

APPRAISAL OF THE FEDERAL ROAD SAFETY COMMISSION (FRSC) PERFORMANCE IN ROAD ACCIDENTS REDUCTION IN KADUNA STATE, NIGERIA.

*Ajiboye A.O**, *Folagbade, A. M*** & *Ohida M. E* Kolawole, O. J.****

*Logistics and Transport Technology Department,
School of Innovative Technology, Federal University of Technology Minna.

**Carecrest Specialist Hospital, 1, Agbaja Close, IBB Way, Lokongoma,
Lokoja, Kogi State.

*** Nigerian Army University Biu, Borno State.

Corresponding Author Email: araoyeoajiboye@futminna.edu.ng

Abstract

Kaduna State have one of the highest Road traffic accident statistics in Nigeria with high rate of causality and fatality. This is from the Federal Road Safety Corps (FRSC) who has been given the task of curbing traffic accidents on the roads in Nigeria. This study therefore appraised the performance of the FRSC in the reduction of road accidents in Kaduna state. It identified the type and the commonest period of accidents; examines the type of equipment available to FRSC and appraise the methods adopted in reducing accidents. Two sets of questionnaires were employed and 214 copies of questionnaires were administered, while the data was analyzed using descriptive statistics, T – Test and Chi-square. The study revealed that that, though the FRSC has to great been successful in reducing road accidents in Kaduna state, the basic equipment, personnel and management strategies needed are not adequate. The study therefore recommends that standard equipment should be made adequate for all the units of FRSC units in Kaduna state, while public enlightening programmes and regular consultation with the stakeholders should also be encouraged in order to combat accidents on the roads.

Key words: Freight, Road, Traffic Accident, Simulation Safety.

Introduction

Modern transport and freight distribution system all over the world is tending towards the adoption of best practices that are reliable, timely and cost-effective (Ubogu, 2011). This is because transportation has been discovered to be a major prerequisite to the development of any economy. Like other activities that are intensive in the utilisation of infrastructure, the transport sector is an important component of the economy impacting on development and the welfare of the people (Rodrigue and Notteboom, 2009). Transport provides the

arteries through which the economic life of people, information and raw materials as well as finished products can be moved from one place to another (Ighodaro, 2009). Road transport provides benefit both to nations and individuals by facilitating the movement of goods and people thereby enabling increased access to jobs, economic markets, education, recreation and healthcare, which in turn have direct and indirect positive impacts on the health of populations (WHO, 2009). Despite these multiple advantages, road accidents have serious negative consequences on the

economy of a nation. Road traffic accidents have been a major issue to both developed and developing world today. One of the major concerns of any nation's transportation sector is how to curb road traffic accidents in such a country. The growing number of deaths and injuries as a result of road traffic accidents is a global phenomenon that all countries of the world are grappling with. According to Aderamo (2012a), road traffic accidents and deaths are global diseases sweeping through the world gradually.

The World Health Organization estimates that more than 3000 people are killed every day in road traffic accidents globally with at least 30,000 people injured or disabled and these add up to over 1 million people killed and between 20 – 50 million people injured or crippled in road traffic crashes each year (Krug, Sharma and Lozano, 2000). Jacobs, Aaron-Thomas and Astrop (2000) estimated that the global cost of road crashes is about 518 billion US dollars annually, and ranges in percentage of GNP from 0.3% in Vietnam to almost 5% of GNP in the United States of America, Malawi and Kwa Zulu Natal, South Africa. The true costs of accidents to the society are probably much greater, since these estimates are based on direct costs only. The problem of transportation safety is of great magnitude encompassing all modes of transportation, economic levels and transport purposes.

The rising trend in morbidity and mortality rate due to road traffic accidents in low and middle income countries has made some authors to declare road traffic accidents an 'epidemic' (Nantulya and Reich, 2002;

Aderamo, 2012; Atubi, 2012). Traffic accident mortality rates doubled in Ghana between 1994 and 2004, increasing public awareness of the issue and prompting the government to take action. To curb the rise in death rates, the government implemented both structural and behavioural plans aimed at crash prevention. Structural plans took the form of speed bumps and rumble strips, while the behavioural plan used informational television advertisements to educate citizens about drunk driving and speeding. From 2000 to 2005 road traffic deaths in Tanzania increased by nearly 50 per cent. In an effort to improve response mechanisms, a trauma-team training programme was offered to help nurses and physicians assess and assist victims of traffic accidents. An evaluation of this programme showed a positive response by students and a post-training simulation showed an overall improvement in response capabilities (Eshbaugh, Maly, Moyer and Torkelson, 2012).

Over 42,000 road users are killed in European Union (EU) countries annually and around 3.5 million are injured. This accounts for an annual cost of over 160 billion Euros and health concern based on the number and magnitude of persons killed and injured. Between 1960 through to 2006, a total of 969,618 road crashes were reported leading to a casualty figure of 1,159,642 persons, distributed as 292,703 persons killed and 866,939 persons injured (Arosanyin, Olowosulu and Oyeyemi, 2012). These figures of crashes and casualty are an under-estimation of the realities on Nigerian roads, as it has been argued that there are high non-reporting

and under-reporting of road crashes (Arosanyin, 2004).

Comparative assessment of the causes of deaths in Nigeria has placed road crashes as the most important killer of Nigerians than a combination of 35 notifiable diseases including malaria and HIV/AIDS. This burden is more given that the estimate covers only casualty component (Arosanyin, 2008). Indeed, the Nigerian accident pattern seems to suggest that the better the road, the higher the accident and fatality rate as well as the severity and non-survival indices. This is because of non-compliance of drivers with speed limits (Filani and Gbadamosi, 2007).

In the year 2012, at the special marshal workshop held in Kaduna state, it was announced that between January and July 2012, a total of 2, 200 traffic offenders were apprehended while 597 road traffic accidents were recorded in Kaduna state. Out of these accidents, 125 fatal cases, 389 serious cases and 58 minor cases occurred while 297 persons were killed and 2, 239 persons were injured (FRSC, 2012). Owing to these facts, the high rate of accidents in Kaduna state is obviously unacceptable.

