

**Kogi State University**

---

**From the Selected Works of Confluence Journal of Environmental Studies (CJES), Kogi State University, Nigeria**

---

Spring March 19, 2017

## **Analysis of Road Users' Perception of Road Traffic Safety in Minna, Niger State, Nigeria**

J A Ojekunle, *Federal University of Technology, Minna, Nigeria*

M S Oluwole, *Federal University of Technology, Minna, Nigeria*

M E Ohida, *Federal University of Technology, Minna, Nigeria*



**SELECTEDWORKS™**

Available at: [https://works.bepress.com/cjes\\_kogistateuniversity/47/](https://works.bepress.com/cjes_kogistateuniversity/47/)



## Analysis of Road Users' Perception of Road Traffic Safety in Minna, Niger State, Nigeria

Ojekunle J.A, Oluwole M.S. and Ohida M.E.

Department of Transport Management Technology,  
School of Entrepreneurship and Management Technology,  
Federal University of Technology Minna, Niger State  
ojekun@yahoo.com

### Abstract

Apart from epidemiological factors, road traffic accident is one of the major causes of death in developing countries. Over the years, many lives have been lost, properties damaged or lost and many others are left permanently impaired by Road Traffic Accident (RTA) in Nigeria especially in Minna, the Capital city of Niger State. As a result of this, road traffic safety management measures have been put into place to help in curbing the menace of road traffic accidents. This paper therefore investigated the perception of road users on the effectiveness of the road traffic safety measures put in place in Minna metropolis. The methodology adopted was based on the collection of data using questionnaire and documentary records from the Motor Traffic Division of the Nigerian Police force, Minna Command. The findings show that 78% of accident victims are males while 21.9% are females in Minna. The study further reveals that 84.2% of vehicles involved in road accidents are private cars. Also, the number of accident in each zone does not depend on the population of that zone. The study further identifies the causes of accident in Minna which are largely human induced constituting 70% of causes and generally the existing safety measures put in place to curb accident menace in the study area are perceived to be ineffective by road users. On the strength of the findings, recommendations were made bothering on regular and periodic maintenance of road network, and proactive measures such as regular road safety enlightenment programs by all stakeholders in order to increase road safety education and awareness among the city residents in particular and in Nigeria in general.

**Key Words:** Road, Traffic, Accident, and Safety

### Introduction

The dominance of the road transport as a means of movement and the magnitude of road traffic accident leading to health, social and economic perils in developing countries has continued to be of great concern to transport planners, researchers and policy makers. Asalor (2010) estimated the cost of Road Traffic Accident (RTA) in low and middle income nations of the world to be about \$18 billion and that road related injuries will rise to third position ahead of epidemics like tuberculosis and HIV/AIDS. Recent studies have continued to show that developing countries have more serious road accident problems and accident rates are higher than those of developed industries (Baluja 2010), a situation which calls for a collaborative effort to stem the tide of the menace.

Asogwa (1992), analysed the trend of RTA in Nigeria between 1971-1985 and concluded that the country has a serious and growing accident issue which is one of the worst in the world; an indication that all the measures to reduce the trauma is ineffective.

Nwaegbe (2008) and Gana and Emmanuel (2014) traced the modest effort to reduce the menace to the proclamation of Motor Traffic Regulation of 1913 which was limited to Southern part of Nigeria. In 1940 and 1945 the National Motor Traffic Regulation was reviewed in line with English Road Traffic Act of 1930, this was followed with the establishment of Road Traffic Police in 1960. In 1972, the Nigeria Army introduced a one week yearly safety crusade to sensitise the populace on the perils of Road Traffic Accidents and in 1972 the Highway Code was introduced to guide road users on the road. Following the unabated Road Safety Management challenges in the country the Federal Road Safety Commission (FRSC) was established in 1988. The establishment of FRSC brought a renewed efforts at curbing road accidents in Nigeria. FRSC has introduced various programmes, rules and regulations to regulate the safety aspect of road transport in Nigeria in the last three decades of its existence. In spite of these programmes, the issue of RTA is still on the increase especially in major cities in the country.

The population of Minna has risen over the years (286,838 by 2016 estimate), this increase in population has resulted to increased mobility and consequently lots of traffic challenges such as congestion and accidents. The threats to road traffic safety in Minna metropolis have become so persistent as cases of accident and near misses have become so frequent. The State government and other relevant road traffic and safety agencies in the city have put some measures in place to enhance the road safety level in the city ranging for enforcement and traffic management schemes. The issue of concern in this paper is how effective are these measured put in place in enhancing road safety in the city? What is the road users' perceptions of road safety measures in Minna and what are the underlying factors responsible for road accidents in the city. The above questions and issues are the focus of this paper. The study provides answers to the trend of RTA in Minna between 2006-2015, causes of RTA, existence of road safety measures and the challenges to their implementation in Minna-Nigeria. The study also tests a hypothesis on the relationship between the city's population and the rate of RTA.

### Description of the Study Area

Minna city serves as the administrative headquarter of Niger state and has two Local Government Area which are Chanchaga and Bosso, but the township has grown to engulf the suburb like Kpakungu, Barki Sali and Tunga. The city has about 6,789 kilometres square of land area and according to the 2006 census the population is estimated to be 209,341 and a projected population of 286,838 to 2016 using growth rate of 3.2%. The city of Minna is located between the latitude 9°28'N and latitude 9°42'N and longitude of 6°30'E to longitude 6°35'E. The north eastern part of the city is characterized by more or less continuous rock outcrop which hinder urban development in that direction. Figure 1 shows Map of Minna metropolis.

