

**AN ASSESSMENT OF DRIVERS' CAPACITY IN APPLYING ROAD SIGNS AND
REGULATIONS ON THE HIGHWAYS IN THE SUNYANI MUNICIPALITY**

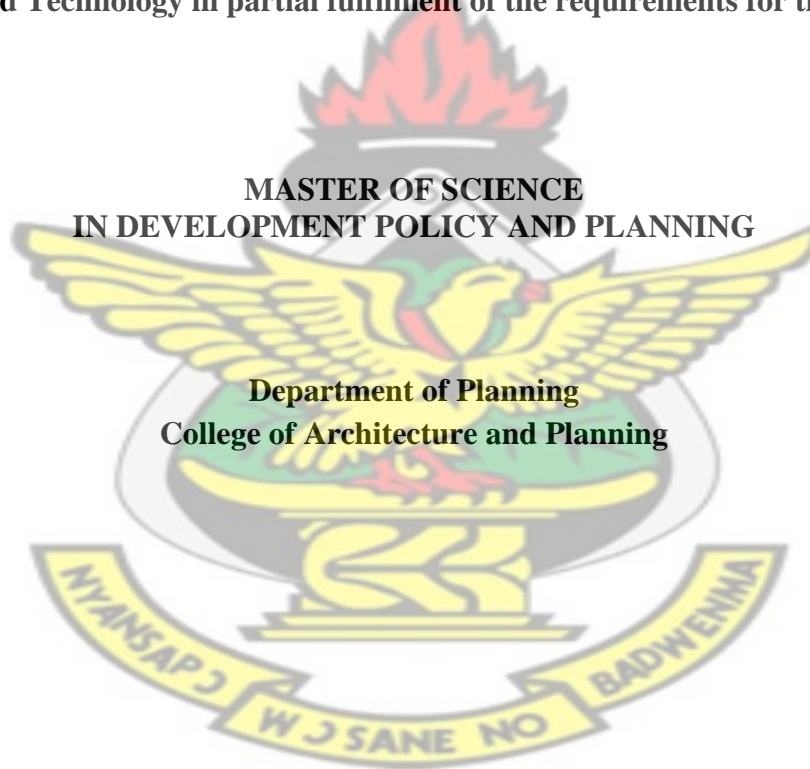
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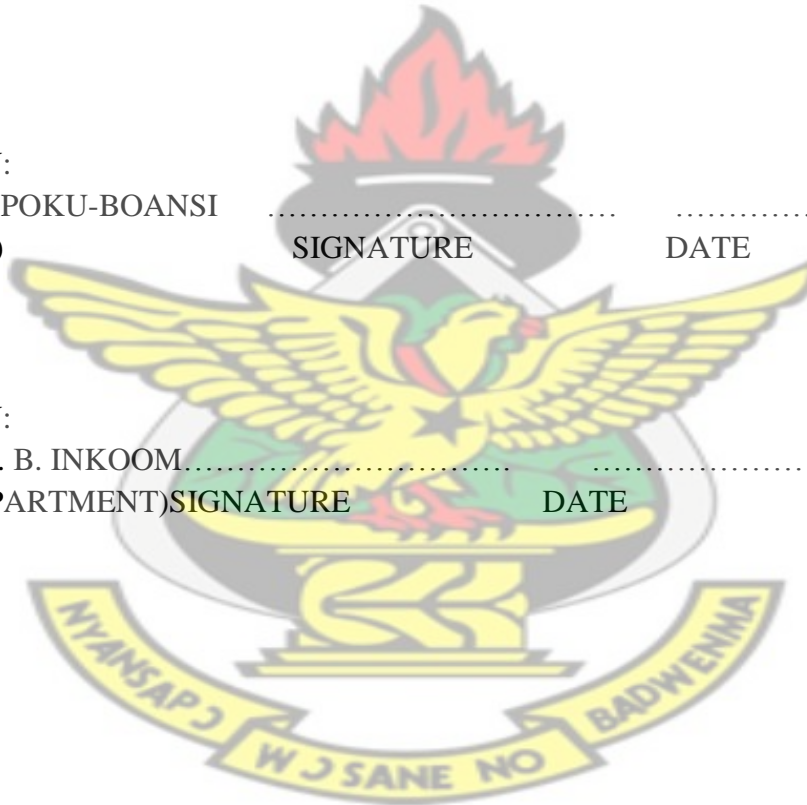
DECLARATION

I hereby declare that this submission is my own work towards the MSc. in Development Policy and Planning and that, to the best of my knowledge, it contains no material previously published by another person or material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Road transportation provides benefits both to nations and individuals by facilitating the movement of goods and people. It enables increased access to jobs, economic market, education, recreation and health care, which in turn have direct and indirect positive impacts on the health of populations. However, the increase in road transportation has also placed a considerable burden on people's health, especially in the form of road traffic deaths and injuries. In finding reasons for high accident occurrence, the questions the study seeks to answer include; social characteristics of commercial drivers in the Sunyani Municipality; trends and nature of accidents in the Sunyani Municipality; relationship between the characteristics of commercial drivers and incidence of accidents in the Sunyani Municipality; roles of the stakeholders in reducing the rate of accidents in the Sunyani Municipality.

One hundred and twenty-eight (128) structured questionnaires were administered to commercial drivers at selected lorry parks in the Sunyani Municipality. Data were also collected from the management staff of institutions such as GPRTU, DVLA, MTTU and GPRTU. Both descriptive and quantitative analyses were used for data presentation. Findings indicated that about 79 percent of the drivers were below 35 years of age. Also, more than 88 percent of them had no more than secondary education - out of which 20.3 percent had no formal education. The study subsequently identified a positive linear correlation between these characteristics and the occurrence of accidents in the study areas, as it was revealed that, the 37.4 percent drivers who had never been to school frequently had recorded accidents – 59 cases out of 158. In contrast, the 13.4 percent drivers who had some tertiary education only recorded 18 accidents.

The study calls for proactive drivers' education and training as well as effective law enforcement in order to reduce the level of carnage on the roads, from the drivers' perspective.

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TABLE OF CONTENTS

| Contents | Page |
|-------------------------|------|
| Title Page..... | I |
| DECLARATION | ii |
| ABSTRACT..... | iii |
| ACKNOWLEDGEMENTS | iv |
| TABLE OF CONTENTS | v |
| LIST OF TABLES | ix |
| LIST OF FIGURES | x |

CHAPTER ONE

GENERAL INTRODUCTION

| | |
|-------------------------------------|---|
| 1.1 Background to the Study..... | 1 |
| 1.2 Problem Statement..... | 2 |
| 1.3 Research Questions..... | 5 |
| 1.4 Research Objectives..... | 5 |
| 1.5 Scope..... | 6 |
| 1.6 Significance of Study..... | 6 |
| 1.7 Organization of the Study | 7 |

CHAPTER TWO

REVIEW OF LITERATURE ON ROAD ACCIDENTS, DRIVERS AND ROAD SIGNS

| | |
|---|----|
| 2.1 Introduction..... | 9 |
| 2.2 Conceptualization of Road Accidents | 9 |
| 2.2.1 The Concept of Road Accident..... | 10 |
| 2.2.2Basis for Road Accidents in Ghana | 10 |

| | |
|--|-----------|
| 2.2.3 Major Causes of Accidents on Highways in Ghana | 11 |
| 2.3 Road Accident Cases in Ghana..... | 13 |
| 2.4 Effect of Accidents on the Economy of Ghana | 15 |
| 2.5 Overcoming Road Accidents in Ghana..... | 17 |
| 2.6 Road Signs and their Relevance | 19 |
| 2.6.1 Road Safety Signs | 20 |
| 2.6.2 Construction Safety Sign | 20 |
| 2.7 Assessment of Drivers' Capacity in Reducing Road Accidents..... | 21 |
| 2.7.1 Characteristics of a Good Driver | 21 |
| 2.7.2 Conditions for Ensuring Safe Driving on Highways | 23 |
| 2.8 Drivers' Capacity Building as a Social Responsibility | 25 |
| 2.8.1 Techniques for Ensuring Discipline on Highways | 27 |
| 3.9 Road Safety Management System in Ghana | 28 |
| 3.9.1 Relevance of Accident Data to Road Safety Management..... | 29 |
| 2.10 Case Study on the Enhancement of Road Safety Capacity in Egypt | 30 |
| 2.11 Summary of Chapter | 32 |
| CHAPTER THREE RESEARCH METHODOLOGY | |
| 3.1 Introduction..... | 33 |
| 3.2 Research Design | 33 |
| 3.3 Data Requirements and Sources..... | 35 |
| 3.4 Data Collection Instruments | 36 |
| 3.5 Selection of Study Population and Area | 37 |
| 3.6 Sampling Techniques..... | 38 |
| 3.6.1 Sample Size Determination..... | 39 |

| | |
|---|-----------|
| 3.7 Key Study Variables | 40 |
| 3.8 Unit of Analysis and Data Processing | 40 |

CHAPTER FOUR

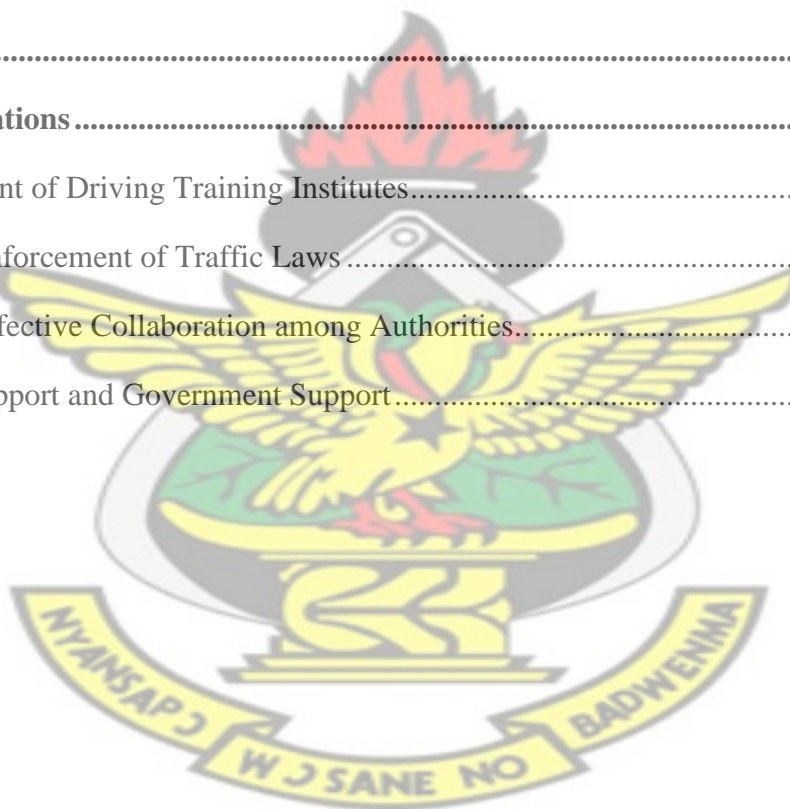
DRIVER’S CAPACITY AND THE INCIDENCE OF ACCIDENTS IN THE SUNYANI MUNICIPALITY

| | |
|--|-----------|
| 4.1 Introduction..... | 43 |
| 4.2 Profile of the Study Area..... | 43 |
| 4.2.1 Location and Size..... | 43 |
| 4.2.2 Climate and Vegetation..... | 44 |
| 4.2.3 Geology and Soil Type | 45 |
| 4.2.4 Demographic Characteristics | 45 |
| 4.2.5 Economic Activities..... | 46 |
| 4.3 Social Characteristics of Commercial Drivers | 47 |
| 4.3.1 Age Distribution of Commercial Drivers | 47 |
| 4.3.2 Educational Background..... | 48 |
| 4.3.3 Marital Status of Commercial Drivers | 49 |
| 4.3.4 Mode of Training of Drivers..... | 50 |
| 4.4 Trends and Nature of Accidents in the Brong-Ahafo Region..... | 51 |
| 4.5 Traffic Behaviour of Commercial Drivers | 53 |
| 4.6 Capacity of Drivers in Applying Road Signs in the Sunyani Municipality | 56 |
| 4.7 Capacity of Authorities in Reducing Accident Occurrence in Sunyani Municipality.... | 59 |
| 4.8 Summary of Chapter | 62 |

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

| | |
|--|-----------|
| 5.1 Introduction..... | 63 |
| 5.2 Summary of Findings | 63 |
| 5.2.1 Social Characteristics of Commercial Drivers in the Sunyani Municipality | 63 |
| 5.2.2 The Trend and Nature of Accidents in the Sunyani Municipality | 64 |
| 5.2.3 Drivers' Capacity and the Occurrence of Accidents in the Sunyani Municipality | 65 |
| 5.2.4 Capacity of Authorities in Reducing Incidence of Accidents in Sunyani Municipality | 65 |
| 5.4 Conclusion | 66 |
| 5.3 Recommendations | 67 |
| 5.3.1 Establishment of Driving Training Institutes..... | 67 |
| 5.3.2 Effective Enforcement of Traffic Laws | 68 |
| 5.3.3 Ensuring Effective Collaboration among Authorities..... | 69 |
| 5.3.4 External Support and Government Support..... | 69 |



LIST OF TABLES

| Table | Page |
|--|------|
| Table 2.1 - Accidents Fatality Rate in Ghana (2000-2008) | 14 |
| Table 2.2 - Road Accident Cases by Region in Ghana (2008) | 15 |
| Table 3.1 - Data Requirements and Sources | 36 |
| Table 3.2 - Selection of Sample Size of Respondents | 40 |
| Table 4.1 - Population Growth Trend of the Sunyani Municipality (1960-2000) | 46 |
| Table 4.2 – Age Distribution of Commercial Drivers in the Sunyani Municipality..... | 47 |
| Table 4.3 – Educational Background of Commercial Drivers in the Sunyani Municipality | 48 |
| Table 4.4 – Crosstabulation of Age and Marital Status of Respondents | 49 |
| Table 4.5 – Mode of Training of Commercial Drivers before Licensing | 50 |
| Table 4.6 – Trends of Accidents in the Brong-Ahafo Region (2007 – 2011) | 52 |
| Table 4.7 – Age of Respondents and Accident Occurrence in the Sunyani Municipality..... | 54 |
| Table 4.8 – Educational Level of Respondents and Accidents in Sunyani Municipality | 55 |
| Table 4.9 – Familiar and unfamiliar Road Signs | 58 |



LIST OF FIGURES

| Figure | Page |
|--|------|
| Figure 2.1 - Accident Prone Roads in Ghana | 14 |
| Figure 3.1 - Data Analysis and Reporting Framework | 42 |
| Figure 4.1 – Study Area in Context | 44 |

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LIST OF ACRONYMS

| | | |
|---------|---|---|
| AAA | - | American Automobile Association |
| ADB | - | Asian Development Bank |
| BAR | - | Brong-Ahafo Region |
| BRRI | - | Building, Roads and Research Institute |
| CD | - | Compact Disc |
| CID | - | Criminal Investigations Department |
| DVLA | - | Driver and Vehicle Insurance Authority |
| GDP | - | Gross Domestic Product |
| GHA | - | Ghana Highway Authority |
| GPRTU | - | Ghana Private Road Transport Union |
| JHS | - | Junior High School |
| MTTU | - | Motor Transport and Traffic Unit |
| NRSC | - | National Road Safety Commission |
| PROTOA | - | Progressive transport Owners Association |
| SHS | - | Senior High School |
| UNESCAP | - | United Nations Economic and Social Commission for Asia and the Pacific |
| WHO | - | World Health Organisation |

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Concern over aggressive driving and road rage has swept the world especially developing countries in the final decade of the 20th century. While still relatively infrequent, the number of fatalities and injuries on roads appear to be growing (Goehring, 1998). According to Asian Development Bank (ADB) (2006), road accidents account for over 1.2 million deaths and as many as 50 million injuries per year worldwide. This situation is more acute in developing countries, as it experiences about 85 percent of these fatalities. According to World Health Organisation (WHO) (2004), road accidents were the ninth most important cause of deaths, out of a total of over 100 identified causes, around the world. Forecasts however, suggest that, as a cause of death, road accidents will move up to the fifth place by 2030, resulting in an estimated 2.4 million fatalities per year (WHO, 2009), unless immediate action is taken.

