

Analysis of Road Crashes and Categories of Vehicle Involved in Lagos Metropolis between 2010-2019

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Abstract: The continuous increase in the rate of road crashes and the high casualty rate is worrisome, especially in the low-income countries, there has been local and global effort at stemming the tide of the increase to minimize socio-economic losses arising from it. This study aims to evaluate ten years (2010-2019) record of road crashes in Lagos State with the objectives to determine the rate of casualty and identify categories of vehicles involved in road crashes. Accident record of Federal Road Safety Corps, Lagos State Command was obtained and analysed using descriptive statistics. Result revealed that there are 8.9% fatal crashes, 41.3% serious and 49.8% are minor crashes. It was also discovered that most of the vehicles involved are commercial vehicles which account for 56%. The study concluded that road crashes casualty is on the increase and that there is little difference between the rate of involvement by commercial and private vehicle, hence it is recommended that a continuous and holistic intervention programme should be planned and implemented across the users of all categories of vehicle, public enlightenment and awareness through education on road safety should be made available at all levels of education (driving schools included), Strict enforcement of road safety laws without compromise by relevant agencies, Federal Road Safety Commission (FRSC), Lagos sector command should improve on their scope of data coverage to capture each Local Government Area in the state and NDLEA and NAFDAC should rise up to their duty and continue to campaign against sales/intake of alcohol/psychotic substances within major parks in Lagos State as the study shows that the rate of accident are more among the commercial drivers.

Keywords: Road Crashes, Vehicle Categories, Accident Types, Casualty Rate.

I. INTRODUCTION

Three major causative factors of road crashes have been identified in the literature as major causes of accident on the highways, these include human, vehicle and the environment. Of these factors vehicle contribution have been seldomly studied in this part of the world. Vehicle are designed and manufactured for different purpose and uses, they are also of varying capacity and maneuverability which distinguished them into various types, make, model and of course the uses which allow it categorization into passenger vehicles, goods vehicle equipment and the like.

The increase in the automobile use world over has brought to fore the contribution of vehicle to the incidence of road crashes. Scholars have developed concept and theories to explain the complex road safety system, the driver-vehicle-

road interface is explained in the concept of risk assessment developed by Haddon (1980) rises from the triangle concept. This concept is often used by road safety practitioners, they have categorized it into human factor, mechanical factor and environmental factor. Issues relating to vehicle are categorized as mechanical factors and the different components of mechanical factors that causes road accident are identified as including Brake failure; Burst tyres; Engine failure; Use of fake spare parts; Defective and Dazzling lights; Poorly maintain vehicles.

Over the years United Nation have increase advocacy for safer vehicle, it is one of the pillars of the decade of action on road safety which focused on improve safety in vehicles and promotion of seatbelt usage, airbag in vehicles and other protective devices. This has impacted positively in the development of new generation vehicles, vehicle now come with safety sensor which helps drivers to identify danger either in the mechanical system or in the road environment. The role of driver is therefore very important in the analysis of mechanical factors, because vehicles are used and maintain by driver.

Road safety however goes beyond periodic check or prompt repair of vehicles by drivers. It should be a daily routine of care and check of all components of a vehicle. The main vehicle factors are defects in tyres, brakes and inputs all arising from poor maintenance of the vehicle. The global economic recession have badly affected the quality of products in the Nigerian markets such that people now prefers the use of sub-standard products like Tokunbo tyres, Tokunbo spare parts and Tokunbo vehicles. These, coupled with over speeding and reckless driving, negate the principles of safety when considered against the phenomenon of used vehicles. Any of those parts malfunction can eventually affect smooth driving, which in the end, can lead to serious accident. In essence, a deficient vehicle, an unserviceable car, or a poor maintained automobile are all dangerous with high probability to cause accidents on the highways. Recently, mechanical alteration was discovered as another major factors contributing to high rate of crashes, most right-hand drive vehicles imported into the country are altered by local mechanic who change the steering wheel to the left to comply with the existing laws in the country, these vehicles are danger in the waiting.

