Original Research Article

INVESTIGATION INTO THE UNDERSTANDING OF TRAFFIC SIGNS AND SYMBOLS AMONG DRIVERS IN SOUTHERN NIGERIA

ABSTRACT

Aims: This study examines the understanding of traffic signs and symbols as a safety measure towards accident reduction among drivers in Southern Nigeria. It investigated the understanding of traffic signs and symbols by drivers in Nigeria with regards to their personal characteristics such as age, educational background, and driving experience and also determined the major factors influencing the high rate of road traffic accidents in Nigeria**.**
Study design: Investigation into the level of knowledge of drivers in understanding traffic signs and symbols in Southern Nigeria.

Place and Duration of Study: This study was conducted in Southern Nigeria, from September, 2017 to December, 2017

Methodology:600 questionnaires were administered within the various city parks in Anambra, Enugu, Delta, and Lagos states but 476 of the respondents participated. A total of 27 symbols, which includes ten regulatory signs, nine warning signs, three traffic signal~~s~~ lights, and five road pavement markings were investigated. Miscellaneous questions for driving under special conditions, mechanical factors, and general guides were also assessed among the drivers.The use of Statistical Package for the Social Science (SPSS), as a tool was employed t~~o analyse~~ analyzethe data obtained from the respondents.

Results: The analysis showed that there is a low understanding of traffic signs and symbols by drivers in Southern Nigeria. The overall average percentage of drivers who correctly understood the regulatory signs ~~were~~ was59%, warning signs was 64.2%, and pavement markings was 31.8%. The average knowledge percentage of drivers for driving under special conditions, speed/mechanical factor, and general guides are 43%, 53.66%, and 46.4% respectively. From the statistical ~~cross -~~analysis of the findings, there is significance prove that age, driving experience, and educational background play an important role in ~~driver's~~ drivers'understanding of traffic signs and symbols.

Conclusion:~~In conclusion~~, it is recommended that drivers are properly trained and sensitized on the correct meaning of traffic signs and symbols.The body concerned for issuing a driver's license should carefully test the drivers' knowledge before issuing a driver's license and also traffic law court should be established for the prosecution of defaulters.

Keywords*: Understanding traffic signs and symbols, road safety, driver's characteristics.*

1.0 INTRODUCTION

The search for greener pasture has made it necessary for a man to move from one place to another. In the olden days, the movement was more or less through narrow paths, mainly on foot, but with the invention of modern means of transportation, increase in the population of humans, construction of roads for vehicles, and pedestrian usage, there exist some unavoidable negative consequences of movement in which accidents is one. It is obviously clear that the number of vehicles on Nigerian roads had increased in recent years due to technological and economic development; incidentally this has equally increased the number of accidents and fatalities.

However, traffic control devices such as traffic signs, pavement marking and traffic signals are a vital part of the highway system used to convey safety messages [17]. They are used to provide crucial information in a short time to support safe driving; but the success depends on their comprehensibility by the drivers [8].Traffic signs use colour, shape, and words to convey information. Traffic control devices aim to regulate and control traffic by providing information about the road and its environment to road users [10].However, traffic control devices cannot serve their intended purposes effectively if the information concerning safe driving behaviour that is encoded in the devices is not properly understood by the drivers and other road users [18].

The rate of accident in Nigeria is very worrisome especially during festive periods. Road traffic accident in Nigeria is rising geometrically. There is hardly a day that goes by without a record of road accidents in Nigeria. Road signs, markings, and signals, amongst others, are meant to guide road users and ensure their safety. Most of road signs alert the road users on importance of road conditions such as a dangerous double bend, sharp bend ahead, failed or narrow bridge etc. Also, road markings show lane divisions and lane discipline, stop lines and pedestrian crossing. Computerized traffic lights indicate when and when not to move, while traffic control signals are displayed by traffic officers to ensure free-flow of vehicular and human traffic. The essence is to reduce the rate of road traffic crashes on the roads. In spite of these, unfortunately, accidents continue to occur, and somehow tend to be on the increase. This may be attributed to the poor condition of our roads, over speeding, recklessness of drivers, lack of/poor understanding of road signs, road caution and other road safety devices. Thus, the cardinal factors influencing high rate of road traffic accident in Nigeria are really a very huge problem which need to be investigated by researchers. It is on this note that the researcher sought to explore the level of safety knowledge, understanding/

comprehension of traffic signs and symbols by drivers, identify major causes of road traffic accidents and proffer good solutions for prevention. Arshad Rehman1 et al (2021)[5] studied understanding of drivers nonverbal communication of traffic signs and symbols in Malakand District. Their findings showed that only 25% drivers hailing from district Dir lower, while more than 70% derivers belong to district Swat have understood and recognition of roadside signs and symbols. It is concluded that age and driving experience also the factors for lack of roadside signs and symbols in the area.

