



## RESEARCH ARTICLE

# Socio-Economic Situation and Substance Use Disorder Influences on Safety Practices among Truckers

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### Abstract:

### Background:

The study examined the nexus between Social Economic Situation (SES) and Substance Use Disorder (SUD) and the influence the two exerted on willingness to comply with Health Safety and Environment (HSE) guiding the conveyance of petroleum products among truckers in Ibadan metropolis, Nigeria.

### Methods:

Multistage and simple random sampling techniques were utilized to obtain the 265 respondents who are professional haulers and necessary information on the study objectives were obtained through self-reporting designed questionnaire. Bivariate statistical analysis and Logistic Regression Model were also used in ascertaining the existence of relationships among the dependent and independent variables.

### Results:

The result from the bivariate analysis showed the existence of an association between two SES variables of age [ $X^2 (9) 17.05, p=0.04$ ] and literacy level [ $X^2 (9) 41.36 p=0.00$ ] and SUD. While the marital status of the respondents did not significantly influence the incidences of SUD [ $X^2 (9) 9.841 p=0.36$ ]. Furthermore, a Logistic Regression Model (LRM) examined the relationship between dichotomous dependent variable (compliance or non-compliance to HSE stipulations guiding the conveyance of petroleum products) and the different independent explanatory variables (Age, Marital Status, Educational Status and SUD). The Wald criterion demonstrated that marital status ( $p=.000$ ), educational status ( $p=.000$ ) and attitude to SUD ( $p=.000$ ) all made significant contributions to the prediction (compliance) while age ( $p=.861$ ) was not a significant predictor.

### Conclusion:

The study recommends the importance of non-economic factors (like literacy and marital status) in the achievement of sustainable HSE stipulations guiding the conveyance of petroleum products.

**Keywords:** Socio-economic-situation, Substance use disorder, Truckers, Health safety environment, Road safety, Logistic regression model.

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## 1. INTRODUCTION

In contemporary times, arguably one of the most stressful outdoor jobs is truck driving [1 - 6]. Empirical evidence and verifiable statistics suggested that truckers who are engaged in freight distribution have one of the highest career turnover rates globally [1, 3 - 5]. A 2017 statistics from the American Trucking Association (ATA) observed that the United States industry experienced a staggering 90% job turnover rate among truckers in 2016 [6, 7]. The causative factors behind such a

high rate of job turnover are heavily linked to the job schedule of an average trucker [1, 3, 6]. Different studies have established the fact that due to high occupational stress, limited access to health care services and prolonged absence from loved ones; there are disproportionately high incidences of occupational health-induced conditions among truckers when compared to other similar outdoor careers [8 - 10]. Truckers are discovered to be particularly exposed to negative health conditions such as mental health breakdowns and ergonomically hazardous working conditions [8, 10]. It is therefore not surprising that incidences of Substance Use Disorder (SUD) have been rampantly reported among truckers

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globally [1, 3, 4, 6, 7]. According to Sieber [11], high incidences of SUD occur among truckers who generally utilize different psychoactive substances and opioids to ameliorate perceived shortcomings in their physical conditioning. The reliance of some truckers on these substances as 'quick fixes' against different health challenges like fatigue, sleeping disorder, sitting/low back pain, musculoskeletal disorders and whole-body vibration has always put a disturbing question mark on their judgments when behind the wheels [3, 12, 13].

There has been a surge of interests among the academic communities in recent times on the apparent relationship between the Socio-economic Situation (SES) of Road Traffic Crashes victims' and the possibilities of their involvement in Road Traffic Crashes (RTC) [14 - 16]. Most of these studies established the existence of strong concatenation between SES of RTC victims and the spatial pattern of RTC occurrence among different neighbourhoods in most urban locations

[14 - 16]. Some of the studies also provided insight into how various attributes of SES (particularly age, income, gender, ethnicity/cultural belief) play important roles in the possibility of one becoming an RTC victim in a particular location [16, 17]. A major premise ascertained from the findings of these studies is that the SES of an individual has an inherent proclivity for predicting the chances of his being involved in RTC across space and time in a studied location [16, 18, 19]. It is however perceptible that studies that examined the influence of SES on drivers' general involvement are rare. Contextual analysis of some of the studies [16, 17, 20] on the discourse revealed that some of the popular perceptions of the discourse are anecdotally obtained. Many of the aforementioned studies failed to establish a scientific premise on the existence of interface between the occurrences of RTC and SES of passengers, pedestrians and drivers [14]. While it might be true that drivers could sometimes be victims of RTC, there are empirical pieces of evidence which support the position that they are more of a causative factor in the occurrence of RTC [8, 21, 22]. This study therefore attempted to systemically consider how key attributes of SES (age, gender, educational attainment, marital status and period spent in employment) and the existence of SUD, influences adherence to safety rules guiding the conveyance of liquid petroleum products by truckers. The available literature is replete with studies that focused on how the attributes of SES influence the occurrence of RTC among different road users (pedestrians and passengers) [16, 18, 19]. It is also a fact in the literature that key SES attributes of age, marital status educational attainment and the working condition affect drivers' disposition towards SUD, which in turn influences their abilities to adhere to stipulated driving rules on roads [1, 3, 11, 12]. However, there is a paucity of evidence in studies that focused on how the attributes of SES among homogeneous professional groups like the truckers influence their attitudes to SUD and safety practices guiding the conveyance of hazardous goods like petroleum products.