The mission of safe road in Nigeria initiative is to reduce road crash deaths and injuries to 50% by 2020. Safe road in Nigeria is a response to the United Nations decade of action for road safety. However, as laudable as the functions of this government agency appear, the public view it as revenue generating unit rather than an agency that implement policies that should ensure road safety compliance and culture of road safety discipline by road users (Arosanyin *et al*, 2012; Mbachu, 2012). These enforcement agencies over the years

are known to be a major force in prevention, control and reduction of road traffic accidents, and are generally observed to be functional in their duties, yet there is an alarming increase in accident rate. An examination of the studies available reveals that not much attention had been given to the effectiveness of agencies responsible for the reduction of accidents and road safety. Hence, there is a need to thoroughly examine how effective this agency is in its duties of reducing road traffic accidents in Kaduna State.

Literature Review

Nigeria ranks among the worst countries in the world for road traffic accidents (191 of 192 countries), according to a WHO, 2009 survey. Despite the significant numbers of Africans being injured or killed in this way, road traffic accidents do not receive the same coverage as other public health issues such as HIV/AIDS, tuberculosis and malaria (Esbaugh *et. al.* 2012). In Nigeria, road traffic accident situation over the last three decades has been particularly disturbing. In 1976, there were 53,897 road traffic accidents resulting in 7,717 deaths. Although in 1981, there was reduction in magnitude of accidents, but an increase in fatality. The trend in accidents increased between 1990 and 2005 and the fatality rate remained consistently high (Atubi, 2009).

An analysis of the traffic crashes data recorded over a seven year period of 2000-2006 shows that 98,494 cases of traffic crashes were recorded out of which 28,366 were fatal and resulted into 47,092 deaths (FRSC, 2009). The number of reported cases of fatal road traffic accidents in Nigeria has shown an increasing trend of

accidents from 1995 to 2004, indicating an increase in fatal road accidents from 1995 to 1996 (CBN, 1997). Fatal road accident figures across the federation of Nigeria rose sharply in 1992 (CBN, 1994). This increasing rate of accident over decades lead to the introduction of road traffic enforcement officers. However, the establishment of the fact that human behavior constitutes the largest percentage of factors that is specifically known to cause road traffic accidents, there is a higher need to control the behavior of road users.

Therefore, this has necessitated the need for a strong team of traffic enforcement agents whose focus will be on road safety. Analysis of data on the role of law enforcement agents shows a decline in the proportion of road traffic accident cases prosecuted, convicted, or acquitted, while the proportion of persons awaiting trial and those under investigation increased and remained large (Ogunjumo, 1995). In the analysis of road traffic accident between 1972 and 1979 in Zaria uncovers that there were more road traffic accidents on Tuesdays and Wednesdays than Fridays and Saturdays and more cases of such accidents were witnessed in the months of September and October with the least recorded accidents in February and June. Also, recklessness and negligence of drivers was found to be mostly responsible for the cause of accidents and private car drivers played more roles in accidents in Zaria than any of the other participants like taxi drivers, bus drivers and motor cyclists (Aganga and Umoh, 2012). Aderamo (2012) examined the spatial variation of road traffic accidents casualties in Nigeria

between 2004 and 2007. The findings showed that spatial variation exist in the incidence of road traffic accidents in Nigeria. It also showed that total road traffic accidents, population estimate, road lengths and number of registered vehicles are important variables to take into consideration in examining road traffic accident casualties in the country.

A study of the causal factors of road traffic crashes in southwestern Nigeria by Aworemi, Abdul- Azeez and Olabode (2010) concluded that human, vehicle, roadway and environment are the salient factors that had significant contribution of about 79.4% on the road traffic crashes in the study area. Ohakwe, Iwueze and Chickezie (2011) also analyzed road traffic accidents in Imo state, south- eastern Nigeria. The study concluded that crashes such as Motorcycles- Motorcycle (McMc), Motorcycles- Vehicle (McV) and Vehicle- Vehicle (VV) are the leading types and accounted for the greater number of deaths. In these findings, it was observed that reckless driving, inexperience, mechanical fault and bad roads are the major causes.

Chukwuemeka (2012) observed that the perturbing problems in the issue of road accidents are the seemingly incorrigible attitude of drivers to overloading of goods and passengers. Granted that there are multiple areas of concern, the offence of overloading is rife on Nigerian highways. In this respect, many motorists appear ignorant of essential principles outlined in the Highway Code. Therefore, it is not surprising that many of these drivers do not see these guidelines as congruent enough with road safety. Cars, minibuses and taxis

are predominantly involved in road traffic accidents. Furthermore, Arosanyin *et al* (2012) examined the level of compliance with some basic road traffic regulations among commercial motorcyclists commonly called Okada riders in Zaria. In their findings, it was observed that the driver licensing procedure is faulty. The fact that about 42% of the motorcyclists are not aware of the existence of the Highway Code which is expected to guide their conduct on the road is an indication of the fact that they did not pass through the theory and practical test required for issuing drivers licence.

Ajiboye, Kolawole & Adebajo (2020) appraise the duties of FRSC in reducing road accidents in Ibadan and its environment. The study showed that the operational performance of the Federal Road Safety Corps is not satisfactory because only seven out of 22 statutory duties of the Road Safety Corps were being discharged successfully. The study therefore recommends that the authorities should act fast by collaborating with individuals, NGOs and corporate bodies by putting in place all essential incentives and equipments that will make the work of the Corps easier while there should be enlightenment of the community on road safety all the time where the issue of enforcement should not be neglected.

Methods and Materials

The Study Area

Kaduna state came from the old northern region of Nigeria leaving it as the capital of

North Central state. Meanwhile Kaduna was further divided in 1987 with the creation of Katsina state and presently is divided into 23 local government areas. Kaduna state is politically classified as belonging to the now “North- west” geopolitical zone of the current six geopolitical zones of Nigeria (Hayab, 2014). Located in the north-west zone of the country, on the southern end of the high plains of northern Nigeria, Kaduna state lies between latitudes 9° 05’ 56”N to 11° 31’ 52”N and longitude 06° 04’ 17” E to 08° 40’ 19”E (Fig. 1).

