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Socioeconomic Profiles of Drivers of Heavy-Duty Vehicles and Self-Reported Causes of Road Traffic Crashes in Southwestern Nigeria

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ABSTRACT

Heavy-duty vehicle (HDV) crashes, particularly those involving tankers and trailers, present severe safety challenges in Nigeria due to the combination of human, vehicular, and infrastructural risk factors. This study investigates the socioeconomic and demographic characteristics of HDV drivers in Southwestern Nigeria and examines their perceptions of factors contributing to road traffic crashes. Using a descriptive survey design, data were collected from 200 licensed tanker and trailer drivers across major haulage corridors through structured questionnaires. Descriptive statistics, Relative Importance Index (RII), and Analysis of Variance (ANOVA) were employed to analyze the data. Findings revealed an entirely male driver population, predominantly aged 31–60 years, with substantial driving experience (over 70% having more than 10 years). Most operated company-owned (44%) or privately owned (53.5%) vehicles, the majority of which were termed 'fairly used' (68%). Poor road conditions (RII = 0.87), long driving hours and fatigue (RII = 0.86), and mechanical faults (RII = 0.85) emerged as the most critical perceived causes of crashes, followed by employer time pressure, substance use, and lack of rest facilities. ANOVA results indicated significant differences in accident involvement across age groups ($p = 0.005$) and driving experience levels ($p = 0.009$), with younger and less experienced drivers reporting higher accident rates. The findings underscore the need for targeted

driver training, stricter enforcement of rest regulations, improved road infrastructure, and fleet maintenance standards. These insights are vital for policymakers and transport stakeholders seeking to reduce HDV-related crash risks in Nigeria's freight sector.

Keywords: Heavy-Duty Vehicles; Crashes; Socioeconomic Factors; Nigeria; Relative Importance Index; ANOVA

1. Introduction

The movement of goods in Nigeria—particularly petroleum products and bulk commodities—relies heavily on road transportation, with tankers and trailers serving as the primary mode of long-distance haulage [1,2]. This reliance has intensified over the past few decades, largely due to the decline of the railway system and persistent insecurity along oil pipelines, which have compelled petroleum marketers and other distributors to shift their operations to the road network [3]. Although this transition has been economically significant, it has also increased both the frequency and severity of road traffic accidents involving heavy-duty vehicles (HDVs) [4]. Socioeconomic and demographic characteristics of drivers—such as age, marital status, educational attainment, income level, and driving experience—have been widely identified as key determinants of driving behaviour and road safety outcomes [5,6]. In low- and middle-income countries, where the enforcement of traffic and safety regulations is often weak, these human factors play a particularly important role in influencing accident occurrence [7]. For instance, drivers with limited formal education may have inadequate knowledge of road signs and safety regulations, while those facing economic pressures may engage in prolonged driving hours to maximise earnings, thereby increasing the risk of fatigue-related crashes [8].

In Nigeria, HDV drivers frequently operate under strenuous conditions, including extended driving hours, insufficient rest periods, poor vehicle maintenance, and deteriorating road infrastructure [9]. A significant proportion of these drivers rely on imported used vehicles—popularly referred to as Tokunbo in Nigeria—whose mechanical conditions are often uncertain, further increasing accident risk [10]. These challenges are exacerbated by the inadequate provision of rest areas along major transport corridors, resulting in chronic driver fatigue and reduced reaction times [4].

Existing studies in Nigeria have largely examined road traffic crashes as a general phenomenon, with limited disaggregation by vehicle type [11]. However, HDVs differ substantially from passenger vehicles in terms of size, manoeuvrability, and stopping distance, indicating that the human, vehicular, and environmental factors associated with crashes involving these vehicles warrant independent and disaggregated investigation [12]. Moreover, crashes involving HDVs often have catastrophic consequences, including multi-vehicle collisions, fuel explosions, and prolonged traffic disruptions. Consequently, the socioeconomic and demographic characteristics of HDV drivers deserve closer scrutiny [13].

Understanding these characteristics is essential not only for academic inquiry but also for effective policy formulation. By establishing links between driver attributes and safety outcomes, targeted interventions—such as specialised training programmes, improved welfare conditions, and strengthened regulatory frameworks—can be developed to mitigate accident risks. Accordingly, this study examines the socioeconomic and demographic profiles of HDV drivers in Southwestern Nigeria to identify how these factors may contribute to the region's high incidence of heavy-duty vehicle crashes.