## 2. MATERIALS AND METHODS

For the purpose of this research, a positivist approach is considered as being the most ideal. The study was carried out

in Ibadan metropolis in Nigeria between June 2017 and December 2018. The studied population comprised of 632 members of the Petroleum Tanker Driver Associations (PTDA) Ibadan zone servicing 702 Fuel Retail Outlets [FRO] within the metropolis at the time of the research. The research protocol was approved by the ethical committees of the University of Fort Hare (South Africa) and Redeemer's University (Nigeria). All participants were duly notified of the aim of the research. Then, informed consent was obtained from the participants. In accordance with the dictate of the ethical protocol, the reassurance of confidentiality of all the participants in the study was confirmed. All sourced data were documented by code, rather than the respondent's name. A multistage sampling technique was employed in selecting respondents for the study. Available records from the register of Petroleum Tanker Drivers Association showed that there are 632 registered members of the group servicing FRO in Ibadan and environs. A simple random sampling technique was employed in selecting respondents for the study. Information garnered from the register of the Petroleum Tanker Drivers Association (PTDA) Ibadan branch revealed that all the 632 registered truckers are also affiliated to the 702 Fuel Retail Outlets (FRO) in the metropolis. The research team used the register in selecting every odd-numbered member on the list as a potential respondent for the research exercise. Since the address of the FRO they serviced are on the register, the research team linked up the two and thereafter visited each of such FRO and attempt was made to sample such trucker. A total number of 351 respondents were sampled from which 265 questionnaires were retrieved for this analysis (a response rate of 75.49%). The study utilized a self-reporting approach in obtaining information about the incidences of SUD among different categories of drivers [22 - 26]. According to Girotto *et al.* [25], the use of the self-reportage technique in analyzing issues surrounding SUD among truckers could provide deeper introspective knowledge than biological analyses. Biological analyses while being adept at identifying the presence of alcohol and other substances could only be useful if the consumption of such substances is done hours or a few days prior to sample collection. The biological analytical approach most often than not also underestimates the intake prevalence and level of addiction. The self-reportage technique is also not without its own demerits as respondents could sometimes withhold information deliberately due to fear of losing their driving licenses or sometimes as a result of outright forgetfulness of information. Structured questionnaires with three different sections were used in obtaining the required information from respondents; the questionnaire which was divided into three sections had Section A that obtained information on the Social Economic Situation (SES) of the respondents. Section B which employed a Likert scale (where responses were categorized into four options of strongly disagreed, disagreed, agreed and strongly agreed) was used to get the necessary information on respondents' attitude/disposition to SUD. The third section which extracted information on the willingness of respondents to comply with Health Safety Environment (HSE) stipulations guiding the conveyance of petroleum products was measured through the development of dichotomous measurable operational definitions which provided a yes or no response to the

question. A pre-field exercise helped in ensuring the validity and reliability of the research instruments. Additionally, the Cronbach alpha test was done on each of the constructed multi-items' instruments in order to observe their internal reliability and ability to effectively measure the research variables [27]. The compliance to HSE stipulations subscale which consisted of 8 items has a Cronbach alpha of .79 ( $\alpha=.79$ ) while attitude to SUD subscale which had 9 items has a Cronbach's alpha of .80 ( $\alpha=.80$ ). The information retrieved from the questionnaires was codified into Microsoft Excel (2010) workbook sheet where the database management was done thereby getting the data into good shape for the analysis. The statistical analyses were performed using IBM SPSS (Statistical Package for Social Sciences), version 23. Bivariate analysis done through chi-square was employed to test for the possibility of the existence of relationships/associations between three SES variables (age, literacy level and numbers of years spent in marriage) of truckers and incidences of SUD. Furthermore, the Logistic Regression Logistic Regression Model (LRM) was used to test the existence of significant relationships between the dichotomous dependent variable (compliance to HSE stipulations guiding the conveyance of petroleum products) and the different independent explanatory variables (Age, Marital Status, Educational Status and Substance Use Disorder). Logistic Regression as a classification algorithm is ideal for predicting a binary outcome (yes or no) given a set of independent variables.

