ASSESSMENT OF HIGHWAY ROAD TRAFFIC CRASHES IN KADUNA STATE, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE IN SOCIOLOGY

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JUNE, 2019

DECLARATION

I hereby declare that the work in this dissertation entitled **Assessment of Highway Road Traffic Crashes in Kaduna State, Nigeria** has been carried out by me under the supervision of Prof. J.E. Gyong and Dr (Mrs.) P.E.U. Mudiare in the Department of Sociology, Faculty of Social Sciences, Ahmadu Bello University, Zaria .The information derived from the literature has been duly acknowledged in the text and a list of references has been provided. No part of this dissertation has been presented in this institution or any other institution for the award of a master degree.

_____ _____

UDIE PETER UGBE **Date**

CERTIFICATION

This dissertation titled **Assessment of Highway Road Traffic Crashes in Kaduna State, Nigeria** by Udie Peter Ugbe meets the regulations governing the award of the degree of Master of Science (M.Sc.) Degree in Sociology of the Department of Sociology, Ahmadu Bello University Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This Dissertation is dedication to my beloved wife Mrs. Pauline Udie, my beloved children Catherine, Emmanuel, Peter Unimke Udie (JR), and Joan Ushiukun Udie and in memory of my late parents Mr. and Mrs. Demien, Udie.

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LIST OF ACRONYMS

ABU: Ahmadu Bello University

C: Commutters

CDC: Crash Development Centre

DD: Deputy Director

DWT: Driving When Tired

FCT: Federal Capital Territory

FRSC: Federal Road Safety Corps

FVFC: Following the Vehicle in Front too closely

HRTC: Highway Road Traffic Crashes

IFRA-N: Institute for Research in Africa - Nigeria

IFRCS: International Federation of Red Cross and Red Crescent Societies

IRTCDB: International Road Traffic Accident Data Base

KASTELEA: Kaduna State Traffic and Environmental Law Enforcement Agency

KSMC: Kaduna State Media Corporation

MVA: Motor Vehicle Accident

MVTC: Motor Vehicle Traffic Collision

NAFDAC: National Agency for Food Drug Administration and Control

NCR: Nigerian Cencus Report

NITT: **N**ational Institute for Transport Technology

NP: Nigerian Police

NARTO: National Association of Road Transport Owners

NURTW: National Union of Road Transport Workers

OECDC: Orgniazation for Economic Cooperation Development Countries

RC: Road Crashes

RSM: Road Safety Management

RT: Road Transportation

RTI: Road Traffic Injury

S: Safety

SPSS: Stastistical Packages for Social Sciences

UN: United Nations

WBR: World Bank Report

WHO: World Health Orgnaization

ABSTRACT

Highway Road Traffic Crashes (HRTC) is a global phenomenon that affect all strata of human life, which have become a reoccurring problem that constitutes a burden to road users in Kaduna State, and Nigeria in general. It has been acknowledged that road traffic crashes occurred due to violations of rules and regulations of traffic on highways in Nigeria, which have become a national problem, particularly in Kaduna State. However, the nature, rate and frequency of these road crashes are frightening which down played the dignity and value of human lives and the destruction of property. The study objectives examined the nature, causes, consequence of highway road traffic crashes as well as remedies. Domino theory was adopted in the study to explain and analyze road traffic crashes. Qualitative and Quantitative methods of data collection were employed for the study. The data was analyzed manually and electronically using Statistical Package for Social Sciences (SPSS) version 21.0. The findings from non-participant observation, and in-depth interview were synergized and triangulated. The study found out that the highest road traffic crashes occurred on Kaduna-Abuja expressway. The study further revealed that commercial drivers between the age brackets of 18 – 45 years were mostly involved and perpetuated in HRTC. The findings revealed that over speeding, dangerous over taking and the used of cell-phone and other devices used while driving were the most frequent causes of HRTC among commercial vehicle drivers. And that NURTW/ NARTO members did not contribute to HRTC occurrence. The study found out that guilty perpetrators/ offenders were to be jailed for 5 years imprisonment, to serve as deterrent to others. It is evident that road traffic crashes are very common on Nigerian roads due to excessive speed, dangerous over taking, lack of road worthiness of vehicles and the use of cell phones. In view of this, the study recommended that (FRSC) Rs 1.1 Kaduna Sector Command, (NP) and KASTELEA should provide the public with special law enforcement hotlines numbers that individuals can call and report plate numbers, model and colour of cars when drivers are found wanting. This could be achieved by partnering with NURTW / NARTO in collaboration with Kaduna State Media Corporation Capital Sound 90.9FM, through her Oga driver radio road safety daily talk show. The study found that most vehicles were not road worthy. In view of this, the study recommended that only vehicles certified by road safety agencies should ply Nigerian roads, those found wanting should have their vehicles impounded after drivers have received second booking.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Highway Road Traffic Crashes (HRTC) is a global phenomenon that affects all strata of human life, which has become a reoccurring social problem that constitutes a burden to road users in Kaduna State, in particular and Nigeria in general. Ugbebor (2014) found that road crashes do not just happen; they are caused by unsafe Acts such as Pedestrians carelessness, example conversation on the road, phone calls while crossing the highway and unsafe conditions such as darkness and inclement conditions, poor conditions of vehicles, road potholes or flood on highways among others. It has been observed by Federal Road Safety Commission Rs 1.1 Kaduna State Sector Command in (2016) that before, the concept accident was in use, but has been replaced with crashes inline with global usage. They noted that crash were caused by human, mechanical and environmental factors, unlike an accident, when it occurs, it happens surdenly with no human external influence.

David (1999) is of the opinion that automobiles revolution has led to high vehicle aquisation by a larger population, leading to an increase in statistics of vehicular crashes in the course of transportation of persons and goods on roads which inflict loss of lives and properties. However, public outcry of the causes of road crashes has continually attributed it either to the will of God or evil spirits while ignoring the scientific approach to its causes.Thus, reckless and bad driving culture among motorist has led to various injuries or deaths on highways due to traffic violations (Balogun, 2006).

Elvik (2004) viewed crashes as a sudden and unintentional event that results in damage of property or environment, while Hollnagel (2004) sees road crashes as a short, sudden and unexpected event or occurrence that results in an unwanted outcome in the course of transporting persons and goods by motorist, which usually leads to traffic violatons thereby resulting in vehicle crashes and loss of lives and properties.The problems of highway road crashes and road safety has not been given serious attention in developing nations unlike developed nations. Global statistical report as indicated by Murray and Lopez (1996) cited in Ugbebor (2014) shows that a proportionate share of 85% - 90% of land transport fatalities occur in the developing world when compared to the developed nations. Most deaths in land transport occur on the road affects drivers, travelers and pedestrians and this constitutes a public safety problem which requires urgent attention (Ugbebor, 2014).

HRTC is ranked the 9th leading cause of mortality and morbidity, and account for 21% of all global death and disability. This makes motor vehicle crashes a leading cause of injury or death for people from 5 to 32 years old. Young people also have the highest crash rate of all drivers (World Book Encyclopedia, 2002). The burden of global death resulting from HRTC is on the increase. According to United Nations study in 2003, statistics on road traffic crashes indicate that more than 1.3 million people are killed every year, a figure which exceeds the number of people killed by AIDs, hepatitis or malaria Akpoghomeh (2012:12). Further global reports shows that India has 105,000 traffic deaths in a year, followed by China with over 96,000 deaths. While in United States of America (USA), 45,800 persons were killed and another 2.4million injured as a result of vehicle collision, in 2005.Thus, making highway road crashes the 6th leading preventable causes of death in the United States (US) (Akpoghomeh, 2012:13).

Road traffic cashes occurred first in the United Kingdom (UK) on 31st August 1869 with Irish scientist Mary Ward as the first road crash victim in the world. Similarly, Bridget Driscoll was the first pedestrian victim on 17th August 1896 in Croydon, Surrey (UK) (Egonu, 1998; Akpoghomeh, 2012). Nigeria experienced her first road crash in Lagos in 1906, ever since, highway road traffic crashes (HRTC) have been acknowledged generally in developed and developing countries as not only a major killer but in Nigerian as a national problem. Fatalities resulting from highway road crashes in Africa have reached alarming proportion. Adedeji (1989) notes that the fatality rate per vehicle registered on African highways ranged from eight to fifty times higher than what is registered in industrialized nation (WHO, 2006).

Pedestrian and young road users have been identified as highly vulnerable groups, for instance, road traffic crashes involving children less than 15 years vary from 35 percent in Addis-Ababa to 40 percent in Abidjan (David, 1999). The current road safety situation in Nigeria using the 2007 data, indicates that there were about 32.3 fatalities per 100,000 population as compared to 10 in the western world (5.4/100,000 for US). Also in 2007, Nigeria ranked 150 out of 175 on country fatalities per 100,000 population; 149th in 2009, and 127th in 2011 (FRSC, 2012 cited in Akpoghomeh (2012). Similarly, a highway road traffic crashes reported by FRSC, 2002-2010 on Tankers and Trailers drivers in Kaduna State revealed a total of 4,017 crashes, with 4,076 deaths, 12,994 injured resulting to 17,070 fatal casaulties, with a total of 26,362 persons and 5,825 vehicles were involved. A more worrisome road crash report was on State to State comparison of drivers between the periods 2007 and June 2010. These report shows Kaduna State recorded the highest number of road crash death with 463 representing (11.36%), also the State had the highest number of injuries with 1,375

representing 10.56%. Within the same period, Kaduna State recorded the highest figure of casaulties with 1,838 (10.77%).

Furthermore, according to Punch Newspapers report of 16 August (2012), caption 18 die in Kaduna – Abuja road traffic crash. Similarly, other report by Premium times Newspaper of 14, October (2013) shows that 7 persons were feared death, 11 injured Birnin-Gwari – Kaduna highway. In spite of the number of lives being lost on daily bases on highways, HRTC has not received the required attention as motor vehicle crashes have become a leading cause of death and disability in Nigeria and in Kaduna state in particular (Callistus, 2008). The problem is that road traffic crashes are preventable, but motorist and pedestrians continue to violate rules and regulations of traffic, as well as ignored safety measures which may be attributed to lack of enforcement by road safety law enforcement agencies on perpertrators on highways due to weak policies. This has led to crashes. Thus, over 4,700 cases of crashes are recorded annually in Nigeria, translating to about 4 casaulties (killed or injured) per crash. The World Bank Report (2010) once classified Nigerian roads among the greatest death-traps in the world due to high frequency of Highway Road Crashes, resulting in loss of lives,which have been acknowledge as national problem and source of concern (Akpoghomeh, 2012:14). The problems of victims cut across all groups without any regards for social class or status. Against this backdrop, this study is an assessment of highway road traffic crashes in Kaduna State, Nigeria is conducted with a view to bridging the gap.

1.2 Statement of the Research Problem

HRTC are associated with transportation of goods and services and transit of passengers from one location to another. Thus, the increasing road risks and enormous crash cost involved have now made traffic safety a major concern for society and road users worldwide.This concern for road safety is heightened against the background that road traffic crashes which rank the world's ninth killer in 1988 has been predicted to become the third leading source of death by the year 2020 according to International Federation of Red Cross and Red Crescent Societies (IFRCS) (World Disaster Report, 1988). It has been acknowledged that road traffic crashes were due to violations of rules and regulations of traffic on highways in Nigeria have become a national problem, particularly in Kaduna State. However, the nature, rate and frequency of these road crashes are frightening which down plays the dignity and value of human lives. For instance, Kaduna State had the highest number of vehicle in road traffic crashes (RTC), with a total of 599 crashes representing 10.28% (FRSC, 2007-2010).

Similarly, Ukoji (2014) severity index on fatal road crashes per State between June 2006 and May 2014 in partnership with Institute for Research in Africa - in Nigeria (IFRA-N 2014) shows that Kaduna State is among the States in Nigeria with the highest fatal road crashes of 446 fatalities. These huge losses in human and material resources have become a problem and a source of worry in terms of road and safety standards. Their nature and causes of highway road traffic crashes may differ slightly from one zone to the other, but highway road crashes is generally believed to be higher in some zones because of their socio-cultural, economic and political practices (Oyeyemi 2003; Balogun, 2006; Federal Road Safety Corps, 2008).

Thus, it has been observed that commercial andprivate car drivers are noted to be stopping along major highways at various intervals without proper clearance, while scouting and picking of passengers. Their actions constitute a problem in congesting the highways at strategic spots leading to HRTC. However, it is common to find motorist driving their vehicles with worn out tyres, in effective breaks system, poor lightings and at the same time, driving recklessly among other drivers leading to road traffic crashes, or can these causes be attributed to lack of awareness among motorist? Thus, one begins to wonder which groups of road users are responsible for the cause of HRTC and what preventive measure can be use to curb road traffic crashes.

The problem at hand indicates that major roads in Kaduna State suffered neglect and remained indeplorable condition or worsening by the day due to high vehicular traffic, with total disregard for traffic laws by perpetrators through reckless driving which often ends to road traffic crash victims who are injured, killed or their property being destroyed (Oni 1998; Ukoji 2014). For instance, Sahara Reporters New York of the 7th February (2014) reported a tragic crash that claim the lives of four (4) lecturers of Ahmadu Bello University (ABU) Zaria along Abuja-Kaduna express way. A more worrisome problem was a five (5) months highway road crashes report of February, July, October and December of 2015 by FRSC Rs 1.1 Kaduna Sector command which shows that a total of 1,680 road crashes were recorded in Kaduna State with 822 persons injured out of which 639 victims were male and 183 female, while 185 persons were killed, of which 144 were male and 41 female. This HRTC victims live or dead cut across all gender and nations of the world.

Consequently, on the one hand, the problem faced by road traffic crash victims in Kaduna State and Nigeria in general is that in advanced countries road users' adhered

to a larger extent, the various policy measures to protect and prevent HTRC victims. On the other hand, road users in Nigeria and Kaduna State in partuclar violate such policy measure put in place to mitigate or prevent vulnerable road users who end up as road crash victims. Hence, most victims, be it persangers, private and commercial drivers or pedestrian suffers economic, social or psychological consequencies. Other problem is that, while most offenders / perpetrators are unknown or let scot free, vulnerable road users who end up end up as HTRC victims, in most cases are left to suffer the consequences by paying medical bills if they are lucky to survive.

Thus, it is quite difficult to quantify the economic cost/loss in terms of consequences to Kaduna State which has been acknowledged a problem. Oni (1998) also attributes some of the problem that cause road crashes to lack of funding and poor bugetary allocation, and when funds are released they are not use properly used.

In view of these problems, the researcher therefore examined the following questions:

1.3 Research Questions

1. What is the nature of highway road traffic crashes in Kaduna State?
2. What are the causes of highway road traffic crashes in Kaduna State?
3. What are the consequences of highway road traffic crashes on victims in Kaduna State?
4. What are the remedies to highway road traffic crashes in Kaduna State?

1.4 Aim and Objectives of the Study

The aim of the study is to find out road users responsible for the cause of highway road traffic crashes. Also, to find out the attributes or characteristics of road traffic crashes

victims, who bear the consequences and those to be blamed in Kaduna State, as well as suggest preventive and control measures, towards highway road traffic crashes reduction

1.4.1 Objectives

The following are the objectives of the research:

1. To examine the nature of highway road traffic crashes in Kaduna state.
2. To find out road users responsible for the causes of highway road traffic crashes in Kaduna State.
3. To assess the consequences of highway road traffic crashes on victims in Kaduna State.
4. To find out safety remedies and suggest control measures to highway road traffic crashes in Kaduna State.

1.5 Significance of the Study

The outcome of this study will not only add to the existing stock of knowledge in the academia, but will be of value to road safety management agencies. Also, the study will be of benefit to road transport fleet managers, commercial vehicle operators, and members of the various road transport unions/organization on the proper use of roads and in curbing avoidable highway road traffic crashes. The significance of the study is that the expected findings from this work will also guide policy makers in the formulation and implementation of policies geared towards addressing the problem of highway road traffic crashes and traffic violations in the country. In addition the findings will serve as reference point to others who may want to conduct a study of this nature.

1.6 Scope of the Study

The study is limited to highway road traffic crashes, its nature, causes, and the consequences on road users in Kaduna State which was carried out between 2015 to 2017. Justification for choosing Kaduna State as an area of study is simply because of the growing urbanization/population due to industrial and commercial activities, coupled with traffic congestion along routes that serve as road network linking Kaduna State with other states in the northwest geopolitical zone. Also, the area of study is noted for high occurrence of deaths resulting from highway road traffic crashes, due to traffic violations. The study covered some selected local government areas in the State from the three (3) senatorial zones, especially in study areas like Kafanchan, Kaduna metropolis and Zaria. Other major township roads are: Sabon Tasha/Kachia high way, Zaria flyover, Zaria/Kaduna highway and Kawo flyover.

In addition, the study covered key road safety law enforcement agencies like, Nigeria Police (NP), Federal Road Safety Corps (FRSC), Kaduna State Traffic and Environmental Law Enforcement Agency (KASTELEA) and Kaduna State Media Corporation (Capital Sound 90.9FM), in the study area..

1.7 Definition of Key Terms

The key terms which describe the theme of this dissertation are defined below. Other concepts which may be obscure or ambiguous are defined in the thesis where they are used.

Accident: Accident is defined by Collins Coubuid Adraneed Dictionary (2009), Edition as something on unpleasant happens when a vehicle hits a person, an object or another person causing injury or damage.

Traffic Offences: Any violation of traffic ordinance, Act or enactment, rules and regulations of a Local, State or the Federal Government by pedestrians, vehicle drivers and other road users, which makes it a crime punishable by law.

Road Crashes: Is defined as unexpected and sudden happenings on the road in which a moving vehicle hit another vehicle, pedestrian or something that can cause death, injury and destruction of goods, property or environment.

Safety: The process whereby adequate measure and precaution are put in place to provide security, and to prevent persons, animals from danger and crashes injury or death.

Road Safety Management: The Institutional framework needed to implement road safety activities, there by setting the monitoring and evaluation of the other pillars such as safer roads, safer vehicles, safer drivers and responses.

Road Transportation: The act of carrying goods, persons and services from one place to another along a given road corridor.

Law Enforcement: Is any syatem by which some members of society act in an organized manner to enforce the law by discovering, deterring, rehabilitating, or punishing people who violate rules and norms governing that society.

Commuter: A person who travels on a long distance between two points, either by the means of motorise and non-motorise vehicle, for the perpose of doing business or to work. `

Highway: This is a usual single carriageway in which traffic flow in opposite direction on single lane. Highway may be rural, urban, intra or intercity roads.

Victim: A victim is defined by Collin Coubuid Adraneed Dictionary (2009) as someone who has been hurt or killed.

1.7.1 Operational Definition of Key Terms:

Accident: For the purpose of the study, accident is defined as unpleasant something that happened to a pedestrian, driver, motocycle drivers among several others which resulted to an injury, property damage or death.

Traffic Offences: In this study refers to actions and in-actions of motorists, pedestrians or road users that violate the rules and regulations guiding the use of roads/ highways that can cause crashes leading to deaths, injuries or destruction of property.

Safety: Proper following of a guide, instructions, rules and regulations that is capable of preventing motorist, pedestrians and road users from harm/ danger, road crashes including death/ injury or damage to property.

Road Crashes: An unexpected happening that occur as a result of different operations of vehicles including bicycles, handcarts on roads or highways which may result in death/injury of pedestrians, drivers and passengers or damage to property.

Road Safety Management: These are bodies or group of individuals trained and placed with the tasked of road crash risk reduction, prevention and saving of lives and properties.

Road Transportation: The movement of people, goods and services from one place to another and for the purpose of this study from Kaduna State to other parts of Nigeria.

Law Enforcement: Are bodies, agencies or personnels of the Federal Road Safety Corps (FRSC), Nigerian Police (NP) and Kaduna State Traffic and Environmental Law Enforcement Agency (KASTELEA) that are trained and given the authority to ensure compliance with road safety standards, as well as apprehend arrest and prosecute road users that violate traffic rules and regulations in Kaduna State.

Victims: For the purpose of this study, victims are either motorist, passengers, pedistrians, motocycles or handcart drivers that are hurt or killed as a result of a road crash.

Commuter: A person who travels on a long distance between two locations from Kaduna to Abuja.

CHPATER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The section comprises of the review of concepts and literature on assessment of highway road traffic crashes in Kaduna State, Nigeria. There are three concepts that are reviewed; traffic offences, crashes and safety in line with the study objectives. The review of related literature is done in accordance to the stated objectives so as to bring out the extent of academic scholarship to explore the gap in the previous study. Theoretical frame work for the study dwells with the Domino Theory of Road Accidents Causation.

2.2 Conceptual Review

Traffic Offences: Is used in a variety of context, for example, traffic violations are committed in transportation movement along the road in an area. The concept is said to originate from the French word 'trafique' and Italian word 'Traficore' 'and English word' 'Traffic' which means to engage in trade especially of an illicit drug traffic, human traffic or the business of commercial transportation. Traffic offences in regards to road safety on highway, traffic administration have no single acceptable definition. Federal Road Safety Corps FRSC (2007), defined traffic offences as action which constitute the breach of traffic laws made in Nigeria. However, in this study 'Traffic Offences' refer to actions and in-actions of motorists, pedestrians or road users that violate the rules and regulations guiding the use of roads/ highways that can cause crashes leading to deaths, injuries or destruction of property.

The FRSC (2007) argues that on every road, there are road users such as motorists, pedestrians, cyclist, motorcyclist, passengers and even animals. It is expected that the users of road should be disciplined, careful and considerate to others, to ensure safer roads, devoid of crashes and by so doing prevent arrest and persecution for traffic offence.

The issue of traffic offences is the problem of safety on roads that is why the World Book Encyclopedia (2002:949), observed that each year, motor vehicle crashes due to traffic violations kill an estimated 300,000 people throughout the world. Young people who are drivers have the highest crashes rate. And that; almost every highway road traffic crashes result from one or more traffic violations is centered on the driver, the car and the road. Drivers are the chief factor in vehicles safety, because they are responsible for about two-third of all highway road traffic crashes that are caused through traffic violation such as over speeding, driving in the wrong lanes, making improper turns, and breaking other rules of safe driving. And making reference to Ukoji (2014) argued that Nigeria still remains number one country in Africa in highway road traffic crashes resulting from traffic violation. Because of the risk to lives and property, most governments in the world have put measures and legislations in place to curb traffic crashes and traffic violations.

Safety: Safety generally means freedom from danger injury, damage or risk emanating from hazards. Safety, particularly road safety in this study is referred to as the proper following of a guide, instructions, rules and regulations that is capable of preventing motorist, pedestrians and road users from harm/danger, road crashes death/injury or damage to property. Consequently, safety encompass the state of being free from harm to workers or damage to company's asset or impact on the environment, Man desires daily to live in an environment that is safe and comfortable to exploit his God given

privileges and opportunities. Therefore, the history of man indicates that safety was climaxed at the beginning of creation with man dwelling in the Garden of Eden. He lived in a safe environment with all he needed. But as time progressed, men became inquisitive, and began to research and develop new ideas of venturing into technology and much later industrial activities (Ugbebor, 2014).

The environment was consequently polluted with accompanying hazardous exposure emanating from industrial and automobile fumes, machines and equipment which subsequently led to safety concerns (Ugbebor, 2014). However, viewing safety from another perspective, the Encyclopedia Americana (1978), in (Ejue, 2012) defines it as the condition of being free from danger of harm. It also added that as a legal concept, safety implies security from crashesal injury or death due to measures designed to guard against road crashes. The problems of safety around man brought about laws made to encourage the maintenance of safety standards and they are often called safety laws. With regards to road safety, the Grolier Encyclopedia of Knowledge (2000), in (Ejue, 2012) asserts that:

> Automotive safety is concerned with how to reduce the number of traffic crashes and lessening the severity of injuries when crashes do occur. Areas of safety activity include the design of road highways, adjustments in laws pertaining to traffic and vehicles, systems of traffic control programs of driver education and vehicle design.

Highway Road Crashes rate is still high, because road users have constantly violated road traffic laws, among such violations are; road rage, over speeding, dangerous driving/overtaking especially when there is heavier vehicular traffic (Grolier Encyclopedia of knowledge, 2000). In order to restore sanity on roads among drivers and other road users, ‘safety standards’ as in preventing highway road traffic crashes and traffic violations led to the United States (US) congress in 1966 passing a law that

permitted the federal government to issue mandatory road safety standards for cars, trucks, motorcycles, and other vehicles. Since then, more than 50 safety standards for cars have been imposed, regulating such items as safety windshields, brakes, tyres, and seatbelts. The result has been a reduction in highway road traffic crashes and severity mostly blamed on traffic violations (David, 1999).

David (1999) observed that highway road traffic laws and regulations in Nigeria was inherited from the colonial administration as a means of curbing traffic crashes occurrences and facilitating the safety and security of motorist and the general public on the road. On 18th February 1988; FRSC was established by cap 141 laws of the federation (1990), otherwise known as FRSC Act in line with highway road safety international standard. Aimed at checking the rising trend of road carnage resulting from traffic violations; the concern for road safety is worldwide and is the province of numerous governmental and international levels (Balogun, 2008; Oyeyemi, 2003 and Decree No. 45 1988). The frequency and severity of highway road crashes vary from country to country. Highway Road Crashes now caused more deaths than all infectious diseases and more than any single illness except those related to heart disease and cancer (The New Encyclopedia Britannica, (1974).

On a worldwide basis today, motor-vehicle crashes tend to be the primary cause of deaths followed by those in the construction industry and in the home. The concern for safety has led to a number of organizations including bodies like, International Labour Organization (ILO), the International Social Security Association (ISSA), the World Health Organization (WHO), and the European Economic Community (EEC), to maintain a joint information bureau in Geneva, Swizerland. These bodies help to establish safety codes and standards for numerous areas of activities. Safety'' For

example, with regards to highway safety, most activities are conducted by professionals whose job relate closely to questions of safety, among them are: Federal Road Safety Corps, policemen, firemen, medical personnel's, and others concerned with health and with crashes prevention.

The greatest challenges in highway road safety and prevention of traffic violations is how to keep legislation and public awareness abrest the rapid development of technology and with fresh hazards that it constantly presents (The New Encyclopedia Britannica 1974).

Crashes: Elvik (2004), defined crashes as 'a sudden and unintentional event that result to damage of property, people or environment' while Webster's Encyclopedia dictionary defines crashes as 'a sudden and terrible events such as an earthquake, flood or tornado or any disaster affecting one or more persons.

Crashes, particularly "Road Crashes" for the purposes of this study is defined as unexpected happenings that occur as a result of different operations of vehicles including bicycles, handcarts on roads or highways which may result in death/injury of pedestrians, drivers/passengers or damage to property.

Crashes occurrence affects every facet of human activity, such as highway road crashes, industrial accident, and construction accident among others. Crashes are caused, they do not just happen. And whenever any occurs, its cost is prohibitive or serious (Ugbebor, 2014). Also, Odogwu (1988) defined road crashes as a sudden catastrophic event involving one or more vehicles such as head-on or side impact collision. This observation is based on the premise that, crashes that occurred on road are mostly attributed to traffic violation. For instance in the United State of American (USA), the most common violations of traffic laws has been observed to be speeding,

red light running, nonuse of seatbelts, aggressive driving, road rage and driving under the influence of drugs or alcohol (Inciadi, 2007). Cox (2004), noted that in spite of all efforts at public enlightenment by road safety administration, many motorists are still reluctant to use seat belts. Unfortunately the problem in most African countries and Nigeria in particular is that, there is a dearth of documented information on highway road traffic violations. For instance, the FRSC has no accurate data on speeding offences because of lack of radar gun to keep track of speed rate. In addition, motorists can hardly be charged with driving under the influence of alcohol because of lack of alcoholiser to measure blood alcohol level of an offending driver as found in developed countries (David, 1999).

2.3 Nature of Highway Road Traffic Crashes

Automobile revolution is traceable to Europe and the United States of America in 1900s. Automobile helped in giving people the freedom to live, work and travel whenever they wanted. However, the glories of automobile culture came with serious problems, and as such, vehicle traffic crashes became a major cause of death and injury throughout the world, to the extent that people yearned for the old days before these revolutions, when life seemed simpler; but there is no turning back to traffic deaths on highway WBE, 2002). Bridget Driscoll was the first pedestrian victim of highway road traffic crashes on the 17th August 1896 in Croydon, Surrey, United Kingdom. She was killed at the age 44 by a taxicab driver Arthur James Edsall of upper Norwood. Mary Ward was however, in 1869 the first victim of highway road crashes in the world while in the United Sates of America, Henry H. Bliss was also the first road crashes victim; he died on 13th September 1899 (Egonu,1998; Akpaghomeh, 2012).

Mary Ward's road traffic death in 1869 was believed to be the last. However, the worst was yet to come, as the Royal society for the prevention of road traffic crashes estimated that, more than 500,000 people have been killed on Britain's road since then. And almost 4, 000 people are killed on world roads every day, according to the campaigning charity road peace corp when marking national road victim month (McFarlane, 2010).

Further, studies have shown that highway road traffic deaths/injury resulting from traffic violation has become one of the world greatest problems to the better realization of human life longevity in both developed and developing African countries including Nigeria has continued to fall short of the acclaimed life expectancy range of 55 – 63 years for women and 52.2 years for men as measured in Nigeria in 2013 by the World Bank WB Report, 2013). Most segment of the population in Nigeria, including the elites had one time or the other been involved in traffic violations which are criminal in nature. Both rural and urban centers have suffered from these undesirable activities which are mostly perpetrated by drivers, pedestrians and road users on high ways resulting in various highway road traffic crashes.The degree and nature of highway road traffic crashes have gone far beyond the tolerance limit of society and has consequently attained disturbing dimension to the extent that social, economic and political activities are adversely affected. Given this situation, the national and international communities have sought to understand the various dimension of the phenomenon and the nature of highway road traffic crashes that is (i) where this highway road crashes occurs; (ii) how the highway road crashes occurs; (iii) who are those affected (victims) and (iv) who are the perpetrators of highway road traffic crashes.

2.3.1 How Highway Road Traffic Crashes Occur

Crashes occurrence can be occupational as in manufacturing, plants farms; construction site or the crashes that occurs when traveling by air, water, or on highway. Crashes occurs when an activity that seeks either to minimize or to eliminate hazardous conditions that can cause bodily injury or death are not taken seriously or not kept by operators and regulatory agencies. That is why the New Encyclopedia Britannica (1974) observed that the greatest challenge is how managers should regulate safety legislation in line with best international standard to keep pace with the rapid development of technology and with the fresh hazards that it constantly presents (Agbonkhese, et al. 2013). Similarly, Ata and Aderinlewo (2012), observed that highway road crashes occur when a vehicle collides with another vehicle, motorcycle, pedestrian or animal. This can result in injury, property damage, death and permanent disabilities.

Driver's characteristic is observed as one of the major contributing factors for highway road crashes occurrence. It is the performance of drivers in both single vehicle and multivehicle crashes. Urbanization has taken a huge toll in fatal highway road crashes in Nigeria. Nigeria is one of the countries in the developing world with a high rate of rural urban migration and fast-growing cities. Though growth is a global phenomenon, 90% of growth in urban population worldwide occurs in developing countries and place intense pressure on urban infrastructure, particularly transportation. In this context, very large metropolitan cities like Lagos, Kano, Ibadan, Kaduna and Port Harcourt face congestion problems that often results to highway road crashes occurrence when traffic pressure is increased in the transport systems.

