



## Driving Behaviour and Public Transport Operation in Lagos Metropolis, Nigeria

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**Abstract.** During the last decade, Nigeria has been exhibiting rapid increase in human population and vehicular traffic, and increase in road traffic accidents. Regrettably, incessant deviant driving behaviour of public transport drivers is worrisome. This study examines the driving behaviour of commercial drivers and public transport safety in Lagos metropolis. The study employed survey research design. Five motor parks were selected for the investigation, where a total of 68 structured questionnaires were administered to commercial drivers in five (5) selected motor parks in the metropolis. Analysis of Variance and Multiple Regression Analyses were used to explain the research hypotheses at 5% level of significance. The results of the study showed a significant variation ( $F= 3.175$ ,  $p= 0.05$ ) among determinants of driving behaviour of commercial drivers in Lagos metropolis, Nigeria. Age of the Driver ( $\beta= .270$ ,  $t= 8.100$ ) and Type of Vehicle ( $\beta= .116$ ,  $t= 2.208$ ) are driving behaviour of commercial drivers that significantly influence driving experience profile, while License Status ( $\beta= .006$ ,  $t= .175$ ) and Education ( $\beta= -.026$ ,  $t= -.712$ ) have no significant influence on driving experience profile. The result also indicates that driving behaviour of commercial drivers contributed about 33.4% ( $R^2= 0.334$ ) to driving experience profile in the metropolis. It was concluded that improved driver behaviour can be an effective countermeasure to reduce the vulnerability of road users and inhibit crash risks. It is therefore recommended adherence to road traffic safety driving rules and enforcement measures.

**Keywords:** Licensing, Driving, Behaviour, Public Transport, Road Safety

### 1. Introduction

Road traffic crash can be described as an unexpected and unfortunate incident that occurs, resulting in injury or damage. The traffic crashes issue happens before the motor car was introduced (WHO, 2004).

Yearly, the number of vehicles registered and intensity of traffic increases, many drivers drive vehicles and become involved in road traffic activities. This results in growth of volume of traffic on the road and an increasing traffic demand and safety (Mphela, 2020). Active usage and possession of license of any vehicle becomes an important part of people's life. Moreso, this is related to the increased road traffic crashes. Road traffic safety relies on some factors, such as the behaviour of the driver and the efficiency of the technical system of the vehicle.

Transportation by road is the dominant means of conveyance for both passenger and freight traffic with the relative absence of water, rail, and air mode in Nigeria. It accounts for about 92% of the transport contribution to the GDP in the country. WHO (2013), opined that there are about 12 million vehicles registered in Nigeria, at approximately 85 cars per 1000 people.

Nigeria recorded a total of 6,911 serious crashes cases across the 36 States and FCT in 2019 which represented 62.42% of the overall and an average of 186.78 cases per State. The federal governments through the Police and FRSC have made enormous efforts to minimize the increase fatality or death from traffic injuries. However, efforts still need to focus on the vulnerable road users particularly the pedestrian who continues to suffer from these traffic crashes.

Tiznado, Galilea and Delgado (2014) identified major factors for the increasing Road Traffic Crashes (RTC) globally which are subdivided into three: environmental (such as condition of the road, weather, visibility and lighting), mechanical (such as safety and security equipment and maintenance) and human factors (such as speed, improper overtaking, and drunkenness). Oyeyemi (2003), opined that human factors contribute over 85% to traffic crashes recorded on our roads. This will include over speeding,

overtaking at crest of a hill, bends, drugs/alcohol consumption and the usage of mobile phone etc. Most of the vehicles do not meet minimum safety requirements. Olagunju (2010) also noted that lack of effective and efficient enforcement of the traffic law is mostly responsible for many traffic crashes on our roads especially among public transport operators.

Bad driving behaviour is seen as the most factor contributing to traffic accidents, and the traffic safety culture is the aspect that retains the persistent road crash (Carruthers, 2015). To improve driving behaviour, it is very significant to understand the reality of the problem by having a clear idea of the challenges to be tackled. To improve road traffic safety, and minimize road crashes, the highway codes have been revised severally.