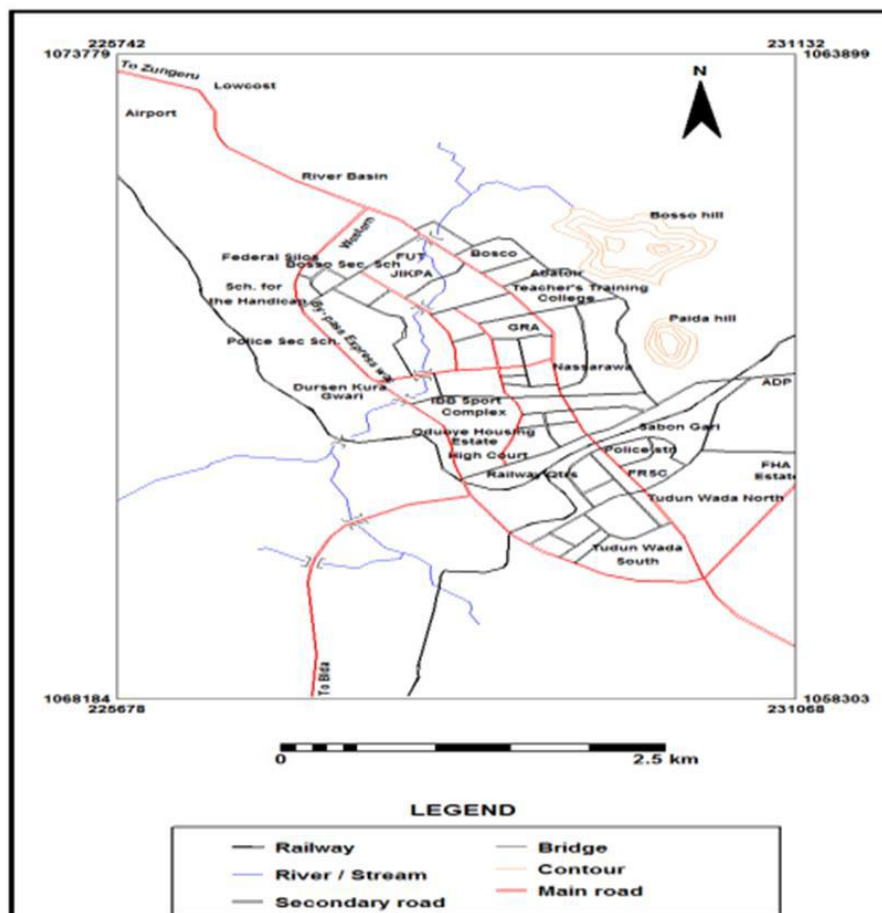


Fig.1: Minna Metropolis  
(Source: Adapted from Ojekunle 2014)

The mean annual rainfall is about 1334mm, in August and September Minna has the highest rainfall of about 300mm, the highest monthly temperature is recorded to be 30°C in March and the lowest daily temperature of 22°C recorded in August. The city is blessed with fertile land coupled with regular annual rain fall and climatic condition, the fertile land sustain animal grazing, fish farming and others. Mineral industry are available in commercial quantities which includes gold, silica, sand, copper, etc. which are of economic benefit both locally and internationally. The city is well known for its tourism activity and recreational centres such as Gurara waterfall, Zuma rock, etc. Gani festival is one of the most popular festival in Niger State.

The traffic condition in the city is generally bad, areas like Chanchaga and Kpakungu is characterized by perennial traffic congestion mostly at intersection points or roundabouts. The congestion is high in the morning and afternoon especially during the peak hours. Most road network in the city is characterized by portholes and other form of encroachment which can cause accident.

### ***Road Traffic Accidents and Safety Measures***

Road traffic accidents are caused by two main factors which are human and mechanical factors. The human factor may arise as a result of the driver behaviour on the road, drunk driving, over speeding, overtaking on a slow route, etc. while the mechanical factor is caused when there is tyre burst, break failure, etc. According to ovuwori et al..(2010), tires, engine, breaking system and light system are among the vehicle subsystem which when broken down can bring about road accident. This is supported by Atubi (2012) who calls attention that light failure (e.g. headlamp) tends to deceive and misdirect other road users in this way causing road mishap to happen.

Agbonkhese et al, (2013) noted that one of the predominant factors in deciding the stability and safety on the road is tires. He went further to express that tire made for cold and temperate area are not the same for the tropical area like Nigeria. Vehicles owners in Nigeria hardly pay serious attention to tire details and standards when purchasing them. Mechanical elements have added to the reason for road accident much consideration ought to be paid to the vehicle mechanical components such as, tires determination, braking mechanism, light system, engine system, and so forth.

Other factors road traffic accident are environment elements which include fog, harmatan, sun ray, and rain, this contribute greatly to the cause of road accident.

The issue of human factors played a critical role in traffic accident causation globally, which are mostly driver related elements. This driver related variables are those elements that are associated with the conduct of driver i.e. driver conduct or mentality to driving, this includes drunk driving, drugs use, seatbelt use and the age of the driver. Research has demonstrated that liquor and drug use when driving is more common among youn-age drivers. (Abdel-Aty and Abdelwahab, 2000; Abdel-Aty et al, 1999; McGwin and Brown, 1999; Burgess and Lindsey, 1997; Chen, 1997; Mason et al, 1992; National Highway Traffic Administration (NHTSA), 1992; Evans, 1991; Jonah, 1986; Mayhew et al, 1986; Pendleton et al, 1986). In a study on drinking and driving, Anderson and Ingram (2001) found that more youthful males turn out as the key danger group. In addition Ingram, Lancaster, and Hope (2001) reported that drug driving gives an impression of being most dominating among the 20 to 24 year old of age group, with much lower levels in the older age groups.

### ***Road Accident Countermeasures***

Various studies have indicated that safety belt use is more improbable among more youthful drivers than among older drivers (Shinar et al, 2001; Abdel-Aty et al, 1999; Beirness and Simpson, 1997; NHTSA 1995; Jonah, 1990). Shinar et al (2001) observed that more old drivers than youthful reported that they utilize safety belts constantly, and reported utilization of safety belts was along these lines saw to increment with age. The discoveries from the NHTSA (1995) survey demonstrated that, in general, seat strap use tends to increase with age, despite the fact that a study by Jonah (1990; in NHTSA, 1995) found that the use rate for 20-24 year-olds was even lower than that for the 16-19 year-maturity bunch. The NHTSA (1995) distinguished the indicators of safety belt use in more youthful drivers to be: without solace decision, danger of smashing, social standards, and saw viability of belts. Abdel-Aty (1999; in Abdel-Aty and As-Saidi, 2000) found that adolescent drivers encounter the most noteworthy rates of car accidents and wounds, and that these are principally because of speeding, intoxicated driving, and not wearing a safety belt. This finding is likewise suggestive of the more prominent inclination for more youthful drivers to be less inclined to wear a safety belt. In spite of the fact that Wasielewski (1984; in NHTSA, 1995) found that drivers in the '20 and under' class had higher belt-utilization

rates than drivers in the 50-55 and more than 70 years age aggregates, the NHTSA's (1995) report prescribed that one ought to decipher such more older studies with caution - as safety belt laws were not as across the board at the time, so this may represent the lower belt-use in the more older drivers.