Wontorczyk, A. and Gaca, S(2021)[19] in their study on the relationship between Drivers' Personal Characters and Non-Standard Traffic Signs Comprehensibility explore thelevel of comprehensibility of four different types of non-standard signs. The relationship between the level of comprehensibility of these signs and personality traits of the drivers were also studied. It was found that a total of 369 drivers were tested using a questionnaire method. The researchers found that symbolic signs, unlike symbolic and text ones, are much better comprehended by drivers. Men comprehend the significance of non-standard symbolic regulatory signs better than women.

According to Odibo A.A and Okpako H.(2019)[11] on their study of awareness and Implication of Road Traffic Signs among Pedestrians in Warri Metropolis, Delta State found out that pedestrians in Warri metropolis have the awareness of road traffic signs but they don't have good knowledge of their meaning. Significantly, male pedestrians were found to be more aware and knowledgeable on road traffic signs than female. They concluded that Road safety officers should help to carry out awareness campaign and orientation regularly to all pedestrians through the media to create awareness of road traffic signs and their application.

Road traffic signs and symbols originated in Rome in the Middle Ages when milestones were used to indicate distances in the Roman Empire. The traffic signs were discovered to be relevant at the advent of automobiles and this prompted the Italian Touring Clubs to design the road sign system in 1895 [16]. Nigeria adopted the road sign system in the 1970s to ensure safety in Nigerian highways. It was proposed that the traffic signs and symbols must be visible, illuminating and relevant [6].The Federal Road Safety Commission, FRSC, in the 2008 revised edition of the Highway Code, notes that road traffic signs in Nigeria bear same characteristics with those of the developed countries. On categorization, (FRSC) groups the sign as follows: traffic signs, signals, road signs and pavement markings.

In the quest to drive home the meaning and ensure effective understanding of traffic signs and symbols, many countries have adopted pictorial sign or otherwise simplified and standardized their traffic control devices to facilitate international travel where language

difference could create a barrier. To help in enhancing traffic safety, such pictorial traffic device use safety symbols and signs in place of words [20].

Many researchers have tried to proffer solution that will better the understanding of traffic signs and symbols among drivers. [21] Opined that research concerning traffic sign comprehension dates back to 1966 and that early studies focused on evaluating users' understanding levels of traffic signs and most of the results indicated that the general understanding performance was far from satisfactory.

[3]In their own study opined that age, gender, education and income played major roles in determining drivers understanding of traffic signs and symbols while marital status shared no significant effect. [10]In another study was of the opinion that age, education and driving experience played prominent roles in understanding of traffic signs while marital status had no effect on the understanding.

In Nigeria, the traffic signs and symbols used on our highways are published in the National Road Traffic Regulation (FGN 2004) and the Highway Code [7]. Many studies carried out here in Nigeria have proved that average percent of drivers does not even understand the traffic signs and symbols talk more of adhering to it.

A study in Akure, Ondo state by [10] indicated that the average percentage of drivers understanding of traffic signs (warning and regulatory/prohibiting signs) was 67%, the average percentage of drivers understanding of mandatory signs has 58%. Another study carried out in the same state reported that only 28.5% of motorcyclists understand traffic signs and symbols and adhere to traffic regulations [14]. A study on the knowledge of and attitude towards road traffic codes among commercial motorcycle riders in Eastern Nigeria showed that about two thirds of the respondents had poor knowledge of road codes and safety. [1]. Poor knowledge of safety measures have been reported by various authors in western Nigeria. [12,4]. From the point of view of different authors and researchers, Nigerian drivers lack safety knowledge and poor understanding of traffic signs which may be one of the contributors of road traffic accident in Nigeria.

The aspect of the use of traffic signs and symbols as a safety measure has been an area of interest by many researchers since the invention of vehicles. The interest covered many areas which include areas of safety, comprehension and design, etc. This research intends

to do proper investigation on the understanding of traffic signs and symbols among drivers in Nigeria and indicate the particular major factors of road accidents in Nigeria. This is quite necessary owing to the fact that there is a general public perception which is also supported by [13], that commercial drivers in Nigeria do not have a satisfactory level of comprehensibility of traffic signs and symbols and often this is thought to be a major contribution to road accidents.