The implications of road traffic accidents in Nigeria, especially Lagos state have been colossal. Despite the happiness and change of quality of family lives associated with owning a vehicle, its possession has made many families bereaved of their breadwinners or loved ones (Umar, 2013). It is apparent that road traffic accident is a complex phenomenon not only in terms of diverse causes but also in the nature of its effects on lives and property. Apart from the humanitarian aspects of road safety the injuries and fatalities, which occur as a result of road traffic accidents have serious social and economic consequences which made prospective travelers to develop phobias for spatial interaction through road transport (FRSC, 2015).

II. OBJECTIVE OF STUDY

The aim of the study is to evaluate a ten years incidence of road traffic crashes in Lagos State between 2009 and 2019. With the objectives of determining the rate of crashes on Lagos road, identify whether commercial or private vehicles are involved more in road crashes within the study area and the nature of the accidents whether fatal, serious or minor.

III. STUDY AREA

Lagos state was created on May 27, 1967 by virtue of the state creation and transitional provisions decree No. 14 of 1967 which restructured the country into a federation of 12 states. Lagos state composed of the old federal territory of Lagos which remains the financial hub and was the federal capital territory of Nigeria (till December 12, 1991). Lagos is the nerve centre of the nation's economy. Lagos State is located in south western part of Nigeria. It is bounded in the north and east by Ogun State, in the west by the Republic of Benin, and in the south by the Atlantic Ocean on the Bright of Benin. Lagos State is the fastest growing city in Nigeria and it is the second most populous and fastest growing city in Africa next to Cairo in Egypt. It has also been ranked as the seventh fastest growing city in the world. The population of Lagos State in 1991 was 5.8 million and by 1997, the population was estimated as 11.58 million. Lagos State attained the mega-city status in 1995 when the population reached the 10 million mark (UN-Habitat, 2006).

The State population is estimated at 21 million, a remarkable increase on the 2006 national census figure of 9.01 million. Lagos State is Nigeria's economic capital as well as its financial and commercial nerve centre. The State accounts for over 33.5 % of national industrial establishment, 65% of its commercial activities, and over 45% of the skilled manpower in the country (LAMATA 2020). Collectively, the socio-economic advantage has implications for traffic generation and flow; and road infrastructural provision. However, road provision has not met the sharp rise in the number of vehicles plying the roads.

IV. THEORETICAL AND EMPIRICAL BACKGROUND

Road traffic injuries cause considerable economic losses to individuals, their families, and to nations as a whole. These

losses arise from the cost of treatment as well as lost productivity for those killed or disabled by their injuries, and for family members who need to take time off work or school to care for the injured. Road traffic crashes cost most countries 3% of their gross domestic product. (UN Global Status Report on Road Safety, 2015). Atubi (2015) averred that road traffic accidents have physical, social, emotional and economic implications. The global economic cost of road traffic accidents was estimated at \$518 billion per year in 2003 and \$100 billion of that occurring in poor developing countries (WHO, 2009). Nigeria loses about 80 billion naira annually to road traffic accidents of all subjects that are involved in road traffic accidents in the country, 29.1 percent suffer disability and 13.5 percent are unable to return to work (Labinjo et al, 2010, Atubi, 2012).

Road traffic accidents have physical, social, emotional and economic implications. Many families are driven deeply into poverty by the loss of bread winners and the added burden of caring for members disabled by road traffic injuries who are among males of the economically active age-group. In Nigeria especially in the study area- Lagos State, road traffic crashes have become one of the leading causes of death in older children and economically active adults between the ages of 30 and 49 years (Murray et al, 1997; Jacobs et al, 2000). Despite this burgeoning problem, little attention has been paid to road traffic injury prevention and treatment in Nigeria and most developing countries.

