have also been

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identified and confirmed by literature to influence the driver's behavior; including income level, personality factors, family relations, number of years of driving experience, history of crash involvement, and number of kilometers driven per year (Mekonnen et al., 2019, Hassen et al., 2011, Atombo et al., 2017. Studies have shown that fixing speed reducing devices contribute to reducing road traffic crashes by reducing vehicular speed. In one study, speed humps contributed to reducing casualty crash frequencies, fatal crashes, and pedestrian crashes by 37.7%, 46%, and 72% respectively on the Kintampo-Kumasi Highway (Afukaar & Damsere-Derry, 2010).

### 2.2.4 Institutional Ineffectiveness

The last set of causes of road crashes are grouped under institutional ineffectiveness. These include unsafe vehicles, rapid urbanization, lack of enforcement of road laws, and increase in motorization without effective road safety measures. The DVLA is responsible for ensuring the road worthiness of a vehicle as well as licensing of drivers. The Ghana police service through its MTTD is responsible for checking that vehicles on the road are worthy by checking roadworthy stickers on display the vehicle's windscreen; and also that road users have the requisite qualification to drive on the roads, as well as ensuring that road users obey all road traffic regulations. Unfortunately, these institutions have not been demonstrating professionalism in the discharge of their duties. There are reported cases of drivers being issued licenses without having gone through the due processes to qualify for same, as well as widespread cases of corruption among the personnel of the MTTD (Boateng, 2021).

There are so many vehicles on the road that are not worth the same, and there are many drivers without the requisite skills and education to be behind the wheel; some even do not understand the road signs, but find themselves on the road because of institutional ineffectiveness. The institutions responsible for managing the country's road sector are generally weak, and lack

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coordination among them. Most of these institutions are also under-resourced to carry out their mandate effectively. The MTTD for instance is not well resourced with the requisite tools and technology, as well as laws to enforce road safety rules. There is also the problem of lack of expertise for the road industry. Some personnel of the institutions responsible for formulating and implementing road safety strategies lack requisite knowledge and skills to function effectively. Some road safety workers who served as participants in a study alluded to the "lack of appropriate knowledge on road safety among road agencies staff, policy makers, and lower-level personnel such as traffic controllers who lack satisfactory knowledge on basic procedures with regards to road safety" Odonkor et al., 2020. P.4). Ghana has a very ineffective public transportation system, with an unregulated road transport system dominated by private companies and individuals. This situation makes it difficult to regulate and enforce rules pertaining to road transport. Successive governments have also not invested in rail transport as well as other non-motorized transport infrastructure, leading to the overdependence on motorized road transport. Increased motorization, poor regulation and enforcement of traffic laws are identified contributors to increased road traffic crashes

## 2.3 Global Plan for the Decade of Action 2011-2020

This is a document prepared by the WHO and the United Nations Regional Commissions, in Cooperation with the United Nations Road Safety Collaboration, to serve as a guiding document to support the implementation of the objectives of the decade of action for road safety (GPDARS, 2011). This has become necessary due to the growing rates of road traffic deaths and injuries, with developing countries being the most affected. The document acknowledges that road traffic injuries can be prevented, and to achieve a sustained response to the problem of road traffic injuries, there is the need for an adequately funded lead agency, and a national plan, with

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measurable targets. This instrument has identified some effective interventions as incorporating road safety into broader land-use; urban and transport planning; designing safer roads; conducting independent road safety audits into new roads; improving safety features of vehicles; speed management; encouragement of public transport; setting and enforcing globally harmonized laws on seatbelt and helmet usage, and child-restraints; enforcing blood-alcohol concentration limit for drivers; and improving post-crash care.

The plan for the decade of action is based on the Principles of the Safe Systems Approach; an approach that takes into consideration the limitations and vulnerabilities of the human body, and builds a system that is capable of accommodating and compensating for human mistakes (ITF, 2016). This approach represents a shift from the traditional approach to road safety that recognizes the road user errors as the main causes of crashes, and attempts to perfect the road user in an imperfect system, which is also an approach that attempts to prevent crashes to a safe systems approach that sees road safety as a responsibility for vehicle and road designers and road users, and represents attempts to prevent injuries and deaths through crashes by creating systems that compensate for human error.

Importantly, the plan stresses on national and local ownership, that is, strategies and activities aimed at achieving the objectives of the decade should be localized. This also calls for the involvement of different sectors such as Nongovernmental organizations, media, civil society groups, private sector, in addition to the main sectors of health, transport, urban planning, police, and judiciary. The activities to be carried out in the decade are to take place in local, national, regional, and global levels. Local and national level activities are put into five pillars namely:

- Pillar 1. Road Safety Management,

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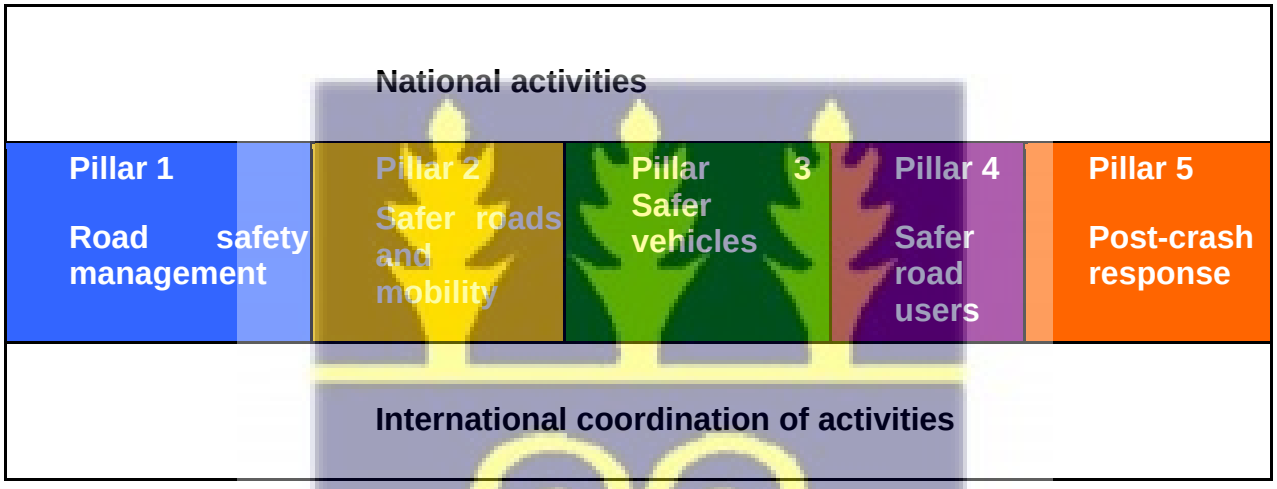
- Pillar 2 Safer Roads and Mobility,
- Pillar 3 Safer Vehicles,
- Pillar 4 Safer Road Users, and
- Pillar 5 Post-Crash Responses.

This is based on the recommendations of the World report on road traffic injury prevention and proposed by the Commission for Global Road Safety (GPARS, 2011).

***Table 2. 2: Five Pillars of Road Safety***




Source: Global Plan for the Decade of Action for Road Safety 2011-2020

**2.3.1 Pillar 1- Road Safety Management.**

Under this, implementation of various United Nations road safety Agreements and Conventions is the objective. This requires the establishment of national and regional bodies to be the lead agencies to facilitate the implementation of those agreements and conventions. The various objectives under this pillar are listed below:

- ✓ Adhere to and/or fully implement the major United Nations road safety related agreements and conventions; and encourage the creation of new regional instruments

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similar to the European Agreement concerning the Work of Crews of Vehicles engaged in International Road Transport (AETR), as required,

- ✓ Establish a lead agency (and associated coordination mechanisms) on road safety involving partners from a range of sectors,
- ✓ Develop a national strategy (at a cabinet or ministerial level) coordinated by the lead agency,
- ✓ Set realistic and long-term targets for national activities based on the analysis of national traffic crash data,
- ✓ Work to ensure that funding is sufficient for activities to be implemented, and
- ✓ Establish and support data systems for on-going monitoring and evaluation to include a number of process and outcome measures.

Each of these objectives is to be achieved under the first pillar, and each one has various activities to be carried out to achieve them.

### 2.3.2 Pillar 2: Safer Roads and Mobility

Road conditions have been found to be a major cause of fatal crashes, ahead of speeding, drunk driving, and not wearing seatbelts (ITF, 2015c). With this knowledge, the plan of action, which is based on the safe system approach, recognizes the road system to be an important and integral part of the road safety system. This pillar sought to raise the safety and protective quality of roads for the benefit of road users, especially vulnerable road users like pedestrians and cyclists. The activities under this pillar include the following;

- ✓ Promote road safety ownership and accountability among road authorities, road engineers and urban planners,

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- ✓ Promoting the needs of all road users as part of sustainable urban planning, transport demand management and land-use management,
- ✓ Promote safe operation, maintenance and improvement of existing road infrastructure,
- ✓ Promote the development of safe new infrastructure that meets the mobility and access needs of all users
- ✓ Encourage capacity building and knowledge transfer in safe infrastructure,
- ✓ Encourage research and development in safer roads and mobility.

### 2.3.3 Safer Vehicles

Vehicles must be able to tolerate crashes, that is, they must be crashworthy. This involves the adoption of standards and consumer information to improve the safety of motor vehicles, in order to protect in particular vehicle occupants (ITF, 2016). The main activities under this pillar include;

- ✓ Encourage Member States to apply and promulgate motor vehicle safety regulations as developed by the United Nations World Forum for the Harmonization of Vehicle Regulations (WP 29),
- ✓ Encourage implementation of new car assessment programmes in all regions of the world in order to increase the availability of consumer information about the safety performance of motor vehicles,
- ✓ Encourage agreement to ensure that all new motor vehicles are equipped with seat-belts and anchorages that meet regulatory requirements and pass applicable crash test standards (as minimum safety features),

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- ✓ Encourage universal deployment of crash avoidance technologies with proven effectiveness such as Electronic Stability Control and Anti-Lock Braking Systems in motor vehicles.
- ✓ Encourage the use of fiscal and other incentives for motor vehicles that provide high levels of road user protection and discourage import and export of new or used cars that have reduced safety standards.
- ✓ Encourage application of pedestrian protection regulations and increased research into safety technologies designed to reduce risks to vulnerable road users.
- ✓ Encourage managers of governments and private sector fleets to purchase, operate and maintain vehicles that offer advanced safety technologies and high levels of occupant protection.

### 2.3.4 Safer Road Users

Road users are the most important factors in the road transport system, for which reason improving road user behavior is not just important, but also necessary to have a safer road transport system. This pillar seeks to enhance safety behaviors among road users through increase wearing of seat belts and child restraints, reduce speed and drink driving, among others, by increasing enforcement of traffic rules, and education and sensitization campaigns. The following activities are to be performed for this objective;

- ✓ Increase awareness of road safety risk factors and prevention measures and implement social marketing campaigns to help influence attitudes and opinions on the need for road traffic safety programmes.
- ✓ Set and seek compliance with speed limits and evidence-based standards and rules to reduce speed-related crashes and injuries.

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- ✓ Set and seek compliance with drink–driving laws and evidence-based standards and rules to reduce alcohol-related crashes and injuries.
- ✓ Set and seek compliance with laws and evidence-based standards and rules for motorcycle helmets to reduce head-injuries.
- ✓ Set and seek compliance with laws and evidence-based standards and rules for seat-belts and child restraints to reduce crash injuries.
- ✓ Set and seek compliance with transport, occupational health and safety laws, standards and rules for safe operation of commercial freight and transport vehicles, passenger road transport services and other public and private vehicle fleets to reduce crash injuries.
- ✓ Research, develop and promote comprehensive policies and practices to reduce work-related road traffic injuries in the public, private and informal sectors, in support of internationally recognized standards for road safety management systems and occupational health and safety.
- ✓ Promote establishment of Graduated Driver Licensing systems for novice drivers.

### 2.3.5 Post-Crash Response

Post-crash response refers to the care or services available to crash survivors to prevent death, heal injuries, and improve wellbeing. According to the ITF (2016), post-crash services are grouped into four; legal support and legislation, research and information, emergency responder training and equipment, injury care, and mental health care. Post-crash response is so vital in the safe systems. As a system that aims to prevent serious injuries and fatality, it is important to strengthen post-crash responses, in order to salvage deaths and long-term disability that may result from serious crashes, which explains why it is included as the fifth pillar in the plan of action. The activities under this pillar include;

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- ✓ Develop prehospital care systems, including the extraction of a victim from a vehicle after a crash and implementation of a single nationwide telephone number for emergencies, through the implementation of existing good practices.
- ✓ Develop hospital trauma care systems and evaluate the quality of care through the implementation of good practices on trauma care systems and quality assurance.
- ✓ Provide early rehabilitation and support to injured patients and those bereaved by road traffic crashes, to minimize both physical and psychological trauma.
- ✓ Encourage the establishment of appropriate road user insurance schemes to finance rehabilitation services for crash victims through the Introduction of mandatory third-party liability; and International mutual recognition of insurance, e.g. green card system.
- ✓ Encourage a thorough investigation into the crash and the application of an effective legal response to road deaths and injuries and therefore encourage fair settlements and justice for the bereaved and injuries.
- ✓ Provide encouragement and incentives for employers to hire and retain people with disabilities.
- ✓ Encourage research and development into improving post-crash response

At the international level, the WHO and UN regional commissions will among other things coordinate regular monitoring, encourage increase in funding for road safety, provide guidance to countries on road safety management, and advocate for road safety at the highest level and encourage collaboration with NGOs, private sector, civil society, etc.

INTEGRI PROCEDAMUS

## 2.4 Sustainable Development Goals (SDGs)

At the 2012 United Nations Conference on Sustainable Development (Rio +20), states committed to the development of a new set of goals, the Sustainable Development Goals (SDGs)

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to build on the Millennium Development Goals (MDG) which were due in 2015. The MDGs were eight sets of goals adopted by the community o-f nations in 2000 to address global developmental challenges at the time, and spanned 15 years. This 15-year commitment contributed greatly to the progress made in areas such as hunger and poverty reduction; improvement of water and sanitation; child and maternal health care; universal basic education; and dealing with diseases such as malaria, HIV/AIDS, tuberculosis, etc. (UN, 2014). The MDGs have been criticized for being too narrow, that is, they did not include all relevant factors in achieving the Millennium declaration (Kabeer, 2010).

The Sustainable Development Goals (SDGs) were adopted by the United Nation (UN) General Assembly in 2015 during a UN Sustainable Development Summit in New York. These are 17 goals, which are made up of 169 targets, and are measured by 232 indicators. The 17 goals are:

- End poverty in all its forms everywhere.
- End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.
- Ensure healthy lives and promote well-being for all at all ages.
- Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.
- Achieve gender equality and empower all women and girls
- Ensure availability and sustainable management of water and sanitation for all. It calls for clean water and sanitation for all people.
- Ensure access to affordable, reliable, sustainable, and modern energy for all. One in five people still lacks access to modern electricity.

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- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Reduce inequality within and among countries.
- Make cities and human settlements inclusive, safe, resilient and sustainable.
- Ensure sustainable consumption and production patterns.
- Take urgent action to combat climate change and its impacts (in line with the United Nations Framework Convention on Climate Change).
- Conserve and sustainably use oceans, seas and marine resources for sustainable development
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
- Strengthening global solidarity

UN member countries are to incorporate these goals into their national development agendas, and they are to serve as national agenda that guides the policies of member states. The SDGs are a build-up on the MDGs, and are broader in scope, and capture all relevant facets of development.

**2.4.1 SDG 3.6**

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Unlike the MDGs that left out road traffic deaths and injuries, the SDGs clearly captures the issue of road traffic deaths and injuries, in two goals. First, under good health and wellbeing in goal 3, target 6 sought to 'halve the number of road traffic deaths and injuries by 2020', from a baseline of 1.2 million deaths; while under sustainable cities and communities in goal 11, target 2 seeks to 'provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities, and older persons' by 2030 (SDGs, 2015). SDG 3.6 has only one indicator, 'death rate due to road traffic injuries. SDG 3.6 was in line with the objectives of the decade of road safety, which sort to reduce by at least 50% the number of fatalities and injuries resulting from road traffic crashes. The inclusion of road safety into the global sustainable development plan produced renewed awareness and commitment, and also realignment of national policies and strategies towards the decade framework in a couple of countries (Peden and Puvanachandra 2019). Measured against a 2010 baseline, achieving the UN target requires improvements in rates of fatalities per 100 000 population as follows (SLoCat, 2014):

• High-income countries: from 8.7 deaths per 100 000 population in 2010 to 4 by 2020.