The entire land structure consists of an undulating Plateau with major rivers in the State including River Kaduna, River Kgom, River Gurara and Galma. Located in the north-west zone of the country, Kaduna state shares common boundaries with the Niger state to the west, Zamfara, Katsina and Kano states to the north, Bauchi and Plateau states to the east and Nassarawa state and FCT, Abuja to south. The state covers an area of 45,711.2sqKm (Nigerian National News, 2012). The total land mass occupied by the State is estimated at 46,053 sq km which is about 5% of the total land area of Nigeria. Kaduna State is the twelfth largest State in the Country. Kaduna State occupies part of the Central position of the Northern part of Nigeria with Kaduna as its capital. However, Kaduna is known to house most of Nigerian head of states and the economic hubs this attract traffics to Kaduna resulting to traffic issues such as accidents, congestion, pollution and parking problem.

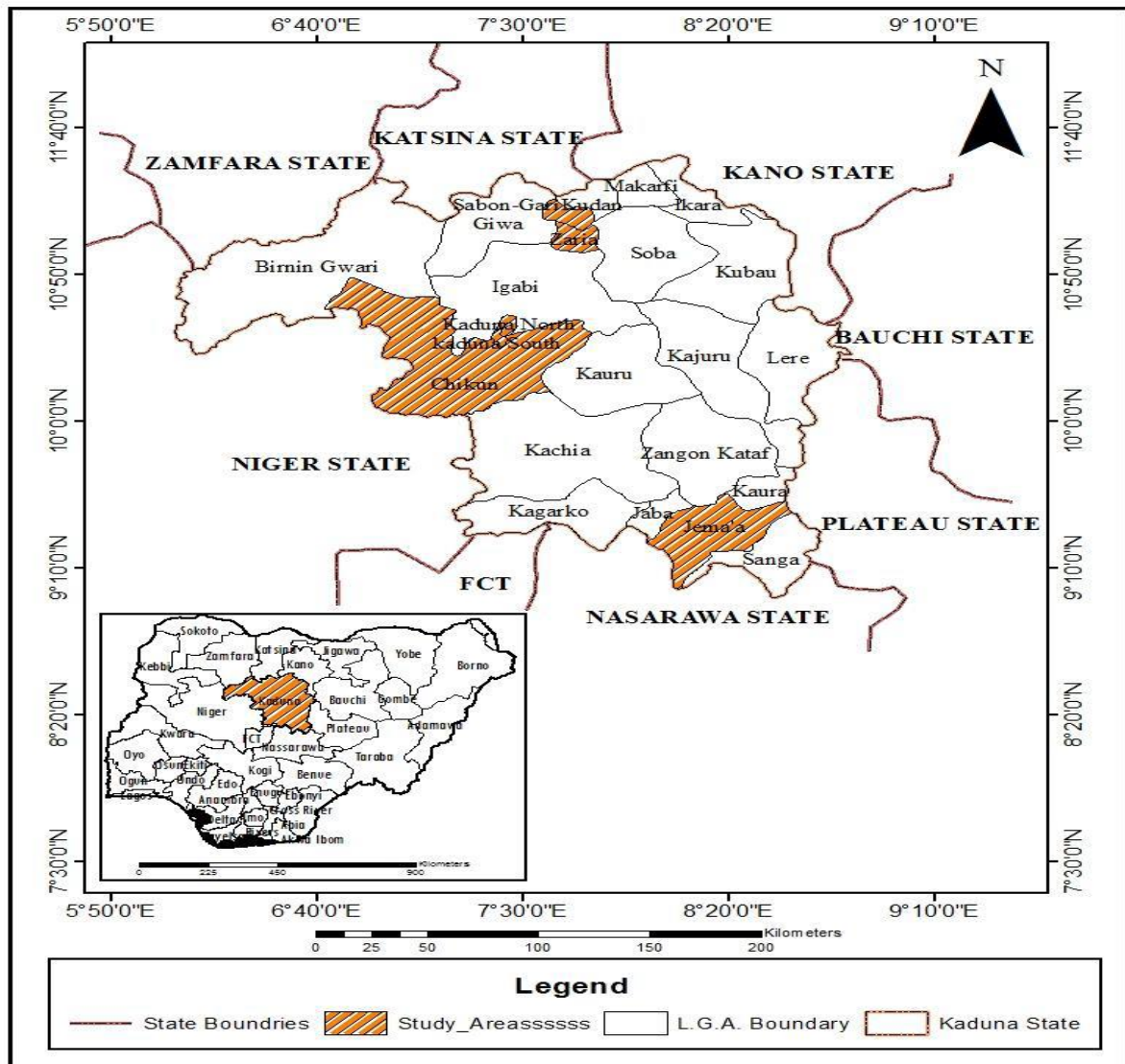


Figure 1: Map of Kaduna State
Source: Authors' Survey (2015)

Methodology

This study relies on both secondary and primary data. The secondary data comprises of online publications, accident data from FRSC and enforcement agencies and available facilities among others. The primary data was mainly questionnaires. However, the authors administered a total of 129 questionnaires to FRSC staffs attached to FRSC Units at Kaduna, Kaku, Zaria and Kafanchan and 123 questionnaires were returned as filled. At

the same time 85 questionnaires were administered to commercial drivers at the same location to have knowledge of their view on the role of Federal Road Safety Corps while one was returned as unfilled. To characterise the commonest period of accidents in the state, frequency and percentages were calculated and presented in tables and charts formats. Analysis and discussion of data on enforcement equipment were done using the T- Test statistics and P- values and the

results were presented in bar charts and tables. Chi-square was used to analyse the perception of commercial vehicle drivers and FRSC on accident reduction strategies measured by Likert scale. To examine the working conditions and enforcement capacity of FRSC in reducing accidents, analysis techniques such as chi-square and p values were adopted. All the findings were presented in tables and bar charts.