Solving the problem of road traffic accident injuries require a multi-dimensional approach which as a matter of fact will involve major stakeholders in the transport industry with the government playing a key role. Road traffic injuries can be prevented. Governments need to take action to address road safety in a holistic manner. This requires involvement from multiple sectors such as transport, police, health, education, and actions that address the safety of roads, vehicles, and road users. Effective interventions include designing safer infrastructure and incorporating road safety features into land-use and transport planning, improving the safety features of vehicles, improving post-crash care for victims of road crashes, setting and enforcing laws relating to key risks, and raising public awareness (UN Global Report on Road Safety, 2015).

However, some of the interventions in vehicle safety for Nigeria include; enforcement of Seat Belts and speed limiter by FRSC. No matter how you will drive there is always a chance that you will be involved in an accident. One cannot predict when it may happen. From statistical analysis of road traffic accidents in Nigeria since independence the chance that one will be injured in an accident in his life time is 1:3; that he may be killed in an accident is 1:9. The best protection inside the vehicle is the use of seat belts (Federal Road Safety Commission Highway Code, 1997). Similarly, the use of seat belts in Nigeria was optional; hence many vehicles are not fitted with seat belts. In those that have them, they are not being utilized by drivers and passengers alike. But currently,

the Federal Road Safety Commission has made the use of seat belts compulsory to all motorists with effect from July 1st 2005 (The Guardian Newspaper, July 2nd, 2005, p. 14). Similarly, the enforcement of speed limiter in vehicles especially commercial vehicle was introduced in June 1st 2015 by FRSC, this effort faces a lot of criticism by the public and the legislatives and was not totally enforced because of public agitation until February 1st 2017 after it was endorsed by the president.

Drivers often think that the faster they drive, the more they impress themselves and others. They fail to remember that anybody’s tyre can burst that accidents at high speed are more disastrous than accidents at low speed; that the vehicle is a machine and can fail at any time. At 100kmph, your vehicle moves at 28 metres per second, just imagine where you could be in only one second if you veer off the road which is usually less than 12 meters wide. (Federal Road Safety Commission Highway Code, 1997; Atubi,2008). The Federal Road Safety Commission also imposed speed limit for all categories of vehicles i.e. 100kmph maximum speed for all private cars, 90kmph for commercial vehicles and 60kmph for trucks. But common sense often dictates lower speed limits. Speeding on highways is a major cause of traffic crashes. The effect of speed on causing traffic related crashes, injuries and deaths has been documented in many settings (Aderamo, 2012). In fact, the over 20% reduction in traffic crashes and deaths in Brazil has been partly attributed to speed limits which have been posted on many roads since 1998 (Afolabi, J. A. Gbadamosi K. T. 2017).

V. METHODOLOGY

This study relied on secondary data from operational records of Federal Road Safety Corps (FRSC) in Lagos state which were obtained from research and planning department at the Ojodu Sector Command Office. The data is limited to road

accident data obtained between year 2009 and 2019 drawn from their statistical record of operations from formations (units and zones) across the state. The data was analysed using descriptive analysis techniques, percentage table and charts.

VI. DATA PRESENTATION AND DISCUSSION

Two sets of data are presented and analysed using simple percentage, the road crashes record between 2010 and 2019 and the categories of vehicles involved in road crashes within the same range of time. Road crashes data is presented in table 1, with emphases on the three types of accidents: fatal, serious and minor. The study reveals a mean rate of accident between 2010 and 2019 for each categories of casualty levels as for fatal accident it is 8.9%, while 41.3% and 49.8% for serious and minor accidents respectively. This suggest that casualty rate is low (8.9%) however, if by definition serious accident records injuries, the rate of injuries which may leads to permanent disability and or death in the long run is on the high (41.3%). Casualty rate therefore is on the rise (50.2%).

Further analysis of the accident data revealed yearly rate of increase or decrease in the road crashes record between the years. From 2010 to 2012 there is a mild increase, 7.2% in 2011 and 2.4% in 2012 and by 2013 there is a remarkable decrease by 27.2% follow by an increase in 2014 by 25.2%. between 2015 and 2017 there is consistence decrease at varying rate, in 2015 19.8% decrease was recorded while in 2016 3.6% was recorded 30.2% decrease recorded in 2017. On the contrary 2018 recorded significant increase in the record by 179.4% and by close of the year in 2019 a decrease by 29.8% was recorded. In conclusion, the record has presented an undulating rate of crashes between 2010 and 2019. This result may not be unconnected with inconsistency in the road safety intervention programmes and approaches to road traffic management.