### 3. RESULTS

On the strength of the application of both the sampling frame and sampling size techniques as conceptualized above, 265 (75.49%) out of the 351 distributed questionnaires were retrieved and used in the analysis to achieve the aim of this research exercise. Below are the analyses:

#### 3.1. Social Economic Situation (SES) of Participants (Truckers) in the Study

The overwhelming majority of the respondents were male(262 which represented 98.86%) while an insignificant proportion of the respondents (3 which represented 1.14%) were female. The gender statistics on its own is not different from figures obtained from other regions of the world [28 - 30]. It is an established fact that the majority of truck drivers worldwide are males. Bunn *et al.* [28], in a study conducted in the US, assessed the effects of gender and age variability of truck drivers on road accident prevention and found that a paltry 554 of the 18678 (2.9%) truck drivers sampled in the study were females. The female respondents from this study complained about the job schedule, lengthy time spent on wheels, driving at odd hours and the rigors associated with the job schedule of a hauler as being deterrents for the tepid interest of the female gender in the occupation. Analysis of the respondents' age distribution showed that less than 7% of the sampled respondents were below 30 years of age. Findings from other studies on the discourse strongly suggested the possibility of a causal relationship between truck driving and maturity in age [3, 7, 31, 32]. The figure is much lower to the 25.30% obtained by Bunn *et al.* [28] when age distributions of truckers were also analyzed in a US study. Different studies

have revealed that the age of truckers, their level of maturity and physical conditioning have been few of the most critical attributes of SES that employers paid premium attention to when recruitment was done [1, 3, 4, 28, 31]. Recent findings showed that there is evidence of causality between the age of drivers and the propensity to be involved in an accident [1, 33] which indicated that over 20% of road crashes that occur among teen drivers are directly attributable to youthful exuberance while drivers who are below 40 years old generally drive faster than those who are above that age group. What younger drivers lacked in maturity and carefulness behind wheels- they often have in by the way of better physical conditions. Older truckers have been known to have problems associated with reduced visibility and impaired visions associated with night driving [7, 21, 32, 33].

Analysis of the respondents' marital status showed that a higher proportion of the respondents were married. 167 which represented 63% were married, while the differentials of 37% were single, separated or widowed. In the Nigerian society, the marital status of an employee is sometimes seen by employers as a proof of how responsible such a staff will likely be. Of importance is the fact the 3 females captured in the study were all below 30 years of age, were all single and well educated(had 2 years of post-high school education). This could mean either of these two things; a possible shift in the paradigm of gender/job definition equation or the reduction in job opportunities in Nigeria is establishing a new frontier in the gender/job definition equation. Nearly all the respondents had a form of formal training. An insignificant number- 10 represented that 3.77% of the respondents were not educated. The greater majority of the respondents (181-69.81%) had a high school education (12 years of formal education) while 22 (8.30%) had post-secondary school education. The essence of formal education for all categories of drivers cannot be overstressed. Literacy as a factor comes into play when drivers have to make decisions and interpret road safety signs. The U.S. government through the Federal Motor Carrier Safety Administration (FMCSA) [8] stipulates that the ability to read and write in English Language is a non-negotiable condition for Commercial Motor Vehicle (CMV) operators (or truck drivers). The Federal Road Safety Corps (FRSC) which is the body saddled with the issuance of driving licenses to drivers in Nigeria also insisted that truckers must be able to read and understand road signs (FGN) [34].

Nearly half of the total number (49%) of the respondents captured in the survey has spent more than ten years on the job. Nearly 15% of the total population had over twenty years of experience as haulers. Doubtlessly the entry age into truck driving is an important criterion that eventually influenced the demographics of the industry. In most countries, younger truckers are only qualified to drive at twenty-one [1]. Studies on truck drivers have shown that the entry age into the profession often, in the long run, has a directional effect on their driving skills such as vision, reflex movement and the processing of information. Reporting the findings from a 2010 safety study on all categories of drivers, Federal Motor Carrier Safety Administration Analysis Division [35] revealed that truckers who have spent less than five years on the job had an alarming 188% more chance of being the direct cause of a road

traffic crash while the same study showed that drivers who are 65 years and above showed a paltry figure of 16%.

### 3.2. Analysis of the Relationship Between Social Economic Situation (SES) and Self- Reportage on Substance Usage Disorder (SUD) among Respondents

This section is dedicated to the presentation of findings on the relationship between SES and SUD by the respondents, as it was earlier stated the researchers employed the self-reportage technique in gathering information on SUD through the use of a structured questionnaire. The findings are presented and discussed below:

About one-fourth of the truckers who participated in the study (Table 1) admitted that they often or regularly take stimulants (26.41%), while a paltry 6.41% posited that they never did. A deeper examination of the result revealed that higher incidences of SUD are associated with being younger, less educated and having spent lesser years in matrimony. Bivariate analysis done through chi-square showed the existence of relationships/associations between SES of truckers and incidences of SUD. Three hypotheses were tested using three SES variables of age, literacy level (number of years of schooling) and marital status (number of years spent in marriage). For the ease of analytical processes, the truckers were (Table 2) categorized into 4 age groups (21-29; 30-39; 40-49; 50 and above). The frequency of the respondent's SUD incidences was then categorized under the four categories of: often, sometimes, rarely and never (Table 2). The result from the bivariate analysis showed that there is a significant relationship between the age of truckers and the incidences of SUD among them [ $\chi^2$  (9) 17.05,  $p=0.04$ ]. In other words, there are significant differentials in the instances of SUD among the different age groups among truckers.