In a related study conducted by Agbonkhese, Agbonkhese, Akanbi, Mondigha, (2013) They observed that hardly a day goes by without the occurrence of highway road traffic crashes leading to generally increasing incidence of morbidity and mortality rate as will as financial cost to both society and the individual involved. However, these highway road crashes occur because basic rules/laws of road safety principles are ignored by most road users. With data supporting the literature, for example, they noted that death from reckless driving are the third leading cause of death in Nigeria. In 2012, at least 473 persons died from a total 1,115 vehicular crashesnationwide. Nigeria has the second highest rate of highway road crashes among 193 ranked countries of the world Aghonkhese et al (2013). According to Aghonkhese, *et al* (2013) was of the opinion that 2013 April was the worst month in terms of road crashes. A chronicle of crashes is as follows: April 3rd 2013: a Luxury bus and a smaller bus crashed on the Abuja-Lokoja Road living 18 death. On April 5th 2013: a petrol tanker set a luxury bus and articulated vehicle ablaze at Ugbogui village on Ore-Benin Expressway 80 people were burnt beyond recognition. April 6th 2013: at Dazigam 11 kilometers from Potiskum Yobe State a car crash living 20 people death. April 14th, 2013: seven died on the Abuja-Lokoja road as a car ran into an articulated vehicle April 15th 2013: five died on the Asaba-Onisha expressway. In 2012 alone, 30% of the 473 recorded deaths occurred in15 days (Aghonkhese, et al. 2013).

Also, other reported cases of highway road traffic crashes include that of February 7th 2014: which shock the Ahmadu Bello University (A.B.U.) Zaria community. The A.B.U lecturers: Prof. Samuel Kafewo, Prof. Jenke Okwori, Dr. Martins Ayegba and Dr. Nana-Ai-sha Ali were all killed in an auto crash along Abuja-Kaduna expressway. Similarly, on Sunday, March 6, 2016: Mr. James Ocholi, (SAN) Minister of State for labour and productivity died along with his wife and son in an auto crash on Abuja-

Kaduna highway. And two days after, Tuesday, March 8, 2016; Major General Yusha'u Mahmood Abubakar, Chief of Training and Operations of Nigeria Army died in an auto crash, while Brig-Gen Mohammed Aliu, the Acting General officer commanding (GOC) 3 Division Sustained serious injury, along Maiduguri-Damaturu road at about 2:30pm. There could be more unreported cases across Nigeria, as often happens, while some of the injured die without making the captured statistics from any of the road safety enforcement agencies. This figure does not always represent the accurate actual data of traffic death/injuries as found in most developed countries (Agbonkhese, *et al.* 2013).

Other scholars who explained how Road Traffic Crashes occur are Groeger (1997), Deffenbacher, Lynch, and Richard, (2003). They argued that angry drivers have been found to be twice as likely to be involved in highway road traffic crashes. This may be so because anger encourages confidence and when angry, we can over estimate the amount of control we have in specific situations and make quick, stereotypical judgments. The dangerous effect is worsened in the driving context because anger-driven aggression and risk taking have very real consequences, both for the driver, passengers in the vehicle and for other highway road users (Agbonkhese *et al.,* 2013). A critical analysis of Agbonkhese,s work suggest that this study failed to consider the role of road infrastructure as the immediate cause of HRTC such as mechanical factor and carelessness of motorist in maintenance of vehicle at the appropriate time. However, the authors stressed that Nigerian road users have high level of awareness on the causes of HRTC. The question then is, if road users were very much aware of the causes of road crashes, which group of road users should be held responsible for the causes of HRTC and what preventive measures mentioned by the authors were meant for which group of road users and why have these measures failed in curbing HRTC in

Nigeria? These identified gaps were coverd by this study as part of its contribution to knowledge.

2.3.2 Where Highway Road Crashes Occur

There appears to be a large body of literature on the subject of highway road traffic crashes and its causes since the invention of automobile, therefore, it is important to note that these bodies of literature have their limitations and therefore need to be interrogated in order to fill the gaps. Although there are journalistic accounts of highway road traffic crashes, very little empirical work is found in the literature perhaps because the phenomenon was over looked for many years, due to the insensitivity to the burden placed on motorist/ road users when a traffic crashes occurs.

Odogwu (1998) observed that the acquisition of personal cars became a vogue in the 1970s due to oil boom. This view is further buttressed by Kalinda (1989), cited in David, (1999). He noted that the post-independent period for Zambia and Nigeria, particularly during the oil boom and immediately after the post-war, led to increase in economic activities which led to a hike in vehicular statistics to meet up with sharp rising demand then. He argued that:

> This situation gave rise to an equally unprecedented rate of road crashes in which a lot of lives were lost and property worth thousands of pounds was damaged.

In the words of Ukoji, (2014) it is of great concern that a less motorized Africa has a high record of fatal road crashes, with an average of 18 deaths per 100,000 populations, it is therefore, necessary for government to give the road its deserving attention. Highway road traffic crashes usually occur on major and minor highways in towns and cities when both pedestrians, commercial vehicle drivers struggle for the use of space.

Highway road crashes occurrence does not only affect developing countries like Nigeria, but cut across developed nations as well.

In a study conducted by Ukoji (2014), in the 36 States of Nigeria in Association with Institute for Research in Africa (IFRA), the main objective of his study is to examine the 'Trend and Pattern of Fatal Road Crashes in Nigeria, particularly on crashes that involved at least one death between (2006 and 2014). A similar study was conducted by Aderamo (2012) 'Assessing the Trend in Road Traffic Causalities' on Nigerian Roads' in which he observed that developing countries bear the brunt of the fatalities and disabilities from road traffic crashes, accounting for more than 85 per cent of the total Disability Adjusted Life Years (DALYs) cost due to road injuries. Moreover, while the problem is increasing in developing countries at a fast rate, it is declining in all industrialized nations such as Western Europe, North America, Japan, Australia and New Zealand (Aderamo, 2012).

Ukoji, (2014) noted that the causes of fatal highway road traffic crashes in Nigerian were Human, Mechanical and Environmental factors, with human factors taking 90 per cent of the blame. The Human factors include: signal acuteness, driver fatigue, and poor knowledge of road sign, excessive speeding, and illiteracy among others. While mechanical factors that cause fatal car crashes are poor vehicle maintenance, tyre blowout, poor light, and un- roadworthy vehicle e.t.c. He also, observed that environmental factors such as heavy rainfall, pot-holes, and un-tarred roads collectively or independently contributed to high rate of fatal road crashes in major roads in the 36 States of Nigeria. Not withstanding, scholars like Adekunle,(2010) maintained that the Human, Mechanical and Environmental factors affects directly the socio- economic well being of road users, in traffic casualties and perhaps can be understood best in

terms of labour lost to the nation's economy. Pratts, (1998) in Ukoji (2014) argued that persons killed or injured in crashes on Nigerian highways and streets no longer participate in the economic mainstream and this amounts to a loss of labour of millions to the nation.

Moreover, different circumstances precipitate fatal car crashes in Nigerian highways which are political, as well as socio- economic in nature. Though, fatal road crashes in Nigeria may not be directly attributed to politics, it is the actions and in actions of the politicians that cause highway road crashes, because of poor budgetary allocation for highways construction repairs and maintenance are misappropriated when funds released to agencies of government like Federal Ministry of Works or Federal Road Safety Corps become in – adequate to maintain or execute roads, living roads in a bad shape and in deplorable condition, which end results is fatal road crashes. He further observed that under bad road condition, all categories of road user's particularly political elites and government functionaries have been identified as protagonist in fatal highway road crashes in Nigeria. They have caused untimely death of many road users through reckless driving in convoy, over speeding and other forms of traffic offences which they violate with impunity. For instance, he highlighted various places where crashes took place that led to the deaths of persons who could have contributed to the nation's economy if they were alive.

For example, a renowned Nigerian academician, professor Iyayi, died in a crashes that involved the convoy of Kogi State Governor captain Idris Wada, in 28 December 2012 was involved in another fatal highway crashes along the Lokoja – Ajaokuta road, which killed his Aid de camp (ADC), ASP Idris Mohammed. Similarly, the convoy of Governor Oshiomole of Edo state was involved in a gruesome auto crashes on 13th

December, 2008 leading to the death of Mr. Greg Aruna, his personal assistant and Mr. Chris Nwachukwu his chief press secretary, while returning from a party function where some members of People Democratic Party (PDP) were being received into the defunct action congress. Aids of Governor Al-Makura of Nasarawa State were killed in a multiple auto-crash involving the governor's convoy along the Gadabuke/Keffi highway in the state.

In Methodology Ukoji, (2014) used secondary sources and employed qualitative Method/ Technique, while generating data from reported crashes cases by Nigeria Watch data, which focus on reported crashes cases involving at least one death between June 2006 and May 2014 in Ten Nigerian News papers excluding non fatal injuries. Also, data records cases from FRSC fatality car crashes rate within the study period covering the 36 states of Nigeria major cities. A critical analysis of his work suggest that Ukoji failed to acknowledge the impact of government policies as one of the fundamental problems that led to fatal road crashes in Africa and Nigeria as a whole, which has been identified as a gap which this study intends to fill as a contribution to knowledge. He noted that road sings were neglected by road users leading to reckless driving which include over speeding was, among other factors responsible for road crashes. Ukoji was silent in putting all these into consideration, considering the congestion on our roads. It is important to note that these bodies of literature have their limitation simply because Ukoji over relied on quantitative data from FRSC and Nigeria Watch data from Ten Nigerian News Papers, leaving out qualitative sources like observation, in-depth interview or focus group discussion which are technique of getting a wider opinion or views that could bring out a holistic data findings through triangulation.

For instance Ukoji (2014) study findings shows that 15,090 lives were lost to fatal road crashes in 3,075 events. The highest fatality occurred in 2013 with 2,061 deaths, having a 2.8% higher than 2012 records.Ukoji (2014) shows that Lagos state recorded the highest number of fatalities from 1,579 deaths from 620 events. Abuja (F.C.T) has the highest on regional level; a trend analysis shows that more people died in fatal road crashes in the south with 8, 288 people (55%) than in the North with 6,792 people (45%). Further more factors like the volume of oil distribution and the occurrence of criminal activities explain why there are more fatal road crashes in the south than in the north. The study also shows that Kaduna State was among the states with the highest fatal road crashes in terms of severity index with 446 fatal crashes between June 2006 and 2014.

Aderamo, (2012) objectives in his study 'Trend of Road Crashes Casualties on Nigerian Roads' 1975- 2009 found that the trend of those killed in RTC in Nigeria is on the increase, for example, from 1975—2003 there was an initial value of 5,552 persons in 1975 which rose to 9,252 persons in 1978 representing an increase of 66.64 per cent. The trend shows a sharp rise to 11,382 persons in 1982 and started fluctuating in value until it dropped to 6,364 persons in 1996. Thereafter, it rose again to 9,946 persons in 2001. From then on, the trend showed a gradual fall to 4,673 persons in 2007 and a rise to 5,693 persons in 2009.

The author however on failed to show or indicate the group and or category of road users that were mostly involved as road traffic crashes RTC casualties, who bear the consequences' and who is to be blamed. These to a large extent are gaps in which this study attempted to fill as a contribution to knowledge. The study findings indicated that

the establishing of FRSC in Nigeria has a positive impact by reducing the rate of casualties from road traffic crashes in the country.

The author observed in his recommendation that for traffic deaths and injuries to be reducing on roads, law enforcement, safety education and research funding should be the focus of the government. The author used secondary data, which were collected between 1975- 2009 from the NPF, FRSC and Nigeria Bureau of Statistics (NBS) by no means are valuable in nature. However, since the author acknowledged that information are collected between 1975- 2009, it shows that there are limitation in a number of ways. First, by 1975, the FRSC has not been established, and the NPF cannot give the required information. Therefore, the authors fell into a trap by presenting vague statistics in the earlier period of the study. This study attempt, therefore, to fill the hiatus left behind by the scholar that has written on the subject matter.

2.3.3 Perpetrators of Highway Road Traffic Crashes

Traffic violations is responsible for most road crashes that cut across all classes of the social divide and anyone can be guilty of causing highway crashes including commercial bus drivers, motorcycle riders, pedestrians as well as government officials using sirens, and herdsmen who,s animals have been known to cause road crashes (David 1999, Arosanyin *et al.*, 2012).

Crashes that happen on highways is being perpetuated by road users, this is based on the premise that Nigerian population is on the increase, coupled with the use of all types of motorize vehicles competing for the narrow and often bad roads. This is so because Aviation is too expensive for an average Nigerian, while the Water ways are restricted to riverside areas, and the rail system is moribund. The combined effect of

rapid growth in motorization, population and urbanization is the serious accentuating of road safety challenges in Nigeria (FRSC, 2011). David (1999) observed that most road users who constantly go against the laid down rules/laws, knowing that such acts are contraventions which make it an offence, as found in the Nigerian Highway code of 2008.

For instance, overconfidence, lack of concentration, dangerous overtaking are responsible for most deaths by drivers on highway. Most drivers on the roads are under aged and are found behind the wheel driving taxi, mini buses, etc. They indulge in over speeding when scouting for passengers in towns and urban cities. Most vehicle drivers have been alleged to be as perpetrators of highway traffic offences which is responsible for about 45% of all major road crashes. Also, "lack of concentration among articulated truck drivers, commercial motorcycle operators that ply major roads in African towns and cities particularly Nigeria is a common cause of highway road crashes" (Ibitoye, 2008).

According to WHO (2013), global status report on road safety, shows that the increasing number of causalities in most emerging economics has been associated with incomplete road safety strategies observed the number of dead remains unacceptably high (WHO 2013). Ata, and Aderinlewo, (2012) noted that while the condition of roads are major factors contributing to crashes, the attitude of road users that perpetuate traffic crashes cannot be over looked.

Consequently, the impact of road sign and the availability of road markings on drivers cannot be ignored. Thus, motorist and users of non motorist vehicles play different roles and take risk and perceive differently while driving on highways. However, bad judgment and taking of risk have led to various crashes and loss of lives, property and

injuries being perpetrated by road users. This has drawn a lot of attention worldwide. Ata, and Aderinlewo (2012), conducted a study on the "Role of risk perception, and other risk related judgment in road transportation; using Ado-Ekiti, as a case study". The objective of the study was to assess the role of risk perception and other risk related judgment of the users of commercial vehicles, bicycle, Taxi, buses, private cars, tankers and road haulage trucks as a means of road transportation in Ado-Ekiti, Nigeria". Risk perception start when motorist, passengers, private and commercial drivers identify, communicate evaluate and manage incoming hazard to prevent highway road crashes from occurring (Nigeria Highway Code, 2008).

When these management indicators are over looked, crashes can occur. Lee, (2008) cited in Ata, and Aderinlewo, (2012) noted that motorcycle riders present more complex behaviour than passengers, pedestrians or car drivers do. They exhibit more erratic and chaotic trajectories without following rules and regulation of traffic. As a result of the level of danger associated with motorcycle transportation in Ado-Ekiti and Nigeria in general, led to about 21,876 road crashes accounting for 31 per cent in Nigeria between 2000 and 2005. Similarly, studies from International Road Traffic / Crashes Data Base and Organization for Economic Cooperation and Development (IRTCDB/ OECD) Countries (2013) have shown that perpetrators that violate traffic laws, most often caused highway road crashes varies from country to country within member state. For instance countries like Korea, Japan, Israel and Poland, pedestrians are responsible for violating traffic laws, which accounts for more than a third of all road crash fatalities. In New Zealand, Netherland, and Norway pedestrians account for 10 % of those violations. Further report shows that bicycle riders perpetuate serious violation of traffic laws, these accounts for different fatalities percentage as indicated: Netherland 22%, Japan, USA, and Greece have 13% respectively; Organization for

Economic cooperation and Development Countries Nigeria (IRTCDB 2013,Annual Report ACB/OECD 2006).

Methodology, Ata and Aderinlewo, in (2012); used primary and secondary sources involving the use of questionnaires, and interviews were conducted with key stake holders in Ado-Ekiti like the Nigeria Police, Ministry of transport, FRSC and Amalgamated commercial motorcycle Owners/ Riders Association among others. In secondary sources, the author used literature from the internet search engines, published and un- published materials, journals etc. On data analysis, data were analyzed through the use of Microsoft Excel Statistical Packages (SPSS) so as to arrive at the percentage possibility of each risk factor that causes crashes along the selected 6 roads.

The study findings shows that the most dominant risk factor for causing RTC was Tail-gating along Opopogboro with 40%, Driving When Tired (DWT) 23% in old garage among others. Consequently, the authors concluded that the risk factors were site specific implying that each of the factors produces contrasting results at different locations both the highest and the lowest possibilities for crashes along two different roads. Also, the following recommendations were made; Drivers should be encouraged to leave a considerable gap equivalent to a vehicle length between their vehicles and the one ahead, and that priority should be given to reducing the incidence of tailgating since Following the Vehicle in Front too Closely (FVFC) was identified as the most dominant factor for causing crashes.

Thus, a critical analysis of Ata and Aderinlewo indicate, the authors failed to acknowledge the impact of Ekiti State government policies toward RTC prevention, the role of FRSC, NURTW/Owners and the amalgamated commercial motorcycle owners /

riders Association of Nigeria toward road crashes prevention. Secondly the study laid and focuses too much emphasis on motorcycle riders leaving commercial vehicle drivers, hence the authors failed to established those that were the real perpetuators that cause RTC amongst the category of road users in risk perception and risk related judgment in the study area? These identified gaps were coverd by this study as part of its contribution to knowledge.

2.3.4 Victims of Road Traffic Crashes

Balogun (2006), asserts that"for each highways road traffic crashes that occurs the victim must have violated road traffic rules and regulations many times uncaught." To him, it is the cumulative effect of traffic violations that causes road crashes. The potential for any traffic crashes have certain hazard associated with it, hence the causes and prevention of highway road crashes differs in their location and depends on the driver, ability to effectively prevent the crashes for safety of commuters and other road users.

Highway road traffic crashes increases drastically worldwide; thus, there is no social class or religious group that can claim immunity from crashes hence victims of highway road crashes whether live or dead cut across every nation of the world. A gender dimension however shows that 73% of all highway road traffic injuries affect mostly males as victims.They include car owners, and occupational drivers belonging to companies fleet and commercial drivers (i.e. articulated/light vehicles). Similarly, road traffic mortality and morbidity rate is almost 300 % higher for males. Males in SE Asia and Africa have the highest victims, while the majority of highway road traffic deaths in most high income countries related to car occupants (Drivers and Passengers). On the other hand in developing countries, victims of highway road crashes are mostly

among people who do not own or have access to a car: pedestrians, motorcyclist, cyclists, and users of public transport (Dinishohan, 2002).

Dinishohans, (2002) study shows that death/injuries account for 25% of those who are between 15 – 44 years (those in their productive stage) and victims often were pedestrians and young road users have been identified as highly vulnerable groups. However, highway road crashes that involve children less than 15 years constitute 35% of victims in Addis Ababa, and 40% in Abidjan it is estimated that by 2020, road traffic crashes would be the second leading cause of mortality and morbidity in developing countries (W.H.O 2004).

The question one may ask is, "should road users who are vulnerable need adequate safety measures before they become victims of highway road traffic crashes''? Gyong, (2012) examined vulnerability and the safety of road transportation, challenges faced as vulnerable road users before becoming victims and the measures that have the potential to ameliorate these challenges. In his paper, he categorized vulnerable road users as those who biological and or socio-economical peculiarities are exposed to high casualty rate on highways. For instance the pedestrians, cyclist, elderly and animal riders and hence noted that victims emanating from vulnerability could be mitigated when certain measure are put in place. Gyong, (2012) noted that HRTC were attributed to many causes, which included mechanical, environmental and human factors. The author findings shows that the activities of agencies directly charged with the responsibility of securing the safety of roads are enhanced via proper funding, capacity building and closer monitoring to reduce sharp practices. And while emphasizing that safety measures be put in place by developed countries like USA to protect vulnerable road users against HRTC, the author was silent on which policy measures Nigeria

government could employ to mitigate or protect vulnerable road users who end up as crashes victims when not protected.

Furthermore, the paper was silent on which group of road users and the age category were perpetrators of HRTC on Nigerian roads. This identified gap is filled by this present study as a contribution to knowledge.

Highway road crash victims often face neglected. They encounter serious difficulties both as a result of the direct impact of crime perpetrated by offenders or traffic violators, when they are left to die, and if they survive they are left to pay their medical bills, and nurse their injuries.Thus, victims' suffer doubly under the Nigerian criminal justice system (Gyong, 1994). While victims should not be left to die, due to negligence and carelessness the perpetrators should be sanction to serve as deterrence. It is further observed that, the problem of care and neglect of highway road traffic crashes victims could be mitigated through accurate reporting of data records by road safety management agencies on victims of highway road traffic crashes in line with international best practices.

According to Akunyili (2008), road safety has been an issue of significant concern, particularly when road users and drivers indulge in activities such as drugs and alcohol abuse that can cause highway roads traffic crashes leading to severe consequences on victims. Drunken and drugged driving is public health concern, because they put not only the drivers at risk, but also passengers and others who share the road. Thus, it has become difficult to know the actual statistics of drug and alcohol use or abuse among drivers worldwide and in Nigeria in particular.

In 2005, 16,885 people died in alcohol related motor vehicle crashes, accounting for 30 per cent of all traffic related deaths in the world, while the use of drugs in combination

such as marijuana and cocaine account for 18 per cent of motor vehicle driver's deaths (CDC) injury center http:/www.cdc.gov/ ncipc/duip/spotlite/3d.htm). The World Bank Report (2013) and FRSC (2010) noted that negative behaviour among passengers, pedestrians; especially drivers have devastative effects and consequences on highway road crashes victims. For instance, a research conducted in USA has shown that, across all collision types' wearing of seat belt reduces the risk of death by about 45 per cent (Joanne, 2008). The author used primary and secondary sources of data generated through experiment in the laboratory and vehicle automated test from National Agency for Food Drugs Administration and Control (NAFDAC) units and command. Method of data analysis, Qualitative technique; observation was carried out in laboratory based on (A Meta-analysis of 60 driving simulator road experiments).

The author findings show that behavioural and cognitive skill related to driving performance were impaired and has negatively impact result to highway road traffic crashes HRTC due to driver attentiveness, perception of time and speed, and the ability to draw on information obtained through past experiences. Furthermore, the study was silent on the particular group or age category of drivers or road users mostly involved in drunken driving and alcohol/drug misuse, and also did not indicate who were the victims that surfers the most consequences from drunken driving road crashes. This identified gap is filled by this present study as a contribution to knowledge.

Agbeboh and Osarumwense (2013) study was concern with an empirical analysis of road traffic crashes, the authors attributed road trffic crashes to road construction and expansion of existing road networks. In Nigeria, making reference to kogi State, Nigeria, the authors, using available records from FRSC from 1997-2010, demonstrated that RTC in Kogi State was increasing and that the rate between 2012 and 2015 was

expected to increase steadily. The study was silent on the factors that cause highway road traffic crashes in Kogi State. And which categories of road users that suffered most as road crash victims. This identified gap is filled by this present study as a contribution to knowledge.

An ealier study by Rallis (1990) cited in Agbeboh and Osarumwense (2013) found that for every 1,000,000 the number of passangers killed is per hour, 0.02 for buses, 0.2 for automobiles and for pedestrians but more for cyclists and motorcyclist.The study recommended that; despite the increasing number of road users using Kogi roads and the increasing occurrence of RTC in Kogi State, the problem can be reduce if every citizen of the state can strictly adhere to all the preventive measures; and calling on the Federal government of Nigeria to allocate funds for road maintenance.

2.4 Causes of Highway Road Traffic Crashes

Highway road crashes vary in degree from one place to another, so does the causes varies, as its happenings have some negative economic consequences to develop and developing African nations particularly Kaduna State and Nigeria in general. Thus, many different terms are commonly used to describe highway road traffic crashes. For instance, the U.S. Census Bureau uses the term motor vehicle Accidents (MVA), while the World Health Organization uses the term Road Traffic Injury (RTI), and Transport Canada uses the term “Motor Vehicle Traffic Collision” (MVTC). a b, (WHO) World report on traffic injury prevention” and (Global status report on road safety 2013).

Ogunsoya, (2002) posit that transportation has built cities over the years in some urban areas in Nigeria and also such infrastructure are gradually destroyed when crash occurs. These according to Filani (2002), cited in Usman et al.(2015) RTC is due to inadequate

and poorly maintained roads and facilities which has led to traffic congestion and parking problems are becoming acute in the cities and major highways. As a result, road vehicular crashes have been so frequent and common to everyday life. The main objective of their study was to "Assessed Road Traffic Crashes in Zaria Urban" Making reference to Samaru/PZ route in Zaria, Usman *et al,* (2015) blamed urbanization and its attendant's congestion for crashes. In the same vein, Aderamo (2002), admitted that urban environment are the most prone to motor traffic crashes because seventy-five per cent of the traffic crash took place in built up areas or cities.

The frequency of crashes occurrence on highway is due to the underlying factors of high concentration of vehicles in urban areas. Traffic mix has been described as the resultant flow conflict. Similarly, highway road traffic crashes appears to occur regularly at some flash points such as where there are sharp bends, pot holes and at bad section of the highways. At such points, over speeding drivers usually find it difficult to control their vehicles, which then results in fatal traffic crash especially at night (Atubi, 2009 cited in Usman, *et al.* 2015). Similarly, scholars like David, 1999, Akpoghomeh, 2012, and Ugbebor, (2014) are of the opinion that unsafe acts and unsafe conditions on road are responsible for most traffic deaths or injuries on highways. For instance, eating while crossing the road, making of phone call while driving or playing with other hand held devices and the use of over beamed headlight by opposite coming driver have resulted in several crashes.

While this is true, Rumer (1995) study using British and American crash data report suggested that 57% of RTC were due solely to driver factor in combination with 27% road infrastructure problem (Academy staff .http/www.ac.gov/3dhtm 2004). Kual *et al.* (2015) posited that HRTC has assumed a worsening and frightening effect on our

society and economy. Among all crashes, road traffic crashes claim the largest toll of human life and tend to be the most serious problem in the world. Apart from humanitarian crisis, traffic crashes and injuries developing countries incur an annual loss of sixty five billion to one hundred billion dollars annually. These costs include both loss of income and the burden place on families to care for their injured relatives (WHO, 2004). Usman, *et al.* (2015) noted that the Congestion of traffic within the Pz-Samaru road has to a large measure weakened the road network efficiency, leading to spoilt sections on the road. These have resulted to several crashes deaths and injuries among commuters. A critical analysis of this study suggest that the authors failed to acknowledge the inadequate and the poorly maintained road infrastructure facilities in Zaria Urban and its ad-journey towns.The authors were silent on the impact of ill-tempered behaviours of road users, the impatience of commercial vehicle drivers, private drivers, pedestrians, Bicycles/motor-cycle riders and Tricycle operators with out giving consideration to the growing urban population explosion, and the growth in commercial activities, as well as the impact of institutions surrounding Zaria urban. Hence the authors failed to indicate those perpetrators that cause highway road crashes in Zaria urban and other towns.This identified gaps were covered by this study as part of its contribution to knowledge.

The authors' findings indicated that while preventive measures like traffic wardens, military check points and FRSC were put in-place in certain locations, road traffic crashes was still on the increase. Usman, *et al.* (2015) study concluded that attention of all stake holders is required to ensure safe urban travel, with a recommendation that there should be channelization of road junctions, construction of speed bumps, strict enforcement of road traffic law officers and public awareness on road safety measures.

2.5 Consequences of Highway Road Traffic Crashes

According to the works of two psychologist (Tillman and Hobbs, 1949) cited in Ogwude (2010), observed that "a man drives as he lives," it is a factual assertion that, every other road users is a potential threat to other road users and to individual motorist. In the same vein, Aderamo (2002) observed that highway road crashes has become a significant cause of any disability and economic loss to persons that are killed or injured on highways. The large number of fast movement of persons and vehicle has created serious risks of vehicle crash injuries and damage arising from drivers' behavour while driving on highways can cause crash leading to death/ injury and sometimes with live threatening consequences of other road users (Ogwude, 2012).

WHO (2004), observed that throughout the world, over one million people are killed yearly, and over twenty three million persons are injured in road crashes. The figure may be frightening, considering the present gloomy picture of transport usage. When the behaviour of drivers on highways in developing countries one considered, road crash rate are 3- 5 times higher when compared to developed countries. For instance, highway road traffic death in Nigeria is still on the increase and constitutes a major public health problem, and ranked Nigeria second highest in the rate of highway road crashes among 193 countries of the world, (Oladipo and Breger, 1996). Although reckless drivers do not usually anticipate the consequences of their recklessness, drivers usually end up in road crashes and the attendant casualties. It is sad to say, that over ninety per cent of all road crashes in Nigeria, can be attributed to human behaviour, especially drivers of all types of vehicle on roads (Oyeyemi 2014).

Ogwude (2012) noted that the Nigerian Police (NP), and Federal Road Safety Corps (FRSC) identified most important causes of road crashes are categorize into Human, Mechanical and Environmental factors. The Human causes include recklessness and

negligence of driver, excessive speed, improper overtaking or cutting in, pedestrian's fault and driver's carelessness at junction among others. Mechanical causes include mechanical defects, defective lights, dazzling lights etc. while, environmental factors which have to do with road condition, include: skid or road surface defect, obstruction, other road defect, and level crossing among others. It has been observed that the major factors relate to drivers errors, his state of arousal and the level of drivers experience. The human factors arise from the errors of other road users, such as pedestrians, motorcyclist passengers and the wondering animals. Consequently, some of the mechanical causes can be traced to human behaviour as in failure to obey simple rules and regulations of traffic. Many vehicle owners and drivers do not take adequate care of their vehicles and so they become mechanically unfit and prone to crashing leading to severe devestitating social, economic and psychological consequences.

Almost every motorist, while not driving is aware of the role of human error in crash situations. Despite transport users awareness of these errors and the carnage on Nigeria roads, there seems to be a very slow change in their transport behaviour. Could it be that transport users' have come to accept the fact of road crashes as natural and tolerable consequences of a motorized society? While no actual crashes may occur at all conflict situations, cases of "near crashes are so frequent as to leave the impression that road usage is too demanding and stressful in Nigeria. Balogun, (2006) asserts that traffic laws provide a frame work for safe road use and lay down clear standards for drivers and rider's behaviours, which is why most developed countries place high premium of punishment on traffic violators that cause crashes on highways. The lack of enforcement of traffic rules in Nigeria probably explains why many motorist and pedestrian alike flaunt traffic rules. For example, lay walking is punishable by a fine in Canada, in Nigeria; there is no penalty for such. Moreover, traders are allowed to set up

their goods along the roads while drivers park their cars indiscriminately thus further congesting the roads at certain points in urban areas. Such scenario provides opportunity for street vendors. Consequently expose pedestrian and motorists alike to crashes, injuries and even death. Sometimes in the bid to circumvent traffic, motorist in their impatience overtake other vehicles wrongly and end up exacerbating the traffic and in some cases cause crashes.