### **Social and Economic Consequence of Road Traffic Injuries**

Road accident is a mind boggling, the assorted course of mishap as well as its negative effect on lives and property. Aside from the humanistic part of road safety, the injury and fatalities of road accident has social and monetary consequences. Road Accidents have enthusiastic, physical, social and monetary ramifications. The worldwide road auto collisions have been assessed to be \$518 billion every year in 2003 with \$100 billion of that happening in poor creating nations (WHO 2009). Nigeria loses 80 billion naira yearly to road accident. Of all, the subject that include in road auto collision in Nigeria 29.1% endure disability, 13% can't come back to work (Labinjo et al 2010; Atubi 2012) Road accident is expanding overall particularly with creating nation, as indicated by (Murray and Lopez, 1996; WHO, 1996). Anticipated road transport injury as the second normal reason for incapacity and balanced life year misfortune in creating nation by year 2020. Road car crash in 2002 alone came about harm of more than 35 million people groups around the world, 5million people groups out of this 35 million people groups are for all time incapacitated. Also, 1.2 million people groups died (Nasar, 2003). In a low wage nation, road traffic wounds assessed to be 1% of the gross national product (GNP). In middle income nation it is assessed to be 1.5% of the (GNP) and 2% in high income nation both the low and center pay nation represent \$65billion, more than they get in creating help ( Safety Net, 2006).Road traffic crash did not just put load on worldwide and universal economies additionally add to the budgetary weight of the family, numerous families today whose provider include in accident in which he/she get to be cripple or passed on as a consequence of this numerous families are headed to neediness. Doctor's facility logs and/or value records from which mishap information could be sourced under evaluation the aggregate weight of the wounds (Balogun et al 1992; Asogwa, 1992; Atubi; 2012).

In spite of the centrality of damage as a general safety issue, few studies have been made committing social and monetary effect of Road Accident. This is because of numerous variables and the majority of which are identified with accessibility of related information (Afukaar et al, 2003). Pratte (1998) and Aderamo (2012) reported that gross underestimation of Road auto collisions injuries and fatalities in Nigeria could be because of an absence of adequate information gathering by government agencies. The financial expense of road traffic crashes and wounds in Nigeria are huge. The immediate expense of activity causalities can maybe best be comprehended regarding the work lost to the country's economy which thus brings about low profitability. Road Traffic crashes and wounds have essentially countered Nigeria's financial desires and improvement because of the untimely loss of qualified and potential contributing experts and capable – bodied men and ladies in the work power (Preatte, 1998; Aderemo, 2012).In Nigeria, Road Traffic crashes have been one of the main sources of death connected with youthful and monetarily dynamic grown-ups between the ages of 30 to 49 years (Murray et al 1997, Jacobs et al 2001). As a consequence of this each road agencies in the nation are entrusted with proffering answer for Road auto collision that is, tending to transportation Safety, each of these organizations ways to deal with the difficulties of Road Traffic risk from alternate points of view. For illustrations transport authorities are entrusted with distinguishing approaches to enhance the security of the general transport framework.

In addition, they are responsible in returning the system to the adequate operations following an accident. By comparison, the FRSC and the Nigeria police force focuses in enforcing laws and regulations to ensure that road users are not put to hazard by reckless driving of the road users. Lastly, public held the functionary/officials focus on how to prevent or how to care for the injuries when road crashes occur. Although there is difference in each of these perspectives, to critically understand the breath of the perspectives that can be brought to discussion of road traffic safety's impact on safety.

### **Methodology**

This study relies on the use of questionnaire survey and documented accident record from Nigeria police force Motor Traffic Division. The population of Minna in 2006 was 209,341 and with a population growth rate of 3.2%, (NPC 2006) using a 10 years period, the city's population is projected using the formula below:

$P_0 = p_1 \left(1 + \frac{r}{100}\right)^n$  ; Where  $p_0$ = projected population

$P_1$ = initial population

$r$ = annual growth rate, and  $n$ = number of years

Using this above formula, the City's population is estimated at 286, 838. For the purpose of determining the sample size, two levels of sampling was adopted. First, the city was divided into 10 clustered neighbourhoods, however, in order to reduce the cost of survey, only 4 neighbourhoods were randomly selected for questionnaire administration. These four neighbourhoods constitute 43.64% of the total population of the city. In order to arrive at the appropriate sample size for the four clustered neighbourhoods selected, salants and dillman (2007) sample size formulae was adopted which gave a total of three hundred and eighty four questionnaires (384). The formulae stated below

$$N_s = \frac{(N_p)(p)(1-p)}{(N_p-1)\left(\frac{B}{C}\right)^2 + (p)(1-p)}$$
 where

$N_s$ = completed sample size.

$N_p$ = size of population.

$P$ = proportion expected to answer in a most conservative way (at least 50% = 0.5).

$B$ = accepted level of simple error is 0.05,  $C$ =confidence level (95% =1.960)

Table 1 showing the projected population and the amount of questionnaire attached to each zones

Study Area	Projected population	Amount of questionnaire to be allocated to each area
BOSSO TOWN	60,091	$\frac{60,091}{125,182} \times 384 = 183$
KPAKUNGU	24,355	$\frac{24,355}{125,182} \times 384 = 75$
CHANCHAGA	31,838	$\frac{31,838}{125,182} \times 384 = 98$
TUNGA	8,898	$\frac{8,898}{125,182} \times 384 = 27$
<b>TOTAL</b>	<b>125,182</b>	<b>384</b>

Source: author's projection (2016)

Table 1 above shows details of the estimated population and the sample size calculated for each selected neighbourhood in the city. Out of the 384 copies questionnaire administered through hand delivery to road users at various residential and work places in the four clustered areas, 300 questionnaires representing about 78% were successfully retrieved and analysed. The specific data collected using the questionnaire with the aid of field assistance include; the causes of Road Traffic Accident, existing road safety measures put in place to Curb Road Crashes and the challenges to road Safety management in Minna among others, while the documentary data include road accident information from 2006 -2015. The data collected were analysed through descriptive statistics of tables of percentages, graph and charts, while the inferential analysis entails correlation and chi-square analysis on Statistical Package for Social Sciences (SPSS) version 17.

## Discussion of Result

### *Injury Classification by Location*

Figure 1 below indicates that Kpakungu had more serious injuries victims resulting from road accident, follow by Bosso and Chanchaga. Also Kpakungu had more fatal accident followed by Chanchaga and Bosso. Kpakungu had more Minor Injury followed by Chanchaga and Bosso, the rate of accident in Tunga is less. It can thus be inferred that there are more fatal, serious, and minor accident in Kpakungu compare to the other three zones.