Road accidents are caused by three main factors: human factors; road defects; and vehicle defects (Hour, 2007). Although all these factors have roles in accidents, it is the “human factor”, that is the interest of this study. Few studies have attempted to show any relationship between the socio-economic characteristics of drivers, their traffic behaviour and the occurrence of accidents. About 92 percent of road accidents have been caused by road users who infringed the traffic law – driving faster than the speed limits; driving carelessly; getting drunk during driving, lending credence to the assertion by Jeminks (2009) that, the greatest threat to drivers is the drivers themselves.

Experts state that the major causes of car accidents are driver distractions. Dangerous distractions that can lead to an accident include cell phones and other gadgets that drivers use as they drive.

Cell phones, laptops, electric razors, etc. causes drivers to take their eyes off the road for seconds at a time with the potential to cause a serious, if not deadly accident. Another dangerous distraction is when a driver who has been drinking, attempts to drive. The effects of alcohol can and does raise havoc behind the wheel. Anyone with a blood alcohol level of .01 is considered unfit to drive. The effects of driving while intoxicated include drowsiness, loss of focus and the inability to judge distances and reaction times (Morris, 2009).

The quest to development may be a mirage, if pointless road traffic accidents continue to consume the illustrious sons and daughters of mother Ghana. The next section highlights on the intensity and magnitude of road accidents, especially on the highways, in Ghana.

1.2 Problem Statement

Road accidents are common in this country to the extent that in 1995, Ghana ranked second to Mexico in terms of road fatalities worldwide. In 1997, it ranked second to Nigeria in West Africa and has remained at this position to date. According to Adomako (2006), available statistics show that over 10,000 vehicles are involved in accidents with over 10,000 people getting injured through accidents. He also states that at least 6 people are killed in road accidents daily with 25% of people involved in accidents below 16 years and another 25% aged between 25 and 35, while 70% of accident victims are males. Speed is a contributory factor in 60% of the cases and about 70% of the accidents occur on straight and flat roads.

The statistics on road accidents in the country are very ugly. Indeed this preventable foe is excessively devouring our human and economic resources. Precious lives are lost thereby decreasing productive labour force in the country. Continual media reports reveal that Ghana's road accident is oddly high among developing countries. In 2001, for example, Ghana was rated

as the second highest road traffic accident-prone nation among six West African countries, with 73 deaths per 1000 accidents. Road accident increased in 2001 to 11,291 with 1660 fatalities, while decreasing slightly in 2002 to 10,718 but with 1665 fatalities. Though road accidents further declined to 10,644 in 2003, fatalities rose to 11,718. Accra alone recorded, from January to March 2003, 1,417 motor accidents involving 2,125 vehicles (Mensah, 2008).

According to the National Road Safety Commission, Brong Ahafo Region currently ranks fifth (5th) in the National ranking. Provisional statistic released by National Road Safety Commission and confirmed by Criminal Investigation Department of the Ghana Police Service indicated an increase by 50, representing over 32% in total reported cases in 2007 where 155 people died from road crashes. In all 560 accident cases were reported across the Region in 2008, involving 722 cars with 734 victims with various degree of injury. Interestingly December, the month in which 2008 general election was held recorded the least accident cases of 27. However October registered the highest figure of 64, closely followed by June during which 62 cases were recorded (Daily Guide, 2009)

Several highway accidents are caused by the behavior of drivers. Rubbernecking and tailgating are potentially dangerous habits that many practice while driving. Rubbernecking occurs when drivers slow down to look at another accident on the road or anything that looks unusual on the highway.

The poor nature of some of roads, poor maintenance of vehicles, disregard for traffic regulations by most drivers and indiscriminate use of the road by some pedestrian are some of the other causes of motor accidents in the country (Mensah, 2008).

Economic impacts of road accidents cannot be glossed over. It is determined that road accidents cost developing countries including Ghana between 1-2% of the GDP. Current estimates show that Ghana loses about US\$300m every year through road accidents (Adomako, 2006). The cost does not include the associated pain, grief and suffering. Costs for road traffic accidents include direct costs, namely medical care, property damage and insurance administration, and indirect costs include property damage, delays on the roadway, fuel consumption as a result of road accidents and resultant traffic jams, loss of earnings, lost household productivity and environmental costs (Adomako, 2006).

The National Road Safety Commission (NRSC) with its allies such as the MTTU, DVLA, the National Association of Driving Schools, National Insurance Commission have over the years contributed in curbing the menace on the highways. Despite the efforts of NRSC together with all and sundry to achieve its target of reducing road traffic accident fatalities systematically into a single digit accident fatality rate by the year 2015, accidents cases are on the ascendancy in Ghana. The commission's determination to ensure that Ghana's transportation system becomes the safest in Africa, with a single digit in road accidents will be a mirage if road accidents continue to escalate (Mensah, 2008).

Although statistics available reveal that pedestrian (particularly men) and children between the ages of 4 to 10 years are most vulnerable to road accidents, every person stands the risk of this menace. The study is therefore intended to investigate into the knowledge of drivers in road sign usage, as well as the processes leading to the acquisition and usage of drivers' license with emphasis on the Sunyani Municipality in the Brong-Ahafo Region of Ghana.

1.3 Research Questions

In view of the issues, which were identified in the problem statement, the study seeks to find answer to the following research questions,

- i. What are the social characteristics of commercial drivers in the Sunyani Municipality?
- ii. What are the trends and nature of accidents in the Sunyani Municipality region and why such trends?
- iii. How have the characteristics of commercial drivers contributed to the incidence of accidents in the Sunyani Municipality?
- iv. What is the level of understanding and usage of road signs by drivers?
- v. What are the roles of the road management and safety stakeholders in reducing the rate of accidents in the Sunyani Municipality?

1.4 Research Objectives

The general objective of this research study is to ascertain the understanding of drivers in applying road signs and how this can help reduce accidents on roads in the Sunyani Municipality.

Against the background of the research questions, this study intends to achieve the following objectives;

- i. To examine the social characteristics of commercial drivers in the Sunyani Municipality;
- ii. To examine, and ascertain reasons the trends and nature of accidents in the Sunyani Municipality;

- iii. To explore the nexus between the characteristics of drivers and the occurrence of road accidents in the Sunyani Municipality;
- iv. To ascertain the level of understanding and usage of road signs by drivers; and
- v. To discuss the roles of road management and safety stakeholders in overcoming road accidents in the Sunyani Municipality.

1.5 Scope

This research explores the capacity of drivers plying the road in the Sunyani Municipality with particular emphasis on the procedures leading to the acquisition of the driving license and observance of road regulations especially on the highways as well as their ability to understand and apply road signs and regulations. The study focuses on the Sunyani Municipality of the Brong Ahafo Region of Ghana.

1.6 Significance of Study

This study on assessing the capacity of drivers in applying road signs and regulations after the acquisition of licenses on the highways would augment the body of knowledge in different ways. To start with, it would conscientise transport operators, and organizations as well as the general public on the increasing occurrence of road accidents as well as its effects on the region.

A careful examination and assessment of road safety measures on the highways in the region would lead to the development of effective strategies of overcoming and managing road accidents. In addition, road accident is in convention with unsustainable cultural and socio-economic development, thus this research would lead to the realization of effective strategies and policies of reducing road accidents. This research intends to unearth methods of improving sanity on the roads, especially on the highways.

When road regulations are given adequate attention and practised by all drivers in the region, the several road accidents and related challenges confronting agencies and institutions concerned with road safety and management would be enhanced. This is because issues pertaining to increasing road accidents associated with the behaviour of drivers would be addressed through adequate through proper observance of road regulations and change of drivers' attitude.

The location of the municipality and for that matter the region puts it in a better position for increased development and therefore reduction in road accidents in the region would create the atmosphere for a sustainable socio-economic development of the region. Ghana, especially the Brong Ahafo region has executed several road accidents policies over the past years and this research would augment the existing literature on road accidents for the effective management of insanity on the highways.

1.7 Organization of the Study

The study was organized into five chapters with Chapter One outlining the problem, research questions, objectives and the scope of the study. In a sense, the chapter formed the background to the study and indicates what the study intended to achieve.

Chapter Two focused on reviewing existing literature relevant to the research. It contains explanations of concept such as accidents, causes, types of accidents, and the road management and safety systems available for overcoming increasing accidents. It also provided the theoretical framework, and consequently the direction of the study.

The approach employed to gather data from the field which was to give credence to reviewed literature review was presented in Chapter Three. It focused on the research design, data required and sources, sampling techniques and the tools employed in carrying out the survey.

Chapter Four centered on the profile of the study area which included the geographical location, population, educational levels, relief and climate and the conditions of its natural and built environments. It also contained analysis of data gathered while the results of the investigation in relation to the major findings, recommendations and general conclusion were presented in Chapter Five.

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CHAPTER TWO

REVIEW OF LITERATURE ON ROAD ACCIDENTS, DRIVERS AND ROAD SIGNS

2.1 Introduction

The extent and nature of accidents resulting from incompetence and carelessness on the part of drivers have been established in the previous chapter. This chapter is designed to review literature on related concepts relating to the study. This review provides the theoretical underpinnings of the research highlighting on the important and relevant definitions, concepts and explanations. The chapter thus begins with the explanations of concepts which include road accidents, road signs and road management systems. These concepts were meant to contextualise the discussion and conclude with observations and lessons from the literature, serving as the test-bed of the empirical research.

2.2 Conceptualization of Road Accidents

A United Nation Economic and Social Commission for Asia and the Pacific (UNESCAP) Report (2004) cited in a Country Report of Cambodia on Road Safety in 2007 indicated that, road accidents are increasingly becoming a problem worldwide. The report gives a devastating account of deaths and injuries caused by road accidents to be around 1 million and over 23 million respectively per year. Around 85% of these deaths occurred in developing countries. The reports goes on to paint a denting image on developing countries, especially in the Asia – Pacific region, which already contributes 44% of global road deaths although it currently only has around 16% of the worlds motorized vehicle fleet.

Road accidents, like armed robbery, have become the sword of damocles hanging on the head of every Ghanaian. In 2008, a total of 11209 accidents were recorded in the country, with 1652

deaths (NRSC, 2008). This sub section gives a prognosis of the concept of road accidents, basis of these accidents and their major causes.

2.2.1 The Concept of Road Accident

Accident, according to Colleen et al (1989), is an unintended event or unstabilized situation that produces injury or damage not directly resulting from a cataclysm of natural phenomenon or an event that cannot be managed. However, Ruediger et al (1999), viewed accident as a random, rate and multifactor event often preceded by a situation in which one or more elements of the traffic stream have failed to cope with some conditions at the time and resulting in unintended injury, death or damage to property.

It can be observed from the above explanations that road accidents creates a platform where there is loss and damage of human lives and properties respectively causing burden on individuals, organizations and nations of the world. It is usually a collision involving at least one vehicle in motion on a road that results in the death or injury of at least one person.

2.2.2 Basis for Road Accidents in Ghana

Superstition and misplaced beliefs are diverting people's attention from the real causes of road accidents in Ghana. The major problem lies with the condition of vehicles on the roads. The blame must be placed directly at the doors of Driving and Vehicle Licensing Authority (DVLA). It is their responsibility to make sure that vehicles that are not road-worthy are not issued with road-worthiness certificates. Owusu (2009), stressed that in Ghana, one does not need to know how to drive before acquiring a driving license. There are agents hovering around the DVLA offices offering to help you get whatever you want - from road-worthiness stickers, vehicle registration, change of ownership and change of driving license status from driving a car to a bus

or truck. All these so-called agents, it is believed, work in close collaboration with the officials at DVLA.

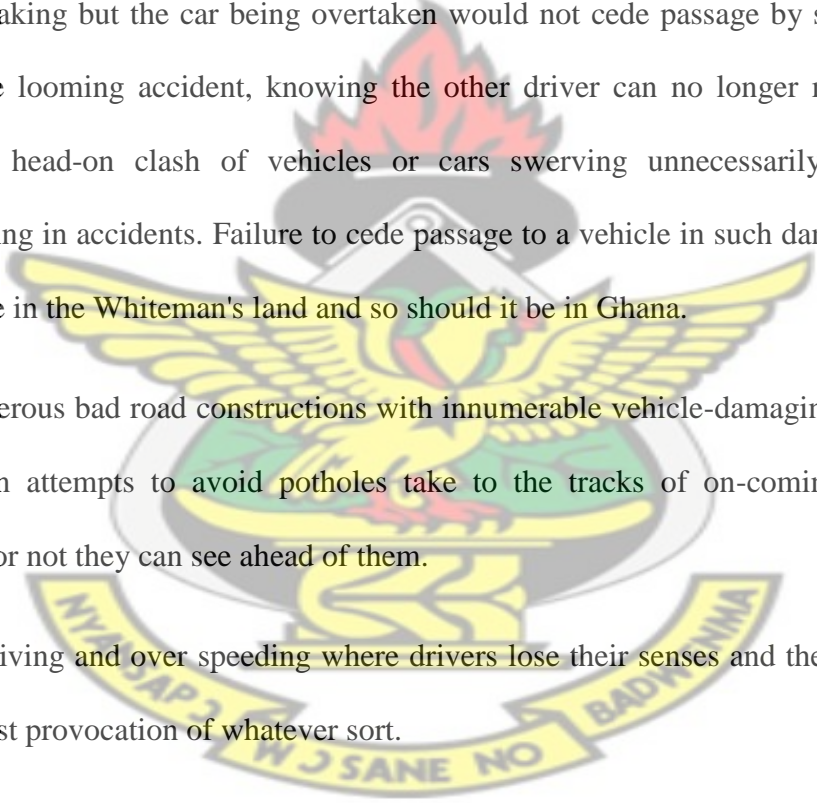
Past governments made sure new roads were constructed. Old roads linking major cities were repaired and widened. Why then do accidents persist on our roads? Owusu (2009) observed that the major problem is due to over-speeding and unsafe and reckless overtaking. Ghana is one of the countries where road signs and speed limits are not respected at all. The conditions of the roads have improved but the attitude of traffic police officers have not changed. Road offenders go free by a simple payment of bribes to the police.

Many drivers have eye problems but are holding driving licenses. They can neither see what is happening around them nor drive in darkness. In the fear of losing their jobs, they continue to drive even though they have very poor eyesights. This problem has also contributed to the many accidents on our roads. The frequent use of worn out tyres have also contributed to road accidents (Afukaar, 2000).

2.2.3 Major Causes of Accidents on Highways in Ghana

The spate of lethal lorry accidents on Ghanaian roads is very alarming. It then calls for a studious investigative study into the causes to be better placed to redress the situation. The adverse effects on the nation include; losing her precious energetic sons and daughters, the financial and psychological strain brought to bear upon the bereaved families, the government and the medical services cannot be over-emphasized. Adofo (2005) made empirical observations into the causes of accidents and revealed the following, in addition to all the other attributed factors.

- i. The blame is squarely put on the heads of the nonchalant drivers who value not their lives let alone that of the passengers, hence resorting to careless driving.