Society is being guided by rules and laws that regulate the actions or inactions of people in the society. To achieve the objectives requires establishing the machinery to help regulate activity as it relates to compliance to existing rules and laws. However, governments create enforcement agencies or an institution that is established to monitor compliance to the laws (Aruwa, 2014).

Most drivers on Nigerian roads have no regards for traffic regulations and laws: They do not obey traffic signs or speed limit on the road (Gana & Emmanuel, 2014). They overtake anyhow and anywhere without consideration for other road users. Road safety enlightenment and education has the tendency to improve road traffic safety by influencing road user attitudinal behaviour.

## 2. Literature Review

The review of the literature on traffic accidents has received adequate and varied attention from academics, some of whom include Giummarra, Beck, and Gabbe (2021), classified the features of traffic injury collisions in Victoria, Australia using text mining analysis and discovered that those who died within a year of the injury, had an intentional injury, had a serious head injury, had no compensation claim, or had not included an injury event description were not included in the study. The most common type of crashes with a common unknown fault were head-on collisions, intersections where a vehicle was entering from the opposite direction, and situations where one party lost control or avoided a hazard, mechanical failure, or medical conditions. More importantly, multi-vehicle incidents, pedal cyclists injured in rear-end collisions, and pedestrians struck while crossing the street or navigating slow-moving traffic zones

were among the crashes in which no one else was at fault.

The incidence of road traffic crashes is the consequence of numerous human, vehicle, and environmental factors combining in a complex way to provide the trigger for the event, rather than just human error or driver negligence, according to Muthusamy, Rajendran, Ramesh, and Sivaprakash (2015)'s analysis of the literature. They concluded that immediate attention is required to reduce the health, social, and economic impacts of road traffic crashes. Yasin, Michal, and Fikri's (2021) examination of the COVID-19 pandemic's impact on traffic crashes globally indicates that there was a dip in both traffic volume and traffic crashes globally during the pandemic. Consequently, in April 2020 compared to April 2019, there were fewer road deaths in 32 out of 36 nations, with decreases of 50% or more in 12, 25 to 49% in 14, and less than 25% in six. Furthermore, data showed that, in 2020 compared to 2019, the number of road deaths annually decreased in 33 out of 42 nations, with reductions of 25% or more in five and 15%–24% in thirteen, and by less than 15% in 15 countries while there was increase in 4 and 9 countries during the periods respectively. More significantly, during both periods, there was a decrease in the number of trauma center patients injured in traffic accidents. This decrease was linked to factors such as increased speeding, fuller traffic lanes, fewer law enforcement officers, failure to wear seat belts, alcohol and drug abuse.

Most International Transport Forum (ITF) member countries had record-breaking road safety performance in the first ten years of the twenty-first century. Based on three years in a row of record improvements in 2008, 2009, and 2010, the number of fatalities from traffic accidents continued to decline in 2014, with a 1.2% decrease in OECD countries (excluding Chile and Israel). Nonetheless, compared to 2013, a third of ITF nations reported a rise in traffic fatalities: Germany (1.1%), France (3.5%), Russia (10.9%), and the UK (4.7%). Road fatalities may be on the rise in countries with high road safety performance; this could be attributed to the challenge of raising the bar on an already high level of safety performance. The facts should not be used to obscure the financial losses and personal tragedies that accompany these generally favorable advancements. While high-income countries take pride in their efforts to reduce road deaths, 90% of road deaths globally occur in low- and middle-income countries; estimates put the global road death toll at over 1.3 million per year, along with 50 million serious injuries (OECD, 2016).

Kidane (2021) modeled Road Traffic Crashes (RTC) in the Amhara Region and concluded that the average monthly number of RTC fatal cases, RTC injuries, and RTC totals were, respectively, 27.2, 14, and 78.2. Furthermore, compared to other days of the week, a comparatively high number of RTCs are reported on Tuesdays, Thursdays, and Saturdays. The data gathered also showed that drivers between the ages of 18 and 30 account for almost 60% of crash victims. Based on a 48-month projection fitted models, he demonstrates that traffic crash cases will continue to occur in the Amhara region at a non-decreasing rate throughout the anticipated periods.

