# ROAD SAFETY PRACTICES AMONG PRIVATE MOTORISTS IN STATE SECRETARIAT, UYO, NIGERIA

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## ABSTRACT

***Context:*** *Road safety measures have been reported to effectively prevent or reduce the impact of road traffic injuries.*

***Objectives:*** *This study assessed private motorists' knowledge and practice of road safety measures in Uyo, Nigeria.*

***Methodology:*** *This was a descriptive cross – sectional study. Data was collected using self administered semi- structured questionnaire and analyzed with SPSS version 20. Frequencies and associations were generated. Level of significance was set at 5%.*

***Result:*** *A total of 388 respondents participated in the study. The mean age of respondents was 37.67±8.27 years with male to female ratio of 1.75:1. Majority, 83.2% had tertiary education. Only 179 (46.1%) learnt how to drive in driving schools. The prevalence of road traffic injuries was 22.7%. Majority, 342 (88.1%) possessed driving licenses, out of which only 168 (49.1%) underwent driving tests. Level of knowledge of road signs ranged from 6.2% for "no stopping" to 67% for "no parking". Lifetime consumption of alcohol was 55.7%. Eighty two (21.1%) of the respondents sometimes or never used seatbelts. The most common reason given by 65.9% was discomfort. Use of seat belt by back passengers was 15.7%. The average speed on highway was 106.9 ± 24.2 km/hour. Awareness of existence of speed limit in Nigeria was 63.7% and 156 (40.2%) admitted to making or receiving calls while driving. There was a statistically significant association between making or receiving calls and occurrence of road traffic injuries.*

***Conclusion:*** *Awareness campaigns to improve knowledge of highway codes and other traffic regulations are advocated for this study population and other private motorists in the study area.*

***Keywords:*** *Road safety practices, private motorists, traffic regulations, road traffic injuries, Nigeria*

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## INTRODUCTION

Road traffic injuries are increasingly escalating into global public health crisis.[1] Globally, about 80, 000 road traffic crashes occur daily, estimated 3, 000 people are killed every day and 1.25 million die annually despite reported improvements in road safety.[2] Road traffic crashes and their consequences have become serious health, social and economic hazards in developing countries.[3] Such countries account for 85% of all the global road traffic mortalities and 90% of all disability adjusted life years lost due to road traffic injuries.[4,5] Africa contributes the highest mortality due to road traffic crashes with a rate of 28.3 per 100, 000 population[4] and Nigeria which is said to have the highest injury rates in Africa recorded an overall road traffic injury rate of 41 per 1, 000 population and deaths from road traffic crashes of 1.6 per 1, 000 population in a recent survey.[6,7]

In Nigeria, road transportation is very common and accounts for about 90% of the means of movement of people and freights across the country.[8] This leads to an increasing number of vehicles which predisposes to fatal and non – fatal road traffic injuries.[9,10] All road traffic crashes are local events that reflect the specifics of a particular road, motorist and vehicle.[11] Road safety measures and interventions have been reported to effectively reduce the number of deaths associated with road traffic injuries. Nigeria, like other developing countries is

experiencing increasing vehicular population without putting in place adequate road safety mechanisms to mitigate the increasing number of road traffic injuries and fatalities.[1] A study in Ibadan Nigeria observed that human factors responsible for road traffic crashes in Nigeria include dangerous overtaking at bends, over speeding, driving under alcohol / drug influence and the use of mobile phones while driving.[12] Other studies have also shown that drivers' attitude towards traffic regulations and the failure to use seat belts are other important risk factors for road traffic crashes.[1,10]

The use of seat belts reduces the risk of injury and fatality in the event of a road traffic crash. It is estimated to reduce the risk of fatality by 40 – 50% among front seat occupants and 25 – 75% among rear seat occupants.[13] Despite it being a safety device, seat belt is still poorly utilized in the West Africa sub – region compared to the highly motorized Western Europe and North America.[14] As part of road safety measures, the use of seat belts while driving in Nigeria became mandatory in January 2005.[13]

