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**FACTORS INFLUENCING THE NON-USE OF CRASH HELMET AMONG
TERTIARY EDUCATION STUDENTS IN THE WA MUNICIPALITY**

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JUNE, 2019



DECLARATION

Student

I hereby declare that this thesis is the result of my own original work under the principal supervision of Mr. Marfo Samuel and that no part of it has been presented for another degree in this University or elsewhere except where due acknowledgement has been made in the text.

Signature.....

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Supervisor

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

Signature.....

Date.....

Name.....

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ABSTRACT

The use of motorcycles has become a preferable means of transport across countries, as in Ghana due to their cost effectiveness and convenience. Ironically, the use of motorcycles has been accompanied by a number of motorcycle- related risks such as head injuries and deaths due to non-use of the safety gear, the crash helmet. Globally, statistics reveal that almost 50% of people, the most vulnerable users of the traffic space, are killed on the roads and majority are left severely injured, and these victims are mostly motorcyclists, bicyclists and pedestrians. In view of this, the use of crash helmets has been advocated as a major safety measure. Evidence, however, has shown that a number of motorcyclists especially, tertiary education students in Ghana do not use crash helmets notwithstanding the risks associated with such a riding habit. Against this background, quota and purposive sampling techniques were used in selecting 101 respondents comprising 90 student-motorists and 11 key informants in an explorative case study in Ghana. Respondents were selected from the University for Development Studies, Wa Campus, Technical University, and University of Education, Winneba, Wa Center. The objectives of the study among others were to ascertain the factors influencing the non-use of crash helmets among tertiary students, as well as the effectiveness of the existing policies and laws on the wearing of crash helmets. Primary data were gathered through interviews. The study concludes that; traveling distance, hair- do and discomfort were the major influencing factors accounting for the non- use of crash helmets. It recommends that the management and student leadership of tertiary institutions, the Motor Traffic and Transport Department, National Road Safety Commission, the media and the health ministry together should organize periodic educational campaigns to orient student motorcyclists about the dangers of non-use of crash helmets.



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DEDICATION

To my parents, Mr. Akpade Napoleon and Miss Klutse Comfort, I dedicate this work to you for having faith in my vision and passion. Also to Mr. Akpade Jeremiah and Fafali Okah, as well as Mr. Bampoe David for their prayers.

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LIST OF ABBREVIATIONS

- ASEAN.....Association of Southeast Asian Nations
- CDC Center for Disease Control
- CODES Crash Outcome Data Evaluation System
- DALYs Disability Adjusted Life Years
- S Decade of Action for Road Safety
- s Department of Urban Roads
- A Driver and Vehicle Licensing Authority
- N European Sustainable Development Network
- Domestic Gross Product
- Fund Ghana Education Trust Fund
- C Ghana Housing and Population Census
- Ghana News Agency
- GRSF Global Road Safety Fund
- GSRRS Global Status Report on Road Safety
- GSS Ghana Statistical Service
- HND Higher National Diploma
- ICT Information and Communication Technology

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LI Legislative Instrument

MoT Ministry of Transport

MTTD Motor Traffic and Transport Department

NHTSA National Highway Transport Safety Administration

NRSC National Road Safety Commission

D Organisation of Economic Cooperation and Development

s Road Traffic Accidents

ID Road Traffic Management Department

..... Students' Representative Council

..... University for Development Studies

l University of Education, Winneba

..... United Kingdom



IP United Nations Development Programme

UNECE United Nations Economic Commission for Europe

UNESCO.....United Nations Educational, Scientific and Cultural Organisation

UNO United Nations Organisation

USA United States of America

UWR Upper West Region

WBG World Bank Group

WHO World Health Organisation

WMA Wa Municipal Assembly

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Road traffic safety, accidents and related deaths have become a major concern to nations globally. Haadi (2014), has pointed out that the topic of crash severity has been of interest to the safety community because of the direct impact on occupants involved. He contends the forward could be to identify factors contributing to either a more or less severe crash. The approaches used to model injury severities, depending on the purpose of the study and data availability. The Global Status Report on Road Safety (GSRRS, 2015; ESDN, 2015 and WHO, 2015), stressed the Sustainable Development Goals 3 and 11, with their targets of 3.6 and 11.2 respectively, which aim at ensuring healthy lives and promoting well-being for all at all ages, by halving global road traffic related deaths and injuries by the year 2020. The United Nations Organisation (UNO) under the Decade of Action for Road Safety (2011–2020), has also charged countries to implement the measures identified internationally to make their roads safer.

Reports have also revealed that road traffic injuries resulted in the death of more than 300,000 persons between the ages of fifteen and twenty- nine in 2012 (WBG, 2014 and WHO, 2014). Although there have been drastic reductions in road traffic deaths in 2013 by 1.25 million per 100,000 population, due to the interventions implemented by the World Bank and the World Health Organisation, to improve global road safety over the past few years, many lives are still being lost through road traffic accidents (RTAs), by a margin of 1.2 million per 100,000



population, leaving over 50 million persons injured globally each year (Peden et al., 2004; WHO, 2013). The World Bank Group (WBG, 2014) reported a decreased margin of 1 million per 100,000 population dying annually across the globe due to road traffic accidents.

In 2013, according to Adebayo et al. (2016), over eighty- five per cent of all deaths and ninety per cent of disability adjusted life years (DALYs) lost from road traffic injuries took place in the low and middle- income countries. The GSRRS (2015), revealed that sixty- eight countries recorded increased road traffic deaths with eighty-four per cent of such occurring in the low- and middle- income countries. While developing countries represent over fifty- four per cent of the world's vehicle ownership despite the poor road network conditions, over ninety per cent of the road traffic deaths are reported within the African region (WHO, 2009; Banik, Chowbury, Akin and Mojumdasr, 2011; WHO, 2014). Comparatively, developed countries recorded the lowest road traffic deaths at a rate of 9.6 per 100,000 population, while the developing and underdeveloped countries, especially Africa recorded over a double, at a rate of 26.6 per 100,000 population (WHO, 2013).



It is obvious that road traffic deaths in developing countries such as Dhaka, Bangladesh, India, Colombo, and other African countries should be of high concern on the global front since the SDGs targets 3.6 and 11.2 aim at halving road transport- related injuries and death by year 2020. Almost half of all these deaths are among the least protected road users as pointed out by the WHO (2009 and 2014). This preventable situation has been further predicted to double, and this may characterise road transport accidents as the number five killer phenomenon among the major causes of deaths by 2030. It has become very imperative for countries to map out road

safety measures to tackle key risk factors of road traffic injuries to ensure best practices as suggested by the World Health Organisation's GSRRS (2015).

According to DEKRA (2017), the measures targeting road safety have been divided or categorised into five broad but interrelated measures namely; user- related measures, vehicle – related measures, infrastructure-related measures, organisational measures and rescue measures.

User related measures involve periodic training and education of road users, traffic laws enforcement, incentives and monitoring. Vehicle- related measures include vehicle- related active, and passive safety approaches, as well as telematics or e-safety enforcement. Infrastructure- related measures focus on good road environment designs, safety- conscious road construction and regular road maintenance practices. Organisational measures deal with thorough planning, and adequate financing of road construction projects, as well as proper monitoring and evaluation. Rescue measures include institutional emergency readiness and timely rescuing to reduce accident- related deaths.



In the spirit of curtailing the spate of road traffic accidents, the WHO (2010), identified five high risk factors for road safety which include speeding, drink-driving, the improper or non-use of motorcycle crash helmets, non-use of seat-belts and child restraints, as being the major causes of road injuries especially, in low- income countries. Africa according to the World Bank Group (2014), has the world's highest road-related death per capita rate. Africa in that regard, spends an estimated cost of 3.7 billion on about 28.3 million deaths per 100, 000 population annually (GRSF, 2012).

The proliferated use of motorcycles has become an alternative in search of easy mobility (Turkson et al., 2013). Motorcycle usage has increased the users' ability to save time and cost as an accompanying advantage. They also provide affordable mobility options. According to several research findings, motorcycles offer ease in navigability in congested traffic conditions as well as providing ease of parking. In times of petroleum price hikes, motorcycles offer users reduced expenditure on energy and transportation (Njiru, 2014). Pitaktong et al. (2004), write that in Thailand, for instance, motorcycles are popular among the youth and are used as the main mode for all-purpose transportation, including leisure. Pitaktong et al. (2004), further noted that in 1999, 13,244,961 motorcycles were registered in Thailand, accounting for 68.5% of all motorized vehicles. In the same year, new motorcycles (497,422) accounted for 71.7% of all newly registered vehicles. Pitaktong et al. (2004), among others, have shown how popular the use of the motorcycle has become in recent times. However, as noted by GSRRS (2015), the proliferation of motorcycles and the non-use of crash helmets have made motorcycle usage more dangerous and riders more vulnerable to road traffic accidents. Finding creative ways of ensuring the use of crash helmets has therefore become much more important in a global world, with the increasing number of motorcycles.



1.2 Statement of the Problem

In urban Ghana, where roads are wider but congested and rural Ghana, where the roads are narrower and congested as well, a significant number of people have developed preference for the use of motorcycles to the use of public transport such as the tricycle, popularly known as “Mahama Kamboo” and the minivan transport system, locally known as “Trotro”, since locomotion is easier through all types of traffic. Motorcycles compete for the same traffic space

with numerous fast-moving vehicles where in most cases, riders are less physically protected, making them vulnerable and prone to preventable injuries and deaths during road crashes.

Across Ghana, there is a phenomenal growth of the use of motorcycles and motor crash-related accidents (Aikins et al., 2011). Both private and public vehicles make use of the shoulders of the major, narrow, roads within the municipalities as parking spaces, causing difficulties in vehicular mobility. However, the few who could afford motorcycles, especially workers and

students, do so for their comfort. As a safety measure, these motorcycles come with the necessary accessories such as crash helmets for the protection of the head, in order to decrease the incidence of deaths and the severity of non-deadly head injuries in motorcycle crashes, when compared to non-helmeted riders (Macleod, DiGiacomo, and Tinkoff, 2010; UNECE, 2016). Usually, most riders do not use such safety gear. Even though there are regulations on the use of a crash helmet among motorcyclists, some motorcyclists do ride without wearing crash helmets. Dinye (2013), suggests that the use of the motorcycle as an alternative means of transport in rescuing the mobility problems in Northern Ghana, has brought along with it issues

concerning road safety, registration, employment and the repair and maintenance activities associated with these motorcycles

Many motorcycle fatalities which are mostly due to head injuries could have been prevented, if crash helmets were worn (Solagberu et al., 2006). The Northern and Upper West Regions of Ghana are characterised by high percentages of motorcycle fatality rates (Aikins et al., 2011; Ackaah and Afukaar, 2010; Afukaar, Antwi and Amaah, 2010). Studies conducted by several scholars reveal diverse forms of injuries experienced by non-helmeted victims, such as head and



brain injuries (Solagberu et al., 2006). Such injuries may result in lifetime deformities as William Singer put it:

*‘People who have an accident like that often don’t get better. They’ve lost something. They may have lost some of their intelligence. They may have lost the capacity to take care of themselves because of the damage to their system that controls their muscles. They may have a behaviour change – have difficulty dealing with other people, having proper social relationships. It’s all a consequence of that unprotected skull, and nothing can take up the shock.’*¹ (UNECE, 2016).

use of the motorcycle among the youth and adults has become popular. Many students as well as the working class, prefer motorcycles to other private means of transport both within the economically- busy urban and rural areas of the country. However, as the use of motorcycles increases, the use of the most important component of the package, the crash helmet, is significant, especially among tertiary education students across the country. Although crash helmets do not prevent accidents, they play a very crucial role in reducing the tendencies of severe injuries and mortalities in the course of crashes (UNECE, 2016). According to Afukaar



(2009), in the Upper West Region of Ghana, motorcycle accidents recorded 14.7 per cent of all road accident related accidents. Yet, scores of people ride motorcycles without crash helmets, not even their pillion riders. An annual distribution of fatalities by the road user class revealed that 3.5 per cent of motorcyclists got involved in fatalities annually. These fatalities would have been preventable if riders were riding with crash helmets (NRSC, 2011).

¹ William D. Singer, M.D., Harvard Medical School Source: Insurance Institute for Highway Safety/Highway Loss Data Institute video. Quote cited in the United Nations Motorcycle Helmet Study (2016).

Currently, comparing the MTTD Road Traffic Accident data for the periods of 2013, 2015, and 2016 in the Upper West Region, the geographical area of study, the Wa Municipality successively recorded the highest figures of road traffic accident cases (Ghana Police MTTD Wa Report, 2017). For instance, in 2013, while the Region recorded 172 motorcycle related accidents, the Wa Municipality alone recorded 113. Similarly, in 2016, while the Region recorded 132, the Wa Municipality recorded 104, representing about 78.8 per cent of all road accidents recorded in the Region. In these reports, it was revealed that motorcycles represented

highest vehicle type involved in road traffic accidents within the Region, making the Wa Municipality a principal motorcycle accident-prone community. Although there was a drastic reduction in the occurrence of motorcycle accidents in the year 2015, with 85 reported cases in the Municipality, a discouraging trend developed in 2016, which revealed an increased number of 104 reported cases, although lower than the case of 2013. This implies that some interventions might have been employed by the key actors involved in road safety resulting in reduction of the accident rate. This study does not, however, intend to suggest that much had been done in 2016. However, it could be said that as motorcycle-related accidents

represented the highest number of accident cases reported, empirically a higher proportion of the high figures of injured persons were motorcyclists. A baseline information received by researcher from a key informant revealed that most of the motorists in the Wa Municipality were tertiary students, and were associated with the non-usage of crash helmets in the Municipality. As noted by Akaateba, Yakubu and Akanbang (2015), despite the existence of a legislation mandating the use of helmets on all roads, as well as the high level of awareness among riders on this legislation and the benefits of helmets, the incidence of helmet use among motorists continues to be low in Wa. The question that this thesis seeks to unravel is *'why in spite of the*



fatalities associated with non-use of crash helmets among tertiary education motorist students, and in spite of the various safety measures targeting crash helmet use, a number of students continue to ride motorcycles without crash helmets’? There should be an explanation to this phenomenon using empirical evidence from the three selected tertiary institutions in the Wa Municipality.

1.2 Research Questions

Main research question

What are the contributing factors to the non-usage of crash helmets among tertiary education students?

Specific research questions

What perceptions are held by students concerning crash helmet usage and road safety?

What measures are there in the selected institutions targeting helmet usage by students?



How effective are the existing policies and laws on the wearing of crash helmets?

1.4 Research Objective

1.4.1 Main research objective

To ascertain the factors that are influencing the non-usage of crash helmets among tertiary education students.

1.4.2 Specific research objectives

1. To establish the perceptions held by students about crash helmet usage and road safety.
2. To examine the measures targeting helmet usage in the selected institutions.
3. To examine the effectiveness of the existing policies and laws on the wearing of crash helmets.

Significance of the Study

Low and middle-income countries such as India, China, Malaysia, Togo and Ghana, where motorcycles are among the commonest means of commutation, motorcyclists are at high risk of being involved in road accidents (Nantulya and Reich., 2003; WHO, 2006). This as noted by Agyemang, Antwi and Amaah (2010), stemmed from the fact that the road networks are poorly constructed and riders share the same traffic space with drivers of vehicles of diverse sizes and speeds. Besides, the roads are of low construction standards and are also poorly maintained.



In Ghana's case, the increased usage of motorcycles has been accompanied by an overwhelming phenomenon of riders among the working class, tertiary education students, as well as children riding devoid of crash helmets. There is therefore government's higher desire for riders' welfare and helmet usage promotion. Ghana like other countries, has mandatory helmet laws aside other national helmet usage awareness campaigns promoting the need for, and importance of crash helmet to the rider (WHO, 2015). That notwithstanding, the elite class in society; tertiary education students and workers still do not comply with the laws. Yet, scientific works which examine critically as to why people, especially tertiary education students do not wear crash

helmets are quite limited. A vast gap continues to exist in the body of research, in spite of all the striking approaches. For instance, Afukaar, Antwi and Amaah (2010) and Afukaar (2009), have written on the dangers of riding motorcycles without crash helmets in some parts of Ghana. Apparently, none of the studies examined more extensively the factors which influence the non-use of crash helmets among tertiary students in Wa, where the use of motorcycles has become quite popular as done in this study. This study seeks to fill such a gap and complement literature on road safety.

findings will be very useful to key road safety agencies. For instance, they will enable the D and NRSC to shape their educational strategies in the Wa Municipality and Ghana's national curricula, and also formulate effective crash helmet usage policies in Ghana.

findings will equally be beneficial to authorities of tertiary institutions who are facing the on-coming danger of the use of motorcycles by students without crash helmets. The findings will place authorities in a better position to enforce crash helmet usage in their respective institutions

to ensure protection of institutional reputation and better student safety.

1.6 Scope

The study covered Wa Municipality of the Upper West Region. Data were solicited from tertiary education students from three selected tertiary institutions namely; University for Development Studies, Wa Technical University and University of Education, Winneba- Wa Center. The Wa Municipality was selected because it hosts more tertiary institutions and students than any other District in the Upper West Region. Apparently, most of them ride motorcycles without crash



helmets. A study purported to study factors influencing non-use of crash helmets among student motorists of tertiary institutions in the Wa Municipality, is therefore considered very important.

1.7 Profile of the Study Locality

The Wa Municipal Assembly (WMA) is one of the eleven District Assemblies in the Upper West Region (UWR) of Ghana. Wa is the administrative capital of the Region. The UWR is situated within the north-western part of Ghana, and is bordered by four important geographical regions; Burkina- Faso to the north, Northern Region of Ghana to the south, Upper East Region to the east and La Côte d'Ivoire to the north- western side. Constitutionally, Wa Municipality emerged branded from a previous state of district assembly to its present as a municipality in 2004 under the ambit of the legislative instrument (LI) 1800 in the spirit of decentralised governance which commenced in 1988. Its core function is to steer the implementation of national policies as the utmost administrative and political corps as mandated in section 10 of the Local Government Act, 1993 Act (462). The Wa Municipal Assembly performs the executive, judicial and legislative roles of the three arms of government; Executive, Judiciary and the Legislature within the municipality.



