Safety Rest Areas and Fatigue Related Road Accidents in Enugu, Nigeria

Austine M. Ezezue, Eziyi O. Ibem, Emmanuel I. Kikanme

Abstract: ***Fatalities and losses from automobile crashes associated with drivers fatigue are on a steady increase in many developing countries, including Nigeria. In a bid to stem the tide, the provision of road rest areas on major highways is increasingly gaining global recognition. However, the extent to which road rest areas can help in checking the rising cases of road crashes in Nigeria have not been examine in the research literature. Therefore, this research investigated how the provision of safety rest areas can contribute to a reduction in the incidence of fatigue-induced road accidents in Enugu southeast Nigeria. The research design adopted was a cross-sectional survey involving the administration of structured questionnaire to 93 randomly selected drivers in the study area. The data were analysed using descriptive statistics and logistic regression analysis. The result revealed that around 86.2% of the drivers sampled indicated that on a daily basis they drove more than 6 hours and around 95.7% of them would be 11 times more likely to prefer to stop over to have some rest in the course of their trips. The participants also identified sleeping and lack of concentration on the stirring as one of the principal causes of road accidents they had experienced. It was also found that most of the drivers who had been involved in road accidents were six times more likely to prefer to stop over than those who have never had accidents. This study implies that fatigue which can lead to sleeping and lack of concentration contributes significantly to road accidents among drivers in the study area. The study concludes that to reduce the high incidence of road accidents caused by long driving hours and resulting fatigue on the part of drivers in Nigeria and other developing countries, the provision of road rest areas should be given adequate attention by governments in policy formulation and development of road transportation infrastructure.***

Keywords: ***Road Rest Areas, Fatigue, Passive Safety, Policy, Road Transport & Accidents***

I. INTRODUCTION

Moving goods and people from one place to another is critical to maintaining a strong economic and political tie between regions or within any given same state. Falola and Olanrewaju [1] opined that the movement can be unique to location and technological development, but the requirement remains same. In his comparison of transportation with other means of movement, Kayode[2] stated that road transportation in Nigeria has remained the most popular form of transportation, due to the disadvantages associated with the other two media (air and water). Transportation by road could be facilitated by trucks, buses, cars and other automobiles or even by foot or by the use of animals such as horses, camels, and donkey.

Revised Manuscript Received on June 05, 2019

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Some scholars have advocated for the need for truck, buses, trailer and other automobiles as media for propagating road transportation because they are able to reach all nooks and crannies of towns and cities as well as rural areas[2, 3, 4]. It was on this premise that Olubomehin[5]concluded that road transportation is indeed the lifeline of the economy any locality, region and country. Furthermore, the growth and development of road transportation infrastructure have closely followed advances in automotive technology and the improvement and expansion of the national highway network [6]. In fact, evidence in the literature shows that this mode of transportation has metamorphosed over time and with the advent of technology, it has become a supportive instrument to the existence of man [7].

It is generally believed that most things in life have its positive and negative sides, so also with road transportation system. According to Gbadamosi [8], the consequential effects of the negative externalities of transport are usually accidents with its attendant injuries and fatalities capable of neutralizing the social and economic benefits of road transport system if not well managed. Traffic fatalities from automobile crashes have been known to be too high in developing countries, including Nigeria. This situation is very worrisome in spite of the fact that when compared with advanced countries there is lower vehicle ownership in relations to the size of the human population. In Nigeria today, hardly a day goes by without the occurrence of a road traffic accident, especially in the urban areas. These accidents result to general increase morbidity and mortality rates as well as financial loss to both society and individuals involved [9]. This situation in Nigeria can be compared to the global statistics of the quantum of road accidents experienced in the world today. For example, The World report on road traffic injury prevention indicates that across the globe an estimated 1.2 million people are killed in road crashes and as many as 50 million are injured each year [10]. Also, the yearly road accidents statistics by the Federal Road Service Corps presented in Appendices I, II and III show the road traffic accidents in the past two and half years in the Enugu State, Nigeria[11]