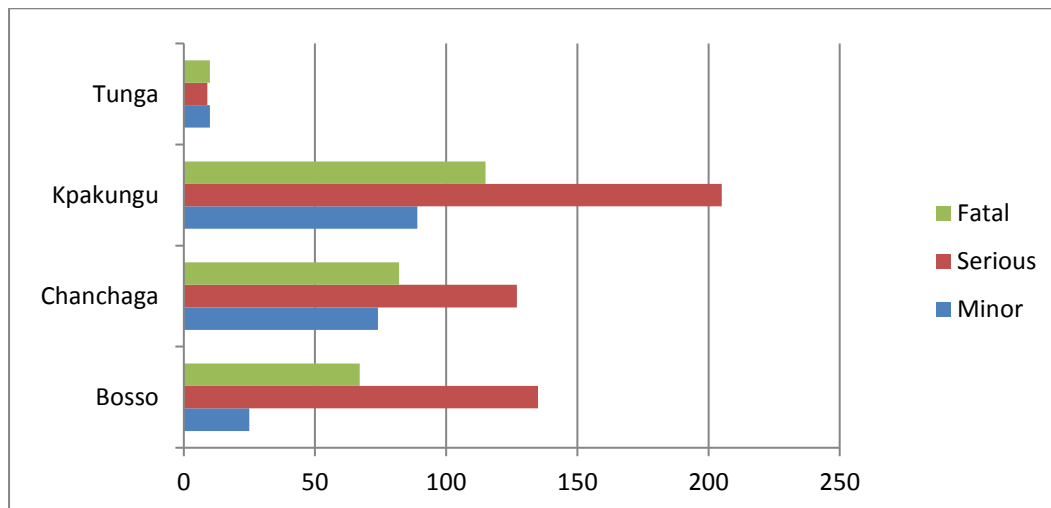


Figure 2 Showing Injury Classification in Minna

With respect to the age group of accident victims, figure 2 shows that Bosso had high severe accident case among the age of 17years above, this is followed by Kpakungu, Chanchaga, and Tunga had low number of severe accident case among the two age groups. The graph also shows that both Chanchaga and Kpakungu had the same number of severe case among under 17years, this is followed by Bosso.

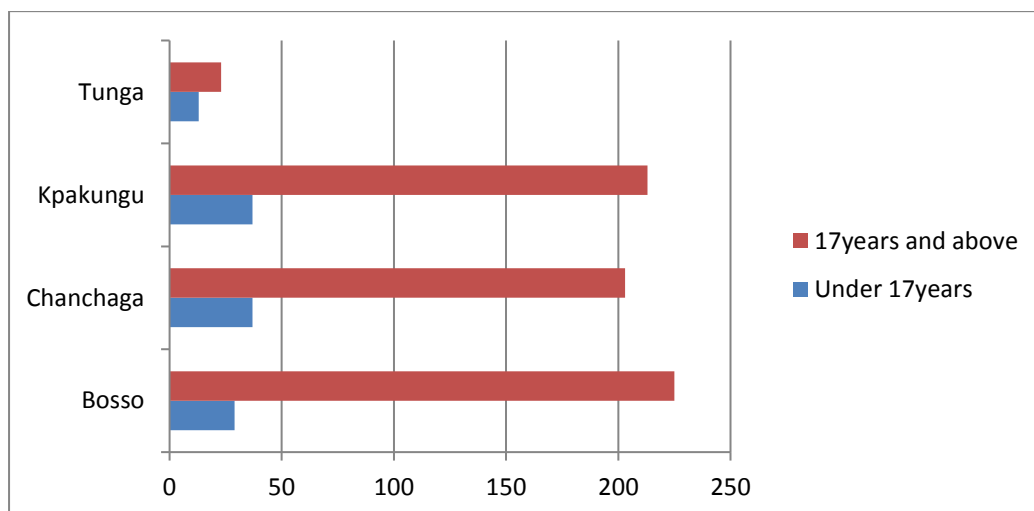


Fig.3: Showing the Age of Victims involves in Serious Accident  
 Source: author's survey (2016)

From fig. 4.2 above, the Y-axis represents the various locations and the X-axis represent the age group of 17years above and under 17years. The graph indicates that Bosso had high severe accident case among the age of 17years above, this is followed by Kpakungu, and Chanchaga. Tunga had low number of severe accident case among the two age groups. The graph also shows that both Chanchaga and Kpakungu had the same number of severe case among under 17years, this is followed by Bosso.

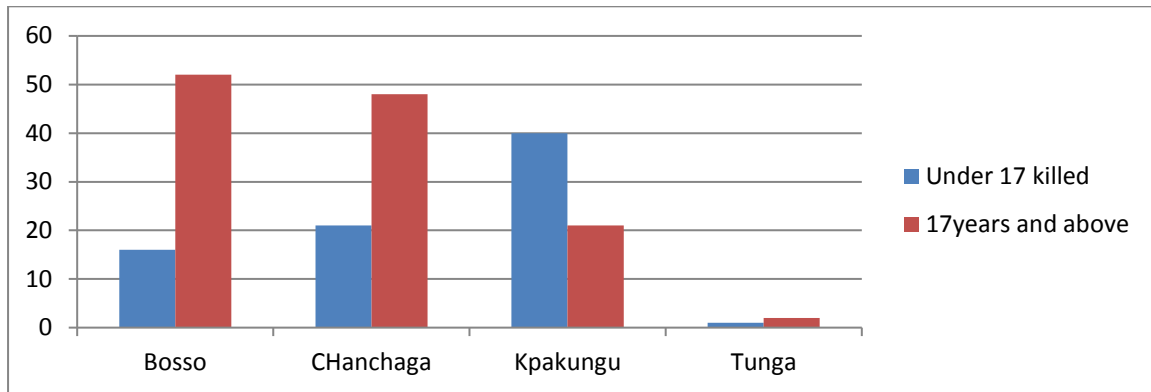


Fig. 4: Age of the Victims that was killed in Road Accident  
 Source: author's survey (2016)

From the figure 3 above it indicates that Bosso had high numbers of people among the age of 17years above killed compare to Chanchaga, Tunga and Kpakungu. The graph Kpakungu records the highest number of death of under 17years, this is followed by Chanchaga, Bosso and Tunga. There are low death records among the two age groups in Tunga area of the town.