A number of experts have suggested several causes of road traffic accident to broadly include the following factors: mechanical factor, environmental factors and human factors but with human factor most of all [2,15]. However, why poor knowledge of /lack of comprehension after many years of driving experience? What is ~~really~~ a particular factor from the human factor that has been leading other factors causing the incessant accident on the roads which this research will answer at the end of its study?

2.0 METHODOLOGY

The method of ~~the~~ instrument of data collection used in this research was a self-administered questionnaire and completed by both commercial and private drivers. The questionnaire used were divided into thirteen sections with the first section made up of short answer questions designed to give detailed information about the drivers' demographic characteristics such as the gender, age, sex, marital status and educational background. The second, third and fourth sections gave information about the driver's characteristics like driving experience, early training/duration of training and possession of valid driver's license respectively .The fifth to ninth sections were designed to assess the knowledge /comprehension of traffic control devices by the drivers. Here 27 multiple choice questions of different traffic signs made up of ten regulatory signs, nine warning signs, three different meanings of traffic light and five different road markings were tested. Lastly, section ten to thirteen assessed the knowledge of driving under special condition, speed limit/mechanical factor, general guides for drivers and assessment of FRSC on enforcement of road traffic laws which comprise eight, five, seven and two miscellaneous questions respectively.

The use of Statistical Package for the Social Science (SPSS), version 20 as a tool was employed to analyse the data obtained from the respondents.Chi-square was used to test statistical significant relationship of individual drivers relating characteristics and traffic control devices comprehension. From the decision rule, according to SPSS, if the p-value is

less than 0.05, the result is showing there is significant effect. But if the p-value is greater than 0.05, then the result is showing there is no significant effect.

However, to crosscheck the p-value significance also, the estimated test chi square expected and observed cell frequencies were compared using the general mathematical formular for testing cross statistical analysis expressed by equation 2 and 3 respectively.

$$X^2 = \frac{\sum(O_i - E_j)^2}{E_{ij}} \quad (1)$$

where:

$\mathbf{X^2}$ = chi-square calculated

$\mathbf{o_{ij}}$= observed frequency of the cell in the ***i*th** row and ***j*th** column

$\mathbf{e_{ij}}$= expected frequency of the cell in the ***i*th**row and ***j*th** column

$$\boldsymbol{e_i = \frac{S_R X S_C}{G_{ij}}} \quad (2)$$

Where $\mathbf{e_i}$=expected frequencies

$\mathbf{S_R}$ =Summation of each cell ~~frequencies~~ frequencyon row

$\mathbf{S_C}$ = Summation of each column for both right and wrong frequencies

$\mathbf{G_{ij}}$= Overall total summation of row and column

$$E_{ij} = \frac{(o_i - e_i)^2}{e_i} \quad (3)$$

Where $\mathbf{o_i}$ and $\mathbf{e_i}$are the subtraction of **each** observed from expected on the row.

To avoid voluminous manual calculation and cumbersomeness of the work, the statistical package was used for instant expected chi square.

According to Kothari [8], the observed chi-square value was compared with the critical chi-square or table value (using the table) with **(r-1) x (c-1)** degree of freedom as appendices in standard statistics books and used as a benchmark to make a decision.

Decision Rule:

If $X^2_{(tab)} > X^2_{(cal)}$, the analysis shows significant effect while $X^2_{(tab)} < X^2_{(cal)}$ simply shows no effect.

3.0 RESULTS AND DISCUSSION

3.1 RESULT ANALYSIS

The results of the study are presented in tables below for clarity.

Table 1: Socio-demographic of the respondents

GENDER	FREQUENCY	PERCENTAGE

Female	2	.4
Male	474	99.6
Total	476	100.0
AGE		
20-25	153	32.1
26-30	64	13.4
31-35	81	17.0
36-40	107	22.5
41 and above	71	14.9
Total	476	100.0
MARITAL STATUS		
Divorced	8	1.7
Married	351	73.7
Single	117	24.6
Total	476	100.0
EDUCATIONAL BACKGROUND		
B.sc	11	2.3
HND	21	4.4
NCE/OND	51	10.7
WAEC	382	80.3
Others	11	2.3
Total	476	100.0
DRIVING YEARS		
1-5years	81	17.0
6-10years	143	30.0
11-15years	111	23.3
16-20years	96	20.2
21 and above	45	9.5
Total	476	100.0

The summary of the socio-demographic characteristics of the respondents are presented in Table 1. For gender status, out of 476 participants, 474(99.6%) were male and 2 (0.4%) were females are which shows that commercial drivers are more dominated by male than their female counterparts. With regards to age distribution, majority of the drivers, 298 (62.5%) were young; aged between 20-35 years while the remaining 178(37.5%) were 36 years and above. As noted from the findings in the analysis of the study, majority of drivers in the study area are within 20-35 years of age. These categories of people are in their late adolescence and early adulthood years and are characterized by high risky driving behaviours, always in a hurry and aggressive and this age of drivers could be a determinant factor responsible for the causes of accidents among other road users.