The second SES variable whose influence on SUD was examined among truckers in the study was the literacy level or years of schooling the truckers had. The levels of literacy were categorized as none formal education, primary school leaving certificate (or 6 years of formal education), senior secondary school leaving certificate (or 12 years of formal education) and ordinary national diploma (or 14 years of formal education) (Table 2). Bivariate analysis (Table 2) showed that there is a significant relationship between SUD and different categories of literacy found among the truckers  $\chi^2$  (9) 41.36  $p=0.00$ . The

final SES variable whose influence on SUD was examined among the respondents was their marital status. For the purpose of the analysis, truckers' marital status was divided into four categories (Table 1). These are; single, married, divorced and widowed. The result from the statistical analysis revealed that the marital status of the respondents did not significantly influence the incidences of SUD among the respondents [ $\chi^2$  (9) 9.841  $p=0.36$ ].

The second objective of this research was to analyze the role which some SES independent variables (literacy level, marital status, working conditions and the attitudes of the respondents towards usage of stimulants) play in the compliance to safety consciousness/ability to obey health, safety and environment stipulations guiding the carriage of petroleum products by haulers. Logistic Regression Model (LRM) was used to test this hypothesis because of the identified advantages it holds over other regression analytical models. The Logistics Regression Model (LRM) is the best fit to examine the relationship between the dichotomous dependent variable (compliance to HSE stipulations guiding the conveyance of petroleum products) and the different independent explanatory variables (Age, Marital Status, Educational Status and Substance Use Disorder).

Some of the HSE stipulations guiding the conveyance of petroleum products which a trucker conveying petroleum products is expected to comply with are that petroleum products must be carried by tanks that are tested and certified by the FRSC [34]. Other stipulations include the fact that the net carrying capacity of a tank shall be between 97 and 98 percent of its gross carrying capacity. Others include the fact that tank vehicles meant for the carriage of petroleum in bulk are not expected to be used for any other purpose; also tank trailers shouldn't be attached to a tank semi-trailer or a trailer at anytime. Furthermore, a portable fire extinguisher (10 kg, dry chemical powder or equivalent) suitable for extinguishing petroleum fire must be borne in an easily accessible and detachable position and away from the discharge faucets on the truck. The driver of a fully loaded truck should not park it on a public road or in any congested area particularly when within 9 metres of any source of fire, neither a fully loaded truck should be driven in built-up zones during the daytime. Truckers or any other person attending to trucks at any time should not smoke (FGN) [34].

**Table 1. The Socio-economic characteristics of the respondents.**

Attributes	Total Number of Respondents	Male (%)	Female (%)
<b>Gender</b>	265	262 (98.86)	3 (1.14)
<b>Age</b>			
21-29	17 (6.41)	15 (82.35)	3 (17.64)
30-39	99 (37.35)	99 (100)	0 (0)
40-49	97 (36.60)	97(100)	0 (0)
50 and Above	52 (19.62)	52 (100)	0 (0)
<b>Marital Status</b>			
Single	61 (23.02)	58 (95.)	3 (5)
Married	167 (63.)	167(100)	0 (0)
Separated	30 (11.32)	11 (100)	0 (0)

(Table 1) cont....

Attributes	Total Number of Respondents	Male (%)	Female (%)
Widowed	7 (2.64)	7(100)	0(0)
<b>Educational Status</b>			
Non-formal Education	10 (3.77)	10 (100)	(0)
Primary School Leaving Certificate	48 (18.11)	48 (100)	0 (0)
Secondary School Leaving Certificate	185(69.81)	185 (69.81)	0 (0)
Ordinary National Diploma	22 (8.30)	22 (86.36)	3 (13.64)
<b>Years of Experience as Haulers</b>			
1-4 Years	45(17)	42 (97,30)	3 (6.70)
5-9 Years	84 (31.70)	84 (100)	0 (0)
10-14	61 (23.0)	61 (100)	0(0)
15-19	36 (13.6)	36 (100)	0(0)
20 and above	39 (14.70)	39 (100)	0 (0)
<b>Years Spent in the Employment of Present Employer</b>			
1-4 Years	25 (9.40)	22 (88.0)	3 (12.0)
5-9	50 (18.90)	100 (100)	0 (0)
10-14	135 (50.90)	135 (100)	0 (0)
15-19	49 (18.50)	49 (100)	0 (0)

Source: Author's Fieldwork, 2019.