The Wa Municipal Assembly is surrounded by Nadowli district to the north, Wa West district to the west, and Wa East district to the east. The Municipality covers an approximate land area of 234.74km², representing approximately 6.4 per cent of the region's land mass. The Municipality's geographical location has significant implications for economic development through bilateral trade opportunities among the surrounding Districts and the neighbouring

French countries. It also has positive implications for industrial and commercial progress along the north- western corridor of Ghana (GSS, 2010).

The UWR has a population of 207,110, with a growth rate of 1.9 per cent per annum (Ghana Housing and Population Census Report (GHPC), 2016). The Ghana Statistical Service Report (2010), revealed a total human population of the Municipality as 107,214, with a male and female population of 52,996 and 54,218 respectively. The population density of the Municipality is at 542/km² which presents housing, health and education facilities, environmental and sanitation, natural resource management as well as infrastructural development, which have diverse implications for basic needs and human development.

available vast arable land, educational facilities; tertiary education institutions such as the University for Development Studies, Wa Technical University, Jahan College of Education, University of Education- Wa Center and University of Cape Coast distance campuses, in addition to the vocational and technical training institutions; Community Development Institutional and Technical Institute and the Wa Senior High Technical, as well as the Wa Technical Institute and the Wa Senior High School and other educational institutions, have led to the influx of persons from other districts within the region, in pursuit of improved academic knowledge. Besides, the improved social amenities, averagely improved housing conditions, communication and transport systems, have also served as pull factors, leading to congestion and expansion of the Municipality towards the outskirts. This, however, has implications for the housing sector, to develop rapidly to meet present and future needs of the increasing population within the municipality as depicted by the 2016 GHPC report.



The topography of the Wa Municipality supports both animal husbandry and crop production such as rice and yam production. There is, however, a challenge of access to water for both agricultural and domestic use during the dry season, because the water bodies dry up during this season. Rain water collection and construction of dams must be encouraged as alternatives to safe sources of water for domestic, agricultural and domestic use. Human activities such as excessive uncontrolled bush burning, poor agricultural practices, poor industrial waste management and mining, as well as indiscriminate felling of trees have led to negative variations in the rainfall pattern which has adverse implications for soil fertility and general agricultural productivity.

Agriculture provides sixty per cent of the Municipality's jobs and other livelihood activities. Traditional methods of agricultural production, processing, storage and marketing still dominate the sector. Food crops such as bambara beans, cowpea, groundnuts, millet, maize, sorghum, and yam are produced in addition to a number economic trees which include baobab, cashew, pawpaw, papaya, guava, mango, shea nuts, and teak. Agriculture therefore, dominates seventy per cent of the

economic activities of the municipality where commerce records nine per cent while industry represents three per cent among other economic sectors including transport, communication, energy and tourism (GSS, 2010).

The WMA is dominated by road transport. Road network in the Municipality spans about 385km comprising trunk tarred road (129km) and latitude roads (256km). The four trunk roads link the following towns as follows; Kumasi and Tamale, Tumu and Leo, Lawra and Hamile, and

Dorimon and Burkina- Faso. These road networks have prospective advantages for tourism, economic and development. Although these roads are in use, their poor condition such as limited pedestrian walks, absence of bus stop pavements, absence of parking lots at the roads' shoulders, inadequate road signs, and poor drainage systems among others pose as promoters of disasters and accidents (UK Essays, 2017). These factors have facilitated increased preference for the use of motorcycles as means of transport among all class of people ranging from merchants to corporate workers and the ever increasing student population. Figure 3.1 (Map of Wa Municipal mbly) below depicts the pictorial view of the features as described on the next page.



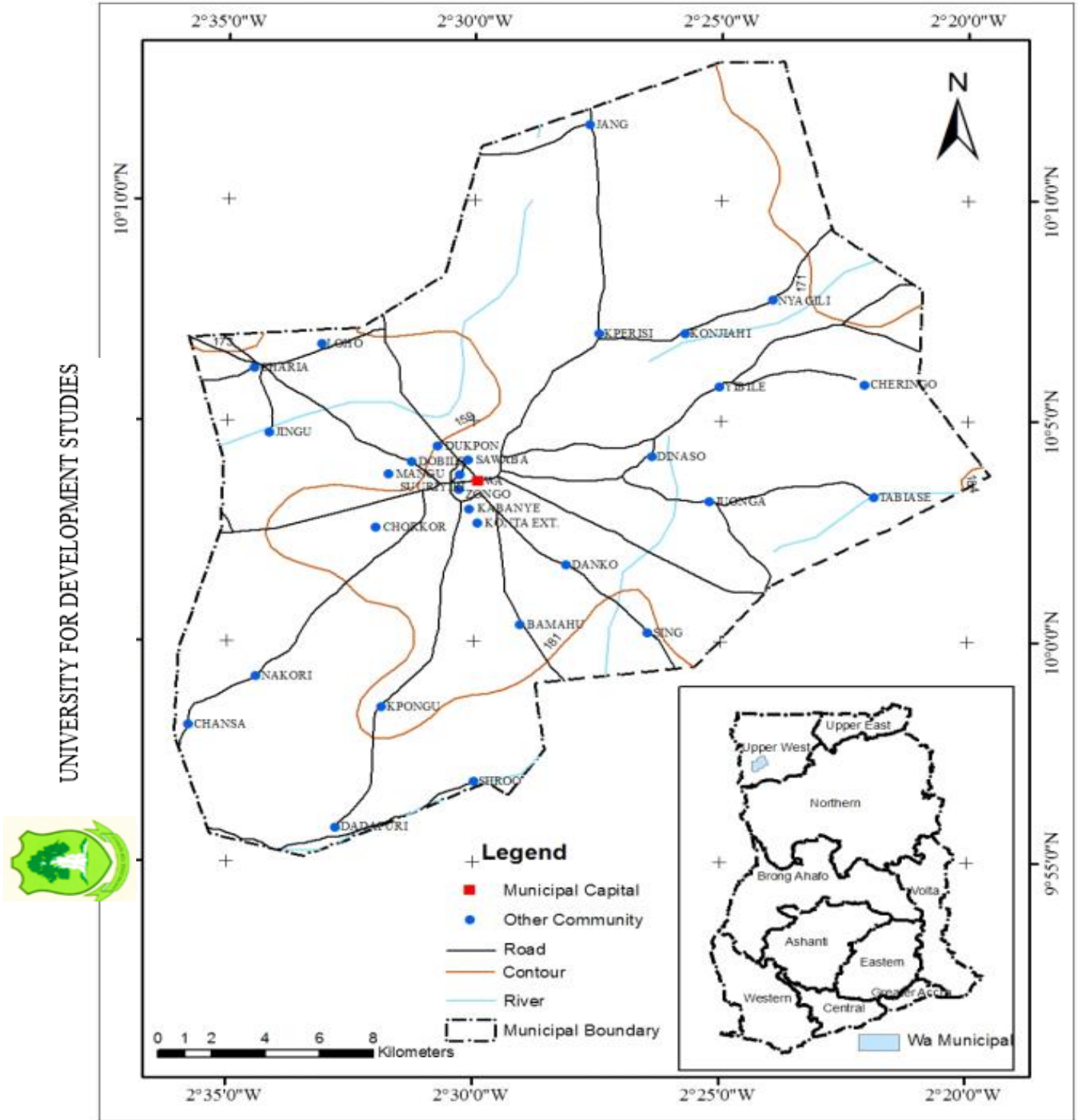


Figure 1.1 Map of Wa Municipal Assembly. Inset Map of Ghana
Source: Ghana Statistical Services, 2016

1.8 Organisation of the Study

This research work is presented in five chapters. Chapter one is devoted to the background of the study, problem statement, the objectives of the study, significance and scope of the study. Chapter two reviewed scholarly texts under a number of road safety and helmet use- related themes. Chapter three discusses the methodology on data collection and variables used. Data analysis and discussions of the results are presented in chapter four. The concluding chapter, chapter five focuses on summary of key findings and recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter seeks to review the various literature on related concepts of the topic under consideration. The review focuses on previous studies on crash helmet and safety. The chapter therefore, reviews issues pertaining to road transport, road transport accidents, causes and effects of road transport accidents, road safety measures, and conceptualisation of the crash helmet.

Road Transport

Road transport in every economy plays pivotal roles in socio-economic development. It is of an important value in the distribution of goods and services, as well as the conveyance of people from place to place. Road transport is an important means of access to employment, markets, education and health-care services, which are global indicators of development in every growth-oriented economy. It therefore offers a number of positive effects, both directly and indirectly, on the livelihood of people on the global front, as suggested by the World Health Organisation (GSRRS, 2015).

In Ghana, road transport serves as pivotal infrastructure in stimulating the nation's socio-economic growth. It accounts for about 94 per cent of freight and 97 percent of passenger transportation as noted by the Ghana National Commission for UNESCO (undated). Ghana's Ministry of Transport (2011), reports that road transport represents over 95 percent of the nation's transport supply. Road transport infrastructure therefore relies on reliable and affordable transport services (Porter, 2013). It is for that matter, a major conduit for passenger and freight



movement in Ghana as far as land transport system is concerned (Owusu-Bio, Acheampong, and Frimpong, 2016). Ghana's road transport system, which is the most extensively used means of transportation, includes buses, cars, lorries, trailers, tankers, carts, bicycles, and motorcycles. It has been revealed that Ghana's emergence as the hub connecting the entire West African zone in trade could not be detached from its improved road networks as suggested by the Ghana National Commission for UNESCO (undated).

importance of road transport include; the facilitation of access to jobs, education and health ties. Road transport also enhances both domestic and international trade thereby creating utility or fast delivery of goods and services to markets and conveyance of people. In addition, road transport encompasses trucks, buses, cabs, bicycles, and motorcycles, which represent high technology and quicker means of movement (Mishra and Chaudhury, 2011). A number of additional advantages have been attached to road transport. Road transport bridges the producer-consumer gap. Roads therefore connect producers of goods and services to the consumers, regardless of geographical and climatic factors that may affect the location of markets. Road transport also ensures time utility or time management due to the speed in distribution of goods and services within markets. Road transport therefore facilitates the allocation of goods and services as well as quick transportation of passengers within the shortest possible time.



In every economy, the road transport system promotes the development of marginalised and mainstream regions through their integration into investment and trade. Road transport still remains a prerequisite for sustainable development to boost productivity and efficient

competition among economies. Against these advantages, Olubomehin (2012), asserted that without road transport, the other means of transportation such as air, water and rail would have been incapacitated. Notwithstanding, the positive contribution of road transport, there exist some challenges in the road transport sector such as environmental (air) pollution, congestion on roads, less safe and insecure roads, fuel price hikes, and the major one of much concern is road accidents. As a result of road congestion and poor road networks, limiting easy mobility, high cost of vehicular maintenance, high fuel prices and cost of cars, there is an ascendant demand for bicycles especially in developing countries as noted by Tuan and Shimizu (2005). The use of bicycles has augmented the user's time utility and has decreased cost, yet, the non-usage of rash helmet has made riding more risky (GSRRS, 2015).

load Traffic Accidents (RTAs)

istics from several studies (WHO, 2004, 2010, 2015; WBG, 2014; GNA, 2016; Iddrisu et al.,) among others, confirm that a great number of people suffer severe and, in most cases, life-long injuries. The proliferation of vehicles and expanded road transport sector, pose a great challenge to human health as far as road transport safety is concerned. These challenges include road transport fatalities, respiratory complications, physical and psychological disabilities, among others. In view of these aforementioned challenges, the roads across the globe especially, in the developing countries, have become death traps against their main purpose of facilitating movement of road users from place to place (Awuni, 2011). According to the WHO (2015), about 1.25 million persons die every year through road transport accidents globally.



Haadi (2014), noted that media reports reveal that Ghana's road accident rate is very high, compared to other developing countries. In 2001, Ghana was rated as the second highest road traffic accident-prone nation among six West African countries, with 73 deaths per 1000 accidents. According to the Finder (2016), in 2015, Ghana recorded 2,289 motorcycle crashes nationwide per statistics from the National Road Safety Commission. The data, however, failed to distinguish between those for private use and those for commercial use. Though the law frowns on the use of motorcycles for commercial use, The Finder (2016), has observed that in it times the popular 'Okada' trade; (a motorcycle transport business), has permeated the portation system in the country. Another observation made by the Finder (2016), is that the ssary authorities have failed to clamp down on the use of motorcycles for commercial oses. The Finder noted, most motorcycle operators disregard road traffic regulations, which orrying to all road users, especially pedestrians, who often share the inadequate walkways able with them. The breakdown of the data indicates that the Greater Accra Region recorded ighest number of motorcycle crashes, with a score of 699 followed by the Tema Region, h recorded 232 motorcycle accidents. The Eastern Region followed third, with 198 motorcycle crashes. The Brong Ahafo Region came in fourth, with 184 crashes. Coming in fifth, was the Volta, where 181 motorcycle crashes were documented. Following in sixth, was the Ashanti Region, where 172 crashes were documented. Following is the Upper East Region with 165 cases. The Upper West Region came in eighth with a score of 122 crashes. In the ninth position was the Western Region, with a tally of 121. The Northern Region came in 10th with 120 cases. Recording the least number of motorcycle crashes was the Central Region, with a score of 95. Even though the use of motorcycles is much common in the northern part of Ghana (Afukaar, 2009; 2010), the low rate of accidents as reported in this part of the country. Perhaps

the statistics could be attributed to the fact that the use of such means of transport for commercial purposes has not been quite extensive, as compared to Accra and Tema among other densely populated regions in Ghana.

The Ghana News Agency (GNA) (2017; 2018) for instance, indicated that the annual accident reports from the MTTD reveal that 2, 198 accident victims died through road transport accidents in the year 2016, whilst further 2, 076 victims died in 2017. Even though the 2016 and 2017

ent recorded figures were less than the 2,219 reported cases in 2015, the figures are still

This is an indication of the prevalence of motorcycle related accidents in Ghana. Road port accidents principally, have been identified in relation to human errors such as speeding, gful overtaking, drunk-driving, as well as gross indiscipline.

rding to Peltzer and Pengpid (2014), in most ASEAN (Association of Southeast African ns) countries, the majority of road users are motorcyclists. Four ASEAN countries nam = 358/1000, Malaysia = 332/1000, Indonesia = 251/1000, and Thailand=251/1000)

more than one motorcycle for every four people. Globally, among the 20 countries with the greatest rate of motorcycle deaths per 100,000 population, six ASEAN countries are included, with the highest in Thailand (28), Lao R. (15), Vietnam (15), Malaysia (15), Cambodia (12), and Indonesia (6) (WHO, 2013). The six countries in ASEAN, where the majority of all vehicles are motorcycles (two- or three-wheeled) are Vietnam (96%), followed by Cambodia (83%), Indonesia (83%), Myanmar (82%), Laos (81%) and Thailand (61%). Peltzer and Pengpid (2014), however, asserted that motorcyclists (two- or three-wheeled) comprise a large proportion of all



road traffic deaths in ASEAN, 74% in both the Lao People's Democratic Republic and Thailand, followed by 67% in Cambodia, 59% in Malaysia and 46% in Singapore.

Road transport accidents could be construed as any accidents occurring on a way or street, open to public traffic, involving one or more moving vehicles; resulting in the death or injury of one or more persons, and damage to property and the environment. Road traffic accidents may include collision between; vehicles, vehicles and pedestrians, as well as vehicles and animals or fixed objects such as trees, road guides or guide poles, utility poles, walls and buildings. According to ECD (2017), road traffic accidents exist in two types; Single-vehicle and Multi-vehicles. A single-vehicle accident involves just a vehicle excluding other road users such as pedestrians, cyclists, or drivers. On the other hand, a multi-vehicle accident involves more than one vehicle, in successive collisions within a short period of time (OECD, 2017).

Causes of Road Transport Accidents (RTAs)

From the end of the nineteenth century and at the beginning of the twentieth century, the rapid growth in the construction of road transport systems, led to the decreased regard for applicable transport regulations. This disregard was as a result of social liberation, which had in turn led to the importation of used vehicles into many economies, resulting in reduced quality of roads, and increased road traffic congestion. Consequently, road transport accidents became more evident (Haadi, 2014).

Globally, motorcycle ownership or occupancy and its usage have hiked over the years among other types of vehicles in the transport sector, especially in the developing economies.



Motorcycles are owned mainly for transportation, economic or recreational purposes. Motorcycles also serve as a form of recreation in the developed countries such as the USA as reported by the National Highway Traffic Safety Administration. (Updated March, 2017). On the contrary, motorcycles are used in the developing countries as means of transportation (Ameratunga, Hajar and Norton, 2006).

The increase in motorcycle usage however, has been accompanied by high risks of crashing resulting in injury and death of riders and other victims (UNECE, 2016). There are a number of contributory factors to road traffic accidents globally and these are User, Vehicle and Environment related. In the study conducted by Njiru (2014), Kenya's District Roads Committee identified a number of causal factors of road traffic accidents which include poor state of trunk roads, poor linkages between rural access, and other rural roads and major high ways, lack of consistent use of road funds to repair degrading roads, lack of quality control to inexecution of projects, and lack of foot paths, bicycles and motorcycles lanes.

The purpose of this thesis, the contributory factors to road accidents are structured into three categories and discussed below.

2.4.1 The User (Human)

Although road transport users include drivers, riders, passengers and pedestrians, both drivers and riders are dominant factors influencing road transport accidents, due to negative behaviour (Zamri, Naim, and Abdullah, 2016; Vogel and Bester, 2005). Human factors are therefore related to personal actions contributing to the incidents of road traffic accidents. Several researches have revealed that driver or rider factors such as noncompliance, have played major roles in causing



system failures (Awuni, 2011). It has been identified that negative behaviour such as speeding, non-usage of crash helmets, non-usage of seat-belts and child restraints, drunk-driving, inappropriate overtaking, alcoholism, drug abuse, and indifference towards traffic laws, are some driver-rider factors which induce or exacerbate road traffic accidents. These factors as identified, as well as human biological characteristics such as age and fatigue which either induce or exacerbate road traffic accidents, had been revealed in an earlier research work (Vogel and Bester, 2005). Researches have revealed that road users especially drivers and riders continue to and ride while using cell phones which detracts their attention (Haadi, 2014).

ngbota (2011) explains that flouting speed limit laws directly and indirectly results in road accidents. According to the author, drivers and riders plying roads below or beyond speed limits lead to users colliding with or being hit by other vehicles. GSRRS (2015), noted that, ignorance, and illiteracy concerning transport regulations, as well lawlessness and negligence on the part of pedestrians, have caused miscommunications between the road, the pedestrians and other users. This means that pedestrians and other users who could not read and

understand the road signs have severely or killed in road accidents. WHO (2010) identified five high risk factors for road safety which include speeding, drink-driving, the improper or non-use of motorcycle crash helmets, non-use of seat-belts and child restraints, as being the major causes of road injuries especially, in the low- income countries. Apparently, these are all human factor-related issues, which induce or facilitate road accidents.