Excessive speed is another major risk factor for road traffic crashes. It is directly related to both the probability of a crash occurring and the severity of the outcome of the crash.[10] Studies in various countries have reported that excessive speed is a major cause of road traffic crashes.[15] Also as a road safety measure, all vehicle drivers should possess a valid driver's license from authorized government agencies as a proof of their proficiency. It is noted that many of Nigerian drivers including private motorists do not possess valid driver's license from appropriate government agencies and as such they are not exposed to appropriate driving tests.[1]

It is argued that road traffic crashes have not generated proportionate attention and have been neglected from global health agenda for many years despite being predictable and largely preventable.[2] For many drivers, their years of experience as motorists may give them a false sense of security and a mistaken belief that they are not traffic risks.[11] An understanding of private motorists' knowledge, perception and practice of road safety measures can be a positive effort towards mitigating road traffic crashes and contribute to the overall incremental gains in road safety. This study therefore aimed at assessing private motorists' knowledge and practice of road safety measures in Uyo, Nigeria in order to serve as an indicator of their proficiency to safeguard their lives and those of other road users while driving.

## MATERIALS AND METHODS

### Study Area

The study was conducted in Uyo, the capital of Akwa Ibom State, Nigeria. Uyo is a fast-growing city which has witnessed some infrastructural growth in the past nine years. It has an extensive network of roads including an eight-lane superhighway which is currently the widest road in the city. Transportation in Uyo is mainly by Tricycles, popularly known as Keke.[16] The projected population of Uyo metropolis as at 2015 was 413,381.[17] Most inhabitants are civil servants and traders. The State secretariat is a large complex which houses sixteen ministries. Many of the civil servants go to work using their private vehicles.

### Study Design

The study was a descriptive cross – sectional study which was conducted in May, 2016 among civil servants working at the State secretariat in Uyo who drive private vehicles.

### Sample Size Determination

The formula for estimating single proportion for cross sectional studies was used in calculating the sample size[18] , with prevalence, (0.68) being the compliance to seat belt use among private vehicle occupants in a previous Nigerian study [14], z of 1.96, sampling error set at 5%, and 10% over estimation to accommodate for non response. A sample size of 369 was obtained. This was

rounded up to 400.

**Data Collection**

The State secretariat has 16 ministries. A total of 25 respondents were selected from each ministry using systematic sampling of alternate consenting civil servants who drive private cars. This gave a total of 400 respondents. Data was collected using structured, interviewer - administered questionnaire. The questionnaire was divided into sections to elicit information on the respondents' socio – demographic characteristics, driving experience and road safety practices. The tool was pre tested on 15 private motorists working at the University of Uyo Teaching Hospital, Uyo, two weeks prior to commencement of the study to ensure adequate comprehension. Eight previously trained research assistants were utilized. Data collection was carried out over a period of five days.

**Data Management**

The data obtained was analyzed using the Statistical Package for the Social Sciences (SPSS) version 20. Data analysis was done using descriptive statistics (frequency and proportion to summarize variables) and inferential statistics (chi square to test the significance of association between two categorical variables). The level of significance was set at 5%.

**2.6 Ethical Considerations**

Ethical clearance was obtained from Akwa Ibom State Health Research Committee. The purpose, content and significance of the study were adequately explained to the respondents after which written consent was obtained from each of them. Participation was entirely voluntary. No names were used on the questionnaire to ensure confidentiality.

**TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS**

| Variable | Frequency | Proportion (%) |
|---|---|---|
| **Age (years)** | **N=304** | |
| 21-30 | 66 | 21.7 |
| 31-40 | 146 | 48.0 |
| 41-50 | 72 | 23.7 |
| >50 | 20 | 6.6 |
| Mean age = 37.67±8.27 | | |
| **Sex** | **N=388** | |
| Male | 247 | 63.7 |
| Female | 141 | 36.3 |
| **Marital status** | | |
| Single | 148 | 38.1 |
| Married | 221 | 57.0 |
| Others | 19 | 4.9 |
| **Level of education** | | |
| None | 1 | 0.3 |
| Primary | 13 | 3.4 |
| Secondary completed | 51 | 13.1 |
| Tertiary | 323 | 83.2 |
| **Monthly income (N)** | | |
| <60,000 | 237 | 61.1 |
| 60,000-120,000 | 129 | 33.2 |
| >120,000 | 22 | 5.7 |