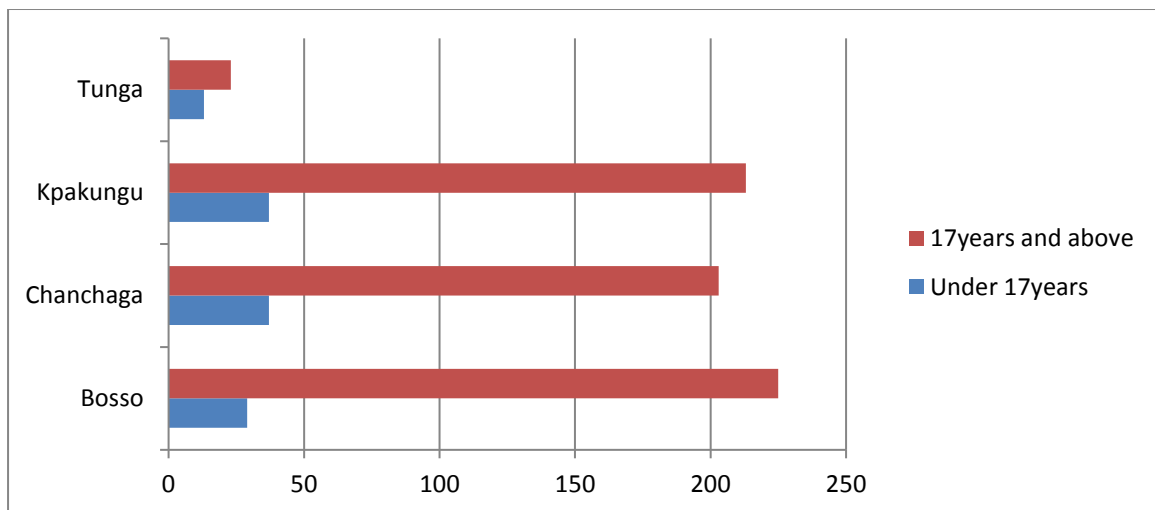


Figure 5: Showing the Age of Victims involves in Serious Accident

Figure 3 shows the number of victims that died on account of the accident the graph indicate that Bosso had high numbers of people among the age of 17years above killed compare to Chanchaga, Tunga and Kpakungu. Furthermore, more under 17years are killed in Kpakungu, and this is followed by Chanchaga, Bosso and Tunga. Following the usual trend, there are low death records among the two age groups in Tunga axis.

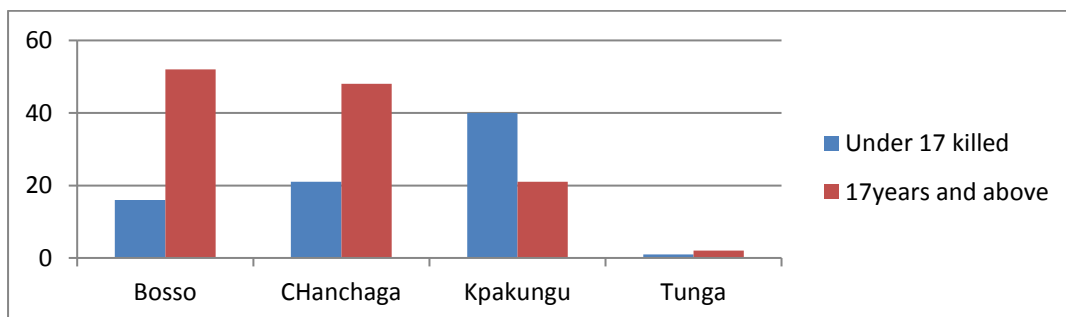


Fig. 7: Age of the Victims that was killed in Road Accident



Figure 4 below present the reported cases of accident in the six zones between 2006-2015, it can be observed that the rate of accident between 2006 to 2015 is not uniform across the years and location. Generally, Kpakungu had high number of accident cases between 2006 to 2015, followed by Chanchaga, Bosso and Tunga.

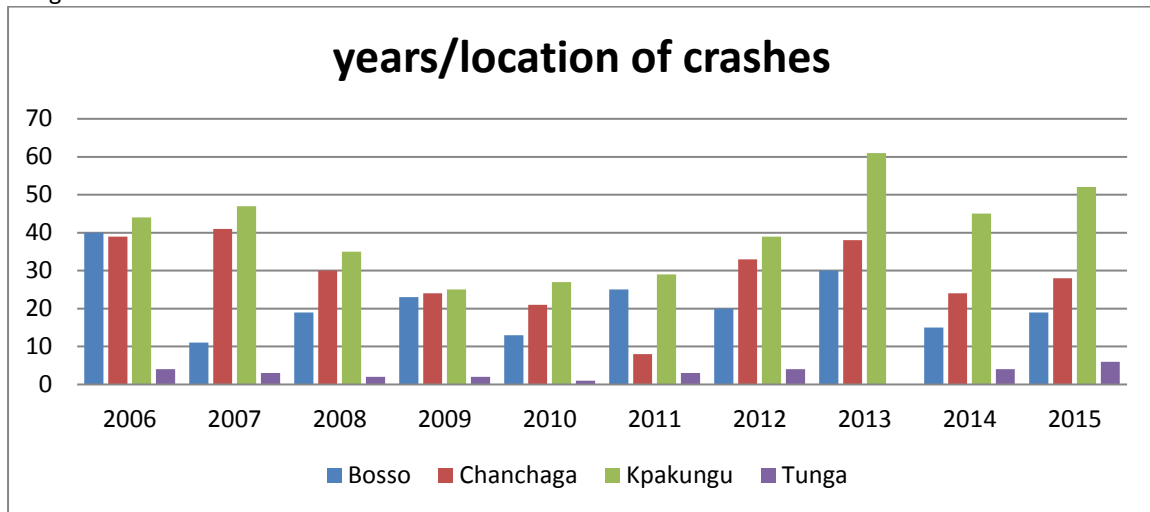


Fig.8 Showing Numbers of Accident cases between 2006 -2015

Figure 5 below shows the aggregation of accident victims among genders (male and female) between 2006 and 2015. The graph indicates that all through the 10 years period, there are more males who are involves in accident compare to females, this is a direct reflection of the occupational specialization in the sense that, the driving job in Nigeria is predominantly practiced by men that women.