Regarding user factors contributing to road accidents, Odero, Khayesi and Heda (2003) argued that passengers' choice of vehicle and mode of transport are limited in the developing countries.



These authorities assert that the vehicle tends to be overcrowded and unsafe, leading to pressure on vehicle and driver's control over vehicle in operation and the slightest negligence could lead to a road accident. Elvik and Vaa (2004), therefore recommend that it is important for road users, especially drivers and riders as well as pedestrians to respect road transport regulations and principles to reduce the spate of road traffic accidents. In a similar vein, DEKRA (2017), states that vulnerable road users could take active measures in reducing road traffic accidents by paying attention to the form of clothing and shoes they wear so that they could at all times be visible to other major road users.

Human factors, as noted by Vogel and Bester (2005), remain the most contributory factors to traffic accidents. The environmental and vehicle factors could be mitigated if human road users are considerate of the vehicle and environmental conditions, road signs, speed limits, and adherence to the road safety rules and regulations. Tamuli (2016), identified flouting of road traffic laws, overspeeding, drink driving or drink riding, improper or non-use of safety gear, disregard for road signals, fatigue, impaired vision, and old age, as major human factors that contribute to road transport accidents.

In a study conducted by Akaateba et al. in 2015, it was found that the prevalence of helmet use among the 271 sampled riders in Wa, Ghana, was 46% (95% confidence interval). Akaateba et al. (2015), therefore concluded that despite the existence of a legislation mandating the use of crash helmets on all roads, as well as the high level of awareness among riders on this legislation and the benefits of crash helmets, the incidence of crash helmet use among motorists continues to be low in Wa, Ghana. The user factor in terms of non-use of crash helmets is seen as a major risk



associated with the use of the motorcycle as a means of transport. This means that efforts to identify strategies to increase helmet use need to continue. The evidence provided by the study of Akaateba et al., suggests that stakeholders in road safety need to put in concerted interventions to ensure a rigorous enforcement of the helmet use legislation and improvement in helmet design.

2.4.2 The Vehicle

Although most road traffic accidents are human factor induced, the conditions of vehicles plying roads also play a significant role. Safe vehicles, considered as road worthy, help avert crashes and reduce the likelihood consequence of serious injuries and deaths. On the contrary, defective vehicles or unworthy vehicles, increase the propensity of accidents leading to loss of lives, injury to passengers as well as drivers and riders. Defects such as worn-out tyres, bad brake systems, loose axles, malfunctioning head lights, as well as warning lights could result in serious accidents (Annan, 2017). There is therefore the need for unworthy vehicles to be taken off the roads by the various road safety enforcement agencies as suggested by Annan. In other parts of the world, failure in breaking systems of vehicles has been identified to be a mechanical cause of road traffic accidents. The German Institute for Accident Research identified that brake failure and defective tyres could lead to loss of control and this may result in road traffic accidents (Institut für Unfallanalysen, 2008; European Agency for Safety and Health at Work, 2010).

The crashing of small vehicles into heavy duty trucks has also been identified as one major cause of road accidents. According to DEKRA (2017), deaths and serious injuries could be prevented if bigger vehicles such as heavy-duty vehicles and higher vehicles are manufactured and fitted with front and rearguards to prevent under riding of small vehicles in cases of



collision. Also motorcycles and bicycles as well as trucks could be fitted with retro reflective markings to make them identified even from far distances.

2.4.3 The Environment

Although human and vehicle technological factors are very pivotal in road safety issues, environmental factors or infrastructure cannot be ignored. The road environment consists of the roads' design and layout, pedestrian facilities, speed limits, crash- protective roadside objects,

estion, and rescue facilities. As far as causal factors in relation to road environment are earned, poor planning and less consideration of vulnerable users are prominent. The vulnerable users are those who are more likely to be affected (WHO, 2009). Most roads in developing countries are of structural defects. For instance, roads are completed without adequate road signs to ensure structural and human cooperation within the system. As noted by Ani, Shariat- Mahaymany, and Ranjbari (2012), issues related to road curvature, weather phenomena, lack of road signs and roadside guards among other environmental factors, contribute to road traffic accidents.



Also, technically, many roads in the low and middle income countries were constructed in view of the few vehicles that existed at the time, to the neglect of the future tendencies of vehicle ownership increasing alongside increasing populations. As revealed by earlier research reports, developing countries represent 54 per cent of the world's vehicle ownership (WHO, 2014). This has resulted in vehicular congestion on many of Africa's transport routes. In the light of these new unforeseen developments, road networks in developing economies are yet to be fully developed. The poor road management and low standard maintenance practices, coupled with

low construction standard of roads, have led to preventable road traffic accidents (Annan, 2017). Thus, there is miscommunication between the road and the users resulting in preventable road accidents. Afukaar (2011), suggests that road systems should be created and improved to tolerate users' mistakes or miscommunications, and to simplify users' decisions in order to reduce crashes and injuries. In this regard, it has been suggested that roads should be constructed such that, no one should have to pay his or her life for a driving error.

response to environmental factors to road accidents, developing countries have developed the and 3+3 approach to ease traffic flow difficulties among motorcyclists, pedestrians and other modes in the traffic mix (DEKRA, 2017). This approach, although carried out in some developing countries such Ghana and Nigeria, where roads have been expanded to lessen the effects of road traffic accidents, the roads, especially in urban cities have been burdened with street hawking activities as revealed in the works of Nnduka and Duru (2014), Umahi (2008), Kwankye, Nyarko, and Tagoe (2007). The findings of Nduka and Duru (2014), showed that of 300 respondents, 214 had been victims of road traffic accidents. These revelations pointed



clearly that the space and victim rates of accidents should be of relevance to road safety agents and stakeholders.

According to Umahi (2008), hawking being an attractive enterprise for dropouts and family burden laden traders, comprises these classes of persons mixed with moving vehicles, occupying traffic demarcated environment in search of livelihood. The implication is that efforts by developing countries to make the traffic environment accident- free enough to ensure road safety, must be increased to reduce or limit human activities in the streets. Hawkers continue to

occupy traffic space and use road traffic sign- posts to display their wares along the roads, causing obstruction and poor visibility. This calls for regular road checks by the National Road Safety Commission and the Standards Authority to ensure that safety is ensured in the traffic environment. Although I agree with the findings of Hajar et al., (2000), and Shankar, Mannering, and Barfield (1995), that environmental factors must not be regarded as the major causes of road traffic accidents, it must be noted that such causes must also be factored into preventive measures of road traffic accidents.

Effects of Road Traffic Accidents

Experiences of road traffic accident victims are of much concern to national socio-economic development, as they sustain physical disabilities and endure severe pains which affect their abilities to contribute to productive development. Road accidents affect the whole fabric of society. The victims, and their relatives, as well as the entire society at large are all affected at various degrees (World Bank, 2014). Road transport accidents effect cannot be overrated in national development planning and road safety in relation to tourism, employment, commerce, port industry and agroindustry among many others. There are categories of costs associated with road transport accidents, social, economic, psychological, and cost to the society (government), which are interrelated. This implies that for every road transport accident that may result in death, there may be several numbers of survivors who may have as well suffered prolonged injuries and lifetime disabilities which in effect, play a role in the social, physical, economic and psychological qualities of the entire human society (WHO, 2004). This further results in severe injuries as well as other accompanying life-changing injuries incurring a whole range of costs; socially, economically, and psychologically, relating to prolonged hospitalisation

and expensive health-care which in turn, increase household expenditure especially among vulnerable road user victims such as bicyclists, motorcyclists, and pedestrians, as well as the aged (DEKRA, 2017).

2.5.1 Social Cost

Social cost constitutes a large portion of the cost associated with road traffic accidents in general.

Social cost category involves traffic delays resulting from traffic flow disruption due to road ent congestion, police and hospital services. Social costs of road accidents encompass a er of components which include loss of life or life quality (temporal or permanent ility), unbearable medical costs which include hospitalisation, emergency, and follow- on odic medical examination), loss of productivity due to prolonged incapacitation, legal court and property damage costs (MoT, 2017).

rding to Atkins (1981), social costs of road accidents are also associated with intangible such as pain and suffering which affect families and the entire community. In support of

is's (1981) view point, Guria (1990) and Ebrahimzabeh (2012), have pointed out that the consequences of road traffic accidents primarily affect both the direct victims and their family relations. There are health effects on the victims which result in incapacitating injuries or death. These consequences reflect in the social spheres of job loss, loss of productivity, financial hardships as well as household malfunctions, which adversely affect the quality of life of the victims and their families. Families with road traffic accident victims become poverty- stricken due to death of a breadwinner or prolonged medical expenses directed toward the health care of the victims. Friends and families may also suffer adverse economic and psychological effects



due to direct assistance and attention both financially and emotionally toward victims (Annan, 2017).

The social costs of road accidents could be dreaded and unquantified as discussed. The social costs of road accidents in terms of grief and pain, bodily injuries and the syphon they exerts on family resources could not be measured (Derrick and Flaucher,2009). This calls for a critical look at the social costs of road accidents.

Economic Cost

ral researches conducted to the effects of road traffic accidents on national development revealed that road traffic accidents have huge negative effects on economic development aro, Millikarjunareddy and Raju, 2013). Aderawo (2012), asserted that a nation's activity is negatively affected by road traffic accidents. The findings from the studies of awo (2012) and Apparo, Millikarjunareddy and Raju (2013), among others suggest that the of a country is negatively affected by road accidents. Thus, as road traffic accidents



ase, a country's GDP per capita consequentially decreases. This stems from the fact that countries are likely to direct funds earmarked for national development to tackle accident-related issues to the neglect or less consideration of basic needs improvement.

In Ghana, GhanaWeb (2018), reported that road accidents increase government expenditure. This has been exemplified by the Ghanaian government's call on the road safety- related ministries to come up with proposals to tackle the over 200 road accidents that have already occurred in 2018, which have claimed several lives and leaving many severely injured

(GhanaWeb, 2018). This implies that, actions to be proposed in these Ministerial proposals would require government's financial commitment to reduce or stop the spate of accidents on Ghana's roads.

Enu (2014), showed that low and middle-income countries lose almost 4 per cent of their GDP to road traffic accidents. Juillard, Labinjo, Kobusingye, and Hyder (2010), equally revealed that out of the victims that survived road traffic accidents, 29.1 per cent got disabled and almost 14 per cent of them could not engage in any meaningful economic activities. This retards the nation's productivity due to loss of life quality and reduced labour force which could have contributed significantly to the nation's economic development (Yusuff, 2015).

NRSC (2007), indicated that 1.6 per cent of road traffic accidents in Ghana cost the country's GDP an estimated USD165 million. These estimates in earlier researches linked the to the management of injuries and deaths of victims in motorcycle accidents who were cited and in recent researches continue to be most likely road users to suffer severe injuries and deaths of road traffic accidents (Janmohammadi, Pourhossein, and Hashemi, 2009; Okeniyi et al., 2005; Branas, and Knudson, 2001).

As road traffic accidents affect the national economies globally, especially developing countries annually (Kudebong, Wurapa, Nonvignon, Awoonor- William and Aikins, 2011), it is incumbent on governments to devise adaptive strategies in tackling the causes and effects of road traffic accidents especially those involving motorcycles. Africa according to the World Bank Group (2014), has the world's highest road-related death per capita rate. Africa in that regard spends an



estimated cost of 3.7 billion on about 28.3 million deaths per 100, 000 population annually (GRSF, 2012). These sums of monies, if not because of road accidents, could have been channeled into the development and growth of the economies of most countries through job creation and expansion of businesses.

2.6 Road Safety Measures

The Haddon matrix, by Haddon in 1968, presents a globally accepted set of measures that could be adopted and adapted by countries to ensure the interactions between possible factors influencing road safety. The Haddon matrix entails the relationship between factors and players in the enterprise of road safety which includes the human factor, vehicle and equipment factors, and the environmental factor (both physical and socioeconomic environments). Albeit, not all measures can be successfully implemented in all regions. Policy makers need to conduct cost-benefit analysis to ensure regional or geographical adaptive implementation and success of such measures. It has therefore, been suggested that policy makers ought to take the safe system approach (WHO, 2010), as proposed and reiterated, into consideration in attempts to ensuring

safety. This approach sought to;

- i. Reduce exposure to risk,
- ii. Prevent road traffic accidents from occurring,
- iii. Reduce the seriousness of injuries during crashes, and
- iv. Reduce the consequences of injuries through post- collision care.

Afukaar (2011), with this approach in view suggested that Ghanaian roads should be forgiving. That is to say, roads should be constructed to prevent road accidents and in such a way that user



mistakes could be tolerated. Dualisation was his suggestion to achieve road safety in the system approach. Although challenges may be encountered, this approach according to Lonero et al. (2002), has been tested and proved effective in reducing road traffic injuries over the years.

Road safety is therefore, a shared responsibility which requires commitment and informed decision-making among the key actors of policy implementation; the executive, the legislature and the judiciary, as well as industry, non-governmental organisations and international organisations and the media with the participatory inclusion of vulnerable groups, law enforcement agencies and community-based groups as shown by the summary of the world report on road traffic injury prevention (WHO, 2004). According to (Downing, 1991), road safety management system is a collection of procedures that necessitate road traffic accident prevention. These procedures include;

1. Identification of a central actor in the state to champion the course of road safety efforts,
2. Evaluation of the challenges, policies, and institutional setting in relation to road traffic injury prevention in each country,
3. Mapping out a national road safety strategic and action plan,
4. Effective distribution of financial and human resource to tackle the challenges,
5. Specific action implementation to reduce traffic crashes, minimise injuries, and their aftermaths, and
6. Support national capacity and international cooperation development.

Downing's definition and Turkson et al. (2013), revealed that many African countries and governments, as well as implementation agencies continuously have largely failed in achieving



road safety. This could be due to inadequate resources and personnel as opined by the National Road Safety Commission (NRSC, 2002). The World WHO (2014), unequivocally reported that in order to achieve road safety in the spheres of injury and death reduction, factors such as speed, drunk-driving, helmet usage, seat-belt usage, and other human as well as structural factors within the system must be critically considered. Regarding crash helmet usage which is the only way of preventing head injuries, Turkson et al. (2013) in the introduction recommended that in order to eliminate the barriers preventing crash helmet usage, education is required to eliminate negative options and also strengthen regular enforcement. Education in all views, contributes to road safety promotion, and hence must not be relegated to the background.

For example, through the NRSC under the act of Parliament, Act 567 of 1999 and Act 683 of 2004, has been endeavoring to ensure the promotion of road safety practices within the road safety management system which encompasses agencies and road users; pedestrians, drivers, motorcyclists and cyclists, with the aim of making Ghana's roads safer in Africa (Boakye et al., 2016).

Although efforts are being made, there is still more room for improvement as suggested by the National Road Safety Commission (2002).



In terms of data management, which is the collection, analysis, and storage of road transport incidents, and accident occurrences, there is still the persistence of issues regarding poor recording and management of road traffic accident data, especially in the developing countries. There exist situations of under reporting of road traffic accidents and even unavailability of road traffic accident data, resulting in missing data (Adeboye et al., 2016). Road traffic accident data collection and management must not be undermined. Afukaar (2000), has stated that identifying

highly accident prone areas will help in calling for a remedial approach to road accident reduction. He added that road traffic accident data could help in adequate safety policy formulation and strategic planning when road safety problems are revealed by such data. Afukaar (2010), further asserted that road traffic data management helps in creating awareness on accident exacerbating behaviours such as speeding, non-compliance by road traffic signs (disregard for road signs), drunk-driving, riding motorcycles without crash helmets, and driving without seat-belts among others. Accident management data would help key state actors to note effective functioning of the road traffic safety management system, and also to manage scarce national and environmental resources, as well as allocate the few personnel to realistic in ensuring road safety and national development.

entally, little importance has been attached to Road Traffic Management Development (RD). According to World Health Organisation (2009), road traffic management can provide vital information on the proportion of road traffic deaths that are attributed to speeding, alcoholism, non-use of helmet and seat-belt usage rate, for effective targeting of interventions in

uating apparent government's national road safety programmes. A study conducted by the world Bank in 2008, revealed that there exists an enormous continuous information gap on the cost of effectiveness of road safety measures especially, in the developing countries. Gaps such as information on performance enforcement measures, impact of road safety on the modes of road transport; minibuses, taxis, motorcycles, and bicycles which are commonly used in the developing countries.



As part of the importance of road traffic data management, proper and adequate data are seen as useful tools in bridging the gap in road traffic management development through the provision of information for effective monitoring and evaluation by concerned road safety agencies in policy direction. Accurate data are therefore, important for monitoring trends, assessing intervention programmes, as well as prioritising public health issues and facilities (Zaal, 1994). The foregoing discussions suggest that issues characterising authenticity of data source, type of data collected, inappropriate use of indicators, non-standardisation of data, underreporting, as well as poor onisation and linkage between different sources of data; will be addressed adequately if er data management practices are ensured within national data management systems.

Conceptualisation of Crash Helmet

According to the Center for Disease Control (2012), and UNECE (2016), using a crash helmet is single most effective way of reducing head injuries and fatalities resulting from motorcycle es. Just as most sporting activities have their own unique protective attire, motorcycling, h is not exempted, has its protective equipment. Motorcycle riders therefore, are expected to



crash helmet, which is the most sensible, every-time safety activity (MSF, 2014). This implies that riding a motorcycle without crash helmet exposes the rider to high risks of dying from head injuries or sustaining severe injuries during crashes because the helmet protects the head from injuries (NHTSA, 2010).