## RESULTS

A total of 388 out of 400 private drivers who enrolled in the study eventually participated to the end, giving a response rate of 97%. The mean age of respondents was 37.67±8.27 years, with a male to female ratio of 1.75:1. More than half of the respondents were married and 83.2% had tertiary education. Majority, 232 (61.1%) earned less than 60,000 naira monthly. (Table 1)

Only 179 (46.1%) learnt how to drive in driving schools. Two hundred and twenty four (57.8%) had been driving for less than 3 years, while 88 (22.7%) were ever involved in accidents. Majority, 342 (88.1%) possessed driving licenses, out of which only 168 (49.1%) underwent driving tests.(Table 2) Probably due variation of prices over the years, the cost of driving license among respondents ranged from 5,000 – 25,000 naira, with a mean of 11,952 ± 3,073 naira.

Knowledge of the different road signs ranged from 24, (6.2%) for "no stopping" to 260 (67%) for "no parking". Majority, 377 (80.2%) however were fully knowledgeable about traffic lights. (Table 3)

Eighty two (21.1%) of the respondents either sometimes or never used seatbelts. The most common reason given by 54 (65.9%) was discomfort. Among those who used regularly, 137 (44.8)) reported that their source of motivation was the frequent presence of members of the Federal Road Safety Corp on the road. The reported use of seat belts by back passengers was 15.7%. (Table 4)

The mean speed on highway was 106.2 ± 24.2km/hour.

Two hundred and forty seven (63.7%) respondents were not aware of the existence of speed limit in Nigeria, while 156 (40.2%)

**TABLE 2: DRIVING HISTORY OF RESPONDENTS**

| Variable | Frequency N=388 | Proportion (%) |
|---|---|---|
| **Source of driving skills** | | |
| Family and friends | 209 | 53.9 |
| Driving school | 179 | 46.1 |
| **Years of driving** | | |
| <3 years | 224 | 57.8 |
| 3-5years | 82 | 21.1 |
| >5years | 82 | 21.1 |
| **Ever had road traffic injuries** | | |
| No | 300 | 77.3 |
| Yes | 88 | 22.7 |
| **Age at commencement of driving (years)** | | |
| =20 | 90 | 23.2 |
| 21-30 | 215 | 55.4 |
| 31-40 | 72 | 18.6 |
| >40 | 11 | 2.8 |
| **Possession of license** | | |
| Yes | 342 | 88.1 |
| No | 46 | 11.9 |
| **Undergone driving test** | **N=342** | |
| No | 174 | 50.9 |
| Yes | 168 | 49.1 |

**TABLE 3: KNOWLEDGE OF ROAD SIGNS AND TRAFFIC LIGHTS AMONG RESPONDENTS**

| Road Signs | Frequency N=388 | Proportion (%) |
|---|---|---|
| **No parking** | | |
| Yes | 260 | 67.0 |
| No | 128 | 33.0 |
| **T junction** | | |
| Yes | 229 | 59.0 |
| No | 59 | 41.0 |
| **No U turn** | | |
| Yes | 173 | 44.6 |
| No | 215 | 55.4 |
| **No horn** | | |
| Yes | 151 | 38.9 |
| No | 237 | 61.1 |
| **No left turn** | | |
| Yes | 144 | 37.1 |
| No | 244 | 62.9 |
| **No stopping** | | |
| Yes | 24 | 6.2 |
| No | 364 | 93.8 |
| **Traffic lights** | | |
| Yes | 311 | 80.2 |
| No | 77 | 19.8 |