- 
- ii. Most of the drivers do not understand the code of driving, especially, the white broken and non-broken lines on the ground. They overtake vehicles where they are not supposed to. Some of the drivers often attempt to overtake vehicles on upward slope or at bends when they can hardly see even 100 metres ahead of them.
 - iii. The most dangerous of all is failure on the part of drivers to cede or give way to a vehicle that has decided to overtake them. Most often one could see a vehicle hurtling down the same road lane in the opposite direction in a likely head-on clash with the vehicle doing the overtaking but the car being overtaken would not cede passage by slowing down to avoid the looming accident, knowing the other driver can no longer manoeuvre. This leads to head-on clash of vehicles or cars swerving unnecessarily but ultimately culminating in accidents. Failure to cede passage to a vehicle in such dangerous situation is a crime in the Whiteman's land and so should it be in Ghana.
 - iv. The numerous bad road constructions with innumerable vehicle-damaging potholes Most drivers in attempts to avoid potholes take to the tracks of on-coming vehicle lanes whether or not they can see ahead of them.
 - v. Drunk driving and over speeding where drivers lose their senses and the grip of the cars at the least provocation of whatever sort.
 - vi. Mechanical problems of the vehicles resulting from lack of maintenance are also to blame but not as much as the deliberate actions of the drivers as listed above.
 - vii. The corrupt attitude of the Police in checking the drivers and their vehicles, accepting bribes and waiving faulty vehicles through.

2.3 Road Accident Cases in Ghana

According to Ghana News Agency (2009), on the 15th September, 2009, thirteen persons died on the spot and one later at the Bole District Hospital when a KIA vehicle travelling from Wenchi Nyapaansasi in the Brong Ahafo Region to Babile in the Upper West Region was involved in an accident at Doli, near Bole, in the Northern Region. About 28 others, most of them Junior High School students, were seriously injured.

Again, The Ghanaian Times for instance reported that 62 people perished while several others suffered injuries in two separate accidents on the Kintampo-Tamale-Bolgatanga road. The cost of these reported accidents to the nation runs into billions of cedis. In addition, another road accident was reported to have occurred at Gomoa Potsin in the Central Region which claimed about four lives (Ghana News Agency, February 2009).

In 2008, the convoy of the former Vice-President Aliu Mahama got involved in a motor accident that claimed the lives of three security details while another accident involving the convoy of Asantehene, Otumfuo Osei Tutu II also occurred in Brong Ahafo region. The convoy was travelling to Seikwa in the Tain District (Ghana News Agency, November, 2009).

The Ghanaian Chronicle reported that 17 persons died in an accident, which happened at Ohene Nkwanta, along the Konongo-Kumasi main road, on January 3, in 2009. The Municipal Motor Traffic and Transport Unit (MTTU) Officer in charge of Konongo indicated that 17 persons were killed on the spot.

Another report from the Ghanaian Times on the 16th February, 2009 reveal that, 62 people perished in two separate accidents on the Kintampo- Tamale-Bolgatanga road on the 15th February, 2009. Many others were reported to have sustained injuries. The accident at Kawnpe,

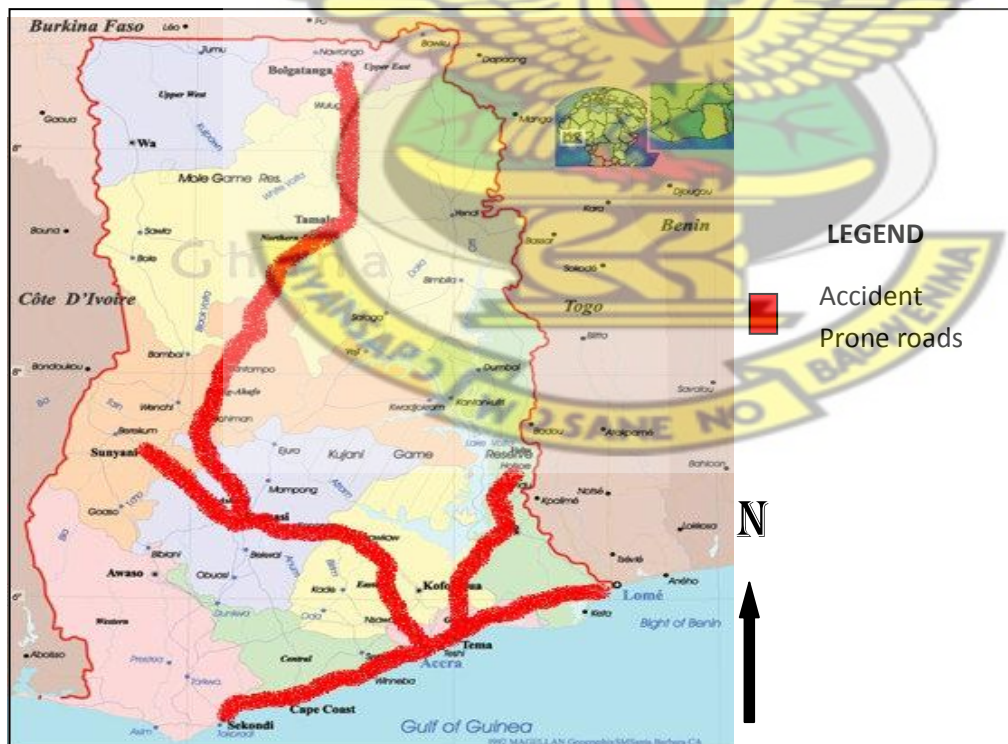
about 40 kilometres north of Kintampo in Brong-Ahafo, 28 people died. Another accident occurred at Kadia, near Savelugu on the Tamale-Bolgatanga main road, which claimed 34, lives on the spot. Forty-seven others were reported injured. Table 2.1 summarizes available data on Ghana's accident fatality rate from 2000 to 2008.

Table 2.1 - Accidents Fatality Rate in Ghana (2000-2008)

| Year | Total No of Accidents | Deaths |
|------|-----------------------|--------|
| 2000 | 11714 | 1578 |
| 2001 | 11291 | 1660 |
| 2002 | 10718 | 1665 |
| 2003 | 10644 | 1718 |
| 2004 | 12164 | 2185 |
| 2005 | 11328 | 1785 |
| 2006 | 11668 | 1856 |
| 2007 | 11648 | 1346 |
| 2008 | 11209 | 1652 |

Source: National Road Safety Commission of Ghana, 2008.

Figure 2.1 - Accident Prone Roads in Ghana



Source: National Road Safety Commission of Ghana, 2008.

The rate of accidents in the various regions of Ghana has also been summarized in Table 2.2. From the Table 2.2 road traffic accident fatalities in 2008 are greatest in the Ashanti region with a percentage of 22 while Eastern region follows with 17 percent while Upper West Region recorded 1 percent of accident fatalities. The Brong Ahafo region however, recorded 10 percent accident fatalities being the fifth accident prone region in Ghana as at 2008.

Table 2.2 - Road Accident Cases by Region in Ghana (2008)

| Region | Rate of Road Traffic Accidents (%) |
|---------------|---|
| Ashanti | 22 |
| Eastern | 17 |
| Greater Accra | 14 |
| Brong Ahafo | 11 |
| Volta | 8 |
| Western | 8 |
| Northern | 6 |
| Upper East | 3 |
| Upper West | 1 |

Source: Ghana Road Safety Commission, 2008

2.4 Effect of Accidents on the Economy of Ghana

Data from the World Health Organization show that in the developing world as a whole, road accident alone are the third leading cause of death in 5-14 years old and the second leading cause in 15-44 years old (World Health Organization, 1989). In Ghana, available statistics from National Road Safety Commission indicates that, about 60 percent of the crash cases reported affect occupants of buses and pedestrians with about 70 percent of the affected belonging to the reproductive age of 15 and 55. Every day four persons are killed on the roads with 1600 being killed annually (Ghana National Road Safety Commission, 2002).

Lives are lost and many are injured. For some of the injured, their conditions are such that they can never return to their work places. Most of them are breadwinners of their various families. Other people are made poorer, cut short the education of some students due to the demise of their parents through accidents. Ghana has over the few years lost precious lives through road accident, the man power needs of the state are being affected. These victims include doctors, engineers, farmers, lawyers, journalist, students and host of other professions who have been trained at the expense of the state's scarce resources (Ghana National Road Safety Commission, 2006).

Economically, the country loses a disturbing 1.6 percent of the National Gross Domestic Product representing about \$160million annually as of 2006 as a result of road accidents (Ghana National Road Safety Commission, 2006). This amount could have been used or channeled into different sectors of the economy such as agriculture, health, and education, to improve the well-being of the citizenry.

According to Kutsoati (2009), hardly a week goes by in Ghana without some families losing loved ones from senseless traffic accidents. The Traffic Unit of the Driver and Vehicle and Licensing Authority (DVLA) estimates that an average of six people die daily from vehicular accidents; and many more sustain injuries of various degrees. Most of the casualties are the sole income earners for their households. Without adequate, or no, personal life insurance policies, loss of lives translates into major income shocks to the bereaved families, often with grave consequences.

The law enforcement officers, charged with ensuring that drivers comply with the law, but paid a meager salary at the end of the month, will rationally demand and accept a bribe, than arrest

irresponsible drivers. It is therefore reasonable to assume that the task of checking for driver-compliance is way beyond the capacity of motor traffic enforcement unit. Ghana continues to pay a costly price by losing a good number of its human resource to avoidable road accidents. Indisputably, Ghana is yet to recover from the loss of the three urologists who lost their lives through a road traffic accident in 2005 (Kutsoati, 2009).

2.5 Overcoming Road Accidents in Ghana

The onus of preventing road accidents lies on the government, the police, drivers, passengers and pedestrians. Drunk driving should be taken more seriously. The instruments used in measuring alcohol levels in the blood are not costly anymore and government can easily afford to provide them to the motor traffic units of the police force. A motorist caught with a certain level of alcohol in his or her blood must automatically lose his or her license for a period of time as a punitive measure. Policemen and women who actually arrest people for drunken driving and other traffic offences who are successfully prosecuted should be commended in one way or the other, perhaps even given a promotion (Appiah, 2003).

It is therefore, necessary in Ghana to promote policemen and women for doing their normal jobs well if it will reduce accidents. One or two examples of motorists arrested and fined for crossing white lines that they should not cross will send fear into other motorists who will know that there are certain unbroken white lines marked on the road that you just cannot cross under certain circumstance (Owusu, 2009).

The DVLA or Ghana Highway Authority should sponsor more research into the causes of road accidents. There are certain roads and spots in the country, for instance, just after the Winneba Junction on the Accra-Cape Coast road and at the Koforidua Junction on the Accra-Kumasi road,

Brong-Ahafo region and more serious is the Bunso curve near Kyebi. If these spots cannot be rebuilt, enough warning signs must be provided. It is important for passengers to stay awake for most part of the journey so that they will be able to see if the driver is sleeping or be able to warn him or her of over-speeding. If he or she refuses to heed to their demand, he or she must be reported to the station manager for action to be taken against him or her. Pedestrians too have a role to play in reducing accidents by making sure that they cross the road only at the zebra-crossing (Owusu, 2009).

The laws, which banned heavy trucks, from plying the roads after 6 pm, must be enforced. What should be done is to exert efforts to enforce existing rules. There are already rules to ensure safe driving in Ghana. Efforts must therefore be directed to really enforce them without fear or favour. The government has the greatest role to play in this regard. It is time the government realized that good roads alone do not prevent accidents. Strict laws must be put in place to prevent very old vehicles from plying the roads or coming into the country (Appiah, 2003).

There must be enough road signs, which give either warning or information to drivers. In several places, the roads are bumpy but there are no warning signs to help drivers to slow down. This has been one of the major causes of road accidents. Not long ago, a petrol tanker hit a bump and fell on its side. The lorry behind crashed into the tanker and other vehicles followed, crashing into each other. The tanker caught fire and exploded, killing bystanders. This accident happened due to lack of information showing that there is a bump ahead. The DVLA must be revamped and all the so-called agents banned from hovering around the offices of DVLA.

The problem is complex but the government must direct its efforts and funds to purchase some of the machines, which are used in the western world to subject vehicles to rigorous check and

thorough examination before a road-worthiness sticker, or certificate is issued. Any vehicle that does not pass must be sent back for proper repairs and come back for a second check. The inspection authority must be able to say the particular things that are wrong with the vehicle so that the owner will know what to repair. It should be possible that an inspection authority should be able to withdraw a vehicle completely from the roads if the faults are so numerous and grievous that the vehicle cannot possibly be put in a state as to go back in traffic safely Road worthiness tests must be mandatory at least once every other year. Vehicle statistics must be computerised so that the vehicle authority will know when every vehicle in Ghana is due for the next test and, if possible, inform the owner accordingly.

The various motor associations like GPRTU should be more fully involved in this process. They are in direct contact with the vehicle owners and drivers and can better educate them on the basics. The police must also be given more power and knowledge to make better use of the so called "flying inspections" - the inspection of basic standards of vehicles in traffic on the spot (Owusu, 2009).

2.6 Road Signs and their Relevance

Road safety signs have become a common feature in almost every aspect of human life. They are necessary because safety is of paramount importance, and cannot be neglected in any case. Whether you are driving on a road or walking on the sidewalk, you have to follow the road safety signs. Similarly, in case of an excavation or other construction project, you have to follow the signs placed on the exteriors; otherwise, there could be serious accidents and loss of life (Harrison 2002).

Harrison (2002) stated that road safety signs are a legal requirement; local and national government can take the responsible persons to court or cancel their license if they have not placed the respective safety signs around their area of work. Public safety department is highly efficient in the United Kingdom and does not tolerate any breach of law. Following is a brief introduction of safety signs and their usefulness in keeping the human lives safe and secure on the road

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2.6.1 Road Safety Signs

The most common safety features are the road signs. They are placed at all major locations of a road, especially at places with any danger or important work going on. The most common road feature is the no parking sign. This is used to inform the drivers that the area is not used for parking vehicles and they should avoid it; otherwise, they can face fines and lifting of their car by the traffic constables. Apart from the no parking sign, the safety signs include a dangerous curve sign, school or hospital ahead, speed breakers and railway crossing, among others. These signs help in ensuring security of not only the drivers but the general population. In case a driver fails to follow these signs, a dangerous accident can happen. Railway crossings are particularly dangerous as there have been many incidents where cars were crushed away by a fast moving train.

2.6.2 Construction Safety Sign

These signs are also commonly found along roads and other construction sites. The most common sign among them is the "Men at Work" sign that is used to caution people and drivers that construction work is going ahead and they should change their route. Similarly, excavation work on a road follows the same sign although sometimes they place road barriers instead of just

erecting a safety sign. This approach is more useful as drivers have to change their route because of diversions, and the chances of any accident remains lower. They can neglect the sign but they cannot neglect the road barriers, as they can damage their vehicle by hitting these barriers.

2.7 Assessment of Drivers' Capacity in Reducing Road Accidents

Studies of highway drivers show they are more likely to engage in risky driving behaviors. Reasons for this could be because they do not have the needed skills and experience to recognize risky situations. They are apt to believe that they are invincible, and therefore will not be involved in a crash, or that they perceive they will gain admiration from their passengers for risk seeking behaviors, such as excessive speeding or unnecessary overtaking (Cobb County Teen Driver Awareness Committee, 2001).

According to Cobb County Teen Driver Awareness Committee (2001), numerous studies indicate that in collisions involving highway drivers, the specific actions causing the collision include, speeding, following too closely, failure to yield, improper lane use and improper turn. Further, these actions may be linked to conditions such as drinking and driving, careless driving and inattention. Other common driving errors include failure to wear a seat belt, distraction inside the vehicle (cell phone use, changing a CD or tape, eating or drinking), and incorrect assumptions about the other driver.