The Commission for Disease Control (2012), noted that the unique utmost effective means of saving lives and saving costs is the enforcement of a universal helmet law. Branas and Knudson (2001), pointed out that motorcycles are one of the most dangerous forms of motorised

transportation. Motorcycle riders represent a vulnerable group of road users, because of the small size of their vehicles. Motorcyclists are about three times more likely than car occupants to be injured in a crash, and 16 times more likely to die. According to WHO (2004), even in developed countries where morbidity and mortality rates from motorcycle accidents are low, the risk of dying from a motorcycle crash is twenty times higher than a motor vehicle crash. These revelations support the urgent need for the wearing of requisite crash helmets.

y countries have saved costs which were formerly diverted to tackling road traffic accident-related results due to the increase in helmet usage, in spite of the fact that much more is required to achieve higher positive effects. There is a continuous challenge with law enforcement in the developing countries which are habituated to road traffic lawlessness (Asibey, 2011). This challenge according to Zaal (1994), requires an integrated enforcement approach to target all harmful road user behaviours to ensure road policy effectiveness and compliance. There is therefore, the need for compulsory national helmet laws and byelaws as an integrated mechanism for increasing the wearing of crash helmets in the developing countries due to the hikes in motorcycle usage and reduced helmet usage.



Several studies which have evaluated the effect of helmet usage on head injuries and motorcycle accident related deaths have proven effective in the sense that helmet usage laws increased usage, resulting in the reduction of head injuries as well as deaths (NHTSA, 2010; Preuser, Hedlund and Ulmer, 2000; Kraus, Peek, and William, 1995).

The impacts accompanying helmet usage laws in use in developing countries have been of much concern. However, there are challenges encountered in relation to police resource constraints, corruption on roads, community attitudes toward helmet usage, as well as poor legislative enforcement (Holder, 2004). This implies that governments of both low- and middle- income countries require much more legislative enforcement efforts to ensure helmet usage and the adaptative application of international standards and approaches (WHO, 2006). Across the globe, although many countries have been mentioned in the literature, some have very effective helmet laws while a few others are less effective. The implication is that road traffic accidents are likely to reduce in countries of high law enforcement, compared to those with less or relaxed laws (NHTSA, 2017 and 2015).

Ghana like most countries in the world has helmet usage laws. The helmet usage law was enacted in 2004 under the Road Traffic Act, Act 683 and entrusted to the National Road Safety Commission and the MTTD in order to ensure the sale and use of standard helmets and also promote world standard road safety among all groups of road users. The MTTD and NRSC have implemented road safety check measures as well as safety education campaigns in place to create awareness within institutions and in the streets and among road users. It is under the same Act that the MTTD of the Ghana Police Service deploys personnel to various traffic zones to ensure traffic law compliance. Despite the existence of this law, crash helmet usage still remains low in the Upper West Region (MTTD, UW/R, 2017). However, the duties as enumerated by the Acts and laws across the Region have been marred by the bad conducts of some police personnel deployed to check and ensure road traffic law compliance. Many are of the view that poor remuneration, accommodation and poor general working conditions have led to this unlawful



behaviour within the Police Service. This demands bold and tactful reforms in the Police Service as well as the improvement of the service conditions of the Police to promote effective service delivery (Awuni, 2011).

2.8 Types of Crash Helmet and World Standards

Generally, the crash helmet is conceived as a hat made of strong material and worn when riding a motorcycle to protect the head from danger in case of any accident or obstacles. A more current definition put its definition as, “a helmet worn by motorcyclists to protect the head in case of crash” (Oord, 2010). Aside these definitions, less has been done by scholars in this enterprise to provide far scholarly definitions. According to WHO (2016), there are three most commonly types of crash helmets which include the full- face, open- face, and the half- head.

Full-Face crash helmet

A full-face helmet is the type that provides ultimate protection to the rider. The crash helmet consists of a chin guard that extends to a level directly below the lips (Yu et al., 2011). Its popularity could be due to the full coverage it provides in addition to impact protection to the rider.

For descriptive purpose, it surrounds and supports the jaw of the rider and the visor provides a variety of visual enhancements through the vision port for upright and outer visions.





Fig 2.1: Full-face crash helmet

Source: Yu et al., (2011)

Open-face crash helmet

Open-face crash helmet type is of standard protection to the rider. It may not be effective enough as it has a visor to protect the rider's eyes. However, the rider's chin and jaw are left unprotected, and the rider risks being fully protected against head injuries in case of a crash (WHO, 2016).



Fig 2.2: Open-face crash helmet

Source: WHO (2016)

2.8.3 Three- Quarter or Half-face crash helmet

The half-face helmet is cheaper, but less protective and less effective among the three types in terms of safety (Yu et al., 2011). This helmet type has a hard exterior shell and a comfortable inner lining. They rarely have visors to protect the eyes and chin, and also lack jaw guards to prevent injury during crashes. They are likely to have less retention systems as some may not have ear flaps. Although these helmets are available to riders on the markets, there must be strict law enforcement on motorcycle vendors to purchase the more safety helmets. Finacially, the face helmet may be less expensive. However, its cost in terms of safety could be more trous in case of road accident and crash injuries. Motorcycle riders therefore, must consider protection when purchasing such a safety gear.

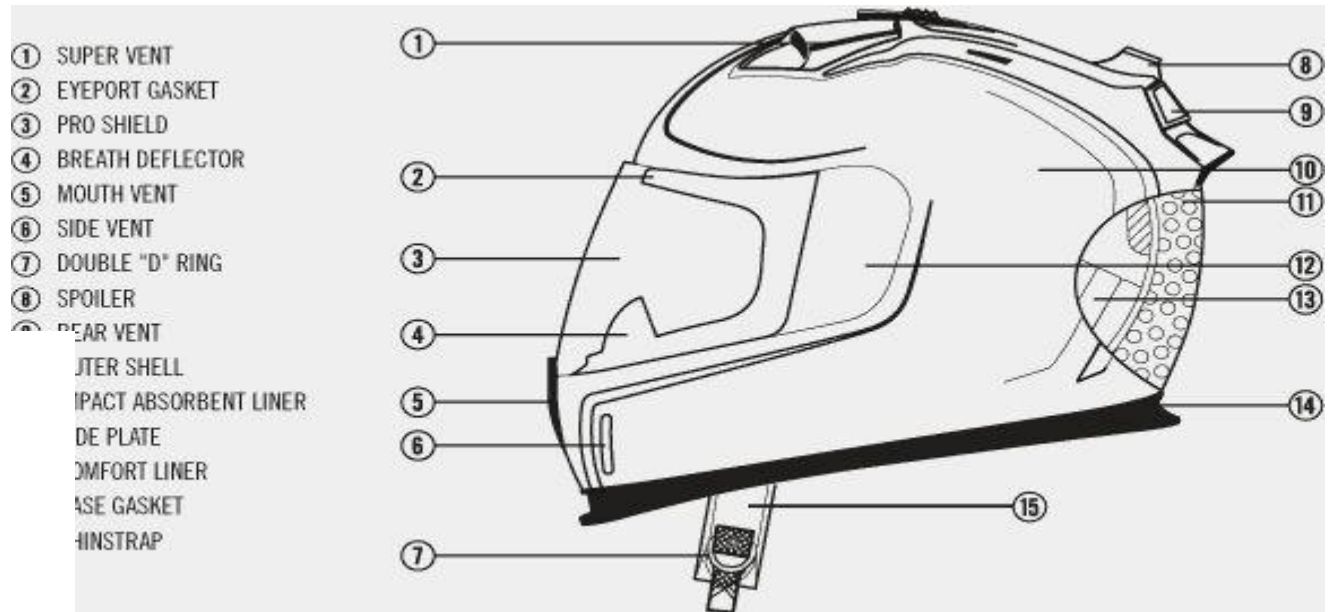
UNIVERSITY FOR DEVELOPMENT STUDIES



Fig 2.3: Half-face crash helmet

Source: WHO (2016)

2.9 Uses and importance of crash helmet



2.4: Labelled diagram of a Motorcycle Crash Helmet

Source: WHO, 2006

1 reports present that motorcyclists mostly suffer severe and fatal head and neck injuries, these injuries are lessened when crash helmets are worn (MSF, Ride Safe Indiana: Motorcycle Operator Manual, 2017). The various parts of the helmet as labelled in the diagram

above perform their various, but integrated functions in cases of crashes, which give a sense of a sense of importance to crash helmets usage. The helmet in its role to reduce severe head injuries and death provides;

- i. Reduction in the deceleration of the skull, thereby preventing movement of the brain in reaction to crash impact. This depicts the function of the parts of the diagram labelled 11 and 13 (impact absorbent liner and comfort liner respectively), which reduce the impact of shock on the brain's movement, making sure it does not hit the



skull (WHO, 2006). In their final report (Chang, Ho and Chang, 2003) they suggested that the crash helmet prevents shocks from road crashes on the head and brain of the crash helmet user.

- ii. The helmet equally, prevents direct contact between the head and any damaging object during a crash. This implies that non-helmeted riders are at a higher risk of sustaining severe lifetime injuries or even dying. These conditions may leave families in traumatic conditions and financial constraints due to medical care bills and loss of relatives. It also in the same regard prevents national economic loss to taking care of accident- related issues rather than other important developmental issues of national concern (Brandt et al., 2002).

work of the helmet could be summarised as having a hard outer shell that distributes the force of an impact to protect the skull and prevents objects from piercing it. The inner liner limits the force of impacts by absorbing a portion of the energy that would otherwise reach the head and brain. As the helmet is used, the number and severity of head injuries are significantly

reduced as has been explained by WHO (2006). In another place of literature, it was concluded that the crash helmets provided protection for the motorcyclists involved in road transport accidents. In effect, their use was linked to reduced death rates and reduced risks of diverse severe degrees of head injuries (Hooten and Murad, 2012).

2.10 Factors influencing the non- use of crash helmets

The motorcycle as a popular, most preferable and convenient means of transportation has and continues to play important roles in the transport sector of economies across the globe. In India



for example, studies reveal that motorcycle usage has rapidly increased over the few decades with its accompanying road traffic- related dangers (Idrisu, 2017; Turkson et al., 2013; and Papadakaki et al., 2013). The increase in the preference of the motorcycle, especially in developing countries could be attributed to its convenience of use in all traffic circumstances, parking feasibility, easy maneuvering and affordable cost. In Ghana, it was concluded that the use of motorcycles as a means of transport has gained fame in the northern parts of the country due to its affordability and accessibility to all classes of people (Ackaah and Afukaar, 2010).

ough motorcycle usage continues to increase in the transportation industry across the globe, use of crash helmets remains a risk factor in the safety of non-users. In the low and middle-income countries, studies revealed high rates of non-use of crash helmets among motorcyclists. For instance, in China, the crash helmet usage among motorcyclists was 34-37% (Li et al., 2008). In India, Mutharajan, Muttappillymqualil, Divakaran and Haran (2010) revealed that the rate of use of the crash helmet stood at 68.6%. Ali, Saeedmj, Ali and Haitar (2011) found that the non-use rate of the crash helmet was 89.3%. Ogunniyi, Ugboko and also, the non-use rate of



crash helmet stood at 76.2% in Nigeria (Adewole, 2007), whilst in Vietnam recorded a 70.1% rate of non-use of the crash helmet (Hung, Stevenson and Ivers, 2008). These figures, as identified in the literature are indicative of the high rate of non-use of crash helmets among motorcyclists.

Since crash helmets remain important components of the motorcycle vehicle, they continue to offer protection, injury prevention and safety to the users (Yu et al., 2011), its non-use continues to be a problematic phenomenon among motorcyclists in spite of the importance characterising

the usage of such safety gear (Idrissu et al., 2017; Brown, Hejl, Bui, Tips, and Coopwood, 2011; and Crompton et al., 2010). There are a number of factors influencing non-use of crash helmet as has been revealed by existing studies. Zamani- Alavijeh, Bazargan, Shafiei, and Bazargan-Hejazi (2011) attributed the factors influencing the use and non-use of crash helmet to personal and psychological characteristics as well as socio-cultural factors. Ranney et al. (2010), as well as Sreedharan et al. (2010), found that motorcyclists with socio-demographic features such as young age, sex (male), low education, unmarried status, unlicensed and previous accidents, were less likely to use crash helmets.

Discomfort, crash helmet characteristic pose an influential factor to non-use among motorcyclists. Low helmet use among some motorcyclists has been revealed to be low due to reasons such as; discomfort due to poor ventilation, poor visibility as well as limited hearing (Idrissu et al., 2017; Odey, Adetifa, Carley, Holt and Walker, 2011; and Ranney et al., 2010). These factors were highlighted in the studies of Papadakaki, Tzamalouka, Orsi, Kritikos, Morandi, Gnardellis and Chliaoutakis (2013).

Regarding socio-demographic factors influencing non-use of crash helmet, it has been identified that low levels of education and less information about the risks factors of non-use and importance of crash helmet account for non-use among motorcyclists (Brown et al., 2011; Sreedharan, 2010). In addition, environmental factors such as heat resulting in headache and discomfort has also been identified as a major contributory factor to non-use of crash helmet especially in countries experiencing high temperature conditions (Idrissu et al. 2017; Gkritza, 2009).



Faryabi, Rajabi, and Alirezaee (2014) concluded the weight of the crash helmet, feeling of heat, neck pain, feeling of suffocation, limitations in the movement of head and neck were factors influencing non-use. Moghisi, Mohammadi, and Svanstrom (2014), also concluded that factors such as funny- looking when in crash helmet, decreased hearing, and feelings of heat during helmet use, as some major factors influencing the non-use of helmets among motorcyclists.

2.11 Mechanisms targeting the use of crash helmets and challenges

As far as the crash helmet and mechanisms to promote its use are concerned, there is less consistent evidence on the effectiveness of interventions such as law enforcement programmes, information and education campaigns, personal protective equipment and conspicuity, and motorcyclist education and training among others, targeted at increasing usage as identified by IHTSA (2011). In addition, reports from several studies on the mechanisms targeting the use of the crash helmet have concluded on helmet law enforcement being effective and preferable.

Mandatory helmet usage legislation is one major mechanism targeting the use of crash helmet in 177 countries. Crash helmet legislation compels the use of crash helmets among motorcyclists thereby reducing deaths (Turkson et al., 2013; Morris, 2006; Sass and Zimmerman, 2000). Below are the main thematic areas under which helmet use targeted mechanisms have been discussed.



2.11.1 Enforcement

Studies have concluded that traffic police, schools/ colleges, the media, as well as parents have responsibilities of enforcing crash helmet usage among motorcyclists. The police enforces laws and penalises offenders. The Police Command in Ghana for instance, creates teams to deal with the *Okada* (a local name for motorcycle transport business), issues which are sources (Awuni, 2011). Awuni added that GH¢462,272 had been bagged into the Consolidated Fund as fines from conviction of crash helmet law violation. Schools and colleges have also taken punitive measures, to deter crash helmet usage law flouters. Parents in countries like the United States of America, Malaysia, and the Netherland make efforts to encourage children to use the crash helmets. Organisations in the developed countries are making efforts in ensuring helmet law compliance among their employees.

2 Education

traffic police make efforts to educate motorcyclists on safety measures as well as safety measures that could prevent injuries. In Ghana, the Police MTTD and other stakeholders put up educational campaigns at national and local levels to ensure that crash helmets are worn by motorcyclists (GhanaWeb, 2018). Education programmes are organised around the scale of problem, benefits of safety behaviour, creation of web portals, and seminars.

The media especially, in the USA (NHTSA, 2011) and others in Africa display statistics and use icons to impart the message. Billboards and social media are used across the globe to share information among motorcyclists. Schools and colleges carry out sporadic lectures on safety



behaviour and reiterate harmful effects of unsafe behaviour. The health sector also has a role in campaigning against unsafe behaviour among motorcyclists, and educating the general public on sufferings associated with non-use of crash helmets (GNA, 2017).

2.11.3 Encouragement

There is the need for motorists to be encouraged. The police give recognition stickers and also accentuate positive behaviour. Educational institutions award and appreciate good safety behaviours as well as organise educative contests among students. The media also advertises positive messages. In Ghana currently for instance, the road safety message concerning crash helmet use is that *'don't lose your head'*, and *'arrive safe'*, *'you may lose your arm or leg, but don't lose your head'* among others.

4 Evaluation

Evaluation involves the measurement of previous measures, impact assessment of desired behaviour, devising ways to overcome resistance and continued periodic evaluation. Evaluation comprises essential constant monitoring. Iddrisu et al. (2017), outlined mechanisms such as public health education, road safety education campaigns, increased presence of traffic police and robust helmet usage law enforcement as thematic areas of evaluation.

A number of challenges however, hamper the effective implementation of mechanisms targeting crash helmet use as explained by Awuni (2011). Poor knowledge in traffic laws poses challenge to mechanisms of ensuring helmet use. Low level awareness on traffic laws among motorcyclists hamper effective law enforcement mechanisms (Iddrisu et al., 2017; Awuni, 2011). There is,



however, less evidence supporting the poor knowledge of traffic laws except those stated in the studies of Iddrisu et al., and Awuni.

Public and political interference is another challenge which requires drastic attention. Regarding police law enforcement, unwarranted and excessive interferences in traffic offences, investigations and prosecution pose a challenge to helmet use mechanisms. Interferences in traffic offences have always been linked to flaws in enforcement as well as corruption on the part of some enforcement personnel (NRSC, 2018, MTTD, 2018). Most persons perceive traffic offences such as non-use of crash helmet as insignificant. Interferences impede the responsibilities of law enforcers and interventions, and also daunts the spirits of police personnel by, encouraging or perpetuating corruption among the police (Holder, 2004).

Another challenge is prosecutorial lapses. The process of prosecution could not be completed if traffic offenders are not arrested and arraigned before court (Awuni, 2011). Awuni explained that prosecution is hampered by difficulty in tracing witnesses to support in pending cases. This as

Awuni argues, often results in poor prosecution leading to the discharge of alleged traffic offenders. In addition, lack of education, media, and enforcement expertise is a problem in helmet use enforcement.