**Table 2. The influence of SES (age, literacy level and marital status) on SUD among the Respondents (Truckers).**

Items	Survey					Significance
	Often	Sometimes	Rarely	Never		
Self-reported of SUD among Truckers	26.41	33.96	33.22	6.41	-	
Mean age of Truckers	38.9	40.65	43.95	44.17	$\chi^2(9) 17.05 P = 0.04$	
Mean years of Schooling	6.3	9.4	11.9	13.8	$\chi^2(9) 41.36 P = 0.00$	
Mean years in Marital union	7.9	16.3	11.23	12.4	$\chi^2(9) 9.841 P = 0.36$	

**Table 3. Model Summary.**

Step	-2 Log likelihood	Cox&Snell R Square	Nagelkerke R Square
1	87.651	.594	.833

**Table 4. Variables in the Equation.**

	B	S.E.	Wald	Df	Sig	Exp (B)
Age	-.068	.392	.030	1	.861	.934
Marital Status	-.2.764	.726	14.481	1	.000	.063
Education Status	-.2.375	.380	38.446	1	.000	1.95
SUD	-.958	.948	13.563	1	.000	.384
Constant	12.407	1.805	47.20	1	.000	24.4568.9

a. Variable(s) entered on step 1: Age, Marital Status, Education Status, SUD.

Table 3 represents the Model Summary. The Cox and Snell's R-Square which is like Multiple Regression R-Square attempt to measure the 'likelihood' relationship. This means that it seeks to explain the level of variation observed in the dependent variable (difference in compliance to HSE stipulations guiding the conveyance of petroleum products) as explained by independent variables in the logistic model. The Cox and Snell R Square value obtained here is 59.4%. It is observed that minimal attention is paid to Cox and Snell R square value because of the smallness of its value (usually less than 1.0, making it difficult to interpret). The Nagelkerke R<sup>2</sup>

modification that ranges from 0 to 1 provides a more reliable measure of the relationship. Nagelkerke's R<sup>2</sup> will normally be higher than the Cox and Snell measure. The table reading of Nagelkerke's R<sup>2</sup> is 0.833, which indicated a very strong relationship of 83.3% between the predictors and the predictio (Table 4).

The result of the logistic regression analysis was used to predict compliance to HSE stipulations guiding conveyance of petroleum products for 265 truckers using their age, marital status, educational status and attitude to SUD as predictors. A test of the full model against a constant only model (Appendix

Table 1) indicated that the predictor as a set reliably distinguished between those who complied with HSE stipulations and those who did not (Chi-Square = 238.081, P < .05 with df = 4). The prediction success overall (Appendix Table 2) was 93.3% (94.8% for compliance and 90% for non-compliance). The Wald criterion demonstrated that marital status ( $p=.000$ ), educational status ( $p=.000$ ) and attitude to SUD ( $p=.000$ ) all made significant contributions to the prediction while age ( $p=.861$ ) was not a significant predictor. Exp (B) values indicate that if for example, the educational status of respondents is increased by a unit (a new trucker with a higher level of literacy is added to the model) the odd ratio is 1.95 times (or approximately twice) large (for educational status to influence the model) and therefore truckers are more likely to comply with HSE (Appendix Table 2).

#### 4. DISCUSSION

Some salient facts are established in this study. First is the scientific evidence of a strong association between some SES variables and incidences of SUD among truckers. Findings from different studies also corroborated this [23, 25, 36] for example, Williamson [23] discovered that younger and less experienced truckers are most likely to engage in SUD in order to reduce the stress associated with their work schedules. Alcanlz *et al.* [36] found out that younger truckers who are males are more likely to engage in SUD. However, most studies did not consider the effects (if any) of SES variables of marital status and years of formal education received on attitudinal reaction to SUD. Findings from this study affirmed therefore that literacy is a key determinant of truckers' perception on SUD (Table 2). While some studies have established the existence of a strong association between some SES variables, pure economic factors (payment by results/quicker delivery time), Job Satisfaction Level (JSL), and SUD among truckers [23, 36, 37] the role played by a seemingly innocuous factor like numbers of years of schooling a trucker got has largely been overlooked. The study also showed that the marital status of truckers is not a significant factor that influences attitudinal disposition towards SUD (Table 2).

Another reality that this research brought to the fore is the possibility of predicting truckers compliance to HSE stipulations guiding the conveyance of petroleum products based on some of their SES variables and their attitudinal dispositions to SUD (Table 3). Perhaps explanatory research on a larger scale (regional or national) on the subject could reveal the existence of causality between the identified independent variables and compliance to HSE stipulations guiding the carriage of petroleum products among truckers. Already findings have shown that there are existences of causalities between economic factors (better pay packages) and compliance to HSE stipulations among truckers [23, 36, 37]. Results from this research further posited that among Nigerian truckers, critical SES variables which are not necessarily economic in nature have a strong influence on their compliance to HSE stipulations guiding conveyance of petroleum products. Result of the statistical analysis (Appendix Table 2) showed that marital status, educational status and attitude towards SUD, all significantly predicted compliance to HSE

stipulations guiding the conveyance of petroleum products. It was only age that did not significantly predict compliance to HSE stipulations guiding the conveyance of petroleum products in the metropolis.