2.7.1 Characteristics of a Good Driver

Drivers should understand that driving is a complex set of mental, social, emotional and physical skills and processes. They need to be able to recognize and evaluate their own driving patterns and evaluate problems, driving behaviors and attitudes. Responsible drivers must make sound judgments and decisions regarding the traffic situation, taking into account that the roadway is

shared with other drivers and pedestrians, while maintaining an objective attitude (Cobb County Teen Driver Awareness Committee, 2001). The Committee therefore outlines the following to be the qualities a good driver should possess;

- i. *Physical skills* - Driving is a psychomotor skill that requires learning a certain set of skills, then practice, practice, practice until the motions become almost automatic. While these skills are sometimes called "instinctive" reactions, they are not instinctive at all. They are learned responses. Highway drivers must split their attention between basic car control (steering, braking, shifting gears) and the attention and concentration needed for the social and decision-making aspects of driving. Novice drivers need to recognize that their ability to react effectively to traffic situations and avoid crashes will be limited until these car handling skills are mastered.
- ii. *Coordination*- The coordination of a variety of motor skills is critical in order to accomplish an intended action. Drivers must make split second decisions in reaction to a traffic situation and execute those decisions smoothly. For instance, if a child runs into the road, the driver will have to simultaneously steer and brake (and perhaps clutch and shift gears), while watching for other potential hazards on the road, such as on-coming traffic or parked cars.
- iii. *Physical condition*- A person's physical condition will substantially impact his/her ability to drive competently. Good drivers will be aware of their own physical limitations and will compensate appropriately (wearing corrective lenses) or will avoid driving entirely when fatigued or under the influence of alcohol or drugs.
- iv. *Mental skills and attitudes* - While car handling skills are important, driving is primarily a thinking task and is more about good decision making and good risk management than

physical skill. Good decision making in driving depends on good information, and 90% of that information comes through the eyes. It is crucial that highway drivers know how, when, and where to look, and what to look for. Novice drivers tend to fix their eyes close to the car rather than searching ahead, thus missing cues for potential hazards. New drivers are also less apt to use their mirrors than experienced drivers.

2.7.2 Conditions for Ensuring Safe Driving on Highways

Driving is a multi-task activity that demands full attention and concentration. Novice drivers must learn to divide their attention over a number of routine, simultaneous tasks, such as steering, scanning, and speed control. In addition, drivers must be able to rapidly switch their focus of attention as the traffic conditions change. Too much attention on any one task or potential hazard can be as serious as not enough (Cobb County Teen Driver Awareness Committee, 2001).

Critical errors can occur when a driver is inattentive or distracted (for instance, using a car phone, talking with passengers, changing the radio station), fatigued, or impaired by alcohol or drugs. According to Smith (1950), there are five principal conditions needed to promote healthy driving on highways. These include:

- a. *Aim high in steering* - In other words, the driver needs to look far ahead when driving, not right in front of their vehicle. The driver will then be able to analyze the traffic conditions and predict what will happen well in advance of a conflict.
- b. *Keep the eyes moving* - Drivers should glance close and far, to each side, in the mirrors, and at the instrument panel, always returning their gaze to the front. This is known as scanning.

- c. *Get the big picture* -Look at the whole scene, not just a single aspect. If a driver fixates on any one element, he could miss other cues coming from a different direction.
- d. *Make sure others see you* -Communicate your intentions to other drivers by using your turn signals, lights, and horn, even through eye contact or body movement.
- e. *Leave yourself and out* -Drivers should identify a way to escape in case of a conflict. This is accomplished by constantly adjusting position to keep space around their vehicle in changing traffic conditions.

However, the Cobb County Teen Driver Awareness Committee (2001) also identified a set of criteria necessary in ensuring safe driving on the highway. These criteria are termed the IPDE process is a system of seeing, thinking, and responding that consists of four steps and they include:

- i. Identify -through visual cues, the driver identifies potential hazards. These hazards could include the roadway, the driver's own vehicle, other vehicles or pedestrians, traffic controls, animals.
- ii. Predict - determine which hazards may become points of conflict and when.
- iii. Decide - what actions does the driver need to take to avoid the conflicts; how should speed be adjusted, braking, steering.
- iv. Execute -implement the proper actions to avoid possible conflict

It can be realized from the above that safe driving on highways can only results when drivers are cautious, observe all road regulations and employ all their senses.

2.8 Drivers' Capacity Building as a Social Responsibility

Driving is more than an individual activity; it is a social contract that involves sharing the road with others - pedestrians, automobiles, emergency vehicles, interacting and cooperating with other people. There are enormous costs in both lives and money to poor driving behaviors. Motor vehicle crashes are the leading cause of death in several countries in the world. The yearly economic impact of traffic crashes in the world alone is nearly \$52 billion, in lost productivity, property damage, medical bills, car insurance rates, and the costs of police, firefighters and emergency medical personnel (National Safety Council, 2004).

A driver's emotional state has a profound impact on his/her driving ability. Road rage, aggression, and stress are increasingly cited as major contributing factors in traffic crashes. The National Safety Council (2004) indicated that drivers' capacity building should be necessitated by the following factors:

- i. Responsibility - Responsible driving is a function of the driver's conscience that goes beyond the individual's personal gratification. It requires that drivers commit to meeting social objectives and norms based on perceived risks for the entire community, even if the risk seems too small for the individual driver to worry about. Also, it requires that each individual be willing to analyze his/her own driving performance and keep it in line with personal and social values.
- ii. Traffic psychology - Developed by Dr. Leon James at the University of Hawaii, traffic psychology refers to how a driver learns to modify his/her own style of conduct in traffic situations and to monitor the impact of the individual's driving behavior on other road users. The benefits of this idea include perfecting the American character by teaching interpersonal skills that encourage, chivalry (being polite to strangers), charity (caring for

the feelings of other road users), freedom (self-responsibility), family values (being nice to your passengers), citizenship and respect for law and order (obeying traffic ordinances), spirituality (subtle connectedness among traffic users), morality and rationality (people's rights in public places), empathy and sympathy (showing solidarity with other traffic users), national unity and integration (identifying with positive symbols), creative driving practices (multi-tasking, recreation, artistic expression).

- iii. Attitudinal Control - A person's attitude toward driving impacts his/her willingness to learn how to drive safely - and act on the learning. The National Safety Council's Alive at 25 programme stresses that each driver has the ability and responsibility to control his/her own behavior. There are results and/or consequences for every decision a driver makes, and the driver is the only one who can make driving decisions and choose to act in a particular way. While it's possible that nothing will happen, the consequences of bad driving decisions can be immediate and catastrophic. A moment's inattention to make a cell phone call or change a CD can result in a lifetime in a wheelchair or death.
- iv. Peer Pressure and Motivation - Peers can play an enormous role in a novice driver's attitude toward taking risks behind the wheel. Safe driving is too often considered boring while risky driving is seen as exciting. The teasing and coaxing of others in the car is a hazard that could be deadly. There will be times when good drivers will have to avoid peer pressure and take the risk of being seen as "wimpy" rather than the possible fatal risk of being considered "macho".

Again, Drivers are inclined to assign motivation to another driver's actions and respond negatively based on that assumption (i.e., assuming that the other driver did not let you change lanes because he or she was intentionally trying to block your path). Most of the time when other

drivers' actions are not intentional or personal, s/he is usually just being inattentive. Rather than reacting personally and aggressively, good drivers remain objective about other drivers' actions. Traffic stress from road congestion is a major contributing factor to violent traffic disputes. Good drivers learn to relax, take a deep breath, and avoid using their vehicle as a weapon against others.

2.8.1 Techniques for Ensuring Discipline on Highways

American Automobile Association(AAA) Foundation for Traffic Safety (2000) emphasized on the following techniques as essential in promoting discipline on the roads and safe driving;

- i. Stay alert:Some beginners may give the impression of being confident and in control but may be totally unprepared to deal with any sudden change in conditions and very reliant on you, the co-driver, for guidance and even assistance in control. Anticipate problems and always be ready to react.
- ii. Communicate clearly: Give directions well in advance and try to always use the same terms (don't say accelerator one time and gas pedal the next, for example).
- iii. Do not hit the beginner with everything at once: a simple right turn, for example, involves several steps checking mirrors, signaling, checking blind areas, braking, positioning, checking for traffic before the turn, steering, and recovery. To expect a beginner to follow all of these correctly during the early sessions is asking too much.
- iv. Do not get excited during practice sessions.This communicates itself quickly to the driver and can make performance difficult.
- v. Do not overload: A big part of being an instructor or co driver is reminding the driver to check traffic and to signal and to bring attention to potential hazards. But once again, remember that everything you say is also a distraction for the driver. Be sparing in your

comments and, above all, try to avoid letting the beginner get into situations he or she can't handle.

- vi. **Stop and discuss:** When your teen makes a mistake, he or she may not be clear as to what went wrong. Explaining and discussing while on the move is not very effective. The beginner is too busy driving! Stop as soon as you can, while the mistake is still fresh in the memory, and sort out the problem. Don't jump on every mistake, however, and make a big thing of it. This will affect the beginner's confidence and concentration on the driving task.
- vii. **Don't clash with what the professional driving instructor teaches.** If your teen is doing something that you think is incorrect and maintains that the driving instructor teaches this way, talk to the driving instructor. Student drivers often wrongly interpret their instructor's directions.

2.9 Road Safety Management System in Ghana

Road safety management system is viewed as the planning and controlling measures employed in the formulation and enforcement of rules, regulations and laws governing the proper use of roads to minimize, if not eradicate, road accidents (World Health Organisation, 1989). Downing (1991) however defined road safety management system as the set of procedures necessary to ensure considerable reduction of road accidents.

The prime objective of the National Road Safety Commission is to facilitate the building of tri-sector partnership with the common goal of improving road safety. The Ghana Road Safety Commission (2002) employed the governmental structures available to ensure coordinated multi-sector improvement programmes; however, progress has been relatively slow due to inadequate resources and staffing.

The scope for increasing resources substantially for road safety activities was launched in 2001 and states ‘the National Road Safety will be the main thread for the National Road Safety Commission’s performance within the five year period (2001-2005). The purpose was to break the upward trend in road accidents and create a basis for concrete, sustainable accident reduction towards 2010. The overall target was a 5percent reduction in road fatalities from 1998 as the base year to 2005 and a further 15 percent reduction before the end of 2010’. This effort is geared towards Ghana attaining the overall African road safety target of 20 percent reduction by the end of 2010 (Ghana Road Safety Commission, 2002).

Extensive accident data, highway and socio-economic data have been collected and are undergoing analysis in the search for significant risk factors. The aim is to provide engineers and road safety specialists with engineering criteria and guidance, which will enable them to provide safety measure for pedestrians using roads and footpaths. The management system is made up of the following actors; Building and Roads Research Institute (BRRI), the Department of Feeder Roads, Department of Urban Roads, Ghana Highways Authority, the MotorTransport and Traffic Unit and the various drivers’ unions (Millard, 1997).

2.9.1 Relevance of Accident Data to Road Safety Management

According to Afriyie (2005), the essence of reliable data on accidents cannot be overemphasized in the efforts of overcoming accidents cases in Ghana. He stated that all data on standard road safety are collected and submitted to the BRRI for further investigations and analysis. Findings made from such reports are directed towards the prevention of further occurrence of road accidents in Ghana.

Afukaar (2000), stressed on the fact that, in order to determine what measures to undertake for the improvement of road safety, accident data collection should be given considerable priority for the following reasons; to identify hazardous spots/blackspots and to suggest appropriate remedial measures; to identify problem areas and the magnitude of the road safety problems in order to help in the development of policies, strategies and safety action plans on national and at local levels for road safety improvements.; to find causes and circumstances leading to accidents; to draw attention to some of the common but dangerous driving habits of the driving public in order to take measures to prevent or reduce their occurrence; and to obtain a pool of data for roads safety education and enforcement programmes.

2.10 Case Study on the Enhancement of Road Safety Capacity in Egypt

Many developed countries have initiated integrated road safety programmes and implemented countermeasures that have been researched and developed to tackle their specific road traffic accident problems (Afriyie, 2005). It is thus of significance importance for developing countries to employ the lessons learnt from the experiences of the developed countries to help improve the safety on the roads especially the highways. This section describes a study carried out in Egypt.

Egypt is a torchbearer for other African Countries due to its long-standing involvement in research to increase road safety and reduce the occurrence of accidents. It is one of the African countries with the least economic cost incurred due to road crashes (0.8%) according to a report by the Transport Research Laboratory in 2000.

The Egyptian Academy of Scientific Research and Technology and the overseas unit began its programme of cooperative research in 1980 by designing a new police accident report booklet

and developing a Microcomputer Accident Analysis Package for data analysis. Ease of use was a key principle in the design of both the booklet and the software (Hills and Kassabgi, 1984).

This database was established for three areas of Cairo and the six main inter- city roads of Egypt. Attention was however focused on locating and treating hazardous road sites. Data for 1983-1985 were used for the accident investigation and blackspots were defined as those sites with five or more accidents per year for each of the three years in questions.

The investigation approach outlined above was applied to the whole database but for this paper, the Cairo-Alexander Agricultural Road has been selected as a case. This dual carriageway road is 240 kilometers long and is the busiest road in Egypt with an average daily traffic flow of 43,200 vehicles in 1984. It has a median of variable with unsealed shoulders and is mostly straight and level with relatively few changes in either its horizontal or vertical profile.

During the three year period, 1480 accidents were reported along the road. Compared with the other five inter-city roads it had the highest fatal accident rate performance per year (0.6) and the highest percentage of accidents, which were fatal (28 percent). Having selected the road for the research, the next step in the accident investigation process was the identification of the hazardous locations.

Eighteen sites were found to have had more than five accidents per year and the problems of these sites were investigated further by using the cross-tabulation and stick diagram facilities of the Microcomputer Accident Analysis Package. This analysis indicated that half of the sites were junctions and although the distribution of accidents types varied from site to site, it can be seen that pedestrian, nighttime and nose to tail accidents featured fairly frequently.

Upon identification of the main accident types, preliminary visits were made to each site with checklists to identify the key physical characteristics at the site. After the first visit a programme of surveys was drawn up as necessary. The investigation of the site revealed that some of them were not suitable for low cost treatment. Some of them were excluded because they were included in another road improvement scheme to add a third lane to each carriageway (Afriyie, 2005).

The remaining sites were included in the evaluation study together with an equal number of similar control sites selected from the untreated section of the road. Kilometer 60 was typical of the experimental sites (Sayer, 2004).

2.11 Summary of Chapter

The assessment of the capacity of drivers especially highway drivers is very significant to national growth and development. The literature review indicates the extent to which countries in the world lose both human and material resources through road traffic accidents. This situation is continually claiming the resources of several countries in the world.

Improvement in highway driving through adequate education for drivers, awareness creation and conscientization of the general public would go a long way to reduce the rate of road accident occurrence in the world. It was realized from the theoretical framework that about 70 percent of accidents in the world particularly Ghana, are caused as a result of inefficiencies on the part of drivers and pressure from passengers.

The subsequent chapters of the study would focus on the extent and level of drivers' capacity in overcoming road traffic accident by examining empirical data from the Brong Ahafo Region with specific emphasis on the Sunyani Municipality.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights on the study design and method adopted by examining the techniques and procedures employed in undertaking the research. The chapter thus accentuates on the study design, data collection tools and methods, sampling techniques, study variables as well as the unit of analysis.

3.2 Research Design

The research design adopted for the study is the case study approach. A case study involves an observation of a single group or event at a single point in time, usually subsequent to some phenomenon that allegedly produced change (Nachmias, 1992). With regard to the above, the Sunyani municipal was subjected to critical observation in the area of drivers' capacity and accidents' prevention. A case study research design, according to Bromley (1990), is a systematic inquiry into an event or a set of related events, which aim to describe and explain the phenomenon of interest.

Haggett (1977) stated that a case study is an empirical enquiry that allows for an investigation of the dynamics of a particular system. The case study is therefore an empirical inquiry that investigates a contemporary phenomenon within its real life context; when the boundaries between phenomenon and context are not evident; and in which multiple sources of evidence are used (Yin, 1993).