This study is organised into six sections. The next section presents the materials and methods. Sections three and four discuss the results and their interpretation, while sections five and six address the study limitations and conclusions, respectively.

2. Materials and Methods

The study was conducted in Southwestern Nigeria, comprising Lagos, Ogun, Oyo, Osun, and Ondo States. This region was selected because of its high concentration of tanker and trailer traffic, as it contains critical transport corridors such as the Lagos–Ibadan Expressway, the Lagos–Sagamu–Ore Highway, and the Ibadan–Akure Road. These routes function as major arteries for the distribution of petroleum products and other bulk commodities from coastal ports—particularly Apapa Wharf in Lagos—to inland cities and neighbouring states (**Figure 1**).

A descriptive survey research design was adopted to

collect and analyze quantitative data on the socioeconomic and demographic characteristics of tanker and trailer drivers in Southwestern Nigeria. This design was considered appropriate because it enables the systematic collection of standardized data from a representative sample and supports statistical analysis for identifying patterns, trends, and relationships among variables [14]. The target population comprised licensed tanker and trailer drivers operating along major haulage corridors in Southwestern Nigeria (**Figure 2**). This population included drivers affiliated with registered transport companies, independent owner-operators, and members of drivers' unions operating from both official and unofficial truck parks located along major highways.

A total of 200 respondents were selected, representing approximately 10% of the estimated driver population within the study area. The sample size was determined using Yamane's [15] formula for finite populations, based on a 95% confidence level and a 5% margin of error. Although alternative non-parametric techniques were initially considered due to potential non-normality of the data, the presence of relatively small sample sizes within some driver subgroups posed challenges for comparative analysis. Consequently, the study adopted repeated-measures Analysis of Variance (ANOVA) to assess differences across related groups.

A multi-stage sampling technique was employed to select respondents. First, five states with the highest concentration of tanker and trailer activities in Southwestern Nigeria were purposively selected. Second, major truck parks were identified along key transport routes within the study area. Third, systematic random sampling was used to select drivers within each identified truck park, ensuring proportionate representation across different routes and operating companies.