The likelihood of the existence of interrelationships between SES variables of years of formal education received by truckers, marital statuses, the effect of such variables on their attitudinal disposition to SUD and the impact of the three on compliance to HSE rules guiding petroleum products conveyance as suggested by this study could help in future policy formulation on the discourse. Trucking organizations should be encouraged to recruit young drivers who are relatively more literate; findings from different researches strongly suggested the existence of an association between health literacy and reduction in the risk associated with SUD among adolescents [24, 38]. UNODC [24] particularly discovered that adolescents who have greater "academic competence" are less likely to be involved in SUD (Pg 15). While marital status was not a significant predictor of SUD among the respondents, it is observed that there is a general reduction in incidences of SUD as years spent in matrimony increase (Table 2). This result corroborated findings from other studies which suggested that marital status among drivers does not influence SUD and RTC outcomes [39 - 42].

#### CONCLUSION

This research undertook the filling of a critical gap in the body of extant literature by examining the relationships between key SES variables (age, educational status, and marital status) and their effects on attitudinal disposition towards SUD among truckers. The study also contributed by revealing that key SES variables and attitudinal disposition towards SUD significantly predicted compliance to HSE stipulations guiding the conveyance of petroleum products. Regardless of the important findings, this study has some limitations. An attempt was not made to adjust for the possibility of the existence of a collinear relationship among some of the multivariate factors in the model, particularly the likelihood of an existence of a collinear relationship between marital status, respondents' age and work conditions. Findings from some studies suggest the existence of a collinear relationship between work conditions and marital status among truckers [36, 37]. Another possible limitation could be in making a sweeping generalization based on findings from this study. The majority of the respondents who participated in the study are from the south-western part of Nigeria, there are therefore the possibilities of some peculiar cultural factors influencing their world views or beliefs as represented by their responses on issues surrounding SUD and compliances to HSE conditions guiding petroleum products conveyance in Ibadan metropolis.

Amongst other propositions on how to reduce the incidences of SUD among truckers, a 2016 World Health Organization report advocates a multifaceted approach which covers five essential areas of legislation, testing, enforcement, awareness-raising, counseling and treatment to address the malaise by different countries. According to the WHO [26], such an approach when sustained would bring much-desired change to the entire narratives of SUD among truckers and

considerably reduce the global incidences of RTC.

#### CONSENT FOR PUBLICATION

All patients participated on a voluntary basis and gave their informed consent.

#### AVAILABILITY OF DATA AND MATERIALS

Not applicable.

#### FUNDING

None.

**Appendix Table 1. Omnibus test of model coefficient.**

	Chi Square	Df	Sig
Step Step 1 Block Model	238.081	4	0.000
	238.081	4	0.000
	238.081	4	0.000

**Appendix Table 2. Classification Table<sup>a</sup>**

	Observed	Predicted		Percentage Correct	
		HSE			
		YES	NO		
Step 1 HSE	YES	168	11	94.8	
	NO	10	74	90.0	
Overall Percentage		-	-	93.3	