6.1 Road Crashes Casualty Data between 2010 and 2019

Table 1: Road Crashes Casualty Data between 2010 and 2019

CASUALTIES	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TOTAL	Mean	Rate
FATAL	522	547	516	394	522	395	547	57	159	115	3774	377	8.9
SERIOUS	1556	1807	1865	1390	1556	1455	1487	483	3082	2829	17510	1751	41.3
MINOR	2309	2349	2436	1721	2309	1669	1360	1830	3380	1706	21069	2107	49.8
TOTAL	4387	4703	4817	3505	4387	3519	3394	2370	6621	4650	42353		
Percentage increase/decrease	-	7.2	2.4	(27.2)	25.2	(19.8)	(3.6)	(30.2)	179.4	(29.8)			

Source: FRSC Ojodu, 2021

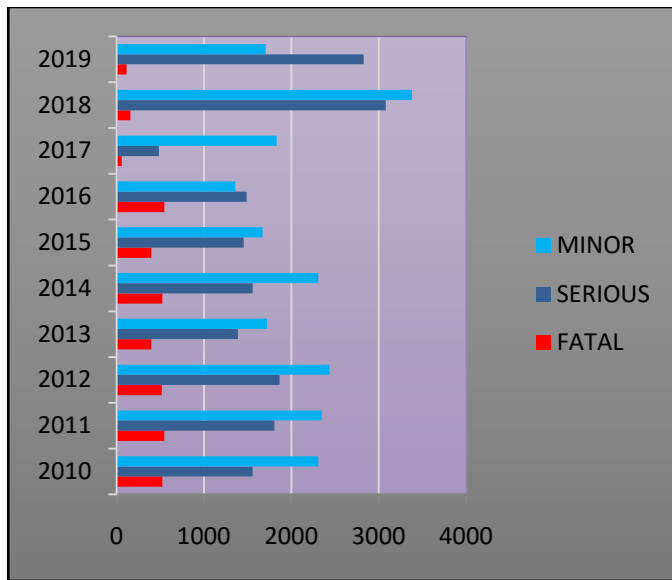


Figure 1: Road Crashes Casualty Data between 2010 and 2019

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6.2 Categories of vehicles involved in road crashes

Vehicles on the highways are categories broadly into two, these are public and private. Table 2 present data on the cases recorded by each categories of the vehicles between 2010 and 2019. Table 2 revealed that on the average 3273 of the vehicles involved in accidents were commercial, while 2568 of them were private. This indicates that the majority of the vehicles that involved in road traffic accidents were commercial. This accounts for about 56% commercial and 44% private vehicles. This is an indication that private cars owners are a bit careful in driving when compare with the commercial drivers who are always in a hurry to meet up their target thereby over speeding and endangering the lives of passengers and other road users.

Accidents differ in their geographical location, tending to occur more frequently at certain sites which may be designated as ‘black spots’. The incidence of road accidents also vary with such environmental factors as time of the day, day of the week, weather conditions, types of road design and surface, lighting and visibility. The severity of accidents and the resulting mortality is also affected by vehicles structural design. Over speeding is often caused by time punching which often occurs after traffic hold up. Time punching is a common occurrence on Lagos roads and is practiced both by commercial bus drivers and private owners in order to make up for time lost in traffic. Figure 1 and 4 further buttresses the fact that commercial drivers are more reckless and involved more in road traffic crashes than the private. Figure 2 show a ghastly accident that involved two private cars while figure 3 shows a multiple incidence of both commercial and private vehicles.



