The Factors Associated with Prevalence of Road Accidents in Dar es Salaam Tanzania

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Abstract

Road accidents have become a common challenge in Tanzania's urban centers, particularly Dar es Salaam, which records the highest number of traffic incidents nationally. This study examined the factors influencing the prevalence of road accidents in Tanzania, focusing on driver behaviors, motor vehicle faults, and pedestrian behaviors. Guided by a positivist philosophy and deductive approach, an explanatory research design was employed to establish causal relationships. A sample of 392 respondents, including drivers, conductors, passengers, and pedestrians, was selected using stratified and probability sampling techniques. Data were collected through structured questionnaires and documentary reviews from sources such as LATRA and the National Bureau of Statistics. Quantitative analysis was conducted using IBM SPSS, applying descriptive statistics and multiple regression analysis. Results revealed that driver behaviors, pedestrian behaviors, and vehicle faults all contribute to road accidents. However, pedestrian behaviors ($\beta = 0.217$, $p = 0.000$) and driver behaviors ($\beta = 0.146$, $p = 0.044$) showed the strongest significant influence, while vehicle faults had a weak and statistically insignificant effect ($\beta = 0.109$, $p = 0.046$). The study recommends enhancing driver education, promoting pedestrian safety through better infrastructure, and strengthening vehicle inspection programs. The findings provide empirical evidence for policymakers to design effective interventions to reduce road accidents in Tanzania.

Keywords: Road Accidents, Driver Behavior, Pedestrian Behavior, Motor Vehicle Faults, Traffic Safety

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Introduction

Introduction Road traffic accidents have emerged as one of the most pressing global health and socio-economic challenges of the 21st century. The Global Status Report on Road Safety (World Health Organization, 2023) estimates that 1.19 million people lost their lives in road crashes in 2021, while tens of millions more sustained injuries of varying severity. Road traffic injuries remain the leading cause of death among young people aged 5–29 years and account for nearly two-thirds of deaths in the working-age population of 18–59 years (WHO, 2023). These figures illustrate the profound human, social, and economic costs of road accidents.

Globally, road traffic injuries alone have been estimated to cost USD 1.8 trillion annually, representing 10–12% of global Gross Domestic Product (GDP) (World Health Organization, 2023). Although road accidents are a worldwide phenomenon, their prevalence and impacts differ significantly between developed and developing countries. In developed nations, fatalities have declined in recent decades due to effective safety policies, advanced

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infrastructure, and strict enforcement of traffic laws (Hazen & Ehiri, 2006; Chen, 2010; Kopits & Cropper, 2005). Contrariwise, in developing countries, including those in Africa, fatalities remain excessively high.

Fatality rates are reported to be 15–20 times higher than in developed countries, emphasizing the magnitude of the problem in low- and middle-income settings (Vecino-Ortiz et al., 2018). Africa, home to approximately 15% of the world's population, bears a heavy burden of road crashes. In 2021 alone, an estimated 225,482 deaths and 1.2 million injuries occurred across the continent, with a mortality rate of 19.4 per 100,000 population, the highest globally and significantly above the global average of 15 per 100,000 (WHO, 2023; World Bank, 2022). Vulnerable road users pedestrians, cyclists, and motorcyclists are particularly affected, accounting for more than 50% of all fatalities.

Since 2010, the African region has witnessed a 17% increase in fatalities, making road safety one of the most urgent public health concerns (World Bank, 2022). These accidents not only result in loss of life but also disrupt livelihoods, impose financial strain on households, and place a considerable burden on already strained healthcare systems (Alam & Mahal, 2014). In Tanzania, urban centers such as Dar es Salaam, Arusha, and Mwanza face persistent road safety challenges. Between 2018 and 2023, Tanzania recorded 13,033 accidents, resulting in 8,590 deaths and 15,658 injuries (Ministry of Home Affairs, 2023).

The Ministry reported that in 2023 alone, 1,733 crashes occurred, marking an increase from 1,545 in 2022, alongside a 19.2% rise in human injuries from 2,278 in 2022 to 2,716 in 2023. Furthermore, 1,550 people lost their lives in traffic crashes in (Ministry of Home Affairs, 2023. The primary causes identified include driver negligence (36.3%), speeding (22.2%), and motorcyclist negligence (15.1%). These statistics underscore the persistence of road safety challenges in Tanzania, with increasing fatalities despite global and regional initiatives such as the United Nations Decade of Action for Road Safety (2021–2030), which seeks to halve global traffic deaths and injuries (WHO, 2023).