Similarly, the case study method was employed in undertaking the research because the phenomenon under investigation is a contemporary one and the research is focused on a real life situation. This results in better understanding of the circumstances of the case and aids in assessing the reactions of the public to questions and issues raised in the cause of the research (Kumekpor, 2002). Norgaard (1994) stated that the case study research design is the preferred one when control on the subjects of the study is neither feasible nor desirable.

Although case studies have difficulties in generating beyond the case, as opposed to survey research, Yin (1993) emphasized that it is possible to make analytical generalizations to the body of theoretical framework. The assessment of drivers capacity in the application of road signs and regulations after the acquisition of licenses, the body of theories and concepts underpinning them, the strategies and activities as well as the impacts of road accidents on the local economy makes the case study approach the most appropriated for the research. In addition, according to Theodorson and Theodorson (1969) the case study approach is very useful for studying an individual, group, an episode, a process, a society or any other units of social life. This is therefore in tune with the phenomenon under investigation as it concerns the welfare of individual, groups and the wider community.

Also, the case study approach is an explanatory method which makes it easy to ask and seek answers for the necessary 'how', 'when' and 'why' questions associated with the research. Again, the intimacy of field study relationships connected to the case study method can be the greatest advantage (David and Sutton, 2004). According to Babbie (1983), the advantage with the case study research method is that it allows statistical inferences to a broader population so that results can be extrapolated as it increases external validity through generalization.

3.3 Data Requirements and Sources

The data needed for the study included the population and the number of licensed drivers in the selected bus terminals in the Sunyani Municipality (Kumasi bus terminal, Wenchi bus terminal, Berekum bus terminal and Techiman bus terminal). Again, data on the criteria required for the issuance of driving license, major causes of accidents on the highways and challenges of drivers plying the highways. In addition, data was required on the attempts made by the road transport authorities towards the reduction of road accidents in the region.

Both secondary and primary data sources were used for the study. The secondary data was gathered by reviewing relevant and related literature from journals, publications, internet among others. The literature review helped in understanding and appreciating key concepts, components of accidents related issues and the impacts of poor driving on the local economy and the nation as a whole. The primary data on the number of licensed drivers in the Sunyani municipality as well as the criteria for the issuance of license was sourced from the Brong Ahafo Regional offices of the Drivers, Vehicles License Authority (DVLA), Motor Traffic and Transport Unit (MTTU) and the Sunyani Municipal Assembly. The offices of the Ghana Private Road and Transport Union (GPRTU) and the Private Road Transport Owners Association (PROTOA) provided the data on the number of licensed drivers plying the highways in the region.

Data on the major causes of accidents on the highways and the challenges confronting drivers plying the highways were also collected from the sampled drivers and the offices of GPRTU, MTTU and PROTOA in the municipality. Again, the offices of the GPRTU, PROTOA, Sunyani Municipal Assembly and DVLA provided data on the various efforts being overcome the challenges of road transport with respect drivers' capacity building. Table 3.1 shows the data required and the sources for the research.

Table 3.1 - Data Requirements and Sources

| Data Required | Source of Data | Mode of Collection |
|---|---|--|
| Population and number of licensed drivers | DVLA, GPRTU and PROTOA | Structured Institutional Questionnaire |
| Criteria for the issuance of driving licenses | DVLA, MTTU and Sunyani Municipal Assembly | Structured Institutional Questionnaire |
| Major causes of accidents on highways | DVLA, GPRTU, PROTOA, Drivers and MTTU | Structured Institutional Questionnaire and Interview Guide |
| Challenges encountered in plying the highways | GPRTU, PROTOA and Drivers | Structured Institutional Questionnaire and Interview Guide |
| Efforts in building drivers' capacity | GPRTU, PROTOA, DVLA, Drivers and the Sunyani Municipal Assembly | Structured Institutional Questionnaire and Interview Guide |

Source: Author's Construct, July, 2010

3.4 Data Collection Instruments

The data collection instruments that were used for the study were the use of structured institutional questionnaires, interview guide, observation and the use of camera and pen drives. These tools facilitated and enhanced the data collection process and were employed as and when they were needed.

The structured institutional questionnaires were employed in the collection of institutional data. Different set of questions were posed to be answered by the offices of the selected institutions which included the GPRTU, PROTOA, DVLA and the MTTU as well as the Sunyani Municipal Assembly. The collection of data from these institutions created an opportunity for the review of some secondary data that was made available. Interview guides were used in the collection of data from the drivers selected from the four principal bus terminals in the Sunyani Municipality. Both close and open ended questions were set and administered targeting the drivers plying the

highways in the municipality. With regard to that, the simple random sampling technique was employed and every fifth driver in each of the four purposive sampled bus terminals was interviewed. The challenge that emanated was that some respondents were reluctant and apathetic in providing information. This was overcome as the purpose of the data collection was explained to them.

Also, observation was used as an instrument as it afforded the researcher the opportunity to appreciate the behavior and dressing of some of the drivers at their various terminals. In addition, direct observation was used to examine the relationship between the GPRTU and PROTOA officials and the drivers. Again, acquisition of institutional data was facilitated with the use of pen drive. The pen drive was used to copy already documented information thus reducing the time spent. The camera was used to take photo of the state or conditions of vehicles plying the highways as well as the conditions of the highways.

3.5 Selection of Study Population and Area

A population as viewed by Frankel and Wallen (2000), is the group to which the results of the research are intended to apply. They further stated that population is usually the individuals who possess certain features or a set of features a study intends to examine and analyze. It is to this end that Kumekpor (2002) defined population as the total number of all units of the issue or phenomenon to be investigated into which is “all possible observations of the same kind”. The study population comprised the licensed drivers who ply the principal highways linking the municipality and are registered with either GPRTU or PROTOA. Also, staff and managers of DVLA, Sunyani Municipal Assembly, GPRTU, PROTOA and MTTU were considered as part of the study population.

Generally, the research was limited to the Sunyani Municipality in the Brong-Ahafo region of Ghana. This place was selected due to the availability of several highways linking the municipality to the rest of the country and the increasing number of road accidents especially on the highways leading to the municipality in the first quarter of 2010. Again, the Sunyani Municipality was purposively selected because of proximity and, it is one of the oldest districts in the region.

3.6 Sampling Techniques

The impossibility of surveying the entire population due to financial and time constraints makes sampling an essential element in research work. The process of sampling makes it possible to limit a study to a relatively small portion of the population (Agyedu, 1999). A sample is therefore a representative selection of a population that is examined to gain statistical information of the whole.

The multi stage sampling method was used for the study. These sampling techniques included the purposive sampling method and the simple random sampling technique which fall under non probability and probability sampling techniques respectively.

The purposive sampling, which is employed when the sampling units considered satisfy certain criteria of interest, was used in the selection of the institutions, which included the DVLA, GPRTU, PROTOA, MTTU and the Sunyani Municipal Assembly. The institutions that have knowledge about the capacity of licensed drivers plying the highways in the municipality of Sunyani were central to the study. Again, the purposive sampling technique was employed to identify the four bus terminals selected for the research.

The random simple sampling was employed in the selection and identification of drivers to be interviewed. Every fifth driver at each of the four bus terminals were selected and interviewed on their capacity and difficulties with regard to highway driving, after the determination of the sample size.

3.6.1 Sample Size Determination

The study has a sample frame of 342 as shown in Table 3.2. The study employed the mathematical approach in the determination of the sample size. The approach creates room for margin of error and makes sampling scientific. The mathematical sampling model given by Miller and Brewer (2003) as presented below, was used to determine the sample.

$$n = \frac{N}{1 + N(\alpha)^2}$$

Where

| | | |
|----------|---|-----------------|
| n | - | sample size |
| N | - | Sample frame |
| α | - | margin of error |

The sample frame (N) shows the list of all licensed drivers at the four selected GPRTU and PROTOA bus terminals. For the purposes of extrapolation, the sample (n) is calculated out of the sample frame (N). Employing the above stated formula with a sample frame of 342 and the margin of error of 93%, the sample size was calculated as:

$$\begin{aligned} n &= \frac{342}{1 + 342(0.07)^2} \\ n &= 127.8 \\ n &= 128 \end{aligned}$$

Based on the above, the number of licensed drivers interviewed was 128. It must however be stated that the respondents were proportionally sampled from the different sample units identified. Details of this are shown in Table 3.2.

Table 3.2 - Selection of Sample Size of Respondents

| Selected Bus terminals | Sample Frame | Sample Size |
|-------------------------------|---------------------|--------------------|
| Sunyani-Kumasi | 111 | 42 |
| Sunyani-Techiman | 83 | 33 |
| Sunyani- Wenchi | 82 | 32 |
| Sunyani- Berekum | 66 | 21 |
| Total | 342 | 128 |

Source: Field Survey, January, 2010

In addition, selected institutions – DVLA, GPRTU, PROTOA, MTU and the Sunyani Municipal Assembly- were contacted to respond to the questions pertaining to the operations of the highway drivers particularly in the area of their capacity.

3.7 Key Study Variables

According to Kreuger and Neuman (2006) a variable is a concept that varies. A variable may take on two or more values which are its attributes. Variables are thus the logical groupings of attributes (Babbie, 2007). It was indicated by Miller and Brewer (2003) that variables help in moving a research from a conceptual to an empirical level, employing the variables as key elements of the research problem.

At the institutional level, the variables employed for the research included; the role of the institutions in ensuring safe road transport in the Sunyani Municipality, the level of institutional involvement in the capacity building of drivers, the level of institutional mechanisms geared

towards the minimization of road unworthiness and the efforts being initiated by the institutions in effective relationship between the drivers and the institutions.

The key variables adopted at the local level were; the level of involvement of drivers in decision making, the level of training received by the drivers, major causes of accidents on the highways and the relationship between the drivers and the institutions.

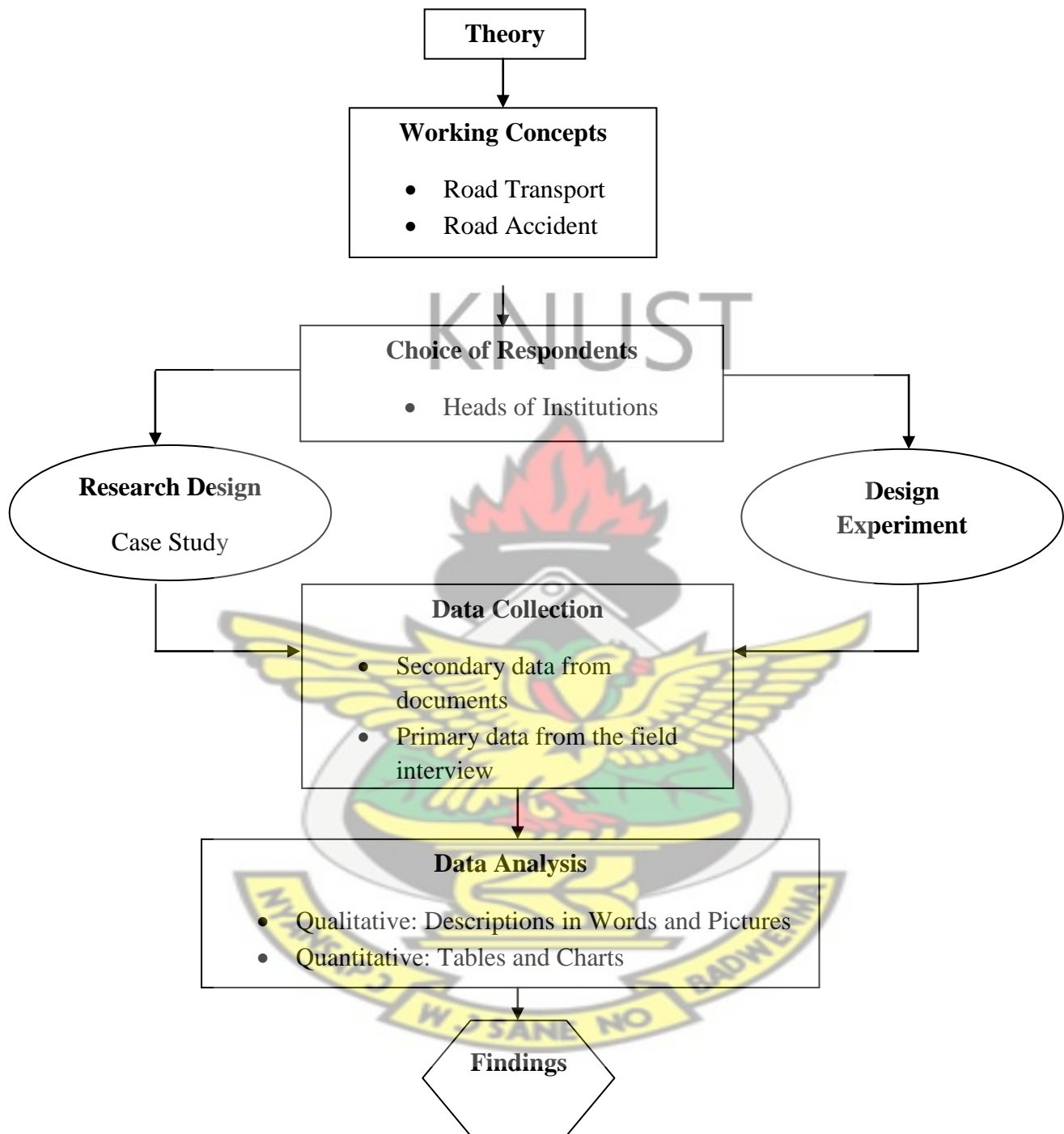
3.8 Unit of Analysis and Data Processing

According to Babbie (2007), unit of analysis refers to the ‘what’ or ‘whom’ is being studied. He further stated that unit of analysis in a research are usually referred to as unit of observation. Unit of analysis has also been viewed as the most basic part of a phenomenon being investigated into. In this research, the head of the GPRTU, PROTOA, MTTU, DVLA and the Sunyani Municipal Assembly formed the units of analysis at the institutional levels. The sampled licensed drivers however formed the unit of analysis at the local level.

Based on the understanding of key concepts of the research, the data collected was analysed. Data gathered was processed by editing to detect and eliminate errors in the data. The data was further coded and tabulated for analysis. The data was analyzed using both qualitative and quantitative techniques. A qualitative technique involves descriptive analysis and it was employed to analyse data obtained from the institutions and the sampled drivers in addition to the presentation of observations made by the researcher. Tables, charts, proportions among others were employed in the case of the quantitative technique.

The summary of the data analysis, processing and reporting summarized in Figure 3.1, which presents a summary of the key features of the unit of analysis and reporting.

Figure 3.1 - Data Analysis and Reporting Framework



Source: Culled from Waugh (1995).

CHAPTER FOUR

DRIVER'S CAPACITY AND THE INCIDENCE OF ACCIDENTS IN THE SUNYANI MUNICIPALITY

4.1 Introduction

This chapter contains the study area profile emphasizing on the physical, social and economic characteristics. Using primarily field data, this chapter primarily focuses on the capacity of commercial drivers and its relationship with accident occurrence in the Sunyani Municipality. Drivers' capacity in this context refers to their age, educational background, marital status, as well as the mode of training before and after been issued with a license, chiefly, training them in understanding and applying road signs. These characteristics are thus, examined in relation to the accidents, in this chapter.