**TABLE 4: USE OF SEATBELTS AMONG RESPONDENTS**

| Variable | Frequency N=388 | Proportion (%) |
|---|---|---|
| **Seatbelt Use by respondent** | | |
| Always | 306 | 78.9 |
| Sometimes | 78 | 20.1 |
| Never | 4 | 1.0 |
| **Reason for non-use** | **N=82** | |
| Discomfort | 54 | 65.9 |
| Unnecessary | 28 | 34.1 |
| **If always, source of motivation** | **N=306** | |
| Self Caution | 154 | 50.3 |
| Federal Road Safety Corp | 137 | 44.8 |
| Friends/relatives | 15 | 4.9 |
| **Seat belt use by front passenger** | | |
| Always | 280 | 72.2 |
| Sometimes | 88 | 22.7 |
| Never | 20 | 5.1 |
| **Seat belt use by back passengers** | | |
| Always | 61 | 15.7 |
| Never | 327 | 84.3 |

**TABLE 5: SPEED AND OTHER ROAD SAFETY ISSUES AMONG RESPONDENTS**

| Variable | Frequency N=388 | Proportion (%) |
|---|---|---|
| **Possession of Functional speedometer** | | |
| Yes | 353 | 91.0 |
| No | 35 | 9.0 |
| **Existence of speed limit in Nigeria** | | |
| Yes | 141 | 36.3 |
| No | 247 | 63.7 |
| **Making calls while driving** | | |
| No | 232 | 59.8 |
| Yes | 156 | 40.2 |
| **Ever Consumption of alcohol by respondents** | | |
| Yes | 216 | 55.7 |
| No | 172 | 44.3 |
| **Consumption of alcohol within the last month** | **N=216** | |
| Yes | 71 | 32.9 |
| No | 145 | 67.1 |

**TABLE 6: ASSOCIATION BETWEEN SELECTED CHARACTERISTICS OF PRIVATE MOTORISTS AND SEX**

| Characteristics | Sex | | | Statistical indices |
|---|---|---|---|---|
| | Male N=247 n(%) | Female N=141 n(%) | Total N=388 | |
| **Road traffic injuries** | | | | |
| No | 179(72.5) | 121(85.8) | 300 | $\chi2 = 9.12$ |
| Yes | 68(27.5) | 20(14.2) | 88 | p =0.00* |
| **Seat belt use** | | | | |
| Always | 191(77.3) | 115 (81.6) | 306 | $\chi2 = 0.96$ |
| Never/sometimes | 56 (22.7) | 26 (18.4) | 82 | p =0.3 |
| **Phone calls while driving** | | | | |
| Yes | 105 (42.5) | 51 (36.2) | 156 | $\chi2 = 1.50$ |
| No | 142 (57.5) | 90 (63.8) | 232 | p =0.22 |
| **Possession of license** | | | | |
| Yes | 214(86.6) | 128 (90.8) | 342 | $\chi2 = 1.47$ |
| No | 33(13.4) | 13 (9.2) | 46 | p =0.22 |
| **Undergone driving test** | **N=214** | **N=128** | | |
| Yes | 106 (49.5) | 62 (48.4) | 168 | $\chi2 = 0.04$ |
| No | 108 (50.5) | 66 (51.6) | 174 | p =0.84 |
| **Significant*** | | | | |