2.12 Theoretical Framework (Rational Choice Theory)

The Rational Choice Theory emanated from earlier theories of human behaviour and utilitarianism in economics Baccaria (1764) and Bentham (1789). The rational choice theory posits that would-be offenders or criminals consider the potential costs and benefits of their



perceived actions before deciding to engage in crime. The classical school of thought and its philosophies propounded by Baccaria (1764) and Bentham (1789) suggested earlier that criminals would desist from committing crime due to the fear of punishment (costs). This fear of punishment (potential costs) of committing crime formed the basis for the deterrence theory in criminology (Bouffard and Wolf, 2007).

According to Ahmad and Emeka (2014), the rational choice theory, being birthed from the classical and Neoclassical schools, had its concepts or principles based on the positions that imposing punishment (or costs) for crime to outweigh the gains (in other words, benefits) will dissuade prospective criminals from engaging in criminal acts. Ahmad and Emeka (2014), opined that the theory had aided the development of other theories such as the Lifestyle and Routine Activities theories. The theory's protagonists, according to Akers (1990), purported to work not just broadening the theory in view of deterrence perspectives. They actually had injected an integrative viewpoint to the theory, research and policies of criminology.



The rational choice theory in its entirety sought to explain human behaviour from social sciences, psychology, as well as economics fields. The rational choice theory, according to Hechter and Kanawaza (1997), is a collection of theories and models. Such collection of models includes the decision theory, game theory, public choice theory, and other social science-related models. The Rational Choice Theory, increasingly adopted by social scientists, political scientists as well as lawyers as a perspective of thought, was an expanded and explicated ideology which sought to deal with criminal behavioural issues (Clarke and Cornish, 1986).

The theory as explained in the eighteenth century posited that offenders tend to commit crime based on the costs and benefits associated with such perceived crime. This implies that there is a sense of reasoning in every individual's actions (whether good or bad, lawful or deviant) as suggested in several, but unrelated criminological studies journals, papers as well as scholarly articles (Athens, 1980; and Dobash and Dobash, 1984). Based upon these assertions, Keel (1997), outlined the assumptions upon which the rational choice theory had been propounded that;

-) The human being is a rational actor,
-) Rationality involves an end/ means calculation,
-) People (freely) choose behaviour, both conforming and deviant, based on their rational calculations,
-) The central element of calculation involves a cost benefit analysis. Pleasure versus Pain or hedonistic Calculus,
-) Choice with all conditions being equal will be directed towards the maximisation of the individual's pleasures,
-) Choice can be controlled through the perception and understanding of the potential pain or punishment that will follow an act judged to be in violation of the social good, the social contract,
- 7) The state is responsible for maintaining order and preserving the common good through a system of laws (this system is the enforcement of the social contract), and
- 8) The swiftness, severity, and certainty of punishment are the key elements in understanding a law's ability to control human behaviour.

Also according to Lopez (2014), there are in a more simplified assumptions to those outlined by Keel (1997), four areas in which the rational choice theory could be applied or used. He explained that every person uses the rational choice theory. This implies that every individual is perceived being a rational actor in every situation (Lopez, 2014). People therefore understand things from a logical point of evaluation of alternative means to achieving ends. It is therefore a matter of what best means yield the expected end, then a decision is taken. It must therefore be noted that the individual's rationality deals with individualism which is an ultimate outcome in a free society.

her assumption from the viewpoint of Lopez (2014), is guided by utilitarianism. This option suggests that individuals are rational in seeking the best means to maximise their utility, hence would calculate costs and benefits of their means vis- a- vis the ends.

This thesis assumes that, tertiary education motorists who do not use helmets as actors, have calculated ends of non-use in view of the costs of what could happen riding without crash helmets, against the benefits of what could happen if crash helmets were used. Hence the best or maximum utility is derived having calculated all means such as plying in areas of less police supervision, excusing non-use, as well as lending out helmets as identified in previous studies.

Lopez's (2014), third assumption suggests that behaviours stand to be the product of costs and benefits analysis of perceived actions. People in evaluating actions consider the pains and pleasures involved. Individuals therefore tend to choose options that present the least pain or cost. In related studies, findings revealed that motorists involved in road traffic accidents due to



speeding, non-use of crash helmets, and drunk riding had calculated the benefits of beating time. Also, avoidance of discomforts of heat, hearing and vision impairments, as well as the pleasures or acting under the guise of alcohol respectively are chosen by the individuals taking into consideration the costs of the tendencies of being imprisoned, fined, severely injured or even dying. Proponents of this theory therefore recommend that the costs of deviant actions should be increased to outweigh the pleasures of benefits to deter criminals or deviants from choosing perceived pleasures regardless of the costs involved.

z's (2014), final assumption is in line with structural and institutions approach to controlling rational choice among individuals and societies. He posited that harsher sanctions of crime could be established to deter crime. These sanctions may be social constructs approving or disapproving actions through established rules and laws fortified by associated penalties (Gibson, 1990).

more recent explanation, Steele (2016), opined that rational individuals or offenders assess costs and benefits before engaging in any activity. Hence an individual's actions must be



justified for by no other person than the executor. Steele's (2016), rational choice explanation concurs with earlier writings of Sutherland and Cressey (1974). From Steel's (2016) ideas, "*the Rational Choice Theory has at its core an assumption that a decision to offend or commit crime takes place, and that such a decision is taken by a reasoning and rational individual, weighing up the costs and benefits of the action*".

The rational choice theory has been tested and applied to previous and more recent studies in seeking to comprehend the criminality of offensive experiences of those engaged in criminal or

deviant behaviours. Carroll and Weaver (1986), Feeney (1986), Schlueter, O'Neal, Hickey and Seiler (1989), Corbett and Simon (1992), Paternoster and Simpson (1993), Topali (2005), and Beauregard and LeClerc (2007), on socio- behavioural issues ranging from burglary, institutional crime, sex crime, traffic offences, as well as property thefts, found culminated views that offenders weighed up their costs, which could be official (institutionalised) or experiential (natural consequences of the act), and benefits associated with their actions. This implies that a prospective criminal offender would have determined the pain or punishment and rewards or ure associated with his or her perceived offence before acting. In this light , it is prudent /ing this theoretical framework to exploring the rationale for non-use of crash helmets ig tertiary education students within this study's research jurisdictions as stated earlier, since a behaviour is believed to have been calculated by the actors.

though the framework has been applied to diverse fields of study in criminology, ology, economics and legal thinking of human actions, it has has not been applied to any et use- related study hence a gap to be filled in ascertaining the factors influencing the non-



f crash helmet, which is a criminal offence under Ghana's Road Traffic Act, Act 683, which ensures that both riders and pillion riders of motorcycles use crash helmets at the time of riding. This rational choice theory as reviewed in this work will create a framework for better understanding and create better deterrent and preventive policies for crash helmet usage among motorcycly users based on the findings and recommendations of this study.

The rational choice theory could, however, not go without deterrence theory which has its values directlty or indirectly incorporated into it. Just as the rational choice theory suggests costs of

deviance ought to be maximised to prevent crime, deterrence theory posits that crime could only be prevented only if the costs and punitive measures were certain, severe and swift., of which certainty in deterrence stands paramount to celerity and severity (See and Kieser, 2013). In their work, they identified certainty, severity and celerity as being key elements of deterrence. Certainty, refers to the likelihood of an offender or criminal being caught and, or punished for a criminal or deviant or an unlawful act in the shortest space of time. Certainty is identified as most important among the three.

ity has to do with how quickly or swiftly an offender or criminal gets sanctioned or punished for an offence or a criminal act. Severity is about the harshness of a sanction metted out on an offender. It is assumed that if a sanction does not fit the crime, there is the likelihood that the perceived crime may not be prevented, hence the offender must be punished according to the crime committed. This explanation reaffirms Femi (2013). In his conclusion he suggested that punishment should be made severe to deter traffic operators from offending. I, however, disagree with Femi's use of severe in his conclusion, because punishments or sanctions could be made



re, especially financial penalties or fines and if the offender has the financial capacity to make up for a fine, he or she could commit such an offence again and again as far the resources could cater for. I, however, agree with See and Kieser (2013), that certainty being one of the three elements of deterrence should be paramount in metting out punishment to law offenders. For example, if a prospective offender is aware of the certainty of a penal cost of his or intended unlawful action, such as instant arrest and on- the- spot prosecution tangent to the gravity of intended offence, such an individual may be deterred from committing the act as explained by Durkheim (1951).

Keel (1997), regarding the swiftness, severity and certainty of punishment being the cardinal elements of deterrence which should be critically taken into consideration when considering increasing the costs (sanctions, punishments, as well as imprisonment) of deviance. This implies that costs could be increased to outweigh the benefits or pleasures derived from deviance, but if such costs are not severe, swift, and most importantly, certain offenders could continue to reinforce their deviant strategies and engage in more criminal acts than initially perceived.

Though the rational choice theory has been through criticisms, the most profound in research is that it dwells more on the individual than also concentrating on the social constructs and institutions that might also have been contributing to the perpetuation of deviance. The theory of deterrence, however, had elaborated on that critique that the individual must be regarded as a social being or member of a society and social characteristics tend to form an individual's character hence lapses within regulatory institutions within the society could also be contributing factors to deviance in society. Hence, institutions must also be examined and fortified to fight crime (Keel, 1997; Durkheim, 1951).



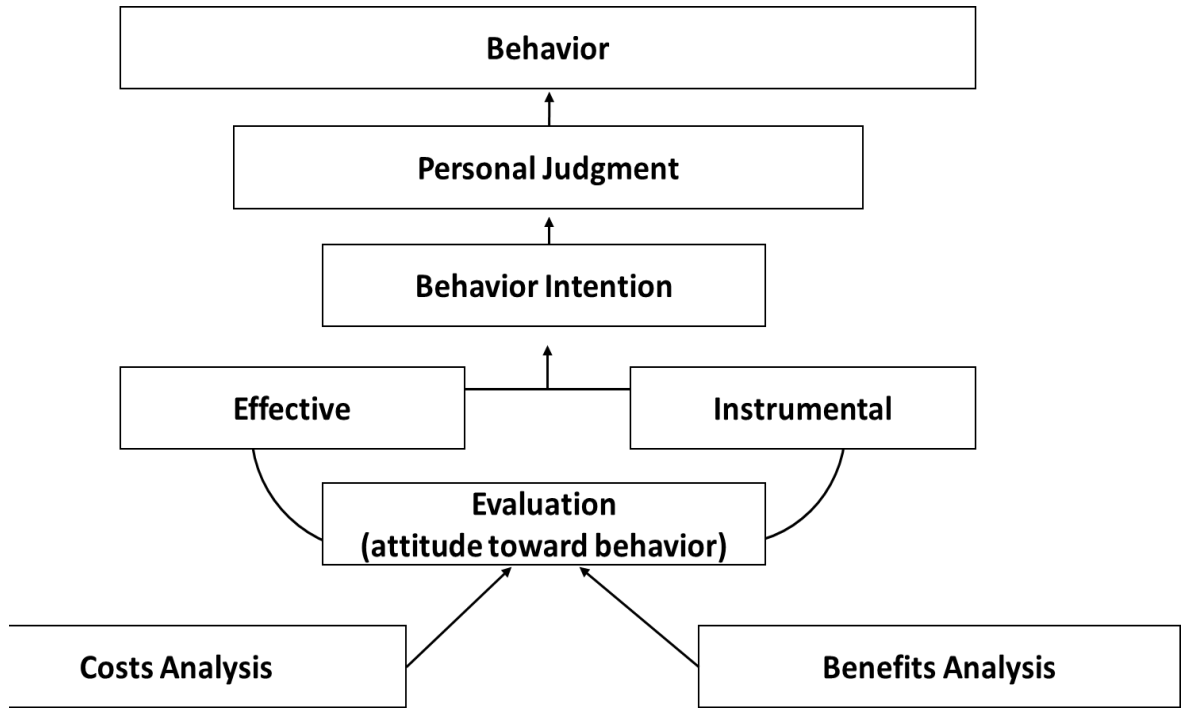
2.15 Conceptual framework on the use and non- use of helmets

Figure 2.5 on page 59 illustrates the factors influencing the non-use of crash helmets. It explains why some motorcyclists use crash helmets and others do not. It reveals that crash helmet use or non-use is a matter of rationality as explained by Cornish and Clarke (1986) in their rational choice theory. The concept is that factors influencing non-use of crash helmets among motorcyclists as this study seeks to identify, are based on an interplay between costs and benefits attached to the behaviour.

From the conceptual framework perspective, the effectiveness and instrumentality of helmet use regulatory measures affect motorcyclists' intention and judgment thereby resulting in behaviour. The conceptual framework assumes that those motorcyclists who use crash helmets have calculated the costs of non-usage of the helmets and accepted that it is more risky to their lives. Hence, their habit to wear crash helmets. On the other hand, the framework assumes that non-users of crash helmets have accepted that it is more profitable not using the helmet than its dants costs. The framework therefore concludes that, both users and non-users of crash ets have reasons of why they behave in the way they do, and therefore are responsible for own choices.



2.13



2.13 Conceptual framework on the use and non-use of helmets

Source: Researcher's construct (2018)



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the methods of collecting appropriate data, analysis and presentation process of this research. University for Development Studies, Wa Campus, Wa Technical University and the University of Education, Winneba- Wa Center, all within the Wa Municipality, were purposely selected because they host a number of tertiary education motorist students, most of whom are non-users of the crash helmets. The various methods, approaches and techniques of data collection and analysis as well as the rationale for their choices are also outlined here.

Research Design

Research design is the types of inquiry that provides specific direction for procedures in a research or study (Creswell, 2014). In other words, it is a strategy of inquiry (Denzin and Lincoln, 2011). Hussey and Hussey (1997:54) also defined research method as the overall approach to the research process, from the theoretical underpinnings to the analysis of data. Every research type therefore requires appropriate design in order to produce valid and reliable results (Sarantakos, 2005).

Given the objective and the qualitative nature of the study, a qualitative case study design was adopted as opposed to other qualitative research designs. According to Babbie and Mouton (2004), qualitative research designs are referred to as generic research approaches in social



research within which the research takes, as its departure point, the insider perspective of the social actors. This as noted by Babbie and Mouton (2004), opposes quantitative research designs, which are broad categories of social research approaches, which focus much on the quantification of constructs and control for sources of error in the research process. Robson (2002), explains that a case study involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. Babbie and Mouton (2004) asserted a case study may be conducted for the purpose of describing, ordering and explaining. Thus, a case study could be descriptive, explorative and explanative. Y and Ormrod (2010) wrote that a case study may be especially useful for learning more about a little known or poorly understood situation. The factors that influence the non-use of crash helmets by motorcyclists demand in-depth understanding. Ironically, in many quarters, the factors that account for the non-use of crash helmets by motorcyclists are largely poorly understood. This explains why this thesis employed the qualitative case study design which led the researcher to gain much insight as to the problems necessitated for the thesis.



Qualitative case study design is suitable for finding out the feeling and thoughts of people (Rubin and Rubin, 1995). Besides, it examines the opinion of respondents through a wider lens in view of the context, real issues, and phenomena existing within the research environments (Creswell, 2014; Seidu, 2012; and Bacho, 2001). The qualitative design was to help interpret, integrate and synergise findings for easy identification of interrelationships and implications. Seidu (2012) added that qualitative research gives adequate description and interpretation of social phenomenon relating to the subjects experiencing such phenomenon.

Yin (2003) writes that a case study design could be a single case or a multiple case. He argues that a single case is often used where it represents a critical case or, alternatively, an extreme unique case. A single case may be selected because it provides an opportunity to observe and analyse a phenomenon more intensely than few have considered before. On the other hand, multiple cases (more than one case) may be used if the rationale is to establish whether the findings of one case occur in the other cases and, as consequence, the need to generalise from these findings (Saunders, Lewis and Thornhill, 2009). This thesis used multiple cases as opposed to a single case with the view to understanding the commonalities and divergence that existed in helmet usage habit among the students of the three selected institutions. In this regard, the researcher considered students from three tertiary institutions within Wa Municipal namely UDS, Wa Campus, Wa Technical University and the University of Education, Winneba- Wa Center by focusing closely at the factors that influence the non-use of helmets among motorcyclists.

A major strength of a case study is that by focusing on a limited number of cases (in-depth research), researchers often provide richly detailed descriptions that make fascinating reading. A



case study helps researchers to produce first-hand information, in that they work in a natural setting. Case studies generally tell us little about other cases which is a major weakness (Babbie and Mouton, 2004). The nature of the problem and the objectives of this thesis demanded in-depth knowledge and understanding. The case study design in this regard was considered more appropriate as it encouraged close contact between the researcher and the research participants and more so, provided the researcher with detailed and first-hand information pertaining to the problem which motivated the study.

3.3 Selection of Study Location

The research location was the Wa Municipality and focused on three selected tertiary institutions namely, University for Development Studies, University of Education, Winneba- Wa Center, and Wa Technical University. These institutions were purposely selected because they host a number of tertiary students, most of whom are motorcyclists and apparently do not use helmets. The selected institutions were therefore relevant in view of the objectives of the study. It was fore appropriate to choose respondents from such institutions for the study to find out the rs that influence the non-use of helmets. As noted by Maxwell (2005), purposive sampling defined by as a type of sampling in which, particular setting, persons, or events are erately selected for the important information they can provide that cannot be gotten as well other choices. The purposive technic used in the selection of the three institutions was idered appropriate.

University for Development Studies, Wa Campus



University for Development Studies was established with a philosophy of relevant and ivingful education. The combination of academic work with community studies provides a constructive interaction and a common ground for the total development of northern Ghana and the country as a whole, as mandated by PNDC Law 279 (Section 2). It was based upon this philosophy that the University adopted a multi- Campus system with four campuses namely; Tamale and Nyankpala (Northern Region), Wa (Upper West Region) and Navrongo (Upper East Region). Principally, the University's objective is to address and find solutions to the socio-economic and environmental challenges characterising northern Ghana.