A cursory look at the data in Appendices I, II and III will reveal that the rate of accidents in the area is high when compared with data from developed countries of the world. Supporting this opinion is the study by [9] which affirms that the number of road traffic accidents in Nigeria has been consistently on the increase because most drivers on Nigerian roads are very rude, discourteous and have no regard for human life. Some authors were of the view that although it is well known that more than 90% of road accidents are related to human errors; sufficient information on the causes of accidents is still lacking [12]. This calls for further

investigations in the pre-crash phase of road accidents in Enugu and its environs. However another author was of the view that to reduce road crashes, there is needed for road safety rest areas where the automobiles, the drivers and as well as passengers can relieve themselves from the stress, frustration and boredom associated with long distance road transportation [13]. In the midst of this, the possible impact of safety road rest areas on fatigue-related accidents is yet to be adequately investigated in Nigeria. Therefore, this research sought to examine the influence the provision of road safety rest areas on fatigue-related accidents in Nigeria using Enugu as a study area. This is with a view to identifying how this can be a veritable strategy for reducing fatigue related road crashes and mortality rate in Nigerian roads. This study relied on detailed drivers' bahavioural data to provide understanding of how and why there is increasing rate of road crashes. It makes contribution to knowledge by suggesting effective solutions that can be evolved to reduce the number of the road crashes in the study area in particular and in Nigeria as a whole.

II. STUDY AREA

This research was conducted at the 9th mile corner of Enugu, Enugu Ngwo, Enugu East Local Government Area of Enugu State, hereafter referred to as the study area (See Figure 1). It is part of the capital territory of Enugu State which was created on August 27, 1991. It is located between the latitude 6°30′N 7°30′E of the earth surface [14]. With a population of about 5,590,513 million people, Enugu State has a population density of two and half times the national average [15]. Authors observed that Enugu has good soil and climate, sitting at about 223 meters (730 ft) above sea level, and the soil is well drained, with a mean daily temperature of 26.7 °C (80.1 °F)[16]. The average annual rainfall in Enugu is around 2,000 millimeters (79 in)[16]. Other weather conditions affecting the city include harmattan, a dusty trade wind lasting a few weeks of December and January [17]

The 9th mile nerve point is strategically located because it is a connection between several parts of the country especially the Northern part of the country and the South- East and a toll area, with an average daily traffic volume of 4594 road users [18]. The highways and other classes of road within this area are usually very busy both day and night, with buses and large trucks parking along the shoulders of ramps and road intersections. Trucks are usually seen parking along regular interchange ramps and in some cases along the lanes, to obtain road side services. This is indeed a potentially hazardous situation for travelers; since this is unsafe, undesired, and uncomfortable parking location that impedes the free flow of traffic. It was based on these features that the 9th mile corner was chosen as the study area for this research.

Figure 1: Google Earth Map Showing the Location of 9th mile corner of Enugu

III. REVIEW OF LITERATURE

Fatigue and Road Accidents

There are varied meanings of the term fatigue in the literature. However, most authors have adopted the definition of fatigue offered by Horscocta [19] which explained that fatigue in a road can range from falling asleep at the wheel to inattention. The authors made it clear that the three determinants of fatigue are: 1) lack of sleep 2) time of day or circadian factors, and 3) time spent performing a task. The individual factors that can affect the incidence of fatigue include age of the person, his/her physical fitness, and medical condition. Anecdotal evidence shows that one of the major causes of road accidents can be attributed to fatigue on the part of drivers. In many cases it has been observed that hardly do drivers have enough rest as many of them work round the clock as long as the passengers are there and vehicles are in moving condition. Most times when they want to sleep, they sleep in their vehicles within the motor parks. This condition makes them vulnerable to sleeping on the wheels resulting in errors that can lead to crashes. In fact, several authors acknowledged that sleep and fatigue factors significantly reduce alertness and performance on a task such as driving [20, 21, 22]. This view was corroborated by several other scholars who also noted that fatigue was a serious issue in the road transport sector in Nigeria (both for the drivers and the passengers alike) as it is not easily recognised and diagnosed[23, 24]. Driver fatigue is a very dangerous condition, when a person is suffering from the symptoms of fatigue while driving or falling asleep on the wheel he/she is so exhausted and will most easily make serious and fatal driving errors. Furthermore, the study by Munala and Maina[23] revealed that the causes of fatigue include poor road condition and long sitting periods. Many researchers have come to appreciate that one approach that had been in use over times to reduce fatigue is the provision of road safety rest areas. A cursory look at the National Transport Policy of Nigeria shows that this is completely absent as there is not much for this under infrastructural development plan save for the abortive toll gates used to collect double taxation from road users. As one travels along major roads in Nigeria, it is common to find makeshift road rest centres at some road nerve points. It could be said that its origin was in response to the increasing dependence on the road system to meet virtually all the inland transport needs. Within the