Results and Discussion

Socio-economic Characteristics of the Respondents

The age distribution of commercial drivers was also obtained so as to determine if they

have attained the universally acceptable age to drive. The age distribution of the respondents (FRSC staff and commercial drivers) is shown in table 1. 34.1% of FRSC staff are of the age range of 30- 34years which has the highest frequency implying that majority of the FRSC workers are young officers who have probably spent few years in service. Indeed, an examination of the result indicates that in all, over 68.3% of the FRSC officials are within the age bracket of 20- 34years. However, no FRSC worker was found to be less than 20 years. This can be explained by the fact that it is not acceptable to employ anybody less than 18 years for a road safety job.

Table 1: Age Distribution of FRSC staff and commercial drivers

	FRSC`		Drivers	
	Frequency	Percentages	Frequency	Percentages
≤19years	0	0	0	0
20-24years	20	16.3	8	9.5
25-29years	22	17.9	14	16.7
30-34years	42	34.1	20	23.8
35-39years	12	9.8	20	23.8
40-44years	7	5.7	13	15.5
45-49years	17	4	4	4.8
50-54years	1	3	3	3.6
55-59years	2	2	2	2.4
60years and above	0	0	0	0
Total	123	100	84	100

Source: Authors' Survey (2021)

For commercial drivers, 23.8% respectively fall within the age range of 30- 34years and 35-39 years. This constitutes the highest frequency implying that majority of the commercial drivers are young, sound and

old enough to drive a commercial vehicle. However, very few of the drivers (2.4%) were found to be 55years and above. This implies that the elderly people are not attracted to the driving profession. Also, the elderly ones cannot cope with the rigors of commercial driving. Health issues such as bad eye sight and high blood pressure are mostly associated with people that are 50yrs and above and this is why they hardly go into commercial driving.

Table 1 shows the educational status of FRSC officials and commercial drivers. The level of education gives an indication of their knowledge and level of intellect. It also gives an indication of how well they can understand and implement given tasks as road safety agents. Furthermore, the educational status of commercial drivers was obtained to provide an understanding of their level reasoning.

Table 2: Educational status of FRSC staff and commercial drivers

Qualification	FRSC`		Drivers	
	Frequency	Percentages	Frequency	Percentages
SSCE	43	35	No education	4
OND	38	30.9	Qur'anic	24
HND/BSc	15	12.2	Primary	22
Post Graduate	21	17.1	SSCE	27
Others	6	4.9	Tertiary	7
Total	123	100	Total	84

Source: Authors' Survey (2021)

The findings as presented in table 2 revealed that larger number of the FRSC workers are secondary school certificate holders (35%). However, analysis of the result shows that about 65% of the workers possess some level of postsecondary qualifications such as OND, HND and university certificates. This implies that virtually all the FRSC officials are educated. This level of education might

influence their understanding of road safety enforcement rules and regulations. Also, 40.4% of commercial drivers have some form of formal education while 33. 4% have no formal education. This implies that some of these drivers may not be able to read and interpret road signs and symbols appropriately which is paramount to road safety.

Table 3: Number of Years of Working/Driving Experience

Number of Years	FRSC`		Drivers	
	Frequency	Percentages	Frequency	Percentages
Less than 2yrs	33	26.8	0	0
2yrs-4yrs	23	18.7	8	10.1
5yrs-7yrs	20	16.3	8	10.1
8yrs-10yrs	15	12.2	17	21.5
11-yrs-13yrs	14	11.4	8	10.1
14yrs-16yrs	8	6.5	10	12.7
17years-19yrs	7	5.7	9	11.4
20yrs and above	3	2.4	19	24.1
Total	123	100	79	100

Source: Authors' Survey (2021)

Table 3 shows the years of working experience of FRSC staff and the years of driving of commercial drivers. This is necessary to ascertain their level of expertise in their jobs given the number of years that has been spent. It shows the frequency and percentage of the number of working years for FRSC staff and the number of years of driving experience for commercial drivers in Kaduna state. 61.8% of FRSC staff had worked between 0 and 7years while 38.2% have worked for 8years and above. This means that the largest percentages of FRSC staff constitute the lowest years of working experience and vice versa. With the above information, FRSC does not have enough experienced hands to battle road traffic accidents. For drivers, 41.7% had been driving for 0-10years while 58.3% had been driving for 11years and above. Subsequently, the higher the number of years in driving, the

greater the experience and expertise. Therefore, 58.3% have experience in driving and are more conversant with road safety rules and regulations and traffic signs.

Analysis of Accident Cases in Kaduna

The trend of Road Traffic Accident occurrences in Kaduna State was computed majorly to analyse whether accidents has been increasing or decreasing over the past 10years. The trend graph as shown in Figure 2 shows that the lowest case of Road Traffic Accidents was in 2011 in which 90 cases were recorded and the highest number of accidents recorded was 1733 in 2010. From the year 2006 to 2007, there was no increase or decrease in the number of accident cases due to the fact that the figure remained at 968 for the two years.

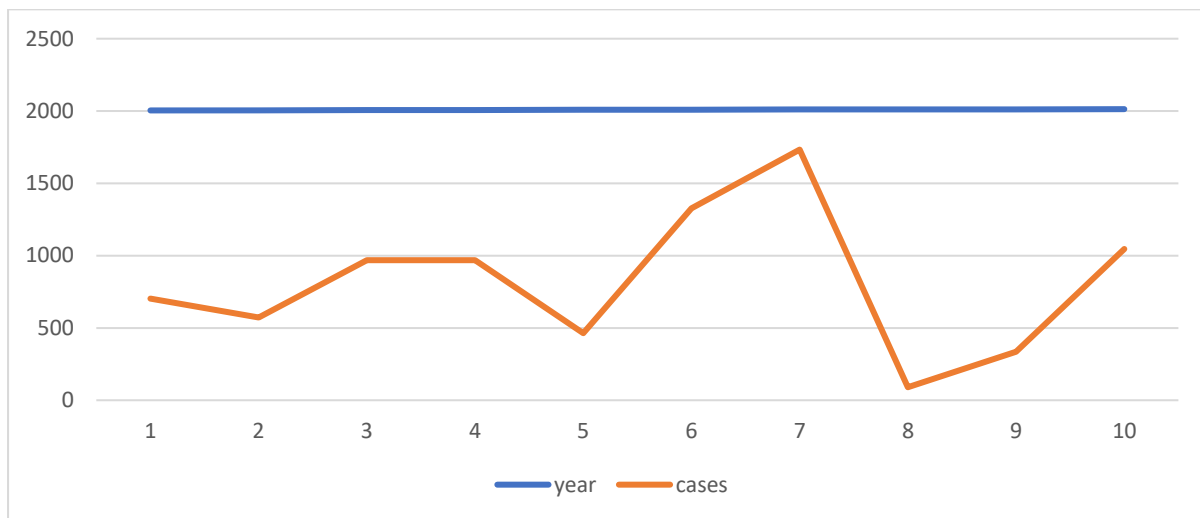


Figure 2: Road Traffic Accident in Kaduna
Source: Authors' Survey and FRSC (2021)