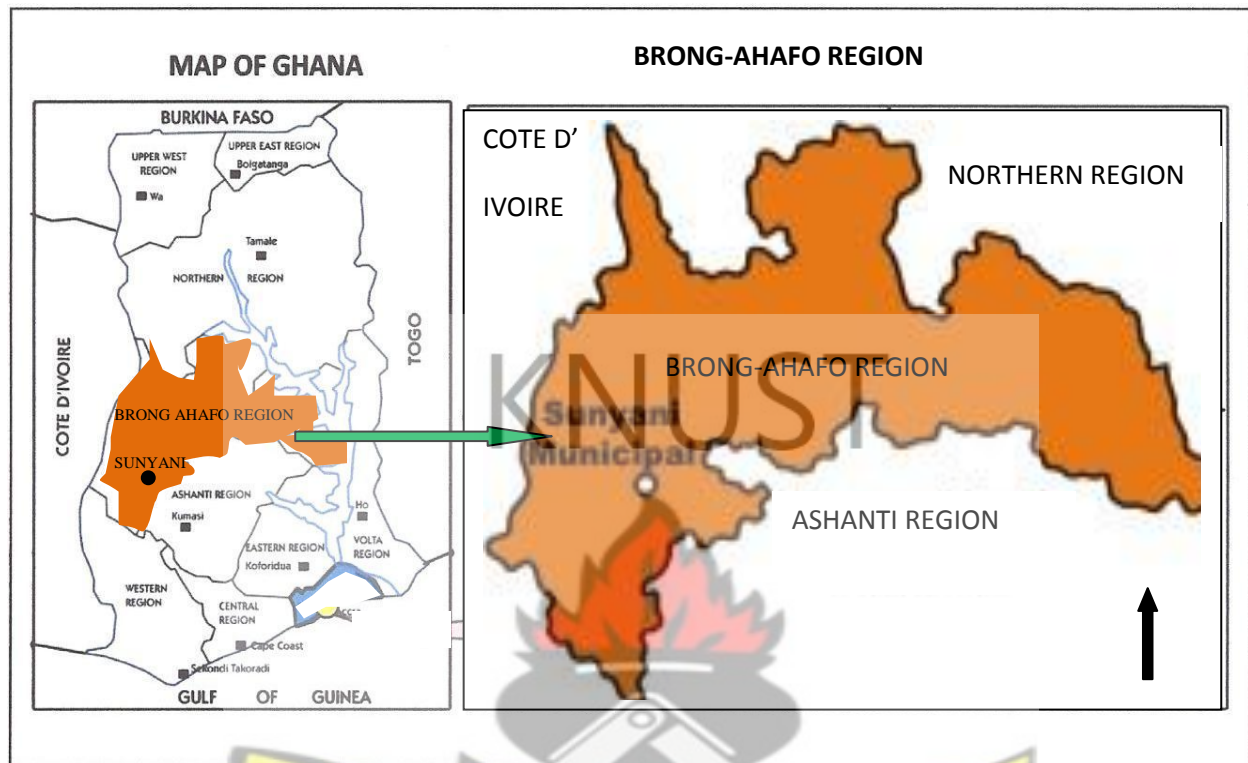
The relationship between drivers' capacity and the incidence of accident is also examined in section four. Section five looks the capacity of stakeholders (with emphasis on the challenges they face) in reducing accidents in the region, with regards to commercial drivers' attitude. The concluding section, section six summarises the chapter, and provides transition for the next chapter.

4.2 Profile of the Study Area

4.2.1 Location and Size

The Sunyani Municipality is located in the heart of Brong Ahafo Region, between Latitudes 70 55'N and 70 35'N and Longitudes 20 W and 20 30'W. It shares boundaries with the Wenchi District to the north, Berekum and Dormaa districts to the west, Asutifi District to the south and Tano South District to the east. The Sunyani Municipality has a land area of 24885 square kilometres.

Figure 4.1 – Study Area in Context



Source: Author's Construct, January, 2010

4.2.2 Climate and Vegetation

The municipal falls within the West Semi-Equatorial Climate Zone. Its mean monthly temperature varies between 23 degrees celsius and 33 degree celsius, with the lowest in August and the highest in March/April. The municipal, like other parts of the region, enjoys heavy to moderate rainfall, recording about 945.69mm as annual mean.

It experiences two rainfall regimes. The major rainy season occurs from April to the end of July, while the period from September to late October is the minor wet season. Found within a transitional zone, the southern portion is covered with tropical soft woods, whilst the northern sector is covered mainly with Guinea Savannah woodland. The forest cover in certain parts of

the municipal is, however, degenerating into the Savannah type through human activities, such as agriculture and settlement expansion.

4.2.3 Geology and Soil Type

Underlying the municipality is a metamorphic rock, which has undergone several thermodynamic changes in the mineral composition and structure. Upper and Lower Brimin rocks are the most predominant geological formation composed of phyllite, schist, tuff and greyrocks. Soils of the district are mostly forest ochrosols, well-drained soils in the weathering products of intermediate or moderately acidic rocks. The ochrosol soil is the most important soil in the forest zone of Ghana.

During the dry season there is a gradual increase in the level of nitrate and a more rapid increase as soon as the rain begins. Crops grown in the Municipality include rice, maize, plantain, oil palm, coffee, cassava, yam and others. The soil has also served as the platform on which all development activities take place.

4.2.4 Demographic Characteristics

The population of the Sunyani Municipal area for the periods 1960, 1970, 1984 and 2000 were 59,374, 76,046, 98,604 and 183,235 respectively as shown in Table 4.1. Accordingly, this gives an annual growth rate of 3.5 percent between 1960 and 1970, 3.4 percent from 1970-1984 and 3.3 percent between 1984-2000. This shows a fall in the growth rate of 1970-1984 in the period of 1970-1984. There is a further decrease in the growth rate of 1970-1984 in the period 1970-1984, however, still higher than the national average of 2.7% and the regional growth rate of 2.5%.

Table 4.1 - Population Growth Trend of the Sunyani Municipality (1960-2000)

| Year | Population | Growth Rate (percent) |
|------|------------|-----------------------|
| 1960 | 59,374 | - |
| 1970 | 76,046 | 3.5 |
| 1984 | 98,604 | 3.4 |
| 2000 | 183,235 | 3.3 |

Source: Sunyani Municipal Assembly Database, January, 2010

4.2.5 Economic Activities

Agriculture is the major sector of occupation in the Sunyani Municipality, accounting for 45.9 per cent of the municipal's economically active population. It is the main occupation for about two-thirds of the economically active group in the Sunyani Municipality. Significant proportions (14.9%) of the economically active persons are engaged as production, transport operators and labourers, sales workers, and professional and related workers.

Analysis of the sex composition by occupation shows that females outnumber males in Service and Sales work in the municipality, and also in production, transport and labourer. On the other hand, males are predominant in Professional, Technical and related work in the municipality.

Changes in structural composition of economically active population often reflect the course of social and economic development; for instance with progress of industrialisation, the proportion of workers in agriculture decreases while those of workers in manufacturing, wholesale, retail trade, and service activities increase, implying changes in the main source of livelihood. This further implies that urbanised areas like the Sunyani Municipality has relatively lower proportion of workers in agriculture, hunting and forestry than the rest other districts in the region.

4.3 Social Characteristics of Commercial Drivers

As indicated in the introductory section, the characteristics of commercial drivers, which are indicative of their capacity, are age, educational background, marital status, as well as the mode of training, assuming that every driver has a drivers' license. These are examined seriatim.

4.3.1 Age Distribution of Commercial Drivers

Road traffic accident involvement rates show clear age and gender differences, which may in part be accounted for by differences in risk perception and perceptions of driving competence. It is reasonably well known that, age and gender have an effect on the likelihood of an accident. Understanding the age and gender differences of drivers is also crucial to preventing injuries and fatalities suffered in accidents. This section however focuses age, since it was realised from the survey that, all commercial drivers were males. In terms of age, the survey revealed that, the population of commercial drivers in the region is very youthful. Commercial drivers aged 16 – 24 and 25 – 34 constitute 38.3 percent and 41.4 percent respectively, all within the youthful age. A 38.3 percent of the drivers within the 16 – 24 age range are a source of worry, given that, the minimum age to be issued a commercial drivers' license in Ghana is 24, according to the DVLA. Table 4.2 illustrates the age composition of commercial drivers.

Table 4.2 – Age Distribution of Commercial Drivers in the Sunyani Municipality

| Age | Frequency | Percent |
|--------------|------------|------------|
| 16 – 24 | 49 | 38.3 |
| 25 – 34 | 53 | 41.4 |
| 35 – 44 | 21 | 16.4 |
| 45+ | 5 | 3.9 |
| Total | 128 | 100 |

Source: Field Survey, 2011

The reason for this is not clear but may not be unconnected with the rate at which unemployed youth move to urban centres in search of jobs. All the sampled drivers were males, which goes on to confirm that, the norms in Ghana makes commercial driving exclusively men's job. The relationship between the ages of drivers and their involvement in accidents in the region is further discussed in section 4.5 of this chapter.

4.3.2 Educational Background

The educational background of the respondents indicated that more than 88.3 percent of them had no more than basic education- out of which 20.3 percent of them had no formal education. The large percentage of drivers (20.3 percent) who are illiterate has implications for traffic safety in the study area. It means that many of them may not be able to read road signs and markings correctly thereby increasing accident risk on the roads. It was realised from the survey that, drivers who had attained tertiary level of education were teachers at the secondary schools who run their own taxis after school.

Table 4.3 – Educational Background of Commercial Drivers in the Sunyani Municipality

| Level | Frequency | Percent |
|----------------------|------------------|----------------|
| Never been to school | 26 | 20.3 |
| Primary | 74 | 57.8 |
| Middle / JHS | 13 | 10.2 |
| SHS | 12 | 9.4 |
| Tertiary | 3 | 2.3 |
| Total | 128 | 100 |

Source: Field Survey, January, 2011

4.3.3 Marital Status of Commercial Drivers

More than 60 percent of commercial drivers had never been married. The high percentage of unmarried drivers is expected because most of them are within the youthful age group (refer to section 4.2.1) and may not be prepared adequately for marriage now. Comparing the ages of drivers with their marital status again, it was revealed that, the majority of those married were found between the 35 – 45 age range. In the same manner, more than 70 percent of those married had more than three children, which indicates a form of responsibility. When asked about over speeding, one of the married drivers answered: *“I am more careful when at the back of the steer because of my wife and children”*. They are careful of their action when driving since they have a family to return to and children to provide for. They agreed that their families back home in a way influence the way they drive.

Table 4.4 - Crosstabulation of Age and Marital Status of Respondents

| Age | Marital Status | | | | | | Total | |
|---------|----------------|------|---------|------|------------------|------|-------|------|
| | Never Married | | Married | | Widowed/Divorced | | | |
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 16 – 24 | 49 | 62.1 | 0 | 0 | 0 | 0 | 49 | 38.3 |
| 25 – 34 | 25 | 31.6 | 22 | 57.9 | 6 | 54.5 | 53 | 41.4 |
| 35 – 44 | 5 | 6.3 | 13 | 34.2 | 3 | 27.3 | 21 | 16.4 |
| 45+ | 0. | 0 | 3 | 7.9 | 2 | 18.2 | 5 | 3.9 |
| Total | 79 | 100 | 38 | 100 | 11 | 100 | 128 | 100 |

Source: Field Survey, January, 2011

As indicated in Table 4.3, there is a direct relationship between age and marital status of commercial drivers in the Sunyani Municipality. A larger proportion of drivers within the 35 – 45 age range were married, whilst the majority of those who had never married were found

within the 16 – 24 age range. The effect of this revelation on the incidence of accidents in the region was discussed further in the chapter.

4.3.4 Mode of Training of Drivers

The safety effect of driver training is widely discussed in literature. This section focuses on practical driver training before licensing for drivers of passenger cars in the study area. The study identified two main modes of training of drivers before licensing – professional driver training (formal training) and informal driver training. Informal training which includes apprenticeship (conductors graduating to be drivers) and learning through a friend, constituted the majority of about 95 percent of the various modes of drivers training. Training of drivers by accredited driving schools, on the other hand constituted about 5 percent.

Table 4.5 – Mode of Training of Commercial Drivers before Licensing

| Training Mode | Frequency | Percent |
|----------------------|------------------|----------------|
| Apprenticeship | 78 | 60.9 |
| Friend | 43 | 33.6 |
| Driving School | 7 | 5.5 |
| Total | 128 | 100.0 |

Source: Field Survey, January, 2011

It is believed that, due to high cost in acquiring training from licensed driving schools, most (95percent) of the drivers obtained driving lessons from outside the traditional driving schools. The reason explains why there are more people gaining lessons from either a friend or through apprenticeship rather than from a driving school.

Implacably, it means that, there is a high correlation between willingness to learn driving and fees paid for learning. As a result, drivers might not get the most important basics (especially theoretical background) in driving including the road signs and road traffic behaviour – as such more road accidents are recorded in the region.

4.4 Trends and Nature of Accidents in the Brong-Ahafo Region

Motor accidents usually occur unexpectedly and are sometimes without apparent causes. However, most accidents are not accidents at all: they are collisions that could have been avoided. In the Brong Ahafo Region, most accident occurrence has resulted in fatal losses and destruction valued resources. This section will look at the trends in accidents over a period of five years beginning 2007 to the second quarter of 2011.

The incidence of vehicular accidents in the area has seen steady increase from 2007 to the second quarter of 2011. The trends indicate that, and assuming all variables are held constant, the number of accidents is likely to increase annually at a rate of 12.1 percent. This trend is very threatening and alarming. More fatal and serious cases are going to be recorded at this given rate and the numbers of people killed will more than double, that is more than 67 percent, in 2012 alone.

The economic and social implications of these are enormous. An increasing number of road accidents not only mean a considerable loss of human lives but also important economic costs to society. Reports indicate that, traffic accidents annually cost developing countries around US \$53 billion; both on infrastructure rebuild and medical compensations. What this shows is that traffic safety remains an important public and social priority issue as well as an economic challenge. The region will be faced with severe infrastructure breakdown if this rate is continued. As a

matter of fact, economic losses in terms of loss of life and life quality, property damage costs and loss of output due to death and temporary incapacitation amounts to a significant reduction in the region's contribution towards national GDP if estimates are based on the 'willingness to pay' principle.

The number of vehicles increased from about 567 in 2007 to close to 800 in 2010 and, to 349 in only the second quarter of 2011. Logically, the number of accidents has grown during those years because of the greater number and use of cars. This explains that, as more cars are in use and ply the road, more accident cases will be recorded, all other things being equal. Thus, a positive linear relationship exists between the number of cars and traffic accidents.

Table 4.6 – Trends of Accidents in the Brong-Ahafo Region (2007 – 2011)

| Accident Cases | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------|------|------|------|------|------|
| Total cases reported | 381 | 440 | 522 | 593 | 319 |
| Number of vehicles | 567 | 610 | 720 | 796 | 349 |
| Fatal cases | 55 | 76 | 82 | 141 | 81 |
| Serious cases | 122 | 150 | 153 | 170 | 77 |
| Minor cases | 86 | 160 | 206 | 282 | 161 |
| Persons killed | 143 | 172 | 188 | 192 | 121 |
| Persons injured | 860 | 976 | 1056 | 1138 | 306 |

Source: MTTU, Ghana Police Service, Regional Headquarters, Sunyani

Sometimes motor accidents are caused by natural factors. For example, heavy winds, rain, thundershowers and heavy snowfall may result in automobile accidents. However, the forms in which these accidents occur are numerous and sometimes avoidable. The study revealed crashes are responsible for 50 percent of fatal cases.

The re-occurring forms were head-crashes; overtaking and over-speeding (at night). These were the main features reflecting the nature of accidents in the region as revealed by the study. It was realized that, head-crashes was the main feature showing the nature of accidents in the region. It goes with saying that, a high level of bad road regulation compliance is on the increase in the region given the notion that more accidents are being recorded and most of them being head-crashes.

4.5 Traffic Behaviour of Commercial Drivers

One of the pillars of road safety is the possession of a valid and current driver's license. This is because, one would have to undergo some road safety and driving related studies and pass an examination (coupled with test driving) before being issued with a license. However, this particular principle has not been very effective in Ghana because many under aged and those who do not know how to drive are in possession of valid driver's license. This has partly resulted into many of the accidents that occur on the roads of Ghana, especially in the urban areas. This section thus, examines the relationship between the social characteristics of commercial drivers, as discussed in section 4.2, and their behaviour towards driving, and ultimately the incidence of accidents in the region.