Enugu and Anambra State's axis, these nerve points can be found at Upper Iweka-Onitsha, Anambra State, Obollo-Afor and 9th mile in Enugu State

In addition, Atuma [13] posited that with the poor road network in Nigeria, travelers experience a lot of frustrations including broken down vehicles; traffic snarls and accidents, which sometimes lead to aborting passengers' journeys. Atuma [13] further argued that comfort is one of the basic requirements in road safety rest areas. This is to ensure that the automobiles, the drivers and as well as passengers have a soothing place to relieve themselves from the stress, frustration and boredom associated with long distance road transportation. Hence, this study is focused on road safety rest areas on major highways in Nigeria.

A Review of the Nigerian Road Transport Policy

Authors have described transport policy as the process of regulating and controlling the provision of transport with a view to facilitating the efficient operation of the economic, social, and political life of any country at the lowest cost [25]. Oyesiku [26] opined that transport policy forms the basis for the planning and direction of the growth of the transport system and the extent to which the planning and provision of transport provide appropriate solutions. The author further argued that the approaches to the provision of transport infrastructure as well as the efficiency of the transport system are directly related to the nature and dynamism of the transport policy of a country. From these submissions, it can be inferred that transport policy is an approach to identifying the transportation needs of any society and strategies for meeting them within the prevailing socio-economic and political imperatives. Sometimes, certain policies are outdated and found wanting, and thus required to be modified to serve the people they are meant for. It was based on these opinions that Sumaila [27] concluded that transport policy has many cross-sectional implications which make its goals largely interdependent. In their contribution, other scholars have provided an analytic framework to evaluate transport policies within and across countries. The framework focuses on three elements of a policy, namely, context, content, and consequence [28]. According to them, transportation policies are analysed with respect to the context upon which they were formulated. These include the institutional set up and policy motivations derived from the country's socio-economic and political circumstances. While the institutional analysis evaluates the country's general government structure and how sub-national entities fit into the policy motivations are analysed in terms of the country's transport framework messages such as their end goals. On policy contents, they summed it up in terms of policy objectives, approaches, and solutions, while consequences relate to the policy outcomes and performance of policy solutions. They posited that often policy intentions can be undermined by the actual implementation of adopted programme approaches and solutions bringing about outcomes or unintended consequences. According to the Federal Government of Nigeria Draft of the National Transport Policy [29], transport plays a key role in the economic and social development of any nation. This policy document states that a well functioning and integrated transport system amongst other things should serve the following functions:

i. Stimulates national development and enhances the quality of life for all.
ii. Allows markets to operate by enabling the seamless movement of goods and people
iii. Provides vital links between spatially separated facilities and enables social contact and interaction
iv. Provides access to employment, health, education and services;
v. Alleviates regional inequality and fosters national integration;
vi. Increases access to markets and links local, regional, national and international markets; and
vii. Promotes economic development by increasing access to labour and physical resources thus facilitating the realization of a country's comparative advantages.