Figure 2 shows a causal relationship in which there is a high possibility that the increased employment rate is responsible for the sharp decline in accidents rate. From this discovery, it is therefore paramount to note that the number of FRSC officials deployed to any part of the state will affect the number of accident cases. Also, from figure 2, the number of FRSC staff employed remains the same in 2006 and 2007 and from figure 2, the number of

accidents also remain the same in the two years.

Common Period of Accidents

The occurrence of traffic accidents vary on daily, weekly, monthly and on seasonal basis. Table 4 shows the period of occurrence of accidents. The information about period of accident occurrence is necessary so as to know how and when to prepare against accident during such periods beforehand.

Table 4: Period of the year/season that accidents are common

Period/Season	Frequency	Percentages
April- October(wet season)	96	78
November- February(dry season)	4	7.3
March(hot season)	14	3.3
No specific season	14	11.3
Total	123	100

* indicates significance at 5% level (i.e. p-value < 0.05).

Source: Authors' Survey (2021)

The result in table 4 indicates that the wet season, that is between April and October is the period with the highest occurrence of accidents. This is because of the factors associated with the rainy season. Such factors include slippery road surface, blurred vision due to heavy clouds, potholes and ditches filled with water after a rainfall, insufficient facilities for road traffic enforcement during the rainy season and all other risks associated with the rainy season. With these factors still in place, accidents will definitely increase during the wet season. Similarly, the diurnal occurrence of

accidents also shows that most accidents occur at night (figure 3), the time of the day that accident is common is obtained so as to prepare against accident at such times. This may be due to the fact that there may be no or fewer FRSC officials on patrol at night and poor lighting facilities for vision to drive at nights. Secondly, accidents are also common in the morning because of the peak period of movements to schools, offices and businesses and as a result, the number of vehicles on the road will increase during this period

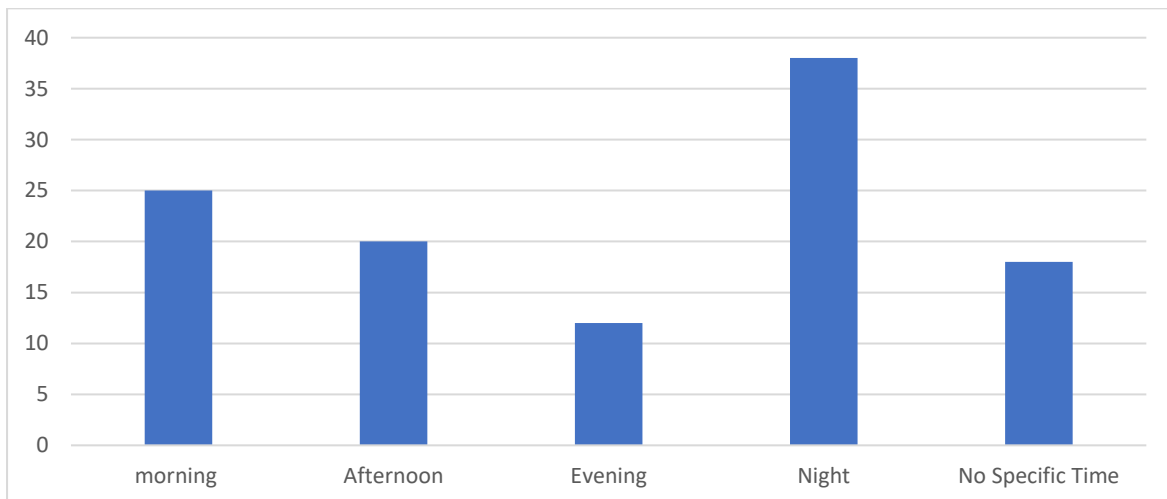


Fig 3: Time of the day that accident is common

Source: Authors' Survey (2021)

Enforcement Equipment for Accident Reduction

Table 5 Condition/state of available equipment

Period/Season	Rating	Frequency	Percentages
Very Good	>70	17	14
Good	50-69	58	47.9
Fair	40-49	36	29.8
Poor	<40	10	8.3
Total		121	100

* indicates significance at 5% level (i.e. when X^2 -cal > X^2 -tab or p-value < 0.05).

Source: Authors' survey(2021)

There is need to know how effective FRSC enforcement equipment are because this determines their performance in curbing road traffic accidents. In an attempt to determine the condition of the available equipment, the FRSC workers were asked to provide their assessment of their equipment from very good to poor. This will help to determine if there is need for repair or replacement of such equipment to ensure proper enforcement of traffic rules

on the road. Table 5 shows the condition of available equipment. Table 5 shows that 47.9% of FRSC officials believe that the available facilities are in good condition which means that they can be used when needed and necessary while 29.9% of FRSC officials believe that these facilities are in a fair condition. This indicates that there are still some repairs and replacements to be done.