A structured questionnaire was administered to the selected respondents in the study area (**Table 1**). The questionnaire comprised three sections: (i) socio-demographic characteristics (age, gender, marital status, education, and ethnicity); (ii) employment and income characteristics (years of driving experience, vehicle ownership, monthly income, and working hours); and (iii) work conditions and safety practices (rest breaks, substance use, awareness of traffic laws, and accident history). Data collection was conducted over a six-week period. Trained research assistants administered the questionnaires to drivers during rest periods at selected truck parks to minimize work disruption. The study method was in accordance with the Declaration of Helsinki. The Research Ethics and Postgraduate Committee of the Department of Geography, Obafemi Awolowo University, Ile-Ife, Nigeria waived the need for ethical approval for this study. However, Verbal informed consent was obtained from all participants, and anonymity was assured.
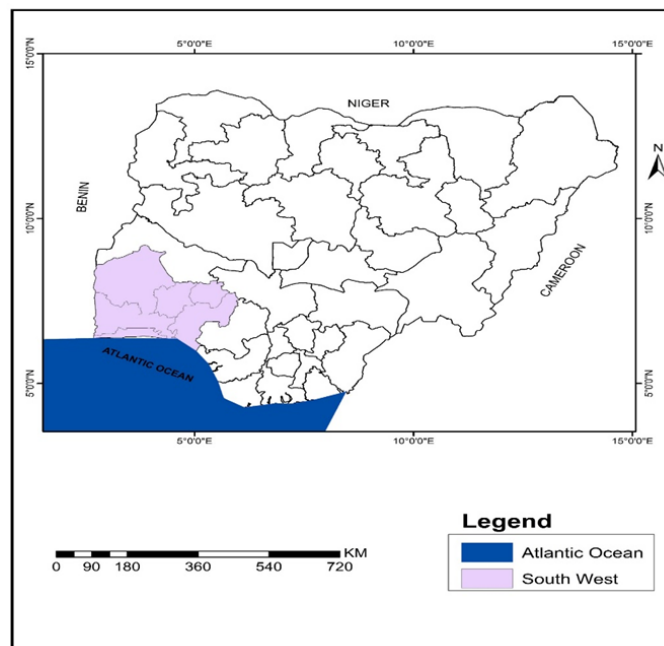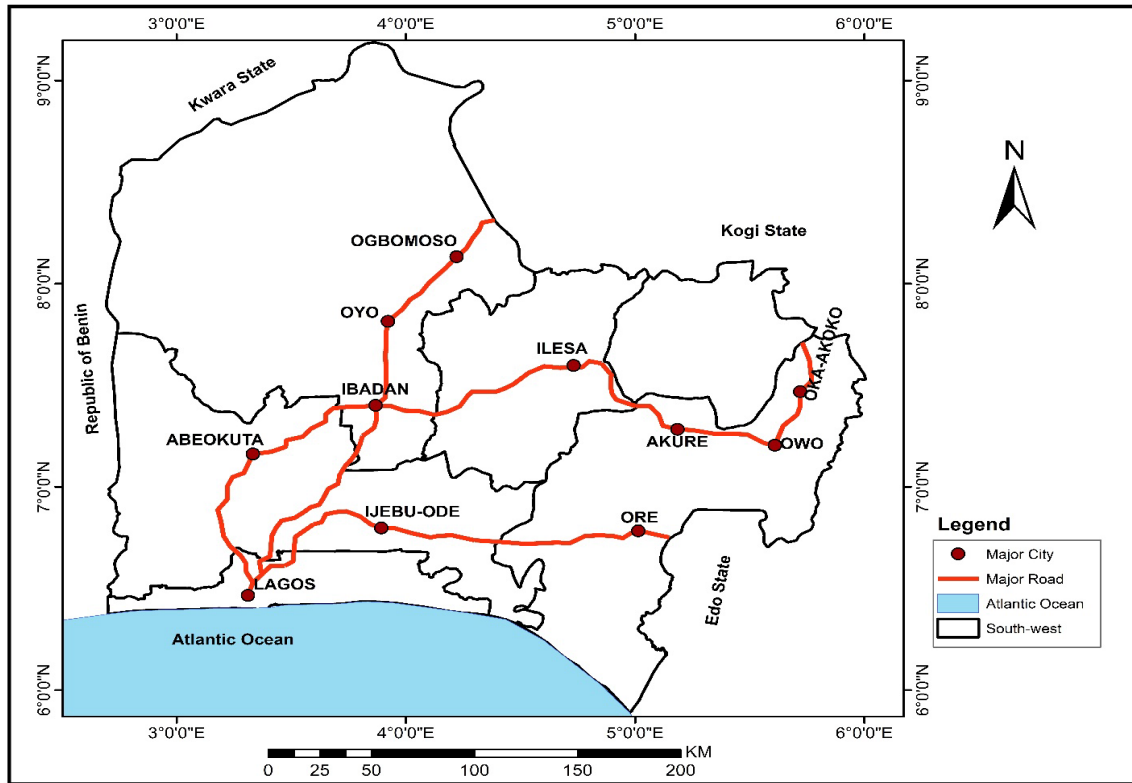

Figure 1. Study Area.

Figure 2. Study routes.

Table 1. Selected sample included in the survey.

S/N	Identified Tankers' Routes in the Study Area	Number of Identified Legal Tankers and Trailers Parks in Each Route	Estimated Number of Tankers and Trailer Drivers in Each Park	Questionnaire Sample Size to Tankers and Trailers Drivers in Each Park
1	Lagos-Ibadan	1	600	60
2	Lagos-Sagamu-Ore	6	450	45
3	Lagos-Otta-Abeokuta	1	200	20
4	Ibadan-Oyo-Ogbomoso	2	200	20
5	Ibadan-Ilesa-Akure	5	450	45
6	Akure-Owo-Oka-Akoko	1	98	10
Total		16	1998	200

Collected data were coded and entered into SPSS version 25 for analysis. Descriptive statistics, including frequencies, percentages, and means, were used to summarize respondents' characteristics. The Relative Importance Index (RII) was employed to rank factors influencing unsafe driving practices. Repeated-measures Analysis of Variance (ANOVA) was used to test for statistically significant differences in safety practices and accident history across demographic categories such as age, educational level, and years of driving experience.

3. Results

The driver population is entirely male, reflecting a broader trend in heavy vehicle and long-haul trucking, which is predominantly male in many countries. Studies indicate that males statistically engage in riskier driving behaviours than females [7], increasing the likelihood of crashes. A male-only workforce may also foster a competitive or risk-normalizing workplace culture, which can reinforce unsafe driving habits.