• Middle-income countries: from 20.1 deaths per 100 000 population in 2010 to 7 by 2020.

• Low-income countries: from 18.3 deaths per 100 000 population in 2010 to 12 by 2020 (ITF, 2016).

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While both the decade of road safety and SDG 3.6 came to an end last year 2020, the numbers do not signify a reduction in road traffic deaths and injuries. Despite an 11.7% reduction in crash data from 2015 in Ghana, fatalities and serious injuries increased by 15.6% and 7.77%

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respectively (Building and Road Research Institute; BRRI, 2017). A review report on the implementation of SDGs in Ghana, produced by the government of Ghana indicates that number of deaths due to road crashes has since 2016 been on the rise; increasing from 4 deaths per 100,000 population to 8 deaths per 100,000 population.

## 2.5 Road Safety

Road traffic safety is referred to as the application of safety measures to road transport network with an aim to prevent and or reduce the risk of road traffic injury and death (Ackah, 2019). Road safety policies and strategies are the plans, measures, actions, and the approaches adopted by stakeholders in the prevention and reduction of road traffic crashes. There are different road safety approaches adopted by different countries, some countries adopt more than one approach. While Hamid et al., (2020) identified three main road safety approaches; Traditional Approaches, Systemic Approaches, and Vision Zero; other researchers (Mohan et al, 2006, Khorasani-Zavareh, 2011) identified two approaches to road safety; The Individual and The System Approaches. The individual approach, which often focuses on one or few factors such as unsafe vehicle, speeding or road architecture in reducing RTCs, is akin to the traditional approach. Such approaches primarily focus on human error and adopt education and enforcement as strategies in reducing crashes (Khorasani-Zavareh, 2011). The type of road safety approach adopted and implemented in a given country is based on certain local conditions.

### 2.5.1 Traditional Road Safety Approaches

The traditional approach to road safety focuses on changing the behavior of the road users, reducing human error, and holding the road user accountable for road crashes (Hamid et al., 2020). This approach is based on the assumption that the road user is the main cause of road crashes; contributing about 95% of all road crashes (Mousavi Bazzaz et al., 2015) and therefore

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ch6nging the behavior of the road user will lead to a reduction in road traffic crashes. Due to this assumption, experts have directed interventions more on road users, by persuading road users to adopt “error free” behavior. The strategies adopted by this approach are Legislation, Education, Information, and Enforcement (Staton et al., 2016).

While road-user behavior and human error are significant factors, altering such behaviors and reducing human error cannot lead to maximum outcome (Khorasani-Zavareh, 2011), rather, interventions that aim at altering human behavior should be part of a more comprehensive set of interventions to achieve maximum outcome (Herrstedt, 1997). Literature shows that education and enforcement are best effective at reducing crashes when they target such behaviors as wearing seat belts and helmets (Elvik & Vaa, 2004). Two types of traditional approaches have been identified, road user approach, and causal approach. The former recognizes human error as the major cause of RTCs, implying that the road user is responsible for RTCs. The focus of this approach is the prevention of RTCs; therefore, the approach is focused on changing the behavior of road users to make them conformable to the system (Hamid et al., 2020, Peden et al., 2004). The causal approach posits that only knowledge of the factors that cause accidents can guarantee suitable interventions. Accidents are caused by a certain event or factor, or a combination of factors (Peden et al., 2004), and controlling these factors or events can prevent accidents (Kjellen & Albrechtsen, 2017).

### 2.5.2 Safe Systems Approach

The safe systems approach to road safety can be considered as a contemporary road safety approach that began in Sweden and the Netherlands, which moves away from the traditional road safety approaches. It is a system approach that begins with an ethical imperative that no human being should die or be seriously injured through road accident (ITF, 2016), and human life and

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health should not be compromised by the need to travel. This approach acknowledges the fact that road crashes cannot always be prevented, given that humans are prone to error, and that humans cannot act safely at all times, however, deaths and serious injuries through crashes can be prevented (ITF, 2016). This is an approach that takes into account the limitations of the human body or capability. It recognizes that crashes occur in a complex system, and result from a combination of factors such as the road environment, vehicle, and human error, and that although altering just human behavior can lead to a reduction in road crashes, human error can be reduced by altering other factors such as the immediate environment, to achieve more effective results. It places the responsibility of road safety on both system designers and road users.

The safe systems approach moves from the prevention of road crashes to the prevention of deaths and serious injuries in the event of crashes. This approach is holistic, and recognizes a couple of integrated interventions such as safer road and roadside design, safer vehicle design, stronger enforcement, and more effective post-crash care (ITF, 2016). It is achieved by designing roads, vehicles, and transport system that can accommodate human error, by allowing road users to tolerate accidents without being killed (Koornstra et al, 2002). It aims to improve infrastructure design and vehicle technology to be adaptive to the limitations of the human capacity. This idea was echoed in the conclusion of a Swedish committee of enquiry into road traffic responsibility, as it stated "In order to achieve a safe transport system, there must be a change in our views concerning responsibility, to the extent that system designers are given clearly defined responsibility for designing the road system on the basis of actual human capabilities, thereby preventing the occurrence of those cases of death and serious injury that are possible to predict and prevent" (ITF, 2016).

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According to the International Transport Forum (ITF, 2016), safe systems approach adopts a proactive approach which helps to understand road user behavior and its limitations, to know when the road user can act safe and when they cannot, so that appropriate measures in infrastructure, vehicle, and speed operations management could be put in place to get the road user to act safely. Proactiveness also implies the understanding of the risk factors, assessing those risk factors inherent in a road network, and instituting interventions to avert disaster.

The safe system is based on four key principles; firstly, that Humans (road users) make errors, and errors are not always preventable. Due to the interconnectedness of the road system, errors are not always the result of misjudgment, but an interaction between the road user, and the road environment (Peden et al., 2004). Understanding of this interaction and designing interventions from that understanding can however reduce the occurrence of human error or the consequences of such errors (ITF, 2016). The important theme here is that human error is not isolated as the main cause of traffic crashes, it is mostly the result of an interaction among parts of the system, and its occurrence could be reduced by a strong functioning system and vice versa.

The second principle of the safe system is that there is a limitation on the body's physical ability to tolerate crashes before they occur. That is, the amount of kinetic energy the body is able to absorb before a crash occurs is limited. Mackay, (1983) notes that in most cases, fatal crashes and serious injuries occur because loads and accelerations that exceed that which the body is able to absorb are applied by some part of the motor vehicle. Pedestrians for instance are more likely (80%) to die at a collision with a vehicle running a speed of 50km/h or beyond, while at a speed of 30 km/h, the chance of dying is 10%. At a speed of over 30 km/h, the body's tolerance to kinetic energy is exceeded, giving the pedestrian a high degree of dying (Mitchell, 2001). In this

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regard, reducing kinetic energy through speed management and or contact surfaces that absorb kinetic energy are effective interventions (ITF, 2016).

The third Principle of Safe System is a shared responsibility between experts in road design, construction, and management; automobile manufacturers; post-crash care providers, and road users to prevent crashes that result in serious injuries or deaths. The road infrastructure and vehicles must be forgiving enough to accommodate human error (Turner et al., 2016). The automobile industry is faced with the responsibility to adopt technology for the designing and manufacturing of automobiles that compensate for human error. Post-crash care is also vital in this regard, as intensive post-crash care can salvage long term injuries and disabilities as well as death.

The fourth and final principle is that all parts of the road system must be strengthened, in a way that a weakness in one part would not put road users at risk. This is based on the idea that all the layers of the road system; road user, vehicle, road, are imperfect, and therefore strengthening each one of those layers would make it difficult for an error to penetrate through the whole system to cause a serious outcome. Latent error is unlikely to be dangerous, unless in line with a sequence of occurrences that causes a crash (Wegman and Aarts, 2006). In a safe system however, all factors or parts of the system are strengthened, so that a failure of one is compensated for by the other parts, to avoid dire consequences. This calls for the holistic management of the parts of the system interventions (ITF, 2016).

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***Table 2. 3: Differences between Traditional Road Safety Approach and Safe Systems Approach***

| | Traditional road safety policy | Safe System |
|---|---|---|
| What is the problem? | Try to prevent all crashes | Prevent crashes from resulting in fatal and serious casualties |
| What is the appropriate goal? | Reduce the number of fatalities and serious injuries | Zero fatalities and serious injuries |
| What are the major planning approaches? | Reactive to incidents Incremental approach to reduce the problem | Proactively target and treat risk Systematic approach to build a safe road system |
| What causes the problem? | Non-compliant road users | People make mistakes and people are physically fragile/vulnerable in crashes. Varying quality and design of infrastructure and operating speeds provides inconsistent guidance to users about what is safe use behaviour. |
| Who is ultimately responsible? | Individual road users | Shared responsibility by individuals with system designers |
| How does the system work? | Is composed of isolated interventions | Different elements of a Safe System combine to produce a summary effect greater than the sum of the individual treatments- so that if one part of the system fails others parts provide protection. |

Source: International Transport Forum 2016

Safe systems approach has been the backbone of road safety initiatives such as Sweden's vision zero, and Sustainable safety of The Netherlands. Vision Zero was passed by the Swedish

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parliament in 1997. It is an ethical imperative that "It can never be ethically acceptable that people are killed or seriously injured when moving within the road transport system". The Vision Zero is that eventually no one will be killed or seriously injured within the road transport system (Ministry of Transport and Communications, 1997, Johansson, 2009). Similarly, sustainable safety of Netherlands, which began in 1998, is based on the philosophy that Human errors and crashes are inevitable, despite prevention measures; that both road transport designers and road users must accept responsibility for safety; that safety management decisions must be put within the broader transport and planning decisions, in order to meet the economic, human, and environmental goals; and that interventions must be based on long term goals (Weijermars & Wegman, 2011, ITF, 2008). These strategies are aimed at reducing physical damages due to accidents by eliminating known human errors through the transformation of road systems (AdrianaTisca et al., 2016).

## 2.6 Global Road Safety Initiatives

Road safety has been prioritized at the international level by the international community, and has been made a global policy issue. The 1968 Vienna Convention on Road Traffic, designed to facilitate international road traffic and to increase road safety through the establishment of standardized rules for contracting parties; and the 1968 Vienna Convention on Road Signs and Signals, which also standardized road signs and signals for contracting parties were both prepared by United Nations Conference on Road Traffic held at Vienna from October 7 to November 8, 1968. Before these was the Convention on Road Traffic, also known as the Geneva Convention on Road Traffic of 1949, which was aimed at promoting the development and safety of international traffic by establishing certain uniform rules.

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When the issue of road traffic injuries became more rampant in the 21st century, the United Nations adopted various resolutions and established some bodies to help reduce the rate of occurrence. In April 2004 the UN General Assembly adopted resolution 58/289, after which The United Nations Road Safety Collaboration (UNRSC) was established as part of efforts for the United Nations system to address the global road safety crisis (Global Plan for Decade of Action for Road Safety). Resolution 58/289 invited the WHO, in collaboration with the UN's regional commissions to be the lead organization in coordinating road safety issues in the United Nations system.

In 2010, as part of actions to prevent the rise of road traffic fatalities and reduce the forecast of road traffic deaths from becoming the 5th cause of global deaths, which could lead to the death of some 2.4 million people each year, the General Assembly adopted Resolution 64/2551 of March 2010, which declared 2011-2020 a Decade of Action for road safety. A plan of action was prepared by the WHO, the UN regional commissions, and other stakeholders (United Nations Road Safety Collaboration) to help member states in reducing road accidents. Through this plan, there have been some global initiatives to fight the road accident cancer, some of which are the Road Safety in 10 countries Project, Global Road Safety Partnership, the Bloomberg Philanthropies Initiative for Global Road Safety which is in its third phase, and the World Bank's Global Road Safety Facility (Heydari et al., 2019). Ghana is among the first 15 countries to benefit from the third phase of the Bloomberg Philanthropies Initiative for Global Road Safety, and Accra and Kumasi, the two largest cities of Ghana are among the first 15 cities that are to benefit from the program.

Recognizing that both the SGG 3.6 and the goal of the decade of action were unattainable, and the need to consolidate the gains achieved and strengthen efforts made by curbing the menace of

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road traffic deaths and injuries, the UN General Assembly in September 2020, adopted resolution A/RES/74/299 "Improving global road safety" proclaiming 2021-2030 the Second Decade of Action for Road Safety, with the target of "preventing at least 50% of road traffic deaths and injuries by 2030". Earlier in 2019, the UN High-Level Political Forum on Sustainable Development promised to carry on with action on road safety targets, including target 3.6. (Mohan et al., 2021) This is part of a commitment to maintain the integrity of the 2030 Agenda by "ensuring the ambitious and continuous action on targets of the SDGs with a 2020 timeline". These renewed commitments have been emphasized in the Stockholm declaration of 2020, and states, through their Ministers and National Delegations have reaffirmed their commitment to this course. Like in the case of the first decade, a plan of action for the second decade has been prepared by the WHO and the UN regional commissions, and was launched in October 2021. The plan calls for continued improvement in the design of roads and vehicles; enhancement of laws and law-enforcement; and provision for timely, life-saving emergency care for injured persons. The plan also promotes walking and cycling as healthy behaviors, and the design of infrastructure to enable the same. The use of public transport as a safe means of transport is also highlighted.

## 2.7 African Union and ECOWAS

Regional road safety collaboration in Africa could be traced to the 2000s; the First African Road Safety Conference that was held in Accra, Ghana in 2007. The conference was held on the theme "Road Safety and the Millennium Development Goals; Reducing Road Traffic Fatalities by Half by 2015" and produced an agreement; the Accra Declaration, in which the African ministers resolved to among other things, work in harmony to end the increasing rates of road traffic casualties; promote road safety as a health, transportation, law enforcement, education, and

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development priority for 'our' nations; and set and achieve measurable national targets for road safety and traffic-injury prevention.

Two years later, an African Regional Road Safety Seminar was held in Dar es Salaam, Tanzania, on the theme "Setting Road Targets: A way Forward for Reducing Accident Fatalities by Half by 2015". During this seminar, targets were developed and adopted for tracking the state of implementation of the Road safety conference held in Accra (AUSTCTIIIET, 2017). The second African road safety conference was organized in Addis Ababa, Ethiopia in 2011 by Economic Commission for Africa, the Government of Ethiopia, in cooperation with the African Union Commission, African Development Bank, Sub-Saharan African Transport Policy Program, Global Road Safety Facility, and the World Bank; to prepare an action plan for the continent following the declaration of 2011-2020 as the global decade of action for road safety by the UN GA. The action plan was drawn from the global plan of action for road safety, and was based on the five pillars identified in the global plan, plus an additional pillar on cross-cutting issues that addresses rural road safety. The development and adoption of an African road safety action plan was necessary in order to take into account the African perspective, thus developing a context specific action plan that would work for the continent. The plan however, was in accordance with the global plan of action. It was signed by the African countries through the African Union Conference of Ministers in charge of Transport.

In response to the incessantly increasing road traffic deaths and injuries, and the associated economic and social cost, the Heads of states of the AU on January, 2016 adopted the African Union Road Safety Charter, with the main objectives " to serve as a policy framework for Road Safety Improvement in Africa", and "to serve as advocacy tool and instrument for road safety improvement on the continent aimed at facilitating the creation of an enabling environment to

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drastically reduce the road traffic crashes" [Article 2 (1&2,), African Union Charter, 2016]. By ratifying this charter, states commit to among other things, establish legally mandated national road safety lead agencies with cross-sectorial coordination responsibilities within 3 years of signing the charter; provide financial and human resource support for the lead agency to enable it carry out its responsibilities; and also prepare road safety strategies with clear priorities, responsibilities, and targets through collaborative and consultative process. Article 7 of the charter also identifies the need for the establishment of road safety data management systems that encompass quality data collection, storage, collation, analysis, and reporting models as a response to the problem of underreporting of road crashes by countries on the continent as reported by the WHO, and to also facilitate evidence-based policy formulation.