a. The cut value is .500

#### REFERENCES

- [1] J. Short, "Analysis of truck driver age demographics across two decades", *American Transportation Research Institute*, 2014.<http://atri-online.org/2014/12/03/analysis-of-truck-driver-age-demographics-across-two-decades/>
- [2] G. X. Chen, Y. Fang, F. Guo, and R. J. Hanowski, "The Influence of daily sleep patterns of commercial truck drivers on driving performance", *Accident Analysis & Prevention*, vol. 91, pp. 55-63, 2016. [\[http://dx.doi.org/10.1016/j.aap.2016.02.027\]](http://dx.doi.org/10.1016/j.aap.2016.02.027)
- [3] H.S. Bombana, H. Gjerde, M.F. Dos Santos, R.E.G. Jamt, M. Yonamine, W.J.C. Rohlf, D.R. Muñoz, and V. Leyton, "Prevalence of drugs in oral fluid from truck drivers in Brazilian highways", *Forensic Sci. Int.*, vol. 273, pp. 140-143, 2017. [\[http://dx.doi.org/10.1016/j.forsciint.2017.02.023\]](http://dx.doi.org/10.1016/j.forsciint.2017.02.023) [PMID: 28273545]
- [4] R. Greenfield, E. Busink, C.P. Wong, E. Riboli-Sasco, G. Greenfield, A. Majeed, J. Car, and P.A. Wark, "Truck drivers' perceptions on wearable devices and health promotion: a qualitative study", *BMC Public Health*, vol. 16, p. 677, 2016. [\[http://dx.doi.org/10.1186/s12889-016-3323-3\]](http://dx.doi.org/10.1186/s12889-016-3323-3) [PMID: 27475984]
- [5] M.S. Thiese, "Hanowski, R.J.,Kales, S., Porter, R.J., Moffitt, G., Hu, N. and Hegmann, K.T. "Multiple conditions increase preventable crash among truck drivers in cohort study", *J. Occup. Environ. Med.*, vol. 59, no. 2, pp. 205-211, 2017. [\[http://dx.doi.org/10.1097/JOM.0000000000000937\]](http://dx.doi.org/10.1097/JOM.0000000000000937) [PMID: 28079676]
- [6] S. Thomas, *Examining Sources of Driver Stress*. Transport Topic, vol. 2018, 2018.<https://www.ttnews.com/articles/examining-sources-driver-stress>
- [7] American Trucking Association, *Turnover rate at large truckload carriers rises in first quarter; Accelerating churn rate indicates continued tightness in driver's market.*, 2018.<https://www.truckload.org>
- [8] A.H. Taylor, and L. Dorn, "Stress, fatigue, health, and risk of road traffic accidents among professional drivers: the contribution of physical inactivity", *Annu. Rev. Public Health*, vol. 27, pp. 371-391, 2006. [\[http://dx.doi.org/10.1146/annurev.publhealth.27.021405.102117\]](http://dx.doi.org/10.1146/annurev.publhealth.27.021405.102117) [PMID: 16533122]
- [9] M. Shattell, "Apostolopoulos, Y. Collins, C. Sonmez, S. and Fehrenbacher, C. "Trucking Organization and Mental Health Disorders of Truck Drivers", *Issues in Mental Health Nursing*, vol. 33, pp. 436-444, 2012.
- [10] Marsh & McLennan Agency, *On The Road: Truck Driving Present Unique Ergonomics Challenges*, Marsh & McLennan Agency LLC, 2017.<https://www.marshmma.com/blog/truck-driving-and-ergonomic-challenges>
- [11] K. Sieber, *Long-haul truck drivers health survey.*, NIOSH Science Blog, 2015.<https://blogs.cdc.gov>
- [12] S. Murphy, and Z. Leach David , *The extent to which heavy goods vehicle driver training is focused on reducing the causal factors of driver stress and fatigue*. In: *LRN Annual Conference and PhD Workshop 2013, 4th-6th September 2013, Birmingham, UK*, 2013.
- [13] A. Behnood, and F.L. Mannering, "The effects of drug and alcohol consumption on driver-injury severities in single-vehicle crashes", *Traffic Inj. Prev.*, p. 28, 2016. [PMID: 27893281]
- [14] S. Newman, and B. Watson, "A participative education program to reduce speeding in a group of work-related drivers", *Policing and Education Conference: Smarter, Safer Directions*, , 2009
- [15] L. Bates, J. Watson Davey, J. King, and K. Armstrong, "Factors contributing to crashes among young drivers", *Sultan qaboos univ med. journal*, vol. 14, no. 3, pp. e297-305, 2014.
- [16] W. Van den Berghe, The association between road safety and Socioeconomic Situation (SES). *An international literature review*, Brussels, Belgium: Vias institute – Knowledge Centre Road Safety, 2017.
- [17] P. Cairney, V. Pyta, T. Thoresen, J. Catchpole, S. Van Dam, and A. Baruah, *Safety of Disadvantaged Road Users*, Sydney, 2016.
- [18] N. Christie, H. Ward, R. Kimberlee, E. M. L. Towner, and J. Sleney, "Understanding high traffic injury risks for children in low socioeconomic areas: a qualitative study of parents' views", *Injury Prevention*, vol. 13, no. 6, pp. 394-397.