In terms of age distribution, nearly half of the drivers

(47.5%) are aged 31–45 years, representing a physically active and economically productive group. Drivers aged 46–60 years constitute 36.5% of the population, while those aged 30 years or younger are relatively few. Notably, 9.5% of drivers are over 60 years, likely occupying senior or late-stage driving roles.

Drivers in the 31–45 age group face high exposure due to heavy work demands, with crash risk often associated with fatigue, time pressure, and workload stress. The 46–60 age group remains active, though slower reaction times and emerging health conditions may begin to influence driving safety. Drivers over 60 years are at increased risk of medical emergencies while driving, experience slower decision-making, and may have reduced night vision—factors particularly critical for the safe operation of heavy goods vehicles (See **Table 2**).

Table 2. Socio-demographic characteristics of the Tanker and Trailer Drivers.

Variable	Frequency	Percentage
Sex:		
Male	200	100
Female	0	0
Total	200	100
Age:		
≤30 Years	13	6.5
31 to 45 Years	95	47.5
46 to 60 Years	73	36.5
Over 60 Years	19	9.5
Total	200	100
Nationality:		
Nigerians	200	100
Non-Nigerians	0	0
Total	200	100
Experienced Year of Driving:		
<1 Year	1	0.5
1–5 Years	23	11.5
6–10 Years	43	21.5
11–15 Years	65	32.5
16–20 Years	51	25.5
Above 20 Years	17	8.5
Total	200	100
Ownership:		
Self	5	2.5
Company	88	44
Private individual	107	53.5
Total	200	100
Status of Vehicles When Purchased/Acquired:		
New	64	32
Fairly Used	136	68
Total	200	100
Types of Goods Transited:		
Fuel	83	41.5
Agricultural products	3	1.5
Solid Minerals	63	31.5
Consumable goods	51	25.5
Total	200	100

The majority of drivers possess substantial driving experience, with the largest proportion having 11–15 years of experience (32.5%), followed by 16–20 years (25.5%) and 6–10 years (21.5%). Only a small fraction (0.5%) has less than one year of experience. This indicates a workforce dominated by seasoned drivers, which may positively influence safety practices, route familiarity, and operational efficiency.

In terms of vehicle ownership, over half of the vehicles (53.5%) are owned by private individuals, 44% are company-owned, and a small fraction (2.5%) are owned by the drivers themselves. This distribution suggests that most drivers operate vehicles owned by others, particularly private owners or corporate fleets, which could affect maintenance responsibilities and operational policies. A significant majority of vehicles (68%) were acquired as fairly used, while only 32% were purchased new. This reliance on second-hand vehicles has implications for maintenance costs, mechanical reliability, and overall safety.

Regarding cargo types, fuel accounts for the largest share (41.5%), followed by solid minerals (31.5%) and consumable goods (25.5%), with agricultural products representing only a small fraction (1.5%). The dominance of fuel and solid minerals indicates a transport sector heavily engaged in hazardous and high-value goods, where safety, vehicle roadworthiness, and regulatory compliance are particularly critical (**Table 3**).

Table 3. Ranked Factors Affecting Driving Safety.

Factor	RII	Rank
Poor road conditions	0.87	1
Long driving hours/fatigue	0.86	2
Mechanical faults in vehicles	0.85	3
Pressure from employers to meet deadlines	0.84	4
Substance use	0.82	5
Lack of adequate rest facilities	0.81	6

Analysis using the Relative Importance Index (RII) revealed that all identified factors were considered highly significant by respondents, with RII values exceeding 0.80. Poor road conditions emerged as the most critical factor (RII = 0.87), highlighting the substantial impact of inadequate infrastructure on operational safety and efficiency. This was closely followed by long driving hours and associated fatigue (RII = 0.86), reflecting the physical strain and diminished alertness experienced by drivers. Mechanical faults in vehicles (RII = 0.85) ranked third, underscoring the risks posed by aging or poorly maintained fleets, especially considering that most vehicles were acquired as used. Pressure from employers to meet tight deadlines (RII = 0.84) further compounds these challenges, suggesting that organizational demands may inadvertently compromise safety. Substance use (RII = 0.82) was also a notable concern, although less influential than infrastructural and operational pressures. Finally, the lack of adequate rest facilities, while ranking lowest (RII = 0.81), remains significant, as it may exacerbate driver fatigue and reduce recovery time.

Collectively, these findings indicate that a combination of infrastructure deficiencies, operational demands, vehicle maintenance issues, and human factors interact to shape the risk environment for heavy-duty vehicle operations in Southwestern Nigeria.