Existing studies have made significant contributions to understanding the problem. For example, Robinson (2021) analyzed structural challenges in the Tanzanian transport system, while Budzynski et al. (2021) examined the inadequacy of road infrastructure in urban areas, highlighting limited pedestrian crossings and poor communication between drivers and pedestrians. The World Bank (2022) further emphasized the critical role of human error, which accounts for nearly 90% of road crashes worldwide, while also acknowledging the contribution of inadequate infrastructure.

Studies outside Tanzania have similarly highlighted speeding, reckless overtaking, and alcohol consumption as critical risk factors (Kiwango et al., 2021). Despite these contributions, few studies have systematically examined the combined role of driver behaviors, motor vehicle faults, and pedestrian practices on the prevalence of accidents, particularly within Tanzania's urban context. This knowledge gap has left policymakers and stakeholders with fragmented evidence, limiting the design of holistic interventions to curb rising accidents. The persistence of high accident rates in Tanzania calls for comprehensive research that addresses multiple dimensions of the problem, aligning with both national development goals and international road safety frameworks.

The study contributes to empirical knowledge on road safety in Tanzania, a context where research has often been fragmented. By identifying and quantifying the role of human, mechanical, and pedestrian-related factors, the study provides critical insights for

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policymakers, practitioners, and development partners. Moreover, its findings will inform the design of targeted interventions such as stricter driver training and education, improved pedestrian infrastructure, and enhanced vehicle inspection programs. Ultimately, the study supports Tanzania's efforts to reduce road traffic fatalities in line with the UN Decade of Action for Road Safety.

Theoretical Reference

Systemic Theory of Accident

The Systemic Theory of Accident, originally developed by Petersen in 1971, provides a comprehensive framework for understanding the root causes of accidents (Petersen, 1989). The theory argues that accidents are rarely the result of a single, isolated factor but rather the outcome of multiple interacting elements within a complex system. According to this perspective, accidents are influenced by human factors, technical components of facilities, and environmental conditions, which combine to create cumulative effects (Reason, 1990). It further emphasizes that accidents emerge from integrated and interconnected factors spanning human behavior, equipment performance, and contextual circumstances. Organizational culture, policies, and procedures are also considered critical contributors to accident occurrence (Ramadhan et al., 2025).

Human error remains the predominant cause of road accidents, particularly among drivers who often disregard safety measures by over speeding, ignoring traffic regulations, or driving under the influence of alcohol (Reason, 1990). Such errors are not only limited to drivers but also extend to pedestrians and passengers, whose unsafe behaviors expose them to risks (Reason, 1990). With regard to technical components, the theory identifies poorly maintained or uninspected vehicles as significant contributors to accidents (Hale & Hovden, 1998). A lack of routine vehicle inspection and inadequate repair practices heightens vulnerability to crashes. The systemic approach has been widely applied to road and workplace accidents, reinforcing the importance of considering the broader environment in which incidents occur (Reason, 1990).

The application of the systemic theory to the present study is highly relevant, as it encompasses the key dimensions addressed in the research objectives. It enables an analysis of driver and pedestrian behaviors as well as vehicle faults in explaining accident prevalence. Furthermore, it provides a theoretical basis for identifying and categorizing factors that contribute to road crashes in Tanzania. By grounding the research in this framework, the study not only explains the prevalence of accidents but also provides practical insights and recommendations for reducing road traffic incidents.

Accident Causation Theory

The Accident Causation Theory was proposed by Petersen in 1971 as an attempt to systematically analyze accidents and their underlying causes (Petersen, 1989). The theory posits that accidents result from a broad chain of events, where each event or factor triggers another, ultimately leading to the occurrence of an accident. It emphasizes that accidents are not caused by isolated incidents but by a combination of factors, primarily human errors, unsafe actions, and environmental or technical hazards. Human error, in particular, is identified as the predominant contributor to vehicle crashes, encompassing unsafe driving practices, poor decision-making, and lapses in vehicle condition that can result in uncontrollable situations prior to an accident (Pillay, 2015). Unsafe actions attributable to both drivers and pedestrians

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further exacerbate the risk, while hazards in the environment or sudden system failures may disrupt control and precipitate accidents.

The theory rests on several key assumptions that shape its explanatory framework. First, no single factor independently causes an accident; rather, it is the interplay of multiple interconnected factors that leads to the event (Mitropoulos et al., 2005). Second, the occurrence of an accident is conceived as a sequential process, in which one event triggers another, forming a causal chain. Third, unsafe human behavior, such as negligent or irresponsible decision-making, plays a central role in generating conditions for accidents (Hale & Hovden, 1998). Due to its explanatory power, the Accident Causation Theory has been widely adopted by safety researchers, industry stakeholders, and transport authorities to address accident prevention (Lyu et al., 2022). In road transport, it has been applied to explain patterns of crashes and to design evidence-based interventions aimed at reducing accidents.