## 2.8 West Africa Road Safety Organization (WARSO)

The West Africa Road Safety Organization (WARSO) is a road safety management organization that was established in May 2008, for the integration of road safety issues of member states for socioeconomic development. The organization emerged from the defunct Groupes des Pays Africain de la Prévention Routière Internationale (GPA-PRI)- International Road Safety Organization of African Group which became inactive due to the lack of commitment by some member states, partly attributed to the large and heterogeneous nature of the area of coverage. The formation of the organization was an initiative of Nigeria's Federal Road Safety Corps, which had gained much experience from the leadership role it had played in the defunct GPA-PRI. WARSO's vision is to promote and reinforce road safety in West Africa. Some specific objectives of the organization include: Encouraging the creation of road safety lead agencies in member states, advise and give support to road safety bodies, promote and encourage exchange of information and experiences among member states in order to efficiently reduce road traffic

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fatalities and injuries, promote cooperation among countries, sub-regional bodies, research centers, legal entities, and individuals etc. the organization holds annual general meetings to brainstorm and promote road safety activities in member states.

ECOWAS as a sub-regional body is yet to have a common regional strategy to fight road traffic fatalities and injuries. The ECOWAS commission assembled heads of various road safety agencies, transport ministries and other government officials in charge of road safety to consider a proposal on ECOWAS Regional Road Safety Policy; ECOWAS Regional Road Safety Regulation, Action Plan and Monitoring and Evaluation Framework. These proposals were put together by the ECOWAS commission in consultation with key stakeholders, and it is yet to be finalized for submission to the ECOWAS Council of Ministers Meeting in December 2021. When adopted, the instrument would serve as a policy document for member states, in addition to the African Road Safety Charter and other Global Action Plans, and in addition, coordinate road safety actions in the sub-region.

## 2.9 Road Safety in Ghana

Road safety activities in Ghana were not properly managed and coordinated until 1988, when the Ghanaian government under World Bank Financed Transport Rehabilitation Project (TRP) started the Ghana Road Safety Project (GRSP), through which a body, National Road Safety Committee was formed to manage the country's road safety activities and tackle its road safety problems (Boateng, 2021). A decade later, parliament through ACT 567 of 1999 transformed the committee to a commission, National Road Safety Commission (NRSC). This was to ensure that the commission was well resourced with funding and the expertise to plan, promote, coordinate and evaluate road safety activities (Parliament of Ghana ACT 567, 1999, Boateng, 2021). The commission was further transformed into an authority, National Road Safety Authority (NRSA)

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by parliament in 2019. This gives the body additional responsibility and legal authorization to regulate road safety by setting standards and take actions against non-conforming stakeholders (Ackah, 2019). The NRSA is under the Ministry of Transport, and has been the lead agency in road safety management, and works alongside other key stakeholder Agencies such as DVLA, MTTD, Ministry of Roads and Highways, etc., The various roles in road safety are collectively or individually played by certain institutions and agencies, such as:

- Education, which is jointly played by the NRSA, MTTU, DVLA, Ghana Education Service (GES), and the media;
- Legislation, jointly played by Parliament, Ministries of Roads and Transport (MRT), and various Metropolitan, Municipal, and District Assemblies (MMDAs);
- Enforcement, played by MRT, DVLA, MTTD, NRSA, Environmental Protection Agency (EPA), and the Judiciary;
- Post-Crash care, by Ministry of Health (MoH), Ghana Health Service (GHS), National Ambulance Service, Fire Service, St. John's Ambulance Service, etc.,
- Engineering, by Ghana Highway Authority (GHA), Department of Urban Roads (DUR), Department of Feeder Roads (DFR), Building and Road Research Institute (BRRI), and Contractors. Figure 2.1 below shows Ghana's road safety framework, detailing the roles of the various stakeholders in the road safety enterprise.

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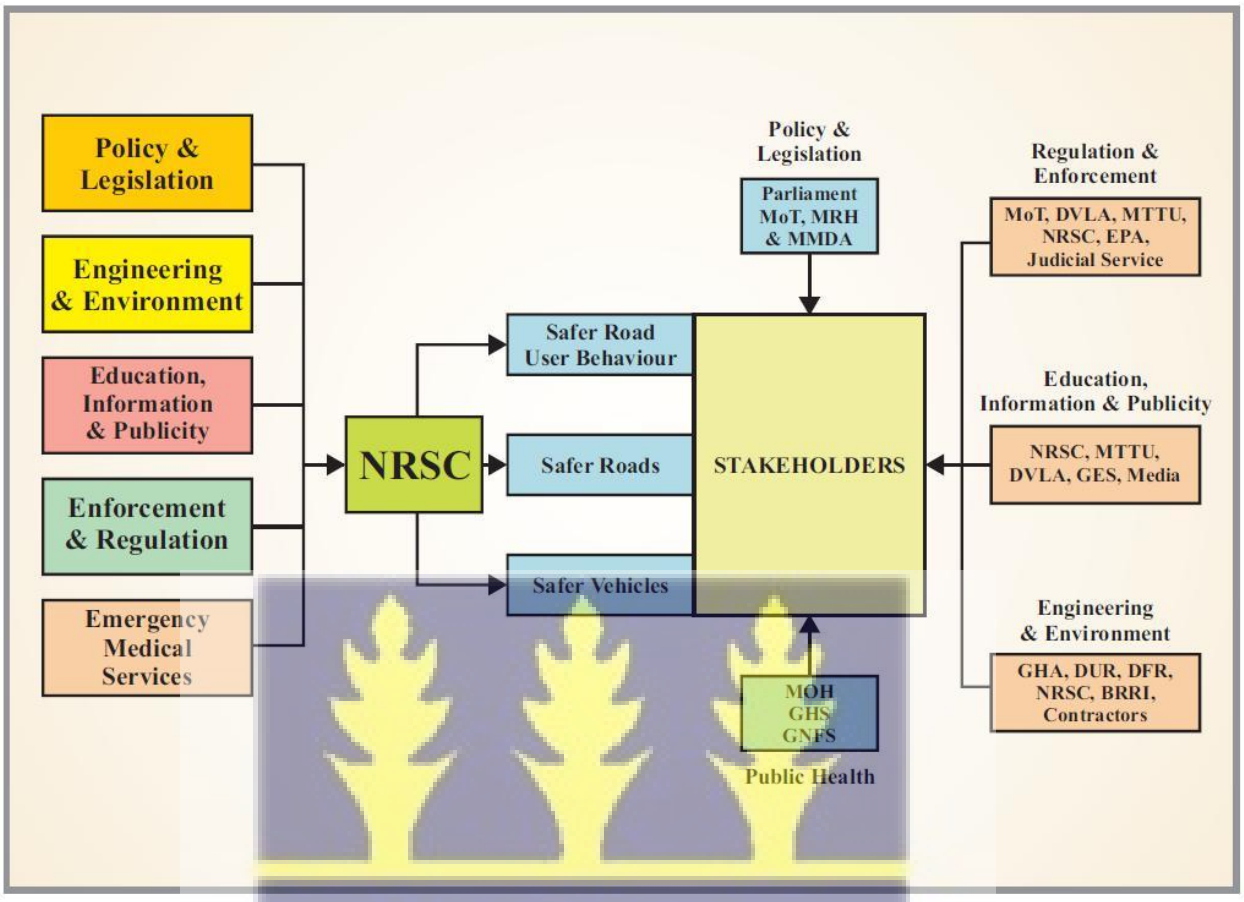
**figure 2. 1: Ghana's Road Safety Framework**




Source: NRSC, 2011

The NRSC in consultations with other agencies prepare road safety action plans for the country. The first strategic action plan, National Road Safety Strategy One (NRSS I) spanned 2001 to 2005. The second, NRSS II came into force from 2006 to 2010. The current strategy, NRSS III (2011-2020) was particularly developed in line with the UN decade of action for road safety (2011-2020), and aims to "halt the unacceptable levels of road traffic fatalities and injuries by 2015, and thereafter, reduce it by 50% by end of 2020 as recommended in the United Nations (UN) Global Plan for the Decade of Action for Road Safety 2011-2020", (NRSS III, 2011-2020). Road traffic fatalities and serious injuries were

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expected to drop to 810 and 2838 respectively by 2020. Various agencies are identified with the various pillars in the plan of action for road safety, to work collectively to ensure that the objectives and goals identified were achieved. Three-year Action Plans were also developed with specific objectives, aimed at achieving the objectives of NRSS III.

## 2.10 Conclusion

This chapter began by discussing the risk factors of road accident globally. Reference was made to the global status report 2018 on the extent to which the various risk factors contribute to RTIs. Speeding, drunk and drug-driving, road infrastructure and unsafe vehicles were some of the factors that were identified. The chapter also discussed the causes of road accidents in Ghana. Some of the causes identified were institutional ineffectiveness, driver attributes, and the state of road infrastructure. The chapter also presented some road safety approaches, of which the merit of the safe system's approach was thoroughly examined. Finally, the chapter concluded with some global, regional, sub-regional, and national road safety commitments. It was found that Ghana has international, regional, and national obligation to reduce RTIs, and there are documents such as the global plan for the decade of action for road safety and the African road safety charter to guide the development of national strategies

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# CHAPTER THREE
# GHANA'S PERFORMANCE ON SDG 3.6, GHANA'S ROAD SAFETY STRATEGIES FOR THE PERIOD, AND CHALLENGES IN REDUCING RTIs

## 3.0 Introduction

This chapter presents an analysis of data gathered from the interviews conducted with stakeholders of road safety in order to answer the research questions asked in the first chapter as follows:

This research answers the following questions:

1. What is the state of road safety in Ghana?

2. How related are Ghana's road safety policy and strategies to the Global Plan for the Decade of Action for Road Safety 2011-2020?

3. What are the challenges undermining Ghana's strive to preventing road traffic deaths and injuries?

## 3.1 The Trend of Road Traffic Fatalities and Injuries for the Decade 2011-2020

Ghana's road safety performance over the past decade was marked by decreases in fatality and injury in the early years and a sharp increase following the adoption of the SDGs. To achieve SDG 3.6, Ghana aimed at reducing road traffic fatalities and injuries by 50%, by the year 2020, using 2011 as the base year. With 2,199 fatalities in 2011, it was expected that fatalities would be reduced to 1,099, and injuries to 6,636. The data however does not project so. The country recorded decreases in fatalities for three consecutive years starting 2013, owing to the aggressive implementation of interventions. In the year 2015, the country recorded 1802 fatalities; the

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lowest in the decade, representing an 18% decrease relative to the base. Coincidentally, this decrease was not sustainable following the years after the adoption of the SDGs. There was a recorded 15.6% increase from 2015, that is, from 1802 fatalities in 2015 to 2084 in 2016. In 2020, which marked the end of the decade and the target year for the achievement of the SDG 3.6, with 2,753,914 registered vehicles, the country recorded 2528 fatalities, representing 14.96% increase relative to the base year and 21.94% from 2019. The fatality numbers for 2020 also represent an increase of 40.2% relative to that of 2015, the year that ended the three year consecutive decline. The 2020 fatalities are the maximum number of fatalities to have ever been recorded in a year, resulting from the increasing rates of motorcycle fatalities in recent times. This data therefore indicates that Ghana could not reduce fatalities to achieve the targets; rather, fatalities have been increasing, despite the initial reductions in the decade, as Illustrated in figure 3.2 below

*Figure 3. 1: RTC and RTF trends in Ghana since 2010*

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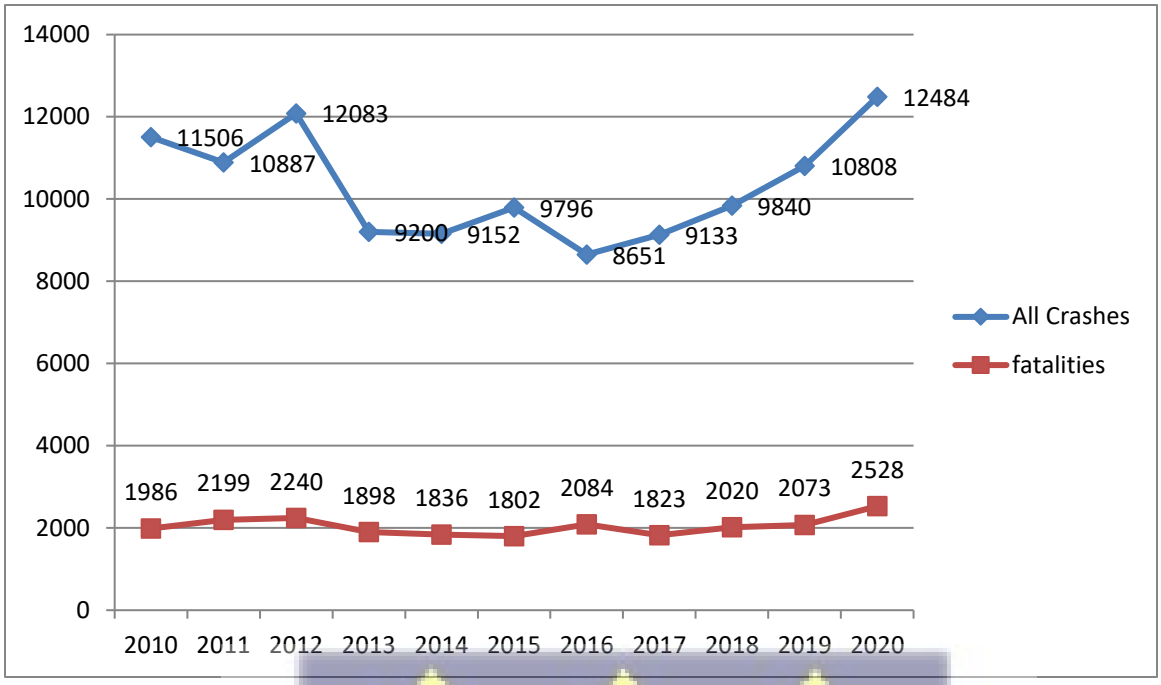


Data provided by BRRI

The injury data as well is not much different. In 2011, which is the base, the number of injuries recorded was 13272. In the next year, there was 6.84% increase. The numbers will then follow the fatality trend of decreases for the next three years. In 2015, the number of injuries dropped to 9186, representing a 30.78% decrease over the base. The next five years saw significant increases in injuries, reaching 15,517 by the end of the decade. This represents an increase of 16.9% over the base, which also means the target of halving the number of injuries as well could not be met; rather, RTIs have been increasing, despite the initial declines, as illustrated in figure 3.2

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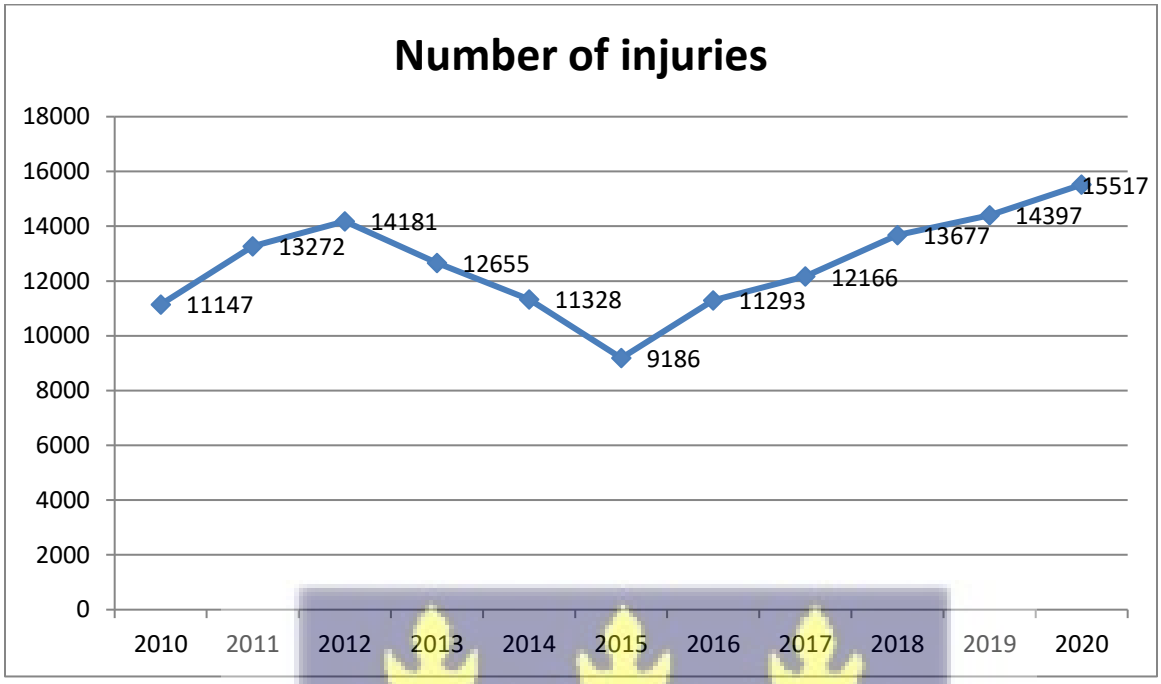
***Figure 3. 2: Road Traffic Injury Trends in Ghana since 2010***