UDS- Wa Campus, which is one of the campuses of interest to this study is situated in the Wa Municipality of the Upper West Region. It is located off the Wa- Kumasi highway, and shares boundaries with Bamahu and Kumfabiala communities on North- West and South- West respectively. Students come from neighbouring districts within the region and other regions of the country. Accommodation is provided by the University and private housing (hostels) is also rented by students off campus at their own comfort. Greater population of the students who reside off campus use motorcycles for the sake of easy mobility to and fro campus. This has led to the increased use of motorcycles among the increasing student population.

The combination of the University's location and vision; 'to be a home of world- class professional scholarship' places it in the ideal position to collaborate with organisations in tackling environmental issues. The University presently has four campuses with seven Faculties three schools and three Centers. The entire student population stands at about twenty thousand, with the Wa Campus holding the highest population of students (UDS portal, accessed March, 2018).



Wa Technical University

Wa Technical University is the youngest of the ten regional Polytechnic Institutions (Technical Universities) in Ghana. It was established in 1999. Since its establishment, Wa Technical University never admitted students until 2003. The first batch of tertiary students were enrolled to pursue Higher National Diploma (HND) programmes in Agricultural Engineering and Secretaryship and Management Studies. Amidst its startup challenges, Wa Technical University operated from borrowed buildings.

Wa Technical University through the Ghana Education Trust Fund (GETFund) acquired its current seat of operation with a modern administration block, a lecture theatre complex, a workshop and bungalows to house some of its staff. Presently, the GETFund support is not adequate to meet the University's recent needs. Residential facilities to house students on campus remain a pressing challenge. Since Wa Technical University is located outskirts the Wa Township, students who live in the Municipality acquire motorcycles to attend lectures since they could not be housed on campus.

institute being guided by its ten year strategic plan since 2006, had a vision of becoming 'a 1- class center for applied technology and providing career- focused education for rural rty reduction and national development, under the following five areas of academic pline:

- . Human Resource Development;
- . Physical Infrastructure Development;
- . Training Research and Innovation;
- . Expansion and Application of ICT; and
- 5. Financial Resource Mobilisation and Management/



Currently, much progress has not been made since 2016, which marked the end of the timeframe of the ten year strategic plan due to administrative challenges.

3.3.3 University of Education, Winneba- Wa Center

The University of Education, Winneba was established in September, 1992 under the PNDC Law 322 and was then called University College of Education. The University of Education,

Winneba gained its present University status under the University College Act 672 which was enacted to upgrade its former name to the latter. It was created with the aims of providing higher education and fostering a systematic advancement of the science and art of teacher education. Again, it was established to train tutors for the Colleges of Education and tertiary institutions.

The University combined seven diploma awarding colleges located in different towns under a common umbrella. These colleges include the Advanced Teacher Training College, the Specialist Training College, and the National Academy of Music located at Winneba. These sites in Winneba are presently referred to as the Winneba Campus. Others outside Winneba include the School of Ghana Languages, Tarkwa- Ajumako; the College of Special Education, Akwapem- Mampong; the Advanced Technical Training College, Kumasi; and the Andrew Agricultural Training College, Mampong- Ashanti.

Presently, the University has centers across the country, and the Wa Center became of interest to study, since students are admitted from communities and districts within the Upper west region. Lectures are held on week- ends and since students are not housed at the Center, most students make use of motorcycles from their various locations. Also, since the Center is located outside the Wa Township, vehicles scarcely ply the routes to the Center, thereby influencing the predominant use of motorcycles.

3.4 Target Population and Sampling

The sample population, which was a subset of the larger population according to Agbeke and Denkyira (1999), from which respondents were selected included only tertiary student motorists. Due to logistics and time constraints, only student motorcyclists (both males and females) of



University for Development Studies, Wa Campus, Wa Technical University, and Wa campus of University of Education, Winneba- Wa Center constituted the population of interest. Pillion riders were not interviewed. The three institutions were purposively selected due to their characteristics of containing tertiary education student motorists from whom information could easily be accessed. More so, the Wa Municipality was targeted, because it is a commonly known for its motorcycle usage (Akateeba et al., 2014). Targeting such a locality was therefore considered appropriate for the study.

Sampling Units

According to Marfo (2014), the element, group or system considered from a sampling frame is a sampling unit. In other words, the sample unit is the individual or case under study (Amankwah, 2014). In this study, the sample units included student respondents from the three selected institutions and other key informants who had information on the subject being studied.

Selection of Research Participants



Sampling is the process of selecting a subset of population for the purpose of study (Panneerselvam, 2007), and it could be a probability or non-probability sampling technique (Creswell, 2009). With probability sampling, the chance of each case being selected from the population is equal for all cases. Consequently, probability sampling techniques are often associated with quantitative studies (Saunders et al., 2009). Non-probability sampling techniques on the other hand, are more akin to qualitative studies in that all the cases under consideration do not have an equal chance of being selected for observation (Babbie and Mouton, 2004). Given that the target population was fairly homogenous in terms of motorcycle usage, 90 student

respondents and 11 key informants were selected from the various tertiary institutions and other state institutions. The quota sampling technique was used by the researcher to select respondents (students) from the three selected institutions for observation. The quota sampling technique was required because, according to Sarantakos (2005), it is appropriate if it becomes difficult coming by respondents and sample size through simple random or systematic sampling techniques as well as in the absence of an already existing sampling frame. The criteria for the selection of the respondents were specified and limited to three characteristics namely; (1) should be a tertiary institution student in any of the three selected tertiary institutions (UDS- Wa, Wa Technical University or UEW- Wa Center), (2) should be a male or female motorcyclist, and (3) should be riding motorcycle with or without a crash helmet as at the time of study. Those who fit into the criteria were selected for the study. Through this selection approach, 90 respondents comprising 68 males and 22 females were selected. The distribution of the respondents from the three institutions was given as follows; UDS- 26 males and 4 females, Wa - 16 males and 14 females, and UEW, Wa Center- 26 males and 4 females.



In addition to the respondents from the selected institutions, 11 other key respondents were purposely selected from the MTTD (1), National Road Safety Commission (1), Department of Urban Roads (1), Wa Regional Hospital (1), DVLA (1), management of the selected institutions (3), and security section of the selected institutions (3), bringing the total number of respondents selected to 101. These key informants were intentionally selected because in the judgment of the researcher they had important information to contribute to the success of the study.

Abdalla (2007), and Sarantakos (2005), opine that large samples do not, in general, necessarily guarantee higher levels of validity and success. Sarantakos (2005) suggests that a quality study is influenced by the methodology adopted, available resource allocated, and homogeneity of the target population as well as its purpose and sample size. These are factors influencing the degree of quality of every study. The quota sampling and purposive selection approaches used in selecting a combined 101 respondents could be considered as appropriate.

Sources and Methods of Data Collection Tools

Twumasi (2001), opined that various sources, tools and techniques should be employed by researchers to collect, validate and detect inconsistencies in data. Twumasi further indicated that it is also essential to use more than one method to collect data. Using various suitable methods to collect data helps a researcher to evaluate his data source and detect inconsistent answers. Flick (2002), maintained that generally, there are two sources of data collection in social research. These are the primary and secondary sources. In the light of this assertion, this study made use of primary and secondary sources to gather information for further study and analysis.



3.6 Primary Sources of Data

Data collection techniques refer to the ways by which data are generated in the research process. Several methods of data collection exist for qualitative research. They include interviews, observation, participation in the setting, questionnaire and surveys and life histories, among others (Twumasi, 2001; Sarantakos, 2005). Primary data were gathered through survey interview and in-depth interview.

3.6.1 Survey Interview

Primary data were gathered through survey interviews with the aid of semi-structured questionnaires from the tertiary students within the three selected institutions, which were relatively small to accurately reflect the overall situation in the Region just as other related researches had done. Hence, the estimates and findings were interpreted against this limitation. Ninety semi-structured questionnaire were administered to 90 respondents in the three selected institutions.

Survey, though used largely in quantitative research, could also be used to gather qualitative data. Babbie and Mouton (2004), have said, survey research is suitably fit for descriptive studies of a large population but could also be used for explanatory and exploratory studies as in qualitative research. Survey is a useful data collection technique to use when collecting data that are more general than specific and thus, can be generalised to reflect trends in whole populations. In this study, what Babbie and Mouton (2004), referred to as survey interviews was used in the collection of primary data from the student respondents. According to Babbie and Mouton



(2004), survey interviews usually use semi-structured questionnaire, which make room for both closed and open ended questions to be asked. Its usefulness stems from the fact that information is gathered from a number of respondents within the shortest possible time. It also has an advantage over self-administered questionnaire in that the response rate is very high.

The semi-structured survey questionnaire aided with audio recording devices helped the researcher gather general views/information on personal demographics of the 90 respondents, opinions and helmet usage behaviour, frequency of helmet usage, and reasons for use or non-use

of crash helmets, existing helmet usage laws and policies as well as ways to promote helmet usage. The various interviews took place on the Campuses of the three institutions. Each interview session lasted about 12 minutes. To facilitate the process, the assistance of two field assistants was sought. The field assistants helped the researcher to record the information from the respondents.

In-depth interview

In-depth personal interviews, with the aid of interview guides and an audio recording device used to collect primary data from the key informants. In the opinion of Marfo (2014), an in-depth interview is a guided social conversation between a researcher and an individual or group of individuals with some predetermined topics or questions. It is a flexible technique and uses a checklist but not formal questionnaire. In-depth interview can be conducted with individuals and key informants. Kumeckpor (2002), opines that in-depth interview finds relatively fewer questions considered to be of great importance to the objective of the study which are selected and pursued in much greater detail, both intensively and extensively. In

In this thesis, the researcher therefore, employed in-depth interviews by asking questions to attain much the details pertinent to my objectives.

In-depth interviews were used to gather information from 11 key informants selected from the Police MTTD -Wa, Road Safety, Department of Urban Roads (DUR), Wa Regional Hospital, DVLA, UDS-Wa Campus, Wa Poly and UEW- Wa Center. Each interview session lasted between 25- 30 minutes and was conducted between January 2018 and February 2018. Unlike



the survey interviews conducted among the students with the assistance of two field assistants, the researcher solely conducted the in-depth interviews with the selected key informants.



3.7 Secondary Source of Information and Data Collection

Secondary data and information basically involve existing relevant data which a researcher consults in the process of carrying out a study. In this thesis, secondary sources of information and data were gotten by reviewing relevant literature from sources including: journals, newspapers, magazines, and articles, as well as the websites. Secondary data provided a broader view of the problem which necessitated this study.

Data Analysis

Data to be meaningful to the people, they have to be organised. Babbie and Mouton (2004), pointed out that, we interpret collected data for the purpose of drawing conclusions that are based on the interests, ideas, and theories that initiated the inquiry. Yin (1993; 2003), writes that data analysis involves summarising data and organising them in such a manner that they answer research questions. It involves the searching of patterns of relationship that exist among data sets (Karma, 1999). Twumasi (2001), argues that data analysis involves critical examination of materials in order to understand their parts and their relationships and to discover their trends.



In the nature and the objectives of this thesis, the qualitative approach of data analysis was adopted.

The raw data such as field notes were typed, interviews recorded with an audio device were transcribed and carefully edited where necessary to ensure that the original meanings given by the respondents were preserved. Data from secondary sources were arranged based on pre-set themes. The raw data were read through several times to get the overall sense of the information gathered. Themes or patterns which are the ideas, concepts, behaviours, interactions, incidents,

terminologies or phrases used were identified. These were then organised into coherent categories that summarised them giving description to each case, setting, and brought meaning to the text based on pre-set categories and emergent categories. The relationship between themes and patterns were established in each question or case. The themes and connections were then used to explain the findings. Ader (2008), intimates an analysis of data is a process of editing, cleaning, transforming and modelling of data, with the goal of highlighting useful information, suggestion, conclusion and supporting decision making.

Reliability and Validity

According to Marfo (2014), validity refers to the extent to which a measure adequately reflects the real meaning of a concept, whilst reliability connotes whether a particular technique applied repeatedly to the same object, would yield the same results. It concerns mainly the use of a particular tool or technique. For the purposes of reliability and validity, the questionnaire were thoroughly examined by the supervisor to ensure matching between questionnaire items and the research topic. The semi-structured questionnaire's validity and reliability were tested

thoroughly through pilot distribution to colleague students and a few motorcycle riders outside Campus before the actual study's implementation to ensure necessary corrections and suggestions.

3.10 Ethical Review

Social research involves the use of human subjects and demands various ethical considerations. Ethics generally, centers on matters of right and wrong. De Vos (2002), has emphasised that human beings are the objects of study in social sciences and brings unique ethical problems to

the fore that would not be relevant in the pure, clinical laboratory settings of the natural sciences. In the view of Babbie and Mouton (2004), the scientist has the right to the search for the truth and the right to collect data through interviewing people, but this must not be done at the expense of the rights of other individuals in the society.

De Vos (2002), and Sarantakos (2005), have argued that in conducting research, all possible or adequate information of the goal of the investigation, the procedure that will be followed during investigation, the possible advantages or dangers of the research must be made known to the respondents. The study's purpose was explained to the respondents before questionnaire guides administered. Respondents were assured of their anonymity and confidentiality. The semi-structured questionnaire were administered to the respondents to respond to the various items on questionnaire depending on their own views, since they could understand and communicate effectively. Individual responses were not identified and all responses were analysed together. Before, the researcher did not require any personal details. Respondents were, however, pre-med of further contacts where necessary.



3.11 Limitation

A major obstacle that confronted the research was how to meet some of the key informants due to their operational schedules. Interview sessions most of the time were cancelled. However, this was dealt with by rescheduling of the interview meetings with the affected key informants. This did therefore not affect the credibility of the findings. Both the student respondents and the key informants cooperated fully with the researcher.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter focuses on the analysis of data collected from respondents drawn from the three selected tertiary institutions within the Wa Municipality of the Upper West Region of Ghana. The analysis was conducted around the thematic areas of the studies namely; contributory factors to non-helmet use, respondents' opinion on crash helmet usage and road safety, assessment of the effectiveness of existing crash helmet policies and laws, challenges confronting enforcement of policies on road safety, as well as measures to promote crash helmet usage. The chapter begins with the analysis of the socio-demographic characteristics of the respondents, as they have an implication for the study. Primary data gathered with the aid of semi-structured interview guides were analysed descriptively. Themes were identified and these were then organised into coherent categories based on pre-set categories and emergent categories. Where appropriate, tables and charts were used to illustrate the finding.



4.2 Socio-Demographic Characteristics of Respondents

4.2.1 Sex Distribution of Respondents

The sex distribution of the respondents was examined. The study sampled 90 student motorcyclists from three tertiary institutions in the study area from which semi-structured interview guides were completed and each case was analysed. It was found that 68 (75.6%) of the student motorcyclists were males and 22 (24.4%) were females. This finding implies that more males use motorcycles as compared to females. The use of motorcycles as means

of transport could therefore be seen as more popular among males than women, even though males are not the sole users. The finding corroborates the works of Iddrisu et al. (2017). In their study, it was found that males were almost three times associated with the use of motorcycles as means of transport in comparative to females.

4.2.2 Motorcycle usage and Age distribution of Respondents

The age distribution of respondents in this study as represented by Table 4.1 below shows that the prevalent age group in terms of motorcycle usage is the age bracket of 21- 25 recording 60 respondents. The age bracket 26-30 witnessed 22 respondents with the age bracket 31-35 being the least usage of motorcycle recording 3 respondents representing about 3.3%. The age bracket of 21-25 recording the large number of respondents could be attributed to youthful exuberance. It could also be deduced that as respondents aged from a youthful stage to adulthood, they become more conscious about the use of motorcycles probably due to the associated risks with such means of transport.



Table 4.1: Motorcycle usage and Age distribution of Respondents

Age bracket	Number of usage	Percentage
21-25	60	66.7
26-30	22	24.4
31-35	3	3.3
36+	5	5.6
Total	90	100

Source: Field Study, February, 2018

In respect of the key informants, none of them was below 40 years. The findings show that both the student respondents and the key respondents were mature or fairly mature and therefore constituted reliable source of data gathering for the study. The mature nature of the respondents also implied that the issues raised were within their understanding.

4.2.3 Sex and Helmet use and non-use among Respondents

It was prudent to find from the student motorcyclists the category of users and non-users of helmets. The study revealed that out of the 68 male respondents drawn from the three Tertiary Institutions, 41 (60.3%) were helmet users, whilst 27 (39.7%) were non-users of helmets. In terms of the female respondents, the study revealed that 8 (36.4%) were helmet users, whilst 14 (63.6%) were non-users of helmets (See Table 4.2 on next page). What the informant presents is that female non-users of helmets (63.6%) are more than male non-users of helmets (39.7%) not in terms of absolute figures but in percentage terms. This information points out that all things being equal, female motorcyclists are more likely to be injured in terms of motorcycle-related accidents than male motorcyclists. As noted by GSRRS (2015), the proliferation of motorcycles and non-use of crash helmets has made motorcycle usage more risky and riders more vulnerable to road traffic accidents. This finding from the study is in line with the WHO (2010) Report, which identified improper or non-use of motorcycle crash helmets as one of the five high risk factors for road safety.

The study revealed that 49 respondents representing 54.4% wear helmets, yet, a substantial number of 41, representing 45.6% do not wear helmets. The findings suggest that there is the need for more education on crash helmet usage especially, among female motorcyclists.



As noted by CODES (2013), even though the wearing of crash helmets does not prevent accidents, yet, the wearing of crash helmets significantly reduces the traumatic brain injury-related cases. The implications for development and road safety is that motorcycle accident related fatalities could be mitigated if riders wear crash helmets.

Table 4.2: Sex, Users and Non-Users of Helmets (Absolute figures)

Sex	Users of helmets	Non-users of helmets	Total
Males	41	27	68
Females	8	14	22
Total	49	41	90

Source: Field Study, February, 2018

4.2.4 Sex, Institutional affiliation and helmet use and non-use

Given the fact that the student motorcyclists were drawn from three institutions, the study sought to find out crash helmet usage behaviour among the respondents in the respective institutions. Table 4.3 on the next page depicts the institutional affiliation of the respondents and their helmet usage habit. In comparative terms, helmet usage practice among male respondents (motorcyclists) from UDS is quite encouraging as compared to the male respondents from UEW and Wa Technical University. In UDS, 21 males (80.8%) wear helmets as against only 5 (19.2%) who do not wear crash helmets. Table 4.3 on the next page shows that UEW has the highest male non-users of helmet, 15 (57.7%) as against 11 (42.3%) users. On the contrary, in terms of female non-users of helmets, UDS has the highest number (75.0%), followed by Wa Technical University (57.1%). The finding from



this study points clearly to non-use of the crash helmets cutting across respondents from all the three selected institutions.