However, Novoaa, *et al.* (2011), observed that the consequences of Traffic Crashes placed more burdens on victims than traffic offenders. For them, "Legislation alone without rigorous enforcement is unlikely to deter road users from engaging in risky behaviours while driving or crossing the highway as a pedestrian. Consequently, highway road safety managers have argued that the failure of drivers to comply with basic highway road safety legislation is the main cause of serious crashes as the consequences of such violation (EC, 2003) cited in Arosanyin *et al.*, 2012). It has been observed that punishment is meant to serve as deterrence to others who may have the intension to violate traffic laws that lead to traffic crashes, resulting to death of pedestrians and other road users (Novoaa, *et al.* 2011). Thus, for violators of the traffic laws, punishment may range from fine to incarceration. And where the police or court is involved, the financial toll and lost hours can have dire consequences for both victims' violation and their families.

In the attempt to have a better understanding of the impact of impulsiveness, anger and aggression on driver behaviour in Nigeria and how these variables can influence drivers' behaviour in causing road traffic crashes, Ogwude, 1986 cited in Ogwude, (2012) used variables like confrontation driving, Aggressive violation of Traffic Rules, Obstruction and inconvenience from divers among others. The author also measured

and tested these variables among three categories of drivers; these are Taxi Driver, Bus Driver and Lorry Driver and found that these variables were key factors that influenced driver behaviour in Nigeria, in the context of intercity travels.

It is important to note that while all emphasis was based on factors influencing driver behaviour on Nigeria roads, the author was silent also on the 'behaviour of other road users such as pedestrians, passengers, bicyclist, motorcyclist, and vehicle drivers can stress other road users which can affect their attention. Moreover the author failed to examine the impact of government policies and that of law enforcement agencies as well as other bodies like NURTW/Owners towards highway road traffic crashes reduction. This present study fills such a gap.

In another study, Ogwude (2012) identified the facets of driver's behaviour which contribute to incidence of road crashes. These factors derive from the impact of impulsiveness; anger and aggression of drivers were responsible for the causes of highway road traffic crashes (Ogwude, 2012). Consequently, he recommended the use of anger management therapy for drivers that cause traffic crash on roads be made mandatory and that transport education is required to influence behaviour and to encourage appropriate skills for taking risk in traffic situations. The research study concluded that: The use of anger management therapy and transport education to influence behavoiur and to encourage appropriate skills for taking risks in traffic situations.

However, it would have been helpful if the author had made a comparative study between two States in Nigeria to compare the factors that influences driver behaviour in causing highway road crashes. Secondly, Ogwude's studies could have used both quantitative and qualitative Methods/ Technique of data analysis in order to bring out

findings that is complimentary to capture wider views and opinions in reflecting real live situation not only on factors that influence the behaviour of “Bus, Lorry and Taxi driver” but also eliciting information and opinion of pedestrians, passengers, National Union of Road Transport Workers/ Owners (NURTW/NARTO) and Federal Road Safety Corps (FRSC). Thirdly, much has been debated on drivers’ knowledge of road safety awareness on factors that causes crashes particularly, anger, impulsiveness and aggression and whilst Ogwude was silent on government policies measures and its impact towards highway road crashes prevention. These identified gaps were covered by this study as part of its contribution to knowledge.

2.6 Theoretical Framework

For Analytical simplicity, domino theory of road accidents causation model is adopted in explaining road crashes and in analizing the sequences inter relationship between the vehicle, driver and crash which is centered on unsafe acts and unsafe conditions.

The origin of this theory began with the work of an early pioneer of accidents prevention and industrial safety, Herbert, W. Heinrich in the late 1920s who took interest on how to prevent large scale indusrial accident and injuries among plant managers, actuarial workers as well as vehicle drivers since each activities involved most complex process hence accident can occur in different situations due to various causations. Road crash can originate from human errors and operation sources such as a vehicle driver driving on highway. Most crashes leads to the loss of lives, injuries and loss of properties which are trace to unsafe acts and unsafe condition. He went on to write a book in which he introduced 10 “axioms of industrial safety; the first of which states: “The occurrences of an injury invariably result from a completed sequence of factor, one factor being the accident itself”.

Consequently, Heinrich study laid the foundation for his axioms of industrial safety and his theory of accidents causation, which came to be known as domino theory. Domino theory developed slowly overtime with the help of many scholars in various field such as; construction and building engineering, automobile engineering, road safety management among others in different parts of the world. The major contributors to domino theory of road "accidents" causation are Weaver 1971; Birds and Loftus, 1974; and Adams, (1976). In 1931, Herbert William Heinrich theory explains that crashes occur following a 5 steps domino sequence which is: Social environment and Ancestry, Fault of the person or carelessness, unsafe act and unsafe condition, Crashes and Injury. Perhaps the most significant contributors to the initial development of this theory are for example, Weaver, who in 1971 modified the original theory to propose that the last three dominos in the sequence are caused by management lack of supervision on workers. Bird and Loftus in 1974 modified domino theory and place the "role of management as a significant part of the theory" their new sequence included: Lack of control/management; Basic causes/origins (basic causes: 1-personnel factors, 2-job factors); Immediate causes/Symptoms (unsafe act and condition); Incident (the events which could cause harm to either people or property) and Loss (properties, people, process). According to the modified model of domino theory that signifies the role of management, the process of incidents begins by the lack of control by management. Planning, controlling, organizing, and leading by management are the factors that can prevent incidents to happen (Pejman, G.S. et al, 2013). However, in 1976, Adams changed the emphas of the first three Dominos to reflect organizational functions rather than person's features.

Heinrichs, Domino theory of accidents causation postulates that an accident is only one of a series of factors, each of which depends on a previous factor in the manner similar

to the toppling of dominoes when disrupted, if one occurs the others will too. That 88% of all highway road traffic crashes are caused by unsafe act of people, 10% by unsafe actions and 2% by act of God. Heinrich, (1931) came out with a 10 statement he called axiom of industrial safety. These axioms can be paraphrased as follows:

1. Injuries result from a completed series of factors, one of which is the accident itself.
2. An accident can occur only as an unsafe act by a person and or a physical or mechanical hazard.
3. Most crashes are the result of unsafe behaviour by people.
4. An un-useful act by a person or an unsafe condition does not always immediately result in a crash /injury.
5. The reason why people commit unsafe acts can serve as helpful guide in selecting corrective actions.
6. The severity of a crash is largely fortuitous, and the crash that caused it, is largely preventable.
7. The best crashes prevention techniques are analogous with the best quality and productivity techniques.
8. Management should assume responsibility for safety because it is in the best position to get results.
9. The supervisor is the key person in the prevention of industrial accident.
10. In addition to the direct cost of a crash for example, compensation, liability claims, medical loss, and hospital expenses, there are also hidden or indirect cost.

Heinrich believed that any accident prevention program that takes all 10 axioms into account is more likely to be effective than a program that leaves out one or more axioms.

Heinrich theory proposed a “five-factor road accidents sequence” in which each factor would actuate the next step lined up in a row like topping dominoes.Which is highlighted as follows:

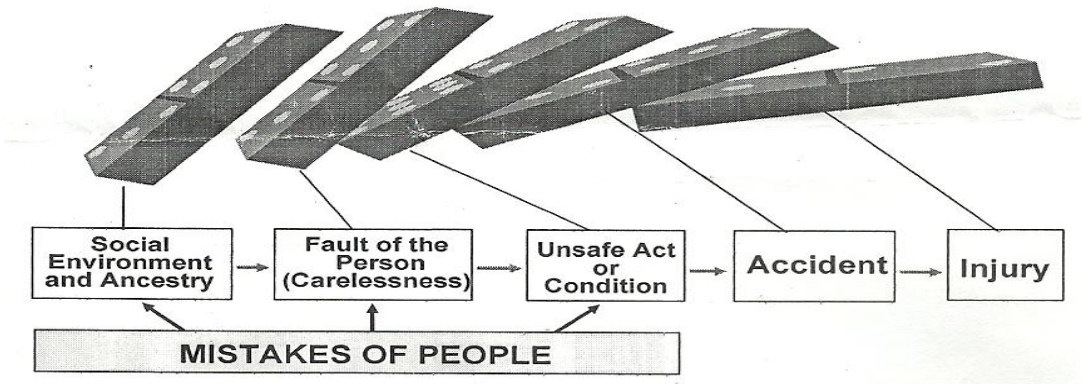


Figure: 2.1. Source: Heinrich, H.W. (1931) Industrial accidents prevention.

1. Social Environment and Ancestry;

2. Fault of the Person (Carelessness);

3. Unsafe Act or Condition; 4.Accident 5.Injury.

Dominoes theory of road accidents causation is use to explain Assessment of Highway Road Traffic Crashes in Kaduna State, and Nigeria in general. Ukoji,(2014) noted that the causes of highway road crashes are Human, Mechanical and Environmental factors, with human factor taking 90% of the blame. This includes signal acuteness, driver fatgue, and excessive speeding among others.While mechanical factors such as poor vehicle maintenance, poor light, un-road worthy vehicle etc.While environmental factors is as a result of fault arising from the condition of the road being used, such as slippery road surfaces, narrow and uneven road sides, weak bridges and culverts, with bad weather condition due to heavy severe temperature-either too cold or too hot among others. Some of these factors like recklessness, greed, and bad temper are either acquired by leaning or inherited from the social environment. In other words, bad driving culture are traits that can be raised, acquired and nutured contributing to fault of persons in an environment has been considered by Heinrich as capable of causing

highway road crashes. Domino theory is an ‘event based’, it explain that, for any road crashes to occur, it must be initiated by an act from road users following a particular sequence one step leads to the other step causing the crashes.

Therefore to prevent any highway crash from occurring, motorist and road users must not engage in “unsafe acts or conditions. Thus, in Nigeria situation, Heinrich domino theory of road accident causation explained that road users in Kaduna State have over time learned and acquired various social negative characteristics in their environment on motor vehicle operations. Through socialization in accordance with the diverse cultural norms, in the response and disobedience to Nigerian highway road safety laws/regulations, this has little or no value attach to road users mindset. Since some vehicle drivers have little concern for other road users safety. Domino theory explains that road traffic crashes occur on highway through persons fault and carelessness by carring out certain actions when condition are not safe which originates from the acquired bad habits by vehicle drivers, pedestrians and other road users that ply on highway.

Domino theory further posits that a driver singular fault as in (carelessness or mistake) while driving in most cases, a pedestrian carelessness in crossing on highway can cause road crashes. This act is likening to when one of the dominoes falls; it triggers the next one, and the next. But if road users, pedestrians or drivers could imbibe in good driving culture by obeying traffic rules and reglations on highway, it will prevent road crash. David, (1999) opines that unsafe acts and unsafe conditions are the most significant factors in road crashes causation, in which domino theory explain that when commercial, private or motor cycle drivers go against the rules and regulations of traffic by engaging in unsafe acts like over loading, use of mobile phones/ hand held

divises, excessive speed and dangerous overtaking on sharp bend on sleepliry on wet surface in most cases results to road crashes. Also Ata, and Aderinlewo, (2012) stated that the condition of the mind, unfit state of the body; such as tiredness, drunkenness which prevents the proper control of the muscles caused by drugs leads to errors of judgment in bad wheather condition results in highway road crashes.

Heinrich Domino theory further explained that traffic crashes on Kaduna State highway could be avoided and prevented if drivers and other road users control unsafe acts and unsafe conditions. He believed that the remedy to any type of accidnts is when all the 10 axioms of accidents prevention are taken into account and practice as a safety measure. Ogwude (2012) said that highway traffic crash occurs on roads when the impact of impulsiveness, anger and aggression during emergency period when drivers tries to return to normal situation by carring out an emergency manoeuvre as drivers faces very severe constraints (both temporal and dynamic) with regards to the options open to them by " breaking, accelerating or swerving" when a pedestrain suddenly enters carelessly on roads, or through reckless and negligence over taking of motor – cyclist driver. The in ability or attempt to find a solution to a problem at that emergency manoeuvre can cause road crash or head-on collision.

Injuries or deaths from any highway road crashes are the consequences suffered by road users for failure to apply safety caution that could prevent a crash. Domino theory is relevance to this study in that it perceived all road users, automobile manufacturers, road construction engineers and road safety managers are seen as a team player faced with one common problem which is vehicle road crashes. The strength of the theory is that, it has been able to emphasize on the factors, process and sequence contributing to crash occurrence on highways affecting all road users emanating from common errors

and mistakes. In Nigerian contexts, the uniqueness of domino theory has been able to establish that road traffic crashes is caused by human, mechanical and environmental factors by road users when rules and reglulations of traffic are contravene. And commercial vehicle drivers are mostly the offenders. The relevance of this theory to road traffic safety managers, law enforcement agencies and road users is that preventive measures are provided to control undesirable factors and to prevent mistakes/ errors, before crashes occurs Pejman, *et al* (2013).

Domino theory as a structural map has been one of the most understandable and widely acceptable accidents theories employ to control and prevent human errors and mistakes to mitigate road crashes on highways. The theory limitation or weaknesses in Nigeria situation is based on the fact that with all the 10 axiom of road safety provided for road safety managers and all road users, motorist and other road users have not been able to control the level of risk to prevent road crashes. Limitation of the theory is also found in the sequence causation process on Nigerian roads. Some of the crash coccurrence on our roads does not follow domino sequence before crash occurs. And that driver error due to unsafe acts and unsafe conditions doess not always result to crashes. Despite the limitation of the theory, it has been able to explained central factors that are unsafe acts and unsafe conditions as the immediate (direct) causes to cause highway road traffic crash. It also presents us with the ways to eliminate road crashes if road users will keep and carry out the basic safety laws, rules and regulations as indicated by domino theory, the theory is still useful in explaining the outcome of this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology that was used in conducting the research on Assessment of Highway Road Traffic Crashes in Kaduna State. Methodology embraces the specification of the steps and procedures that were employed by the researcher in collecting data. This chapter includes location of the study, research design, types and sources of data, sample and sampling technique, population of the study, methods of data collection, methods of data analysis and problems encountered in the field.

3.2 Research Design

In all researches, the nature of data govern the methods and the tools that may be appropriate for the research (Cagno, 1999).This study design employed methodological triangulation by combining survey questionnaire, participant and non-participant observation and, in-depth interview. Also, simple descriptive statistical tables and percentage was adopted in reporting the findings.

3.3 Location of the Study

This research was conducted in Kaduna State, Nigeria. The State is located in the North West geo-political zone in Northern Nigeria. It has a total population of six million, sixty six thousand, five hundred and sixty two persons (6,066,562) of both male, female adults and children that cut across 23 Local Governments Areas of the state according to 2006 Nigeria Census Report (NPC, 2007). Kaduna State shares border with Zamfara, Katsina, and Kano States to the North, Bauchi and Plateau State to East, Niger State to the West, Nasarawa and Federal Capital Territory (FCT) to the South

(www.nigeriagaleria.ur). The State occupies an area of approximately 48,473.3 square kilometers, and has three Senatorial Districts; Northern, Southern, and Central Senatorial Districts.The existing high way system within and around the Kaduna city is based on a grid pattern. Ahmadu Bello way, Independence way and Tafawa Balewa way form the main North-South components of a grid which is completed by Warf Road, Yakubu Gowon way, Market Road and Constitution round about as the main East-West links. While the North-West road starts from Kawo under the fly over bridge to Air-force Base, and Mando round about straight to Birnin-Gwari high way and links to the right, Mando junction round about to form Kaduna-Abuja western bye –pass through Kurmin- Mashi, Unguwan Sanusi, Tudun- Nupawa, Unguwan Muazu, Abuja junction and linking to Kaduna Polytechnic back to Sabon-Tasha, forming the South component.

Kaduna State was chosen as the study area because apart from being the former capital of Northern Nigeria, it is a centre for commercial activities as such has a large fleet of vehicular movement across the State, linking to other States in the North.

Indeed, it is the bridge between the Southern and the Northern parts of this country which makes traffic within the city very hectic thus making the state vulnerable to vehicular crashes.

3.4 Sources of Data

Data are pieces of empirical information the researcher designed to collects on a particular subject of inquiry (Gyong, 2011). In this study, the data were elicited from both primary and secondary sources .The primary data were generated directly from the respondents through questionnaires, and in-depth interview conducted with selected

key informants in addition to direct observation by the researcher. The secondary data were elicited from Official documents on road traffic crashes, Nigerian Police extracts and policies handbook.

3.5 Methods of Data Collection

In this study, the researcher employed both quantitative and qualitative methods of data collection. For quantitative data, the instrument for data collection were survey questionnaire which were administered to commercial bus drivers, passengers, members of National Union of Road Transport Workers, (NURTW) and National Association of Road Transport Owners, (NARTO) and private car owners in the study area.

For qualitative method of data collection, the selection of participants was purposive. A total of fourteen (14) key informants were purposively selected from the study population for the in-depth interview. Due to time constriant and termination of appointments by two key informants, only twelve (12) key informants were interviewed by the researcher which was done through a purposive sampling technique because of their in-depth knowledge about the phenomenon under investigation. The key informants include one (1) Nigerian Police Officer (NP), three (3) FRSC Officers, and one (1) KASTELEA Officer ie Deputy Director (DD) Kaduna State Ministry of Transport, and also five (5) staff Officials from Transport Unions, one (1) Chairman from Sabon-Gari LGA and one Secretary each from Kaduna North, Kaduna South, and Jamaa LGA was purposively selected from the three senatorial zones. One (1) presenter of OGA–Driver programme (A radio talk show on safe phiring) in addition two (2) private car owners (1 male, 1 female) from Urban and Rural LGAs were selected. To

enrich the data, the researcher designed interview guides as instruments, in line with the research objectives.

Non-participant observation method was used to observe certain issues in the motor parks such as passengers boarding of vehicles in motor parks with a view to knowing whether NURTW and NARTO members were committed to enforcing the required number of passengers stipulated by law as against over loading or know whether drivers complied with the use of passengers manifest register. The researcher observed private car drivers and commercial bus drivers plying two purposive selected highways for over-speeding in black spot locations like corner bend. The researcher observed that over speeding drivers approaching sharp bend corners did not drive slowly or apply breaks, which is disobedience to traffic laws, while mechanically deficient vehicles such as bad or no wipers, bad or no head lamps, and worn out tyres were equally observed. For the participant observation, a checklist was designed as an instrument in line with the objectives to guide the researcher to further observe how offenders are booked, how fines are paid and how vehicles impoundment were carried out by officers of FRSC Rs 1.1, Kaduna State Sector Command.

3.6 Population of Study

The population of this study consisted of adult of both sexes who were workers with the three (3) main Road Safety Management Agencies, Federal Road Safety Corps (FRSC), Kaduna State Traffic and Environmental Law Enforcemental Agency (KASTELEA), Presenter of a radio talk show Oga driver programme Kaduna State Media Corporation (KSMC) Capital Sound 90.9FM and Nigerian Police (NP) at study area. Also, the study selected respondents among Commercial Bus Drivers, Passengers, Private Car owners and staff of both National Union of Road Transport Workers and

National Association Road Transport Owners (NURTW / NARTO) in four (4) selected LGA of the twenty-three (23) local government area in Kaduna State. The four (4) purposively selected local government areas were Sabon-Gari LGA, Kaduna North LGA, Kaduna South LGA and Jamaa LGA, out of which four (4) Motor Parks were selected. These were Dadi Motor Park Kwangila Zaria, Makarfi Central Motor Park Kawo, Television Garage Motor Park and Kafanchan Main Motor Park.

The motor park study population were categorised into three (3) groups.These are Union Workers, Drivers and the Passengers. The population strength of 15,000 were distributed as follows: From the available records the union management of Dadi motor park, Kwangila fly over, Zaria indicated that there were 500 Union Workers who were divided into two (NURTW and NARTO). Similarly, the records indicated that there were 1,100 registered drivers in the park. The records further showed that there were on average of 1,500 passengers who boarded vehicles in the park on daily bases, making a population of 3,100. The researcher followed the same procedures to obtained available records from the other three (3) motor parks to get the study population as shown in Table 3.6.1 below:

Table 3.6.1: Distribution of Population of 3 Categories of Respondents from the Four (4) selected Motor Parks

Parks	Dadi Motor Park	Makarfi Central Motor Park	Television Garage Motor Park	Kafanchan Main Motor Park	No. of respondents
Union Workers	500	1,000	400	400	2,300
Drivers	1,000	3,500	1,200	700	6,400
Passenger	1,500	2,000	1,500	1,200	6,2oo
Total	3,100	6,500	3,100	2,300	15,000

Source: Field Survey, 2017

3.7 Sample and Sampling Techniques

In this study, the researcher employed the use of probability and non-probability sampling methods to obtain data from the respondents. For non-probability sampling, a purposive sampling technique was used to select four (4) local government areas. These are

1. Sabon-Gari L.G.A, Northern Senatorial Zone
2. Kaduna North L.G.A, Central Senatorial Zone
3. Kaduna South L.G.A, Central Senatorial Zone
4. Jamaa L.G.A, Southern Senatorial Zone

The purposive choice of these four L.G.A was based on the fact that, they were strategically located and served as connecting link with other local government areas in their road network to other States. Also, the road networks were noted for high movement of passengers, commercial and private vehicular transportation of goods and services coming and moving out, making Kaduna road corridor one of the highest carriers of vehicular traffics among all groups or class of people engaging in economic transport activities along these routes. From the four (4) L.G.A selected, the researcher employed purposive technique to select one (1) motor park each. Out of the several motor parks in Sabon-gari L.G.A, Dadi Motor Park in Kwangila under the flyover bridge was selected because of strategic location, and capacity to receive high flow of vehicle fleet of passengers traveling to State likes Sokoto, Zamfara, Katsina, Kano, Kebbi, Abuja, and Plateau among others. In Kaduna North L.G.A, Makarfi Central Motor Park, Kawo was selected from among otherseveral motor parks. Also, in Kaduna South L.G.A. Television garage Motor Park was selected among others. The reason for choosing these motor parks was because of their unique sizes and strategic locations and the fact that they control large fleet of vehicular movement of passengers to all

parts of Nigeria. For example, Television Garage Motor Park controls most vehicles travelling to the south-south and south-east geo-political zone while Kawo Park controls the Northern routes.

The fourth motor park is located in Kafanchan. It was selected among several others because it is strategically located in the centre of the town. The motor park controls vehicles traveling to Makurdi, Jos, Gombe, Adamawa, and Kaduna Township.

For Probability Sampling, disproportionate stratified sampling technique was employed in the research.

3.7.1 Determination of Sample Size for the Study

The sample size is calculated based on Yamane (1967) formula cited in Israel (2012). The formula is given as:

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

Where "n" is the sample size,

"N" is the population size,

"e" is the level of precision (±5%)

The total number of the 3 Categories of Respondents from the Four (4) selected Motor Parks according to the available records in (2016) is 15,000.

$$n = \frac{15,000}{1 + 15,000\ (0.05)^2}$$

$$n = \frac{15,000}{1 + 15,000\ (0.0025)}$$

$$n = \frac{15,000}{1 + 37.5}$$

$$n = \frac{15,000}{38.5}$$

$$n = 389.61 \sim 390$$

n = 390.

Based on the formula, the sample size for the study is 390 respondents which were rounded up to 400 respondents. Thus n = 400.

Questionnaire was therefore administered to respondents in the four (4) motor parks as follows:

Dadi Motor Park:

Total population is 3,100

$$\frac{3,100}{15,000} \times \frac{400}{1} = 83$$

Makarfi Central Motor Park Kawo:

Total population is 6,500

$$\frac{6,500}{15,000} \times \frac{400}{1} = 173$$

Television Garage Motor Park

Total population is 3,100

$$\frac{3,100}{15,000} \times \frac{400}{1} = 83$$

Kafanchan Main Motor Park

Total population is 2,300

$$\frac{2,300}{15,000} \times \frac{400}{1} = 61$$

Thus the overall sample size for the study is a summation of the various sample in each motor park.

83 from Dadi Motor Park

173 from Makarfi Central Motor Park

83 from Television Garage Motor Park

61 from Kafanchan Motor Park: The four (4) Motor Parks have a total sample size of 400 respondents.

Questionnaire was distributed based on each categories of population in each four (4) motor parks as follows:

Dadi Motor Park:

Total population is 3,100

Union workers: $\frac{500}{3,100} \times \frac{83}{1} = 13$

= 13 respondents

Drivers: $\frac{1,100}{3,100} \times \frac{83}{1} = 29$

= 29 respondents

Passengers: $\frac{1,500}{3,100} \times \frac{83}{1} = 41$

= 41 respondents

Makarfi Central Motor Park Kawo:

Total population is 6,500

Union workers: $\frac{1,000}{6,500} \times \frac{173}{1} = 27$

= 27 respondents

Drivers: $\frac{3,500}{6,500} \times \frac{173}{1} = 93$

= 93 respondents

Passengers: $\frac{2,000}{6,500} \times \frac{173}{1} = 53$

= 53 respondents

Television Garage Motor Park

Total population is 3,100

Union workers: $\frac{400}{3,100} \times \frac{83}{1} = 11$

= 11 respondents

Drivers: $\frac{1,200}{3,100} \times \frac{83}{1} = 32$

= 32 respondents

Passengers: $\frac{1,500}{3,100} \times \frac{83}{1} = 40$

= 40 respondents

Kafanchan Main Motor Park

Total population is 2,300

Union workers: $\frac{400}{2,300} \times \frac{61}{1} = 10$

= 11 respondents

Drivers: $\frac{700}{2,300} \times \frac{61}{1} = 19$

= 19 respondents

Passengers: $\frac{1,200}{2,300} \times \frac{61}{1} = 32$

= 32 respondents

Table 3.7.1: Sample Distribution of Four (4) Purposively Selected Motor Parks

Park	**Dadi**	**Makarfi**	**Television**	**Kafanchan**	**Total**
Union Workers	13	27	11	10	**61**
Drivers	29	93	32	19	**173**
Passengers	41	53	40	32	**166**
Total	**83**	**173**	**83**	**61**	**400**

Source: Field Survey, 2017

Thus, accidental or hap-hazard sampling was used to get respondents who were Passengers, Union Workers and Drivers. Questionnaires were self administered with the help of two (2) research assistants. This was only to respondents who were willing to spare their time in filling or answer questions from the questionnaires, especially the passengers. While respondents who could not understand English Language properly were helped by research assistants in reading and translating to such respondents in Hausa Language, and filling questionnaires for those who could not write.

Qualitative data used in this study was elicited through IDI made up of purposively selected fourteen (14) Key informants, but only twelve (12) were interviewed due to time constraints and engagement from the respondents.These were: 5 NURTW/NARTO officials, a Chairman long distance Taxi driver Sokoto unit Dadi Motor Park kwangila Zaria, 3 Secretaries representing National Union of Road Transport Workers and 2 National Association of Road Transport Owners from the 4 purposively selected motor parks. Also, one Deputy Superintended of police 2ic motor traffic metro Area command was interviewed, one Deputy Director Road Traffic Kaduna State Ministry of Tranport Kaduna North, 2 Deputies and one Route Commander of FRSC officers, one (1) Business Woman who is a car owner in Kafanchan main motor park and one (1) presenter of Oga Driver program were also interviewed.

3.8 Methods of Data Analysis

The researcher adopted three (3) methods from data collected which complemented each other. Thus, three methods of data analysis were used in this study; data collected from the questionnaire was fed into computer and analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. The information derived therein was analyzed

using descriptive statistical analysis through simple tables and percentages for easy understanding. For the in-depth interview, materials were transcribed and sorted out into various themes for analysis. Similarly, the observation that was carried out was re-written in prose format and analyzed contextually. Thereafter, both quantitative and qualitative data were synergized and triangulated which complemented the information gotten from the other two techniques.

3.9 Challenges Encountered in the Field

Time was the major problem faced by the researcher, as almost all the commercial vehicle drivers, Passengers, and Union Members in-charge of scouting and loading of passengers had little time to spare especially when passengers were completed. It took the researcher a period of 3 months to conduct interviews and administering of questionnaires, interviews were conducted with Union Chairmen and Secretaries of both (NURTW / NARTO). Also, two male research assistants were trained and used in administering of questionnaires especially those who could not read and write English Language. The long time it took the researcher to collect data from Passengers, Drivers and Union members implies expending huge amount of money and time was spent in logistics.While in Kafanchan, the researcher encountered social unrest when conducting the study. Other challenges were reluctance on the part of the respondents, particularly, union members to cooperate. Many of them pointed out that similar studies had been done in the past, never benefited or benefit from the out come. However, after a lot of persuasion, some of them eventually cooperated, but time was wasted. In spite of these challenges, the research was able to come up with enough data that can be considered valid and reliable in relation to issues raised in this study.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

This Chapter presents the analysis of data derived from the field survey. The chapter is sectionalized into five. The first section is on Socio-demographic attributes, the second focuses on issues relating to responses on the nature of highway road traffic crashes in Kaduna State, the third; to examine the causes of highway road traffic crashes by commercial vehicle drivers and other road users, the Fourth assesses the consequences of Highway Road Traffic Crashes in Kaduna State. The last Section dwells on Remedies that can prevent Highway Road traffic Crashes in Kaduna State.

Four Hundred Copies of Questionnaires (400) were administered to respondents in the study area. In all Three Hundred and Ninety- Five (395) Questionnaires were retrieved. Though the 395 questionnaires were representative enough to cover the population under investigation. Twelve (12) In- Depth Interviews were conducted, and also observation was carried out in purposive selected motor parks and major highway locations. Thus, analyses were based on the In-depth interviews and observation. Thereafter, both the Qualitative and Quantitative data were synergized and presented according to the objectives of the study.

4.2 Socio–demographic Attributes of Respondents

Socio-demographic data presented here include: Gender, Age, Educational qualification, Geo-political zone, Marital status, Ethnicity, Religious affiliation, Residence/town, Occupation, Motor Park and Income per month.