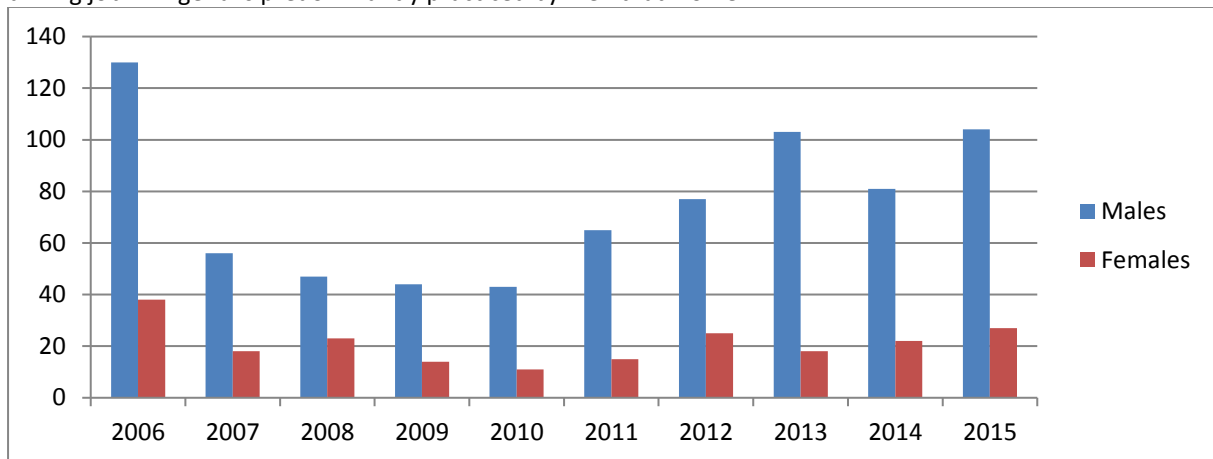


Fig. 9 Aggregation of Accident Victim among Gender

Using six categories classification of private car, commercial car, trucks, motorcycles, cyclists and taxis figure 6 present the various types of vehicles that are involve in accident in Minna between 2006 and 2015. The result shows that there is high rate of accident with involving private cars and motorcycles followed by commercial car and taxi, but there are fewer accident rates involving cyclist, apparently because of it low level of usage. The high figure associated with private cars can be linked with weak licensing procedure in which anybody that can afford to buy vehicle can just get behind the steering without undergoing adequate training and road traffic education.

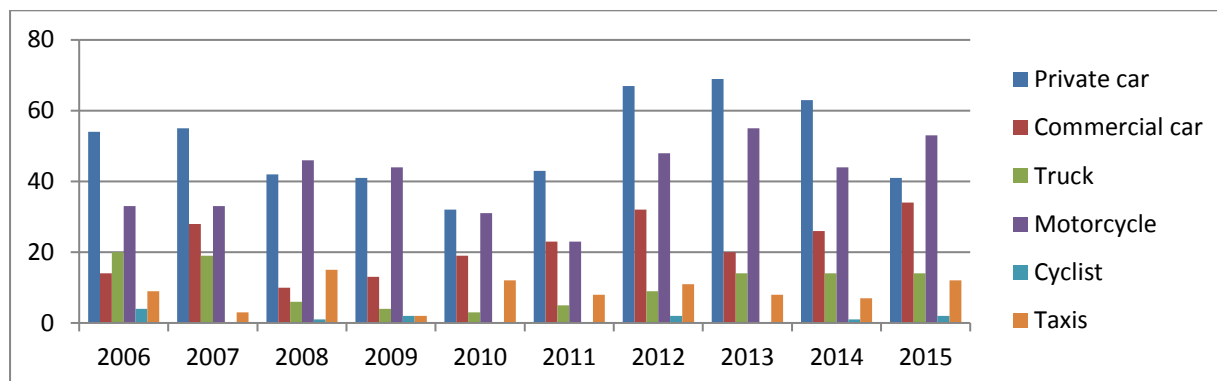


Figure 10: Types of Vehicles involved in Road Accident

### Road Users Perception of the Causes of Road accident

The perception of the respondents' as to the likely causes of road traffic accident was tested in order to gauge their understanding on the menace of RTA, the result is presented in Table 2 below.

Table 2 Road Users Perception of Road Accident Causes

Causes of Accident		No of respondents	Percent
Valid	poor road	69	23.0
	poor condition of vehicles	21	7.0
	reckless driving of motorist	63	21.0
	over speeding	72	24.0
	Impatience	36	12.0
	non compliance to general traffic rules	39	13.0
	Total	300	100.0

Source: authors' Field Survey (2016)

From the Table above about 23% of the respondents believes that poor road condition is the cause of road accident in Minna, 7% of the respondent said road accident is caused by the poor maintenance and condition of the vehicle, 21% noted that road accident are caused due to reckless driving by motorist, 24% of the respondent agrees that accident is caused due to over speeding, 12% of the respondent are on the opinion that road accident is cause due to impatience of the road users, while 13% of the respondents are on the opinion that accident is cause as a result of non compliance to general traffic rules. All the elements listed above are largely human induced, which suggest the place of human factor in accident mitigation.

### Existing Road Safety Measures in Minna

A number of road safety measures are in place to reduce road accident or reduce its effect in the event of fatalities, these ranges from vehicle seat belts, installations of traffic lights at intersections, enforcements of road traffic rules by Vehicle Inspection Office (VIO) and Federal Road Safety Commission (FRSC) testing of drivers before licensing, public education and awareness by the police and FRSC among others, however, the effectiveness of this measures are in doubt as the figures of accident over the years have not significantly reduced. Tables 2-8 investigate the level of effectiveness from the road users perspectives, information of this nature can assist traffic management authorities on the need to adopt alternative ways to implement the measures.

**Table 3 Respondents Perception of the effectiveness of the Seatbelt policy**

Use of Seatbelts		No of Respondents	Percent
Valid	Ineffective	60	20.0
	Effective	144	48.0
	very effective	96	32.0
	Total	300	100.0

Source: Authors' Field survey (2016)

From Table 2 above 20% of the respondents agreed that the use of seatbelts is ineffective in reducing road crashes fatality, 48% of the respondents agreed that the use of seatbelts is effective in reducing road crashes fatality and 32% of the respondent agrees that the use of seatbelts is very effective in reducing road crashes fatality. Based on the overall effectiveness of this policy agency responsible for its enforcement should pursue its aggressive enforcement until it becomes the culture of every driver.

From Table below about 23% of the respondents said installation of traffic light in selected intersection is ineffective in reducing road traffic accident, 57% of the respondent are on the opinion that installation of traffic light in selected intersection is effective in curbing road traffic accident and 20% of the respondents agreed that installation of traffic light in selected intersection is very effective in curbing road traffic accident.