The marital status shows that most of the drivers are married with 351(73.7%) of the respondents, 117(24.6%) are single, with only 8(1.7%) divorced. Thus, majorities have families and are responsible personnel.

On the aspect of education, it is only 11(2.3%) of the respondents that had only primary education and below while the rest had senior school certificate and above. Therefore, drivers in the study areas according to this study are educated enough to read and understand traffic signs and symbols. This little number can cause a serious traffic calamity if not well educated on the safety signs since they find it difficult to read and easily interpret safety signs on the roads.

Similarly, for driving experience of the respondents, the results from the above table shows that 81(17.0%) had between one(1) to five (5) years of driving experience, 143(17.0%) six(6) to ten(10) years of driving experience, 111(23.3%) respondents reportedly had between eleven(11) and fifteen(15) years of driving experience, 96(20.2%) respondents affirmed they had between sixteen(16) and twenty(20) years driving experience, while 45(9.5%) respondents had twenty-one years and above driving experience. Here, drivers with the least driving experience are many, that is 81(17.0%) for one (1) to five (5) years experience leaving the rest of 395(83%) with six(6) years to twenty-one (21) and above. This indicates that majority are old enough in driving system to know what safety signs are.

Table 2: Driving characteristics of drivers

How Did You Learn to Drive	**Frequency**	**Percentage**
Driving school	18	3.8
Family members	166	34.9
Others	12	2.5
Private lesson	117	24.6
Through a friend	163	34.2
Total	476	100.0
Duration of Training		
One week	219	46.0
One month	233	48.9
Six months	19	4.0
One year and above	5	1.1
Total	476	100.0
Re-driving Programme		
No	473	99.4
Yes	3	0.6
Total	476	100.0

Table 2 represents the driving characteristics of the drivers; the result shows that 3.8% learnt how to drive through driving school, 34.9% through family members, 24.6% through private lesson, 34.2% through a friend, while others were only 2.5%. Duration of training received by the drivers before embarking on driving indicates that 219(46.0%) respondents trained for one week, 233(48.9%) respondents trained for less than one month, 19(4.0%) respondents received training for six months, 5(1.1%) trained for one year.

From the findings only 3.8% learnt how to drive through driving school which is recognized by FRSC leaving the remaining 96.2% through others means. While 1.1% only received training for one year; 452(94.9%) had formal training between one week and one month. Meanwhile it is expected that drivers should pass through recognized driving school and the duration of training should not be less than one and half year, if sanity should be maintained on our highways. It can be seen from the above table why there is incessant increase of accidents among drivers which is lack of adequate training of the drivers.

On the area of re-driving programme and sensitization, the result shows that infinitesimal number 3(0.6%) had re-driving programmes while the remaining 473(99.4%) did not attend despite the years of driving experience, which indicates that most drivers are yet to embrace the culture of re-driving training. This simply means that the drivers are ignorant of new codes and road guides for safety which can lead to severity of road traffic injuries.

Table 3: Possession of Valid Driver's License of the respondents

Drivers license	Frequency	Percentage
No	36	7.6
Yes	440	92.4
Total	476	100.0
Driving test		
No	467	98.1
Yes	9	1.9
Total	476	100.0

In Table 2, we have seen the percentage of those that passed through driving school, duration of training of training and re-driving programme. In Table 3, the result of holders of driving license shows that 440 (92.4%) of the respondents had driving license while 36 (7.6%) had none. Driving test before possession of drivers license reveals that 467 (98.1%)

out of 476 respondents had no test before possession of driving license leaving only 9 (1.9%) which is very poor.

This shows why the drivers are ignorant of safety rules after many years of driving. Thus, the questions are, how are they getting the license without driving test? What is the prescription of the federal road safety before issuing driver's license? The result simply clarify that inadequate examining of drivers and corruption from the body concerned with issuance of driver's license are the main reasons why poor understanding and lack of comprehension by drivers are increasing. This is the major factor found in this study that is ahead of other factors for incessant road traffic accident in Nigeria. Any others factors lies here.