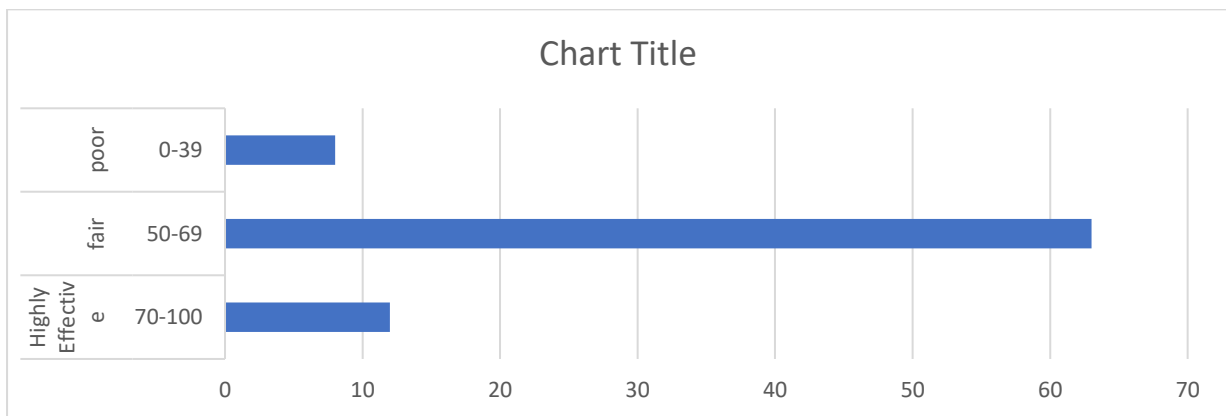


Fig. 4. Level of provision of enforcement facilities
Source: Authors' Survey (2021)

Figure 4 depicts the level of provision of enforcement facilities. As regards the provision of the enforcement facilities, the highest proportion of the FRSC officials agreed that the level of provision of facilities is fair (47%). However, a fair level of provision doesn't guarantee safety on the road. To ensure road safety, the need for adequate equipment cannot be compromised or overemphasized.

Figure 5 show that 65% of the respondents agreed that available enforcement

equipment are fairly effective. It is however instructive to note that very small proportion of respondents are of the view that available enforcement equipment are of high effectiveness. With the equipment rated as fairly effective, there is the need to maintain and add more standard equipment to the available ones. Without an effective set of equipment, an accident free situation cannot be achieved on the roads.

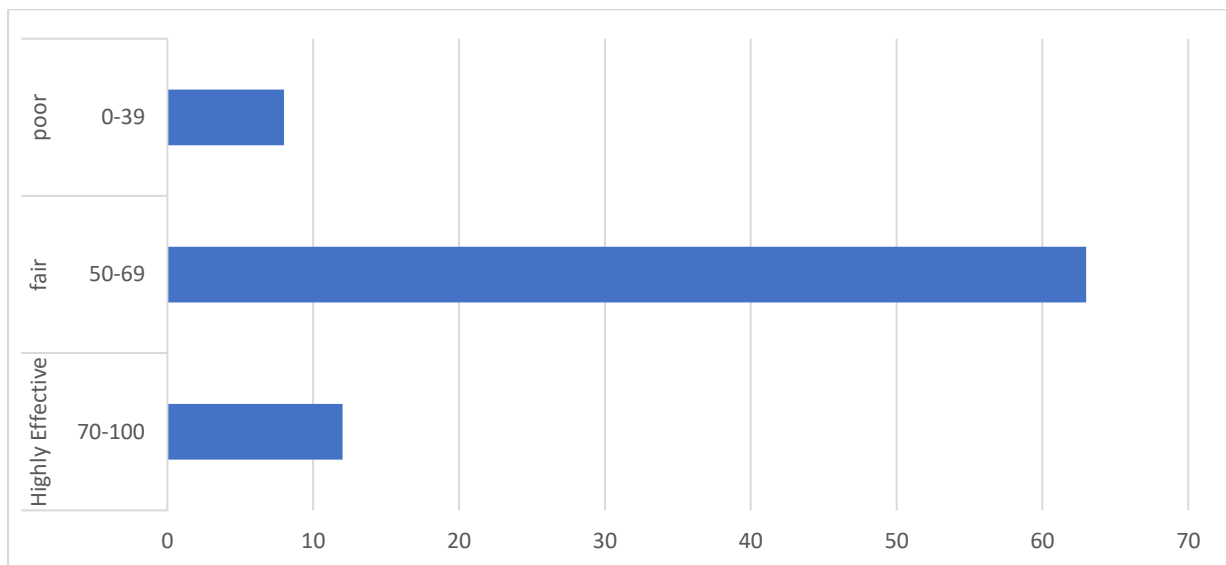


Figure 5: Rating of the effectiveness of available equipment

Source: Authors' Survey (2021)

Table 6 presents a list of items required to enforce traffic rules available and the quantity in working condition. A cursory examination of table 6 reveals that the total number of equipment types needed in Kaduna unit is 98 while the actual available equipment account for 38. Similarly, a total of 56 equipment types are required in Zaria unit. However, only eight (8) of these equipment are available. It is important to

note here that the same scenario is applicable to Kafanchan and Kakau units. Furthermore, in some of the units under investigation, some of the available equipment are not in working condition especially Kaduna and Kafanchan units (table 6). The result as presented indicates that the ability of FRSC units in the study area to effectively enforce traffic regulation is greatly hampered.

Table 6: Records of Road Enforcement Equipment

Enforcement equipments	No. Required				No. Available				No in working condition			
	Kaduna	Zaria	Kafanchan	Kakau	Kaduna Zaria	Kafan- chan	Kakau	Kaduna Zaria	Kafanchan	Kakau		
(a) Patrol vans	4	4	3	4	4	2	1	2	2	2	1	2
(b) Road side clinics	2	2	2	2	2	0	0	1	2	0	0	1
(c) Ambulance	3	3	2	2	1	0	0	0	1	0	0	0
(d) Breathalyzers	5	4	4	6	0	0	1	2	0	0	1	2
(e) Computers	10	5	5	2	0	2	2	1	0	2	2	1
(f) First aid kits	5	4	4	2	0	2	0	0	0	2	0	0
(g) CUG(phones)	10	6	4	5	8	2	3	4	8	2	3	4
(h) cranes	3	1	1	1	1	0	0	0	1	0	0	0