Furthermore it discusses the evolution of modern transport system in Nigeria in distinct phases: colonial period and the post colonial period. Examination of the developments in each era reveals the following. The colonial period marked the origin of modern transport system; the networks developed then were geared essentially to meet the economic requirements of the colonial masters. The post colonial period was characterised with a re-orientation of goals as the transport became one of the instruments of unification of the country and an important tool for social and the economic development. The discovery of oil brought significant impact on the nation's social and economic growth, putting increasing demands on the transport systems. This brought with it so many challenges and opportunities which have culminated into the present situation where the Nigerian transport system is replete with several challenges and at a near a crisis state. It has been identified that one of the principal causes of the current situation, is a major imbalance between the growing needs of Nigerian society and economy for adequate provision of transport facilities and the ability of the transport sector to meet such needs demands [30].

This situation has persisted due to the obvious imbalance in the supply and demand for transport infrastructure and in the development of the different modes of transport systems, which has in fact increased over the period since 1993 without any significant efforts by governments to address the situation. This is because the corrupt and selfish leadership in Nigeria has shown less political will to address the transportation infrastructure supply deficit. This country is faced with challenges that have manifested in the demand for basic infrastructure services outstripping the supply of the existing assets amongst others. Many years of under-investment and poor maintenance saw Nigeria with a significant infrastructure deficit and this has contributed to slowing down the country's development and economic growth. In fact, the study by Sumaila [27] summarised the transport challenges in Nigeria that have contributed to crippling the growth and development of the sector to include: 1) poorly maintained road network and road complementary facilities, 2) inefficient public transport system 3) poor institutional framework leading to poor coordination of urban transit services, 4) poor land use-transport planning, and 5) poor and ineffective transport management. Despite the obvious poor transport state of infrastructure in the Nigerian transport system, there is still hope for amendment and improvement on several fronts by the hopeful masses and some top government officials.

One of such strategies identified by authors in their case for the re-introduction of the abortive toll gate infrastructure together with clinics for emergency treatment of accident victims and maintenance of deplorable highways in Nigeria[31, 32]. This suggestion may not be regarded as being proactive in the quest to achieve a reduction in the number of accidents and fatalities recorded on our roads. Hence, the thrust of the paper for policy makers in the field of transportation is to consider breaking away from wastefulness, double standard and institutionalise road service support centers on our highways in order to save the lives of Nigerians through passive safety measures.

IV. RESEARCH METHODS

The research design adopted for this study was cross-sectional survey, which involved quantitative research strategy. The primary data were obtained, from field observations and administration of questionnaire to drivers in study area while secondary data were derived from archival records, books, and journals. The questionnaire used was designed by the researchers and had sections A and B. Section A was used to extract data on the demographic characteristics of the drivers, while section B contains questions bothering on the objectives of the study. Both open and closed ended questions were included. Since the actual population of drivers in the study area is not known and to ensure that adequate sample that is representative of this category of road users in the study area was selected for this study, the Cochran formula for determining sample size for infinite population presented in equation 1 was used. In applying this formula, p = 0.5 i.e. the maximum variability of the population of e-Procurement users at 95% confidence level and q represented by (1 – p).

$$n_0 = \frac{Z^2 pq}{e^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{[33]}$$

Using this formula the minimum sample size was 385 drivers. A total of 385 copies of questionnaires were administered to randomly selected drivers at a major motor park in 9th mile area of between August 2018 and November 2018. However, 93 copies of the question- naires were retrieved from those who available and willing to participate in the study. The researchers used research assistants to further explain the contents of the questionnaire to the respondents who were not very conversant with the language of the questionnaire. This was to ensure that the participants understood the questions in the questionnaire and provide useful information needed to achieve the purpose of the research. This also helped to eliminate loss due to poorly filled questionnaires.

The data collected from the survey were analysed using SPSS version 22. Descriptive statistics which included frequency and percentages were used to summarize categorical variables investigated. Test of association between categorical variables were done using logistic regression. *P* value of less than 0.05 level of significance was regarded as significant. The results are presented using texts and tables.

V. RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of the respondents in the survey. Examination of the result reveals that most (84.9%) of the participants are male drivers, while the rest are female drivers. It is also evident in the result that most (67%) of them have driving experience of 5 years and above and many of them are 30 years and above. Further, Table 1 reveals that around 68.8% of the respondents had at least secondary education, while at the time of the survey, 77% of the vehicles where respondents were drawn from were fully loaded with passengers.