In Nigeria today, the number of fatalities from crashes much outweighs the number from infectious diseases. In Nigeria, traffic accidents have long been acknowledged as a serious public health concern (Asogwa, 1998). In recent years, road transportation has become more and more popular and widely accepted. Regrettably, the surge has coincided with higher crash risk, poor operator attitudes, irresponsible driving, bad behavior, and resistance to commendable government initiatives, among other things (Olubomehin, 2012). They have therefore been the subject of intense scrutiny, which has led to laws regulating and, in some cases, outright banning their operations in certain places.

A road traffic crash caused by driver behavior is described as a person or thing that gives rise to an action phenomenon or condition while driving. The fact that there is rarely a single clear cause for a specific traffic crash complicates matters and this cause include visual acuteness, driver fatigue, illiteracy, drug abuses, drunkenness, aggressiveness, excessive speeding or health problem. Others include over-confidence, distraction, poor knowledge of the road sign and regulation, smoking and this human cause accounted for over 85% of the contributing factors (Olagunju, 2010).

According to Odumosu (2017), the majority of issues that drivers encounter when driving in busy, congested cities are caused by their senses being overloaded with information that must be continuously processed; this state is also referred to as information overload. A typical city motorist may come across and have to respond to a wide range of information, such as traffic signs, traffic signals, and instructions regarding detours, advertisements, and music from passing cars when changing lanes, pedestrians, and much more. According to Anderson's (2019) research on the causes of traffic crashes, many young males turn to driving commercial passenger vehicles as a last choice. They operate in extremely difficult and perhaps nearly

impossible circumstances. Driver behavior is called into question in light of this. Dangerous overtaking often entails speeding, and naturally, driving in the lane of oncoming traffic, all of which have been linked to an increased risk of collisions.

According to Adewale (2012), speeding is a major contributing factor in one-third of all fatal crashes that occur on our roadways. According to studies, driving too fast is a purposeful and determined action when the motorist is aware of the risk but chooses to ignore it. Some drivers develop the habit of speeding excessively as a result of using drugs, alcohol, or other illegal substances. Due to poor quality and lack of signage, overspeeding has been a key factor in deadly traffic accidents in developing nations, including Oyo State. About 40% of traffic fatalities, according to the Road Safety Authority (RSA) of Nigeria, are caused by drivers who speed—that is, go faster than the posted speed limit or too fast for the conditions on the road (NSW Roads and Traffic Authority, 2018).

The majority of car crashes are thought to be caused by distracted drivers, and this problem is becoming more prevalent on the roads. Road Safety in Western Australia: Towards Zero from 2008 to 2020 (Road Safety Council, 2009). Additionally, road safety agencies worldwide are ranking it higher and higher as major contributing factors to traffic accidents. Driver distraction can be classified into four categories: aural, visual, physical, and cognitive. One or more of these are involved in distracting activities. Operating a handheld cell phone, for instance, can entail all four forms of distraction: visual (looking at the screen), auditory (having a conversation with someone else), and cognitive (concentrating on the subject of the conversation).

Olagunju (2010) claims that a large number of untrained, inebriated, and overconfident drivers who didn't care about other drivers' lives as well as their own predominated Nigerian roadways at the time. He went on to say that many drivers of commercial vehicles only had the basic skills of maneuvering their cars and honking their horns, presumably to get the attention of other passengers. This was supported by Maduagwu's (2008) assertion that the majority of Nigerian drivers pay absolutely no attention to traffic laws and regulations. Many drivers overtake other vehicles on highways and roads without regard for other road users, and some people park their cars on the road without observing speed limits or traffic signals. At the time, the public's interest in road safety issues was low, the traffic situation was described as unpredictable and chaotic, and there was a lack of clear and consistent policy action to address concerns about

road safety (FRSC, 2007). As a result, there were several traffic accidents and fatalities.