Table 4: Knowledge of road signs, signals and markings

Familiarity of road signs	Frequency	Percentage
very familiar	118	24.8
Familiar	248	52.1
fairly familiar	99	20.8
Not familiar	11	2.3
Total	476	100.0

Table 4 describes the familiarity of road signs among the respondents. 118 (24.8%) claimed to be very familiar, 248 (52.1%) said to be familiar, 99 (20.8%) had fairly familiar; while 11 (2.3%) were not familiar with road signs, signals and markings.. The results in tables 5 - 7 would prove them right or wrong. The small percentage of drivers who are not familiar and are fairly familiar can cause a great havoc on the road due to their ignorance.

Table 5: Testing of drivers understanding of regulatory signs

Signs	**Meaning**	**Frequency**	**Percentage**
	Speed Limit	377	79.2

	No Stopping	208	43.7
	No Left Turn	225	47.3
	No Right Turn	224	47.1
	Stop At Intersection	343	72.1
	No Overtaking	195	41.0
	No U Turn	365	76.7
	No Horn	196	41.2
	No Waiting	243	51.1
	No Parking	435	91.4

Here, ten regulatory signs were evaluated for testing the drivers' knowledge. The results as presented in table 5 show that the signs which the drivers understood most are "speed limit" 79.2%, followed by "No U-turn" 76.7% and then "stop at intersection" 72.1% and the high percentage performance of these signs could be also attributed to the self-explanatory graphics in the signs. Those with poor knowledge are "No Overtaking" 41.0%, "No Horn" 41.2%, "No Stopping" 43.7%, "No Right Turn" 47.1% and "No Left Turn" 47.3% . The average percentage of correct answers of this study was 59% which shows that most of the drivers on our highways are yet to understand the regulatory signs and this indicates that the poor understanding of these signs prone the roads to accident.

Table 6:Testing of drivers understanding of warning signs

Signs	**Meaning**	**Frequency**	**Percentage**
	Cross road or four way Junction	325	68.3
	School children crossing	432	90.8
	Give way to traffic	278	58.4

	Y- junction	294	61.8
	T-junction	320	67.2
	Round about	422	88.7
	Dangerous bend right	258	54.2
	Long grade dangerous hill	218	45.8
	Dangerous double bend to first left	205	43.1

Table 6 shows that the result of drivers' knowledge of warning signs. A total of nine warning signs were evaluated in this study. The average percentage of correct answers of these signs was 64.2% which indicated that the understanding was not at all that excellent. The signs that were understood well were "school children crossing" 90.8%, "Round about" 88.7%, "Cross road/four way junction 68.3% and "T-junction" 67.2%. This high percentage knowledge could be resulted to the self-explanatory graphics in the signs. The least understood warning signs were "dangerous double bend" 43.1% and "long grade dangerous hill" 45.8%. Poor understanding of this safety signs is also one of the major causes of road accident.

Table 7: testing of drivers understanding of traffic light signals

SIGNS	***MEANING***	***FREQUENCY***	***PERCENTAGE***
RED	**(Danger/stop)**	446	93.7
RED/AMBER	**(Ready to move)**	458	96.2
GREEN	**(Safe to move)**	466	97.9

This is the signs that were well understood by drivers. The result of the respondents with red light signals was 446(93.7%), those with red and amber was 458(96.2%), while those with understanding of green light signals were 466(97.9%). The high percentage rate of understanding of this traffic light signals were due to frequent and early use of it on the roads.

Table 8: Testing of drivers understanding of pavement markings and meanings

Signs	Meaning	Frequency	Percentage
	Zebra crossing	156	32.8
	Two solid line -no crossing or overtaking. It serves as road barrier	152	31.9
	Centre line used to mark centre of a sign carriage way separating in opposite direction. warning line	151	31.7
	Double continuous lines with hatched area. Meaning do not cross	146	30.7
	Single solid white lines. Meaning do not cross the white lines if on the drivers side	152	31.9

Table 8 narrates the level of drivers understanding of pavement markings and meaning by the respondents. It indicates that 156 (32.8%) had knowledge of zebra crossing, 152 (31.9%) with the knowledge of two solid line, 151(31.7%) with the knowledge of centre broken line, 146 (30.7%) with the knowledge of double continuous lines with hatched area, 152 (31.9%) with the knowledge of single solid white line. The average percentage for knowledge of pavement markings is 31.8% which is very poor. From the findings, it is obviously clear that the pavement markings are not well understood and are mere formalities to drivers. Some of the markings were newly introduced without proper education and campaign to especially commercial drivers. Non-formal driving programme by drivers are also prone to high rate of road traffic accident.