Table 1: Demographic characteristics of the respondents

	Frequency	Percent
Gender		
Female	14	15.1
Male	79	84.9
How long have you been driving?		
10years and above	34	36.6
5 -10years	28	30.1
2-years	23	24.7
Under years	5	5.4
Specify others	3	3.2
Age range		
20-24	4	4.3
25-29	14	15.1
30-34	24	25.8
35-39	23	24.7
40-44	10	10.8
45-49	8	8.6
50-54	6	6.5
55-59	3	3.2
60 and above	1	1.1
Educational qualifications		
No formal education	15	16.1
FSLC	14	15.1
GCE/WAEC	21	22.6
OND/NCE	12	12.9
HND/ DEGREE	16	17.2
Higher degree	15	16.1
Level of occupation of vehicle		
Full	72	77.4
Partially full	21	22.6
Average of time you drive the vehicle daily		

It can be inferred from the result in Table 1 that the participants in this survey are actually road users with a good number of years of experience in driving and are well education to read, understand, and provide answers to the questions in the questionnaire instrument. This implies that the participants of the research are well qualified to provide valid data for this research Table 2 is the display of the result on participants' responses regarding the questions on their preferences for driver exchange and having a rest after every normal driving period and the reason for these preferences. From the result in Table 2 it is evident that around 57% of the drivers would prefer to have driver exchange after every period of normal driving, while around 43% did not prefer to have this. The result also shows that the reason given by those who do not prefer to have driver exchange was basically due to the lack of trust amongst the drivers. Table 2 also indicates that most (95.7%) of the drivers would also prefer having normal rest in the course of their work outside their stations. This means that the drivers would prefer taking out time to rest in the course of their journeys each day. This is in line with the submission by previous authors[20, 21; 22] who acknowledged that having some rest during trips

can eliminate sleep and fatigue factors, which will in turn increase alertness and performance while driving [20, 21; 22].

Table 2: Drivers Preference for Exchange and Normal Rest in the course of their journeys

	Frequency	Percent
Would you prefer to have a driver exchange after every normal period of driving?		
Yes	53	57.0
No	40	43.0
If No, specify reasons		
Not specified	12	31.6
lack of trust	22	57.9
avoid damage and expenses	1	2.6
don't feel weak	1	2.6
no need for it	2	5.3
Would you prefer to have normal rest in the course of your work when you are out of your station?		
Yes	89	95.7
No	4	4.3

From the result in Table 2 it can be inferred that generally, most drivers would prefer to have exchange after a normal driving period and also have a rest in the course of their journeys outside their stations. The implication of this is that the driver would support the provision of well furnished and equipped rest areas along the major highways so that they can have some rest and thereafter continue with their journeys.

The study also investigated the average driving time and the causes of road accidents from the perspectives of the drivers themselves. From the result in Table 3, it is evident that a high majority (86.2%) of the drivers drive more than 6 hours in a day, while 35.7% drive 6 hours or less than this in a day. In addition, those drivers who drive more than 6 hours daily were found to be 11 times more likely to prefer to stop over than those who drive less than 6 hours daily (P < 0.001, OR = 11.200, 95% C.I = 3.052 – 41.105).Furthermore, Table 3 also reveals that the drivers who participated in the survey identified sleeping/lack of concentration as the main cause of road accidents they were involved in were 6 times more like to prefer to stop over than those who have never had an accident (P = 0.023, OR = 5.867, 95% C.I = 1.279 – 26.903). From this result it is evident that fatigue which can lead to sleeping and lack of concentration contribute to road accidents in the study area. This finding is consistent with the submission by Horscocta [19] who explained that fatigue in a road, which can manifest by falling asleep at the wheel to inattention can lead to road accidents and fatalities.