Plate 1 showing a commercial bus that ran into a median

Source: online

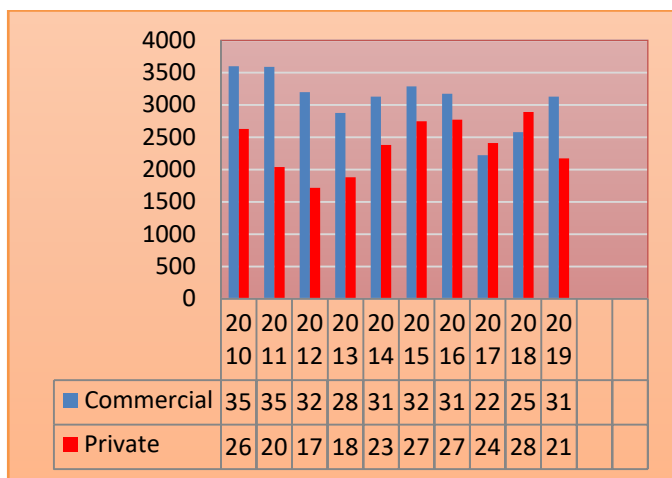


Figure 2: Data of categories of vehicles involved in road accidents between 2010 and 2019

Source : FRSC Ojodu Berger (2021)



Plate 2 Badagry Ghastly accident as a result of barrier drivers over speeding

Source: online



Plate 3 showing a multiple accident along Eko bridge Ikorodu road involving commercial vehicles

Source: online



Plate 4 showing a fatal accident along Lagos

Source: online

VII. CONCLUSION

This study have been able to examine the rate of road crashes by different categories of road accident; Fatal, Serious and Minor. The study concluded that the rate of casualty is high in the study area. This conclusion affirmed the finding of UN (2015) that rate of accident causality is on the increase in most cities of the low crime countries and there is need for a contentious intervention to stem the tide of the increase. The period of this study falls within plan period of global decade of action on road safety, with every effort by state and federal agencies there is no steady reduction in the rate of road crashes in the state, rather there is an outrageous increase in the fatal causality recorded between 2010 and 2019 (37,766) an increase of over 800%. This is not a very good signal for the road transport sub-sector and the general wellbeing of the people of Lagos State.

The two broad categories of vehicles; commercial and private, is to distinguished between public vehicles and private vehicles that are involved in road crashes, though there are some other characteristics that could explain contributions of

vehicles to road crashes rate such as, safety capability of vehicles, drivers handing skills, age and condition of vehicles and the influence of road environments. Commercial drivers because of their frequency of operations may be more susceptible to road crashes than the private vehicle, the result of this study concluded that 56% of vehicles involved in road crashes in Lagos are commercial vehicles while 44% are private. This result suggests that significantly both categories have high rate of involvement, hence road safety intervention programme should target both categories to achieve significant reduction in road crashes.

VIII. RECOMMENDATIONS

- The study therefore, recommends holistic road safety intervention programme with plan to continually implement and monitor over a period of time. A further study into the characteristic of vehicles that are involved in road crashes is equally recommended to identify safer vehicles for public and private use.
- Federal Road Safety Commission (FRSC), Lagos sector command should improve on their scope of data coverage to capture each Local Government Area and factors responsible for occurrence of road traffic accidents in Lagos State.
- Under-aged driving should be discouraged because most of the road traffic accidents involve under-aged commercial drivers.
- Road safety Agents should continue to create awareness on speed limits, alcohol impairment, seatbelt use, child restraints and safety helmets. They should discourage use of fairly-used tyres.
- NDLEA and NAFDAC should rise up to their duty and continue to campaign against sales/intake of alcohol/psychotic substances within major parks in Lagos State as the study shows that the rate of accident are more among the commercial drivers. Culprits should be made to face the law.
- Public enlightenment and awareness through education on road safety should be made available at all levels of education, driving schools included.
- Strict enforcement of road safety laws without compromise by relevant agents like the Police, FRSC, LASMA, VIO, is not negotiable and offenders should be punished accordingly to reduce road traffic accidents in Lagos State.

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