(i) Speed trailers	1	1	1	1	0	0	0	0	0	0	0	0
(j) Radar guns	3	10	1	2	0	0	0	0	0	0	0	0
(k) Patrol bikes	15	4	1	1	10	0	0	0	10	0	0	0
(l) Traffic camera	3	4	1	3	0	0	0	0	0	0	0	0
(m) Pub. add sys.	4	4	2	2	2	0	0	1	2	0	0	1
(n) Walkie-talkie	30	4	10	15	10	0	4	5	10	0	3	5
Total	98	56	41	48	38	8	11	16	36	8	10	16

Source: FRSC, Kaduna State

Table 7 T- Test statistic for record of enforcement equipment

		Kaduna	Zaria	Kafanchan	Kakau
No. required vs Available	No.	4.28571** (0.042)	3.42857** (0.000)	2.14286** (0.000)	2.14286** (0.007)
No. Available vs working condition	No. in	0.14286 (0.944)	0.000 (1.000)	0.07143 (0.336)	0.07143 (0.336)

*The first figures without the parentheses are mean differences. The ones in parentheses are the p-values. ** indicates significance at 5% level.*

Source: Authors' Survey (2021)

From the above described results shown in Table 7, the number of equipment required outweighs the available ones. This implies that FRSC staff are not well provided with the required quantity of equipment necessary for road monitoring. This could be the fault of the government or FRSC by not getting world class enforcement equipment. An examination of the paired difference between the number of available

equipment and number in working condition indicates that the differences are not statistically significant. For instance, the paired difference for Kaduna shows that $t = 0.143$, $p = 0.944$. Similarly, the result for Zaria indicates that $t = 0.001$, $p = 1.000$. The result for Kafanchan and Kakau also reveals that the differences are not statistically significant (Table 7)

Measures Adopted for Accident Reduction

There are several strategies for accident reduction. These measures are standard techniques for accident reduction and general road safety. Table 8 shows the

different strategies that FRSC has put in place for accident reduction in Kaduna state. This is paramount in order to know how best to improve on them and to identify what strategies need re-evaluation. Table 8 indicates that majority (39.3%) of the FRSC workers agreed that public enlightenment

program is the most widely used technique for accident reduction. This finding implies that there is need for an effective, up to date and programme awareness among the general public about the requirement for road safety and accident reduction. Also, 0.8% of FRSC workers interviewed see apprehension of traffic offenders as the least measure employed. This implies that this is probably one of the reasons for the unabated road accident occurrences in Kaduna state. If traffic offenders are not always apprehended and fined, there will

always be a repeat of such offences and consequently there will be accidents. There is therefore a strong need to review policies associated with traffic offenders and their due punishment. The total number of respondents is 129 from which 7 of the respondents did not respond at all to questions related to accident reduction measures. In order to determine the effectiveness of these accident reduction techniques, the respondents were asked to assess how effective the measures are.

Table 8: Measures instituted for accident reduction in the state

	Frequency	Percentage
Public enlightenment programs	48	39.3
Workshop and training of road users	13	10.7
Search and rescue services	3	2.5
24hr patrol and monitoring services	13	10.7
Apprehension and fining of road traffic offenders	1	0.8
Road safety curriculum in schools	3	2.5
Data management	2	1.6
Drivers' training	9	7.4
Vehicle inspection	5	4.1
All of the above	25	20.5
Total	122	100

Source: Authors' Survey (2021)

Figure 6 shows the level of effectiveness of the measures put in place by FRSC. This is necessary in order to know if other strategies should be added to the ones on ground so as to achieve effectiveness. Figure 6 shows that 70% of FRSC workers believe that the strategies put in place are highly effective. The strategies believed to be highly effective are those listed in table

6 of which public enlightenment programs take the lead. However, despite the belief of FRSC in the effectiveness of these measures, accidents are still occurring. This shows that the measures on ground are not adequate and that not only these established accident reduction measures will ensure proper result.

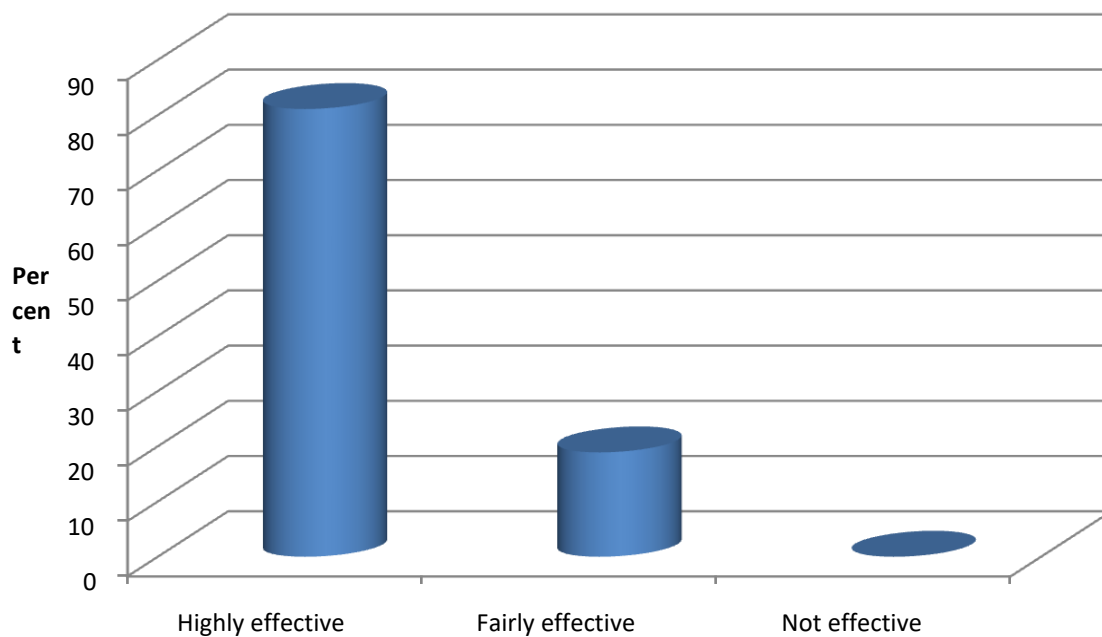


Figure 6: The effectiveness of strategies put in place for accident reduction
Source: Authors' Survey (2021)

The perception of commercial drivers on the activities of FRSC officials is revealed in table 9. This is necessary so as to know

the perception of drivers about FRSC and to ascertain how well they can be obeyed.