Further, ANOVA results revealed significant differences in accident involvement across age groups (F = 4.37, p = 0.005) and years of driving experience (F = 3.91, p = 0.009). Younger drivers (<40 years) and those with less than 10 years' experience reported higher accident frequencies, indicating the potential need for targeted training for less experienced drivers.

4. Discussion

The study examined the influence of socioeconomic attributes on heavy-duty vehicle (HDV) drivers and the incidence of road traffic crashes in selected locations in Nigeria. The findings revealed that all respondents were male, consistent with existing literature showing that heavy-duty trucking in Nigeria and globally is male-dom-

inated due to the physical demands, long-distance travel, and cultural norms associated with driving occupations [4,16]. While gender alone may not directly predict crash risk, previous research indicates that male drivers, particularly in commercial transport, are more likely to engage in risk-taking behaviours such as speeding and aggressive driving [7].

The concentration of drivers within the 31–60 years age range suggests a predominance of individuals in their peak working years with substantial industry experience. However, ANOVA results indicated that younger drivers (<40 years) reported higher accident involvement than their older counterparts. This aligns with findings by Evans [5] and Delavary et al. [8], who noted that younger drivers are more prone to high-risk driving due to lower risk perception and less mature decision-making, particularly in complex driving situations. It also corresponds with research suggesting that adolescents' socioemotional reward systems mature more rapidly than their cognitive control systems, resulting in heightened sensitivity to peer influence and sensation-seeking behaviours [17].

The relatively high educational attainment of drivers (68% with secondary education or higher) is noteworthy, as it implies basic literacy and numeracy that could enhance comprehension of safety training. Yet, as Di Stasi et al. [6] argue, knowledge alone does not guarantee safe driving, as economic and operational pressures may override safety considerations. Most drivers (44%) operated company-owned vehicles, indicating limited control over vehicle maintenance schedules. Studies by Akinyemi [10] and Adeleke et al. [11] have shown that drivers of company-owned fleets often face pressure to meet tight delivery deadlines, leading to violations of rest regulations and unsafe driving speeds.

The average monthly income of ₦58,050, with more than four-fifths earning below ₦70,000, indicates modest earnings relative to the costs of living and occupational hazards. Low wages can incentivize drivers to undertake longer trips with insufficient rest to maximize earnings, a behaviour strongly associated with fatigue-related crashes [14,15]. Global reviews similarly confirm that low remuneration and high work demands remain critical contributors to unsafe driving behaviours among commercial drivers [18]. The study further found that 84% of drivers worked more than the standard eight hours per day, with 25% exceeding 12 h. Extended driving hours have been extensively documented as a major cause of fatigue, impaired judgment, and slower reaction times [14,16]. Additionally, more than half of respondents (55.5%) reported not taking regular rest breaks, exacerbating these risks.

Substance use while driving was reported by 31% of drivers, including alcohol and stimulants. This aligns with previous findings showing significant correlations between psychoactive substance use and crash involvement among Nigerian commercial drivers [17,19,20]. Such practices, often intended to maintain alertness on long trips, introduce impairments that increase accident risk.

Analysis using the Relative Importance Index (RII) revealed that poor road conditions ranked highest (RII = 0.87) among factors affecting safety, consistent with spatial analyses linking deteriorating roads in Nigeria to higher accident concentrations [11]. Fatigue (RII = 0.86) and mechanical faults (RII = 0.85) were also identified as critical contributors, highlighting the multifactorial nature of crash causation [21–23]. The high prevalence of "Tokunbo" (used) vehicles in Nigerian trucking fleets further increases susceptibility to brake failures, tire bursts, and other mechanical issues [9,24,25].

5. Limitations and Directions for Future Research

Although this study provided a clear understanding of the socioeconomic profiles of heavy-duty vehicle drivers and the self-reported factors contributing to road traffic crashes in Southwestern Nigeria, several limitations should be acknowledged. First, the study was constrained by limited resources, which restricted the study area and sample size, thereby limiting the ability to achieve detailed, nationally representative data on how drivers' socioeconomic characteristics influence crash involvement. Second, the study did not include non-park-utilizing drivers, who may possess distinct socioeconomic characteristics that could influence crash outcomes differently. Consequently, the findings may not fully capture the diversity of heavy-duty vehicle drivers across the region. Third, several key variables—such as accident history, working hours, and substance use—were self-reported, making them susceptible

to social desirability bias and recall errors. This introduces potential constraints on data validity and may affect the accuracy of the findings.