**Table 4 Perception of the Effectiveness of Traffic Light in Selected Intersection**

Installation of traffic light		No of Respondents	Percent
Valid	Ineffective	69	23.0
	Effective	171	57.0
	very effective	60	20.0
	Total	300	100.0

Source: Authors' Field survey (2016)

It can be inferred that with adequate monitoring to ensure compliance, traffic lights installations can reduce the magnitude of road traffic carnages.

**Table 5 Perception of the Effectiveness of Rules and Regulation Enforcement**

Rules and Regulation		No. of Respondents	Percent
Valid	Ineffective	84	28.0
	Effective	162	54.0
	very effective	54	18.0
	Total	300	100.0

Source: Authors' Field Survey (2016)

From Table 4.5 Above it can be observed that 28% of the respondents are of the opinion that enforcement of traffic rules and regulation is ineffective in curbing road crashes in Minna, 54% of the respondents said enforcement of traffic rules and regulation is effective in curbing road traffic crashes and 18% of the respondents are of the opinion that enforcement of traffic rules and regulation is very effective in curbing road traffic crashes in Minna.

**Table 6 Perception of Maintenance of Road Networks**

Maintenance of Roads		No. of Respondents	Percent
Valid	Ineffective	141	47.0
	Effective	126	42.0
	very effective	33	11.0
	Total	300	100.0

Source: Authors' Field Survey (2016)

Result from table 5 indicates that 47% of the respondents believed that that maintenance of road network is ineffective in curbing road traffic accident, the believe of this group is hinged on the fact that over-speeding and general recklessness pervades drivers habit when the road is good as against when the road is bad where more caution is exercised. 42% of the respondents agreed that maintenance of road networks are effective in curbing road crashes while 11% of the respondent said maintenance of road networks very effective in curbing road crashes.

**Table 7 Perception of Public Enlightenment**

Public Enlightenment		No. of Respondents	Percent
Valid	Ineffective	105	35.0
	Effective	159	53.0
	very effective	36	12.0
	Total	300	100.0

Source: Authors, Field Survey (2016)

As observed from table 6 above, 35% of the respondents agreed that public enlightenment and jingles on the dangers, causes and measures to combat road accident as a preventive measures are ineffective in curbing road traffic crashes, 53% of the respondents are on the opinion that public enlightenment on traffic safety rules is effective in curbing road traffic accident and 12% of the respondents said public enlightenment is very effective in curbing road traffic crashes in Minna. Therefore, it is safe to infer that this measure when carefully articulated can help reduce road traffic accident.

**Table 8 Perception on Driver Testing and Certification**

Testing and certification		No. of Respondents	Percent
Valid	Ineffective	135	45.0
	Effective	120	40.0
	very effective	45	15.0
	Total	300	100.0

Source: Authors' Field Survey (2016)

As observed in in table 7 above 45% of the respondents believed that vehicle road worthiness testing and certification by appropriate government agencies is ineffective in curbing road traffic accident, 40% of the respondents are on the opinion that vehicle road worthiness testing and certification is effective in curbing road crashes and 15% of the respondents agreed that vehicle road worthiness testing and certification can be very effective in curbing road crashes and therefore should be strictly implemented.

**Table 9 Perception on Traffic Rule, Regulation and Issuance of Drivers Licence**

Regulation and Issuance		No. of Respondents	Percent
Valid	Ineffective	63	21.0
	Effective	177	59.0
	very effective	60	20.0
	Total	300	100.0

Source: Authors' Field Survey (2016)

Table 8 above shows that about 21% of the respondents agreed that regulation and issuance of driving licence is ineffective in curbing road traffic crashes, 59% of the respondents are on the opinion that regulation and issuance of driving licence is very effective in curbing road crashes and 20% of the respondents opined that regulation an issuance of driving licence is very effective in curbing road traffic accidents.

**The Challenges of Road Safety Management in Minna**

In the opinion of the respondents a number of issues challenges the effective implementation of road safety measures in the study are, these include:

- Poor maintenance of road network
- Ineffectiveness of public enlightenment on road safety compliance
- Weak enforcement of rules and regulation in the part of enforcement agency
- Road users do not attend road safety training or driving school or education for good knowledge of compliance to road safety rules and
- Lack of subjecting road users to driving test before issuance of driving licence.

**Test of hypothesis**

Ho = there is no statistical relationship between population and rate of accidents To determine the projected population of Bosso, Kpakungu, Chancha, and Tunga in 2015, Use the following formulae;

$$P_o = p_1 (1+r)^n$$

Where p<sub>0</sub>= projected population

p<sub>1</sub>= initial population

r= annual growth rate = 3.2%, n= number of years = 9years

**Table 9 Location and Projected Population of 2015 and Total Accident in the Locations**

Location	Population(pi)	Project 2015 population	Total accident
Bosso	43,854	58,227	215
Kpakungu	17,774	23,600	253
Chanchaga	23,235	30,850	380
Tunga	6,493.75	8622	29

Source: Computer Analysis (2016)

The Pearson moment correlation was used to determine the whether there is correlation between population and the accident occurrences in different locations in the city

Table 10: Correlation Result

		Population	Totalacc
Population	Pearson Correlation	1	.428
	Sig. (2-tailed)		.572
	N	4	4
Total acc	Pearson Correlation	.428	1
	Sig. (2-tailed)	.572	
	N	4	4

Source: Computer Analysis (2016)

The result shows that the total accident  $r = 0.428$  which is not significant at  $p < 0.05$  this revelation show that the total accident in each zone does not depend on its population. Therefore it shows that there is no statistical significant relationship between population and rate of accident in the area.

### Recommendations and Conclusion

Base on the findings above, the following recommendations are hereby advanced;

1. Government of Niger state should make adequately yearly budgetary provisions for regular and periodic maintenance of the city's road network. There should be an aggressive and continuous monitoring of drivers by the law enforcement agents like VIO and FRSC in order to apprehend and reprimand erring motorists who violate road traffic rules, seat belts, traffic signals and other regulations.
2. In view of the contribution of motorcycles to the rate of crashes in the metropolis, motorcycles should be barn for commercial service and those for private use should be heavily regulated through compulsory use of crash helmet.
3. Government of Niger state should put other engaged other transport stakeholders like National Union of Road Transport Workers (NURTW), National Association of Transport Owners (NARTO), Road Transport Employers' Association of Nigeria (RTEAN), Special Marshals etc in the stepping up of enlightenment and sensitization campaign and bring road safety knowledge and education to the door step of all road users.
4. All road accident hotspot in the city should be identified and proper Intelligent Transport System like Closed Circuit Television (CCTV) sensors and traffic calming devices should be instituted in such places.