Table 4.2.1a: Socio-Demographic Characteristics of Respondents

Gender	**Passenger**				**NURTW**				**NARTO**				**TOTAL**	
	F		**%**		**F**		**%**		**F**		**%**		**F**	**%**
Male	98		25.0		123		31.0		104		26.0		325	83.0
Female	56		14.0		8		2.0		6		1.0		70	17.0
Total	**154**				**131**				**110**				**395**	**100.0**
Age	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
18 – 25 years	14	10	24	6.1	11	1	12	3.0	11	3	14	3.5	50	12.6
26 – 35 years	30	16	46	11.6	34	2	36	9.1	34	1	35	8.8	117	29.6
36 – 45 years	32	18	50	2.6	40	3	43	10.8	26	2	28	7.1	121	30.6
46 – and above	22	12	34	8.6	38	2	40	10.1	33	-	33	8.3	107	27.1
Total			**154**				**131**				**110**		**395**	**100.0**
Educational Qualification	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
HND/BSc or Higher Degree	30	17	47	11.8	20	2	22	5.5	16	2	18	4.6	87	22.0
NCE/ OND	23	16	39	9.8	24	2	26	6.5	13	2	15	3.7	80	20.2
Secondary	24	13	37	9.1	46	4	50	12.6	41	2	43	10.8	130	32.9
Primary	9	7	16	4.1	12	-	12	3.3	16	-	16	4.6	44	11.1
Quranic Education	7	1	8	2.3	10	-	10	2.5	9	-	9	2.3	28	7.1
No formal Education	5	17	22	1.7	11	-	11	2.7	9	-	9	2.3	27	6.8
Total			**154**				**131**				**110**		**395**	**100.0**
Geo – Political Zone	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
North – Central	20	10	30	7.5	30	1	31	7.8	20	1	21	5.3	82	20 .7
North – East	10	3	13	3.2	10	2	12	3.0	10	-	10	2.5	35	8.7
North – West	43	27	70	17.7	68	5	73	18.5	55	3	58	14.6	201	50.1
South – East	12	6	18	4.6	4	-	4	1.0	6	-	6	1.5	28	7.1
South – South	8	9	17	4.0	3	-	3	0.7	4	1	5	1.3	25	6.3
South – West	5	1	6	1.5	8	-	8	2.0	9	1	10	2.5	24	6.0
Total			**154**				**131**				**110**		**395**	**100.0**
Marital Status	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
Single	24	15	39	9.9	28	2	30	7.5	22	3	25	6.3	94	23.7
Married	55	21	76	19.2	64	4	68	17.2	50	3	53	13.4	194	50.0
Separated	10	9	19	4.8	9	1	10	2.5	13	-	13	3.2	42	10.6
Divorced	5	4	9	2.3	14	1	15	3.7	10	-	10	2.5	34	8.6
Widowed / Widower	4	7	11	2.8	8	-	8	2.0	9	-	9	2.2	28	7.0
Total			**154**				**131**				**110**		**395**	**100.0**
Ethnic Group	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
Hausa/ Fulani	45	20	65	16.4	60	3	63	16.0	57	1	58	14.6	186	47.0
Igbo	12	6	18	4.5	10	1	11	2.5	4	1	5	1.3	34	8.6
Yoruba	12	8	20	5.1	8	-	8	2.0	9	2	11	2.7	39	9.8
Others	29	22	51	12.9	45	4	49	12.4	34	2	36	9.1	136	34.4
Total			**154**				**131**				**110**		**395**	**100.0**

Table 4.2.1b: Socio-Demographic Characteristics of Respondents

Religious Affiliations	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
Christianity	44	20	64	16.2	50	-	50	11.1	41	1	42	10.6	156	39.5
Islam	47	36	83	21.7	58	-	58	31.1	50	1	51	13.2	192	48.6
Traditionalist	3	-	3	1.0	7	3	10	2.5	6	2	8	2.0	21	5.3
Others	4	-	4	1.0	8	5	13	3.2	7	2	9	2.3	26	6.5
Total			**154**				**131**				**110**		**395**	**100.0**
Residence/Town	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
Kaduna metropolis	56	27	83	21.0	72	1	73	18.4	55	4	59	14.9	215	54.4
Zaria Town	22	12	34	8.6	27	3	30	7.5	22	2	24	6.0	88	22.2
Kafanchan Town	12	7	19	4.8	14	2	16	4.0	13	-	13	3.2	48	12.2
Other States / Towns	8	10	18	4.5	10	2	12	3.0	14	-	14	3.5	44	11.1
Total			**154**				**131**				**110**		**395**	**100.0**
Occupation	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
NURTW	-	-	-		73	8	81	62.0	-	-	-	-	81	33.6
NARTO	-	-	-		-	-	-	-	40	6	46	42.0	46	19.1
Driver	-	-	-		50	-	50	38.2	64	-	64	58.0	114	47.3
Total					**123**		**131**				**110**		241	**100.0**
Distribution of Respondents by Motor Parks	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
Dadi motor park kwangila	30	17	47	11.8	27	3	30	7.6	24	2	26	6.0	101	25.5
Makarfi motor park kawo	33	19	52	14.8	59	2	61	15.4	7	3	10	2.5	123	31.1
Television garage motor park	11	5	16	4.0	19	-	19	4.8	12	-	12	3.0	47	11.8
Kafanchan main motor park	15	7	22	5.5	15	-	15	3.7	20	-	20	5.0	57	14.4
Mando Lagos garage MP	9	8	17	4.3	3	3	6	1.5	43	1	44	11.1	67	16.9
Total			**154**				**131**				**110**		**395**	**100.0**
Income Per Month	M	F	Total	%	M	F	Total	%	M	F	Total	%	F	%
₦1,000 – ₦ 10,000	12	7	19	4.8	14	-	14	3.5	8	2	10	2.5	43	10.8
₦ 11,000 – ₦ 15,000	14	4	18	4.5	20	-	20	5.0	13	1	14	3.5	52	13.2
₦ 16,000 – ₦ 20,000	12	3	15	4.3	18	1	19	3.5	12	-	12	3.0	48	12.1
₦ 21,000 – ₦ 25,000	16	6	22	5.5	14	2	16	3.5	20	1	21	5.3	59	14.9
₦ 26,000 – ₦ 30,000	20	10	30	7.5	22	2	24	5.6	12	-	12	3.0	66	16.7
₦ 31,000 and above	24	26	50	12.6	35	3	38	9.6	40	2	42	10.6	130	32.9
Total			**154**				**131**				**110**		**395**	**100.0**

Source: Field Survey, 2017

Table 4.2.1 shows the general findings on socio-demographic data of respondents, a gender distribution indicates that out of the 395 respondents there were 325(82.3%) males and 70(17.7%) females.The disproportionate number of male respondents can be attributed to the fact that only very women are members of both transport unions. Most of the females were passengers while most of the male respondents were members of the NURTW/NARTO officials. More so in the North, such occupation as park workers is the preserve of the male gender. The findings therefore suggest that majority of the

respondents were members of NURTW/NARTO taking into cognizance that the questionnaires were administered in motor parks.

The Age distribution of respondents' shows that the majority of the passengers 32(8.1%) were between the ages of 36 – 45 years while adults from 46 years and above constitute 38 (10.0%) of NURTW. For the NARTO, majority were between 46years and above as indicated by 33 (8.4%) of the respondents.On Education, most respondents have formal education with majority of respondents having tertiary education with 47 (11.6%) degree holders and 39 (9.8%) had NCE /OND. However, more of the park workers had Secondary education as indicated by 50 (12.6%) NURTW and 43(10.8%) NARTO respectively.The findings suggest that majority of the respondents have acquired formal education to understand the topic under study.

Geo-political Zones of respondents shows that the highest number 201(50.1%) were from North-West, followed by 82(21.0%) were from North-Central zone and the least the number of respondents 24(6.3%) were from South-West Geo-political zone. The findings suggest that majority the respondents were from the North-West Geo-political zone in the study area.

Marital Status of the respondents shows that 197(50.0%) were married followed by 94(24%) were single, and the least 28(7.0%) of the respondents were widows / widowers. The findings suggest that majority the respondents were passengers and union members who were married in the study area. On Ethnic Group, the responses of the respondents show that 186(47.0%) were Hausa / Fulani's, followed by 136(34.4%) were of other ethnic nationalities, and the least 34(8.3%) were of Igbo ethnic nationality. The findings suggest that majority of the respondents were of the Hausa / Fulani ethnic nationality.

On Religious affiliation, the responses of respondent's shows that 192(49.0%) were Muslims followed by 156 (40.0%) who were Christians and the least 21(5.3%), of the respondents were traditionalists. The findings suggest that Muslims were in majority, followed by Christians. It can be concluded that respondents of different ethnic affiliation were involved in the research in the study area.

The Respondents by Residence / Town shows that 215(54.4%) were resident in Kaduna metropolitan area followed by 88(22.2%) who were resident in Zaria town and the least 44(11.1%), of the residents of other States and towns in Nigeria. The findings suggest that the majority of the respondents resided in Kaduna metropolis.

On Occupation, the responses of the respondents show that 114(47.3%) were commercial drivers followed by 81 (33.6%) were national union of road transport workers, the least 46 (19.1%), were members of national association of road transport owners (NURTW/NARTO). The findings suggest that the majority of the respondents were commercial drivers in the study motor parks. While the passengers did not constitute as occupation, hence were left out. The respondents by Motor Park shows that 123(31.1%) were members of national union of road transport workers (NURTW) and passengers in Makarfi central Motor park kawo, followed by 101(26%) who were respondents in Dadi Motor park Kwangila Zaria, and the least 47(12.0%) were respondents in Television Garage Motor Park. The findings suggest that the majority of the respondents were passengers, Drivers and Union members that operate or boarded vehicles in Makarfi central Motor Park kawo. On Income Per-month, the responses show the respondents that earned the highest income i.e. #31,000 naira and above, were 50(13.0%) passengers, followed by NARTO 42(11.0%) and the least 38 (10.0%) who were NURTW members.

4.3 The Nature of highway road traffic crashes in Kaduna State

This Section examines the respondents' views on the nature of highway road traffic crashes in Kaduna State. The respondents were first asked about their years of driving experiences. See Table 4.3.1 for detail.

Table 4.3.1: **Views of Respondents on Years of Driving Experience**

Number of years in driving	NURTW		NARTO		Total	
	F	%	F	%	F	%
1 yr – 9 years	12	9.2	7	6.4	19	8.0
10 yrs – 15 years	8	6.1	13	12.0	21	8.0
16 yrs – 20 years	15	11.5	11	10.0	26	10.8
21 yrs – 25 years	47	36.0	39	35.5	86	36.1
26 yrs – 30 years	8	6.1	10	9.1	18	8.0
31 years and above	41	31.1	30	27.0	71	29.0
Total	**131**	**100**	**110**	**100**	**241**	**100.0**

Source: Field Survey, 2017

Table 4.3.1 shows that the highest number 47 (36.0%) members of the national union of road transport workers (NURTW) had 21–25years driving experience with NARTO 39 (35.5%), followed by 41 (31.1%) those with 31years and above driving experience. The findings suggest that the question was not applicable to the passengers, hence they did not respond. Therefore, it can be concluded that majority of the respondents were drivers with 21 -25 years driving experience. The implication of this is that commercial drivers with long years in driving have more experience, careful and more likely not to involved in a road crash than commercial than young in experies drivers that most likely to involve in highway traffic crashes in the study area.

Respondents were asked about which road register more crashes.While admitting that crash occur on all roads, however Kaduna – Abuja express way superceeds others. See Table 4.3.2 below for details.

Table 4.3.2 Views of Resondents on Where Highway Road Crashes Occur

Location where HRTC frequently occur	Passenger F	%	NURTW F	%	NARTO F	%	Total F	%
Zaria–Kano express way	17	4.3	13	3.3	11	2.7	41	10.3
Zaria – Jos Highway	19	4.8	20	5.1	14	3.5	53	13.4
Zaria – Kaduna express way	26	6.5	27	6.8	24	6.1	77	19.5
Kaduna – Abuja express way	37	9.4	39	9.8	30	7.5	106	26.8
Kafanchan – Jos High way	11	2.7	5	1.3	5	1.3	21	5.3
Zaria – Sokoto High way	9	2.3	4	1.0	4	1.0	17	4.3
Kaduna – Brinin-Gwari Highway	13	3.2	10	2.5	8	2.0	31	7.8
Saminaka – Jos Highway	10	2.5	5	1.3	5	1.3	20	5.1
Kaduna – Kafanchan Highway	12	3.0	8	2.0	9	2.3	29	7.3
Total	**154**		**131**		**110**		**395**	**100.0**

Source: Field Survey, 2017

Table 4.3.2 shows that Kaduna – Abuja express way witnessed the highest road crashes as indicated by majority106 (27%) of the respondents; followed by Zaria – Kaduna express way 77(20%), while Zaria—Jos highway have 53(13.4%).

This view was supported by an IDI report where a presenter of Oga Driver program Kaduna State Media Corporation Capital Sound 90.9Fm said:

> Kaduna--Abuja and Zaria--Kaduna expressway have high crash occurrence, due to the high vehicular flow of private, commercial vehicles, and articulated vehicles/trucks along this routes on daily basis struggling for space. By disregarding traffic rules and regulations in over speeding, dangerous overtaking and the use of cell phones, resulting in frequent occurrence of vehicles crashes on this routes.

This view was corroborated by an observation made on private and commercial vehicle drivers speed limit compliance along Kaduna—Abuja, and Zaria—Kaduna express way covertly in strategic bending corner location with clear view of commuters as indicated

above. These findings therefore suggest that most of the highway traffic crashes occur more frequently on Kaduna – Abuja and Zaria – Kaduna express ways were due to daily high flow vehicles, particularly among commercial drivers who are in a hurry to make profit.While Zaria – Sokoto highway witnessed the least 17(4.3%) of road crashes.

This view was corroborated by an IDI report where a Deputy Route Commander (DRC) a staff officer FRSC in the intelligent unit in Makarfi said:

> There is a gradual decline of road traffic crash along Zaria-- Sokoto highway. This is because heavy duty vehicles (HDV) ply this route more than smaller Cars like Golf and Sharon that are mostly involved in this crashes. The other reason is the presence of FRSC officials on highway checking and prosecuting those found wanting in traffic violation.

On the contrary, the IDI conducted with a Deputy Superintendent of Police (DSP) 2ic Motor Traffic Metro Area C Police Command said:

> The frequent occurrence of highway road crashes along Zaria—Kano expressway and Zaria – Jos highway is on a down ward trend. However, the crash witnessed is due to dangerous over taking of drivers with small cars like Golf on one lane like Zaria – Jos highway. While crashes on Zaria – Kano expressway have a combination of many vehicles like Sharon, Trailers and Buses.

Views of respondents were sought about the types of vehicles that were usually

involved in highway traffic road crash in Kaduna State.

Table 4.3.3: Views of Respondents on Types of Vehicle mostly involved in Highway Road Traffic Crash

Types of vehicle drivers mostly involved	Passenger		NURTW		NARTO		Total	
	F	%	F	%	F	%	F	%
Commercial – commercial vehicles drivers	30	7.5	40	10.2	30	7.5	100	25.3
Commercial vehicle – Private vehicles drivers	28	7.0	30	7.5	28	7.0	86	22.0
Commercial vehicle drivers – Pedestrians on roads	18	4.6	10	2.5	11	2.7	39	9.8
Private car drivers Motor–cycle drivers	22	5.5	17	4.3	17	4.3	56	14.1
Commercial Vehicle drivers – Motor cycle drivers	15	3.8	4	1.0	9	2.3	28	7.1
Single vehicle on their own	20	5.0	13	3.2	15	3.8	48	12.2
Multiple vehicles drivers	21	5.3	17	4.3	18	4.6	56	14.2
Total	154		131		110		395	100.0

Source: Field Survey, 2017

Table 4.3.3 shows variations in responses by drivers, passengers and union members on the kind of vehicles involved in highway road traffic crashes. The Table shows that the highest number 100(25.3%) of the respondents indicated crashes most often involved commercial -- commercial vehicles drivers followed by 86(22%) of commercial vehicle -- private cars drivers and the least number 28 (7.1%) were commercial vehicle – motorcycle drivers.

This view was corroborated by an IDI report where a presenter of Oga driver radio talk program capital sound 90.9 fm said:

> All kind of vehicles drivers are involved in traffic crash on highway, be it motorcycle, private cars, heavy duty/ articulated vehicles or bi-cycles. However, commercial vehicles – commercial vehicles drivers were mostly involved because these drivers want to make many trips like (2-3) times from Kaduna to Lokoja or Kaduna to Abuja, for this reason they over speed and end up in highway road traffic crash.

On the contrary, this view was not supported by an IDI report where a secretary NURTW Makarfi Central motor park kawo, when he said:

> I must admit that all kind of vehicles are involved in road traffic crash on a daily bases, but the ones mostly involved are tankers/trailers, Buses and private cars. The reason is that these heavy duty vehicles engage in over loading, while private car drivers and Buses indulge in excessive speeding, leading to road crashes. Their actions are clearly a violation to traffic rules/ regulations.

Similarly, the above view was supported in an observation report where it was observed that Tankers, Trailers and Articulated heavy duty vehicles seriously involved in over loading and end in a road crash when plying on highways. However, with regards to over loading of passengers by commercial vehicle drivers in motor parks, the findings shows that union members were not involved in over loading of passengers and luggage inside motor parks.

Respondents were asked on the number of crash occurrences between 2011-2015 most of respondents were of the opinion that drivers operating along their route had at one time or the other been involved in highway road crash. However, they could not ascertain the total number of times drivers were involved in the crashes within that period of 2011—2015. However, the following records obtained from the Nigerian Police Motor Traffic Metro Area C Police Command (2015) shows the total number of highway road traffic crash occurrence between 2011 and 2015 Kaduna States during the study period.

Table 4.3.4: Trend of Highway Road Traffic Crashes between 2011 and 2015 in Kaduna State

Year of Crash	Total number of cases	Effect of Crash		
		Fatal	Serious	Minor
2011	735	621	103	11
2012	721	599	76	46
2013	720	619	91	10
2014	572	176	256	140
2015	524	303	121	100
Total	3,272	2,185	647	207

Source: NP Motor Traffic Metro Area C Police Command Kaduna State (2015).

Table 4.3.4 shows that Kaduna State had 3,272 highway road traffic crash occurrences, with 2,318 fatal road crashes cases, while 647 cases were serious and 207 cases were minor. However, year to year record shows a decreasing trend of crashes on highways in the study area, which reflects the campaign efforts of the Nigerian Police (NP) and Federal Road Safety Corps (FRSC) Rs 1.1 sector command and other Law Enforcement Agencies toward road traffic crash reduction. In terms of fatalities and serious crashes there seems to be fluactuating rise and fall of crashes with fatalities increasing after 2014 when there was a sharp drop, the lowest cases of 176.

For severe cases of crashes there has been a consistent rise which peaked in the year 2014 and there after ditched to 121. A similar increase was recorded for the same 2014 for minor crashes which peaked at 140 but reduce in 2015.

From the stament above, it is pertinent to note that the Probability of reporting Fatal and Serious Crashes by road safety agencies in Kaduna State has their implication, in that these indices are are likely to be exaggerated due to gross under reporting of many minor cases which would have increased the total number of crashes and by extension reduce the result of the calculated indices. Therefor, there is need for collaboration among all road safety agencies on information, road crash data gathering and reporting to avoid under or over reporting of road crashes, to inhance effective road safety policy inplimentation in Kaduna State, and Nigeria in general.

On how road traffic crashes usually occur, most of the respondents were of the opinion that they have witnessed different types of vehicle crash collision between commercial, private, motorcycle and articulated vehicles. However, majority of the Passengers and members of NURTW / NARTO where of the opinion that headlong -- head –on collision was more common on single lanes, while Rear-end collision and Multiple

vehicle collision were more common on express or dual carriage way due to excessive speeding and tail getting of private/ commercial drivers on Kaduna highway.

On the contrary, the above view was not supported by an IDI report where a Deputy Route Commander FRSC staff officer on rescue Rs1.1 said:

> I have experience several road crashes on Kaduna highway before and during operations. However, multiple and single/lone crash occur on Kaduna-Abuja route due to top speeding resulting to lost of control and vehicle somersaulting.

Similarly, this view was corroborated by an IDI report where a Deputy Director Road Traffic Kaduna State Ministry of Transport said:

> There are several highway road traffic crashes; sometimes it's a lone crash that is drivers on their own when on high speed. They veer or skid off, this apply to all vehicles. Not with standing, common crashes are usually Head-long -- Head-on collision especially on Kaduna—Kachia, kafanchan-Jos and Birnin Gwari-Kontogora highway where there is no media separator with commercial vehicles drivers mostly involved.

Respondents were further asked about the ages of those who were the drivers of commercial vehicle drivers that ply on highways. The passengers were of the opinion that the underage drivers below 18 years were drivers that ply more on highway. Members of NURTW / NARTO had a contrary opinion. For them young drivers of the age category 18-45 years were mostly plying the high / express way followed by drivers of 46 years and above.

This view was further supported by an IDI report where a presenter of Oga driver radio talk show program Kaduna State Media Corporation Capital Sound 90.9Fm said:

> All categories of drivers drive on highways. But young adult drivers of 18- 45years are mostly involved in traffic crash, for them, they believe that nothing is at stake. Unlike the elderly drivers who have family or business to take care of. And at such, the adult drivers always drive with caution to avoid road traffic crash.

A clarification was made when one of the key informants, Secretary of the NURTW Makarfi Central Motor Park Kawo said:

> Drivers of all age bracket that ply Kaduna roads are involved in traffic crash, but to me the under aged are only involved in driving private cars, of which most of them are children of the rich. While the young and the elderly drivers indulged in all sort of things like taking of alcohol and drugs before driving. In fact, I don't see the difference in their behaviour

Views of respondents were sought on the effects of highway road traffic crash on road users' in Kaduna State.

Table 4.3.5: Views of Respondents on the Effects of HRTC on all Road users

Effects on victims of H RTC	Passenger F	%	NURTW F	%	NARTO F	%	Total F	%
Economic effects	17	4.3	19	4.8	8	2.0	44	11.1
Social effects	10	2.5	21	5.3	11	2.7	42	10.6
Psychological effects	9	2.2	15	3.8	8	2.0	32	8.1
Economic and Social effects	83	21.0	34	8.6	53	13.4	170	43.0
Social and Psychological "	21	5.3	33	8.4	25	6.3	79	20.0
All of the above	9	2.2	7	1.7	4	1.0	20	5.1
Crashes have no effect	5	1.3	2	0.4	1	0.3	8	2.0
Total	**154**		**131**		**110**		**395**	**100.0**

Source: Field Survey, 2017

Table4.3.5. the table revealed majority of the respondents, most of who were 83(21.0%) passengers, 53(13.4%) NARTO and NURTW 33(8.6%) were of the view that road users were affected economically and socially after fatal crashes having severe impact on themselves and their dependents, followed by 79(20.0%) of all the respondents who were NURTW / NARTO and the passengers were of the view that road users suffered social and psychological effects.While the least 8(2.0%) of the respondents were of the view that highway traffic crashes has no effects on road users after crashes.

This view was supported by an IDI report where a (DSP) Deputy Superintendent of Police Motor Traffic Metro Area C Police command said:

> Yes of cause, in any fatal highway road crashes we do have economic and social effects. The worst of all is the loss of lives and property, while those victims that are lucky to survive, some may no longer have the capacity to take care of their families which leads to psychological traumas.

Similarly, this view was corroborated by an IDI report where a presenter of Oga driver radio talk show program Kaduna State media corporation capital sound 90.9Fm said:

> Certainly during any fatal or serious highway road crashes, road users were affected. Such as pedestrian working along the road, or wanting to cross. The simple principle is to; look left, right and left again before crossing. Failure of this rule, has led many persons being knocked down. However passengers are always higher in number. Both passengers and drivers suffer the same effects, some die while those that survive may be in-capacitated for life, there by being unable to take care of their family, and some victims may not return to active working condition again.

The findings therefore suggest that Passengers, Drivers and Union Members suffered economic, social and psychological effects in any fatal road traffic crashes in the study area.

Views of respondents were sought on who should be held responsible as perpetrators of highway road traffic crashes resulting from traffic violations.

Table 4.3.6: Views of respondents on who should be held responsible for crashes in Kaduna

Who should be held responsible as perpetrators of road crash	Passenger		NURTW		NARTO		Total	
	F	%	F	%	F	%	F	%
commercial vehicle drivers	78	19.7	45	11.3	30	7.5	153	38.7
private car drivers	18	4.6	21	5.3	23	5.8	62	16.2
Kaduna State government vehicle drivers only	14	3.5	21	5.3	20	5.1	55	13.9
State and federal government(blamed for bad roads particularly pot holes)	12	3.0	20	5.1	13	3.3	45	11.3
Pedestrians fault and carelessness on road	7	1.7	5	1.3	4	1.4	16	4.1
Road safety official fault(road blocks)	7	1.7	6	1.6	6	1.5	19	4.8
Passengers causioning drivers in politely	5	1.3	4	1.0	3	0.7	12	3.0
motorcyclist drivers recklessness	8	2.0	5	1.3	7	1.7	20	5.1
Herds men carelessness on road	5	1.3	4	1.0	4	1.4	13	3.3
Total	**154**		**131**		**110**		**395**	**100.0**

Source: Field Survey, 2017

Table 4.3.6 the table revealed that the highest number 78(20%) of the Passengers, followed by 45 (11.3%) NURTW and the least 30(8.0%) NARTO were of the view that commercial vehicle drivers only be held responsible for causing crashes on highways.This view was corroborated by an IDI report where a secretary NURTW Television Garage motor park Kakuri Kaduna south LGA said:

> Frankly speaking, road users particularly commercial vehicle drivers should be held responsible for road crash, while the state/ federal government should be blamed too. Why so? This is because the government has left the road in a very bad shape, causing a lot of crashes. Commercial vehicle drivers are always in a hurry, they engage in over speeding, dangerous over taking/cutting inn, overloading leading to all kinds of crashes in cars like golf and Sharon. That is why the state/ federal government and commercial drivers should be held responsible.

On the contrary, the above view was not supported by IDI report where a Deputy Route Commander (DRC) FRSC staff officer in the intelligent unit in Makarfi said:

> I don't think that the state government should be held responsible for road crashes on highways, because the state government have little resources in her disposal to fixed many problems. Therefore, cannot be liable for road crash. For instance we have education sector, health, transport, and Water resource sector etc. Categorically, commercial vehicle drivers should be held responsible for any traffic violation and road crash that occur on highway.

A clarification was made when one of the key informants, Secretary of the NURTW Taxi long journey Makarfi central motor park Kawo said:

> For me commercial vehicle drivers and the passengers should be blamed for most highway road crash. A situation where passengers praise drivers for their expertise, this rise the driver's ego to over-speed and sometimes passengers who were late on appointment or were in a hurry encourage drivers to over speed to enable them catch up such appointments. Most often road safety law enforcement officials i.e. FRSC, K.A.S.T.E.L.E.A and the NP engaged on illegal check points or road blocks; this often results in fatal crashes knowing that most of the roads are bad.

These findings surggest that commercial vehicle drivers were mostly the perpetrators responsible for that causes of highway road traffic crashes in the study area, followed by private car drivers.

Views of respondents were sought on categories road users mostly involved in highway road traffic crash in Kaduna State, as shown on Table 4.3.7:

Table 4.3.7: Views of respondents on road users mostly involved in highway road traffic crashes in Kaduna State

Category of road users involved In HRTC	Passenger		NURTW		NARTO		Total	
	F	%	F	%	F	%	F	%
Commercial vehicle drivers	71	17.8	46	11.6	30	7.5	147	37.2
Private car drivers	35	8.8	23	5.8	33	8.3	91	23.0
Tri-cycle /motor cycle drivers	9	2.2	14	3.5	12	3.0	35	8.8
Pedestrians	12	3.1	21	5.3	13	3.3	46	11.6
Military/Para-military officer	5	1.3	9	2.2	7	1.8	21	5.3
Political elites and their aids	7	1.7	6	1.5	3	0.8	16	4.0
Commercial bank bullion drivers	3	0.7	2	0.5	5	1.2	10	2.5
Tanker/trailer drivers	9	2.2	6	1.5	4	1.0	19	4.8
Herdsmen	3	0.7	4	1.0	3	0.8	10	2.5
Total	154		131		110		395	100.0

Source: Field Survey, 2017

Table 4.3.7 the Table indicated that highest number 147(37.2) Passengers, NURTW and NARTO were of the opinion that commercial vehicle drivers were mostly involved in highway road crashes. Followed by 91(23.0%) of private car drivers, while the least number 10(2.5%) of the respondents believed that the commercial bank bullion drivers and the herdsmen on highways were involved in crashes.

This view was supported by an IDI report where a (DRC) deputy route commander staff officer FRSC Rs1.1 on rescue said:

> I know that road users perpetuates in all manners of traffic violations that leads to road crashes on highway,the commercial vehicle drivers, private car drivers and commercial Bus fleet drivers. However, commercial vehicle drivers are more in number because, they ply the roads on daily basis and therefore were involved and perpetuated in traffic violations that caused most of these road crashes in Kaduna state.

Similarly, this view was corroborated by IDI report where a presenter of Oga driver radio talk program Kaduna State Media Corporation Capital Sound 90.9Fm he said:

> You might wonder what happens on highway. Most of the elderly commercial drivers misbehave and perpetuated in all sort of traffic violations which ordinarily, young drivers were supposed to indulge in traffic violation which is not peculiar to commercial drivers alone, but also to private car drivers. In overall analysis, 40% of traffic crashes are being perpetuated by elderly drivers, while 60% of road traffic crashes are perpetuated by both private and commercial vehicle young drivers.

An in-depth interview was conducted with purposively selected key informant to seek their views on whether they know of any big man or woman i.e. (those of the upper class) arrested for any traffic violation that cause crash on highway? However, those interviewed expressed the following opinions.

For instance, in an IDI the secretary NURTW Taxi long journey television garage motor park kakuri Kaduna south said:

> I have never witness any arrest of any big man or woman by FRSC or the NP for traffic violations that had caused road crash. All I know is that this big men or women drive big cars with tinted glasses are never stopped on highway talk-less of them being arrested for causing crash.

> What I know is our law enforcement officers are only after the common commercial vehicle drivers at any slightest traffic violation on highway.

Similarly, this view was supported by IDI where a Deputy Director Road Traffic (KASTELEA) Kaduna State ministry of transport said:

> You can hardly see the people of the upper class violating rules and regulation of traffic. These big men or women always obey traffic laws and were careful when driving on highway. However, very minor violation cannot be rule out of traffic crashes cause by those of the upper class. But I can assure you that most commercial vehicle drivers were always arrested for causing road traffic crash on highway.

On the contrary, this view was opposed by an IDI report where a (DRC) staff officer FRSC Rs 1.1 on rescue said:

> The FRSC does not look at class when traffic offences are committed. Any big man or women that commit an offence were arrested and not speared, because all road users are equal before the law. When the upper class commits offence like speed limit violation, or (UPD) i.e. the use of phone while driving, we arrest them and sometimes impound their vehicle. In law there is no room for upper, middle or lower class because all road users must obey rules and regulation of traffic.

This view was further corroborated by an IDI report where a presenter of Oga driver radio talk program Kaduna State media corporation capital sound 90.9 Fm said:

> They are many of those of the upper class arrested by FRSC for causing road crash due to traffic violation, while some offenders arrested do call their brothers in Aso rock to rescue them. I can assure you that even the highly placed are not let scot free in regards to traffic crashes on highway.

The findings therefore, suggest that even men and women of the upper class were also arrested and prosecuted when caught in traffic violation that causes highway crash.

4.4 Causes of highway road traffic crashes in Kaduna State.

Views of respondents were sought on the causes of highway road traffic crashes. Domino theory of road accident causation explains that crashes are not man made; that is to say (2%) of road crashes were unavoidable, or view as act of God. In line with this, respondents were asked whether highway road traffic crashes were man made or spiritual, as shown on Table 4.4.1

Table 4.4.1: Views of Respondents on the causes of highway road traffic crash

Is RTC Cause by road users or an Act of God	Passenger		NURTW		NURTO		Total	
	F	%	F	%	F	%	F	%
Crashes were caused by all road users that often violates traffic rules and regulations	87	22.0	57	14.4	49	12.4	193	48.8
Crashes is an act of God which can not be explained	27	6.8	33	8.3	28	7.1	88	22.3
Crashes are caused by both road users' and also an act of God.	17	4.3	16	4.1	11	2.7	44	11.1
Road crashes is cause by road safety law enforcement agencies i.e. FRSC,NP,VIO,& KASTELEA (through snap road blocks) and bad professional conduct on the road	23	5.8	25	6.3	22	5.5	70	17.7
Total	154		131		110		395	100.0

Source: Field survey, 2017

Table 4.4.1 shows that majority of the respondents, 193(48.8%) passengers indicted all road users in the occurrence of road crashes. Only 88(22.3%) gave a spiritual connotation to highway road crashes. This view was corroborated by an IDI report where a presenter of Oga driver radio talk program, Kaduna State Media Corporation Capital Sound 90.9 FM said:

> Highway road traffic crashes is never an act of God; most crashes that occur on road are caused by excessive speeding/ dangerous over taking. God has never design that we should die an untimely death, but his wish for us is long live. The problem with all vehicles drivers or any type of crashes cause by traffic violation is that road users in Kaduna State often pay dearly with their lives when simple laws that when obeyed could keep us alive are being ignored.