**TABLE 7: ASSOCIATION BETWEEN ROAD TRAFFIC INJURIES AND SELECTED CHARACTERISTICS OF RESPONDENTS**

| Characteristics | Road traffic injuries | | | Statistical indices |
|---|---|---|---|---|
| | No N=300 n(%) | Yes N=88 n(%) | Total N=388 | |
| **Phone calls while driving** | | | | |
| Yes | 104 (66.7) | 52(33.3) | 156 | $\chi2 = 16.88$ |
| No | 196 (84.5) | 36 (15.5) | 232 | p =0.00* |
| **Alcohol use** | | | | |
| Yes | 160 (74.1) | 56 (25.9) | 216 | $\chi2 = 2.93$ |
| No | 140 (81.4) | 32 (18.6) | 172 | p =0.09 |
| **Possession of license** | | | | |
| Yes | 266(77.8) | 76(22.2) | 342 | $\chi2 = 0.35$ |
| No | 34(73.9) | 12(26.1) | 46 | p =0.56 |
| **Undergone driving test** | **N=266** | **N=76** | **N=342** | |
| Yes | 134 (79.8) | 34(20.2) | 168 | $\chi2 = 0.75$ |
| **No** | 132 (75.9) | 42 (24.1) | 174 | p =0.38 |
| **Speed on highway (km/hour)** | **N=232** | **N=62** | **N=294** | |
| =120 | 209 (75.6) | 51(24.4) | 260 | $\chi2 = 2.93$ |
| >120 | 23 (67.7) | 11 (32.3) | 34 | p =0.09 |
| **Age (years)** | **N=233** | **N=71** | | |
| 21-30 | 46 (69.7) | 20 (30.3) | 66 | |
| 31-40 | 119 (81.5) | 27 (18.5) | 146 | $\chi2 = 4.62$ |
| 41-50 | 52 (72.2) | 20 (27.8) | 72 | p =0.20 |
| >50 | 16 (80) | 4 (20) | 20 | |

admitted to making or receiving calls while driving. More than half, 55.7% of the respondents ever consumed alcohol. (Table 5) A significantly higher proportion of male respondents, 68(27.5%) compared to females, 20 (14.2%) had been involved in road traffic injuries ($p<0.05$). The use of seat belt and possession of license were higher, 115 (81.6%), 128 (90.8%) in females compared to males, 191(77.3%) and 214 (86.6%) respectively. The difference was however not statistically significant ($p>0.05$). (Table 6)

There was a significant association between making or receiving calls and occurrence of road traffic injuries. Also, road traffic injuries were reported more among those who ever took alcohol and those who drove at a speed >120km/hour. The difference was however not statistically significant. (Table7)

## DISCUSSION

Road safety measures and interventions have been reported to effectively reduce the occurrence and outcome of road traffic injuries. This study assessed private motorists' knowledge and practice of road safety measures in Uyo, Nigeria. The mean age of respondents was 37.67±8.27 years with almost two thirds being males. Similar findings were reported in a study among non-commercial drivers with a mean age of 33± 10.97 years and 62.9% being males.[19] Statistics show that the young and productive age group of 15 – 44 years account for almost half of the global road traffic deaths.[2]

The level of literacy among the respondents was high as eight out of every ten had tertiary education. This was because the study was among civil servants. These enlightened people were expected to have very good road safety practices. However, less than half of them learnt to drive in driving schools and though almost 90% possessed driving licenses, more than half did not undergo driving tests. A study among commercial drivers reported driving test records of 80%[20]

which was much higher than what was obtained among the private motorists in the present study. Drivers who did not undergo driving tests missed the opportunity of receiving formal training on highway code, speed limit and other traffic regulations that ensures safe road use. This reflected in the poor knowledge of the different road signs which ranged from 6.2% for "no stopping" sign to 67% for "no parking". In Nigeria, the National Road Traffic Regulations stipulate that every potential driver goes through driving tests and passes in an accredited driving school.[6,21]

Injuries and deaths among motorists continue to be of concern globally. In the present study, about one fifth of the respondents had records of road traffic injuries since they started driving. This was much lower than the 45.5% prevalence recorded among commercial drivers in another study.[20] One of the possible reasons for the difference may be the longer hours of driving by the commercial drivers. A significantly higher proportion of males in the present study were reported to have been involved in accidents compared to females. A possible reason is the higher mobility among males when compared to females.

Eight out of every ten respondents in this study used seat belts. A similar finding was reported by Ismailia in a study where seat belt use among private vehicle drivers was 80% compared to only 20% among commercial drivers.[13] Compliance to seat belt use of 67.9% was recorded among car occupants and private vehicles in Makurdi, Nigeria with 77.1% compliance among female drivers compared to 51.4% among males.[14] In the present study, compliance was also higher among females, though not significantly so. Among those who used seat belts regularly, close to half reported that their source of motivation was fear of arrest by officials of the Federal Road Safety Corp who do impromptu checks on highways. Offenders are usually made to pay fines. This has considerably improved compliance. These officers however only enforce the law on the driver and front passenger. Lack of use of seat belt by back passengers is however not penalized. This may contribute to low usage. In the present study, less than 20% of the respondents reported seat belt usage by back passengers. About a fifth of the respondents either never used seatbelts at all or used only occasionally. The most common reason given by about two thirds of the non users was discomfort.