Table 9: Driving under special condition

Question	**For correct answers only**	**Frequency**	**Percentage**
For safe driving and clear sight at night, the beams of head lamp should be lowered when no approaching vehicle	No	215	45.2
For approach vehicle, use high beam for clear visual sight	No	209	43.9
Head beams should be high at for both coming and oncoming vehicle at night	No	222	46.6
Looking directly into the lights of oncoming vehicle is important for safety driving	No	246	51.7
It's important for head lamp to be adjusted at night	Yes	239	50.2
Do you have a heater in your vehicle?	Yes	26	5.5

The result indicates that 239 (50.2%) of the respondents knew that head lamps should be adjusted at night for clear site view ,222 (46.6%) only knew that head lamps for both coming and oncoming vehicle should be adjusted at night, 215 (45.2%) knew that without approaching vehicle that head lamp should be high, Generally, the assessment here is too low especially on usage of head lights. The average percentage of drivers driving under special condition is 40.5%, which is very poor to enhance maximum road safety on the roads.

Table 10: Speed limit /mechanical factor for drivers

Question	**Answer**	**Frequency**	**Percentage**
Speed limit for Taxi and Buses in town, highway and expressway are (50, 80, 90 km/h) respectively	Yes	122	25.6
Do you have Spare tyres?	Yes	381	80.0
Do you have indicator and break light?	Yes	325	68.3
Do you have break fluid?	Yes	283	59.5
Do you check brake fluid and tyre	Yes	166	34.9

Pressure regularly?			

The result of the respondents shows that 122 (25.6%) had the knowledge of maximum speed limit, 381 (80.0%) have spare tyres, 325 (68.3%) drivers have indicators and brake light in their vehicle, 283 (59.5%) respondents have brake fluid, while 166 (34.9%) were constantly checking their brake fluid. The percentage average of the knowledge for this investigation is 53.7% which is not encouraging to maintain sanity and safety on the roads. The findings here narrate the degree of carelessness of drivers. The knowledge of speed limit found in the study is not encouraging. We can see why most road traffic accidents in Nigeria are very severe.

Table 11:General guides for drivers.

Question	**Answer**	**Frequency**	**Percentage**
Those taking alcohol before and on duty	Yes	354	74.4
Drivers observing 15 minutes of rest for 7 hours of driving	Yes	74	15.5
Co-driver is required for a journey exceeding 12 hours	Yes	96	20.2
Free With Seat Belt	Yes	388	81.5
Children under the age of 12 can drive In front of a car with seat belt	No(Those that are correct)	175	36.8
A driver can change Radio Station /Cd while driving	No(Those that are correct)	102	21.4
Witnessing of road traffic accident	Only yes	358	75.2

Table 11 represents general guides of the respondents. The average percentage of good knowledge here is 46.4% which is very poor. 354 (74.4%) are alcoholic intake drivers before and on duty, 74 (15.5%) of the respondents is observing the rule of 15 minutes rest for after driving for seven hours, 96 (20.2%) do have co-driver for a journey exceeding 12 hours, while 102 (21.4%) of the respondents only keeps the rule of not changing radio/CD when driving. The result shows that majority of drivers are driving under the influence of alcohol. And when driver is intoxicated he is a semi mad person and can violet safety rules , causing accident to other road users. On the area of rest and co-drivers, we can see why

many heavy duties are jumping from one lane to the other due to tiredness and sleeping driving. All these continue to occur because of lack of prosecution to the defaulters.

Table 12:Assessment of FRSC on enforcement of road traffic laws

Performance	Frequency	Percentage
Effective	36	7.6
Fairly effective	215	45.2
Not effective	222	46.6
Very effective	3	0.6
Total	476	100.0

Table 12 showed that 3 (0.6%) of the respondents rated FRSC as a very effective organization, 36 (7.6%) found the FRSC as effective, 215 (45.2%) found them fairly effective, while 222 (46.6%) found them as not effective. Generally, the agency is seen as not effective on duty.

3.2 STATISTICAL ANALYSIS OF INDIVIDUAL RELATIONSHIP BETWEEN AGE, EDUCATIONAL BACKGROUND, DRIVING EXPERIENCE AND KNOWLEDGE OF TRAFFIC SIGNS AND SYMBOLS:

Eight selected signs and symbols were analyzed to investigate the relationship between the individual characteristics of drivers and their knowledge of traffic signs and symbols.