Table 3: Average Driving Time and Cause of Road Accidents

	Preferences whenever one feel sleepy or weak while driving				
	Prefer to stop over n (%)	Struggle with the sleep n (%)	P value	OR	95% C.I for OR
Average daily driving time					
>6 hours	56 (86.2)	9 (13.8)	< 0.001	11.200	3.052 – 41.105
≤ 6 hours	5 (35.7)	9 (64.3)			
Cause of Road accident experience					
Sleeping/lack of concentration	22 (88.0)	3 (12.0)	0.023	5.867	1.279 – 26.903
No accident experience	10 (55.6)	8 (44.4)			

Table 4 shows that drivers who drive more than 6 hours daily were 5 times more likely to prefer to have a driver exchange than those who drive less than 6 hours daily (P = 0.004, OR = 4.700, 95% C.I = 1.622 – 13.618). Drivers who admitted to sleeping or loss of concentration as the cause of the road accidents they had experienced were four times more likely to prefer to have a driver exchange than those who have never had an accident (P = 0.046, OR = 3.667, 95% C.I = 1.023 – 13.143).

It is evident from findings of this research that most of the drivers encountered in this survey would love to take some time out and have some minutes of rest in a secured environment where adequate provisions have been made for relaxation and refreshment before continuing on their journey. However, the review of the operational National transport policy in Nigeria has revealed that no provision was made for the establishment of safety rest areas on highways in Nigeria. In addition, anecdotal evidence also shows that apart from eateries operated by individuals, there are no standard safety rest areas for drivers, passengers, and vehicles that ply Nigeria roads. It is because of this that Munala and Maina [23] observed that drivers and their passengers are compelled to sit for long period leading to fatigue, sleeping, and lack of concentration on the wheel. Therefore, the lack of this kind of facilities on our highways is considered to be part of the overall poor road infrastructure identified by Sumaila [27] as one of the critical challenges of transportation in Nigeria.

Table 4: Factors associated with road service and drivers exchange

	Prefer to have a driver exchange		P value	OR	95% C.I for OR
	Yes n (%)	No n (%)			
Average daily driving time					
>6 hours	47 (65.3)	25 (34.7)	0.004	4.700	1.622 – 13.618
≤ 6 hours	6 (28.6)	15 (71.4)			
Causes of Road accident					
Sleeping/lack of concentration	20 (80.0)	5 (20.0)	0.046	3.667	1.023 – 13.143
No accident	12 (52.2)	11 (47.8)			

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication

VI. CONCLUSION and RECOMMENDATIONS

The study investigated the influence of safety road rest areas on fatigue related accidents in Enugu southwest Nigeria. The study reveals that drivers who drive more than 6 hours daily non-stop are prone to fatigue, sleeping on the wheel and lack of concentration and accidents, while those that drove less than 6 hours and stop over to have some rest are less prone to accidents. It was also revealed that sleeping/lack of concentration were the main cusses of fatigued-related road accidents in the study area and that most drivers who had witnessed accidents were 11 times more likely to prefer to stop over than those who have never had accidents. From findings of this study, it is obvious that drivers' fatigue is one of the major causes of road accidents in the study area. This is has been attributed to the non-existence policy and practice of provision of rest areas on the highways for driver and vehicles, which has compelled motorists to drive beyond the mandatory hour of service even when they are tired and exhausted. In view of this, it is recommended that in order to curb the rising cases of fatigue-induced road crashes in Nigeria, there is a need for adequate legislation on the provision and usage of rest areas on the Nigerian roads. Such legislation should make it mandatory for every highway in the country to be provided with rest areas for drivers, passengers, and vehicles at designated locations. Provisions should also be made to ensure that very motorist, especially those that ply long distances are compelled to use the facilities with appropriate punishments meted out to those who failed to comply with this. It is expected that these measures can help in reducing the number of fatigue-related road traffic fatalities in Nigeria. This is in line with the suggestion of previous authors who has underscored the importance of such facilities in ensuring the reduction of the rate of fatigue-related road accidents [34, 35]. It is also suggested that when such facilities are provided, adequate security should also be made available to prevent hoodlums and armed robber from attacking the drivers and passengers using the facilities.