- [19] [http://dx.doi.org/10.1136/ip.2007.016659]  
J. Hosking, S. Ameratunga, D. Exeter, and J. Stewart, "Social and geographical differences in road traffic injury in the Auckland region", *Auckland Transport*, 2013.https://at.govt.nz/media/imported/4468/social-geographical-differences-report-2013.pdf
- [20] S. Burrows, N. Auger, P. Gamache, and D. Hamel, "Individual and area socioeconomic inequalities in cause-specific unintentional injury mortality: 11-year follow-up study of 2.7 million Canadians", *Accid. Anal. Prev.*, vol. 45, pp. 99-106, 2012.  
[http://dx.doi.org/10.1016/j.aap.2011.11.010] [PMID: 22269490]
- [21] A.P. Ajayi, Assessment of the Influence of Lagos Bus Rapid Transit Scheme (BRT-Lite) on Road Traffic Crashes (RTC) on Lagos Mainland-Island Corridor *The Open Transp J*, vol. 11. 2017, pp. 3-8.  
[http://dx.doi.org/10.2174/18744478017110102]
- [22] S.A. Useche, "Serge, A. Alonso, A. and Esteban, C. "Alcohol consumption, smoking, job stress and road safety in professional drivers", *J. Addict. Res. Ther.*, 2017.  
[http://dx.doi.org/10.4172/2155-6105.1000321]
- [23] A. Williamson, "Predictors of psychostimulant use by long-distance truck drivers", *American Journal of Epidemiology*, vol. 166, no. 11, 2007.  
[http://dx.doi.org/10.1093/aje/kwm205]
- [24] United Nations Office on Drugs and Crime, *Cannabis: A short review*, 2012.https://www.unodc.org
- [25] E Giroto, Mesas AE, de Andrade SM, Birolim M.M, "Psychoactive substance use by truck drivers: a systematic review", *Occup Environ Med*, vol. 71, pp. 71-76, 2014.
- [26] World Health Organization, *Drug use and road safety: a policy brief*, Geneva, Switzerland, 2016.
- [27] G. A. Churchill, "A paradigm for developing better measures of Marketing Constructs", *J Mark Res*, vol. 16, pp. 64-73, 1979.
- [28] T.L. Bunn, L. Yu, S. Slavova, and A. Bathke, "The effects of semi truck driver age and gender and the presence of passengers on collisions with other vehicles", *Traffic Inj. Prev.*, vol. 10, no. 3, pp. 266-272, 2009.  
[http://dx.doi.org/10.1080/1538958090285762] [PMID: 19452368]
- [29] T. Hsu, *Numbers of female truckers slides as women face industry hurdles*, 2016.https://www.trucks.com
- [30] J. Black, Voie, E. Maurer, M. Palakeel, J. and Chacon, W., "Truck cab design: Perceptions of women truck drivers", *Journal of Traffic and Transportation Engineering*, vol. 5, pp. 44-54, 2017.  
[http://dx.doi.org/10.17265/2328-2142/2017.01.005.]
- [31] L. Dablanc, "Goods transport in large European cities: Difficult to organize, difficult to modernize", *Transportation Research Part A: Policy and Practice*, vol. 41, no. 3, pp. 280-285, 2007.  
[http://dx.doi.org/10.1016/j.tra.2006.05.005]
- [32] A.P. Ajayi, "Analytical study of supply chain collaboration guiding forestry products supply in a developing economy", *Int. J. Business Performance and Supply Chain Modeling*, vol. 8, no. 4, 2016.
- [33] K. Hamad, "Road traffic accidents trends in Sharjah, United Arab Emirates during 2001-2014", *Int. J. Veh. Saf.*, vol. 9, no. 1, pp. 24-38, 2016.  
[http://dx.doi.org/10.1504/IJVS.2016.077151]
- [34] *Official gazette on Federal Road Safety Commission and National Road Traffic Regulation*, 2012.https://frsc.gov.ng/NATROADTRAFFICREGS2012.pdf
- [35] *Large truck and bus crash facts*, 2016.https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/safety/data-and-statistics/398686/lbfc-2016-final-508c-may-2018.pdf
- [36] M. Alcañiz, M. Guillen, and M. Santolino, "Prevalence of drug use among drivers based on mandatory, random tests in a roadside survey", *PLoS One*, vol. 13, no. 6, 2018.e0199302  
[http://dx.doi.org/10.1371/journal.pone.0199302] [PMID: 29920542]
- [37] C. Jiang, "Lu, L. & John, J. "Socioeconomic factors affecting the job satisfaction levels of self-employed container truck drivers: a case study from Shanghai Port", *Marit. Policy Manage.*, vol. 44, no. 5, pp. 641-656, 2017.  
[http://dx.doi.org/10.1080/0308839.2017.1326182]
- [38] D. J. Chisolm, Manganello, J.A., Kelleher, K.J. and Marshall, M.P, "Health literacy, alcohol experiences, and alcohol use behaviors in teens", *Patient Educ. Counseling*, vol. 97, no. 2, pp. 291-296, 2014.  
[http://dx.doi.org/10.1016/j.pec.2014.07.019.]
- [39] L Morrison, DJ Begg, and JD Langley, "Personal and situational influences on drink driving and sober driving among a cohort of young adult", *Injury Prevention*, vol. 8, pp. 111-5, 2002.  
[http://dx.doi.org/10.1136/ip.8.2.111]
- [40] D.M. Fergusson, and J.M. Boden, "Cannabis use and later life outcomes", *Addiction*, vol. 103, no. 6, pp. 969-976, 2008.  
[http://dx.doi.org/10.1111/j.1360-0443.2008.02221.x] [PMID: 18482420]
- [41] L. Lander, J. Howsare, and M. Byrne, "The Impact of Substance Use Disorders on Families and Children: From Theory to Practice", *Soc Work Public Health*, vol. 28, no. 0, pp. 194-205, 2013.  
[http://dx.doi.org/10.1080/19371918.2013.759005]
- [42] BH Ramos, MFC Almeida, de, JA Ribeiro, and C Silveira, "Life, work and health conditions of cargo transportation drivers", *J Nurs UFPE on line, Recife*, vol. 12, no. 1, pp. 150-9, 2018.  
[http://dx.doi.org/https://doi.org/10.5205/1981-8963-v12i01a22922]

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