3.2.1 Statistical analysis of age and knowledge of traffic control devices

Table: 13:statistical analysis of age and knowledge of road signs

Age	Traffic Signs/Safety Guide															
	Y-Junction		**Dangerous Double Bend**		**Four Way Junction**		**No Left Turn**		**Speed Limit**		**No Stopping**		**Two Solid Line**		**Alcohol Consumption**	
	R	W	R	W	R	W	R	W	R	W	R	W	R	W	R	W
20-25YRS	77	76	53	100	89	64	55	98	129	24	53	100	33	120	128	25
26-30YRS	40	24	25	39	45	19	27	37	56	8	30	34	22	42	51	13
31-35YRS	56	25	39	42	56	25	31	50	59	22	28	53	31	50	68	13
36-40YRS	68	39	50	57	81	26	69	38	79	28	57	50	38	69	101	6
40 ABOVE	53	18	38	33	54	17	43	28	54	17	40	31	28	43	61	10
P-VALUE	0.04		0.052		0.017		0.000		0.052		0.002		0.020		0.054	

Chi-square	15.489	9.452	12.073	28.921	9.393	16.705	11.705	9.312
Decision rule(significant)	Yes	No	No	Yes	No	Yes	Yes	No

NOTE: R and W stand for frequency of right and wrong answers respectively.

In the cross statistical analysis of age of the respondents and the knowledge of the selected traffic signs and safety guide, the result is shown in Table 13.From the decision rule, the p-value is less than 0.05 to some. By considering a 5% level of significance, the critical chi-square or tabulated value X^2 =9.488. The calculated chi-square values of some of the traffic control devices evaluated were higher than the critical value, indicating that there are reasons to believe that some of the variables have significant effect between age and safety knowledge except dangerous double bend, speed limit and alcohol consumption. This analysis shows that accident occurrence on sharp bends are caused by non-compliance of speed limit which may be attributed by alcoholic consumption.

3.2.2 Statistical analysis of educational background and knowledge of traffic control devices

Table 14:statistical analysis of educational background and knowledge of road signs

Educational Background	**Traffic Signs/safety guide**															
	Y-Junction		**Dangerous Double Bend**		**Four Way Junction**		**No Left Turn**		**Speed Limit**		**No Stopping**		**Two Solid Line**		**Alcohol Consumption**	
	R	W	R	W	R	W	R	W	R	W	R	W	R	W	R	W
B.SC	10	1	11	0	10	1	11	0	7	4	11	0	9	2	9	2
HND	20	1	14	7	19	2	18	3	20	1	19	2	14	7	17	4
OND/NCE	36	15	23	28	43	8	35	16	41	10	34	17	24	26	42	9
WAEC	221	161	151	231	246	136	225	251	304	78	140	242	100	282	332	50
OTHERS	7	4	6	5	7	4	5	6	5	6	4	7	5	6	9	2
P-VALUE	0.001		0.000		0.003		0.000		0.014		0.000		0.000		0.812	
Chi-square	18.092		21.939		16.198		40.411		12.579		51.741		36.364		1.581	
Decision rule(significant)	Yes		yes.		yes.		yes.		Yes		Yes		Yes		No.	

In the cross statistical analysis of educational background of the participants and the knowledge of the selected traffic signs, the result is shown in Table 14. From the decision rule, the p-value is less than 0.05 almost in all. Also by considering a 5% level of significance, the critical chi-square or tabulated value X^2 =9.488. The calculated chi-square values of all the traffic signs evaluated were greater than the critical value showing that there are reasons to believe that most of the variables have significant effect between them except in alcoholic intake. These analysis shows that both educated and non-educated do take alcohol while on duty and we know the dangers of its negative effect.

3.2.3 Statistical analysis of driving experience and knowledge of traffic control devices

Table 15statistical analysis of driving experience and knowledge of road signs

DRIVING EXPERIENCE	**Traffic Signs/Safety Guide**															
	Y-Junction		**Dangerous Double Bend**		**Four Way Junction**		**No Left Turn**		**Speed Limit**		**No Stopping**		**Two Solid Line**		**Alcohol Consumption**	
	R	W	R	W	R	W	R	W	R	W	R	W	R	W	R	W
1-5YRS	43	38	31	50	57	24	30	51	70	11	30	51	20	61	13	68
6-10YRS	78	65	51	92	73	70	55	88	111	32	48	95	40	101	22	121
11-15YRS	69	42	46	65	75	36	61	50	89	22	48	63	32	79	12	99
16-20YRS	74	22	49	47	79	17	53	43	73	23	51	45	37	59	16	80
21 ABOVE	30	15	28	17	41	4	26	19	34	11	31	41	23	22	4	41
P-VALUE	0.003		0.010		0.000		0.05		0.435		0.000		0.011		0.562	
Chi-square	15.743		13.299		39.323		14.905		3.788		22.511		13.022		2.976	
Decision rule(significant)	Yes		Yes		yes.		yes.		No		Yes		yes.		No	