An analysis of the data on drivers' involvement in road traffic accidents indicates that about 85 percent of the respondents were involved in road accidents at one point or the other in the last 2 years. About 70 percent of the accidents occurred between 7am and 6pm. The reason for the high percentage of accident cases between 7am and 6pm is that most of the vehicles being used are on the road mostly between these hours of the day. Correlating these figures with the ages of commercial drivers involved in the accidents, the survey revealed that, drivers within the age range of 16 – 24 had each experienced on an average, 3 accidents in the last 2 years, constituting

about 65.2 percent of the total accidents experienced by the sampled drivers, ranging from vehicular-vehicular accidents to vehicular-pedestrian accidents. Many of these accidents were not reported but were settled amicably since the degree of severity was low, according to the drivers. This is followed by the drivers within the age range of 25 – 34, 35 – 44 and over 44 years, with 29.1, 4.4, and 1.3 percent respectively. The low frequency of accidents experienced by drivers within 35 – 44 years and over is an indication of the fact that, careful driving is associated with old age and experience, all things been equal. This also lends credence to the regulation by the DVLA of Ghana to issue drivers' license only to persons over 25 years for commercial vehicles.

Table 4.7–Age of Respondents and Accident Occurrence in the Sunyani Municipality

| Age | Frequency of Accidents | Percent |
|--------------|-------------------------------|----------------|
| 16 – 24 | 103 | 65.2 |
| 25 – 34 | 46 | 29.1 |
| 35 – 44 | 7 | 4.4 |
| 45+ | 2 | 1.3 |
| Total | 158 | 100.0 |

Source: Field Survey, January, 2011

The type of injury sustained indicated that fracture accounted for the highest percentage of 32.7 percent. Leg injury was responsible for 29.3 percent, dislocation 19.6 percent and bruises 9.5 percent. Three behavioral factors in particular may contribute to these statistics: poor judgement in making left-hand turns; drifting within the traffic lane; and over speeding which leads to decreased ability to change behavior in response to an unexpected or rapidly changing situation.

The results of education attainment and the cases or number of accidents in the region also revealed positive correlation. This implies that as drivers acquire higher level of education, all things being equal, cases of road accident will decrease, though marginally. This is expected because the drivers would become more enlightened and be able to read traffic signs and markings more correctly as well as complying with traffic rules and regulations, resulting in decreasing traffic accident cases. Data gathered corroborated this assertion, as drivers who had never been to school had experienced more accident cases than those who had had some level of formal education (refer to Table 4.5). Although there is a direct relationship between accident cases and educational level of drivers, the difference recorded from the field data was very marginal. Drivers who had no more than secondary school education, including those who had never been to school had experienced more than 70 percent of the total number or cases of accidents in the region.

Table 4.8– Educational Level of Respondents and Accident Occurrence in the Sunyani Municipality

| Level | Frequency of Accidents | Percent |
|----------------------|-------------------------------|----------------|
| Never been to school | 59 | 37.4 |
| Primary | 28 | 17.7 |
| Middle / JHS | 32 | 20.3 |
| SHS | 21 | 9.4 |
| Tertiary | 18 | 13.4 |
| Total | 158 | 100.0 |

Source: Field Survey, January, 2011

Educational level of drivers is necessary especially in interpreting road signs and markings which are made to ensure safety on our roads. Road signs and markings are meant to guide,

warn, inform, direct, prohibit and regulate the movement of cars on the road. The signs and markings are in different forms of circle, triangle, rectangle etc, and have different interpretations, which are supposed to be understood by road users, especially drivers. The respondents agreed that, markings on the road are very essential especially at night. During this time drivers need the markings on the road especially to guide them from driving off the road. 75 percent of commercial drivers interviewed admitted not knowing most road signs and markings and their implications, justifying the number of accidents experienced by drivers who had attained not more than secondary education.

Other causes of road traffic accidents as identified by the drivers included vehicle defects (burst tyre and brake failure etc); road defects (slippery surface, potholes), especially the Sunyani-Kintampo road through Techiman which is regarded as an accident prone road in the Region; as well as weather related causes.

4.6 Capacity of Drivers in Applying Road Signs in the Sunyani Municipality

As earlier indicated, knowledge of road signs and its usage is very critical in minimizing the occurrence of road accidents. This has however, been found to be a problem for drivers in the Sunyani Municipality due to a number of identified factors. These are;

- Source of “Pre-License” Training
- Educational Level
- Age of Commercial Drivers

From the analysis, it has been stated that only 5.5% of the commercial drivers interviewed had obtained their skill in driving from a driving school, which can be said to be the only formal means of attaining education in driving. The remaining 94.5% obtained their training from non-

















conventional sources such as friends and through apprenticeship (found mostly among all drivers and their mates). Since these unconventional methods only serve to give the learner the ability (albeit crude) in driving, they fail miserably in transmitting road safety rules and regulations and also the application of road signs to these learners.

Another issue worth discussing is the substantial proportion of ineligible commercial drivers. Per the rules in obtaining a driver's license in the country, a prospective commercial driver must be aged 25 years and above. He or she should also have had a complete basic education in order to be eligible. It was however revealed from the survey that, 38.3% of drivers are between the ages 16 and 24. How these people got the license to drive, or how they can still be found on the road, gives credence to the loopholes in obtaining license from the DVLA and the inefficiencies of MTTU and NRSC in the Sunyani Municipality in ensuring road safety and its management.

It was also found that 78.1% of respondents had less than JHS education. This is to say that, 78.1% of respondents do not have complete basic education, thus disqualifying them from obtaining driving licenses. Since one's level of education is an indication of ability to understand apply road signs to promote road safety and reduce occurrence of accidents, this phenomenon is distasteful and will only undermine the efforts of institutions in ensuring road safety and reductions in the incidence of accidents in the Sunyani Municipality. Certain road signs were common to interviewed drivers while others were not familiar. While familiar ones included "No U-Turn", "Roundabout", "Cattle Crossing" and "Hospital", unfamiliar ones included "Dual Road ends", "Dual Road Narrows", "Dip in Road", "Steep Ascent and Descent" and "Bumpy Road". These unfamiliar roads are very necessary to improve road safety and forms part of the very important road signs which should be a common knowledge to drivers. It is therefore plausible to say that the inadequate knowledge of road signs and their usage (as acknowledged

by 75% of respondents) has been a contributory factor to road accidents in the Sunyani Municipality. On the average, just about half (52.9%) of the drivers understood road signs and could apply them. Table 4.9 presents the extent of comprehensibility of road signs by interviewed respondents.

Table 4.9: Familiar and unfamiliar Road Signs

| Road Signs | Proportion of Familiar Drivers | Proportion of Unfamiliar Drivers |
|---|--------------------------------|----------------------------------|
|  | 68.2 | 31.8 |
|  | 7.5 | 92.5 |
|  | 84.2 | 15.8 |
|  | 87.3 | 12.7 |
|  | 2.6 | 97.4 |
|  | 72.2 | 27.8 |
|  | 82.4 | 17.6 |
|  | 1.9 | 98.1 |
|  | 83.3 | 16.7 |
|  | 95.4 | 4.6 |
|  | 3.8 | 96.2 |
|  | 100 | - |
|  | 8.8 | 91.2 |
|  | 85.7 | 14.3 |
|  | 64.6 | 35.4 |
|  | - | 100 |

Source: Field Survey, Sunyani Municipality, January, 2010.

4.7 Capacity of Authorities in Reducing Accident Occurrence in the Sunyani Municipality

Institutions play a very important role in vehicular accidents in the region and Ghana as a whole. Through the enforcement of laws as well as mass education; these institutions are critical in reducing the rate of recorded accident cases. The study identified five key institutions regarding road safety and these are basically the MTTU, DVLA, GPRTU, Ghana Highway Authority and National Road Safety Commission. Each is an entity on its own but sometimes do collaborate with each other to offer training to the drivers and to check unauthorized drivers from the road but in most cases individual organization does its own programme due to differences in programme.

GPRTU indicated that, its main role is to organize periodic in-service training for the drivers. They give education to drivers about road markings and signs. They are to do periodic inspection on vehicles at the lorry parks in order to expunge all unworthy vehicles from the road, to inspect vehicle document like insurance policy, DVLA certificate, tax certificate and also to settle disputes among members where necessary, they monitor the drivers to check the speed limit with the introduction of road safety log book.

The DVLA performs the following roles; educate the public on road safety issues once every week on the region's popular radio station (BAR). They issue license to prospective competent drivers, inspect vehicles to meet road-worthiness standards and take drivers through the road signs, rules and regulations. They argued that an applicant for driving license must be eligible based on the following criteria;

- i. Must be 18 years for private cars and 25 years and above for commercial cars licenses
- ii. Eye testing
- iii. Should be examined to check for any form of physical deformity.

- iv. Then the applicant should apply for learner's license when the above requirements are met, then an appointment is booked for written examination, then in-traffic driving test is done. This is where the applicant is sent for road testing and is done with a fee.
- v. Oral identification of regulatory signs and warning signs are done.
- vi. The level of one's education was not considered but after 2008 a new policy came out that an applicant should be at least JHS holder.

Then the license will be issued to the applicant upon reaching the requirements. This notwithstanding, one's license can be revoked when identified as putting up bad behaviour on the road.

The National Road Safety Commission as well plan the execution, monitoring and the evaluation of road safety intervention measures. They give education on road safety and speed reduction interventions among others and all road users in order to upgrade the skills of the drivers.

The MTTU ensures the enforcement of the law. They are to check drivers as well as the road worthiness of vehicles. They are also to check the general behaviour of drivers on the road to ensure safety.

The Ghana Highway Authority has its main role as designing and constructing roads, maintenance of the roads and providing road signs, line markings and other road furniture.

Despite the importance of these institutions regarding road safety, a number of challenges were identified during the survey, serving as barriers in promoting effectiveness and efficiency in the work of these institutions. Notable among them was the limited qualified skilled staffs to man the technical roles. This hindrance was evident especially in the MTTU and the Road Safety

Commission (key players in ensuring road safety) as they explained why certain roles were left undone due to lack of staff. According to a staff at the MTTU, it was realized that since they had limited staff, the unskilled workers were given higher roles to supplement the few skilled staff.

At an interview with staff at the road safety commission, the same scenario was seen; but the only differing view here was that the unskilled staffs were not engaged in higher roles and the vacancy left to fill as a result of limited skilled staff were left unattended.

The implications are that activities to promote road safety and reduce carnage in the municipality will be severely hampered. The capacity to regulate traffic and reduce traffic accidents is reduced due to this situation and can partly explain the increasing number of accident cases in the region (refer to Table 4.7).

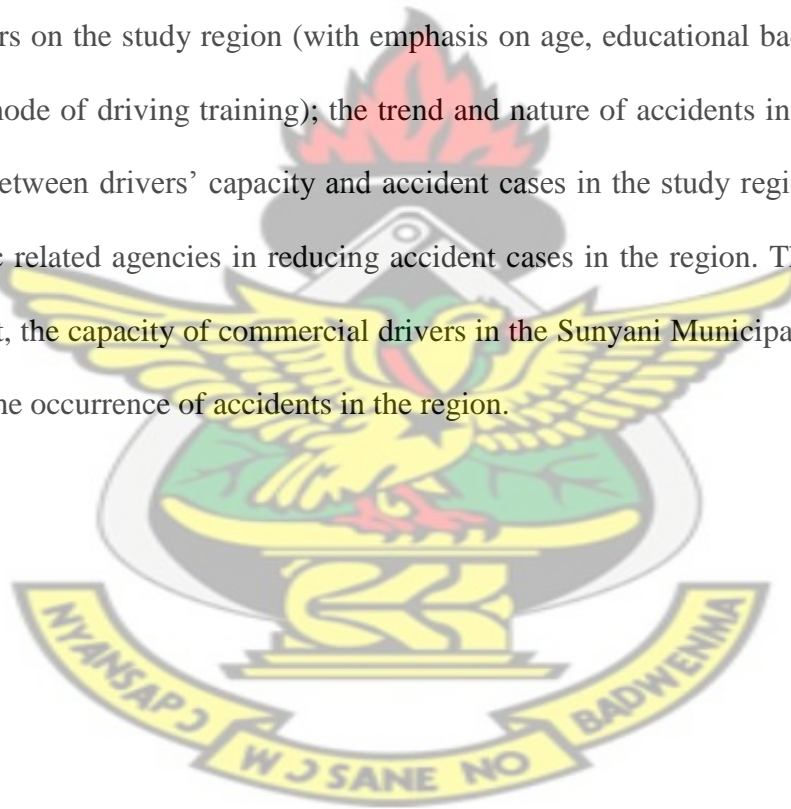
The problem posed by inadequate logistics could also be identified at the MTTU. This undermined their ability to satisfactorily perform their statutory responsibilities. One fundamental bane that was raised by both MTTU and NRSC was inadequate funds. The revenue base of the institutions, according to both agencies, was inadequate to even facilitate recurrent expenditures and thus none left to fund monitoring and field works which is the major role of the institutions.

The MTTU also complained of interferences from politicians, opinion leaders, chiefs, and people at high positions, which do not help in smooth running of their work. They also cited the delay in adjudication of traffic offences in law courts and the pittance nature of spot fines to offended drivers when reported as unable to serve as deterrent to others and even the culprit himself. These, they admitted could explain why some of the policemen will rather collect money from drivers when found at fault on the road although that should not be the right thing to do.

According to the highway authority, road signs and line marking are supposed to be done every two years. But this is not done due to lack of funds. Even some areas do not have line marking at all.

4.8 Summary of Chapter

The chapter essentially focused on the nexus between the capacity of commercial drivers, their behaviour towards driving, and the occurrence of accidents, from an empirical point of view. To give a clearer picture of this interrelationship, the chapter looked at the social characteristics of commercial drivers on the study region (with emphasis on age, educational background, marital status and their mode of driving training); the trend and nature of accidents in the study region; the relationship between drivers' capacity and accident cases in the study region; as well as the capacity of traffic related agencies in reducing accident cases in the region. The analysis of the data indicates that, the capacity of commercial drivers in the Sunyani Municipality has a positive correlation with the occurrence of accidents in the region.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In the previous chapter, a presentation and analysis of the surveyed data were made. Specific attention was on the social characteristics of commercial drivers; the trends and nature of accidents in the Sunyani Municipality; the nexus between social characteristics of drivers and the cases of accidents in the region; and the capacity of authorities (DVLA, MTTU, National Road Safety Commission, etc.) in reducing the incidence of accidents in the region. This chapter recaps the principal findings in relation to the set objectives for which this study was conducted and the data analyzed. It also contains general conclusion of this work and recommendations which have been put forth in response to the findings.

5.2 Summary of Findings

This section of the chapter focuses on the summary of findings in relationship to the set objectives of this study. The aim is to ascertain whether the objectives that really propel this survey have been met.

5.2.1 Social Characteristics of Commercial Drivers in the Sunyani Municipality

The study examined the age, educational background, marital status, as well as the mode of training, as social characteristics of commercial drivers in the Sunyani Municipality. This was with the view that, these characteristics are indicative of the capacity of drivers, which affects their behaviour towards driving, and consequently, the occurrence of accidents, from the driver's perspective.

In terms of age, the survey revealed that, the population of commercial drivers in the region is very youthful. Drivers aged 16 – 24 and 25 – 34 constitute 38.3 percent and 41.4 percent respectively, all within the youthful age. The educational background of the drivers also indicated that more than 88.3 percent of them had no more than secondary education - out of which 20.3 percent of them had no formal education.