This study is limited on the research design as it was based on questionnaire survey and participants drawn from Enugu State, southeast Nigeria, and thus the findings cannot be generalised for every part of Nigeria. Therefore, further studies are recommended for other parts of Nigeria with such studies adopting mixed research approach. The study is also limited to the biases of 93 participants who were available and willing to participate in the study, so their responses to the questions would have been influenced by their state of mind at the time the survey was conducted. Although this type of limitation is expected in questionnaire surveys, future studies should endeavour to include more respondents for more robust findings. These limitations notwithstanding, this study can be considered to have achieved its goal by unearthing the influence of safety rest areas on fatigue-related road accidents in Enugu, Nigeria.

APPENDIX I

Appendix 1: Road traffic crashes from January to December 2016

Month	No. of road accidents	No. Of fatal	No. Of serious	No. Of minor	No. Killed	No. Injured	Total Causalities	No. of vehicles involved	No. Private vehicles involved	No. Of Commercial Vehicles involved	No. Of Government Vehicles involved
January	26	8	17	1	21	116	137	55	21	34	0
February	14	8	5	1	15	28	43	18	8	10	0
March	20	7	12	1	7	68	75	48	17	30	1
April	18	4	11	3	8	49	57	34	12	22	O
May	23	5	15	3	5	54	59	41	9	31	1
June	15	3	10	2	17	61	78	24	7	17	0
July	16	4	11	1	9	62	71	39	9	30	0
August	16	3	10	3	3	45	48	27	8	19	0
September	32	3	22	7	10	77	87	52	11	41	0
October	14	4	6	4	6	44	50	25	5	20	0
November	26	10	10	6	15	47	62	52	15	36	1
December	18	8	7	3	12	54	60	35	8	27	0
Total	238	67	136	35	128	705	833	450	130	317	3

Source: Federal Road Safety Corps *RS9.* 1 and Enugu Component Commands (2016)

Appendix II: Road traffic crashes from January to December 2017

Month	No. of road accidents	No. Of fatal Cases	No. Of serious Cases	No. Of minor Cases	No. Killed	No. Injured	Total Causalities recorded	No. Of vehicles involved	No. Private vehicles involved	No. Of Commercial Vehicles involved	No. Of Government Vehicles involved
January	17	6	9	2	8	55	63	28	9	19	0
February	16	6	9	1	8	57	65	25	7	18	0
March	29	9	16	4	14	88	102	51	10	41	0
April	20	5	7	8	5	69	74	28	9	19	0
May	14	3	6	5	6	56	62	25	11	14	0
June	13	4	8	1	8	54	62	20	8	12	0
July	16	8	6	2	13	34	47	25	8	16	1
August	17	3	11	3	4	54	58	18	4	14	0
September	10	6	4	0	13	34	47	16	3	13	0
October	10	2	6	2	4	36	40	15	4	11	0
November	9	3	4	2	4	10	14	13	3	10	0
December	14	5	7	2	8	29	37	28	9	19	O
Total	185	60	93	32	95	576	671	292	85	206	1

Source: Federal Road Safety Corps *RS9.* 1 and Enugu Component Commands (2017)

Appendix III: Road traffic crashes from January to December 2018

Month	No. of road accidents	No. Of fatal Cases	No. Of serious Cases	No. Of minor Cases	No. Killed	No. Injured	Total Causalities recorded	No. Of vehicles involved	No. Private vehicles involved	No. Of Commercial Vehicles involved	No. Of Government Vehicles involved
January	12	6	4	2	10	42	52	16	6	10	0
February	12	5	6	1	9	41	50	30	8	22	0
March	10	3	5	2	3	43	46	18	5	13	0
April	22	6	9	7	14	57	71	39	10	29	0
May	17	7	10	0	12	63	75	28	10	18	0
June	6	2	3	1	9	71	80	15	5	10	0
July	7	1	4	2	1	19	20	13	10	3	0
August											
September											
October											
November											
December											
Total	86	30	41	15	58	336	394	159	54	105	0

Source: Federal Road Safety Corps *RS9.* 1 and Enugu Component Commands (2018)

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