In the cross statistical analysis of driving experience of the participants and the knowledge of the selected traffic signs, the result is shown in Table 15. From the decision rule, the p-value is less than 0.05. In consideration for a 5% level of significance, the tabulated chi-square value X^2 =9.488. The calculated chi-square values of most of the traffic signs evaluated were more than the critical chi-square value showing that there are reasons to believe that most of the variables have significant effect between driving experience and traffic signs comprehension excluding speed limit and alcoholic intake. This analysis shows more reasons why road traffic accidents in Nigeria are rising geometrically. Driving under the

influence of alcohol and non speed limit compliance is a serious problem to maintain safety of lives and property on the roads.

~~Summary~~ The summary report of the ~~cross~~ cross-analysis shows that only the educational background, age and years of experience of the drivers had influenced the responses. The drivers with B.Sc and Higher National Diploma (HND) understood traffic signs more than the drivers with WAEC and OND. Similarly, the drivers with the age range of 36-40 and above do have a better understanding of traffic signs more than the younger ones. The drivers with driving experience of 16-20 years and 21 years & above do comprehend traffic signs easily and better than those with 1-5 years, 6-10 years, and 11-16 years experience.

4.0CONCLUSION AND RECOMMENDATIONS

4.1 CONCLUSION:

Generally, based on the findings of the study, the following conclusions are made:

i. The level of safety knowledge and comprehension of traffic signs and symbols is very poor.

ii. The statistically significant relationship of individual driver's characteristics and traffic control comprehension and understanding showed that age, driving experience, and educational background play a major role.

iii. Excessive alcohol intake, over speeding that might result to wrong overtaking, is one of the factors leading to road accidents.

iv. Another factor for road accidents is poor understanding of traffic signs, lack of safety knowledge, and comprehension of safety signs which is contributed by possession of driver's license through the back door.

v. Lack of rest on duty and no co-driver for a long journey is also another factor of road accidents.

vi. Other factors as found in the study responsible for the incessant road accidents are the lack of adequate training of the drivers.

vii. In all, the main reason why many drivers had poor knowledge of road signs after many years of being on the road is corruption and inadequate examining of drivers knowledge of safety guides before issuing driver's license or wrong possession of driving license by the concerned body and non-prosecution of the defaulters by the traffic officers are the particular major factors from human factor influencing high rate of a road traffic accident in Nigeria.

4.2 RECOMMENDATIONS

The following recommendations were made by the researcher to curtail road accident in Nigeria. They are:

i. Law enforcement agencies should continuously train and retrain their personnel to improve on their knowledge of road traffic enforcement to road users especially drivers.

ii. The relevant agencies, in particular the Ministry of Works- Highway Division, the Nigeria Police-traffic division and the Federal Road Safety Commission, should intensify enlightenment campaigns through the public media - radio, television, newspaper and magazines in propagating the road safety and education. These agencies must demonstrate to the public on the proper and correct use of the roads and highways; the meaning and significance of traffic signs; demonstrations of correct and incorrect use of the road through films and posters and the importance of compliance by road users.

iii. Total reshuffle of the Federal Road Safety Commission should be done to screen out corrupt officers who are promoting noncompliance of safety rules by issuing license without due process and collecting bribes from traffic offenders, and any officer caught in such act should be prosecuted by law.

iv. Government also should ensure that all established agencies like Federal Road Safety Commission, FRSC, Vehicle Inspection Offices, VIOs and so on must effectively carry out their duties with no prejudice; checking the conditions of vehicles on our roads, drivers mood, interrogate with passengers about drivers mannerism towards driving, without extorting money from drivers.Negligence of this promotes traffic crime.

v. There should be strict penalties against anybody caught driving vehicle under the influence of alcoholic drinks and alcoholic joints should be closed by the government especially motor parks.

vi. Drivers should be properly trained and as well retrained for safety knowledge and comprehension.

vii. Well-equipped government driving schools should be established in all the Local Government, State Government and the Federal Capital for easy access and proper learning.

viii. Traffic law courts should also be established by the Government for traffic offenders.

ix. The agency in charge of issuing driving license should test the drivers for knowledge of safety and rules guiding the roads and ascertain their proficiency in driving before issuing driving license.

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