Table 4.3: Sex, Institutional affiliation and helmet use and non-use

Institution	Males (Helmets)		Females (Helmets)	
	Users	Non-Users	Users	Non-Users
UDS	21(80.8%)	5 (19.2%)	1(25.0%)	3 (75.0 %%)
UEW	11 (42.3%)	15 (57.7%)	2 (50%)	2 (50%)
Wa Technical	9 (56.2)	7 (43.8%)	6 (42.9%)	8 (57.1%)
Total	41	27	8	14

Source: Field Study, 2018

4.3 Contributory factors to non-use of crash helmets



One major objective of this study was to examine the contributory factors to non-use of crash helmets among the respondents. According to UNECEF (2016), the increase in motorcycle usage without crash helmets has been accompanied with high risks of crashes resulting in injury and at worst, death of riders and other victims. Examining the factors contributing to non-usage of helmets was considered critical. To be able to achieve this objective, the respondents (41), who were non-users of helmets were asked to explain their behaviour. The study revealed a number of reasons. These reasons were grouped into 10 themes including forgetfulness, rush, lending to friends and not having any crash helmet at

all, distortion of hair-dos, distance and discomfort among others. Table 4.4 below depicts the reasons given by respondents for not using the crash helmet.

Table 4.4: Reasons for non-use of helmets by respondents

Reasons	Gender		Total
	Males	Females	
Don't wear, unless on a long distance trip	6	3	9
Forgetfulness	3	1	4
In a hurry	1	0	1
Because of hair-do	0	4	4
Lending out	2	0	2
Only wear when riding through security designated checkpoints	2	2	4
Head size and helmet weight	1	0	1
Not important	3	0	3
Do not have	4	1	5
Discomfort	5	3	10

Source: Field Survey, February, 2018

From Table 4.4 above, it was found that among male non-users of helmets, a major reason is attributed to distance. The respondents were of the view that they only wear the helmet when they embark on long distance trips. This is what one of the respondents said:



'In riding in town or to Campus, you don't need to worry yourself about the helmet. After all you can't speed. But you know, when travelling to a distant place on the highway, it will be necessary to wear the helmet' (Respondent's Interview, 2018).

Another male respondent in support of this assertion remarked in February, 2018:

Wearing helmet whilst riding in town or to Campus to me is nothing. But to travel to a place involving long distance, you can use the helmet because of the speed'.

The information received from the respondents indicates that riders have reduced the risk of riding without helmet only to long distance. From the perspective of the male non-users of helmets, discomfort ranks second receiving 6 responses. This was followed by those who indicated that they do not wear the helmet simply because they do not have one. On the contrary, among the female non-users, hair-do (5 responses), discomfort (4 responses) and distance (3 responses) were the dominant reasons respectively. This is what one respondent said:



'It is not easy to come by money nowadays. So as a woman, if I manage to style my hair, I make sure that nothing disturbs it. This is why I personally don't wear the helmet. The helmet may be good in some instances, but for the ladies, generally it does not help us'.

Common factors identified among the reasons for non-use of helmets among both males and females are; distance and discomfort, besides hair-do. As if road accidents knew distances, quite a number of respondents reported using the crash helmets only on long distant trips. This implies that any efforts targeting the problem should be focusing on these three

identified issues. This, however, does not mean that the other reasons as given by the respondents are not important. The findings from this study were not different from those of Akaateba et al (2015). In their study, they identified that the leading reasons stated for helmet non-use among nonusers were, not traveling a long distance and helmets blocking vision and hearing. Protection from injury, legal requirement, and coping with the police for fear of being accosted for helmet non-use, were identified as common reasons for helmet use. In their study they found that positive attitudes and beliefs were also significantly correlated with helmet use.

The finding from this study is in direct disagreement with the findings of Iddrisu et al. (2017), which sought to suggest that their respondents did not use crash helmets except during short distant trips. On the contrary, however, the long distant riders in the study by Iddrisu et al. (2017), were also prone to accidents outside their own locations. This attitude concurs with the views of the key informants. As indicated by one of them:

'Road accident is not limited to a distance, and for that matter crash helmets ought to be used by riders always. Even within the confines of your resident, you could involve in an accident. This is why we insist that motorcyclists should wear their helmets at all times' (A key Informant interview, February, 2018).

Those who attributed their failure for using the helmet due to discomfort mentioned issues such as heat, poor visibility through the visor, and pressure on the neck associated with the wearing of helmets. Three respondents unequivocally in February, 2018 Remarked:

"Crash helmet is quite heavy and makes movement of the head difficult for me. In addition the visor makes vision blurry at night'.

'I don't feel comfortable using a crash helmet, because the weather is always hot in this part of the country. Also the police are not strict on non-users of crash helmet'.

"Wa is too hot and wearing the crash helmet in this weather, especially in the day time is very difficult and uncomfortable. I would prefer to wear in early parts of the day and late evening because the weather becomes a bit cold when riding within these periods'.

The findings from this study corroborate Khan et al. (2008) and UNDP (2010) studies. Khan et al. (2008), findings suggest that their respondents did not use helmets for reasons such as physical discomfort and visual limitations. The UNDP (2010) report pointed out that crash helmets are more likely to be used in the early hours of the day and late hours of the night within the tropics, where annual day sunshine is almost eight hours. Due to excessive heat from the sun in the late hours of the day, especially in the study area where temperatures range between 36 and 39 degrees Celsius (Daily Ghana's Weather Report), motorcyclists prefer to ride without crash helmets to prevent being discomforted by heat when riding. This issue of discomfort which stems from heat calls for geographically adaptive designs of crash helmet to reduce heat, especially in the tropical regions as suggested by Iddrisu et al. (2017).

Four respondents in separate interviews, narrated that they only wear the crash helmet anytime they have lectures or have to visit campus due to the presence of the security personnel at the entrance to the school. This implies that if not because of the security checks, they would never use helmets. Thus, from the perspective of these category of



respondents, the occasional wearing of the helmets is not for the sake of protection but to gain access to the school.

Three of the respondents were of the view that crash helmet usage has no safety importance as promoted. This is what one of the respondents said in March, 2018:

'Death could occur whether you are wearing crash helmet or not in an accident. To me there is no need wearing it. I have witnessed an incident when two motorcyclists crashed. Apparently, the rider in a crash helmet died instantly whilst the non-user was spared of death, even though he sustained serious injuries on his body'.

The respondents' view that the use of crash helmet is unimportant is not different from the views expressed in other research works of Iddrisu et al. (2017), Grimm and Treibich (2014) and Klein et al. (2005). Persons wearing the crash helmet could die or sustain injuries in an accident. However, in general, evidence has proved that non-helmet users stand the risk to suffer more fatalities than helmet users in accidents (WHO, 2016).

Respondents who therefore think that the crash helmet has no safety mechanism, do so with limited information or knowledge. This calls for a more intensive and collaborative safety education by the various stakeholders in Ghana, responsible for the health and safety of all persons including motorcyclists.

4.3.1 Motivating factors for using crash helmets

In order to get a balanced view of the problem necessitating this study, all the 49 respondents who wear helmets were also asked to explain the motivating factors of their behaviour. All the helmet user respondents gave virtually similar reasons based upon their



own experiences of the use of helmets, as well as knowledge available to them on the use of helmets. All the 49 respondents indicated that they use helmets because it protects their heads against unintended danger. Further, 32 said that they wear the crash helmet, because it protects their eyes against foreign objects and other detractors such as ambient noise. Another 9 respondents further expressed the view that they use the crash helmet because it is part of the accessories of a motorcycle which users are enjoined to use. This is what two respondents said during an interview in February, 2018 and March, 2018 respectively:

'The crash helmet offers protection to the head, a sensitive part of the body. I feel safe when riding. I use it because it also prevents dust particles and insects from distracting my attention and impairing my vision when riding'.

'To me, the fact that the motorcycle comes with a helmet is an indication that it has a major role to play. I have never missed wearing my helmet when riding. I have not done it before and I will not attempt. I don't know when I may involve in an accident and my head will be affected. I equally ride without any fear of incurring the displeasure of the police' or any of the law enforcement agents of road safety.



This finding from this study supports Cornish and Clarke (1986) Rational Choice Theory which posits that individuals calculate the costs and benefits before engaging in any activity. Those who use motorcycles as identified in this study have found that the cost of not using helmets is quite disastrous. This reasons confirms the findings of GSRRS (2015), WHO (2010 and 2014), Faryabi et al. (2014), Kudebong et al. (2014), MSF (2017) and Iddrisu et al. (2017). Again, as revealed by several earlier studies, this study's findings support the beliefs that crash helmet use promotes safety and lessens the fatalities of injuries sustained in motorcycle crashes (Olakuhin et al., 2015; Tuffour, and Appiagyei, 2014; Zamani-

Alavijeh et al., 2011). Helmet users have seen the benefits of wearing the equipment when riding. The implication is that the probability of non-helmeted motorists suffering injuries or death is very high since the riders could not predict accidents and their related fatalities.

4.4 Crash Helmet usage and its perceived safety mechanisms

This aspect of the study examines the perceived contributions of the crash helmets to general road safety. Perception generally involves a mental picture that people form about a thing or a person. As noted by Forsyth (1999), perception could be accurate or inaccurate, positive or negative, depending on various factors including the social context of the perceived object, experience and knowledge level of the perceiver. To be able to achieve this objective, the opinions of the respondents, both users and non-helmet users, and the key informants were sought. Three main responses were given by the respondents. Thirty-eight respondents representing 42.2% were of the opinion that the crash helmet offers protection to the head. Further, 34 respondents were of the view that they feel safe with the helmet. Another 18 respondents had the opinion that the crash helmet could prevent injury and death during road crashes. The findings from this study indicate that at least all the student motorcyclist have some knowledge about the crash helmet and its role in terms of road safety. In this regard, failure of a person to wear a crash helmet could not necessarily be attributed to complete ignorance. Incidentally, as the study has revealed, of all the 90 respondents, only 49 respondents actually wear helmets. The remaining 41 respondents apparently do not wear crash helmets. As Cornish and Clarke's (1986) Rational Choice theory posits, both crash helmet users and non-users are rational and have calculated the costs and benefits of wearing and not wearing crash helmets.



The finding shows that there is a complete gap between having knowledge about the importance of crash helmet usage and the commitment in using such a safety device. As indicated elsewhere, although all the students have various conceptions on helmet usage and its contribution to safety, not all the students practice the habit of wearing helmets. The findings from this study corroborates the results of WHO (2004, 2006, 2010, and 2013). WHO reports indicate that the use of crash helmets may not necessarily prevent accidents, nonetheless, the reports categorically stress that crash helmets reduce carnage and severe injuries in case of road accidents. This, the reports attributed to the fact that the hard covering of the crash helmet receives the scratches the rider could have received if the crash helmet was not being used, and also the interior cushion prevents the head or brain from directly receiving the pressure against the road surface thereby preventing brain damage.

The responses given by the students were not different from those of the key informants. All the key informants expressed their views that the crash helmets may reduce physical effects of road traffic accidents, such as death and severe injuries (traumatic brain injuries) on the users. This is what one key informant in an interview in March, 2018 indicated:

'Crash helmet usage improves road safety for soft road users such as cyclists and motorcyclists' (Key informant's interview March, 2018).

Another key informant in support of this assertion had this to say during an interview in March, 2018:

‘When accidents do occur, crash helmet users often do not receive major head injuries. A number of head related injuries might have been avoided if riders were to have worn helmets during the accidents. We occasionally educate riders on this safety measure to avoid risking their lives. For whatever reasons, in Wa town, most people including students do not wear helmets but rather prefer hanging the helmets on their motorcycles. This situation is quite worrisome. Personally, I don’t know what could be done to ensure that riders put on this simple but protective safety gear’.

Commenting on the perceived safety nature of crash helmets, another key informant expressed the view that:

‘Crash helmet is the only safety equipment that protects the head from injury or reduces the injury caused to the head when there is a crash involving riders or riders and other vehicles. You can lose your arm, hands, or legs and still be alive, but not your head. This is why we have been insisting on the use of crash helmet by all motorcyclists’ (Key informant Interview, March, 2018).

Measures targeting crash helmet use



According to Downing (1991), the road safety management system is a collection of procedures that necessitate road traffic accidents reduction. This aspect of the study therefore sought to examine the policies targeting road safety especially policies and laws on helmet usage. Three major safety policies were outlined by the key informants as measures employed to ensure helmet usage by motorcyclists namely prosecution of offenders, education and periodic roadside and entry checks. The key informants indicated that these measures are used with the view to ensure that all motorcyclists make use of crash helmets. This is what one key informant said:

'Aside prosecution of offenders in the law courts, we embark on public campaigns and education with the view of creating public awareness of the need for using crash helmets. These measures have changed the attitude of some motorcyclists towards the use of helmets. Some motorcyclists however, are adamant and still manage to ride without the crash helmet'.

In finding out as to the measures outlined to deal with the issue of non-usage of helmets by the selected institutions, the study revealed that the measures put in place are similar to the national

ies as outlined by the key informant. The study found that in the Wa Technical University, Safety personnel are invited from the NRSC by the school authorities to educate students on the orientation of fresh students on the laws of crash helmet usage and its importance. However, this, the institution does not have any concrete enforcement policy.

At the University of Education, Winneba- Wa Center, it was found that, the institution does not have any specific measures to ensure that their student riders use crash helmets. As indicated by the key informant, the students are presumed mature enough to make their own rational choices.

However, the key informant said, some lecturers occasionally educate the students and provide information on the need to choose benefits (protection and safety) of the helmet over the costs (legal sanction, injuries, and preventable death). What the study revealed is that education has been the main policy or measure adopted by the institution to ensure the wearing of helmets by students.

At UDS-Wa Campus, it was revealed that the institution has gone beyond education on safe riding and has put robust measures in place to ensure crash helmet usage among its staff and student motorists. The study revealed that, per the regulation of the institution, non-



helmeted riders are not allowed entry into the Campus and security officers are tasked to ensure this measure. Motorcycles without helmeted users are impounded and offending users are required to purchase helmets from the Students' Representative Council (SRC) at subsidised costs before the motorcycles are released. A key informant indicated that entry points to their institution are guarded by security officers to ensure that all motorcyclists who enter the premises of the institution wear crash helmets. The key informant indicated:

The exercise has not been easy, however, we are still on course to enforce the policy on helmet use by all motorcyclists as espoused by management. Dealing with students is quite difficult. Through the education given to them by the authorities of the institution and other stakeholders especially the police and officials from Road Safety Commission, they all know the dangers of riding without helmet. Yet, some students find all means possible to enter the school premises without helmet'.

major things were revealed in terms of the measures adopted by management to ensure safe g by students in the selected institutions. In the first place, it was found that, sanction, ation and road checks have been the main measures targeting helmet usage among students.

study also revealed that apart from UDS Wa Campus, where there is an enforcement policy on the wearing of crash helmets, Wa Technical University and UEW, Wa Center had no structured policies controlling the use of motorcycles and helmets among their student motorists besides casual education. For instance, as gathered, Wa Technical University is constructing a barrier and a security post to ensure that student riders use crash helmets before they can gain access to the campus. However, as the study revealed, until then, non-use of helmets remains a problem.



The measures employed targeting crash helmet usage as identified in this study indicates the need for concerted efforts to promote the use of crash helmets by motorcyclists. The study, however, found that the student motorists have two opposing views about institutional policy targeting crash helmet use. Users of crash helmets support the idea that policies should be enacted and enforced by institutions. Their views were based on the reasons that institutional helmet policies will adequately guide riders to comply with national laws and reduce injuries and deaths. On the contrary, non-users argued out that such policies will compel them to use crash helmets against their choices. A female helmet non-user expressed her view that:

‘Although crash helmet offers protection and other safety conditions, it is a matter of choice and preference. I think people should not be compelled but, rather left to make their own choice on whether to use or not’.

The view of a male non-helmet user was not different. He remarked:

‘The laws and policies may exist, and people could either be aware or not. But the choice to use the equipment lies with the rider. The issue of using crash helmet among student motorists is a matter of personal choices’.



views of the various categories of respondents are indicative of the prevalence of challenges facing policies and measures targeting helmet usage. No matter the views of people on helmet usage, as noted by UNECEF (2016), the major preventive and safety measure against head injury is the wearing of a crash helmet, and concerted efforts have to be made to ensure this principle.

4.6 Effectiveness of the policies and laws on crash helmet usage

Often times, there is a gap between policy formulation and implementation. Generally, the issue of concern has to do with the implementation aspects of policies. This aspect of the study therefore sought to examine the effectiveness of the policies targeting road safety especially policies and laws on helmet usage. The study first established the awareness level of the respondents in respect of safety policies in Ghana.

On questions regarding crash helmet laws awareness, the study found that 53 of the respondents unaware of any national laws regulating the use of crash helmets. Also, the fact that the e occasionally check crash helmets among riders reveals that there is a law, hence, the 37 ndents who affirmed awareness. The respondents who said they were aware of such laws able to tell their legal requirements. This is what one of the respondents said during an view in February, 2018:

‘The law requires that both the rider and pillion rider should wear a crash helmet when riding the motorcycle and riders without crash helmet should be prosecuted’.