Data provided by MTTD

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***Table 3. 1: Crash Statistics from 1991 to 2020***

**Table1.1 Changes in National Traffic Fatality Indices**

| Year | All Crashes | All Casualties | Fatalities | Estimated Population ($X10^6$) | Registered Vehicles | Fatalities per 10,000 Vehicles | Fatalities per 100,000 Population | Fatalities per 100 Casualties | Fatalities per 100 Crashes |
|---|---|---|---|---|---|---|---|---|---|
| 1991 | 8370 | 9693 | 920 | 14.821 | 132051 | 69.67 | 6.21 | 9.5 | 11.0 |
| 1992 | 6922 | 10030 | 914 | 15.222 | 137966 | 66.25 | 6.00 | 9.1 | 13.2 |
| 1993 | 6467 | 8578 | 901 | 15.634 | 157782 | 57.10 | 5.76 | 10.5 | 13.9 |
| 1994 | 6584 | 8488 | 824 | 16.056 | 193198 | 42.65 | 5.13 | 9.7 | 12.5 |
| 1995 | 8313 | 10132 | 1026 | 16.491 | 234962 | 43.67 | 6.22 | 10.1 | 12.3 |
| 1996 | 8488 | 10952 | 1049 | 16.937 | 297475 | 35.26 | 6.19 | 9.6 | 12.4 |
| 1997 | 9918 | 11448 | 1015 | 17.395 | 340913 | 29.77 | 5.84 | 8.9 | 10.2 |
| 1998 | 10996 | 13205 | 1419 | 17.865 | 393255 | 36.08 | 7.94 | 10.7 | 12.9 |
| 1999 | 8763 | 11439 | 1237 | 18.349 | 458182 | 27.00 | 6.74 | 10.8 | 14.1 |
| 2000 | 11087 | 13747 | 1437 | 18.845 | 511063 | 28.12 | 7.63 | 10.5 | 13.0 |
| 2001 | 11293 | 14838 | 1660 | 19.328 | 567780 | 29.24 | 8.59 | 11.2 | 14.7 |
| 2002 | 10715 | 15077 | 1665 | 19.811 | 613153 | 27.15 | 8.40 | 11.0 | 15.5 |
| 2003 | 10542 | 16185 | 1716 | 20.508 | 643824 | 26.65 | 8.37 | 10.6 | 16.3 |
| 2004 | 12175 | 18445 | 2186 | 21.093 | 703372 | 31.08 | 10.36 | 11.9 | 18.0 |
| 2005 | 11320 | 15813 | 1779 | 21.694 | 767067 | 23.19 | 8.20 | 11.3 | 15.7 |
| 2006 | 11668 | 16348 | 1856 | 22.294 | 841314 | 22.06 | 8.33 | 11.4 | 15.9 |
| 2007 | 12038 | 16416 | 2043 | 22.911 | 922748 | 22.14 | 8.92 | 12.4 | 17.0 |
| 2008 | 11214 | 16455 | 1938 | 23.544 | 942000 | 20.57 | 8.23 | 11.8 | 17.3 |
| 2009 | 12299 | 18496 | 2237 | 24.196 | 1030000 | 21.72 | 9.25 | 12.1 | 18.2 |
| 2010 | 11506 | 16904 | 1986 | 24.865 | 1122722 | 17.69 | 7.99 | 11.7 | 17.3 |
| 2011 | 10887 | 16219 | 2199 | 25.099 | 1225754 | 17.94 | 8.76 | 13.6 | 20.2 |
| 2012 | 12083 | 15241 | 2240 | 25.510 | 1532080 | 14.62 | 8.78 | 14.7 | 18.5 |
| 2013 | 9200 | 12509 | 1898 | 26.004 | 1708958 | 11.11 | 7.30 | 15.2 | 20.6 |
| 2014 | 9152 | 12863 | 1836 | 26.505 | 1885836 | 9.74 | 6.93 | 14.3 | 20.1 |
| 2015 | 9796 | 12367 | 1802 | 26.942 | 2062714 | 8.74 | 6.69 | 14.6 | 18.4 |
| 2016 | 8651 | 12522 | 2084 | 27.424 | 2256180 | 9.24 | 7.60 | 16.6 | 24.1 |
| 2017 | 9133 | 12339 | 1823 | 28.027 | 2467787 | 7.39 | 6.50 | 14.8 | 20.0 |
| 2018 | 9840 | 13837 | 2020 | 28.803 | 2679394 | 7.54 | 7.01 | 14.6 | 20.5 |
| 2019 | 10808 | 15094 | 2073 | 29.600 | 2891001 | 7.17 | 7.00 | 13.7 | 19.2 |
| 2020 | 12484 | 16820 | 2528 | 30.419 | 3102608 | 8.15 | 8.31 | 15.0 | 20.2 |

Source: NRSA, 2020

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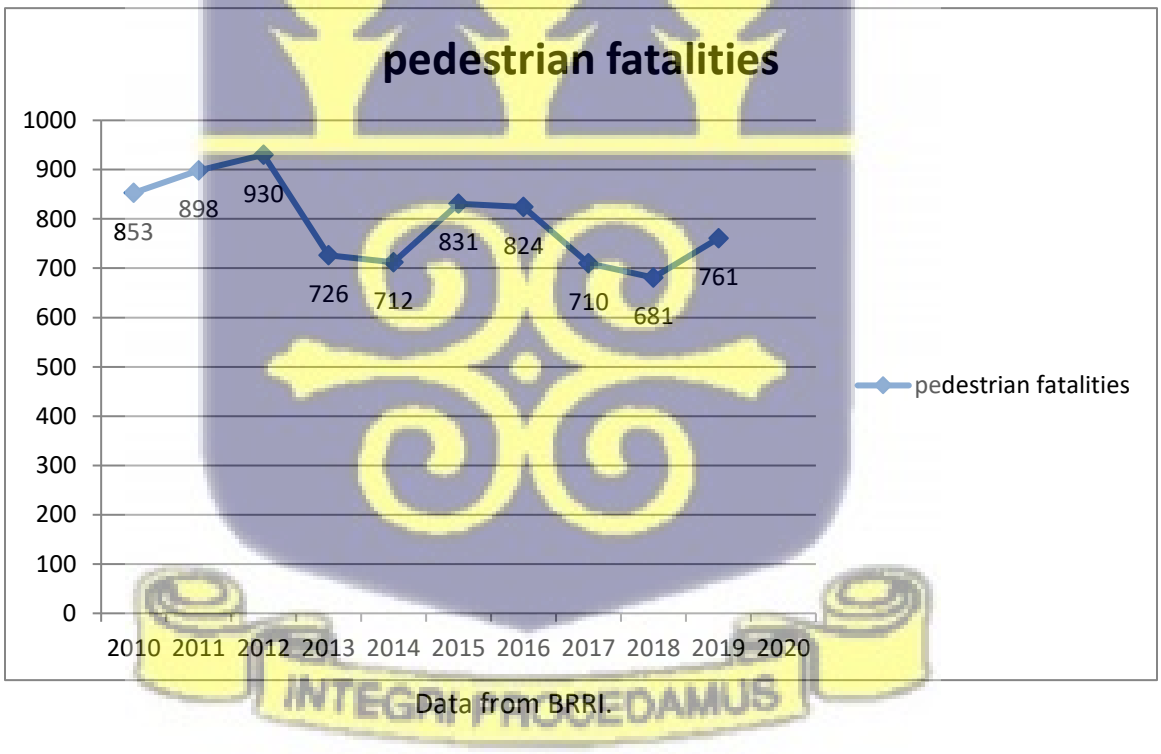
### 3.1.1 Most Affected Road Users

Pedestrians have been the most vulnerable road users, and make up the highest percentage of crash victims followed by bus occupants. Pedestrian crashes saw both increases and decreases at various periods in the decade. There was a consecutive decline for three years, beginning 2016. The numbers increased for both 2019 and 2020. However, comparing the recorded pedestrian fatality for 2020 of 789 to 898 of 2011, pedestrian fatalities could be said to have decreased over the decade. The pedestrian fatality trend is presented in figure 3.3 below:

***Figure 3. 3: Pedestrian Fatality Trends in Ghana since 2010***




This trend of reduction in pedestrian crashes can partly be attributed to the provision of pedestrian infrastructure such as zebra crossings, and footbridges, as well as attempts by city

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authorities to clear pedestrian pathways. Also, the mounting of speed-calming measures on settlements along major highways as well as in urban centers where most pedestrian crashes occur have also contributed to the reduction in pedestrian knockdowns.

*"I think we are also doing much in terms of pedestrian safety. That has also made their figures to come down. So you will realize that the pedestrian fatality recorded in the past years is dropping. You talk of maybe the education is there, and also the infrastructure. More zebra crossings are being built. You know most of these pedestrian knockdowns happen in the cities, and if you recall the recent Madina issue… we are also doing much on child safety, which has also improved; because we give them crossing aids, a lot of education and training on how hot cross, so putting in much measures to educate the pedestrian to be safe has led to some reduction in those figures".* Interview with NRSA Officer at the headquarters of the NRSA, (22nd October, 2021)

Nevertheless, there is still more to do in order to sustain and further decrease the high numbers of pedestrian fatalities. Pedestrian fatalities have been increasing in urban areas relative to rural areas, and even though in recent years the measures to improve pedestrian safety in Accra and Kumasi have been reinforced by the Bloomberg special initiative for road safety, pedestrian crashes continue to increase in these two cities as a result of carelessness on the part of some pedestrians and indiscipline on the part of motorists, especially motorcyclists who have mostly been found to disregard traffic regulations and road signs. Indeed most of the pedestrian crashes in recent times have been attributed to motorcyclists. Short term measures that can further reduce pedestrian crashes especially in the cities include compelling motorcyclists to obey traffic rules, i.e stopping at red lights, stopping for pedestrians, mounting more traffic-calming devices, and

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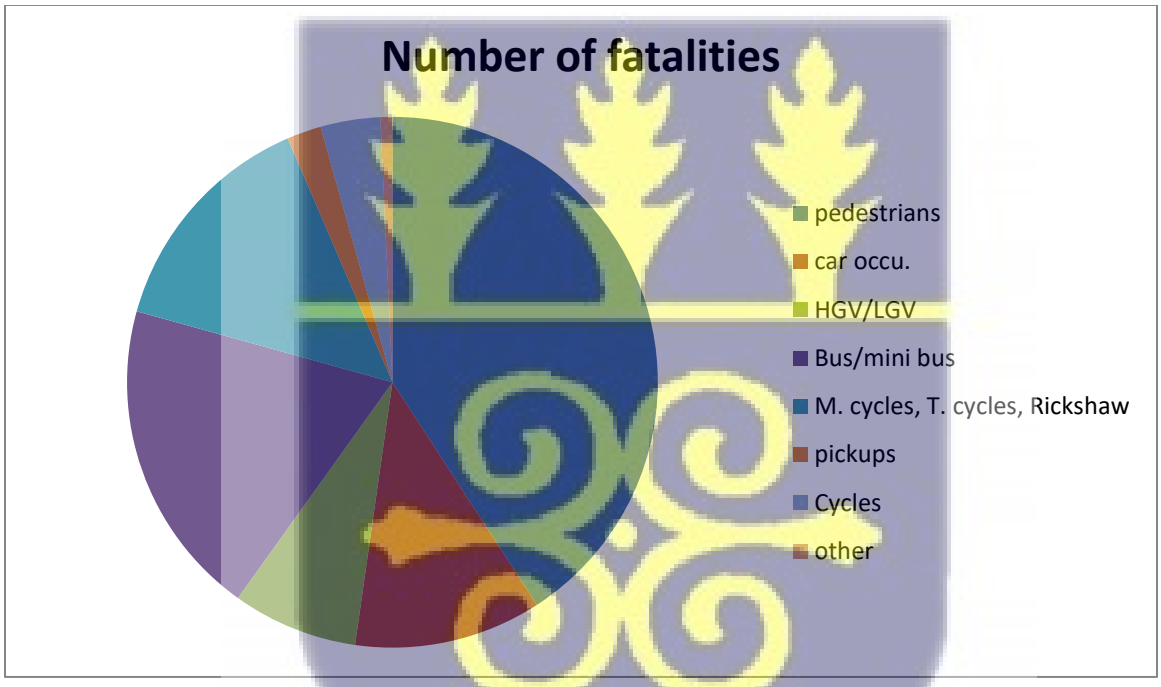
improving road safety education. Long term measures include separating non-motorist road users from motorists during road construction.

As at 2011, the percentage share of pedestrian fatalities to total road traffic fatalities was 40.83, making pedestrians the most vulnerable road users, followed by bus and mini bus occupants, who contributed 19.4% of all fatalities, and then motor cyclists, tricycles, and rickshaw together constituted 14%, making them the third most affected, followed by car occupants, 11%, as presented in figure 3.4 below:

***Figure 3. 4: Fatality Per Road User Distribution in 2011***

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This distribution has taken a different turn; as at 2020, motor cyclists and tricycles contributed the most to fatalities. The fatality data shows that the fatality figures for this group of road users

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have been increasing significantly, even when those for other road users such as pedestrians and bus occupants have reduced.