In recent times, the majority of Nigerians have grown increasingly concerned about vehicle crashes. This is due to the severe harm that traffic accidents cause to people's lives, their property, and the environment (Agbonkhese, et al., 2013). The amount of traffic-related deaths and injuries has an impact on national and international social and economic issues, particularly in Nigeria. Huge human potential is being wasted, with disastrous social and economic effects. Consequently, traffic safety is a major global public health concern. Even worse, it is estimated that over the next 15 to 20 years, road traffic deaths will climb by an average of 80% in low- and middle-income nations and fall by roughly 30% in high-income countries if current laws and practices continue without creative initiatives. In addition, it is estimated that the cost of road traffic injuries to low- and middle-income countries is between 1% and 2% of their GDP, surpassing the whole amount of development aid these countries get (WHO, 2004).

According to Atubi (2009), the state of traffic crashes in Nigeria throughout the past thirty years has been especially alarming. 53,897 traffic crashes in 1976 resulted in 7,717 fatalities. In 1981, the number of crashes decreased to 5,114, but the number of fatalities grew to 10,236. This means that there were 96 crashes on average, and the situation did not improve in the following years. Between 1990 and 2005, there were more road crash deaths than ever before (28,253 to be exact), and the fatality rate remained high. More significantly, an analysis of the quantity and kind of vehicles involved in traffic crashes showed that taxis, buses, and private cars were more likely to be involved in crashes in Lagos State. Additionally, over 90% of traffic crashes in Lagos State were caused by drivers acting carelessly, speeding excessively, and not knowing traffic laws (Atubi, 2010).

Nigeria's road traffic crash statistics show a severe and expanding issue, with both the absolute death rate and the causality figure rising quickly. The majority of developing nations have a population or car count that influences the frequency of crashes and deaths that result from them. Interestingly, research in Nigeria has shown that increased crash rates have coincided with improved road quality and standardization (Gbadamosi, 2002; Atubi & Onokala, 2009). This is completely at odds with the patterns in nations where both the volume of automobile traffic and the sophistication of the road network are significantly higher (Atubi, 2015).

According to Oyeyemi (2003), human causes account for over 80% of road traffic accidents that are reported in the country. Using a cell phone while operating a car, driving while intoxicated or under the influence of drugs, speeding excessively, and reckless overtaking at bends and hilltops are a few examples of these. According to Oyeyemi, this is a scenario in which drivers drive cars with technical flaws while transporting people and property on the roadways, disregarding the safety of others. These vehicles do not fulfill minimum safety standards and are not fit for use on public roads. According to Olagunju (2010), a number of accidents in the nation, particularly involving road transport operators, have been attributed to a lack of efficient and effective traffic law enforcement.

The major cause of traffic accidents in Nigeria is considered to be unsafe driving behavior, and a contributing factor to this high collision incidence is the country's pervasive road safety culture. It is critical to grasp the problems at hand in order to gain a thorough picture of the scenario in order to influence drivers' behavior. The Nigerian highway codes were updated in 2016 to guarantee road safety, continuous traffic flow, and a decrease in traffic accidents. The purpose of the highway codes was to govern human activity on the roadways by assisting users in using them safely and civilly; noncompliance was to result in consequences. Nwachukwu (1998) claims that the purpose of the Mobile Court is to expedite the trial of traffic violators in order to maintain order on the roadways. All societies are governed by laws that control the behavior of the people who live there. If people are free to choose not to obey the law, they are likely to do so whenever they like. Therefore, the enthronelement of orderliness and security within society cannot be achieved solely by the existence of laws and codes of conduct. Setting up the required mechanisms to control human behavior with regard to compliance with current laws is vital to achieve these goals. Therefore, nations established law-enforcement organizations tasked with making sure the laws are followed.