Future research should consider expanding coverage to other geopolitical zones in Nigeria and include both park-utilizing and non-park-utilizing drivers to examine potential variations in crash involvement across geographical locations. Employing a mixed-methods approach to data collection and analysis could also provide more robust and balanced insights into the relationship between drivers' socioeconomic characteristics and road traffic crash outcomes.

6. Conclusions

This study demonstrates that heavy-duty vehicle (HDV) crashes in Southwestern Nigeria are influenced by a complex interplay of socioeconomic, demographic, vehicular, and infrastructural factors. The driver population is entirely male, predominantly aged 31–60 years, and largely experienced; however, younger and less experienced drivers report higher accident involvement. Poor road conditions, long working hours, fatigue, and mechanical faults were identified as the most critical perceived causes of crashes, further compounded by employer-imposed time pressures, substance use, and inadequate rest facilities. The high prevalence of foreign used ("Tokunbo") vehicles increases mechanical risks, while low earnings and extended working hours exacerbate fatigue-related hazards.

The findings underscore that improving HDV safety requires a multifaceted strategy, including targeted training for younger and less experienced drivers, stricter enforcement of rest regulations, enhanced remuneration and working conditions, investment in road infrastructure, and adherence to robust vehicle maintenance standards. Coordinated policy interventions and effective enforcement of safety regulations are essential to mitigate crash risks and enhance safety outcomes in Nigeria's freight transport sector.

Author Contributions

Conceptualization, O.F. and S.A.A.; methodology, O.F. and O.M.O.; validation, O.F., S.A.A. and O.M.O.; formal analysis, O.M.O.; investigation, O.F.; data curation, O.F.; writing—original draft preparation, O.M.O.; writing—review and editing, O.M.O. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement

The study method was in accordance with the Declaration of Helsinki. The Research Ethics and Postgraduate Committee of the Department of Geography, Obafemi Awolowo University, Ile-Ife, Nigeria waived the need for ethical approval for this study.

Informed Consent Statement

Informed consent was obtained from all participants involved in the study.

Data Availability Statement

Data will be provided subject to request.

Conflicts of Interest

The authors declare no conflict of interest.

References

[1] Umar, I.K., Bashir, S., Gora, A.M., 2017. Road Traffic Accident in Kano Nigeria: A Case Study of Kano Metropolitan. Scholars Journal of Engineering and Technology. 5(12), 691–697.

[2] Adepoju, O.O., 2024. Analysis of Constraints Against Efficiency of Seaport-Hinterland Logistics in Nigeria. Periodica Polytechnica Transportation Engineering. 52(2), 199–208.

[3] Bakare, H., Ayoola, P., Ogundari, I., et al., 2020. Dynamics of Road Mishaps Involving Petroleum Products Vehicles in Southwestern Nigeria. African Journal of Science Policy and Innovation Management. 1(2), 50–60.

[4] Muritala, A.O., Eno, P.T., Adeniji, T.A., 2022. Health

Implications of Long Driving Hours on Truck Drivers in Apapa Seaport, Lagos, Nigeria. International Journal of Advances in Engineering and Management (IJAEM). 4(6), 106–112.

[5] Evans, L., 2004. Traffic Safety. Science Serving Society: Bloomfield Hills, MI, USA.

[6] Di Stasi, L.L., Diaz-Piedra, C., Morales, J.M., et al., 2020. A Cross-Cultural Comparison of Visual Search Strategies and Response Times in Road Hazard Perception Testing. Accident Analysis and Prevention. 148, 105785.

[7] World Health Organization, 2018. Global Status Report on Road Safety 2018. World Health Organization: Geneva, Switzerland.

[8] Delavary, M., Mesic, A., Krebs, E., et al., 2024. Assessing the Effect of Automated Speed Enforcement and Comprehensive Measures on Road Safety in Rwanda. Traffic Injury Prevention. 25(7), 947–955.