The increase in road traffic fatalities in general is as a result of the increase in motor cyclists and tricycle riders' fatalities. From figure 3.1, it can be deduced that if the trend of fatalities for motor and tricycle riders was to follow the trend of fatalities for other road users, the number of fatalities would not have been this much. This is also due to the fact that, many of the pedestrian fatalities were also caused by motorcycles. The percentage share of motorcycle user fatality to total fatality for 2020 was 32.79%, relative to 14% of 2011, this is a significant increase. The increase in motorcycle user crashes and fatalities is due to the increase in the usage of motorcycles for commercial purposes, albeit illegal. The factors underlying the patronage of motorcycles by the public are inherent in the transportation systems and problems that inhibit fast vehicular travel; key among these are poor land use and public transport system leading to the high vehicular traffic in urban centers that delay vehicular transport time; and the bad nature of roads in remote and rural areas, therefore people fall on commercial motorcycles to get to work on time and meet appointment time, and also get to their destinations where the roads linking those areas are not in good shape for vehicles to ply. This means that as motorization increases and roads remain in a deplorable state, dependency on commercial motorcycles increases, although the road network does not guarantee the safe use of commercial motorcycles. Figure 3.5 shows the distribution of fatality by road user for 2020

***Figure 3. 5: Fatality Per Road User Distribution in 2020***

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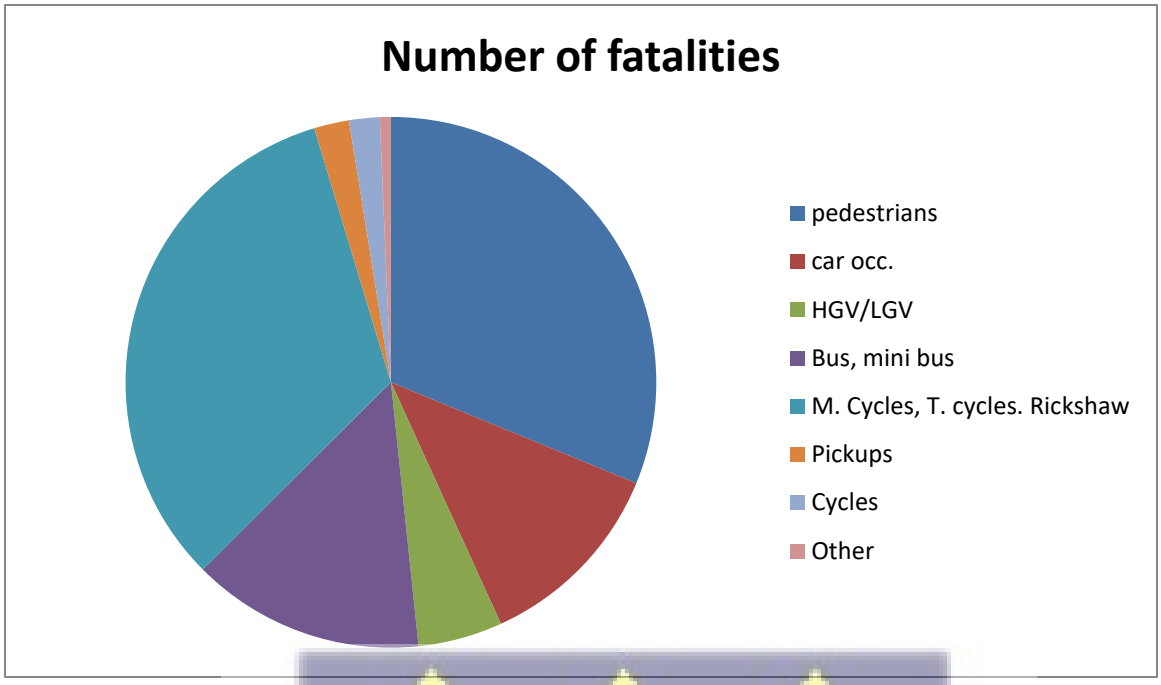


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### 3.1.2 Fatality Indices

To effectively categorize and compare road traffic crashes and fatalities, there is the need to compute the fatal indices. Perhaps the most common index is the Traffic System Risk Indicator (TSR), calculated as number of fatalities by 10,000 vehicles (fatalities/10,000 vehicles) indicates level of risk that is associated with vehicle transportation in a given period. A BRRI report shows that as at 1991, the TSR was 69.7 fatalities/10,000 vehicles, but this has seen significant decline over the past three decades; as at 2013, the TSR was 11.1 fatalities/10,000 vehicles. The best index was recorded in 2019; 7.17 fatalities/10000 vehicles, with a slight increase to 8.15 fatalities/10000 vehicles. With vehicle being exposure variable, all things being equal, and increase in motorization would result in an increase in TSR index, however, effective measures could have mitigated what would have been a worse situation.

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*"I know vehicles is an exposure variable right, and so as the number of the vehicles on the road increases, you will expect accident to increase. But if you should look at the country, the number of motorization, if you put in safety measures, we don't expect number of crashes to increase, we should expect decline"*. Interview with an Engineer and Road Safety Specialist at BRRI at the BRRI premises in Kumasi, (5th November, 2021).

Fatalities per 100,000 population is an index that shows the number of people as a population that are being killed through road traffic crashes. It indicates the public health risk (PHR) of road traffic crashes. The 2011 fatality per population rate was 8.76 fatalities/100000 population. There was a downturn from 2013 to 2015. Since 2016 however, there has been an upward trend although the 2020 rate of 8.31 fatalities/100000 population is lower compared to other LMIC. Given that so significant improvement in PHR index has been made following the implementation of the NRSS III, more drastic measures must be put in place to avert what could become a serious public health problem.

Equally important are Fatalities per 100 crashes and Fatalities per 100 casualties. These two indicators are useful in measuring the severity of crashes, the extent to which roads are forgiving, and the quality of post-crash response. Again, BRRI road traffic crashes statistics (2020) projects that these two indices have been on the rise over the years. A reduction was observed in the period 2016-2019; from 16.6 and 24.1 to 13.7 and 19.2 for fatalities/ 100 casualties and fatalities/100 crashes respectively. The year 2020 however showed an increase relative to 2019, as fatalities/ 100 casualties and fatalities/100 crashes increased to 15.0 and 20.2 respectively (NRSA, 2020). Figure 3.6 below illustrates the trend of the various RTF indices since 2011

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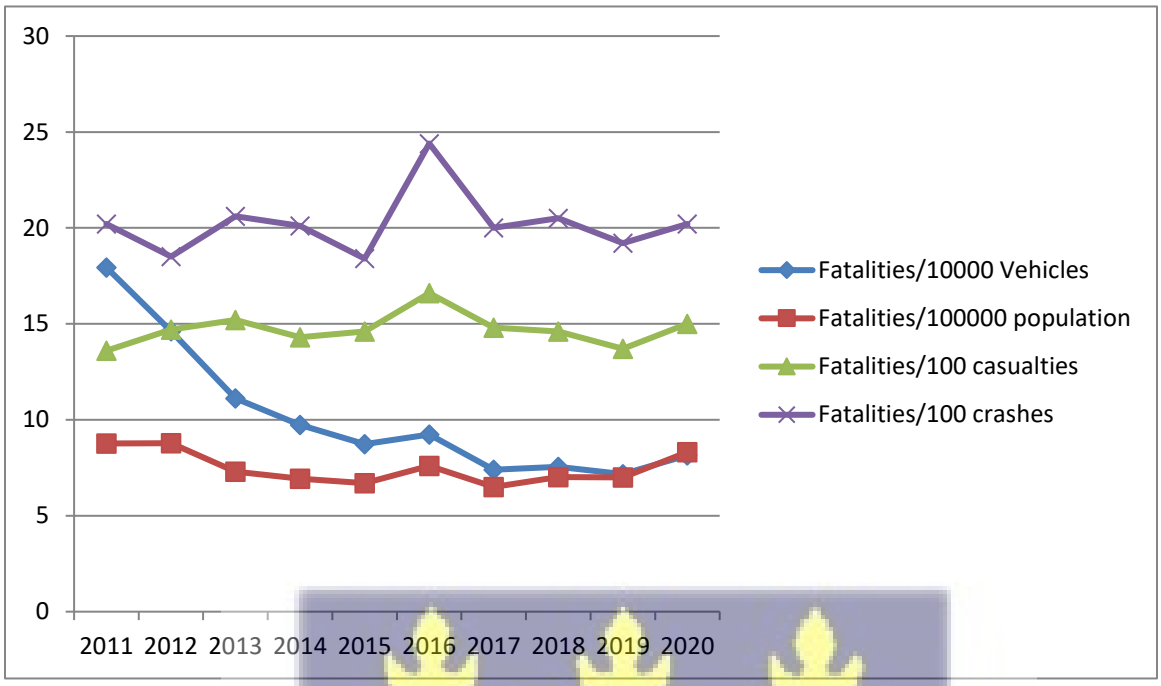
***Figure 3. 6: RTF Indices Since 2011***




BRRI Data

### 3.1.3 Current Situation in 2021

The current situation does not look good; as at September 2021, the MTTD report indicates that some 2126 people have died through road traffic crash, representing a 16% increase over same period last year. The number of people who have sustained injuries as at September 2021 is 11659, also representing 6.2%. Road Traffic Accidents have dominated media discussions almost every quarter in the year. In addition to the rising rates of motorcycle user fatalities, the current situation is also attributed to the absence of a road safety strategy to guide road safety actions in the year. After the elapse of NRSS III last year, the NRSA is yet to launch a road safety strategy for implementation.

## 3.2 Ghana's Road Safety Policy

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Even after the establishment of the National Road Safety Commission in 1998, and the periods of the implementation of its first two road safety strategies; National Road Safety Strategy I (2001-2005) and National Road Safety Strategy II (2006-2010), Ghana did not have a national road safety policy, until later in 2008, when the National Road Safety Commission came out with a policy document for road safety. This came after the realization of the Ministry of Transport that the absence of a national policy on road safety makes it difficult for the NRSC to coordinate road safety activities, as a result of the fact that there was no existing document to serve as a reference point for the commission and its stakeholders to design and implement road safety measures "that all stakeholders could own and identify with" (National Road Safety Policy, 2009). The policy therefore has two mandates; to underpin and validate road safety interventions from 1999 to 2007, and then be the guiding document for the design and implementation of future road safety interventions from 2008 (National Road Safety Policy, 2009).

The policy captures sixteen areas of road safety and a list of the key challenges on these areas. A "broad" policy statement was given for each of the sixteen areas, and proposed strategies to address the challenges. The sixteen areas identified include: I. Road Transport Industry. II. The Driver. III. The Vehicle. IV. Road Infrastructure. V. Intermediate Means of Transport. VI. Pedestrian and Vulnerable Road Users. VII. Road Safety Legislation. VIII. Enforcement. IX. Post-Crash Care. X. Road Safety Database, XI. Funding for Road Safety Programs. XII. Research into Road Safety Issues. XIII. Inter-Agency Collaboration and Coordination. XIV. Human Resource Development for Road Safety Activities. XV. Monitoring and Evaluation of Road Safety Activities, XVI. Road Safety Awareness.

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The policy's recognition of the need to establish a body framework to regulate road transport is its highlight. Regulating road transport is an added role to be performed by the NRSA as mandated by the NRSA Act 2019 (Act 993). The Legislative Instrument (LI) to operationalize the Act is however yet to be passed, which means that for almost a decade and half of putting together this policy, road transport in Ghana is yet to be regulated.

The policy document is quite comprehensive as it appears to consider various areas of road safety, to enhance the entire road transport system. There is however no policy statement on the promotion of the use of public transport in the document, rather, a more recent national transport policy developed in 2020 has a policy objective to "Establish Mass Transportation systems in urban areas with inter-modal facilities and interchanges" (National Transport Policy, 2020), although this is not linked to road safety. The tendency for more qualified drivers steering public transport vehicles is higher, hence facilitating safe travel. The encouragement of the use of public transport has become more necessary to aid the movement of people and the growing population, as they are able to carry many people and are more affordable as compared to private transport (Global Plan for Decade of Action for Road Safety 2021-2030, 2021). The use of public transport has been identified to be a sure way of reducing road traffic crashes (Oteng-Ababio and Agyemang, 2012, Boateng, 2021), because of its potential to reduce traffic volumes.

### 3.3 Ghana's Road Safety Strategies

The road safety vision of Ghana is "Ghana, a country with the safest road transportation system in Africa". The National Road Safety Strategy is the framework for road safety management in Ghana. The first of its kind, the National Road Safety Strategy I (2001-2005) was put together by the National Road Safety Authority (NRSA), formerly National Road Safety Commission, which

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is the body mandated to manage road safety in Ghana, in consultation with other key stakeholder institutions. The prime objective of NRSS I was to reduce fatalities by 5% by the year 2005, using 1998 as the base, which was not achieved. The second strategy, the National Road Safety Strategy II (2006-2010) was developed to consolidate the gains of NRSS I and address emerging challenges. The third in the series of strategies is the National Road Safety Strategy III (2011-2020); a decade long strategy which coincides with the UN's Decade of Action for Road Safety. The strategy was developed in 2011 by the National Road Safety Commission in collaboration with all stakeholders; that is DVLA, MTTD, Ministries, Civil Societies, NGOs, Transport Service Providers, Academic and Research Institutions, and Driver Training Institutions. The overall objective of this strategy was to "halt the unacceptable levels of road traffic fatalities and injuries by 2015, and thereafter, reduce it by 50% by end of 2020 as recommended in the United Nations (UN) Global Plan for the Decade of Action for Road Safety 2011-2020", (NRSS III, 2011-2020).

The strategy was in line with the UN's Global Plan for the Decade of Action for Road Safety 2011-2020. The objectives of the strategy were put into six pillars; the five pillars identified in the UN action plan; Improved Road Safety Management, Safer Roads and Mobility, Safer Vehicles, Safer Road Users, Improved Post-Crash Response, plus an additional pillar; Improved Enforcement (NRSS III, 2011). To achieve these objectives, a number of interventions in the form of activities were outlined, with defined targets, inputs, verifiable indicators and means of verification of its implementation, assumptions under which these activities are to be carried out, and the responsible stakeholders to perform these activities (NRSS, III). The activities to be performed to achieve the various objectives are listed below:

- **Improve Road Safety Management**

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- Empower NRSC to hold stakeholders to their mandate
- NRSC to improve coordination role among stakeholders
- Improve capacity of key stakeholder Agencies
- Solicit and sustain political commitment
- Regulation of road safety industry
- Build centralized data base
- Increase funding levels
- Increase research on road safety issues
- Increase road safety priority in stakeholder agencies

**Safer Roads and Mobility**

- Train road engineers, consultants, and contractors on road safety
- Increase budgetary allocation for road safety engineering
- Include safety provisions in road design, construction, and use
- Train staff on road safety audit
- Train staff in specialized fields for specific assignment.

**Safer Vehicles**

- Harmonize standards on importation of vehicles and spare parts
- Ensure compliance with regulations on use and physical conversion of vehicles
- Train staff of the DVLA on vehicle testing
- Improve enforcement on Driver Qualification Index (DQI)

**Safer Road Users**

- Educate and upgrade driver skills
- Enhance education, information, and publicity efforts

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- Establish NDA Model Schools throughout the country
- Enhance community participation

**Improved Post-Crash Response**

- Train EMTs
- Train more first aid volunteers
- Construct emergency posts and provide logistics
- Enhance community participation in emergency services
- Establish effective linkages with other agencies

**Improved Enforcement**

- Elevate road safety violations to a high priority among law enforcement agencies
- Apply modern technology in enforcement of road traffic regulations
- Establish education and training programs
- Institute appropriate mechanism for apportioning fines accruing from road traffic violations.

### 3.3.1 Action Plans

In order to implement the strategy, the NRSA also developed three action plans in three periods in the decade; Action Plans of the National Road Safety Strategy III (2011-2014), Action Plans of the National Road Safety Strategy III (2015-2017), and Action Plans of the National Road Safety Strategy III (2018-2020). The Action Plans spelt out the activities to be performed by the NRSA and its stakeholders as well as the budget by the various agencies to carry out the activities in relation to the pillars of the NRSS III. A total of 152 activities were outlined in the (2015-2017) action plan, and were expected to be implemented by 13 agencies. There was a joint

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effort to implement the action plan, as well as internal and external mechanisms to check progress. An evaluation report of the second action plans by a consultancy indicated that out of the 152 activities, 27% were completed, 43% were being implemented but not yet completed, while 30% were not implemented (Evaluation of 2015-2017 Action Plans). Implementation of this action plan however was not decentralized to include agencies at the regional and district levels. This limitation was addressed in the third and final action plan, where the newly created Department of Transport in the Metropolitan, Municipal, and District Assemblies (MMDAs) and their road safety units engaged in the implementation of the action plan at the district level. Also, the 2018-2020 action plans were developed for the various agencies on a regional level, based on each region's road safety priority area. The (2018-2020) action plans therefore sought to decentralize the implementation of the NRSS III.

The strategy and the action plans were comprehensive; they aimed at strengthening the entire road safety system, i.e. the road, the vehicle, and the road user. NRSS III recognized the need to set and enforce standards for vehicle importation and assemblage. The need for the consideration of safety at various stages of road design and construction was also highlighted. The strategy and action plans spelt out the roles of all agencies, and promoted a collaborative approach to resolving Ghana's road safety challenges. The strategy and action plans attempted to strengthen all aspects of road transport system; improving safety in road designs as well as improving safety on existing roads; improving vehicle safety; improving road-user behavior; and improving post-crash response. This could therefore be seen as a move towards the safe systems approach to road safety. A key challenge to the full implementation of the action plans was funding.

### 3.4 Funding Road Safety Activities.

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Road safety activities are funded from the road fund, the national insurance commission, the consolidated fund, and philanthropy (Ackah, 2019). Funding has been inadequate to effectively put plans into actions. For instance the main challenge to the successful implementation of NRSS III was funding; most of the agencies reported not being able to implement the plans due to unavailability of funds. Not only is the money allocated for the implementation of the plan insufficient, they were also not released on time.