Similarly, the above view was supported by an IDI report where a Deputy Route Commander (DRC) staff officer FRSC Rs1.1 on rescue said:

> Road traffic crashes are caused, before we use to call it accidents but now it has been replaced by crash. Here they belief that crashes is an act of God, but all crashes have been analyzed and proven that road traffic crashes are caused by three basic factors; the Human, Environmental and the Mechanical factors, out of which the human factor takes a highest percentage.

The least respondents 44(11.1%) of NURTW / NARTO and the Passengers were of the view that road traffric crashes were the result of both the fault of all road users as well as an act of God. A clarification was made when one of the key informants, a Secretary of the (Long distance Taxi) NURTW at the television garage, Kakuri, Kaduna South said:

> Road crash is both, I mean all road crashes that is caused result from negligence, and for instance when a driver drives his vehicle with faulty brakes and gets crashes. While the one by God is when all measures have been taken, and the crashes goes on to occurring this we can say it is an act of God.

On the contrary, this view was not supported by an IDI report where a secretary NURTW Makarfi Central motor park, Kawo said:

> Our law enforcement officers are not helping matters, particularly the FRSC officers are supposed to be deployed on highways. But you can see them working within the township roads blocking the roads, in the name of checking vehicle particulars this constant blockage has resulted to many crashes. The worst thing is that even when deployed on highway, they only pursue offending commercial vehicle drivers who end up in a crash. In fact, the FRSC are after generating revenue for the government and were not out to prevent traffic offences or crashes.

Views of respondents were sought on the contribution of all road users to highway road traffic crashes as shown on Table 4.4.2

Table 4.4.2: Views of Respondents on the contribution of all road users to highway road traffic crashes

Do all road users	YES		NO		No Response		Total	
contribute to HRTC	F	%	F	%	F	%	F	%
Passengers	91	23.0	50	12.7	13	3.3	154	38.9
NURTW	80	20.3	40	10.1	11	2.8	131	33.2
NARTO	65	16.5	36	9.1	9	2.3	110	27.9
Total	236	59.7	126	31.9	33	8.4	395	100.0

Source: Field survey, 2017

Table 4.2.2 shows that the highest number 236(59.7%) of the respondents affirmed that all road users contribute to highway road traffic crashes only 126 (31.9%) had a contrary view while 8.4% did not respond. And as to how all road users contributed to HRTC was clarified by one key informant in an IDI report, where a Route Commander FRSC Staff Officer Administration and Planning Rs1.1 said:

> To be honest with you 'yes' all road users lack due consideration for other road users which might be due to ignorance of the rights of others on road. Over 50% of road crashes is by road users who are pedestrians and motorized vehicle drivers. This is attributed to total disregards for traffic rules / regulations and bad aggressive driving culture among motorized vehicle drivers, particularly commercial fleet vehicle drivers through excessive speed / tail getting which leads to crashes on our highways.

Similarly, this view was supported by an IDI report where a Secretary NURTW Makarfi Motor Park Kawo said:

> All road users should be held responsible for highway road traffic crashes in Kaduna State, this is because where there is a road they must be road users be it Pedestrians, Motorcycle riders, Bi-cycle, Buses, Herds men and heavy duty / articulated vehicle drivers are always inpatient or in a hurry making them violating traffic rules and regulations leading to crashes.

Table 4.4.3: Views of Respondents on the contribution of commercial vehicle drivers to HRTC in Kaduna State

Do commercial vehicle drivers contribute to HRTC	YES		NO		No Response		Total	
	F	%	F	%	F	%	F	%
Passengers	126	31.8	20	5.1	8	2.0	154	
NURTW	34	8.6	63	15.9	34	8.6	131	
NARTO	31	7.8	39	9.8	40	10.1	110	
Total	191	48.2	122	30.8	82	20.7	395	

Source: Field Survey, **2017**

Respondents views were sought on whether commercial vehicle drivers contribute to crashes.Table 4.4.3 shows majority of the respondents 191(48.2%) were of the view that commercial vehicle drivers contribute to the HRTC, in particular more of the passengers 122(30.8%) indicted commercial vehicle drivers. Not surprising the NURTW and to a lesser degree NARTO had a contrary view probably because to accept would be an indictment on them. As to how commercial vehicle drivers contributed or not to highway road traffic crashes in Kaduna State; this view was clarified by an IDI report where a Deputy Route Commander staff officer on rescue FRSC Rs1.1 said:

> When it comes to road use, it is the drivers that contribute more to road crashes, not the passengers or union members this is because the driver communicates with passengers and the vehicle itself. Most drivers get drunk before driving, and often fall asleep which leads to a crash. To avoid crash passengers must politely caution drivers when deem reckless in over speed violation or dangerous overtaking, rather than keeping quite an ending up in untimely death.

The findings therefore suggest that majority of commercial vehicle drivers have a higher risk of dying when they fail to obey simple rules and regulation as enshrined in National Road Traffic Regulations (NRTR, 2011).

Similarly, an observation was carried out on private and commercial vehicle driver's speed limit compliance on Kaduna – Abuja express road. It was observed that most

commercial vehicles drivers drove their vehicle above the normal prescribed speed limit of 50km/h in built up areas, and 100 km/h on express way. Rather, they drove between 110-130 km/h a speed which is capable of causing road crashes. In the course of the field observation, along Kaduna – Abuja road, three commercial vehicle drivers were apprehended and arrested by the FRSC officers on patrol, and booked for speed limit violations in accordance with section 10(4), 28(2) of FRSC Act of 2007 and regulation 143 of NRTR, 2011.

However, the worst offences as observed were the use of cell phone (UPD), especially those driving Big or high class vehicles did not comply with speed limit Regulations. It was observed further that, the law enforcement officers can hardly stop them hence most of them drove in their cars on convoy. These findings corroborated the in-depth interview report where members of NURTW / NARTO said they had never seen any "big man or woman" (those of the upper class) arrested for traffic violation that caused highway road traffic crashes in Kaduna State Nigeria.

Passengers have been known to sometimes encourage drivers to speed when late in meeting up appointments and complain about the drivers' sluggishness. To ascertain how true this view is, respondents who were members of NURTW/NARTO were to indicate the extent to which they agreed that passengers contribute to highway road traffic crashes.

Table 4.4.4: Views of Respondents on the contribution of passengers to highway road traffic crashes in Kaduna State

Do Passengers ontribute to HRTC	**SA= Strongly Agree**		**A= Agree**		**D = Disagree**		**SD= Strongly Disagree**		**Total**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Passengers	-	-	-	-	-	-	-	-	-	-
NURTW	57	23.6	9	3.7	29	12.0	36	14.9	131	
NARTO	42	17.4	15	6.2	25	10.3	28	11.6	110	
Total	**99**	**41.0**	**24**	**9.9**	**54**	**22.3**	**64**	**26.5**	**241**	**100.0**

Source: Field Survey, 2017

Table 4.4.4 shows that majority of numbers of NURTW 57 (23.6%) and of NARTO 42(17.4%) members strongly agreed that passengers contribute to highway road traffic crashes. And as to how passengers contributed to HRTC, this was clarified by an IDI report where a Secretary NARTO Mando Lagos garage motor park said:

> Passengers contribute to highway traffic crashes in the sense that most of them encourage commercial drivers to over speed in order to catch up with appointments. For instance, if a passenger who knows that he/she has appointment and does not leave on time to the motor park. These passengers boarded vehicles and in a bid to meet up their appointments encourage the driver to over speed, and in most cases the vehicle end up in a road crash without getting to its destination.

This view was not shared by one of the key informants, (DSP) Deputy Superintendent of the Nigerian Police 2ic Motor Traffic Officer Metro Area C Police command when he said:

> The commercial vehicle drivers should be held for any traffic crashes on highway, and not the passengers. This is because drivers control their vehicles and should not be encourage by any passenger to over speed while driving, drivers are to protect the lives and property of passengers rather than compromising and ending with crashes.

The findings therefore suggest that both Passengers and Drivers contributed to road crashes in the study area.The implication is that both Passengers and Drivers play important role in HRTC prevention.

Respondents who were passengers were asked about the extent to which they agreed with the NURTW / NARTO members' contribution to highway road traffic crashes while the majority of members of the NURTW and NARTO vehemently denied their role but many of the passengers agreed that they were part of the problem of road traffic crashes in Kaduna State.

Table 4.4.5: Views of Respondents on the contribution of NURTW / NARTO members to highway road traffic crashes

Do NURTW/ NARTO contribute to HRTC	SA= Strongly Agree		A= Agree		D = Disagree		SD = Strongly Disagree		Total	
	F	%	F	%	F	%	F	%	F	%
Passengers	56	36.4	19	12.3	31	20.1	48	31.2	154	100.0
NURTW	--	--	--	--	--	--	--	--	--	--
NARTO	--	--	--	--	--	--	--	--	--	--
Total	**56**		**19**		**31**		**48**		**154**	**100.0**

Source: Field Survey, 2017

Table 4.4.5: shows that most passangers were divided as to whether NURTW/NARTO contributes to HRTC as only 75(48.7%) agreed that they contributed to crashes while 79(51.3%) disagreed. In the same vein qualitative data supported the view that NURTW/NARTO may not be responsible for highway traffic road crashes as corroborated by Deputy Director Kaduna State ministry of transport, when he said:

> We in the transport sector work hand in hand with the NURTW/O and other road safety law enforcement agencies like FRSC and the police, by holding lectures and seminar for commercial vehicle drivers on road use and vehicle maintenance that deals with road safety. In fact, NURTW/O cannot encourage drivers to over speed or over load their vehicles which is a violation to traffic laws. I cannot accuse union members of contributing to crashes because they have mechanism of checking erring members.

Similarly, this view was supported by an IDI report where one of the secretaries in the NURTW Makarfi motor park Kawo said:

> I don't think any of our members can influence or encourage our drivers to go against rules and regulation of traffic. Even the drivers themselves, but I know that some passengers do encourage drivers to over speed. What i can tell you is that the NURTW spend a lot of money in grooming and training of our drivers. Some of these drivers on highway are not our members but the public don't know that. The union clamp member's vehicles with chain for three days, when caught in traffic offence, this is to deter others from any act capable of tarnishing the union image.

Consequently, a covert observation conducted in three purposively selected motor parks, was observed certain issues such as whether drivers were committed to enforce the of passengers manifest, loading the required number of passengers and whether drivers complied with checking of vehicle tyres air pressure after loading in the study area. These are Dadi Motor Park Kwangila Zaria, Makarfi central Motor park Kawo and Television garage Motor Park However, the findings corroborated with the In-depth interview report: It was observed that all passengers, boarding long or short distance Taxi buses or vehicles, was done in accordance with the required road safety laws.Both; union members (NURTW/ Owners and drivers ensured that vehicles were not over loaded with passengers and luggage inside in the motor park. It was further observed that vehicle boat was properly closed to prevent luggages from falling off before departure which is in line with FRSC safety standard and principles.

Also, it was observed that drivers comply with checking of vehicle tyre pressure before and after loading. The drivers gauge their tyre air pressure before driving out off the motor parks which is in line with S. 53 National Road Traffic Regulation, 2004. Therefore the study observed that members of NURTW/O did not contribute to the cause's crashes. This is being done by not allowing commercial drivers in over loading of vehicles with passengers and luggage in Motor Parks in the study area.

Views of respondents were sought about the factors responsible for the causes of HRTC in Kaduna State, as shown in Table 4.4.6.

Table 4.4.6: Views of Respondents on the causes of HRTC crashes

Causes of crashes	Passenger		NURTW		NARTO		Total	
Over speeding	50	12.6	34	8.6	41	10.3	125	31.6
Dangerous over taking	25	6.3	27	6.8	15	3.7	67	16.9
Tyre burst	9	2.3	10	2.3	9	2.3	28	7.1
Over loading of vehicle	19	4.8	15	3.7	10	2.5	44	11.1
Bad road (pot holes)	12	3.0	7	1.7	5	1.2	24	6.1
Use of cell phone/devices	23	5.8	16	4.1	10	2.5	49	12.4
Weather factor (fog/rain)	5	1.3	6	1.6	5	1.2	18	4.1
Vehicle mechanical defect	4	1.0	8	2.0	6	1.6	18	4.1
Road safety official fault	4	1.0	4	1.0	7	1.8	15	3.8
Other factors	3	0.7	4	1.0	2	0.5	9	2.2
Total	154		131		110		395	100.0

Source: Field Survey, 2017

Table 4.4.6 shows that 125(32.0%) of the highest number of respondents who were passengers, NARTO / NURTW members were of the view that over speeding, dangerous over taking and use of cell phone respectively, were the three most frequently mention factors responsible for highway crashes. While 9 (2.2%) the least of all the respondents said other factors were responsible for the cause of HRTC.

This view was supported by an IDI report where a Deputy Route Commander (DRC) staff officer FRSC Rs1.1 Rescue said:

> Over speeding still remains the major cause of highway road crash, followed by dangerous overtaking particularly in cars like golf and Sharon among commercial drivers, which is basically the human factor. Currently the use of cell phones while driving among all drivers is on the increase, if not check and curtailed it will surpass dangerous over taking among other offences in Kaduna State.

The findings therefore suggest that over speeding, dangerous over taking and the use of cell phone and other devices were responsible for highway road traffic crash among commercial vehicle drivers.The implications of these are that, most victims die or are maimed for life during such crashes. And victims that survive usually suffer economic, social and psychological trauma, this are young people of about 18 to 45 years lying

down in the hospitals. These are people who were supposed to contribute to the Gross Domentic Product (GDP) of the Nation economy and Kaduna State in particular.

4.5 Assessing the consequences of highway road traffic crashes in Kaduna State.

This section assesses the consequences of highway road traffic crashes in Kaduna State. Views of respondents were sought on the most appropriate punishment that could serve as a consequence to perpetrators / offenders found guilty for causing crashes as a result of traffic violations as shown in Table 4.5.1.

Table 4.5.1: Views of Respondents on the most appropriate punishment for offenders that cause highway road traffic crashes

Consequence on traffic offenders that cause highway traffic crashes	Passenger		NURTW		NARTO		Total	
	F	%	%		F	%	F	%
Offfenders driving with out valid D/l that kill on highway should be charged for manslaughter/ murder, if found guilty should be jail for 1- 5years	60	15.2	47	11.8	25	6.3	132	33.4
Impoundment of offenders vehicle with payment of fine	52	13.2	32	8.1	31	7.8	115	29.1
Widrawal / suspension of drivers license	14	3.5	21	5.3	15	3.8	50	12.6
Confiscation of valid document (International pass port, vehicle papers / vehicle license)	18	4.6	16	4.1	33	8.3	67	16.9
Arrested / advisory enforcement with compulsory public education class by FRSC for four weeks	10	2.5	15	3.7	6	1.5	31	7.8
Total	154		131		132		395	100.0

Source: Field Survey, 2017

Table 4.5.1 shows that the highest number 60(15.2%) of the passengers, 47(12.0%) NURTW and NARTO 25(6.3%) of the respondents were of the opinion that perpetrators or offending drivers, driving without valid drivers license that cause crashes or kill on highway should be charged for manslaughter or murder, if found guilty should be jail for 1 to 5years imprisonment as the most appropriate punishment

as a consequence to perpetrators. While the least 6(2.0%) NARTO, Passengers 10 (3.0%) and NURTW 15(4.0%) were of opinion that perpetrators arrested should be on advisory enforcement capacity and should attain compulsory public education class by FRSC for four weeks.

This view was supported by an IDI report where a Route Commander FRSC staff officer administration and planning Rs1.1 said:

> Traffic offence are a very severe offences, which is why drivers caught in traffic violation are always arrested by FRSC officers and charge to court for manslauter or murder where death is involved, some pay fines and or serve jail terms as a consequence. In case of death of a victim, the family loses their bread winner which affects their welfare, education, health and life style.And, if the victim is incapacitated for life, a member of his family will have to take care of his welfare, feeding and management.That is why perpetrator should be severely punish to serve as deterent to others.

In a related development, this view was corroborated by an IDI report where Deputy Superintendent of Police 21C Road Traffic Metro Area C Police Commander said:

> The NP, officers and men shall continue to arrest offenders caught in traffic violations, some offences were advisory in nature, teaching and warning and releasing them after fines were paid, while some were charged to court, and those found guilty were sent to prison. I must say that a lot need to be done on collaboration with FRSC, and NURTW to curb this violations and crashes through organizing of workshop in partnership with commercial drivers on road safety / road use in Kaduna State.

On the contrary, this view was not supported in an IDI report where a secretary NURTW Makarfi central Motor park Kawo said:

> The right thing to do is that the FRSC should be deploying their officers and men on highways instead of allowing them to cause confusion on township road, blocking and collecting money in the name of checking vehicle papers. If the NP and the FRSC were deployed on highways and does the right thing, it will send a warning signal to road uses and there by curtailing crashes and traffic violations, because seeing them alone creates fear on road users.

Views of respondents were sought about which victims that suffered the most consequences as a result of any fatal highway crashes as shown in Table 4.5.2.

Table 4.5.2: Views of Respondents on who suffers / mostly affected in any HRTC

Road users mostly affected in HRTC	Passenger		NURTW		NARTO	F	TOTAL	
	F	%	F	%	%		F	%
Drivers only	18	4.5	14	3.5	24	6.1	56	14.2
The victims family	76	19.2	43	10.8	31	7.8	150	37.9
Drivers / passenger	27	6.8	32	8.1	24	6.1	83	21.0
Kaduna State Government Official/ aids	12	3.0	22	5.5	17	4.3	51	12.9
Federal Government Official/ aids	11	2.7	17	4.3	8	2.0	36	9.1
Total	10	2.5	3	0.8	6	1.5	19	4.8

Source: Field Survey, 2017

Table 4.5.2 the table shows that the highest number 76 (19.2%) of the Passengers, 43(11.0%) NURTW and NARTO 31(8.0%) of the respondents were of the view that passengers only were mostly affected and suffered the most consequences when any fatal road crashes occurs.

This view was supported by an IDI report where a chairman NURTW Taxi long journey Sokoto route Dadi motor park Kwangida Zaria said:

> The passengers suffer most; this is because they fail to complain or caution commercial drivers when trying to overtake dangerously or when on high speed.

Similarly, this view was corroborated by an IDI report where a Deputy Route Commander FRSC staff officer Rs 1.1 on Rescue said:

> The passengers suffer the most consequences be it economic, social or psychologically. Most times drivers know the place and route where crashes happened, while passengers are always far from home suffer psychological traumas.

The table shows further that 83(21.0%) of the respondents indicated that the victim's family was mostly affected and suffered most in any road traffic crashes, and the least 19(5.0%) of the respondents were of the view that Federal Government Official and

their aids suffered in any crashes. A clarification was made when one key informant, Secretary of the NURTO Mando Lagos garage motor park said:

> It's the families of either the drivers or passengers that bears the most consequences, because when any fatal crashes occurs, the victims family leaves whatever engagements by taking care of the victim in terms of paying medical bills or being physically present in the hospital. In the lost of property (if it is a commercial vehicle), the source of income to the family vanise and therefore becomes a burden to the victims and the society.

The responses therefore suggest that the passengers suffered the most consequences in any fatal crashes, followed by the victims' families.

' Views of respondents were sought about the effects and consequences of highway road crashes on victims and their families after a crash as shown in Table 4.5.3

Table 4.5.3 Views of Respondents on the effects of highway road traffic crashes on victims/family

Consequences of HRTC on victims / family	**Passengers F**	**%**	**NURTW F**	**%**	**NARTO F**	**%**	**TOTAL F**	%
Loose of goods & properties, company/personal effect worth million of naire	39	9.9	10	2.5	20	5.1	69	17.5
Death of Bread winer	37	9.4	48	12.2	41	11.1	126	32.0
Economic consequences survive victims can no longer provide for immediate family	33	8.3	44	11.1	26	6.6	103	26.1
Social consequences most survive victims no longer participate in social activities	12	30.0	14	3.5	9	2.3	35	8.6
Stoppage of education of survive victims family	20	5.1	8	2.0	10	2.5	38	9.6
Disruption in the production system and of job to survive victim	13	3.2	7	1.7	4	1.0	24	6.1
Total	**154**		**131**		**110**		**395**	**100.0**

Source: Field Survey, 2017

Table: 4.5.3 the table shows that the highest number 126(32.0%) of the respondents who were NURTW, NARTO and the passengers indicated that the consequence of HRTC is the death of victims who were bread winers of their families. Followed by 103(26.1%) of the respondents indicated that victims that survived HRTC suffered economic consequences, hance such victims can no longer provide for their immediate families.While the least 24(6.1%) of the respondents were of the view that the consequences of HRTC was disruption in the production system and loose of job to survived victims whose source of income vanise and therefore becomes a burden to himself, his family and the society.

This view was corroborated by an IDI report where a secretary NURTW taxi long journey television garage motor park said:

> Union members, passengers, and other group of road users that die in highway road traffic crashes and those that survive can no longer contribute to the economy of Kaduna State, and the Nation at large. Our members whose vehicles were damage beyond repair cannot pay back their loans borrowed from the bank. We in the union are trying that is why we are training and retraining our drivers on road safety and vehicle use, I can tell you that crashes among members has reduced, but the roads are still in bad condition and full of pot holes which is why the government need to fixed the roads.

The finding therefore suggest that the consequences of HRTC on victims is that those who were supposed to contribute to the Gross Domestic Product (G.D.P.) of the nations economy die or sustained severe injuries on highway road traffic crashes there by loosing income or work hours which does not help the state or federal government in terms of human capital development.

4.6 Remedies on highway road traffic crashes in Kaduna State

This section suggests remedies on highway road traffic crashes for road users in Kaduna State.Views of respondents were sought about the role of Passengers on highway road traffic crashes reduction on light duty vehicles as shown in Table 4.6.1: Passengers were to skip and not to respond.

Table 4.6.1: Views of Respondents on Passengers role in HRTC reduction on light duty vehicles

What passengers do to reduce HRTC on light duty vehicles	NURTW		NARTO		Total	
	F	%	F	%	F	%
Passengers should insist drivers observed stipulated speed limit, and causion erring drivers politely to reduce speed when driving on highway	55	22.8	30	12.4	85	35.2
Passengers should check vehicle physical condition and avoid boarding old / dilapidated un road worthy vehicle	21	8.7	32	13.2	53	22.1
Passengers to report erring over speeding driver to any nearest motor park NURTW/O union executive for deciplinary measures	25	10.3	6	6.6	41	16.9
Passengers should check drivers eye condition for possible alcohol / drunken behavior and avoid boarding such vehicle	21	8.7	13	3.7	34	8.6
Drivers are advice /encourage by FRSC to install speed limit devices	9	3.7	19	7.8	28	11.5
Total	131	54.4	110	45.3	241	100.0

Source: Field Survey, 2017

Table 4.6.1 shows that the highest number 85(35.2%) of the respondents who were NURTW and NARTO members were of the view that passengers should always insist drivers observed the stipulated speed limit and causion erring ones politely to reduce speed in order to avoid a crash. Followed by 53(22.1%) and the least 28 (11.5%) of the respondents were of the view that drivers were adviced and encourage by FRSC to install speed limit devices. This view was supported by an IDI report where a deputy route commander FRSC staff officer Rs1.1on rescue said:

> On issues of this nature, we usually carry out public lectures in motor parks and in town hall meetings by telling passengers not to sit down

> and watch these drivers driving them to death. We advice them in talking to drivers politely, because most drivers have very low 1Q. Passengers should avoid using hash words or raising their voices on drivers on motion. It's important to note that there is only one driver and fourteen passengers if they keep quite they may likely end up losing their lives or get injured, therefore passengers should be very diplomatic and care full in order to get to their destination safely.

Similarly, this view as was supported by an IDI report where, a presenter of Oga driver radio talk show program Kaduna State Media Corporation Capital Sound 90.9fm said:

> The aim of this program is educate the general road users on the dangers of speed violation and other traffic violations, so that both commercial drivers and passengers should know what to do. Some of these drivers always take alcohol before driving; passengers should check such drivers and report them to NURTW/O for immediate action against such erring driver.

On the contrary, this view was not supported by an IDI report where a deputy route commander FRSC staff officer Rs1.1 on rescue said:

> Speed limit devices remained one of the most viable solutions in reducing road traffic crashes on our highways. Are you not aware that FRSC Rs 1.1 has flag on the installation of speed limit devices in Kaduna State; this is a going policy that was lunch on October 2016? That all vehicle drivers plying the highway must key inn, since we are time bound.

In utilizing the road, vulnerable and non vulnerable road users have certain role to play. Passengers, Chairmen and Secretaries need to know that it is everyone's responsibility to pay attention and stay safe on the road.

The findings therefore suggest that passengers play major role in HRTC reduction by advising erring over speeding commercial drivers politely and by reporting the drivers to union executive members (Chairmen/Secretary) for disciplinary measure.Also, by enforcing speed limit devices among commercial drivers by all unions in collaboration with law enforcement safety agencies.

Views of respondents were sought about the role of commercial drivers in highway road traffic crashes reduction on light duty vehicle as shown in Table 4.6.2, hence drivers were to skip and not respond.

Table 4.6.2: Views of Respondents on the Role of Commercial Vehicle Drivers in HRTC reduction on light duty vehicle

What can commercial vehicle divers do to reduce (HRTC) on light duty vehicles	Passenger		NURTW		NARTO		Total	
	F	%	F	%	F	%	F	%
Commercial drivers are to ensure only road worthy vehicle ply the road, this could be archieve through training and re-training of drivers	38	9.6	53	9.4	31	7.8	122	30.8
Commercial/ private drivers are advice to stop excessive speeding when driving and observe speed limit as enshring in NRTR	37	9.4	15	3.7	19	4.8	71	17.9
Drivers are advice to avoid overloading of vehicles an reckless driving at all time	33	8.4	31	7.8	21	5.3	85	21.5
Drivers are to avoid fatique / stress Driving on highways	27	6.8	19	4.8	22	5.6	70	17.7
Drivers are to observe rest for 15 minutes when travelling for (4) four hours at a strech	19	4.8	13	3.3	16	4.1	48	12.2
Total	**154**		**131**		**110**		**395**	**100.0**

Source: Field Survey, 2017

Table 4.6.2 the table shows that the highest number 122 (30.0%) of the respondents who were Passengers NURTW and NARTO were of the view that commercial vehicle drivers play a significant role in HRTC reduction when all Commercial drivers ensure only road worthy vehicle ply the road, this could be archieve through training and re-training of drivers. Followed by 85(22.0%), and the least 48(12.2%) of the respondents indicated that drivers can reduce and prevent crashes by observing rest of 15 minutes when travelling for (4) hours at a stretch.

This view was corroborated by an IDI report where a chairman NURTW Taxi Long journey Sokoto route Dadi motor park kwangila Zaria said:

> Are you not aware that we have bad roads, potholes; we can't be losing our members or their vehicles in careless road crashes, which is why our drivers are punished when any report is brought against any of them?

> Before the disbanding of VIO, our drivers were usually train by them on vehicle condition and road safety to retrain others in checking of tyres, wipers and everything that deals with a vehicle being in a perfect condition. This has become culture that all NURTW members must obey rules and regulation of traffic; this has been archive with low crashes occurrence among our members.

The findings therefore suggest that commercial drivers role isto ensure that only road worthy vehicle ply the road, this could be archieve through training and re-training of drivers. In view of the above findings, in order have responsible drivers on Kaduna roads, both private and commercial drivers must meet the minimum age requirements recommended that only tested and qualified drivers with the age requirement should be issued license. And any government road safety agency personnel found wanting should prosecuted as required by law.

Views of respondents were sought about the role of NURTW and NARTO members in highway road traffic reduction on light duty vehicles, among commercial driver as shown inTable 4.6.3: union members to skip and not to respond.

Table 4.6.3 Views of Respondents on the role of NURTW / NARTO members in HRTC reduction on light duty vehicles

What can union members do in HRTC reduction on light duty vehicles	**Passenger**		**Total**	
	F	**%**	**F**	**%**
Organize lectures and workshop/ town hall meetings on regular basis in collaboration with FRSC / KSMC 90.9fm to change drivers driving culture	56		56	36.4
NURTW/O should punish erring drivers caught in traffic violation,by clamping their vehicles for 3days to deter others	54		54	35.1
NURTW/O should put mechanism to prevent drug, alcoholic/ drunken drivers from driving on highway	27		27	17.1
Union members to ensure that commercial drivers obey traffic rule/ regulation and also maintain vehicles regularly	17		17	11.0
Total	**154**		**154**	**100.0**

Source: Field Survey, 2017

Table 4.6.3 shows that the highest number 56(36.4%) of the respondents were of the view that NURTW/NARTO members can reduce HRTC among commercial vehicle drivers when lectures, workshop and town hall meetings are organized in a regular basis, in collaboration with FRSC/ KSMC 90.9fm towards changing the driving culture and driving habit of these drivers. Followed by 54 (35.1%), and the least 17 (11.0%) of the respondents who were passengers were of the view that highway road traffic crashes can be reduce among commercial drivers, when NURTW/NARTO members ensure that all drivers who are members obey rules and regulations of traffic, and also maintained their vehicles regularly to reduce road crash.

A clarification was made when one key informant, a Secretary NURTW Taxi long journey Makarfi Motor Park Kawo said:

> Are you aware that our drivers are afraid of the union disciplinary measure on them than our law enforcement agencies? This discipline on drivers is to make all union members obey the laws of the land. We usually tell the passengers to alwaysreport any reckless driver to the nearest motor park union secretary or chairman, this is to curtailed RTC on highways.

On the contralry, this view was not supported by an IDI report where a Business Woman in Kafanchan Main Motor Park said:

> Kanuna roads are in a bad shape; full of pot holes, wick Bridges and poor or no road signs.This has put the lives of market women in danger as most drivers disobey traffic laws which has led to untimely death of men and women doing business.Road crashes can only reduce when the State government releases money for quick repairs and maintainance of these roads.In doing so; it will drastically reduce traffic crashes among road users.

The findings therefore suggest that both NURTW/ NARTO members and FRSC need to put in their best toward reducing HRTC,hance it is evident that road traffic crash is still high amongst commercial vehicle drivers in Kaduna State. It is therefore, recommended that the Federal and State governments should introduce highway road

trust fund, as a policy in collaboration with Non-government organization for proactive measures and timely disburstment of funds meant for road rehabilitation and repairs towards HRTC reduction inline international standard.