[9] Federal Road Safety Corps, 2020. FRSC 2020 Annual Report. FRSC Headquarters: Abuja, Nigeria. Available from: https://frsc.gov.ng/wp-content/uploads/2022/11/2020-ANNUAL-REPORT-COMPLETE-WORK3_compressed.pdf

[10] Akinyemi, Y., 2020. Relationship between Economic Development and Road Traffic Crashes and Casualties: Empirical Evidence From Nigeria. Transportation Research Procedia. 48, 218–232. DOI: https://doi.org/10.1016/j.trpro.2020.08.017

[11] Adeleke, R., Osayomi, T., Iyanda, A.E., 2020. Geographical Patterns and Effects of Human and Mechanical Factors on Road Traffic Crashes in Nigeria. International Journal of Injury Control and Safety Promotion. 28(1), 3–15. DOI: https://doi.org/10.1080/17457300.2020.1823996

[12] Umar, I.K., Bashır, S., 2020. Investigation of the Factors Contributing to Truck Driver's Involvement in an Injury Accident. Pamukkale Üniversitesi Mühendislik Bilimleri Dergisi. 26(3), 402–408. DOI: https://doi.org/10.5505/pajes.2019.65391

[13] Doecke, S.D., Elsegood, M.E., Thompson, J.P., et al., 2024. Preventing and Mitigating Truck Crashes: Results from 100 in-Depth No-Blame Truck Crash. The University of Adelaide: Adelaide, Australia.

[14] Creswell, J.W., Creswell, J.D., 2018. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th ed. SAGE Publications: Thousand Oaks, CA, USA.

[15] Yamane, Y., 1967. Statistics: An Introductory Analysis, 2nd ed. Harper and Row: New York, NY, USA.

[16] Scott, A., Davis-Sramek, B., 2023. Driving in a Man's World: Examining Gender Disparity in the Trucking Industry. International Journal of Physical Distribution & Logistics Management. 53(3), 330–353. DOI: https://doi.org/10.1108/IJPDLM-03-2022-0073

[17] Li, X., Liu, X., Dai, T., 2022. The Relationship between Trait Anxiety and Adolescent Risk-Taking Behavior: The Influencing Mechanism Based on the Dual-Systems Model. Studies in Psychology and Behavior. 20(4), 529–535.

[18] Amoadu, M., Sarfo, J.O., Ansah, E.W., 2024. Working Conditions of Commercial Drivers: A Scoping Review of Psychosocial Work Factors, Health Outcomes, and Interventions. BMC Public Health. 24(1), 2944. DOI: https://doi.org/10.1186/s12889-024-20465-1

[19] Ajayi, A.P., Mazinyo, S.P., 2020. Socio-Economic Situation and Substance Use Disorder Influences on Safety Practices Among Truckers. The Open Transportation Journal. 14(1). DOI: https://doi.org/10.2174/1874447802014010078

[20] Obadeji, A., Kumolalo, B.F., Ajiboye, A.S., et al., 2021. Substance Use Among Commercial Motorcyclists and Its Relationship with Life Satisfaction and Significant Depressive Symptoms. Journal of Substance Use. 26(2), 177–183. DOI: https://doi.org/10.1080/14659891.2020.1800844

[21] Rad, E.H., Hosseinnia, M., Mousavi, N., et al., 2024. Fatigue in Taxi Drivers and Its Relationship with Traffic Accident History and Experiences: A Cross-Sectional Study in the North of Iran. BMC Public Health. 24(1), 530. DOI: https://doi.org/10.1186/s12889-024-18044-5

[22] BaHammam, A.S., Hunasikatti, M., Pandi-Perumal, S.R., 2024. Traffic Safety in Sleep Deprivation, Sleepiness, and Sleep Disorders. In: BaHammam, A.S., Hunasikatti, M. (Eds.). Sleep Apnea Frontiers: Pathophysiology, Diagnosis, and Treatment Strategies. Springer Nature: Singapore. pp. 161–179.

[23] Dada, M.U., Adeoti, A.O., Elebiyo, T., et al., 2021. Pattern of psychoactive substances use among Long-Distance Truck Drivers in Nigeria. Asian Journal of Medicine and Health. 19(1), 8–25. DOI: https://doi.org/10.9734/AJMAH/2021/v19i130293

[24] Yang, D., Li, J., Huang, C., et al., 2024. A Review of Research on Tire Burst and Vehicle Stability Control. Science Progress. 107(3). DOI: https://doi.org/10.1177/00368504241272478

[25] Sassi, S., Sassi, A., 2015. Destabilising Effect of Tyre Burst on Vehicle's Dynamics. International Journal of Vehicle Systems Modelling and Testing. 10(2), 85–203. DOI: https://doi.org/10.1504/IJVSMT.2015.068981