Table 4.5 Level of Awareness about Cash Helmet usage Laws and Policies

Gender	Gender distribution of respondents on helmet law awareness levels				Total
	Yes		No		
	Frequency	%	Frequency	%	
Male	31	45.6	37	54.4	68
Female	6	27.3	16	72.7	22
Total	37	41.1	53	58.9	90

Source: Field Study, 2018

Although excuses of unawareness may not be forgiven, as the study has revealed, the toll on non-use of crash helmets as a result of ignorance of the helmet law could result in increased deviant behaviour as well as increased severe head injuries and deaths among non-helmet riders. As Awuni (2011), reiterated, poor knowledge of traffic rules and regulation among road users in Ghana poses a challenge to road safety. The revelation from this study demands that holistic and rete strategies should be designed so as to make riders more abreast of helmet rules and road safety policies and rules.

study sought to understand by probing further, the effectiveness of existing laws among the respondents who confirmed their awareness of such law. In a general assumption, ignorant respondents would not have known the legal costs of non-use such as prosecution or sanction as laid by the national law Act 683, which recommends that riders without crash helmets should be prosecuted. However, as far as there are rules guiding social behaviour, they were one of reasons for which motor riders suffer certain legal costs such as sanctions and court prosecutions.

The study found that 51 respondents were of the opinion that national helmet usage laws and policies under Acts 567 and 683 of 1999 and 2004 respectively are less effective. Further, 22 respondents said the laws are highly effective, whilst 15 others were indecisive on their opinion in that regard. The low level of the respondents' opinion on the effectiveness of the existing laws shows that much is required from the law enforcement agencies and assistance from managements of the tertiary institutions.



Table 4.6 Respondents’ opinions on the effectiveness of Crash Helmet Laws and Policies

Gender	Effectiveness of Crash Helmet Laws and Policies			Total
	Indecisive	Less	Highly	
Male	8	43	17	68
Female	7	12	3	22
Total	15	55	20	90

Source: Field Survey, February, 2018

In finding out as to what influenced the judgment of the respondents to indicate that existing laws on safety are less effective, the respondents cited various reasons as captured in Table 4.7 on the next page.

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Table 4.7 Reasons assigned by respondents for the less effectiveness of crash helmet laws

Reasons	Institution		
	UDS	UEW	WPT
Law enforcement is insignificant (low)	4	3	7
Riders' ignorance of the law	0	2	7
No prosecution of law transgressors	3	2	3
Law enforcers being relaxed	5	4	0
Low education on helmet laws and importance of the equipment	3	1	3
Lack of proper enforcement measures	5	1	4
Law enforcers not adhering to the law or not living by example	2	2	2
Corruption and politicisation	4	4	1
Checks being periodical instead of regular	5	3	0
Disregard for the laws	1	2	1

Source: Field Survey, February, 2018

From table 4.7 above, opinions by respondents mostly narrated were on law enforcement being very low, law enforcers being relaxed, lack of proper helmet law enforcement measures, as well as irregularities in roadside crash helmet checks. Low level of law enforcement topped the list with 14 responses. This was followed by the lack of proper enforcement measures receiving 10



responses. Corruption and politicisation, and law enforcers being relaxed were the third on the list, each receiving 9 responses. A male respondent remarked in an interview in March, 2018:

'The helmet laws and policies are less effective, because the security personnel are not doing their part adequately to ensure that riders abide by the laws and policies on helmet usage'.

Another female respondent remarked:

'Inspections of crash helmet usage must be at all times, and not only on special days or occasions. Also the country's laws on crash helmet usage are not strictly enforced if there is any in Wa. The natives are not checked and even that, the students are not checked regularly' (Respondent Interview, 2018).

, data gathered reveal that periodic road checks hinder the use of crash helmets. A number of respondents reported that they used crash helmets only when the MTTD and NRSC officers check on the roads. This implies that helmet use could be effective when regular checks are conducted. This in effect, would promote regular usage of crash helmets which could in turn

promote the safety of motorcyclists, especially tertiary education students. This opinion and its implications have, however, been proven in previous researches (Idrisu et al., 2017; Awuni,

2011), which suggested that the presence of the road traffic police is a factor that influences mandatory crash helmet usage. Iddrisu et al. (2017), in their conclusion therefore suggested that increased presence of the road traffic police and other relevant agencies would be appropriate for enhancing road safety behaviour, especially among tertiary student motorcyclists.



In another interview, a female respondent said that law enforcement agencies are there to ensure compliance of government policies as they are paid from the taxpayers' coffers. She, however, stated that this is far from the reality. This is what she said:

The police are charged to arrest and prosecute, but in reality it does not happen. It is only a matter of corruption and politicisation' (Respondent interview, 2018).

Buttressing the point on corruption, a male student motorcyclist remarked:

'I think one major challenging factor affecting enforcement is the corruption among enforcement agencies. They only demand little amounts of money from me anytime road checks are mounted and I'm caught without crash helmet while riding' (Respondent Interview, 2018).

finding on corruption confirms the study of Femi (2013). In the findings, Femi suggested traffic law enforcement agents in Nigeria have been identified to be financial penalties conscious. The study further explained that financial penalties have become universally popular are not adequately effective enough to deter crime. Since traffic offenders are aware that are paramount for traffic offences, traffic operators prepare funds aside for such offenses (Femi, 2013). The study reaffirms the ideologies of rational choice theory, because since the offenders could prepare towards the penalties for committing a criminal act, they must have calculated those costs against their benefits. For student motorists in this study, paying a little sum of spot fines to the Police as a form of punishment for non- use of the crash helmet would not be a problem. The problem, however, is could that money have ensured his or her safety than the crash helmet?



Major challenges identified regarding crash helmet usage enforcement as stated by the key informants include; political interferences, politicisation of enforcement measures, and shirking of responsibilities among enforcement agencies. Also, misconceptions about helmet usage among riders were revealed as a barrier to effective implementation of laws and policies regarding helmet usage. In the case of UDS, key informants lamented the numerous unauthorised routes as the main factor impeding effective enforcement measures by the institution. In view of this, it is assumed that since Wa Technical University is also in the process of constructing a security post at the main entry and exit points of the Institute to check and ensure that students and staff use crash helmets, the challenge of unauthorised entry and exit points as exist in UDS will not be an issue as well.

The key informants thought that the issues relating to crash helmet usage and its enforcement should be the sole responsibility of the Police and the NRSC. This as the study found results in shirking of responsibilities by the other key state actors including the DVLA, Health Institutions, DURs, as well as management of educational institutions. The findings from this

study show that, there is the need for concerted efforts from the various bodies and authorities to encourage smooth enforcement and compliance of crash helmet laws and policies among motorcyclists, especially tertiary education students who are thought to have adequate exposure to information.

4.6.1 Crash Helmet type used by respondents

The use of crash helmets as protective gear against injuries is advocated by many safety agencies, bodies and authorities. Ironically, among all the crash helmet related studies which



provide information on the relevance and roles played by the crash helmet on the safety of riders, little information exists regarding the type of crash helmet and its level of effectiveness. According to Akande (2009), a Road Traffic Safety Consultant, wearing the right helmet can reduce the risk of brain injury by 85 percent. Akande (2009), noted that a correctly-fitting, well-designed helmet prevents danger to the ears due to ambient noise such as honks and sirens. The crash helmet also helps to reduce ambient wind noise which consequently brings about fatigue and distracts a rider from concentrating. In addition, a helmet with visors and goggles also helps to keep insects away, prevent dust, and protect the eyes from the blazing sun. Apparently, the researcher observed that not all helmet users wear the right helmet as manifested in Nigeria. The researcher further, indicated that some motorcyclists wear improvised helmets like empty paint cans, plastic keg or dried pumpkin shells. It is against this observation that the researcher sought to investigate the various helmets used by respondents who wear helmets. The results are captured by Table 4.8 below.

Table 4.8 Crash Helmet type used by respondents

Gender	Full- Face	Open- Face	Half- Face	Total
Male	19	15	7	41
Female	5	2	1	8
Total	24	17	8	49

Source: Field Survey, February, 2018

Although the crash helmet offers protection to the users, that protection exists in degrees depending on the type of helmet being used, Full- face, Open- face or Half- face. It was

gathered from the data that out of the 49 respondents who used crash helmets during the time of the study 24 used the full- face, which according to the MSF (2017), WHO (2016), and Yu et al. (2011), is the most effective and globally recommended. This corroborates the findings of NHTSA (2009), CODES (2013), and Iddrisu et al. (2017).

Further, 17 crash helmet users used the open- face crash helmet type. Studies by the WHO (2014), suggested that open face crash helmet users were more likely to suffer chin and jaw related injuries than full- face crash helmet users who may only suffer neck fractures and may not even sustain jaw or chin related injuries due to the protection offered to such areas among the latter. Among the third type, half- face users were found to be eight respondents. WHO (2014), indicates that riders who use the half-face helmet are more like to experience severe injuries and even death since the helmet type does not offer adequate protection and could even go off the user's head if not fastened well in cases of crashes.

From the study, it could be suggested that the deaths related to crashes among student motorcyclists who used crash helmets are likely to be low since the majority of users used full- face type. Also, further probings on the respondents' choices of open- face and half- face suggest that the hot weather conditions, poor visibility, difficulty in hearing and the variations in the cost of helmets necessitated their choices. Out of the combined 25 respondents who used open- face and half- face helmets, 14 reported that the crash helmet produced heat during the dry season and espeacially the daytime. This supports the findings of Zamani- Alavije et al. (2011), UNDP (2010), and Skalkidou et al. (1999), whose



respondents unlike those of this study, did not use crash helmets due to the reasons being narrated in the analysis of this study.

Six of the respondents who used either open or half- face crash helmets were of the view that the crash helmet provides protection but the costs are varying according to type. This category of crash helmet users indicated they use the open and half- face, since that is what they could afford. The other reasons, which were less occurring were poor visibility and difficulty in hearing. Users who subscribe to these reasons, have directed their preference for open and half- face helmet since such types could mitigate their perception. Based on the Cornish and Clarke's (1986) Rational Choice Theory, it could be premised that helmet users in this study have chosen the various types of helmet in view of the costs (heat, cost of helmet, vision and hearing related issues) and benefits (protection, safety insurance and injury prevention).



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter is devoted to the discussion of major findings, conclusions and recommendations drawn on the topic ‘Factors influencing the non-use of crash helmet among tertiary education students in the Wa Municipality’. The chapter’s contents reflect the representations gained from data gathered in view of the study’s objectives as well as previous studies across the African continent.

Summary of Major Findings

This thesis revealed a number of issues. One of the key objectives of the thesis was to find out factors influencing the non-use of crash helmets. The study found that common dominant reasons for non-use of helmets among both males and females are; distance and discomfort, and long hair-dos. The findings from this study corroborate Khan et al. (2008) and UNDP (2010) studies. Khan et al. (2008), suggest that respondents did not use helmets for reasons such as physical discomfort and visual limitations. The UNDP (2010) report pointed out that crash helmets are more likely to be used in early hours of the day and late hours of the night within the tropics where annual day sunshine is almost eight hours.

The study found that among helmet users, the firm conviction that the helmet protects the head against unintended danger, and the eyes against foreign bodies are the motivating factors of wearing such a safety gear as confirmed by all the 49 helmet user respondents.



With respect to the perceived contributions of crash helmet to general road safety. Three main responses were given by the respondents. Fifty-two respondents representing 42.2%, were of the opinion that the crash helmet offers protection to the head. Further 34 respondents were of the view that they feel safe with the helmet. Another 18 respondents had the opinion that the helmet could prevent injury and death during road crashes.

The study further revealed that three main measures are employed by both school authorities and actors in targeting crash helmet usage namely; prosecution of offenders, education and traffic roadside and entry checks. These measures, however, were perceived to be less effective due to the low level of law enforcement, lack of proper enforcement measures, corruption and misadministration.

Conclusion

The conceptual framework, reasons assigned by both users and non-users of the crash helmets found in this thesis, suggest that motorists are aware of the benefits and costs of the use and misuse of crash helmet, and are therefore not ignorant. They are therefore responsible for their decisions or actions and should face the law when found culpable.

5.4 Recommendations

In order to achieve the policy of promoting crash helmet usage among tertiary education students, the promotion of crash helmet usage should be done through sectorial collaboration. The management and student leadership of tertiary institutions, the MTTD, NRSC, the media



and the health ministry should closely work together. Periodic educational campaigns should be carried out to orient student motorcyclists about the dangers of non-use of crash helmets.

In order to deal with the problem of non-use of helmets, penal codes of the various institutions should be revised to include sanctions for non-use of crash helmets per the suggestions of Cornish and Clarke (1986). The costs of non-use of crash helmets such as suspension for first and second offenders, and dismissal for recidivists should be carried out to deter others from going in such negative and dangerous practice. This in effect would help protect the image of institutions and also promote the safety of both student motorcyclists and pedestrians.

der to help reduce the practice of non-use of helmets, all strategic entry points and exits of various institutions should be closely monitored by the security officers of the institutions. also calls for beefing up the strength of the security and also empowering them by giving the necessary security accoutrements.



one found interfering with the operations of the agencies responsible for the safety of motorists should be sanctioned. The media in this regard has to play a critical watchdog role. This will at least boost the confidence and operations of the agencies, targeting helmet usage in the country at all levels of enforcement.

Suggestions for further studies

This study was guided only by the Rational Choice Theory. It is recommended that further studies should be conducted into the fusion of both Rational Choice and Deterrence theories, since they seem to be complementing each other in this study. This would help streamline the rules and regulations on helmet usage in the Ghana.

Therefore, further research should be conducted on the factors hindering sectorial collaboration in promotion of road safety in the country. This will help synchronise the various measures promoting helmet usage at all levels in the country including measures of educational institutions.



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APPENDIX A

Interview guide for students of the three selected tertiary institutions

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance shall these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Interviewer.....

.....

Crash Helmet Usage and Road Safety

1. How often do you use a crash helmet?

Why?.....

.....

2. What is your perception about crash helmets?

.....

.....

3. On a scale of 0-3, how effective is crash helmet in terms of protecting the user?

.....

4. Any reason behind your choice of score?

.....

.....

5. In your opinion, how does the crash helmet contribute to road safety?



B: Assessment of existing crash helmet policies and laws

6. Are you aware of any crash helmet usage law or policy?

Yes No....

7. If yes, what does the policy or law require?

.....
.....

On a scale of 0-3, how effective then, is the helmet usage law or policy?

8. What is your opinion on your choice of score?

.....
.....
.....

- **Indecisive**
- **Less**
- **Very**
- **Highly**

ny measures to promote effective crash helmet usage?

.....



i.

iv.

v.

APPENDIX B

Interview guide for Motor Transport and Traffic Department Officials

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. What is your view on helmet usage and road safety?

.....
.....
.....



2. How often is helmet usage checked among motorcycle riders on a scale of 0-2? (0= Always;

1= Often; 2= Occasionally)

3. What reasons do non-users give when caught?
 - i.
 - ii.
 - iii.
4. What measures exist to ensure effective crash helmet usage?
 - i.
 - ii.
 - iii.
5. What challenges are encountered in ensuring helmet usage among riders, especially student motorcyclists?
 - i.
 - ii.
 - iii.

. Any way forward?

.....
.....



APPENDIX C

Interview guide for Management of selected tertiary institutions

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. What is your opinion on helmet usage and road safety among student motorcyclists?

.....
.....

2. Are there any measures put in place to ensure safety of students as far as motorcycle usage is concerned?

If yes, what are they?

i.

ii.

iii.

3. What challenges exist in implementing such measures?

i.

ii.

iii.

APPENDIX D

Interview guide for National Road Safety Commission

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality. This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance shall these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. What do you think about crash helmets and road safety?

.....
.....
.....
.....



2. In your opinion, what impact does crash helmet have on the user?

.....
.....
.....
.....

3. Does the Commission have any measures in place to ensure crash helmet usage among riders? Explain

.....
.....
.....

4. What challenges does the Commission face in realising such measures?

- i.
- ii.
- iii.
- iv.

5. What do you suggest for policy formulation on helmet usage among student riders?

.....

.....

.....



APPENDIX E

Interview guide for Driver and Vehicle Licensing Authority

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality of the Upper West Region of Ghana.**

This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance shall these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

ion.....

. What is your opinion on helmet usage and road safety?

.....
.....
.....

How regularly are motorcycles registered with your institution, on a scale of 0-2?

(0= Always; 1= Often; 2= Occasionally).



2. Are helmets prerequisites for licensing? Explain.

3. What measures are adopted to ensure that licensed riders use crash helmets?

.....
.....
.....

4. What challenges does the institution face in connection with helmets usage?



APPENDIX F

Interview guide for Department of Urban Roads

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. What is your opinion on helmet usage and road safety?

.....
.....
.....



2. What effects does helmet have on the users, in your opinion?

.....
.....
.....

3. What steps is the department taking to ensure road safety and helmet usage?

.....
.....
.....
.....

4. What challenges are encountered in the course of executing such measures?

.....
.....
.....

5. Any piece of advice for student motorcycle riders?

.....
.....
.....
.....
.....



APPENDIX G

Interview guide for Health/ Medical Officer

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance shall these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. In your view, how are helmet usage and health related?

.....
.....
.....
.....



2. What effects does non helmet usage have on the society in general?

.....
.....
.....
.....

How frequently do you admit motorcycle accident victims, on a scale of 0-2? (0= Always; 1= Often; 2= Occasionally)

3. How many of such victims used crash helmets in course of accident?

.....

4. What measures do you think ought to be implemented to promote crash helmet usage, health, and safety?

.....

.....

.....



APPENDIX H

Interview guide for Security officers of the three selected campuses

I am a student of the above mentioned University, Wa Campus. I am currently writing my MPhil. Thesis on the topic; **Factors Influencing the Non- use of Crash Helmets among Tertiary Education Students in the Wa Municipality.** This study is purely for academic purposes and not inspired by any ulterior motive. I am much aware of the ethical issues regarding the conduct of social researches, and therefore assure you that under no circumstance shall these ethics be breached in the course of the work. Your participation is, however, voluntary and you are at liberty to discontinue with the process at any point in time. Your cooperation in this exercise by way of providing appropriate responses to questions posed would be very invaluable and appreciated. Thank you.

UNIVERSITY FOR DEVELOPMENT STUDIES

Name/ Rank.....

1. What do you think about helmet usage and road safety?
.....
.....

2. Are there any helmet usage enforcement measures under your supervision? Explain.....

3. Do you think helmet usage enforcement is helpful to students? Explain
.....
.....

4. What challenges do you face or foresee in implementing helmet usage policies as an institution?

i.

ii.

iii.



UNIVERSITY FOR DEVELOPMENT STUDIES