*"funding has improved now compared to previous years, but we are still not fully funded as we require for us to step up the game, it is just like how the assemblies are given common fund, we usually have quarterly release of funds, but there's never been a year where we have all that in a year"*. Interview with NRSA Officer at the headquarters of the NRSA, (22nd October, 2021)

Safe and quality road infrastructure design and road maintenance for instance is capital intensive, and requires much financial commitment, as a result, sub-standard designs become the option, and road maintenance is barely carried out, putting road users at risk.

There is therefore the need to rethink road safety financing, by considering effective internal and external funding opportunities. Various road safety agencies such as the NRSA, DVLA, GHA, must look inward to generate revenue through fines, service charges, and also checking revenue losses resulting from corruption, in order to supplement government funding for road safety activities. The corporate world should also be targeted; the NRSA should embark on a campaign aimed at getting corporate organizations to promote road safety as part of their corporate social responsibility. International funding opportunities such as the Global Road Safety Facility provided by the World Bank, the United Nations Road Safety Fund, as well as development organizations can be considered for funding.

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## 3.5 Road Safety Database

The importance of accurate crash data for the development of evidence-based interventions cannot be overemphasized. The WHO's 2016 road traffic fatality estimate for Ghana was over 7000; three times the figure reported by the MTTD. Even though this estimate is too high and unrealistic, there is some form of underreporting and under recording of road traffic accident data in Ghana, partly due to the delay by the police in sending collision report to the central compiling unit (Odonkor, 2020)

"*There is some form of under recording, where you go to the police, you don't get the whole crash, you don't get the whole docket, and that for last year was 10%, we didn't get 10% of the docket".* Interview with an Engineer and Road Safety Specialists at BRRI at the BRRI premises in Kumasi, (5th November, 2021).

BRRI has a crash computerize database with data obtained from the MTTD. When a road crash happens in Ghana, an MTTD is sent to the scene to record the accident using a standardized accident report form (Tamakloe et al., 2021), the BRRI obtains and manages this data. This database does not include data from health facilities, a case cited by Ackah (2019) as a possible reason for under reporting of crash data. The medical centers have their respective database, making it difficult for data synchronization, and their data is not comprehensive enough for an effective safety management system. The data provided by the MTTD is however deemed much more comprehensive. There is therefore a lack of crash data synchronization from the various stakeholders. The NRSA is currently working out means of synchronizing crash data to solve the problem of disparities in data from the various institutions as well as the problems of under reporting and under recording of crash data.

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*"We are very much aware of that, and as I speak to you, a consultant is on the ground, doing a study on how to harmonize road traffic crash data from the institutions; so the health, the police, and all other relevant institutions".* Interview with NRSA Officer at the headquarters of the NRSA, (22nd October, 2021).

Synchronizing road traffic data would then require that all health facilities adopt a common system for recording road traffic data to enable easier and effective synchronization with police data.

## 3.6 Road Safety Research and Development

The BRRI has been the body that conducts scientific research into road safety and feeds the NRSA with research information to guide interventions (Ackah 2019). Until recently however, road safety research among academics has been limited, partly due to lack of funding for road safety research.

*"I am one of the first lecturers to conduct research into road accident, and I think there was only one or two people at the time. Later, someone from UCC also started doing research in road accident. People don't want to do that, it was recently that people are showing interests in it"* Interview with Lecturer/Researcher with department of psychology, University of Ghana, at the department of psychology (30th September, 2021).

Research data in the field is also poorly consolidated and disseminated. Professional training and capacity development is also limited to a few; the BRRI trains personnel of the MTTD and road engineers (Ackah, 2019). To confirm this, Odonkor et al. (2020) found that road safety officials exhibited limited and inadequate knowledge in road safety issues.

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## 3.7 Regulation of Road Transport, Monitoring and Evaluation

Despite the fact that road is the predominant mode of transport in the country; transporting over 95% and 90% of passengers and cargo respectively (National Transport Policy, 2020), road transport in Ghana is yet to be properly regulated. While the Ghana Civil Aviation Authority, Ghana Railway Authority, and Ghana Maritime Authority regulate air transport, rail transport and marine transport respectively in the country and promote standards and safety in those sectors, there is no overarching body and framework that regulates road transport in the country (Lamptey, 2019). The absence of a regulatory body reveals a lot of gaps and ill practices by operators in the sector, due to the fact that individual transport operators institute their own rules and regulate themselves.

Regulation 121 (2) of the Road Traffic Regulation 2012 L.I 2180 forbids a person from operating a commercial vehicle, unless that person is employed by or belongs to a recognized commercial road transport organization, however this is not an uncommon practice in the country; there are lots of drivers operating commercial vehicles but are not employed by or do not belong to any recognized transport organization, partly due to the fact that existing road transport organizations may adopt unfair means that make it difficult for new entrants and a lack of an authorized body to compel such drivers to belong to a union (Lamptey, 2019). The resulting problem is the proliferation of commercial drivers who do not belong to any organization, and are therefore not bound to any regulations. Some of those drivers drive without licenses, and some without the adequate experience to drive commercial vehicles or go longer distances. Such drivers are also vulnerable to exploitation by vehicle owners; they can be fired at any time by the vehicle owner, and are also those drivers who are asked to make abnormal sales, which then compel them to disregard safety by driving for longer hours and speeding.

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*" but in Ghana, we have drivers who are called floating drivers, who even do not go to terminals to apply their trade, when he wakes up in the morning, if he is from Takoradi to Accra he just moves the car straight away he is on the road taking all those passengers who are on the road. Maybe the person may not be coming from Takoradi to Accra, but he will be dropping intermittently in between the cities on the road, and that gives them the impetus to speed, because they want to do sales, but in GPRTU as a regulated drivers' organization, even if there is a sales, it is known, so you cannot tell the driver that today he should make more than what he makes always*" Interview with an officer of the GPRTU at the TUC building (28th October, 2021).

Driver welfare in the country is very poor. Even for drivers who belong to driver unions, some are not well compensated; most are paid on commission basis, and there are no retirement plans and pension schemes for them.

*"at some of the unions, the drivers are really not being paid, but they are given I think for example if you do out of five trips, the next one is yours, something like that. So we have always made a recommendation that they should be on salary, they should even be on pension, SSNIT, and all of that"* Interview with NRSA Officer at the headquarters of the NRSA, (22nd October, 2021).

Until the full operationalization of the NRSA Act, 2019 (ACT 993), the NRSA remains incapacitated to enforce road safety standards. Institutional irresponsibility has been cited as one of the major causes of road traffic crashes (Odonkor et al., 2020). Although there are standards that guide road construction to ensure safety, they are often disregarded by road engineers. Road audits are not done regularly (Bezabeh, 2013), and there are no mechanisms to ensure adherence

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to post-crash standards (Ackah, 2019). The general low levels of monitoring and evaluation could be attributed to the lack of capacity and ability of the NRSA to carryout monitoring and evaluation, as well as the lack of a regulatory body to regulate road transport

Attempts are being made to establish a regulatory framework for the road transport sector. It is however not the setting up of a road transport authority as has been recommended, but rather the Act establishing the National Road Safety Authority gives the body the additional role of regulating road transport, although the L.I that will operationalize the Act has not been passed yet. There is currently an ongoing dialogue among the various industry players to reach a consensus on the parameters of that regulatory framework. When passed, the NRSA will regulate road transport, and would have the powers for policy formulation, quality control, standards management, and general monitoring of road transport operations among others. This therefore requires that the personnel strength of the authority be increased, and there should be adequate training for the staff of the authority to equip them enough to perform this function effectively

### 3.8 Legislation and Enforcement

The two body of laws that provide legal framework for road safety in Ghana are the Road Traffic Act, 2004 (Act 683) and the Road Traffic Regulation 2012 L.I 2180. These legal frameworks cover a number of issues, including speed, drink-driving, wearing of helmet, seatbelts, licensing, etc. Parliament is involved in making road traffic laws. A key problem identified is the level of enforcement of the laws, which is generally weak. The lack of enforcement or weak enforcement results from a combination of factors, such as inadequate MTTD personnel to carry out enforcement, lack of adequate training of personnel, lack of tools and equipment, corruption (Ackah 2019).

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"*Honestly there are a lot of challenges. It ranges from personnel, that is manpower, logistics, when we talk of logistics we don't have the required number of tools to work with that is the breathalyzers, patrol vehicles, motorcycles, even raincoats, traffic directional signs, body bags to convey accident victims to hospitals, and a whole lot".* Phone interview with an MTTD Personnel, (20th October, 2021).

Interference is also a major problem that the police MTTD identified to be a hindrance to effective enforcement of road traffic laws. The MTTD personnel lamented over the regular calls that come through from state dignitaries when an arrest is made.

*"You will arrest, somebody will say o pick a call from this person, somebody will call from here, I am honorable so so and so, I am so so and so, leave this man to go, and you will realize that once these interferences continue to go on, the target may not be met".* Phone interview with an MTTD Personnel, (20th October, 2021).

**3.8.1 Speed Management**

The law that regulates speed is the Road Traffic Regulation 2012 LI 2180. Specifically, regulations 163, 164, 165, and 166 talk about general speed limits, speed limits for particular class of vehicles, reasonable and prudent speed for conditions to be observed, and exemption from speed limit respectively. Regulation 163 of LI 2180 established speeds limits 30 kilometers per hour; 50 kilometers per hour; 90 kilometers per hour; and 100 kilometers per hour for driving around a place where human activity is predominant i.e. in a school, market, health facility; on urban sections of a road; on rural sections of a road; and on a motorway respectively.

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Despite these general speed limits, regulation 164 prescribes speed limits for specific vehicles; Regulation 165 talks about instances where speed must be reduced; while Regulation 166 exempts vehicles that are being used for official duties by security agencies such as armed forces, prisons service, police service, ambulance service, etc., from observing speed limits, and also in instances where observing speed limit would defeat the purpose for which the vehicle is being used for, a driver can contravene speed laws. Contravening regulations 164 and 165 would attract a punishment of not less than ten and not more than twenty-five penalty units, or a term of imprisonment of thirty days maximum, or both.

The MTTD is the agency that enforces the regulations. The Global Status Report 2018 rates Ghana's enforcement of speed laws 4 out of 10. Enforcement has traditionally been done manually; most recently however, measures are being put in place for enforcement to be done electronically.

*"You see when it comes to speed; I believe you and I know that gradually every country is getting to a system where the human interface or the physical approach to enforcement will be reduced. I mean they have deployed a lot of electronic gadgets like cameras all over to monitor compliance on our roads. And currently what the police has done is that, despite the police not present everywhere, the current administration, that is Dr. Dampare now the police MTTD has a 24/7 surveillance center, where cameras are mounted on major highways, and other installation to monitor traffic violations and other related crimes that may be committed on our highways".*

Phone interview with an MTTD Personnel, (20th October, 2021).

Speeding, especially in settlements leads to another problem; illegal mounting of speed ramps. In most cases, these speed ramps come with no signs, hence increase the risk of accident for

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unsuspecting drivers and those who ply the road for the first time. Although there are laws against mounting of illegal speed control measures, lack of enforcement and incessant killing of pedestrians motivate communities to keep mounting them.

*"but because when some of the drivers, especially those who drive for fantasy and all those things, when even they get to towns, that's when they overspeed, so they have been knocking people down and other things, so the town folks can take the law into their hands to also erect speed ramps… and some of the speed ramps are made in such a way that sometimes one may not realize that there is a speed ramp".* Interview with an officer of the GPRTU at the TUC building (28th October, 2021).

To improve enforcement, more deterrent-based techniques such as the ticketing system or other measures that are punitive enough should be adopted to deter drivers from breaking speed laws. Steps should also be put in place to get vehicles, especially public transport buses and heavy goods vehicles to install speed limiters to inhibit excessive speeding. This would complement the traditional speed-calming measures such as speed ramps, speed tables, etc., that are fixed on roads.

### 3.8.2 Drink-Driving

Drink-driving was found to be common in Ghana. Damsere-Derry et al., (2012) found that 64% of drivers who ingested alcohol recorded blood alcohol concentration (BAC) exceeding the legal limit. The law that regulates drink driving in Ghana is the section 4 of the Ghana Road Traffic Act (Act 683); it states that "a person who, while driving or attempting to drive a motor vehicle on a road, is under the influence of alcohol or drugs to such a degree as to be incapable of having proper control of the vehicle commits an offence and is liable on the summary conviction". The

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Blood Alcohol Concentration limit for the country is set at 0.8 mg/ml or 0.08 g/dl, and it is same for the general population as well as young and novice drivers. Ghana's BAC limit is higher (Damsere-Derry et al., 2012), relative to other countries in the world (Germany, France, Nigeria, Mauritius 0.05 g/dl; Ukraine 0.02 g/dl). According to the 2018 Global Status Report, enforcement of drink-driving law is low; scoring 3 out of 10 points. Many motorists in Ghana have little knowledge of the legal BAC limit, how many drinks will approximate the legal BAC, and they also consider drunk driving not to be a major cause of road crashes (Damsere-Derry et al., 2016). The personnel of the police MTTD run checks on motorists on the road using breathalyzers. These devices however are not available at every checkpoint, hence making enforcement very difficult

*"Once we suspect you to have drunk, you are gotten off your steer, then you blow air into it, and the law says that you are not supposed to go more than 0.08"... It is not all that available at every police post, but we have it on most of our places that we call black spots, or accident prone areas. These devices are been deployed there to assist police to work and work well".* Phone interview with an MTTD Personnel, (20th October, 2021).

There is therefore the need to purchase more breathalyzers so that all police MTTD checkpoints will have them to carry out regular checks to ensure compliance. Education and sensitization of motorists on the BAC limit and also the effects of drunk-driving must be increased.

**3.8.3 Seatbelt, Child Restraints Laws**

The use of seatbelts and child restraints is a passive way of reducing the severity of injury that the occupants of a vehicle may suffer during a crash Marphetia (2006). They prevent the body from being hurled forward when a vehicle is stopped abruptly. Seatbelts have been proven to

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reduce about 80-90% of occupancy injuries in most advanced countries (Abdulla, 2013), therefore most countries, including Ghana have legislated on their use.

In Ghana, the law on the use of seatbelt is the Road Traffic Act, 2004 (Act 683) and Road Traffic Regulation 2012 LI 2180. Section 13 of the former says that "A person of 18 years or above who; (A) drives a motor vehicle on a road, or (B) sits on the front or rear seat of a motor vehicle on a road without wearing a seatbelt commits an offence and is liable on summary conviction to a fine not exceeding 100 penalty units or to a term of imprisonment not exceeding 6 months or to both". Regulation 119 of Road Traffic Regulation 2012 LI 2180 also regulate the use of seatbelt and child restraints. This regulation also makes illegal driving a motor vehicle which is not fitted with a seatbelt.

Despite the availability of these laws, the wearing of seatbelt is found to be generally low in Ghana. In Afukaar et al., (2010), the overall seatbelt usage among drivers was 17.6% while that of front-seat occupants was 4.9%. In a similar study, 53.1% of drivers were observed to be driving without wearing seatbelts, and only 13.2% of children were restrained (Ojo, 2018). Wearing of seatbelt is even lower among mini bus (trotro) commercial drivers. The 2018 Global Status Report scores Ghana's enforcement of seatbelt law 3 out of 10. The DVLA and the MTTD must improve the enforcement of seatbelt laws in the country in order to avert the unnecessary injuries during crash.

### 3.8.4 Use of Mobile Phone While Driving

Regulation 107 of the Road Traffic Regulation 2012 L.I 2180 also prohibits the use of communication devices such as cellular or mobile phones, or any other communication device while driving. It also prohibits a person from supervising a driver with a learners' license while the driver is using a communication device. The prohibited usage includes but not limited to

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sending or receiving oral or written messages, and sending or receiving facsimile documents. A person may only use a communication device while driving to communicate with the security services, when it is impossible for the driver to stop before using the device. The law per the current regulation however does not prohibit hands-free mobile use. Notwithstanding this regulation, the use of mobile phone while driving is a common practice in Ghana. Donkor et al., (2018) found that although majority (96.4%) of commercial drivers sampled were aware of the law that proscribes the use of mobile phones while driving, 59.6% did not routinely comply with it. The use of mobile phone is also common among non-commercial drivers. Supplementing enforcement will make the regulation more effective, thereby achieving the desired outcome.