In conclusion, road transport has caused a lot of damage to lives and properties all over the world, being the most dominant means of transport in Nigeria it is highly concentrated and the threats to road safety have leads to adverse social and economic cost in the country concerted efforts by all concerned must be geared towards curbing the tides and menace of RTA in Minna in particular and Nigeria at large.

### Reference

- Abdel-Aty, M. A. & Abdelwahab, H. T. (2000). Exploring the Relationship between Alcohol and the Driver Characteristics in Motor Vehicle Accidents. *Accident Analysis & Prevention*. 32, 505 - 515.
- Abdel-Aty, M. A., & As-Saidi, A.H. (2000). Using GIS to locate the High-Risk Driver Population. *Traffic Safety on 2 continents*. 111 - 126.
- Aderemo, A.J Gladwell, M. (2012), Global Positioning and Socio-Economic Impact of Road Traffic Accidents Nigeria; matters Arising. *American International Journal of Contemporary Research*. 5(5):. 2015.
- Agbonkhese O, Yisa, G.L Dauda P.I (2013), Road Traffic Accidents in Nigeria; causes and preventive measures. *Civil and Environmental Research*. 3(13): 2013.
- Anyata, B.U. (2009). Highway Drainage and maintenance As Aspect of Hihway, University press Ibadan.

- Asalor, J. O. (2010). Towards Improved Road Safety in Nigeria. Technical Report No. Rts/00/82/011, Faculty of Engineering, University of Benin.
- Asogwa, S.E. (1992). Road Traffic Accidents in Nigeria: a review on appraisal. *Accid Anal Prev.*, 24(2): 149-55.
- Atubi, A.O. (2012) Determinants of Road Traffic Accident Occurrences in Lagos State: some Lessons for Nigeria. *International Journal of Humanities and Social Science.* 2(6): 252-259
- Atubi, A.O. and Gbadamosi K.T (2015). Global positioning and Socio-Economic Impact of Road Traffic Accidents Nigeria; matters Arising. *American International Journal of Contemporary Research.* 5(5):136-146.
- Balogun, J.A and Abereoje, O.K. (1992). Pattern of road traffic accident in a Nigerian teaching hospital between 1987 and 1990. *Journal Tropical Medicine and Hyg,* 95: 23-29
- Baluja, R. (2010) Examining Road Safety through the prism of Road traffic violations. <http://www.WCTR2010-Baluja-paper.pdf>. Retrieved Feb 5, 2011.
- Burgess, M. & Lindsey, T. (1997). Alcohol Involvement in Fatal Traffic Accidents 1995. Technical Report DOT HS 808-547. NHTSA, US Department of Transportation, Washington DC.
- Chen, C. (1997). Statistical Analysis of the Effect of Demographic and Roadway Factors on Traffic Accident Involvement. MS thesis. Department of Civil & Environmental Engineering, University of Central Florida, Orlando, FL.
- Evans, L. (1991) Traffic Safety and the Driver, Van Nostrad Resist Helmet, July 17, 2010
- Gana, A.J. & Emmanuel J.A (2014), Road Transportation and Traffic Law enforcement in Nigeria; a case study of Federal Road Safety Corps (FRSC), *West African Journal of Industrial And Academic Research.* 11(1): 134-141.
- Ingram, D., Lancaster, B., & Hope, S. (2001). Recreational Drugs and Driving. Prevalence Survey. System Three Social Research. Development Department Research Programme: Research Findings No. 102. Scottish Executive Central Research Unit.
- Jonah, B. A. (1990). Age differences in risky driving. *Health Education Research,* 5(2): 139-149.
- Jonah B. A. (1986), the contribution of individual factors to driving behaviour; implication for managing work related road safety prepared by entice UK limited for health and safety executive and Scottish executive, research report 020, published 2012 ISBN 0717625567.
- Labinjo, M. Jullrard, C. Kobusingye O.C. Hyder, A.A. (2010). Socio-economic impact of road traffic injuries in West Africa: exploratory data from Nigeria. *Inj. Prev.* 16: 389- 392.
- Mason, J., Fitzpatrick, K., Seneca, D., & Davinroy, T. (1992). Identification of inappropriate driving behaviors. *J. Transport. Eng.* 118, 2.
- Mayhew, D. R., Donelson, A. C., Beirness, D. J. & Simpson, H. M. (1986). Youth, alcohol, and relative risk of crash involvement. *Accident Analysis & Prevention* 18(4): 229-313.
- McGwin, G. J. R. & Brown, D. B. (1999). Characteristics of traffic crashes among young, middle-aged and older drivers. *Accident Analysis & Prevention* 31(3): 181-198.
- Ojekunle J.A. (2014), Analysis of Fare Structure and Determination of Bus Operation in Nigerian Cities. *International Journal of Developing Society.* 3(2):13-21
- Nasar, M. (2003). Methods of forecasting deaths due to road accidents in Pakistan” HEC foreign professor of finance and applied statistics at Comsats University of Technology in Islamabad, Pakistan.
- NHTSA. (2008). Traffic Safety Facts 1992: A compilation of Motor Vehicle Crash Data from the Fatal Accident reporting System and the General Estimates System. US Department of Transportation, Washington DC.
- NHTSA. (1995). Understanding Youthful Risk-Taking and Driving. Interim Report. COMSIS Corporation. 1 - 147.
- Nwaegbe, K. (2008), Rescue and Management of Road Traffic Accident Victims in Nigeria: Challenges and Prospects, National Institute, Kuru.
- Ouwori, Onibere and Asalor, J.O (2010) Traffic Accident in Nigeria in Developing country 1, JOJA press. Lagos.
- Pendleton, O., Hatfield, N., & Bremer, R. (1986). Alcohol Involvement in Texas Driver Fatalities: Accident Reports Versus Blood Alcohol Concentration. Transportation Research Board 1068.
- Pratte, D. (1998) “Road to Ruin: Road Traffic Accident in the Developing World”, NEXUS, Vol. 13, pp. 46 – 62
- Safety – Net (2006). “European road safety observatory annual statistical report” Work package 1 – Task 3, Deliverable No. D1. 1.
- Shinar, D., Schechtman, E., & Compton, R. (2001). Self-reports of Safe Driving Behaviours in Relationship to Sex, Age, Education and Income in the US Driving Population. *Accident Analysis and Prevention.* 33, 243 - 255.
- World Health Organization (2009), World Health Organization, Geneva.