Excessive speed has been established to contribute greatly to the frequency and severity of road traffic injuries. According to the Federal Road Safety Corp, 50.8% of all road traffic crashes that were reported in 2014 were speed – induced crashes. The maximum speed for private motorists on the expressway is 100 km /hour and 90 km /hour for taxis and buses, while in a built – up area, the speed limit could be as low as 20 – 50 km / hour for private vehicles. The implementation of speed control probably carries the greatest potentials to save lives.[5,22] In the present study, the mean speed on highway reported by respondents was 106.9 ± 24.2km/hour. Road traffic injuries were reported more among those who drove at a speed >120km/hour. Excessive speeding has also been linked to injuries among other road users. Speed reduction was identified by 69% of motorcyclists in a study as the single most important means of reducing injuries. In that study, road traffic injuries were observed to occur among 80% of those who were speeding compared to 45.7% who were not ($p<0.05$).[23] A study in Lagos, Nigeria, showed that private motorists were prone to road traffic injuries and 90% of these injuries could be attributed to recklessness on the part of drivers, ignorance of highway codes and over speeding.[24] Many road users have no knowledge of speed limits on different types of roads. In the present study, close to two thirds of the respondents were not aware of the existence of speed limit in Nigeria. This ignorance could encourage recklessness.

The Federal Road Safety Corp (FRSC) is saddled with the responsibility of enforcing road traffic regulations and laws in Nigeria.[3]

Studies have shown that most of the gains produced by changing road user behavior in developed countries resulted from effective road safety laws implementation.[25] However, low enforcement level, inadequate resources, administrative issues and low public awareness have been identified as possible causes of failure of the application of traffic regulations in developing countries.[4,5]

Another very dangerous habit among motorists is answering or making calls while driving. In the present study, about 40% admitted to making or receiving calls while driving. This was higher than findings in a similar study in Ilorin, Nigeria where 27.5% of non-commercial drivers admitted to this practice.[25] It was however lower than 59% prevalence reported in a similar study in Ado-Ekiti, Nigeria.[26] The use of mobile phone while driving can constitute a major source of distraction as an unanticipated event can take place during the few seconds that the motorist's concentration is compromised, resulting in road traffic injuries. In the present study, there was a significant association between making or receiving calls and occurrence of road crashes. Also in a study in Benue State, Nigeria, among commercial motorists, 72.5% of those who had experienced crashes had it while using the phone.[27] A 2006 US study found that almost 80% of crashes and 65% of near crashes involved some form of driver inattention within three seconds of the event.[28] The national Highway Traffic Safety Administration, US Department of Transportation reported that there were 385 crashes with 404 deaths in 2014 linked to the use of cell phones while driving. Cell phones were reported as a distraction for 13% of all distracted drivers in fatal crashes.[29]

Alcohol consumption by drivers is another established contributor to road crashes. More than half of the respondents in the present study admitted to ever consuming alcohol, while about a third consumed within the month preceding the study. Higher values of 71.6% lifetime use and 57.6% current use were reported among tanker drivers.[30] In the present study, it was observed that reports of crashes were more among those who ever took alcohol compared to those who did not though the difference was not significant. Approximately 50% of road crashes on Nigerian roads have been reported to be linked to alcohol use.[31]

## CONCLUSION

Despite the high level of literacy of the study population, a lot of gaps have been identified in their road safety practices. Many of them did not undergo driving tests before issuance of license. There was inadequate knowledge of highway codes, speed limit and other traffic regulations. Organization of awareness campaign will be of value among this study population and other private motorists in the study area.

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