The study conducted by Alispahić, Zeljko, and Ekrem (2017) examined the effect of training for young drivers on road traffic safety. Driver education, particularly for younger drivers, can have a big impact on road traffic safety, protect the environment, and save money out of the budget (Alispahić et al., 2017). As a result, there is now a serious issue with the accident rate among drivers who have limited driving experience. Based on data released by the Slovak Republic's Presidium of the Police Force, drivers with less than 5 years of driving experience are

significantly more likely to be involved in fatal traffic accidents when compared to drivers with longer driving histories. However, even after receiving a license, many drivers lack significant motor vehicle expertise, making them among the most dangerous drivers in terms of road safety. In an emergency, a driver's reaction time determines how quickly they can make the correct decision.

Also, unsafe driving conduct has frequently been taken into consideration in earlier studies. Mañirean and Havañneanu (2018) assessed the correlations between driving dangerous behavior, aggressive driving, and the better-than-average effect. According to Hayley, Ridder, and Stough (2020), a person's capacity to make safe behavioral judgments while driving may be hampered by a lack of emotional control. Young drivers stated reasons for driving were investigated by Scott-Paker, King, and Watson (2020), along with the connection between these reasons and self-reported dangerous driving behaviors, such as infractions. Yi (2018) used a mix of an empirical study looking into traffic sociology, mainstream traffic behavior, and traffic security to explore the influencing elements and mechanisms of the emergence of bus drivers' poor driving behavior. When it comes to driving behavior study methodologies, some researchers have embraced real-world car testing, while others rely on questionnaires (Feng, Zhan & Ma, 2018).

Ogwude (2010) states that the number of fatalities per 100 crashes, which gauges the severity of traffic accidents, has increased from 45 in 2003 to 59 in 2008. Even if the current state of affairs paints a dismal image of the nation's transportation utilization, it is as

depressing to learn that human error is to blame for more than 80% of all crashes on Nigerian roads. Indeed, the FRSC and the Nigerian Police have found that driver mistake, arousal, and experience level are the main contributing factors to traffic crashes. A new driver license applicant is required by Regulation 45 of the National Road Traffic Regulation (2012) to produce proof of their attendance at an authorized driving school. This is in addition to obtaining a learner's permit, which requires passing a general fitness exam and obtaining a certificate of visual acuity.

### 3. Methodology

#### 3.1 Results and Discussion

##### 3.1.1 Test of Hypotheses

##### Test of Hypothesis One

The multiple regression result is displayed in Table 1 along with the model summary, variance analysis, and most importantly the unstandardized coefficient, t-values, and significance of the results. The multiple regression coefficient, specifically the R<sup>2</sup>, is 0.334, meaning that the independent variables taken together (i.e., predictors) account for around 33% of the variation in driving experience. This level of explanation has a statistically significant (sig.=0.000) analysis of variance of the model with a F ratio value of 16.117. Nonetheless, the respondents' driving experiences can be substantially explained by the combination of the independent factors (predictors).

**Table 1:** Model Summary of Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585 <sup>a</sup>	.334	.321	1.2315

*Predictors:* (Constant), Age of the Driver, License Status, Education, Type of Vehicle

*Source:* Author's Computation, 2024

The Table 1 is the model summary that shows the effect of driving behaviour on years of experience in Lagos metropolis. The result showed that the R-value is .334, which indicates that driving behaviour and years of experience has 33.4% shared relationship. R is a metric used to assess how effectively the model forecasts the actual data. Put otherwise, one could characterize the association as moderate. R<sup>2</sup> is the percentage of variation in the outcome variable that the model can explain. In this case, the coefficient of determination from the R-square shows the extent the independent variables (Age of the Driver, License Status, Education, Type of Vehicle) explain the dependent variable (years of experience). The result showed that driving behaviour (age of the driver, license status, education, type of vehicle) explain about 58.5% of changes in years of experience in Lagos metropolis.

Moreover, the F-ratio and sig values in Table 2 are the most crucial metrics that should be investigated. The Table shows that the model is fit given that F= (16.117, p<0.05). The result showed that the model of the study is fit and as such the years of experience of drivers predict driving behaviour in Lagos metropolis.