### 3.8.5 Helmet Law

Ghana could not achieve its target of reducing road traffic fatalities partly because of the continuous rise in motorcyclist fatalities. Motorcycle, tricycle and bicycle fatalities represented 32.79% of all fatalities in 2020. The situation is even getting worse. Out of 2126 fatalities reported for the first nine months of 2021, 912, representing 42% occurred among motor/bi/tricycles. The NRSA has described the commercial use of motor bikes as their current headache

*"We have to ensure that motorcycles stop the misbehavior and wear their helmets. They must stop the misbehavior in traffic. Unfortunately, it took us by surprise when others began using it for commercial purposes, what you call okada. And that's where our headache is currently"* (NRSA officer, 2019 cited in The Ghana Report 2019).

Most of these motorcycle fatalities result from head injuries when the head is not protected during a crash. The solution to this is the wearing of helmet. Section 16 of Ghana's Road Traffic

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Act 2004 (Act 683) stipulates that (1) A person who rides or is ridden on a motorcycle on a road shall wear a protective safety helmet of a type prescribed by regulations; (2) A person who fails to wear a prescribed crash helmet in contravention of subsection 1 commits an offence and is liable on summary conviction to a fine not less than 100 penalty units and not exceeding 200 penalty units or to a term of imprisonment not exceeding 9 months or to both. Compliance with this regulation is generally low among motorcyclists, even though they believe that helmet use can protect them against injury. Turkson et al. (2013) found that the use of helmet was low among both riders and pillion riders in Southern and Northern Ghana. Again in Turkson et al. (2013), motorcyclists cited discomfort and not able to see clearly for the reasons for non-compliance of the regulation. These reasons are not different from those given by motorcyclists elsewhere in Dominica; motorcyclists found helmets to be uncomfortable, ill-fitting, irritating, affecting vision, unaffordable, among others (Dennis et al. 2013, cited in Wumbei, 2021). According to Wumbei (2021), helmet usage could increase by enforcement as has been experienced in Louisiana (Highway Safety Commission, 2016)

### 3.9 Road System

'Safer Roads and Mobility' is one of the five pillars of safety identified in the Decade of Action for Road Safety 2011-2020. Based on the safe systems approach, developing safer roads and improving the safety performance of existing roads is core to improving road safety by making roads crash friendly to reduce the extent of injury in the event of a crash. Safer roads are measured based on the level of safety built-in for all groups of road users, i.e. vehicle occupants, motorcyclists, pedestrians, and bicyclists. The ministry of roads through its agencies- Ghana Highway Authority, Department of Feeder Roads, and Department of Urban Roads is in charge of road construction, and maintenance. The Geometric Design Guide and the Manual on Road

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Signs in Ghana guide engineers in road design and maintenance, however deficiencies in these manuals lead to the adoption of foreign manuals (Quarshie, 2015, cited in Ackah, 2019). Road safety considerations are made during road design and construction.

*"so usually we use the tool the road safety audit, so right from the conception of the project idea, we conduct a feasibility audit, so when the concept has been accepted and the analysis has been done and the road should be constructed, then the design starts, then we have the design audit, where we call stage 2, thereafter we have the detail design, the detail design that's when you put in all your necessary furniture like crass barrier, road line markings, signs, and maybe there will be some streetlights and all, so when you have all those things, the audit again is performed to see where you are positioning them are adequate for safety or whether they are needed there or not at all, so that is also done. And before you open the road to motorize traffic too we have to also conduct that audit so that we can eliminate hazards that were not seen previously. Then after it has been opened for several years you need to go back to audit them".* Interview with a staff of GHA at the premises of the GHA, (1st November, 2021)

Yet, roads in the country remain generally unsafe and unforgiving. Road designers barely consider the error-prone nature of humans, and roads are not designed and constructed to limit the impact of crashes. Most roads do not have separate lanes for cyclists and pedestrian walkways, while large sections of highways are also single-carriage ways, serving both fast and slow moving vehicles. This accounts for the high rates of head-on collisions and pedestrian crashes. Line-markings are overlooked, defaced road signs are not fixed, destroyed guard rails are left unfixed, etc. Another problem with roads from the data is lighting; most roads are not lit, faulty streetlights are left unfixed, while there are roads and highways that do not have

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streetlights at all causing poor visibility at night, and this leads to lots of crashes especially around 6-8pm; the time most crashes occur in Ghana.

*"And most of these crashes around 6-8 are pedestrian crashes. That is when you have the transition from day to darkness… Most of our roads are also not lit; streetlight problems, most of our streets are not lit, and all these result in the crashes around this time".* Interview with an Engineer and Road Safety Specialists at BRRI at the BRRI premises in Kumasi, (5th November, 2021)

Bad road conditions such as portholes, shoulder drop-off, slick roads, oil and chip, and construction work zones also cause road accidents, as they may cause sudden driver maneuvers and clear zone issues (Opoku, 2019).

Broken down vehicles left on the road have been identified to cause about 11 to 15% of crashes. Towing services on the country's roads are ineffective, and broken down vehicles are left on the road for long periods of time. In 2017, there was an attempt by government to introduce a mandatory towing levy, so that such broken down vehicles would be towed within the shortest possible time; however there was a general outcry over it, leading to its suspension. Recently, stakeholders are calling for the reintroduction of the levy but with some changes and intensified education.

*"We shouldn't run away from it. If about 11% to 15% of road accidents are caused by abandoned vehicles and people are dying or sustaining various degrees of injuries, then we should go back to the people and explain to them why they need to pay some money into a fund to take care of towing abandoned vehicles off our roads"* (Participant, national consultative forum on road traffic crashes, Via citi newsroom.com, October 20, 2021)

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Although there are safety standards that may compare to internationally good practices, such standards are generally not followed, either due to lack of expertise or lack of funding.

*"Some of these designs are given to consultants right, and mostly it is not only Ghanaian consultants who work on these roads, we have international consultants working on them. But the standards are there, whether they are followed is the problem".* Interview with an Engineer and Road Safety Specialists at BRRI at the BRRI premises in Kumasi, (5th November, 2021.

The star-rating system developed by the International Road Assessment Program (iRAP) is one of the internationally recognized means of measuring road infrastructure safety. iRAP star rating is an objective measure of the probability of a crash happening and the gravity of that crash. IRAP rates roads from 1 (unsafest) road to 5 (safest) road. The aspiration is that all roads achieve a 5-start rating- the safest, however, a rating of 3-star or better for all road users could be considered a safe road. In Ghana however, this approach has not yet been adopted due to lack of expertise, therefore agencies act reactively by identifying black spots, thus accident prone areas and put in measures to improve safety.

*"…they have star rates from 1-5, so the objective is to have a 3 star or better road, so if you do not meet those objectives then it means you have not met the right standard, those are done with designs as well, so if designs come, you are supposed to star rate them, but that is not something that we currently do, because we don't have accredited officials to engage in that, so very soon when we do, the we can begin to employ those methods. But for now we go by the blackspot treatment and locations".* Interview with a staff of GHA at the premises of the GHA, (1st November, 2021)

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Funding is a major challenge to developing safer road infrastructure, and has been identified to be a reason for the adoption of low cost designs, and the inability of agencies to improve safety on existing roads.

*''if I am an engineer at GHA, its not like I want to come, sit down and not do anything, when there is project, I work on the project and then I get money, right, so if there is an issue here, let's say a porthole, I will just make a budget and present it, if money is not released, there is nothing I can do''*. Interview with an Engineer and Road Safety Specialists at BRRI at the BRRI premises in Kumasi, (5th November, 2021).

## 3.10 Road Users

Road Traffic Regulation Act 2012 (L.I 2180) is the legal framework that guides road use for motorists. It mandates that anyone who wants to drive a vehicle on the road must go through theoretical and practical training and be certified by the DVLA. The DVLA regulates driving schools; it sets licensing and testing standards and provides them with training manuals. There is a graduated licensing program for new drivers such that drivers could upgrade their license every two years. This is in contrast to the findings of Ackah (2019) who observed that there was no graduated licensing program in Ghana. A driver's license could also be revoked under certain conditions.

Attempts have been made to digitalize the driver and vehicle licensing landscape to reduce the issuance of fake licenses. Motor cycles and tricycles are supposed to be registered before use, (private use) and riders are expected to obey same traffic regulations as vehicles, i.e. stop at red lights, respect pedestrians, etc. However, it was found that, people are able to bribe their way through to acquiring licenses without going through the needed laid-down process of testing and

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examination, while others also drive with fake licenses, and this is a threat to safety. For instance Akple and Biscoff (2012) found that drivers not professionally trained accounted for their inability to recognize and comprehend road signs

Road user behavior is rather poor despite the several attempts to promote good road traffic behaviors through enforcement and education. For instance in Akple et al. (2020) it was revealed that drivers most of the time did not comply with road signs, while many studies have also suggested a poor compliance to speed laws. Boateng (2021) links poor road user behavior to factors such as lack of sector regulation, corruption among officials, and unemployment. Limited capacity to enforce traffic rules is also a reason for bad road user behaviors, for instance enforcing rules among motor cyclists and try cycle riders appears to be difficult due to limited capacity of the police to enforce. Poor road-user behavior is also observed among pedestrians; refusal to cross roads at designated pedestrian crossings even when they are available, the use of mobile phones and wearing earpiece when walking along the road and when crossing roads, walking on the sections of the road meant for vehicles, etc. Road safety education in schools is very limited or in most cases none existing. Media education programs have also often targeted drivers, with little emphasis on pedestrians and other vulnerable road users, and not carried out all year round.

### 3.11 Safer Vehicles

The DVLA is the lead agency in providing safer vehicles. Due to the socioeconomic status and standard of living of Ghanaians, most vehicles imported into the country are second-hand vehicles. Import duties on vehicles also favors the importation of old vehicles, as higher import duties are charged on new vehicles as compared to old ones (Akoriyea, 2019) There are

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standards regulating the importation, manufacturing and assemblage of vehicles. Legally, vehicles exceeding ten years of use cannot be imported into the country however; enforcing this regulation by customs officers is a challenge. Imported vehicles are to undergo mandatory testing before they could be licensed, after which commercial and private vehicles must undergo semiannual and annual testing for road worthiness respectively. The MTTD enforces this regulation by checking road worthy stickers. There are also standards guiding vehicle modification.

The major problems in providing safer vehicles is corruption among the personnel of DVLA , customs, and MTTD, limited oversight on driving schools and vehicle testing stations, lack of funding to completely digitalize the licensing landscape to reduce human involvement to barest minimum, and limited enforcement of standards of vehicle importation among custom officers at border entry points, high import duties on new vehicles that encourage the importation of old ones (Akoriyea, 2019), and lack of regulation of mechanics or "fitters" as they are locally referred to (Ackah, 2019).

### 3.12 Post-Crash Response

Post-crash care comes in three stages; the first stage is pre hospital response, which comprises the retrieval of victims from a vehicle, community first aid and ambulance services; the second stage comprises hospital services by trauma and emergency care specialists; and post-hospital care, which is rehabilitation and psychotherapy being the third stage. The institutions responsible for post-crash care include the MTTD, Ministry of Health, Ghana Health Service, Ghana Ambulance Service, St. John's Ambulance Service, Ghana Red Cross Society, and National Disaster Management Organization (NADMO). Pre-hospital post-crash response has improved over the years. The number of Emergency Medical Technicians has increased from sixty-four

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(64) in 2004 to three thousand (3000) in 2021, and the number of functioning ambulances has increased from sixty (60) in 2019 to three hundred and fifteen (315) in 2020, which resulted in an increase in the number of road accident cases responded to from six thousand nine hundred (6900) in 2019 to nine thousand (9000) in 2020. Ambulances have been strategically located along major highways to improve response time. As recommended by the WHO (2018), there is only one emergency number (112) for all emergency services providers. The average emergency response time is twenty (20) minutes, although this is higher compared to the WHO's recommended 8 minutes, improvement has been made over the years. Road congestion and high traffic remain the major challenges to reducing accident response time. The NRSA built eight emergency posts along major highways, but currently only three are functioning. Some communities have been trained to rescue and provide first aids for crash victims. The NAS has given over 500 commercial drivers and conductors first responder trainings.

One of the objectives of the Ministry of Health is to deal with accidents and emergencies of public health concern. In line with this, all new hospital projects have accident and emergency units, while accident and emergency centers have been built in existing hospitals

*"all the regional hospitals have accident and emergency units, and about 96% of the district hospitals, especially the newly constructed al have accident and emergency units. And then those that don't have, they have redesigned them to make sure that they have"*. Interview with a personnel of the GHS at the Ridge hospital (2nd November, 2021).

There has also been an improvement in the number of accident and emergency health personnel, while training in emergency medicine has also improved over the last decade as a result of the

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establishment of emergency medicine institution that offers programs in emergency medicine in the country.

*"Now we have 32 neurosurgeons, it used to be 3, we have about 50 orthopedic and trauma surgeons, intensive care is a place we need to improve, at least from 0 specialists I can say we have a lot of people as well, about 10".* Interview with a personnel of the GHS at the Ridge hospital (2nd November, 2021).

Despite these improvements, fatality per 100 casualties seems to be on the rise. The Ghana Medical Association (GMA) through a statement (November 7, 2021) listed inadequate trauma care centers in the country, insufficient funding for health facilities to cater for crash victims, as well as non-reimbursing of funds spent on crash victims by health facilities as the post-crash challenges accounting for the increase in road traffic fatalities (GMA. 2021). According to Ackah (2019), the use of computerized trauma registry and its performance review, and standards that match international good practices for post-crash response do not exist.

## 3.13 Conclusion

Ghana has shown commitment to global and regional road safety objectives by establishing a lead agency and empowering it legally and financially to ensure road safety, which agency has since its establishment developed strategies aimed at achieving its mandate The National Road Safety Strategy III 2011-2020 was found to be in line with the Global Plan for Decade of Action for Road Safety 2011-2020. Although Ghana has made some gains in recent times in road safety especially in the areas of post-crash response, road construction, and road safety management, there is still more to be done to halt the rising cases of road traffic crashes in the country and reduce them. Road user behavior is a threat to road safety, which regulating road transport and

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improving enforcement can help control. A strong and efficient public transport system is also necessary to reduce the rate of motorization in the country, and increase public safety.

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# CHAPTER FOUR

# SUMMARY OF FINDINGS CONCLUSIONS AND RECOMMENDATIONS

## 4.0 Introduction

This chapter presents the summary of the findings of this study, in line with the objectives of the study; the conclusion; and recommendations based on findings of the study from road safety officials, experts, and secondary data.

## 4.1 Summary of Findings

### 4.1.1 Findings of Objective 1: State of Road Safety

Ghana is still recording high numbers of road traffic fatalities. For the first nine months of this year 2021, 2126 road traffic fatalities; far exceeding the targets for the decade, and more than 12000 injuries have been recorded in Ghana, according to the MTTD. Road transport is unsafe, considering the number of casualties reported. Ghana could not achieve SDG 3.6 and by extension, the targets of the Decade of Action for Road Safety, despite initial decreases at the early years in the decade. Using 2011 as the base year, achieving SDG 3.6 would mean fatalities and injuries dropping to1,099, and 6,636 respectively by 2020. The data however shows that fatalities and injuries recorded in 2020 were 2,528, representing an increase of 14.96% relative to the base; and 15,517 representing 16.9% increase over the base respectively. Also, fatalities by road user statistics show that pedestrian fatalities for recent years have reduced comparatively, while motor cycle and tri cycle fatalities have been increasing astronomically, contributing to the spike in total road traffic fatalities. For the first time motorcycle fatality has surpassed pedestrian fatality to become the highest contributor to road traffic fatalities. Reductions in pedestrian

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fatalities have been linked to efforts to improve pedestrian safety by enforcing speed laws in settlement areas, constructing zebra crossings and other pedestrian infrastructure, while the spikes in motorcycle fatalities have been attributed to increase in the use of motorcycles for commercial purposes with disregard for traffic rules.