On whether FRSC in Kaduna State has done enough in reducing highway road traffic crashes and death in the last 5 years? Different views were expressed about the activities of FRSC Rs1.1 with regards to highway road crashes and deaths/injuries reduction in Kaduna State.

For instance, in an IDI conducted with a presenter of Oga driver radio talk show program Kaduna State media corporation capital sound 90.9fm said on a positive note he said:

> Yes FRSC has done well in reducing road crashes / deaths on our highway in the last 5years. Though, the agency needs to partner with Non governmental organization and NURTW / NARTO in sensitizing / educating the motorist and other road users on road safety. This should be a continuous process when road users finally key inn, to obeying the rules and regulations of traffic. Also, the presence of FRSC personnel on the highways has sent a signal to traffic offenders, while the introduction of speed limit devices is to eliminate or put an end to unnecessary deaths on our roads.

On the contrary, in another IDI report, the view was not supported where a Secretary NURTW taxi long journey Makarfi Motor Central Park kawo said:

> I don't think that the FRSC has done enough in reducing highway road traffic crashes/ death. Categorically, I can tell you that their officers and men are presently deployed in Major Township roads causing confusion. FRSC are there to generate income to the government, their duty was supposed to be on highways, that is where they belong. It is only when they stop in collecting bribe, then I will know that their work is to prevent and reduce crashes / death on highways.

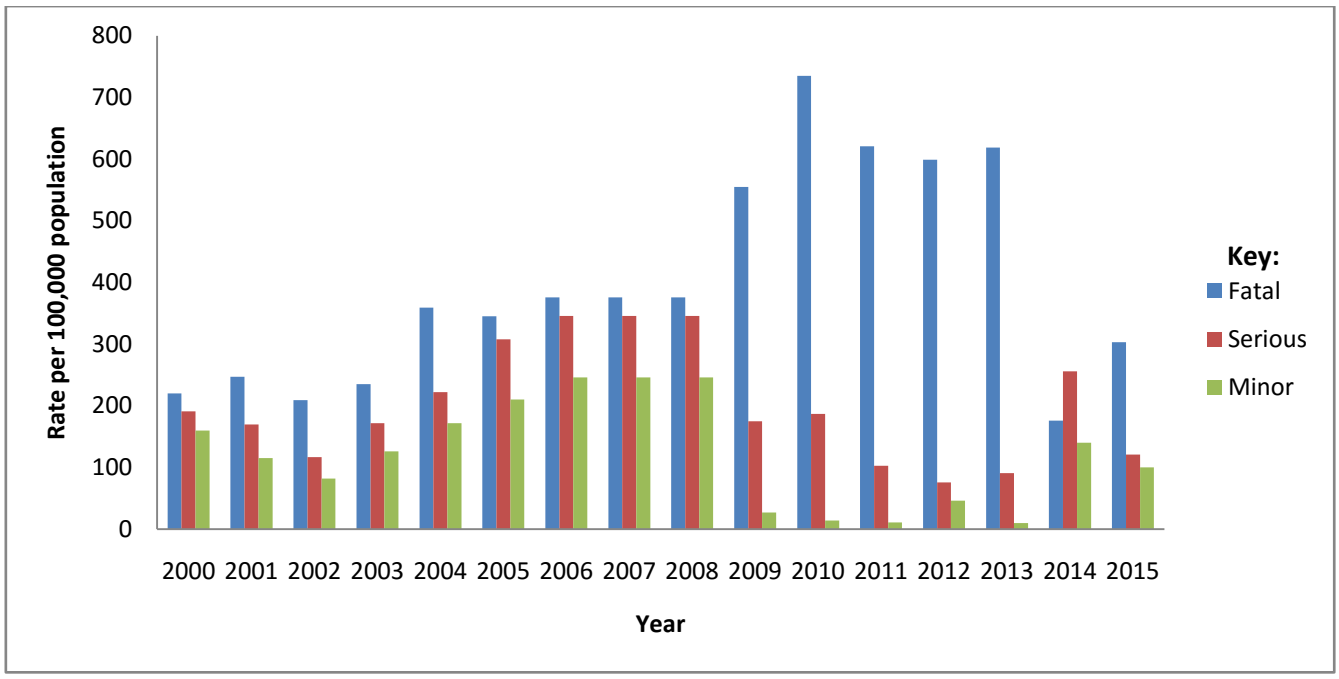


Fig 4.6.1 Trend in Highway Road Traffic Crashes in Kaduna State, Nigeria
Source: NP, State Motor Traffic Metro Area C Police Command, Kaduna State, 2015

Fatality/Severity Index:

A fatal crash is one in which at least one life is lost. An important measure of the severity of highway road crash is the fatality or severity index usually measured by number of persons killed per thousand road traffic crash. Fig 4.6.1 show the fatality/severity index of highway crashes in Kaduna State between 2000 and 2015. The Table and figures show a progressive increase in 2004, 2009 to 2013, a trend as reported by the Nigerian Police Kaduna State Motor Traffic Metro Area C Police Command. While in figure 4.6.2 Trend of reported highway road crash cases in Kaduna State by FRSC Rs 1.1 Kaduna Sector Command show the probability of fatal crash index. This index is the propotion of the total crashes reported which is accounted for by the number fatal crashes. Table 4.6.2 show an in crease of fatal and serious cases in 2000 and 2001, in other words, almost 100 to 200 crash rate reported per 100,000 population in Kaduna State involved the loss of one life in last 10 years. However there was sharp decline from 2002 to 2006 and with an increase in 2007 to 2009 in the study

area. However, it is observed that these indices are likely to be over reported or under reported of minor cases which by implication, leads to reduction of adequate funding by government in road safety sector. Therefore, it is recommended that FRSC, NP and KASTELEA should adopt a new strategy in man power development towars reducing traffic crash fatalities rate death/injury from about 26 persons to 10 per 100,000 populations as found in Developed countries.

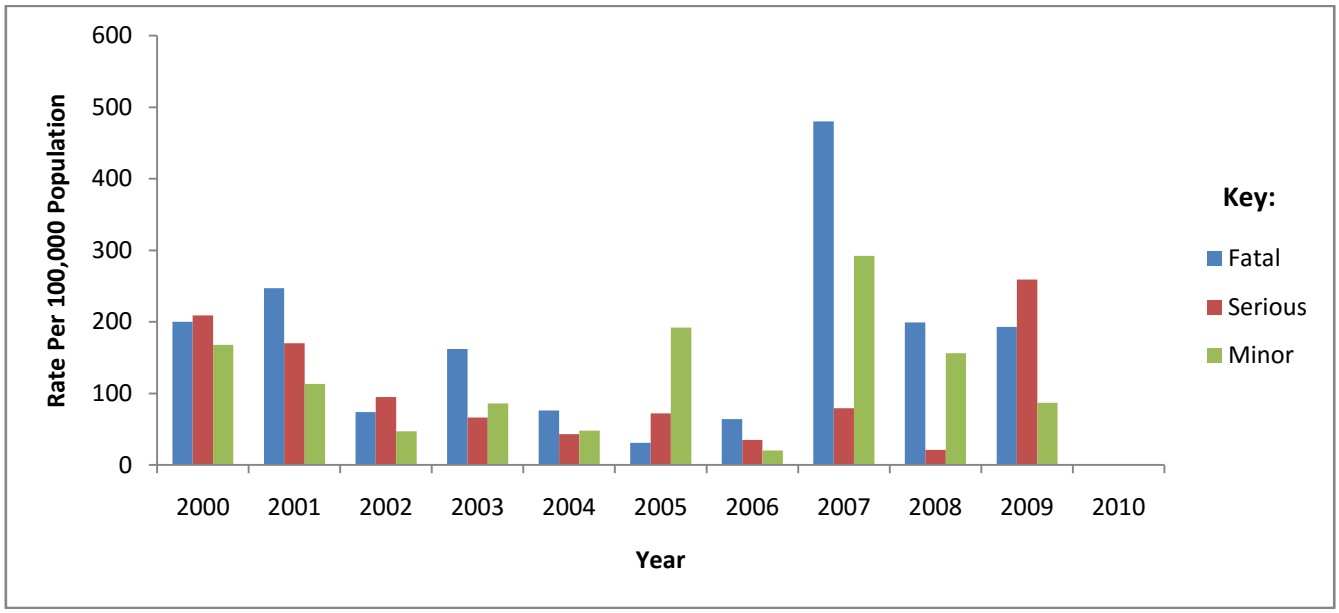


Figure 4.6.2: Trend of Reported Highway Road Crashes Cases in Kaduna State
Source: Federal Road Safety RS 1.1 Kaduna Sector Command, 2014

A non participant observation was carried out in four purposively selected motor parks in the study area in line with the study objectives. The observation was conducted to ascertain whether drivers and NURTW / NARTO members comply with the use of passenger manifest in accordance with road safety laws and principles as found in section (S.10(4) of FRSC Act, 2007 establishment), to ensure that vehicles were not over loaded with passengers and luggages

The observation findings revealed that union members carried out these order there by obeying the safety laws and regulations of traffic to ensuring that HRTC among commercial vehicles drivers are reduce to the barest minimum. The findings from the four motor parks observed, that Dadi motor park Kwangila Zaria, Makarfi central

motor park Kawo and Television garage Motor Park operated in similar pattern in terms of leadership hierarchy, i.e. NURTW/NARTO Chairman and Secretary over see the units / stands in various routes with their sections. However, it was observed that the two unions don't operate inside one motor park. For instance only NARTO operates in Mando Lagos garage Motor Park while NURTW operate in Makarfi central motor park Kawo. Apart from these two parks, Zaria and Television garage, the others have both unions in one park.

On the issue of passenger manifest compliance; it was observed that NURTW/NARTO members and drivers did not comply with the use of passengers manifest in short distance journey travel as found in Dadi motor Kwangila Zaria, specifically on inter local government and in short distance in-state journey like, Zaria-Funtua, Zaria-Jos, Kaduna-Kafanchan and among others. Similarly, this violation was also observed in Television garage Motor Park, which contravene (S.10 (31) of the FRSC Act of 2007 Thus, the question asked is 1. What happen to the passengers in case of crashes, death or injuries during short distance journey travels? 2. Who bears the burden for un-accounted passengers? Is it the unions or the drivers?

This are identified gaps which the present study will recommend for further research. Consequently, on long distance journey travel it was observed in Television garage Motor Park that members of NURTW/ NARTO complied with the correct number of passengers in vehicles travelling on long distance journey, like Kaduna-Ilorin / Oshogbo, Kaduna-Ibadan via Lagos had all passengers names entered into Bio-data manifest sheet. Before driving off, drivers ensured that all information was correct and passengers seated, and tyre pressure was also gauged inside the park for eventual movement.

The observation findings suggest that drivers and NURTW/ NARTO members complied with passengers manifest only on long distance journey travels. Therefore, drivers and the unions requires proper re-orientation on the need and importance of using passengers manifest on both short / long distance journey, hence road crashes does not respect distance when its occurs.

Also, participant observation was conducted through an informed consent with officers and men of FRSC Rs1.1 office along Ali- Akilu, by Jaize bank junction round about Kaduna, observing how offenders are booked, how entering were made with payment of fines and how vehicles are impounded. The observation report did not corroborate the opinion of Oga driver's view that road traffic crashes is on a gradual reduction due to the synergy of other safety agencies with FRSC Rs1.1 duties in mitigating road crash in Kaduna State. However, it was observed that a patrol team comprise of one officer of a rank of Deputy Route Commander (DRC), a vehicle, a driver and two men of a rank of corporal or any senior rank of Assistant Deputy Route Commander (ADRC) during morning or afternoon patrol. In any patrol, a team must carry an offence booking sheet, which has two sides. The page one contain Bio-data information of the offender like name, phone number, offence committed, information on the vehicle type, confiscation and date, time and location / place where the offence was committed. This information is stored, para-venture such offender is booked again he or she will face a severe punishment.

Also, the page two of the offence sheet has six columns codes, this includes; points penalty category among other information. Before now the booking of offences was done manually, but now the booking is done electronically or 'E' booking, it was observed during patrol that when a vehicle driver is sighted to have committed an offence. That

offender is flag down and directed to clear off the road before parking properly. The offender was asked to produce his driver's license for thourough checking. However, it further observed that in the process of checking the offender for an offence, most of them end up being booked for multiple offences such as non use of seat belt, expired drivers license, non functional head lamps/ wipers and No vehicle fire extinguisher. At the end the offence sheet was used to book the offender electronically when the information are displayed and sent via network to FRSC central data base. Consequently, the offender was asked pay the fine at a designated bank and obtain receipt as evidence of payment to FRSC Rs1.1 office, and subsequently the Rs1.1 toying van toys the impounded vehicle to the office awaiting for payment verification.

After payment, the offender takes the receipt to unit office duty room which is headed by a duty officer; where the fine is entered into impoundment register for impound vehicles.

On evidence of payment verified in the duty room the offender's vehicle is then released with other confiscated items. It was observed that offenders in most cases were required to attend compulsory counseling in Rs1.1 class hall for at least four weeks, Tuesdays and Thursdays per week before the final release of vehicle. However, it is important to note that unclaimed impounded vehicle is required to pay demurrage of Two Hundred Naira (₦200.00) only for every 24 hours as custody fees after six (6) months in which that vehicle could be auction for the cash of fine accumulated for that period. Any offender booked is free to challenge his or her offence in the court of law, if they feel dissatisfactory.

The trend of highway road traffic offences records in Kaduna State further explain the various violations committed by motorist and other road users and the number of persons prosecuted and convicted within the period.

Table 4.6.4: Showing 6 years comparative analysis of highway traffic offences in Kaduna State

	Years					
Offences	2005	2006	2007	2008	2009	2010
Excessive speeding/Dangerous Driving	8,875	5,174	4,924	5,022	6,052	6,310
Driving without care	390	1,080	445	980	1,160	2,370
Improper overtaking/cutting in	546	3,640	1,120	1,508	1,073	1,110
In experience/negligence driving	1,456	594	1,040	1,456	1,073	1,530
Intoxication	520	260	104	216	609	360
Recklessness/failure to obey traffic	2,500	3,672	4,570	2,492	2,581	1,800
over loading	1,320	1,460	1,500	1,480	1,560	1,650
unroad worthy vehicle/machine defects	1,188	1,198	1,276	1,360	1,150	1,050
defective lights	568	670	680	675	770	780
dazzling lights/additional lights	340	349	440	435	506	610
dazzling other road users	320	120	340	350	401	510
driving with expired documents	1,405	2,210	2,500	3,700	3,800	4,000
forging vehicles particulars	179	180	250	360	360	400
causing obstruction	1,500	1,560	1,680	1,780	1,780	1,800
incorrect use of horn/sound	70	88	99	120	120	140
pedal cyclist recklessness, negligent	1,680	1,780	1,980	3,504	3,504	450
failure to obey level crossing	44	155	166	180	180	190

Source: Kaduna State Ministry of Transport 2014

Rrecords in Kaduna State

Bar chart showing 6 years comparative analysis by year of traffic offences on Kaduna State Roads between 2005 and 2010

Available records of the trend showing highway road traffic violations, indicates that between 2005 and 2010 show that highest recorded traffic violation was over speeding anddangerous driving in 2005, with sharp dropped in 2006 from 8,875 to 5,174, and dropped again in 2007, to 4,924. Thereafter, it rose to 5,022 in 2008, 6,052 in 2009 and 6,310 in 2010. While a serious rise of traffic violation like over-loading of vehicles.

The trend shows a sharp rise from 1,320 in 2005. From then on, the trend continue to rise to 1,460 in 2006, 1,500 in 2007, 1,560 in 2009 and 1,650 in 2010

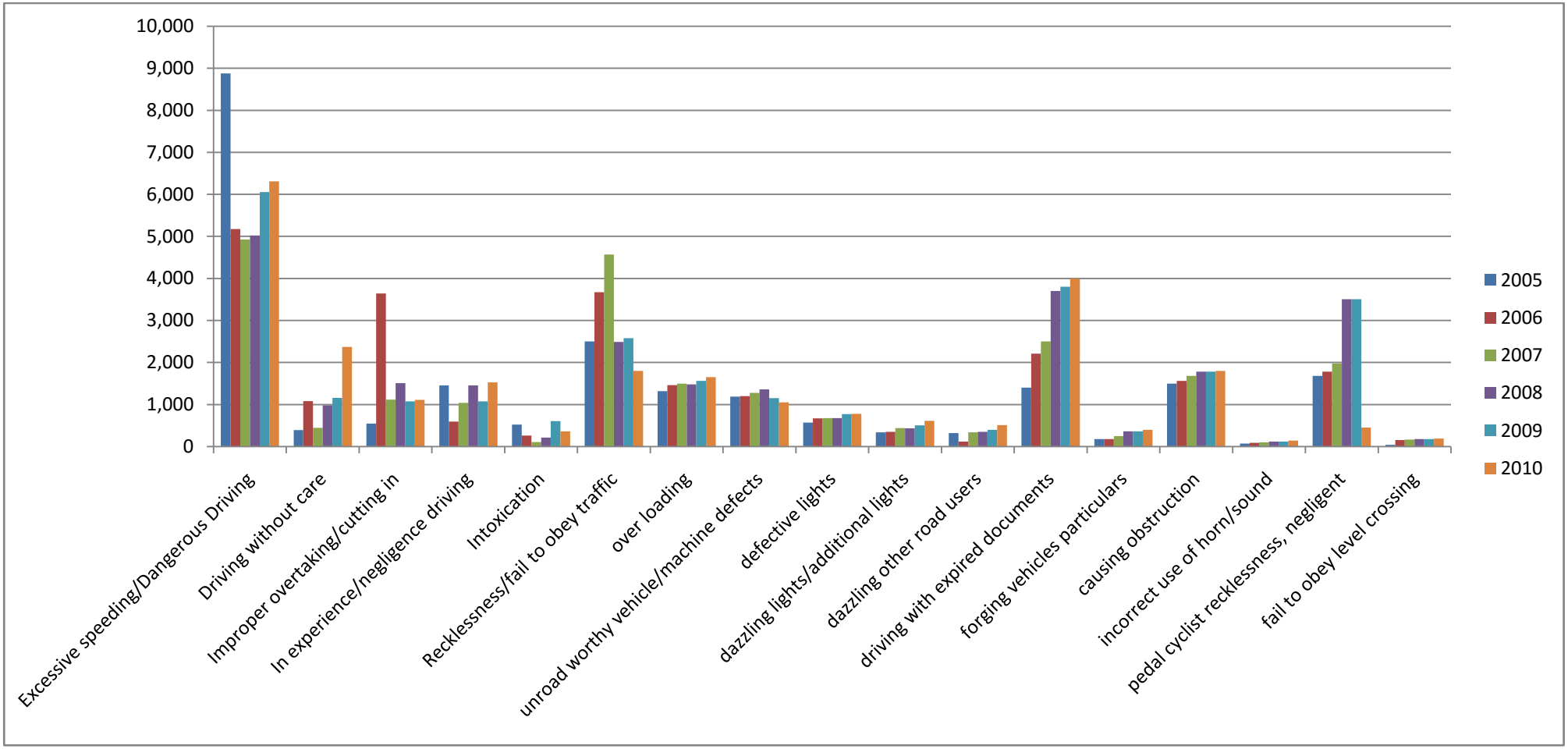


Fig. 4.6.3: Bar chart showing 6 years comparative analysis of persons prosecuted, convicted of traffic offences per 100,000 population in Kaduna State highway between 2005 and 2010
Source: Kaduna State Ministry of Transport 2014.

From the available records, the chart shows that out of 2,147 traffic violations in 2005, 890 (persons) were arrested for serious offences, while 428 offenders had minor cases. It is further observed that 231 offenders were prosecuted per 100,000 populations. While 1,191 offenders were convicted wtin the same period. Other records show that there was a sharp dropped in traffic offences in 2006 to 1,450 with a rise in number of serious (violations) to 920 and minor (violations) to 440. While the number of persons prosecuted rose that year to 300, with 1,200 convictions.

Table 4.6.5: Showing number of person prosecuted, convicted per 100,000 of population in Kaduna State 2005 – 2010

Year	2005	2006	2007	2008	2009	2010
offences	2,147	1,450	1,740	2,210	2,250	2,340
No. of person prosecuted per 100,000 population	231	300	456	68	788	800
No. of person convicted per 100,000 population	1,191	1,200	2,100	2,510	2,600	2,800
No. of person with minor offences	428	440	481	495	501	540
No. of persons with serious offences	890	920	1,001	1,250	1,560	1,808

Source: Kaduna State Ministry of Transport 2014

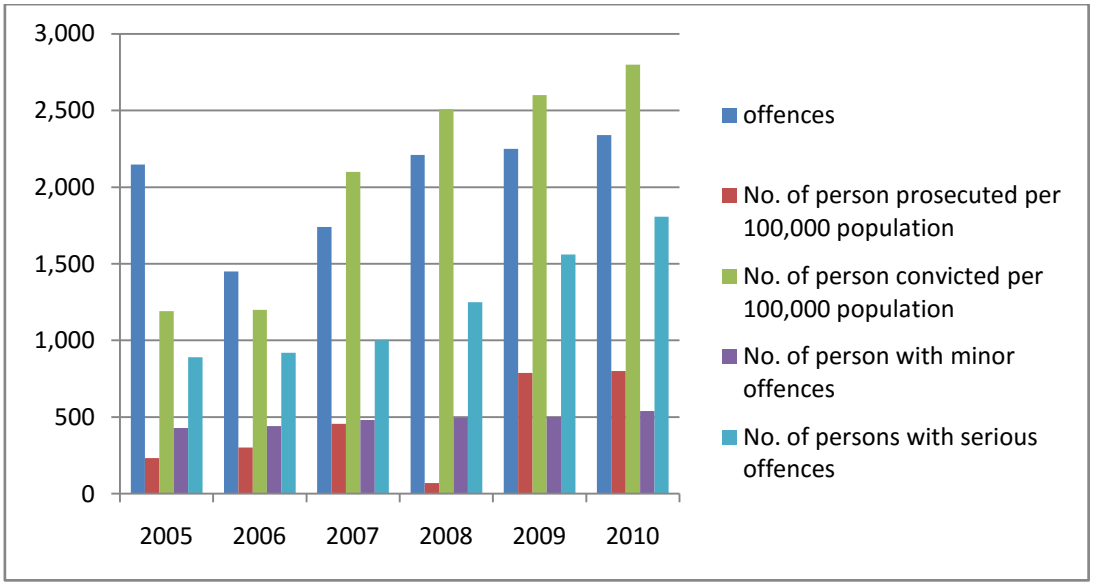


Fig. 4.6.4: Bar chart showing 6 years comparative analysis of person prosecuted, convicted of traffic offences per 100,000 population in Kaduna State
Source: Kaduna State Ministry of Transport, 2014.

It can be deduced from the remaining available records of 2007, 2008, 2009 and 2010 respectively that the high rate of traffic offences among road users and commercial vehicle drivers is mostly due to high vehicular flow on highways. Thus, heightening the risk of road traffic crash (RTC) was mostly due to drivers desire to make many trips for financial gains. The high rate of traffic violation resulting to RTC is also connected to the fact that only few offenders were convicted by the road safety traffic law enforcement agencies i.e. (FRSC, NP, and KASTELEA).

On whether vehicle drivers or passengers that use seat belt have a 50 per cent high chance of survival than those that did not during fatal HRTC? The following views were expressed by the respondents; For instance, in an IDI report view where a (DRC) Deputy Route commander FRSC intelligent unit Makarfi said:

> I can assure you that passengers and drivers that obey traffic rules, by using seat belt have more than 70% chance of survival in most fatal highway road traffic crashes. The reasons are, in- case of vehicle summersault, seat belt will trap them to their seat, but when not in use, such victim can smash his or her head against the windscreen, or steering, and sometimes fling them out of the vehicle and they die in the process.

On a contrary, in another interview conducted with the secretary NURTW Makarfi central motor park kawo did not support the above view where he said:

> The use of seat belt by drivers on highway is a formality. It is not in our law books except the law made by FRSC. I have seen a person that has fatal road crash and died because he was trap on a seat belt, equally I have seen another person who did not use seat belt but survived. Generally, seat belt use makes drivers uncomfortable when driving; though i always use seat belt while driving. We are only being forced in using it to prevent an arrest by FRSC, even though using it or not do not have impacts

However, study findings from scholars like Keith Ada Online (Dead Link) and Joanne, (2008) indicate that wearing of seat belt among motorist and passengers reduces the risk of death by about 45 per cent to 83 per cent in any fatal crashes.

4.7 Discussion of findings

The first objective of this study was to determine the nature of highway road traffic crashes in Kaduna State.The study found out that majority of the commercial vehicle drivers 86(35.6%) have 21 – 25years driving experience.However, these findings did not corroborate any of the literature reviewed. On where highway road traffic crashes frequently occurs; the study found out that the majority 106(26.8%) said Kaduna—Abuja expressway has the highest road traffic crashes occurrence rate, followed by 77(19.5%) Zaria—Kaduna expressway involving commercial, private, articulated vehicles and trucks along this routes on daily basis.This crashes is due to high vehicular flow among vehicle drivers struggling for space, in total disregards for rules and regulation of traffic such as over speeding, dangerous over taking and use of cell phones among others being perpetuated by commercial and private vehicle drivers leading to lose of lives and properties couple with deplorable shape or bad road condition.This corroborate the study by Agbonkhese *et al,* (2013) they observed that the presence of pot holes, aside from human and vehicle related factors are known to be major causes of highway road traffic crashes in Nigeria was greatly a function of government failure. The finding also confirm the New Nigerian News Paper report of 7thFebruary, (2014) that published the death of four Ahmadu Bello University Lecturers' that died in an auto crash along Kaduna--Abuja express way, and the report on Daily Sun on Sunday 6th March (2016), where late Minister of State Labour and productivity Mr. Ocholi, his son and his wife died in an auto-crash along Kaduna-Abuja express way which is being blame on over speeding among commercial and private car drivers, which is in violation to traffic rule/regulations and safety standard.

On Type of vehicles that were mostly involved in HRTC, the study found out that the majority 100(25.3%) of commercial-commercial vehicle drivers of age 18-45 years and

private to commercial drivers 86(22%) were mostly involved on road traffic crashes. However, findings suggest that younger drivers were at higher risk than elderly drivers that were cautious and carefull while driving. This findings corroborates a study by Ata and Aderinlewo (2012) and Ugbebor, (2014) they observed that the actions of commercial vehicle drivers in order to make quick returns indulge in over-speeding and dangerous over taking on major highways in total violations to road safety principles most often resulted to highway road crashes. In regards to this, Heinrich (1931) Domino theory of road accident cauasation explains that pedestrians that cross the roads carelessly, commercial and private car drivers that engage in over speeding, dangerous over-taking and use cell phone and other handheld devices while driving among others constitutes to bad driving cultural traits that have been learned and acquired in the environment by road users on Nigerian roads. These according to this theory are unsafe acts and fault of persons responsible for highway road crashes, and if road user's aviod unsafe act and conditions, this will prevents road crash among road users.

Further findings show a fluctuation in the fall and rise of highway road traffic crashes trends in crashes occurrences in Kaduna State per 100, 000 populations, of (HRTC) between 2011-2015 in 5 years indicated that the State experienced a total of 3,272 cases of traffic crashes, with 2,185 fatal cases, 647 serious cases and 207 minor cases. These study findings corroborate the findings of Okolo, (2008) "Road Safety, physical and legal protection imperative in a civilized Democracy" cited in Ugbebor (2014) shows that Nigeria has a fatality rate of 26 persons per 100, 000 population as compared to low fatality rate of UK 6, Sweden and Norway 7, and Switzerland, Japan 8 respectively. However, the study contradicts the FRSC Rs 1.1 sector command report

of 2015, where they observed that the effort of the sector command in road safety campaign has led to a 7% drop in road crashes in Kaduna State.

On types of vehicles collision, the study found out that Head-long to Head-on collision were responsible for loss of lives and properties among commercial vehicle drivers, particularly drivers of Golf and Sharon cars on single lane highway on Saminaka—Jos, and Kachia – Kaduna highway. While Rear-end collisions and Multiple types was more dominant on expressway with victims who were mostly passengers suffered economic and social effects, followed by victims that suffered social and psychological effects. This findings is in line with the research carried out by Ata and Aderinlewo (2012), they observed that the effects of vehicles collision on highways was either death or severe injuries leading to permanent disabilities or property damage. This is significant because most of this highway road traffic crashes are preventable if commercial vehicle drivers and other road users keep to simple rules and regulations of traffic.

Still on first objective, Heinrich (1931) Domino theory explains that when motorist and road users keep to safety condition on highway, it will prevent road crash, and avert injuries/death or property damages as a consequences of traffic violation.Road crashes could be prevented and reduce only in environment where all road users learn and acquire good road user habit/ driving culture to respect and obeying traffic rules/ regulations.

On those to be held responsible for HRTC, the study found out that the majority 153(38.7%) said that commercial vehicle drivers were to be held responsible for traffic violations that causes crashes/deaths; this was due to fact that they were more dominant and involved in road crashes. This study confirm the findings of Ibitoye, (2008) they observed that commercial vehicle drivers were identified as perpetrators of highway

road traffic offences and were responsible for about 45 per cent of all major road crashes that led to untimely death of many road users.

On the Effects of Highway Road Traffic Crashes on all Road Users, the study found out that the majority 170(43%) of the passengers,NARTO and NURTW said all road users were affected economically and socially after fatal road crash having severe impact on victims and their dependents. The study also shows that 70 (20%) of all road users were affected socially and psychologically as road crash victims in the study area. This study affirms the research findings of Danishohan,(2002) and Balongun, (2006) they observed that victims of road crashes whether live or death cut across every Nation of the world. These victims affects mostly males as they constitutes 73% death, this include passengers, commercial drivers, private car owners and occupational drivers belonging to companies fleet and articulated/ light vehicles drivers.

On the knowledge of arrest of the upper class (big man/woman) involved in highway road crashes.The In-depth interview report revealed that those of the upper class were arrested for traffic violation that caused highway road traffic crashes in Kaduna State. This finding however, did not corroborate any of the literature reviewed.

The second major objective of the study was to find out road users responsible for the Causes of HRTC.The study found out that majority 193(48.8%) passengers indicted all road users in the occurrence of road crashes due to violation of traffic rules and regulations in Kaduna State. On whether commercial vehicle drivers and passengers contribute to highway road traffic crashes in Kaduna State, the study found out that the majority 191(48.2%) said commercial vehicle drivers contributed to HRTC, this was affirm in a qualitative data report. The study also show that the majority passengers contribute to HRTC by encouraging commercial drivers to over speed they by resulting

to road crash, which imply that road crash was never an act of God. This confirms a study carried out by Ogwude (2012) and Ugbebor (2014) they posited that crashes does not just happened, but are caused by actions and in-action of drivers and passengers.

Views of respondents on the factors responsible for the causes of HRTC, the study show that 32% (125) of the majority respondents said that over speeding followed by 16.9% (67) Dangerous over taking and 12.4% (49) Use of Cell phone/ devices (UPD) were the major causes of highway road traffic crashes among commercial vehicle driver in Kaduna State. This study findings corroborates the study by Agbonkhese, et al (2013) they observed that the indiscriminate use of siren couple with very high speed rate by private, political office holders or government drivers has been reported to cause a lot of road traffic crashes in Nigeria.Also,the increase use of mobile phones around the world has become a growing concern for road safety, because drivers using mobile phones are four times more likely to be involved in road crash than those not using it. Also,these study confirm the assertion made by Ata and Aderinlewo (2012) and David (1999) they posited that the Human and psychological factors constitutes about 90% of highway road traffic crashes, out of this percentage, drivers make up 80% of their ability that is critical to the causes and prevention of traffic crashes.