Regarding drivers' marital status, it was found that, more than 60 percent had never been married. The high percentage of unmarried drivers is expected because most of them are within the youthful age group and may not be prepared adequately for marriage. Comparing the ages of drivers with their marital status again, it was again revealed that, majority of those married were found between the 35 – 45 age range. In the same manner, more than 70 percent of those married had more than 3 children, which indicates a form of responsibility.

5.2.2 The Trend and Nature of Accidents in the Sunyani Municipality

It has been observed that the rate of road accidents in the region is continually increasing annually at a rate of about 12.1percent. More than 67percent of fatal accidents recorded in 2011 have been recorded in 2012 alone, indicating increasing road accidents and its danger. It was realized that the increase in car usage varied directly with the increase in road accidents in the Sunyani Municipality.

The study has also shown that, head-crashes, overtaking and over speeding characterizes the nature of road accidents in the region. It is understood that about 50percent of fatal cases are because of crashes.

5.2.3 Drivers' Capacity and the Occurrence of Accidents in the Sunyani Municipality

The study also showed the direct relationship between drivers' capacity (in terms of age and educational status) and occurrence of accidents. In terms of education, it was revealed that, the 37.4 percent drivers who had never been to school frequently had recorded accidents – 59 cases out of 158. It was also established that, drivers between 16 to 24 years were prone to frequent accidents as the 65.2 percent drivers who were between this age cohorts recorded 103 accidents out of 158 total in the region.

5.2.4 Capacity of Authorities in Reducing the Incidence of Accidents in Sunyani Municipality

The institutions identified by the study were the MTTU, DVLA, GPRTU, Ghana Highway Authority and Road Safety Commission. It was revealed that their roles range from road construction and maintenance to enforcement of road laws, plan the execution, monitoring and the evaluation of road safety intervention measures, issue license, education on road safety issues to providing in-service training for the drivers.

However, it was realized that, the institutions were faced with challenges which hindered the execution of their respective roles and as a result evidence seen in high rate of accidents in the region. Two overriding challenges were present in all institutions; limited qualified staff, inadequate logistics and revenue base. It was shown that due to these challenges the institutions failed effectively and efficiently perform their responsibilities to the fullest. In some instances, unskilled staff was used to man technical roles specifically for skilled labour. These issues were evident in all the institutions allowing the study to conclude that the capacity of authorities to help reduce road accidents was very limited.

5.4 Conclusion

Safety is probably the most important aspect of road transportation in developing countries especially. The importance is always stressed from origin to destination. However, safety on Ghana's roads has become a major challenge in the last few decades. The study explores the capacity of commercial driver, their driving behaviour and its implications for road safety in the Sunyani Municipality.

Road traffic accidents have claimed about 820 lives in the last 5 years within the period of 2007 and 2011, in the Brong-Ahafo region. Similarly, more than 4,300 others were seriously injured in 2,255 road accident cases within the same period. Using a sample of 128 commercial drivers in the region, the study indicated that about 79 percent of the drivers were below 35 years of age. Also more than 60 percent of the drivers had never married while about 88 percent of them had no more than secondary education - out of which 20.3 percent had no formal education. The study further indicated that, majority of the drivers had informal driving training, where they graduated from being 'conductors' of the vehicles to driver's position. The few who had some form of formal training also graduated within a period of 2 months, which was found to be not enough to acquaint themselves with the traffic codes.

In an attempt to explore the relationship between the identified characteristics of commercial drivers and their behaviour towards driving, which also influences road accidents, the study found a negative linear relationship. In terms of education, it was revealed that, the 37.4 percent drivers who had never been to school frequently had recorded accidents – 59 cases out of 158. In contrast, the 13.4 percent drivers who had some tertiary education only recorded 18 accidents. These showed relationship education had with accidents in the region. The age of drivers was also a factor in determining the rate of accidents in the region, as revealed by the study. It has

been established that, drivers between 16 to 24 years were prone to frequent accidents as the 65.2 percent drivers who were between this age cohort recorded 103 accidents out of 158 total in the region. Inferentially, those within this age cohort had frequent accidents because majority were not married and were without children and other dependents.

Although the causes of the occurrence of accidents in the region have been associated with the low capacity of drivers, according to the study, traffic related agencies also contributed to the problem. It was showed that the institutions had not been effective in performing their responsibilities to the fullest, as a result of limited qualified staffs, inadequate logistics and revenue base. In some instances unskilled staff was used to man technical roles specifically for skilled labour. These issues were evident in all the institutions allowing the study to conclude that the capacity of authorities to help reduce road accidents was very limited. It is believed that a careful implementation of the recommendations made would improve drivers' capacity with regards to their attitudes towards driving, enhance the capacity of traffic related agencies, and reduce the occurrence of road accidents in the Sunyani Municipality.

5.3 Recommendations

To reduce the occurrence of accidents (concerning the drivers' behaviour) in the Sunyani Municipality, the following recommendations have been made;

5.3.1 Establishment of Driving Training Institutes

One of the major ways for improving safety on the roads in the Sunyani Municipality especially for commercial drivers is to establish driving training institutes for young commercial drivers. This will afford the commercial drivers the opportunity to be regularly updated with the Highway Code and be abreast with existing and emerging traffic laws and regulations. This

should complement the ‘testing ground’ where prospective drivers are tested before approval is given to the issuance of driver’s license.

Similarly there is need to improve the level of education of both the commercial drivers and their ‘conductors’ because of the positive relationship between education and level of safety. The education of ‘conductors’ is very important because in most cases conductors ‘graduate’ or metamorphose into commercial drivers. This strategy could be achieved through the establishment of evening classes where both the commercial drivers and conductors can enroll for regular academic work. And for those who are drop-outs, this will afford them the opportunity to complete their education, because an uneducated man is dangerous to the society. This must, however, be done in conjunction with the Ghana Private Road Transport Union (GPRTU), the umbrella body of all commercial drivers, and all other drivers association, in order to ensure the success of the programme.

5.3.2 Effective Enforcement of Traffic Laws

There is need for the proper enforcement of traffic laws in the country. All traffic agencies, especially the MTTU of the Ghana Police Service, must shun bribery and corruption by ensuring that all relevant traffic laws are invoked against erring drivers. Corruption by road traffic officers is an impediment to road safety. In the same way, government should strengthen and overhaul these organizations by providing them with necessary equipment in order to effectively discharge their duties.

In addition, penalties for violating traffic laws must be heavy so as to serve as deterrent to other commercial drivers who may wish to exhibit similar traffic behaviour. The situation where traffic laws are violated with light penalties or impunity is no longer acceptable. It is with this

view that, substantial penalties be charged for traffic violations. It is advised that, an improved institutional system must precede effective enforcement of road laws.

5.3.3 Ensuring Effective Collaboration among Authorities

To be able to achieve institutional goals and objectives, given their limited financial basis, it is strongly recommended that, institutions form a firm and effective collaborative agreement among themselves. This collaboration should be spearheaded by the Ministry of Transport in the region as the coordinating unit or facilitator of all the other institutions. In this agreement, it is hoped that both financial and technical staff support be made available to all institutions for any gap to be effectively filled.

It is recommended that, a pool of resources be formed comprising finance, human resource and logistics; so that at any point in time, any institution within this collaboration could use the pooled resources for effective execution of its roles and responsibilities. In this way, the challenges faced by individual institutions could have been addressed in one way or the other given the large pool of resource available. However, it is warned here that, checks and balances be put up to reduce and stop over-exploitation of these resources by one institution; that is, the facilitator should ensure equity in access to the pooled resources.

5.3.4 External Support and Government Support

It is recommended that, the government should seek external support from donor countries in the form of technical and logistical support to the institutions responsible for road safety. This is hoped to curb the lack of technical staff in the visited institutions in the region. Again, it is recommended that, the government should increase its share of financial support to these institutions for proper and effective execution of their duties.

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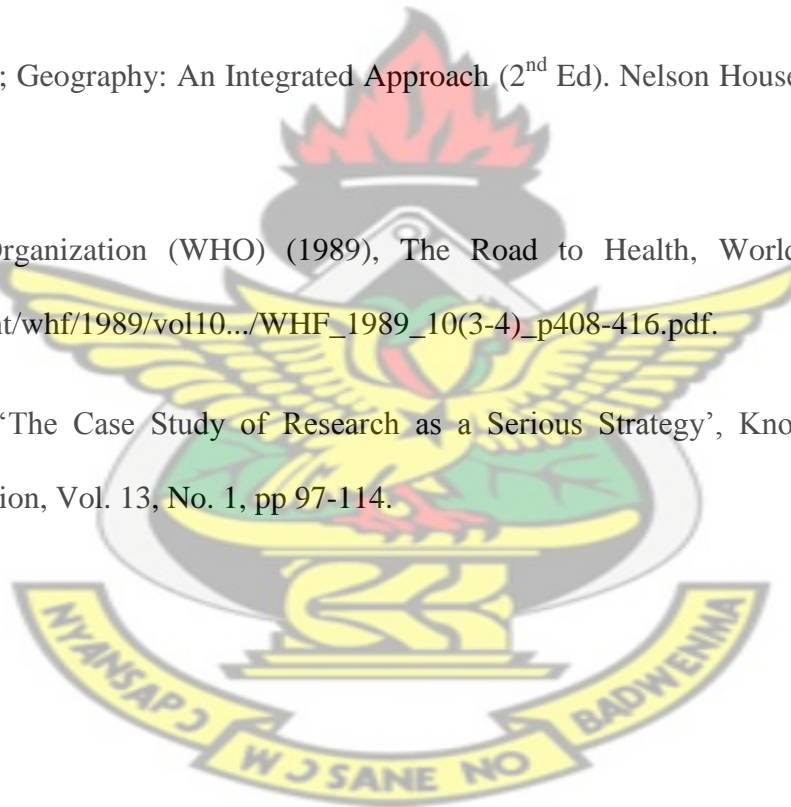
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APPENDICES

Appendix A - QUESTIONNAIRE FOR DRIVERS

Name of Respondent.....

Date of Interview:

Time:

PLEASE TICK WHERE APPROPRIATE

1. How old are you?

- ☐ 16-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-Above

2. What is your educational background?

- ☐ Primary
- ☐ Middle/JHS
- ☐ Secondary
- ☐ Tertiary
- ☐ Never being to school

3. What is your marital status?

- ☐ Single
- ☐ Consensual Union
- ☐ Married
- ☐ Widowed

4. Which Religion do you belong to?

- ☐ Christianity
- ☐ Islamic
- ☐ Traditional
- ☐ Other.....

5. Do you have a family of your own?

- ☐ Yes
- ☐ No

6. Does it affect the way you drive on the road?

- ☐ Yes
- ☐ No

If yes specify how.....

KNUST

7. How long have you being driving?

- ☐ 1-5 years
- ☐ 6-10 years
- ☐ Above 10 years

8. How did you get your professional training in driving?

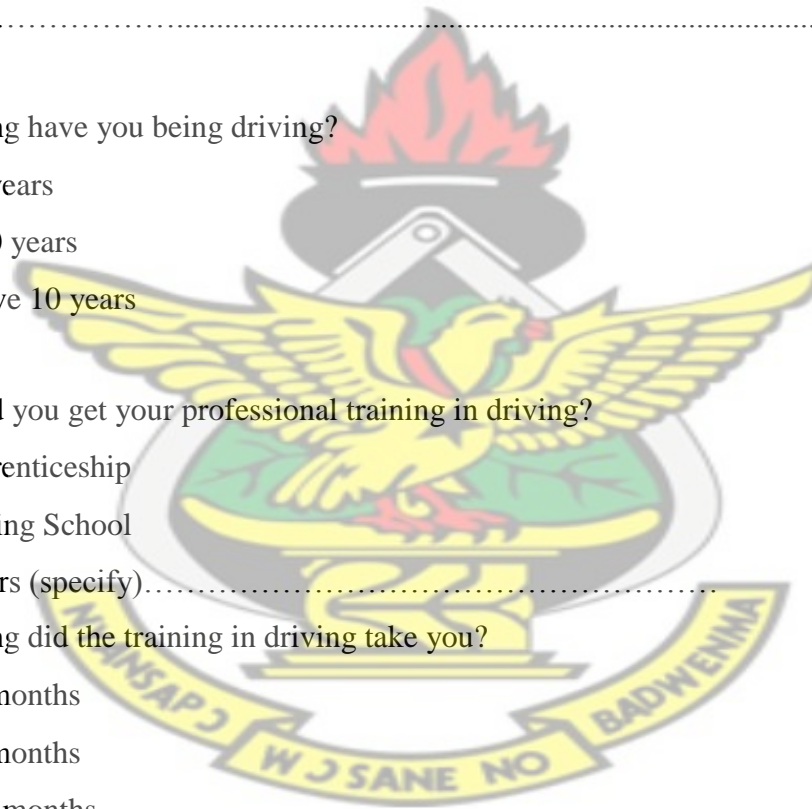
- ☐ Apprenticeship
- ☐ Driving School
- ☐ Others (specify).....

9. How long did the training in driving take you?

- ☐ 1-3 months
- ☐ 4-6 months
- ☐ 7-12 months
- ☐ Above 1 year
- ☐ Others (specify).....

10. Do you have driving license?

- ☐ Yes
- ☐ No



11. What processes did you pass through before acquiring your driving license?

.....
.....

12. How well do you know the road signs and markings?

.....
.....

13. Kindly identify the following road signs and their implications

(Different forms of road signs and markings will be shown to drivers to identify their names as well as their meanings on the road)

14. What do you think will happen when you fail to apply the road signs?.....

.....
.....

15. Have you had any kind of training in road safety since you had your license?

☐ Yes

☐ No

If yes what kind of training?

.....
.....

16. Which Agency organized it?

.....

17. If No to question 13, why have you not have any form of training in road safety since you started driving?

.....
.....

18. How did the training (if any) in road safety help you in your driving profession?

.....

.....

19. What are the major causes of accidents in this Region?

.....

.....

20. What are the accident prone areas in the Region?

.....

.....

21. Have you had any accident in your driving period ?

.....

22. What do you think should be done to ensure safety on the road in this Region?

.....

.....

23. What are the challenges that you encounter in plying the highway in the region?

.....

.....

24. How do you channel your problems/concerns/sentiments for redress?

.....

.....

Thank you for your time and information

Appendix B - Institutional Questionnaire

Name of Institution:.....

Name of Respondent:

Position of Respondent:

Date of Interview:

1. What are your roles in ensuring safe road transport in the Region?

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

(QUESTIONS 2 AND 3 ARE FOR ONLY DVLA OFFICIALS)

2. What are the criteria that your institution considers in issuing driving license?

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

3. Should drivers have any form of formal education at any level before acquiring license and why ?

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

4. In the processes of rendering your services, have you found differences between drivers who have had some form education and those who have not?

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

5. Is there any form of compromising in the discharge of your duties?

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

(FOR MTTU OFFICIALS ONLY)

6. How do judicial services collaborate with your department to ensure sanity on the part the drivers?

.....

.....

.....

7. What programmes and policies does the country or Region have to check the activities of unauthorized driving in the Region?

.....

.....

.....

8. What do you think to be some of the major causes of accidents on the highways?

.....

.....

.....

9. What programmes has your institution initiated to overcome the increasing cases of road accidents on the highways?

.....

.....

.....

10. Do you have any programmes to enhance the capacity of drivers in the Region?

☐ Yes

☐ No

If yes to question 10, please describe the programme?

.....

.....

.....

11. Who are the stakeholders that are involved in the road transport in the Region?

.....

.....

.....

12. How does your institution relate to the other stakeholders especially drivers in promoting safe road transport?

.....

.....

.....

.....

13. What are the challenges encountered by your institution in its efforts to ensure sanity in road transport especially on the part of drivers?

.....

.....

.....

14. What do you think are some of the effects of rampant accidents on the road?

.....

.....

.....

15. How do you think the problem of accident can be minimized?

.....

.....

.....

Thank you for your time and information