### 4.1.2 Finding of Objective 2: Analyze Ghana's national road safety strategies in relation to the Global Plan for the Decade of Action for Road Safety 2011-2020

Ghana's road safety policy developed in 2009 first identified sixteen road safety challenges in Ghana, including regulation of road transport, road infrastructure, driver, vehicle, etc., and then after presented policy statements and proposed strategies to address these challenges. Issues such as public transport, driver welfare, and funding of road safety interventions did not feature in the policy document.

The National Road Safety Authority in consultation with other stakeholders developed the National Road Safety Strategy III which aimed to halt the unacceptable levels of road traffic fatalities and injuries by 2015, and thereafter, reduce it by 50% by end of 2020. It was the principal document guiding road safety activities throughout the decade. Three Action Plans were put together to help implement the strategy. The strategy was developed in line with the Global Plan of Action for the Decade of Road Safety 2011-2020. The interventions identified in the strategy were put into six specific objectives, five of which were developed in accordance with the five pillars of road safety as presented in the Global Plan for the Decade of Action for Road Safety, plus an additional objective to improve enforcement of road safety regulations. It was found that, effective implementation of the strategy could have reduced RTFs and RTIs. Some of the key strengths of the strategy are that, it established a collaborative approach to road safety, as it spelt out interlinked actions to be carried out by the various stakeholders in reducing

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road traffic injuries. The strategy also sought to strengthen the entire road safety system; that is improving vehicle crashworthiness, making roads more crash friendly, improving road-user behavior, and improving post-crash response. This strategy therefore sought to move away from the traditional approach to road safety that attempted to perfect the road-user in an imperfect system, to adopting the safe system approach to road safety that seeks to strengthen all components of the road system just as the global plan for the decade of action recommends; this is however contrary to the findings of Ackah (2019) that the country has still not adopted the safe systems approach to road safety. However, the safe systems approach has still not been fully adopted. As a challenge, the first two Action Plans (2011-2014) and (2015-2017) that were developed to implement did not decentralize the implementation of the strategy to get agencies at the district and regional levels to carryout activities as planned, as a result, casualties, especially pedestrian casualties were high within rural areas. The third Action Plans (2018-2020) however decentralized the implementation, as safety units of newly created transport departments of MMDAs engaged in implementation of the Action Plans, and the plans were tailored to the specific needs of districts in the various regions. Another pitfall in the implementation of the strategy was the lack of commitment on the part of the various stakeholder institutions, and the absence of a body or framework to compel various agencies to comply with standards and carryout various actions as specified. And lastly is the problem of funding, which made it impossible to rollout plans and programs to achieve the various objectives of the strategy. In essence, the failure to meet the objectives of the strategy was not because the strategy and action plans were ineffective, but because they were not adequately implemented.

### 4.1.3 Findings of Objective 4: To ascertain the challenges undermining Ghana's strive to preventing road traffic deaths

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One of the core challenges to RTI prevention identified in the study is the unregulated nature of the country's road transport sector. It was revealed that this is an underlying factor to poor road-user behaviors such as speeding, and also a reason for the institutional lapses. There is no framework to regulate the sector, leading to the lack of standards and ill practices in road transport operations in the country. Drivers who mostly do not belong to any transport union are often exploited by vehicle owners, while driver welfare generally is seen to be weak across the country. Individual transport operators often operate with different rules, leading to the lack of synergy in the system. The absence of a regulatory body also resulted in individual stakeholder institutions not being checked for compliance with various standards.

Road Infrastructure was also identified as a challenge to RTI prevention. To have safer roads means roads must be crash-friendly, so that crashes would not result in fatalities and serious injuries. However, a careful look at the crash statistics show that fatalities per 100 crashes averages 20. Although there are standards that guide road construction and maintenance, roads in the country still remain unsafe. Major highways with high vehicular traffic are single carriage ways, leading to high levels of head-on collisions. Safety measures such as streetlights, line markings, guard rails, road signs, etc. that are not in good shape are often disregarded; that is poor maintenance culture. Poor towing services have left many faulty vehicles on roads and are causing lots of preventable deaths. Vulnerable road users such as pedestrians, cyclists and motorcyclists also share the same space with vehicles due to the absence of separate lanes for these classes of road users.

Corruption among Officials; especially MTTD and DVLA officials is also a hindrance to RTI prevention in Ghana. The MTTD is the pivot of enforcement of road traffic regulations, but their personnel are mostly compromised. This has been found in many other studies (Boateng, 2021,

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Ackah, 2019, Odonkor, 2020). The willingness of personnel to accept bribes in order to free culprits does not deter them from engaging in those behaviors, because the amounts paid as bribes are most often smaller than prescribed penalties for violations of road traffic laws (Ackah, 2021). The driver and vehicle licensing space has also been characterized by bribery, although this has reduced after the digitalization of the licensing landscape. People are able to acquire licenses without going through the thorough process of testing and examination, and this has been identified in Akple and Biscoff (2012) to be a reason for drivers' inability to recognize and comprehend road signs. The importation of used vehicles due to income levels and high import duties on new vehicles coupled with corruption among custom officials present a challenge to providing crashworthy vehicles.

Legislation and Enforcement are also areas with grave concerns. The use of hands-free feature on a mobile phone while driving is not prohibited, while child restrains have not been properly legislated. The Blood Alcohol Concentration level of 0.8 mg/ml or 0.08 g/dl is relatively higher, compared to many countries. The use of motorcycles for commercial purposes is also an area that needs to be relooked. The current legislation makes illegal the use of motorcycles for commercial purposes; however this law has been proven ineffective, as it is a common practice across the country. Enforcement of road traffic regulations has been found to be below average, owing to logistical constraints, interferences, bribery, and personnel challenges.

A major challenge to RTI prevention was found to be inadequate funding of road safety activities in the country. Most challenges to RTI prevention could be linked to this problem of funding. For instance it results in the adoption of substandard road designs and poor maintenance culture, inability to dualize major highways, inability to recruit and train more personnel for various

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agencies, inability to purchase more logistics for the MTTD to carryout enforcement, etc. Also, the capacity for various agencies to generate revenue internally is low.

## 4.2 Conclusion

The present study has shown that road traffic fatalities and injuries are increasing, and are becoming a serious public health issue. Though some measures were instituted in the past to deal with it, not much was achieved. The study has also uncovered and further reiterated the various challenges to RTI prevention in Ghana; including an unregulated and disordered road transport sector, unsafe roads and vehicles, poor enforcement, and corruption among officials, etc.,. Hence, reducing RTIs would require more pragmatic, evidence based, and holistic interventions aimed at addressing each of the challenges identified. The safe systems approach is yet the effective approach to RTI prevention, as it considers the vulnerability of the human body to make errors. Adopting this approach to road safety would substantially reduce RTIs, as proven in other countries. This therefore requires that critical attention is paid to road construction and maintenance, vehicle importation and assemblage, and post-crash response.

Although the WHO and the United Nations Road Safety Collaboration are championing international collaboration and encouraging countries with high rates of road traffic fatalities to learn from countries that have been able to make headway in RTI prevention, local conditions would not allow for a whole-sale adoption of strategies that have worked in other contexts; it requires that interventions from other jurisdictions are tailored to fit the context in which they are to be implemented. While the WHO Plan of Action contains workable solutions, such should serve as guide to the development of strategies that will fit local conditions.

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Road traffic injury prevention also requires a collaborative and coordinated effort. Various institutions involved in RTI prevention should be strengthened through personnel development, logistics, and funding, for them to play their part in reducing RTIs.

## 4.3 Recommendations

The recommendations are proposed based on the findings of the study and suggestions made by the research participants.

### 4.3.1 Road Safety Management

- The NRSA and other stakeholders should develop a more realistic, context specific, and evidence-based strategic plan, inspired by the Global Plan of Action for Road Safety 2021-2030 should be drawn to guide road safety activities in the country for the next decade;
- Ministry of transport and NRSA should revise the National Road Safety Policy and make promotion of public transport a policy objective;
- Parliament should expedite actions to pass the L.I to operationalize the National Road Safety Authority Act 2019 (Act 993), so as to properly regulate road transport in the country;
- Various stakeholders should collaborate and design an integrated road safety database to allow for data synchronization;
- Government should establish a road safety research fund to encourage research into road safety to provide empirical foundation for interventions;
- Legalize and properly regulate the use of motorcycles for commercial purposes.

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### 4.3.2 Safer Roads

- The ministry of roads through its various agencies must ensure road safety audits are conducted at various stages of road construction;
- The ministry of road through the GHA should dualize all major highways to avoid rampant head-on collisions.
- Government should immediately reintroduce towing bill to improve towing services on roads;

### 4.3.3 Safer Vehicles

- Government should reduce import duties on new vehicles to increase their importation, as against old vehicles;
- Review standards on vehicle importation and assemblage to match international best practices.
- Digitalize vehicle registration landscape to reduce corruption;

### 4.3.4 Safer Road Users

- Introduce road safety education into the curriculum for primary and junior high schools;
- NRSA should encourage all year round media education on road safety;
- Parliament should consider a review of LI 2180 (2012) to reduce BAC limit to 0.05g/dl and legislate child-restraint;
- DVLA should improve monitoring of driving schools;
- The MoT should compel Transport Unions to enforce the mandatory two driver for long journey regulation;

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### 4.3.5 Enforcement

- MTTD should adopt the ticketing system for road traffic offences;
- Government should resource the MTTD with logistics and personnel to improve enforcement;

### 4.3.6 Post-Crash

- Government should build more trauma care centers across the country;
- National Health Insurance Authority should reimburse the health facilities on time so as to enable the continuous provision of emergency services;
- Increase and resource emergency posts along major highways to improve response time;
- GHS should identify and train more emergency health professionals for the various facilities and the NAS.

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# APPENDIX

## Interview Guides

### Interview Guide for National Road Safety Authority

PART 1

1. What is the current state of road safety in Ghana?
2. Did Ghana commit to the Decade of Action for Road Safety (2011-2020) and SDG 3.6??
3. Were the country's road safety policies and strategies in line with the plan of action for the decade?
4. How well did Ghana perform on reaching the SDG 3.6? what was the rate of fatality and serious injury reduction between 2015 and 2020 (data report may be included).
5. If there were any reductions since the adoption of the SDGs, were they sustainable?

PART 2

1. What do you perceive to be the primary road safety issues in Ghana?
2. What policies/strategies did Ghana adopt to achieve the target for the decade and SDG 3.6 (specific strategies from 2011 to 2020) soft or hard copies be shared please?
3. How well did these policies/strategies address the five pillars of road safety identified in the plan of action for the decade of road safety
4. What were some identified pitfalls in these strategies?
5. What were the challenges in implementation?

PART 3

1. Motor cyclists are becoming the most susceptible to road crashes, according to the most recent MTTD report, how is the NRSA responding to this threat?
2. What challenges does the NRSA face in their work? (in terms of strategies, expertise, funding, legislation, enforcement, etc)
3. What would the NRSA do differently to achieve the targets of the 2nd Decade of Action for Road Safety (2021-2030)

Please I would also be glad if the various policy instruments or strategies could be made available to me for referral.

### Interview Guide for Driver and Vehicle Licensing Authority

- How many registered vehicles are in Ghana as at now?
- How does the DVLA influence the importation of vehicles?
- What standards guide the importation of vehicles and vehicle manufacturing in Ghana?
- Are there applicable crash-test standards for vehicles?
- How often are vehicles inspected, and what mechanisms are in place to ensure that drivers send their vehicles for inspection?
- Are there standards on vehicle modification in Ghana?

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- Are there policies to promote the installation of speed limiters in vehicles?
- Is there an established graduated driver licensing system for novice drivers?
- How does the DVLA regulate driving schools?

**Interview Guide for Motor Transport and Traffic Directorate**

1. What do you perceive to be the primary road safety issue?
2. Are there laws on speed limits? How do the police enforce these laws?
3. What are the rules on drink-driving? How are drunk drivers identified in traffic? How is the law enforced?
4. Are cyclists guided by different traffic rules? Do they respect traffic rules?
5. How does the police identify and deal with illegal speed-calming measures mounted by communities?
6. Cyclists are becoming the most vulnerable road users, according to the most recent MTTD report; how is the MTTD responding to this?
7. Are there programs to increase seatbelt wearing and child restraint use?
8. What are the challenges the MTTD face in discharging their duties?
9. Are there specific laws the MTTD would want to pass to aid its work?
10. What can the MTTD do better in reducing crashes and fatalities?
11. What is the MTTD doing about unprofessional conduct of some personnel extorting money from drivers who flout traffic rules to free them?

**Interview Guide for Ghana Highway Authority**

1. What is the state of trunk roads in Ghana?
2. How many are labeled as high-risk roads?
3. To what extent is Highways crash friendly?
4. What strategies did the GHA put in place to make highways safer to achieve the objective of the decade and SDG 3.6?
5. What has the GHA identified to be the core road safety issues on Ghana's highways?
6. Given that majority of highway accidents are attributed to head on collision, what is the best way to avoid such?
7. What is the main impediment to dualization of highways?
8. 11% of recorded road accidents have been attributed to abandoned vehicles or wrongly parked vehicles; how is the GHA dealing with this issue? What is the state of the towing bill?
9. Are there engineering treatment to improve safety performance on existing roads?
10. What safety standards are set for new designs?
11. Does the GHA work with regional and international instruments in their work?
12. What is the GHA doing going forward to reduce the frequent RTC on Ghana's highways?

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**Interview Guide for Ghana Private Roads Transport Union**

- Road crashes are often attributed to drivers, some say they cause about 90% of all crashes; how do you respond to that?
- Does the GPRTU have any role in regulating the behavior of drivers?
- Do the various terminals have officers who check vehicle safety before they step on the road?
- How does the GPRTU control sales targets set for drivers by vehicle owners?
- What are the main concerns of drivers with regards to safety on the road?
- What are the mechanisms to check or avoid stress and fatigue driving?
- What is the view of the GPRTU on the legalization of commercial motorcycles?

**Interview Guide for Building and Road Research Institute**

1. What was the state of road safety over the past ten years in Ghana?
2. How well would you say Ghana performed on the targets of the first decade of action for road safety and SDG 3.6?
3. To what extent are Ghana's roads and Highways crash friendly?
4. Are there safety standards set for design and construction of roads for all categories of roads? What are they
5. What remedial measures are employed to improve safety on existing roads?
6. Do these safety standards consider the safety concerns of vulnerable road users?
7. Are there compliance regimes in place to achieve targets?
8. Has the IRAp star rating been adopted? How is safety measured?
9. Has the safe system approach been adopted in the design and construction of new roads?
10. To what extent are safety standards in place comparable to international standards?
11. What attempts have been made to eliminate high-risk roads?
12. Does the country have a functional crash data management system?
13. What would be your assessment of the NRSA's (National Road Safety Strategy III) NRSS II and the action plans?

What are your recommendations for policy makers to achieve the targets of the second decade?

**Interview Guide for Ghana Health Service**

1. Over the past five to ten years, what has been done to improve post-crash responses?
2. What is the average time it takes to covey accident victims to the hospital?
3. What is the survival rate for injured persons conveyed to a hospital?
4. **What is the state of implementation of Policy and Guidelines for Hospital Accident and Emergency Services in Ghana?**
5. Is rehabilitation part of the accident and rehabilitation services?
6. What is the current strength of emergency and trauma health personnel?
7. How many hospitals in Ghana have accident and emergency units?
8. Is NHIS able to cover all the expenses of accident victims; are there any other financial sources available for accident victims?

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9. How best has technology been used to improve emergency care?
10. Has prehospital care improved over the past five years?

**Interview Guide for National Ambulance Service**

1. How many Ambulances does the service have as at now and how many are working?
2. What is the ambulance-population rate?
3. What is the average time it takes for an ambulance to get to an accident scene?
4. Does the ambulance service have a peculiar emergency number or it's a common emergency number for all services such as police and fire service?
5. Has there been an improvement in the number of Emergency Medical Technicians over the past decade?
6. What measures have been instituted to improve swift emergency response?
7. Is the NAS manning emergency posts constructed at various locations on accident prone highways? If no why
8. Does the service train communities in accident response care?
9. What is the average survival rate of crash victims?
10. What are the challenges the NAS faces in providing emergency response?

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