On the second Objective, Heinrich Domino theory of road accident causation explains that pedestrian fault as in the act of carelessness in crossing the road without watching, commercial / private vehicle drivers or motor-cycle drivers fault in dangerous over taking or excessive speeding on highway result in road crash. And that road crashes were preventable when road users were more carefull to observed rules / regulations of traffic. On the issue of seat belt use: The findings from In-depth interview revealed that passengers, private / commercial vehicle drivers that wear seat belt at the time of road

crash have more than 50 per cent chance of survival in any fatal road traffic crashes. This finding corroborate the study findings carried out by Joanne (2008) types, wearing seat belt by drivers and passengers reduce the risk of death by about 45%, and 83% of ejection during roll- over when car occupant did not wear a seat belt, as compared to 25% when they did not.

The third objective is to assess the consequences on highway road traffic crashes victims in Kaduna State; the study finding shows that the majority 132 (33.3%) of the respondents said that most appropriate punishment for perpetrators/ offenders caught and found guilty for traffic violation that causes death / severe injury of a road user in a road traffic crash was 5years imprisonment without an option of fine. The findings corroborates the study of Novoaa, et al (2011) they posited that Spanish traffic laws prescribed serious sanctions such as; imprisonment, fines, compulsory community service and license suspension as a consequence for offenders to serve as a deterrence to prevent or reduce traffic violation/crashes that could lead to death of road users. On who suffers and mostly affected in any highway road traffic crash.The study finding revealed that the majority 150(37.9%) of the respondents said passengers only were mostly affected and suffered the most consequences, followed by 83(21%) of the victims families when any fatal road crashes occurs. This finding was supported by Indepth Interview Report (IDI) and also corroborated the findings of Dinishohan (2002).

On the effects of higway road traffic crashes on victims and their families, the study find out that the majority 126(32%) said the Death of a bread winer, be it a driver, pedestrian or a passenger was the worst consequences to all road users in any highway road crash while 103(26.1%) of the respondents said survived victims and their families were affected and suffered economic consequences since most victims can no longer

provide for their immediate families. This finding was also supported by IDI report and affirm in a study carried out by David, (1999) that the worst consequences of road traffic crashes was death, but those that survived in such crashes suffered severe economic, social, and psychological consequence especially when perpetrators or offenders were let scot free without prosecution. On the third objective Domino theory explains the consequences of any road crash was as a result of the in-ability of commercial / private vehicle drivers, users of non motorise vehicle and the pedestrians to avoid or prevent Unsafe Act and Condition. Thus, road crash consequences could be averted if all road users imbibe the habit of obeying safety laws and avoid unsafe act or condition on highways.

Fourth Objective is to find out safety remedies and suggest control measures to highway road traffic crashes. On passengers role in HRTC reduction on light duty vehicles; the finding reveals that the majority 85(35.2%) of National Union of Road Transport Workers and National Association of Road Transport Owners said that Passengers inside a vehicle should insist that commercial drivers observed speed limit and caution erring speeding drivers politely to reduce their speed while on motion to avoid a crash. This finding was supported by IDI report where a deputy route commander FRSC staff officer Rs1.1 on rescue said speed limit devices remained one of the most viable solutions in reducing road traffic crashes on our highways. However, did not corroborate any of the literature reviewed. On the role of commercial vehicle drivers in HRTC reduction on light duty vehicle, the study findings shows that the majority 122(30.8%) of the respondents said commercial drivers are to ensure only road worthy vehicle ply the road, this could be archieve through training and re-training of drivers. This was supported by IDI report where a business woman in Kafanchan main Motor Park said road crashes can only reduce when Kaduna State government

release money for quick repairs of roads.While the second finding corroborates the findings of Agbonkhese *et al* (2013) and FRSC, (2008) they observed that different vehicles are required by law to drive within specified speed limits on different road in Nigeria. For example, Nigeria law imposes maximum speed limit of 100km/hr for cars on any highway. Taxi and buses are to maintain maximum of 50km/hr in built up areas.

On the role of NURTW/NARTO members in HRTC reduction, the study findings revealed that Union members help in road crashes reduction on light duty vehicle. The study found out that the majority 56(36.4%) of the passengers said NURTW and NARTO play important role in road crash reduction among commercial drivers through organizing lectures, workshop and town hall meetings on a regular basis in collaboration with FRSC / KSMC 90.9fm towards changing drivers driving culture. Also by punishing erring drivers caught in traffic violation, by clamping their vehicles for three 3 days as a deterrence to others.This finding was supported by IDI report and however, did not corroborate any of the literature reviewed.

On the fourth objective, Domino theory explains that for any road traffic crash to occur, it must pass through a sequence not necessary in a linear progression. Crash is always the last phase, this according to this theory posits that a vehicle driver, pedestrian or other road users in an environment have acted wrongly on road in disobeying rules of traffic which has been learned or acquired through wrong user habit larly exhibited on highway by drivers and pedestrians. The first phase leads to the second phase, which is fault of persons on road due to carelessness, leads to the third phase which are unsafe acts and conditions which is a key stage that pitches the driver from a normal driving phase into an impaired situation following a sequence like a domino falling one another in a roll. The last two phases which is crashes itself and injury or death, this normally

happens in a flash when drivers effort to prevent a crash fails.This theory explain that road crash could be prevented from occurring if road users avoid carring out these unsafe actions in unsafe condition on highways.

On non participant observation, the qualitative data revealed that commercial vehicle drivers and private commercial fleet drivers were engage in excessive speeding and dangerouse overtaking of vehicles on highways. However, it was observed majority of both commercial and private drivers slowed down, and reduced their speed especially on sharp bend, slop or were such roads are full of pot holes and ditch. Based on this observation, the following recommendations were made.

1. That the FRSC and the (N.P) Nigerian Police and Kaduna State Traffic and Environmental Law Enforcement Agency (KASTELEA) be deployed on highways to check, arrest and prosecute traffic offenders and enforce the use of speed limit devices to curb/ prevent highway road traffic crashes among all vehicle drivers.
2. On the issue of passengers manifest, the findings revealed that only passengers on long distance journey were involved in the use of passengers manifest. Therefore, it is recommended that; The (FRSC) should partner with (NURTW/ NARTO) to enforce the use of passenger manifest not only to passengers of long journey, but also to passengers of short journey travel, because all lives are precious hence highway road crashes occurrence does not depend on short or long distance travel.
3. On the change of attitude and driving culture among commercial vehicle drivers/passengers in obeying the rules and regulation of traffic such as;

i. The use of seat belt among drivers/passengers

ii. To obey the rule of pulling over before answering or making call from a cell phone, while driving on highways to prevent / reduce traffic deaths and injuries among drivers, passengers, pedestrians and other road users.Which has devastative

economic, social and psychological consequences. Thus, going by this study, H.W. Heinrich (1931) Domino theory of road accidents causation was use in explaining highway road traffic crashes caused by commercial drivers, pedestrians and passengers and other road users. The theory opines that to prevent highway road traffic crashes, motorist and road users must not engage in "unsafe act or safe condition. Going by Heinrich (1931) Domino theory of road accidents causation, the study found out that the road safety law enforcement agencies (FRSC, NP and KASTELEA) did not performed optimally as specified by FRSC Act 2007, and cap 141 LFN 1990, which empowers them to arrest, enforce and prosecute traffic offenders, and at such were required to adopt a new strategy for highway road traffic crashes prevention in line with the best global practices.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of key findings, conclusion and recommendations drawn from the findings of the study.

5.2 Summary of Major Findings

This study is on the assesssment of highway road traffic crashes in Kaduna State, Nigeria. The first objective of the study was to examine the nature of highway road traffic crashes in Kaduna State. The study found out that Kaduna – Abuja express way has recorded the highest number of highway road traffic crashes occurrences, followed by Zaria – Kaduna express way. The study also revealed that commercial to commercial vehicle drivers were mostly involved in highway road traffic crash on express/ highways than on township or village roads.

Consequently, the study revealed that highway traffic crash occurrence rates was high; hence the road safety law enforcement agencies officials need to step up more effort in curbing traffic violation/crashes among all road users. With regards to types of vehicle collision; the findings show that Head – long to Head – on collision was most common with Golf and Sharon cars on single lane highway among commercial vehicles.While Rear-end collision collision was dominant on high/expressway among all vehicle types. Similarly, further findings revealed that young commercial to commercial vehicle drivers of the age bracket of 18-45years were mostly involved and perpetuated in highway road traffic crashes and should be prosecuted. On Effects of crashes on all road users, the study findings revealed that most of the HRTC victims suffered economic and social effect as a result; such victims can no longer contribute

meaningfully to the nation's economy and usually remain as a burden to their self and the society.

On the causes of highway road traffic crashes in Kaduna State, the findings revealed that over speeding, dangerous over taking and used of cell-phone and other hand held devices while driving were the most frequent dominant causes for HRTC among commercial vehicle drivers and at such, crashes was never an act of God. And that NURTW / NARTO members didn't directly encourage or contributed to highway road traffic crashes occurrence;

On the consequences of highway road traffic crashes caused by perpetrators; the study found out that guilty perpetrators / offenders were to be jailed for 5years imprisonment, this is to serve as deterrent to others and prevent those who may have the intension to violate rules and regulation of traffic. Further finding shows that passengers only were mostly affected and suffered as road crashes victims with death as the worst consequences.While the survived victims suffered economic, social, and psychological consequences.

On the remedies to highway road traffic crashes; the findings suggest that passengers inside a commercial vehicle should insist that drivers observed speed limit compliance and causion erring ones politely, in reducing their speed when driving on highways to avoid traffic crashes. This could be enforced by the use of speed limiters by FRSC or KASTELEA. Further findings revealed that national union of road transport workers and owners (NURTW/ NARTO) members role in HRTC reduction was by organizing lectures, town hall meetings on regular basis in collaboration with FRSC / KSMC 90.9fm to change drivers driving culture and also by punishing erring member caught in highway road traffic violations.

5.3 Conclusion

It is evident that excessive speeding, dangerous overtaking and the use of cell phones and other devices amomong commercial vehicle drivers and private car drivers were the causes of highway road traffic crashes in Kaduna State rather than the act of God.

Given the rate of death among passengers, commercial drivers and pedestrians that perish in such traffic crashes occurrences on daily bases This study has showed clear evidence that highway crashes victims suffer severe psychological trauma, material losses and property damages, also victims bear sevear financial/economic burden and socio-psychological consequences as a result of road crashes.While commercial vehicle drivers were to be blamed and held responsible for the causes of road crashes, the State and federal government was to be blame for bad roads across the Kaduna State for in-proactiveness and poor road maintainance culture. This portray the greatest danger for commercial and private vehicle drivers, pedestrians and other road users that meet untimely death on these highways having devastative consequences as road crash victims.Consequently, Assessment of highway road traffic crashes in Kaduna State, Nigeria has brought out a number of lessons.

Firstly, the problem of highway road traffic crashes is real, and has assumed a serious dimension in frequency of traffic crashes occurrences on highway and in terms of trauma for the victims and their families. Secondly, the study has revealed that the highest road crashes occurred on major high/expressway and the lowest in rural and village roads. Thirdly, by these assessments it is evident that HRTC in Kaduna state is on the increase. This is an indication that the various road safety law enforcement agencies i.e. FRSC, NP and KASTELEA lack the adequate human, material and financial resources to satisfactorily prosecute perpetrators/offenders and discharge their assigned functions. Consequently, the attitudinal change in behaviour and bad driving

culture of commercial vehicle drivers and other road users on highways is based on faulty structure of the operational social order in Kaduna state is largely responsible for the problem of highway crashes deaths/injuries due to traffic violation.

5.4 Recommendation

The following recommendations are based on the research Findings;

Given the myriad of casuality faced by road users from road crashes resulting to destruction of lives and property, affecting the socio-economic wellbeing of people and the society. Based on this observation, the following road safety measure/ interventions that has the potential to reduce highway crashes on road users and ameliorate their plight, though with certain implication.

A. Short – term Recommendation

(1) The study found out that most commercial and private vehicle drivers were driving above prescribed speed limit, in violation of traffic laws. In view of this, the study recommended that passengers are to insist commercial drivers observed stipulated speed limit, and causion erring drivers politely to reduce speed while driving on highway. And that (FRSC) Rs1.1 Kaduna Sector Command, the NP, and KASTELEA should provide the public with special law enforcement hotlines numbers that individuals can call and report plate numbers, model and colour of cars when drivers are found wanting.

(2) The study found out that most vehicles plying the highways were not road worthy. In view of this, the study recommended that only vehicles that are certified road worthy by road safety agencies should ply Nigerian roads. This could be achieved through training and re-training of commercial drivers, in collaboration with

NURTW and NARTO members. And through timely release and disbursement of funds meant for road maintenance/rehabilitation by the Federal Government to Kaduna State government will make the State to be proactive in quick repairs of bad road. Also driver that are found wanting should have their vehicles impounded after a driver have receive a second booking. This will reduce or prevent frequent road crashes and death of productive group among private, commercial vehicle drivers, pedestrians and other road users on highways. And by extension enhance economic growth and gross domestic product (GDP) as well as the socio-economic life of the people of Kaduna State.

(3) Findings from the study revealed that NURTW/ NARTO members play important role in HRTC reduction, on light duty vehicles was by organizing lectures, workshop and town hall meetings on a regular basis in collaboration with FRSC/KSMC 90.9FM towards changing drivers driving culture. Also by punishing erring drivers caught in traffic violation, by clamping their vehicles for three 3 days as a deterrence to others.

(4) Findings from the study recommended that, the (FRSC) Rs 1.1 Kaduna State Sector Command, (NP), and Kaduna State Traffic Environmental Law Enforcement Agency (KASTELEA) to enforce the use of speed limiters devices by commercial and private vehicle drivers on Kaduna State highways to reduce road crashes. This could be achieved by partnering with NURTW and NARTO in collaboration with Kaduna State Media Corporation Capital Sound 90.9FM, through her Oga driver safety daily talk show.

The implication of the above policy measures

The federal government of Nigeria in February (1988) established FRSC to curb and reduce HRTC death/ injury among road users, KASTELEA is also an upshot of

Kaduna State road safety policy to arrest and prosecute traffic offenders. Thus, the implication is that if all law enforcement agencies failed to carry out their duties effectively, and road users will continue to violate road safety laws, rules and regulations on highways and nothing is done by these agencies to stem this unpleasant tide, death/ injury by road crashes would increase exponencially and overtake death resulting from malaria, tuberculosis and natural disaster in next five (5) years in Kaduna State, Nigeria.

5.5 Recommendation for further research

B Long term recommendation

1. Further research could be conducted in future on the use of speed limit devices, to determine whether commercial/private vehicle drivers are ready for the use of these devices. Taking into consideration (Bad Roads) and armed robbery attacks on highways. And also further study should be conducted to determine if there are any consequences on the non use of passengers manifest) on short distance journey and its implication on passengers, NURTW/O and commercial vehicle drivers in the transportation industry.

5.6 Contribution to Knowledge

The contribution to knowledge was based on this research finding:

1. The study has contributed to knowledge in that the highest road traffic crashes among commercial vehicle drivers in Kaduna State occurred along Kaduna – Abuja expressway of whom most young drivers within the aged 18 – 45 years are mostly affected as revealed from the finding in the study.

2. The study has contributed to knowledge on road transport sector by identifying that the majority of the respondents said the major causes of highway road traffic crashes on Kaduna State highway was Over Speeding, Dangerouse Over taking and the use of Cell Phone Devices (UPD) among commercial vehicle drivers as revealed from the finding in the study.
3. The study has contributed to knowledge in the area of available records from 2011-2015 show a consistent rise in the trend of highway road traffic crashes and fatalities, there seems to be increase in serious cases, between 2015 and 2016. This suggests that more need to be done by road safety management agencies as revealed from the finding in the study.
4. The study has contributed to knowledge in the area of safety management by identifying that NURTW and NARTO in the studied motor parks do not use passengers manifest in short distance journey which is against the international standards of keeping bio-data of passengers incase of road crash death as such records are useful to victims' family and the Unions interms of insurance benefits as revealed from the findings in the study.

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APPENDIX 1

QUESTIONNAIRE

Department of Sociology
Faculty of Social Sciences
Ahmadu Bello University,
Zaria.

Dear Respondent,

An Assessment Study of Highway Road Traffic Crashes in Kaduna State;

This is a research questionnaire for which you are please requested to answer by ticking the option that is most applicable to you.This study, which is in partial fulfillment of the requirement for the award of a master's of science degree (Msc). An Assessment study of Highway Road Traffic Crashes in Kaduna State has been chosen as a topical issue that impinges on our individual lives. Therefore, you are please kindly requested to supply candid responses or answer to the questionnaire, bearing in mind that your response will be confidentially handled as it is only an academic excise.

Yours sincerely

Udie Peter Ugbe
08130463083

Instruction: For each question, please write in the space provided or tick correctly [√]

Section A: Socio-Demographic data

1. Sex: (a) Male [ ] (b) Female [ ]

2. Age: (a) 18-25 years [ ] (b) 26-35 [ ] (c) 36-45 [ ] (d) 46 and above [ ]

3. Educational qualification: (a) HND/ Bsc or Higher Degree [ ] (b) NCE/OND [ ]
(c) Secondary [ ] (d) Primary [ ] (e) Quaranic [ ] (f) No formal Education [ ]

4. State of Origin:_____

5. Marital Status: (a) Single [ ] (b) Married [ ] (c) Separated [ ] (d) Divorce [ ]
(e) Widow/widower [ ]

6. Ethnic Group: (a) Hausa/Fulani [ ] (b) Igbo [ ] (c) Yoruba [ ]
(d) Others (specify)_____

7. Religious Affiliation: (a) Christianity [ ] (b) Islam [ ] (c) Traditionalist [ ]
(d) Others (specify)_____

8. Residence/Town _____

9. Occupation: (a) Commercial vehicle driver [ ] (b) NURTW/NURTO (Members) [ ] (c). Passenger [ ]

10. Motor Park of Operation (a) Dadi (MP) [ ] (b) Makarfi (MP) [ ] (c) Television Garage (MP) [ ] (d) Kafanchan Main (MP) [ ] (d) Mando (MP) [ ]

11. Income per month: (a) Below ₦10,000 [ ] (b) ₦ 11, 000- ₦ 15, 000 [ ]

(c) ₦ 16, 000 – ₦ 20,000 [ ] (d) ₦ 21, 000 – ₦ 25, 000 [ ] (e) ₦ 26,000 – ₦ 30,000 [ ]

(f) ₦ 31, 000 and above [ ]

Section B: The Nature of Road Traffic Crashes in Kaduna State.

Please note, for detailed response and answers, these section. The Nature has to do with: Where road crashes occurs, how crashes occurs, those usually affected (Victims), and Perpetrators.

Please skip next question if you are a passenger:

12. How many years of experience do you have in driving?_____

13. Where do high way road crashes frequently occur? (a) Zaria/Kano express Way [] (b) Zaria/Jos High Way [ ] (c) Zaria/Kaduna Express Way [ ] (d) Kaduna/Abuja Express Way [ ] (e) Kafanchan/Jos High Way [ ] (f) Zaria/Sokoto High Way [ ] (g) Kaduna/Brinin Gwari High Way [ ] (h) Saminaka/Jos High Way [ ] (i) Kaduna/Kafanchan High Way [ ]

14. When do these highway road traffic crashes mostly take place?

(a) Morning Hours [ ] (b) After-Noon Hours [ ] (c) Night Hours [ ]

These questions are on how Crashes occur on roads.

15. What kind of vehicles is mostly involved in highway road traffic crashes?

(a) Commercial/ Commercial Vehicles [ ] (b) Commercial/ Private Vehicles [ ]

(c) Commercial / Pedestrians [ ] (d) Private Car / Motorcyclist [ ]

(e) Commercial Vehicle / Motorcyclist [ ] (f) Single Vehicle on their own [ ]

(g) Multiple Vehicles [ ]

Please skip the next question if you are a passenger or a union member

16. Was there any period between 2011--2015 that you or any register driver operating along your route had any road crashes? Yes [ ] No [ ]

17. If yes, in what year did the crashes occur? (a) 2011 [ ] (b) 2012 [ ] (c) 2013 [ ] (d) 2014 [ ] (e) 2015 [ ]

18.How many number of times did the crashes occurs? (a) One [ ] (b) Two [ ] (c) Three [ ]

19. Where was the location of the crashes? (a) Zaria / Kano Express way [ ] (b) Zaria / Jos High way [ ] (c) Zaria / Kaduna Express way [ ] (d)Kaduna / Abuja Express way [ ] (e) Kafanchan / Jos High way [ ] (f) Zaria / Sokoto High way [ ] (g) Saminaka / Jos High way [ ] (I)Kaduna / Kafanchan High way [ ] (j) Kaduna / Brinin Gwari High way [ ]

20. What time of the day did the crashes took place? (a) Morning [ ] (b) Afternoon [ ] (c) Evening [ ] (d) Night [ ]

21. What was the cause of crashes?_____

22. What was the effect of crashes? (a) Fatal [ ] (b) Serious [ ] (c) Minor [ ]

23. How do these highway road traffic crashes usually occur?

(a) Head long/Head-on collision [ ] (b) Vehicle collide with pedestrians [ ] (c) Rear-end collision [ ] (d) Vehicle roll over [ ] (e) Skid/Drive off the road [ ]

(f) Vehicle colliding with motorcyclist [ ] (g) Vehicle colliding with Animals [ ]

(h) Vehicle colliding with road debris [ ] (i) Side impact collision [ ] (j) Side swipe collision [ ] (m) Multi-vehicle collision [ ]

24. Who are mostly the drivers of these vehicles?

(a) Under aged drivers [ ] (b) Young people drivers [ ] (c) Elderly people drivers [ ]

(d) Others (Specify)_____

25. How will you feel/react when crashestake place in your presence?

(a) Sad and went for immediate rescue of victims [ ] (b) Sad but remain as a spectator [ ]

(c) Feel unconcern and happy [ ] (d) Indifferent [ ]

26. Why would you consider traffic crashes offence (s) to be most serious crime compared to other offences?_____

27 .In your opinion do you agree that more traffic crashes occur on local or village road than on major express way / high ways?

(a) Strongly Agree [ ] (b) Agree [ ] (c) Strongly Disagree [ ] (d) Disagree [ ]

(e) Others (Specify) _____

28. Who do you think should be held responsible for highway road traffic crashes as result of traffic violation in Kaduna state?_____

29. Do you think, frequent highway road traffic crashes have any effect on road users in Kaduna state?

(a) Economic effects [ ] (b) Social effects [ ] (c) Psychological effects [ ]

(d) Others (specify)_____

Those usually affected (as victims)

These Questions are for your candid response to find out those that are affected mostly in highway road traffic crashes;

30. Who do you think that suffers / affected most after highway road crashes?

(a) Commercial vehicle Drivers/Passengers [] (b) Private vehicle drivers/Passengers [ ]

(c) Bye-standers or pedestrians [ ] (d) Others (Specify)_____

31. At what period of the day do we have victims most during highway road crashes occurrence(s)? (a) Morning [ ] (b) After noon [ ] (c) Evening [ ] (d) Night [ ]

Please Skip next question if you are a passenger

32. Has there been any time you or any member of your family sustained any degree of injury in high way road crashes?

(a) None at all [ ]

(b) Minor (no hospital treatment) [ ]

(c) Aggravate (treatment but no hospitalization) [ ]

(d) Serious aggravated (treatment with hospitalization) [ ]

(e) Instant death within few hours (respondent not a victim) [ ]

(f) Victim died within one to two weeks [ ]

(g) Others (Specify) _____

Skip next question if you are a driver or a (NURTW/NURTO) member

33. Has there been any time you or any driver in your union sustained any degree of injury after high way road crashes?

(a) None at all [ ] (b) Minor (no hospital treatment) [ ] (c) Aggravate (treatment but no hospitalization) [ ] (d) Serious aggravated (treatment with hospitalization)[ ] (e) Instant death within few hours (respondent not a victim) [ ] (f) Victim died within one to two weeks [ ] (g) Others (Specify)_____

Please skip question 34-36 if you have not been affected as a victim of highway road traffic crashes before

34. As a victim of road crashes, did you report the offender to the NP, VIO, or FRSC officials? (a) No [ ] (b) Yes [ ]

35. If yes, to which of the agency did you report to?

(a) Nigerian Police (NP) [ ] (b) VIO Official/Officer [ ] (c) FRSC Official/Officer [ ]

36. (If No) why did you not report?_____

37. What action did any of the officers of the safe agency reported to take?

(a) No Action was taken [ ] (b) Complaint taken and recorded only [ ] (c) Action was taken offenders pay damages [ ] (d) Action was taken offenders charged to court [ ]

38. Who do you think are usually the victims of these highway road traffic crashes?

(a) Commercial vehicle drivers/ passengers [ ] (b) Private vehicle driver/passenger [ ] (c) Bye stander/ pedestrians [ ] (d) Motorcyclist drivers [ ] (e) Tankers/Trailer drivers [ ] (f) No response [ ]

Perpetrators of highway road traffic crashes in Kaduna state.

39. In your opinion which category of road users are mostly involved in highway road traffic crashes in Kaduna State?

(a) Commercial Vehicle Drivers [ ] (b) Private Car drivers [ ] (c) Tri-cycle/motor cycle operators [ ] (d) Pedestrians [ ] (e) Military/Para-military officers [ ] (f) Political/elites and their Aids [ ](f) Commercial Bank bullion van drivers [ ] (g) Tanker/ Trailer drivers [ ] (h) Herds men on roads [ ]

40. To your knowledge has there been any big man/woman (of the upper class) arrested for traffic violation that caused highway road traffic crashes?

(a) Never [ ] (b) Arrested and release after fine payment [ ]

(c) Arrested license and vehicle impounded for 6 months [ ]

(d) Arrested and release after verbal warning without prosecution [ ]

(e) Arrested pay fine and convicted for 6 months imprisonment [ ]

(f) Arrested imprisoned for 1 year with out and option of fine [ ]

\41. Do you agree that teenage and un-license commercial bus drivers are mostly the perpetrators of traffic violation that cause crashes on major highways in Kaduna State?

(a)Strongly Agree [ ] (b) Agree [ ] (c) Disagee [ ] (d) Strongly Disagree [ ]

Section C: To Examine the Causes of Road Traffic Crashes by Road Users in Kaduna State.

42. In your opinion, is highway traffic crashes on Kaduna roads an act of God or it is Cause? _____

43. Do you think that all road users contribute to the causes of highway road traffic crashes?

(a) Yes [ ] (b) If No How?_____

Please Skip next question if you are a commercial driver;

44. Do you think commercial vehicle drivers contribute to highway road traffic crashes in Kaduna State? (a) Yes [ ] (b) No [ ] (c) Undecided [ ]

Skip next question if you are Passenger

45. Do you think passengers contribute to highway road traffic crashes?

(a) SA = Strongly Agree [ ] (b) A= Agree [ ] (c) D= Disagree [ ] (d) SD= Strongly Disagree [ ]

46. What is or (are) the most frequent factors responsible for highway road traffic crashes in Kaduna State? (a) Over speeding [ ] (b) Danger over taking [ ] (c) Smoking/Drunks Driving [ ] (d) In attention, confusion & lack of judgment [ ] (e) Drivers carelessness at road junction [ ] (f) Non use of seat belt [ ] (g) Over loading of vehicle [ ] (h) Wrong packing [ ] (i) Use of cell-phone & other device while driving [ ] (j) Vehicle mechanical defect (e.g.) fail wiper [ ] (k) Bad road (pot holes) [ ] (l) Weather factor (Heavy rain or hamatam haze). [ ] (m) Driver Fatigue/stress or tiredness [ ] (n) under age driving [ ] (o) Obstruction on the road [ ] (p) Pedestrians faulty/carelessness [ ]

(q) Road safety official fault [ ]

Please Skip next question if you are a union member (NURTW/ NURTO)

47. Do you think Union Members contribute to highway road traffic crashes?

(a) SA= Strongly Agree [ ] (b) A = Agree [ ] (c) D = Disagree [ ] (d) SD = Strongly Disagree [ ]

48. Do you think commercial bus/taxi drivers in Kaduna State are well informed about the Causes of road traffic crashes?

(a) Yes [ ] (b) No [ ] (c) Undecided [ ]

Section D: To Access the Consequences of Road Traffic Crashes in Kaduna State?

49. In your opinion what do you think is the most appropriate punishment to perpetrator/ offenders that cause HRTC in Kaduna state?_____

50. In any fatal highway road traffic crashes who suffers the most effects?

(a) Drivers only [ ] (b) Passengers only [ ] (c) The victims family [ ]

(d) Drivers / Passengers [ ] (e) Kaduna State government [ ] (f) Federal government [ ] (g) Others (Specify)_____

51. Do you think that destruction of vehicle and property in highway road crashes serves as a consequence to private / commercial drivers that cause the crashes resulting from traffic laws violations? (a) SA= Strongly Agree [ ] (b) A= Agree [ ] D= Disagree [ ] (c) SD= Strongly Disagree [ ]

Please tick three most preferred consequences/ options against each category or group of road users as shown below.

52. What do you think is the worst effects on high way traffic road crashes victims?

_____

SECTION E: What are the Remedies to Road Traffic Crashes in Kaduna State?

Please Skip the next question if you are a Passenger;

53. In your opinion, what can a passengers do to reduce highway road traffic crashes of light duty vehicles?_____

54. What is your take on Kaduna State government current measures in reducing highway road crashes? _____

Skip next question if you are a commercial vehicle driver;

55. What do you think commercial vehicle drivers can do to reduce highway road traffic crashes of light duty vehicles?_____

Please Skip next question if you are a Union Member (NURTW/ NURTO)

56. In your opinion, what can union members do to reduce highway road traffic crashes of light duty vehicles?_____

57. Kindly suggest ways of reducing traffic crashes associated with Heavy duty Vehicles (HDV) on Kaduna State roads?_____

58. Don't you think that the change of your attitude and that of the other road users in obeying traffic laws remain the only option to reduce traffic crashes/ deaths on highways?

(a) Strongly Agreed [ ] (b) Agreed [ ] (c) Disagree [ ] (d) Strongly Disagree [ ]

59. Don't you think that FRSC in Kaduna State has done enough in reducing highway road traffic crashes / deaths in the last 5 years?

(a) SD= Strongly Agree [ ] (b) A= Agree [ ] (c) D= Disagree [ ] (d) SD=Strongly Disagree [ ]

60. Don’t you thing that passengers/vehicle drivers that use seat belt have 50% high chance of survival than those who did not use seat belt during fatal road traffic crashes?