Table 9: Perception of activities of FRSC officials on patrol by drivers

Variables	Frequency	Percentage
They control traffic when there is a serious traffic hold up	1	1.2
They arrest over speeding drivers	6	7.2
They arrest drivers that donot use seatbelts	2	2.4
They inspect vehicles	2	2.4
They check drivers licence	17	20.5
They arrest drivers with over loaded vehicles	4	4.8
All of the above	51	61.4
Total	83	100

Source: Authors' Survey (2021)

The frequency and percentage of the perception of commercial drivers on the activities of FRSC officials is shown in table 9. This findings show that 61.4% of drivers believe that FRSC officials perform all the above listed activities. Only 1.2% of

drivers believe that they control traffic when there is a serious hold up. This may be because the motor traffic division of the Nigerian Police is saddled with this responsibility. However, because of the major focus of FRSC, which is road safety,

there should be collaboration with other road transport agencies in order to ensure free movement of vehicles and pedestrians for the purpose of creating an accident free environment. The total number of respondents (drivers) is 85. From table 9, only 83 drivers responded showing the reason for a lapse of 2.

Level of Compliance to Road Safety

The degree of compliance to traffic rules varies from one state to another, from one region to another and from one country to another. Table 10 shows the level of compliance of road users to traffic rules. This is needed to determine the rate of compliance as related to the overall state of road safety in Kaduna state. It is apparent that 54.9% of FRSC officials generally agreed that the compliance of road users to traffic rules is fair. This is because there is not enough education and public awareness about traffic rules and regulations and its

implications. This should not be, knowing that public enlightenment program is a major strategy that FRSC claims to use to curb accidents. The underlining issue is some drivers' poor understanding of traffic rules and regulations. This could be as a result of poor distribution of enlightenment programs or the unlearned state of some drivers. Also, many of the commercial drivers might not have passed through authorised driving schools to obtain drivers' license.

However, there is a need not only to sample the opinions of FRSC staff but also to obtain information from drivers too so as to reach a balance in the findings. Table 10 presents the responses of drivers on this. Using Likert-type scales, the drivers were asked to rank their knowledge and perception of FRSC's contribution to accident reduction and maintaining traffic discipline.

Table 10: Level of compliance of road users to traffic rules and regulations in the state

	Frequency	Percentage
Excellent (21- 30)	28	23
Fair (11- 20)	67	54.9
Poor (0-10)	27	22.1
Total	122	100

Source: Authors' Survey (2021)

Assessing Drivers Level of Knowledge

Table 11 shows the level of knowledge and perception of drivers about the effectiveness of FRSC in reducing accidents. Also, it shows the perception of drivers about their attitude to traffic rules and regulations. The result indicates that

57.1% of the drivers strongly agreed that FRSC are effective in reducing accidents while 1.2% disagreed. With this result, majority of the drivers believe that they are effective. Therefore, the hope of collaboration with FRSC in ensuring road safety is positive by completely complying

with traffic rules and regulations. Similarly, 69% of the drivers strongly agreed that FRSC have helped to maintain traffic discipline on the roads while 1.2% disagrees.

Majority of the drivers strongly believe that FRSC helps to ensure traffic discipline on the roads. This implies that they play a major role in ensuring that the roads are free of accidents. There is a need therefore to

ensure continual and increased discipline on the roads. Also, 56.6% of the drivers strongly disagree that they know little of traffic rules and regulations while 1.2% strongly agree. Majority of the drivers do not agree that they know little of traffic rules. This is because they hardly even attended driving schools nor know what traffic rules and regulations mean.

Table 11: Drivers Knowledge on roles of FRSC

Roles	Total	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Chi-Square(X ²)
FRSC is effective in reducing accidents	84	48 (57.1)	19 (22.6)	3 (3.6)	1 (1.2)	13 (15.5)	85.286 (0.000)**
FRSC has helped to maintain traffic discipline on the roads	84	58 (69)	17 (20.2)	5 (6)	1 (1.2)	3 (3.6)	135.524 (0.000)
As a driver, you know little of traffic rules and regulations	83	1 (1.2)	5 (6)	8 (9.6)	22 (26.5)	47 (56.6)	84.651 (0.000)**
Disobedience of road traffic rules are a major cause of accidents	83	55 (66.3)	14 (16.9)	6 (7.2)	1 (1.2)	7 (8.4)	116.217 (0.000)**

The figures in parentheses are the p-values. Each row has df of 4, therefore the X² tabulated value at 5% level with 4 df is 9.49. ** indicates significance at 5% level.

Source: Authors' survey (2021)

Incidentally, 66.3% of the drivers strongly agree that disobedience of traffic rules and regulations are a major cause of road accidents while 1.2% disagrees. Majority of the drivers agree that disobedience of traffic rules causes accidents. Examples of such rules are the use of seatbelts, obeying road

signs and traffic lights and proper use of road lanes. Inevitably, disobedience to such rules will increase accidents. This result calls for stricter measures to ensure total enforcement of traffic rules and regulations. However, this also means more FRSC staffs

need to be employed and positioned at strategic locations in the state.

Conclusion

The overall goal of the Decade of Action for Road Safety, 2011 - 2020 is to stabilise and then reduce the forecast level of road traffic fatalities around the World by 2020 (WHO, 2011). Also, one of the facts discovered from FRSC' safe road in Nigeria, an initiative to reduce road traffic accidents, is that accidents kill more than HIV/ AIDS. Having this fact at hand is a major eye opener to the level of damage and loss it has caused to the nation's economy. Even though FRSC's efforts are noticed nationwide and are seen to be effective in accident reduction, it has been discovered through this study that accidents occur mostly at nights and during rainy season, enforcement equipment are inadequate. It is therefore pertinent to intensify efforts on improving these findings to ensure an accident free environment with uttermost urgency. This research work will sensitise the general public on the roles of FRSC in accident reduction and also the roles of every stakeholder in alleviating the eventualities of accident occurrences.

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