**Table 2: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	321.242	4	29.711	16.117	.000 <sup>b</sup>
	Residual	1211.814	1008	.704		
	Total	1643.168	1012			

a. Dependent Variable: Years of Driving

b. Predictors: (Constant), Age of the Driver, License Status, Education, Type of Vehicle

*Source: Author's Computation, 2024*

The regression line  $PAT = 0.744 + 0.340AD + 0.105TV$  indicates that years of driving improves by 3.4% for every 10% increase in Age of drivers, 0.5% for a 10% increase in License status, 0.4% decrement for every 10% increase in Education and also 1.05% for every 10% increase in Type of vehicle. The standardised coefficient shows the strength of each of the variables to explain the dependent variable. The result showed that age of the driver  $\beta = .270$  is the most significant, while license status  $\beta = .006$  and education  $\beta = -.028$  are not significant. The result showed that aside age of the driver and type of vehicle ( $\beta = .270$ ,  $p < 0.05$  and  $\beta = .116$ ,  $p < 0.05$ ) that showed significant influence on years of experience of drivers, all other variables were insignificant, thus, implying that license status and education have no significant effect on years of experience of drivers in Lagos metropolis and there may be other parameters or indices which this study did not cover and could be for further study.

**Table 3: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	S. E	Beta			Tol.	VIF
(Constant)	.744	.126		5.921	.000		
Age of the Driver	.340	.037	.270	8.100	.000	.854	1.171
License Status	.005	.027	.006	.175	.844	.756	1.323
Education	-.040	.043	-.026	-.712	.356	.961	1.041
Type of Vehicle	.105	.032	.116	2.208	.001	.688	1.454

*Source: Author's Computation, 2024*

### Test of Hypothesis Two

To further explore the variation among the determinants of driving behavior of commercial drivers in Lagos metropolis, a statistical analysis was undertaken using SPSS Version 23. Statistical analysis became necessary because although, initial analysis using descriptive statistics discovered some variation, but it was necessary to check whether these variations were statistically significant where they actually occurred. This technique was used because it allows to test if the means being compared are varied (different) from each other. One-way ANOVA was useful in this comparison because it could compare means irrespective of whether dependent variable was ordinal or interval scaled data.

$H_0$ : There is no significant variation among determinants of driving behavior of commercial drivers in Lagos metropolis.

**Table 4: Summary of ANOVA Result on Variation among Determinants of Driving Behaviour of Commercial Drivers**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	30203.6	5	7100.830	3.175	.003
Within Groups	68281.2	42	1780.182		
Total	118786	47			

*Source: Author's Computation, 2024*

When comparing the two numbers, the Analysis of Variance (ANOVA) findings showed that the F-ratio was 3.175 and the significant value was 0.003, which is less than 0.05 confidence level. Therefore, the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted. This merely suggests that the factors influencing commercial drivers' driving behavior in Lagos, differ significantly from one another.

#### 4. Conclusion

The usage of regression models was found to have a definite influence on traffic accidents, according to the results of the hypothesis testing. The results of the study indicate that modifications made to one sub-factor may have an impact on the remaining sub-factors responsible for traffic accidents. The government must deal with the more serious issue of incomplete and erroneous traffic accident data. It would be challenging to create and implement affordable road safety measures as well as to keep an eye on the degree of traffic safety without an efficient accident report system. The number of vehicles on the road is growing at an accelerated rate, making road safety improvements imperative.

#### 5. Recommendations

Increased supervision and effective traffic enforcement for all commercial drivers are probably going to have a bigger and longer-lasting impact on road traffic safety.

Use of ICT technologies such as enforcement cameras, surveillance cameras, vehicle-actuated traffic signals, and establishment of centralized traffic management centres will assist in ensuring adherence to traffic regulations and thus improve road safety scenario in the study area.

A well operated and designed law enforcement initiatives may have a big impact on traffic safety. It is commonly known that having jurisdiction-wide programs that could effectively enforce the prohibition against driving while intoxicated is an effective strategy to minimize the severity and frequency and of traffic crashes.

The FRSC should launch an awareness campaign for road safety to warn drivers about the risks of breaking the law. This can be accomplished by employing radio and television jingles, disseminating fliers, doing road walks, and using social media to raise awareness.

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