(a) Yes [ ] (b) No [ ] (c) Undecided [ ]

61. Don’t you think that the activities of Kaduna State Media Corporation Capital Sound 90. 9 Fm stereo through her Oga Driver program on (Road Safety Awareness) is a remedy to high way road traffic crashes reduction ?_____

_____

APPENDIX II

AHMADU BELLO UNIVERSITY ZARIA
DEPARTMENT OF SOCIOLOGY
FACULTY OF SOCIAL SCIENCES

QUESTIONNAIRE

STRUCTURED INTERVIEW GUIDE (IDI) ON AN ASSESSMENT STUDY OF HIGHWAY ROAD TRAFFIC CRASHES IN KADUNA STATE

What is the nature of Road Traffic Crashes in Kaduna State?

Probe:

Where crashes occur:

(I) Where highway road traffic crashes do mostly takes place? (ie. what types of vehicles are involved) does it occur within the metropolis or high / express way,?

(II) In your opinion, is a highway road crashes on Kaduna road an act of God or it is cause?

(III) What kind of vehicle is mostly involved in highway road traffic crashes?

(IV) What do you think is responsible for frequent high way road traffic crashes in Kaduna State?

How does this road crashes occur?

(i) How do highway road traffic crashes usually occur? (I mean type of vehicles collision)?

(ii) Who are mostly the drivers of these vehicles? (i.e. Age category /bracket of these drivers)?

(iii) Do you think frequent high way road traffic crashes occurrence has any effects on road users?

(iv) Who do you think should be (Held) responsible for highway road crashes as result of traffic violations in Kaduna state?

Those usually affected (as road crashes victims)

Probe

(i) Who do you think are usually the victims of highway traffic crashes (I mean, are they passengers, drivers or who are they)?

(ii) At what period of the day do we have victims most during highway road traffic crashes occurrence (s)?

Perpetrators of (high way road traffic crashes)

(i) Which categories of road users are mostly involved/ perpetuate in road traffic crashes in Kaduna State?

(ii) To your knowledge, has there been any big Man or Woman i.e. (those of the upper class) arrested for any traffic violation that cause crashes on highway?

1. To examine the causes the of road traffic crashes in Kaduna state

Probe:

(i) What are the factors responsible for high way traffic crashes in Kaduna state?

(ii) Don't you think that motorist or vehicle drivers that use seat belt have 50% high chance of survival than those who dint not use seat belt during fatal highway road traffic crashes?

(iii) What do you think is responsible for non use seat belt among commercial/ private vehicle drivers in Kaduna state?

(iv) Who do you think encourage/contribute to highway road traffic crashes, is it the Passengers, Drivers and (NURTW / NURTO) members?

2. What are the consequences of road traffic crashes in Kaduna State?

Probe

(i) What are (in) your opinion the consequences of highway road traffic crashes in Kaduna State?

(ii) In any fatal highway road traffic crashes, who suffers most in terms of social, economic, and psychological consequences?

3. What are the remedies/solutions to road traffic crashes in Kaduna State?

Probe

(i) What is your take on Kaduna state current measures to reducing highway road traffic crashes?

(ii) Do you think that FRSC in Kaduna state has done enough in reducing highway road traffic crashes deaths in the last 5 years?

(iii) What solution can you proffer to road crashes/traffic violation reduction with all types of vehicles on Kaduna roads?

(iv) Do you think that the introduction of Kaduna State traffic environmental law enforcement agency (KASTELEA) is a welcome measure in traffic violation / road crashes reduction?

(v) Do you agree that Kaduna state radio Corporation Capital Sound 90.9Fm stereo through her (OGA DRIVER) program on road safety awareness is a remedy to highway road traffic crashes reduction?

APPENDIX III

Department of Sociology
Faculty of Social Sciences
Ahmadu Bello Universit, Zaria.

OBSERVATION CHECKS LIST: On an Assessment Study of Highway Road Traffic Crashes in Kaduna State.

The researched intains to observe certain issue in the motor parks such as:

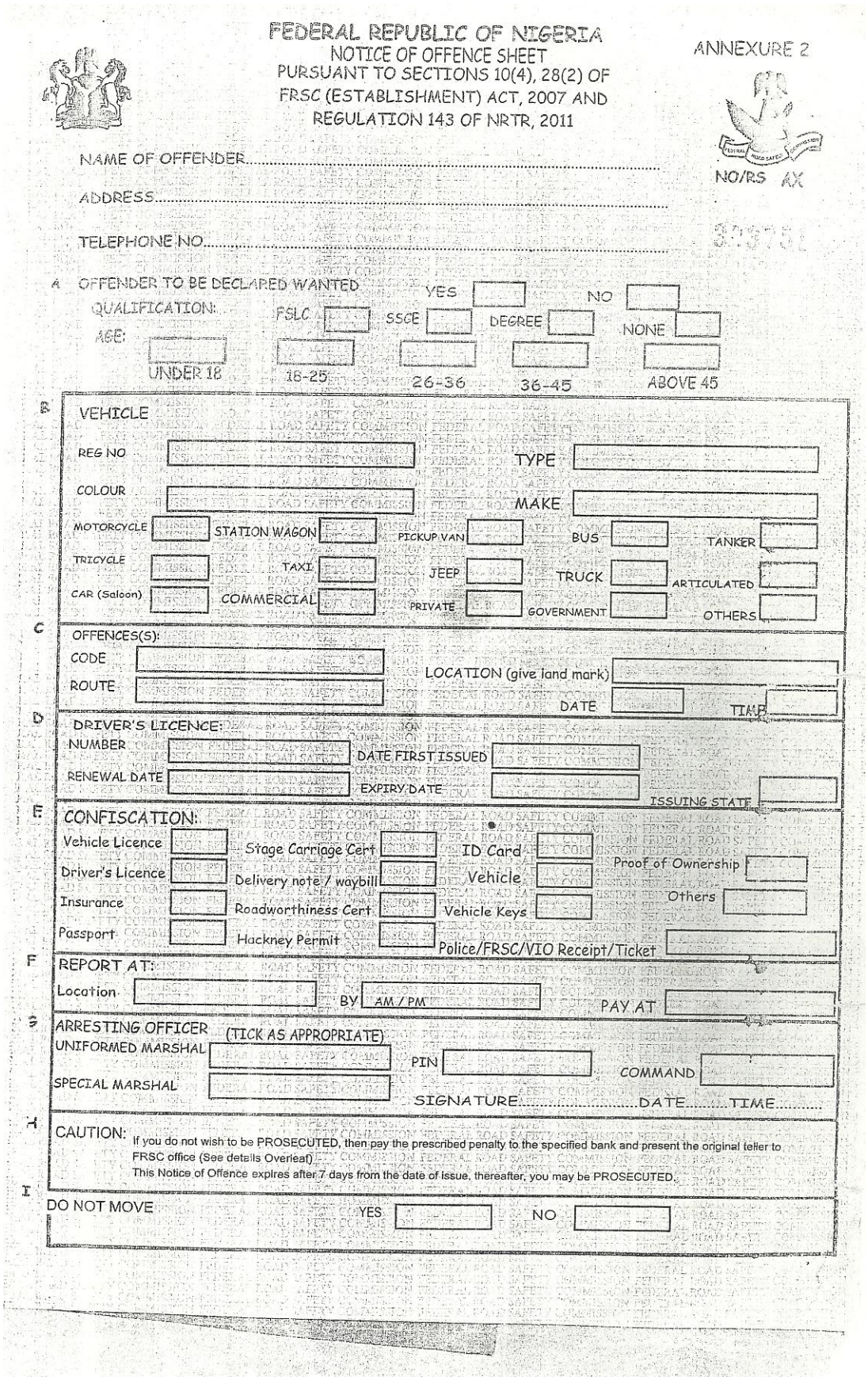
1. Passenger boarding of vehicle with a view whether drivers are committed to enforced the required no of passengers stipulated by law as (against over loading)
2. To observe whether drivers comply with checking of vehicle tyre air pressure before moving out from the motor park.
3. Whether drivers/Unions comply with passengers writing their names, destination and contact phone number/Address in passengers manifest before movement.
4. Observation will be made in strategic location for:
    (a) Observer speeding Driver
    (b) Disobedient to Traffic Laws as in over loading or red light running at road junction/run about.
    (c) Mechanically deficient vehicles as in bad or no wipers
    (d) Bad or no head lamps and worn out tyres.
5. Observation will be made in FRSC Rs 1.1 Kaduna Sector Command Office through and informed consent observing for:
    (a) How offender are booked in their booking sheet.
    (b) How entering is made and fines are paid.
    (c) How vehicle impoundment is carry out among others.

APPENDIX IV

LIST OF INFORMANTS

S/N	NAMES	POST
1	Deputy Superintendent of Police	2nd In Command (2IC) Motor Traffic Metro Area C Police Command
2	FRSC Deputy Route Commander (DRC)	Head of Integent unit Makarfi
3	FRSC Deputy Route Commander	Staff Officer Rs 1.1 on rescue Kaduna Sector command
4	FRSC Route Commander (RC)	Staff Officer administration and planning Rs 1.1
5	Deputy Director	Kaduna State Ministry of Transport
6	NURTW	Chair Man Dadi Motor Park Zaria
7	NURTW	Secretary Taxi Long Journey Makarfi cental motor park kawo
8	NURTW	Secretary Buses Makarfi motor park kawo
9	NARTO	Secretary Mando Lagos garage
10	NARTO	Secretary Taxi Long Journey Television garage Kakuri Kaduna
11	Car Owner Business Woman	Kafanchan main motor park
12	Kaduna State Media Corporation	Presenter of OGA Driver radio talk show 90.9fm

APPENDIX V



FEDERAL REPUBLIC OF NIGERIA
NOTICE OF OFFENCE SHEET
PURSUANT TO SECTIONS 10(4), 28(2) OF
FRSC (ESTABLISHMENT) ACT, 2007 AND
REGULATION 143 OF NRTR, 2011

ANNEXURE 2

NO/RS AX

NAME OF OFFENDER.....

ADDRESS.....

TELEPHONE NO.....

A OFFENDER TO BE DECLARED WANTED YES NO

QUALIFICATION: FSLC SSCE DEGREE NONE

AGE: UNDER 18 16-25 26-36 36-45 ABOVE 45

B VEHICLE

REG NO TYPE

COLOUR MAKE

MOTORCYCLE STATION WAGON PICKUP VAN BUS TANKER

TRICYCLE TAXI JEEP TRUCK ARTICULATED

CAR (Saloon) COMMERCIAL PRIVATE GOVERNMENT OTHERS

C OFFENCES(S):

CODE LOCATION (give land mark)

ROUTE DATE TIME

D DRIVER'S LICENCE:

NUMBER OR DATE FIRST ISSUED

RENEWAL DATE EXPIRY DATE ISSUING STATE

E CONFISCATION:

Vehicle Licence Stage Carriage Cert ID Card Proof of Ownership

Driver's Licence Delivery note / waybill Vehicle

Insurance Roadworthiness Cert Vehicle Keys Others

Passport Hackney Permit Police/FRSC/VIO Receipt/Ticket

F REPORT AT:

Location BY AM / PM PAY AT

G ARRESTING OFFICER (TICK AS APPROPRIATE)

UNIFORMED MARSHAL PIN COMMAND

SPECIAL MARSHAL

SIGNATURE.....DATE.....TIME.....

H CAUTION: If you do not wish to be PROSECUTED, then pay the prescribed penalty to the specified bank and present the original teller to FRSC office (See details Overleaf)
This Notice of Offence expires after 7 days from the date of issue, thereafter, you may be PROSECUTED.

I DO NOT MOVE YES NO

FEDERAL REPUBLIC OF NIGERIA
NOTICE OF OFFENCE SHEET
PURSUANT TO SECTIONS 10(4), 28(2) OF FRSC (ESTABLISHMENT) ACT, 2007 AND REGULATION 143 OF NRTR, 2011

S/NO	TICK INFRINGEMENT (S)	CODE	POINTS	PENALTY	CATEGORY
1	ASSAULTING MARSHAL ON DUTY	AMD	10	10,000	2
2	ATTEMPTING TO CORRUPT MARSHAL ON DUTY	ACS	10	10,000	2
3	CAUTION SIGN VIOLATION	CSV	3	3,000	3
4	CONSTRUCTION AREA SPEED LIMIT VIOLATION	CAV	3	3,000	1
5	DANGEROUS DRIVING	DGD	10	50,000	1
6	DO NOT MOVE VIOLATION	DNM	2	2,000	2
7	DRIVER'S LICENCE VIOLATION	DLV	10	10,000	2
8	DRIVING UNDER ALCOHOL/DRUG INFLUENCE	DUI	5	5,000	2
9	DRIVING WITH WORN-OUT TYRE	TYV	3	3,000	1
10	DRIVING WITH EXPIRED/WITHOUT SPARE TYRE	EWT	2	2,000	3
11	EXCESSIVE SMOKE EMISSION	ESE	5	5,000	1
12	FAILURE TO COVER UNSTABLE MATERIALS	FCM	5	5,000	1
13	FAILURE TO FIX RED FLAG ON PROJECTED LOAD	FFF	3	3,000	1
14	FAILURE TO MOVE OVER	FMO	3	3,000	1
15	FAILURE TO REPORT ROAD CRASH	FRC	10	20,000	1
16	FIRE EXTINGUISHER VIOLATION	FEV	3	3,000	3
17	INADEQUATE CONSTRUCTION WARNING SIGN	ICW	-	50,000	1
18	LIGHT/SIGN VIOLATION	LSV	2	2,000	2
19	MEDICAL PERSONNEL/HOSPITAL REJECTION OF ROAD CRASH VICTIM	RCV	-	50,000	1
20	OPERATING MECHANICALLY DEFICIENT VEHICLE	MDV	5	5,000	1
21	OBSTRUCTING MARSHAL ON DUTY	OMD	3	3,000	2
22	OPERATING A VEHICLE WITH FORGED DOCUMENTS	OFD	10	20,000	3
23	OVERLOADING	OVL	10	10,000	1
24	PASSENGERS' MANIFEST VIOLATION	PMV	10	10,000	2
25	RIDING MOTORCYCLE WITHOUT USING CRASH HELMET	RMH	2	2,000	1
26	ROAD OBSTRUCTION	ROB	5	5,000	1
27	ROAD MARKING VIOLATION	RMV	5	5,000	1
28	ROUTE VIOLATION	RTV	10	10,000	1
29	SEAT BELT USE VIOLATION	SUV	5	5,000	1
30	SPEED LIMIT VIOLATION	SLV	5	5,000	1
31	UNAUTHORIZED REMOVAL/TAMPERING WITH ROAD SIGN	UTS	5	5,000	1
32	UNDER AGED DRIVING/RIDING	UDR	-	10,000	1
33	USED OF PHONE WHILE DRIVING	UPD	4	4,000	1
34	VEHICLE LICENCE VIOLATION	VLV	3	3,000	2
35	NUMBER PLATE VIOLATION	NPV	3	3,000	1
36	VEHICLE WINDSHIELD VIOLATION	VWV	2	3,000	1
37	WRONGFUL OVERTAKING	WOV	3	3,000	1
38	PROJECTED LOAD IN EXCESS OF PRESCRIBED LIMIT	PLE	3	3,000	1
39	VEHICLE MIRROR VIOLATION	VMV	3	3,000	1
40	LEARNERS DRIVING REGULATION VIOLATION	LDV	10	3,000	1
41	CHILD RESTRAINT VIOLATION	CRV	6	3,000	1
42	CHILD SITTING POSITION VIOLATION	CPV	6	3,000	1
43	DRIVING RIGHT - HAND STEERING VEHICLE	DRV	10	3,000	1
44	OTHER OFFENCES/VIOLATIONS	OFV	2	3,000	-

NOTE: Custody fee on impounded Motor Vehicle and Motorcycle/Tricycle is N200.00 and N100, respectively per day payable after initial 24 hours of grace.

YES ☐ NO ☐

Do you wish to waive your Right to a court trial?

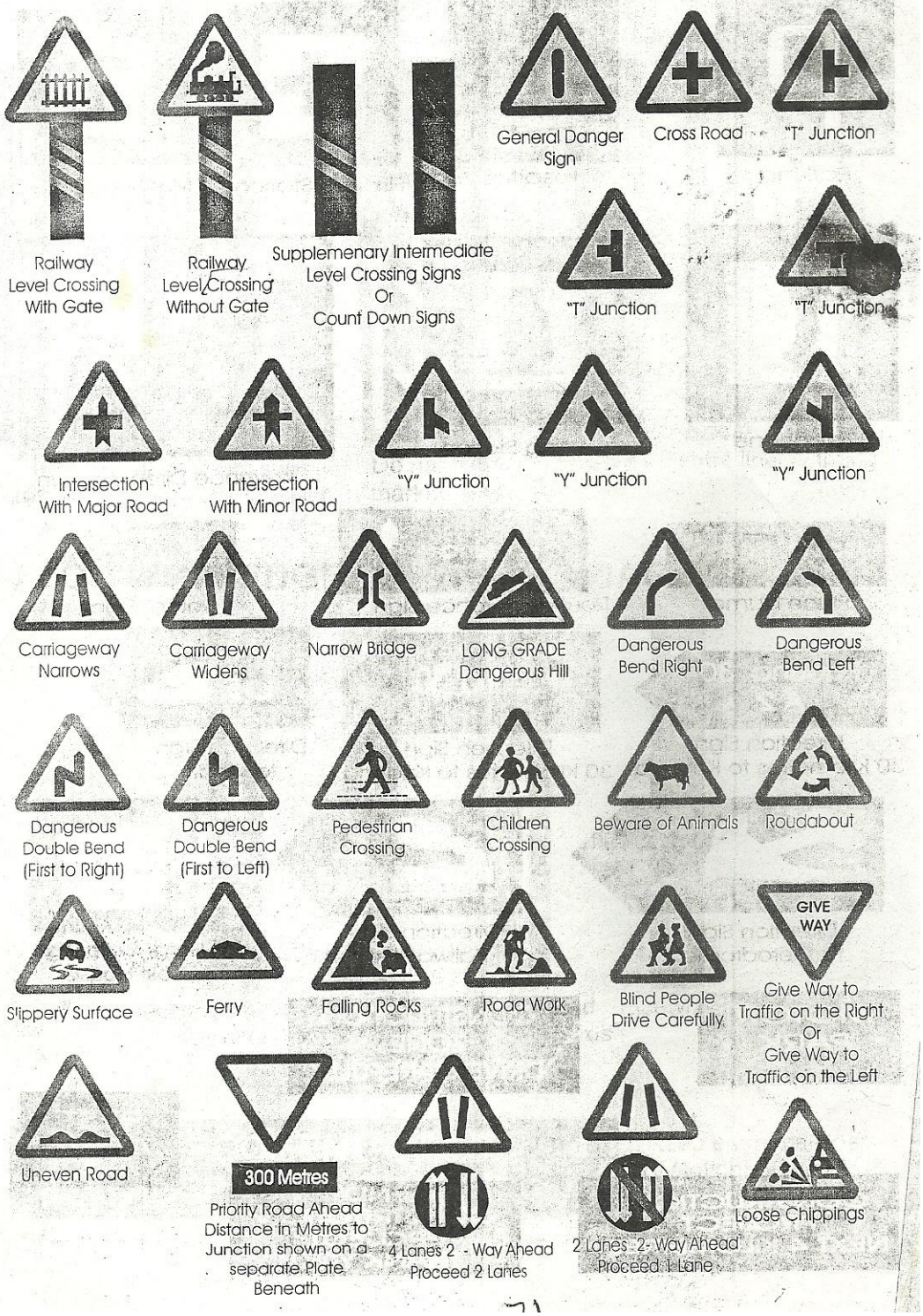
If yes, pay the prescribed fine(s) in any of the designated Banks and bring the Teller to the FRSC office

FIRST BANK	KEYSTONE BANK	UNION BANK	UBA	UNITY BANK
☐	☐	☐	☐	☐
A/C NO 2013278058	A/C NO 1600661805	A/C NO 0021447034	A/C NO 1013703708	A/C NO 0020044271

For further explanations, visit www.frsc.gov.ng/offences

B 104

TRAFFIC SIGNS - DANGER SIGNS



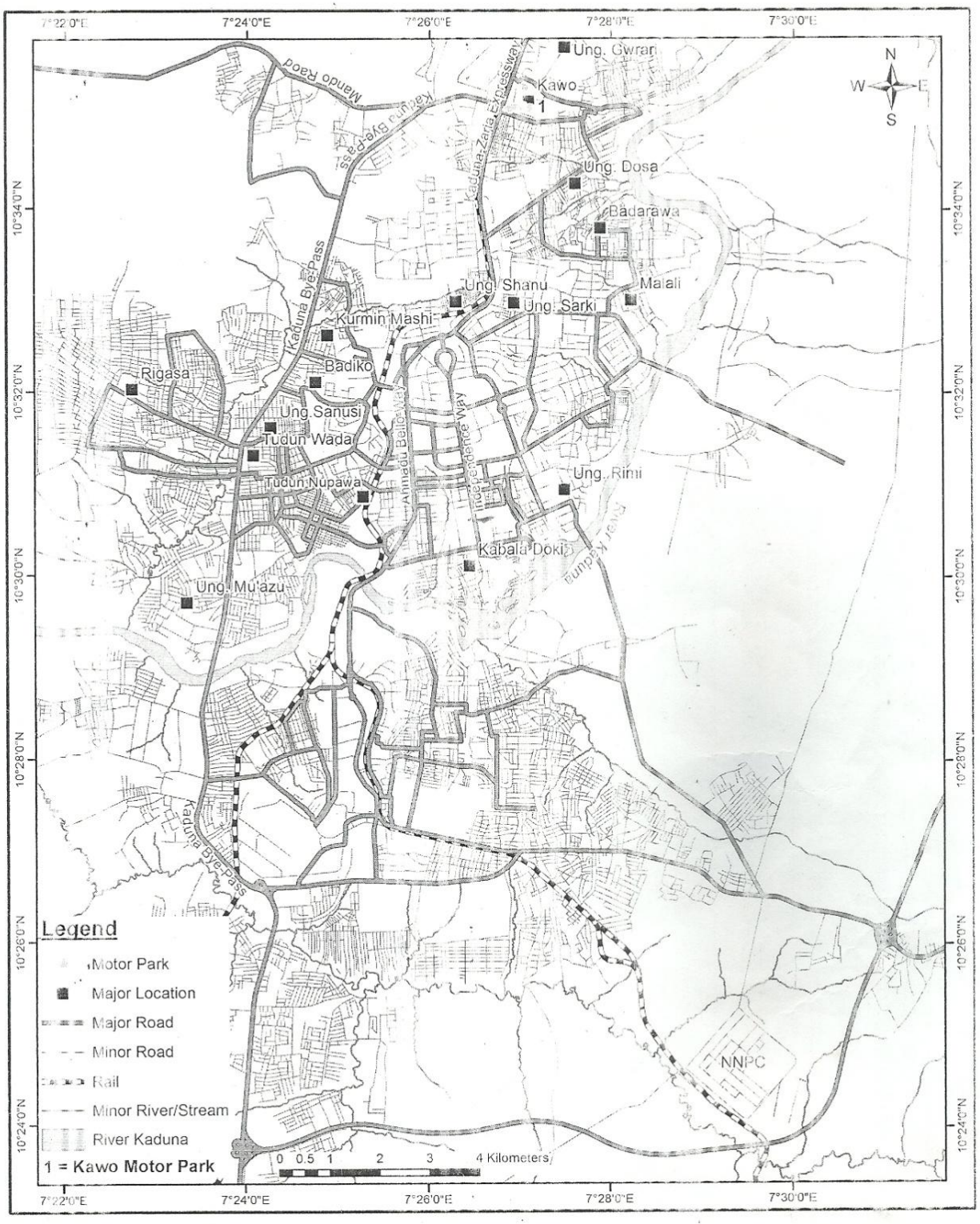


Fig 1: Map of Kaduna Metropolis showing Kawo Motor Park

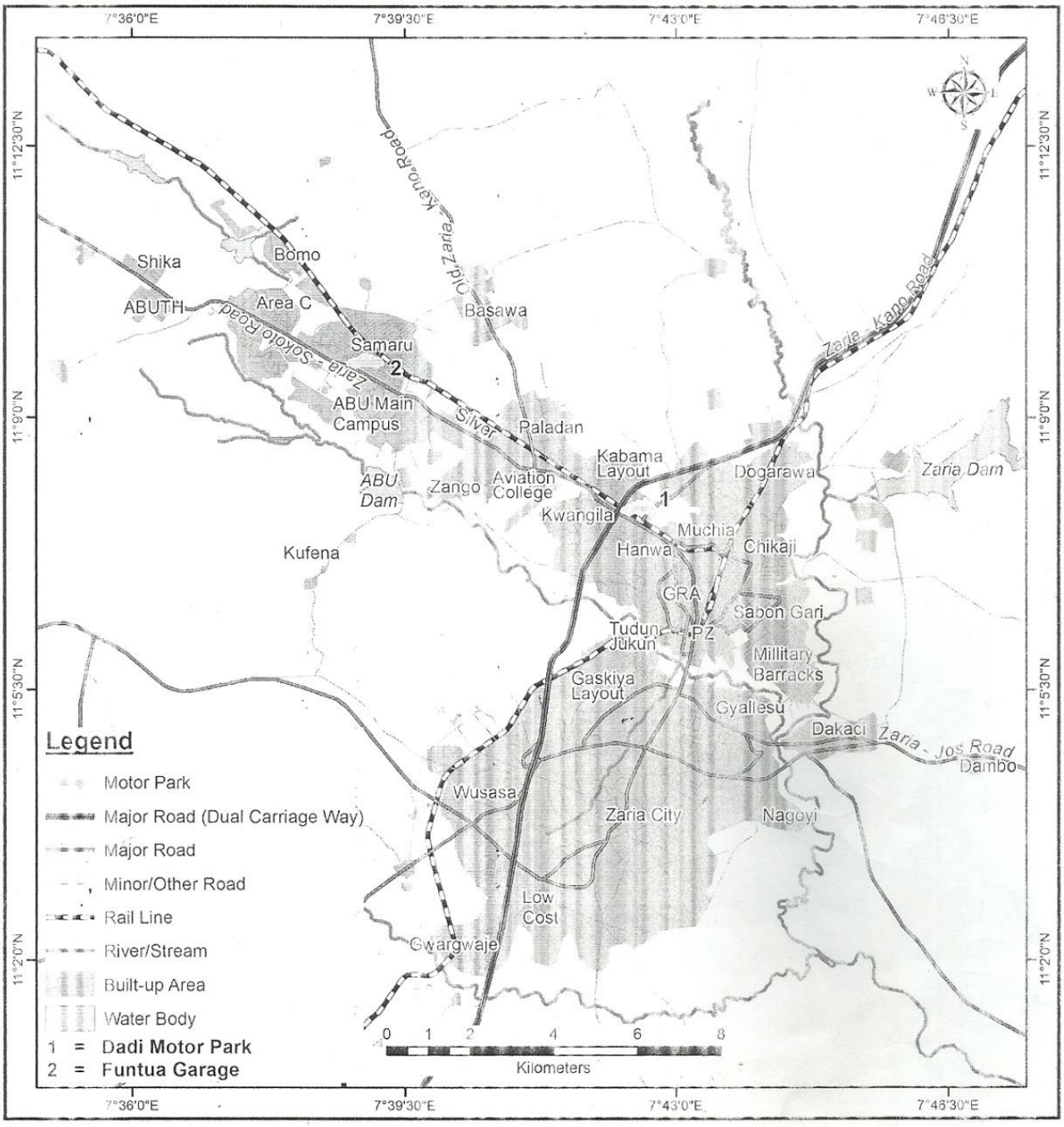


Fig 2: Area map of Zaria showing Dadi Motor Park and Funtua Garage

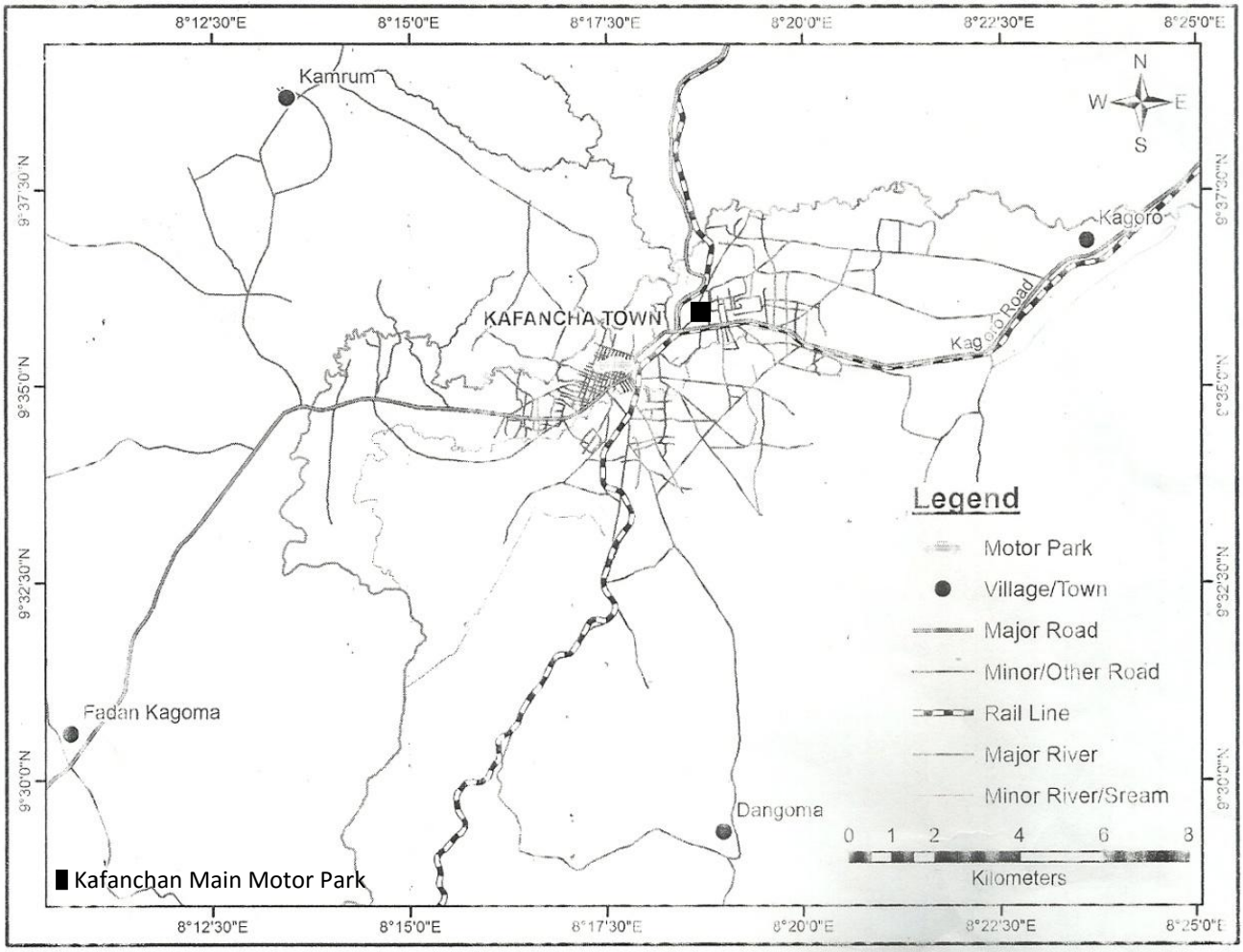


Fig 3: Area map of Kafanchan showing Kafanchan Main Motor Park