In the context of this study, the Accident Causation Theory is highly relevant for explaining the prevalence of road accidents in Tanzania. It provides a theoretical foundation for analyzing the contribution of driver and pedestrian behaviors, vehicle conditions, and external hazards to accident occurrence. By integrating the theory's assumptions, this study is able to assess how unsafe human actions and mechanical conditions collectively influence the rising trend of road accidents, thereby offering insights into effective safety interventions.

Conceptual Framework

The conceptual framework depicts the existing relationships between independent variables (driver's behaviours, vehicle's faults, and pedestrian's behaviours) and dependent variables (prevalence of road accidents). Elements in independent variables are the causes of traffic accidents, which consequently led to deteriorated urban safety. Figure 1 below shows conceptual framework of the study.

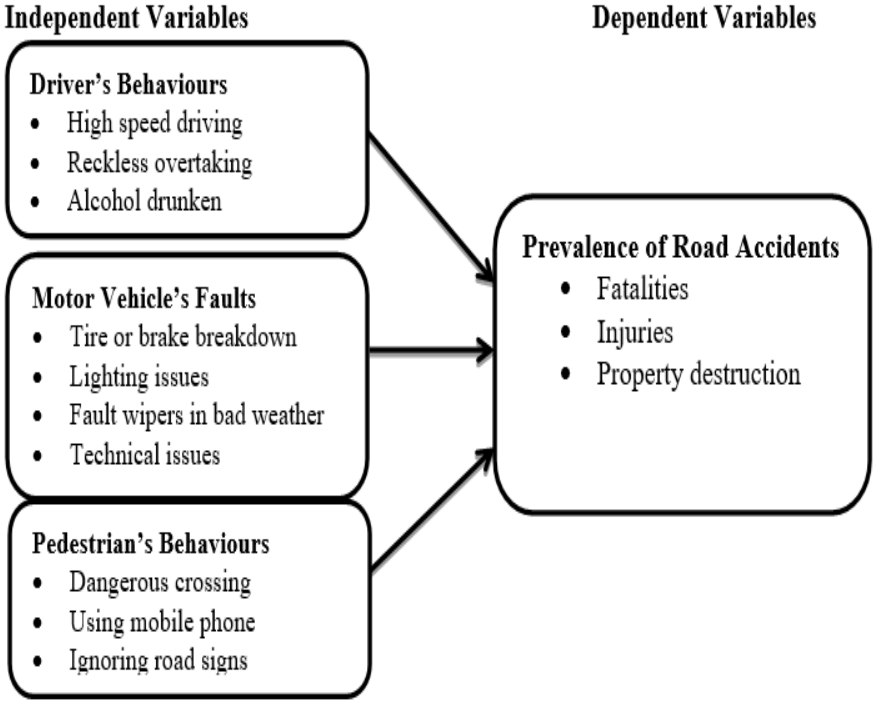

Figure. 1: Conceptual Framework
Source: Adopted from Literature Review, 2025

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Methods

This study adopted a positivist research philosophy, emphasizing objectivity and empirical evidence to establish cause and effect relationships. A deductive research approach was employed, enabling the testing of hypotheses and theoretical assumptions using quantitative strategies. The research utilized an explanatory design, suitable for identifying associations and causal relationships between driver behavior, pedestrian behavior, vehicle faults, and accident prevalence. The study was conducted in Dar es Salaam, Tanzania, the country's largest city and economic hub, characterized by high population density, diverse economic activity, and heavy traffic flows, making it a critical location for road safety research. The target population consisted of adults aged 15–64 years (3,300,224 individuals), representing the working-age group most actively engaged in commuting and transport-related activities. Children and older adults were excluded due to limited mobility and reduced exposure to road traffic. A sample of 392 respondents was drawn from drivers, conductors, passengers, traffic police, and pedestrians. Stratified random sampling ensured representativeness across categories of road users and city districts. This sample size was considered sufficient for statistical reliability, cost-effectiveness, and meaningful generalization of findings to the broader urban population of Dar es Salaam. The study employed probability sampling, ensuring all members of the target population had an equal chance of selection, thereby minimizing bias. A stratified random sampling approach was applied to capture diverse categories of respondents, including pedestrians, drivers, conductors, and traffic police, ensuring representativeness of the population. Both primary and secondary data were utilized. Primary data were collected directly from respondents through structured questionnaires, designed with closed-ended questions and measured using a 5-point Likert scale to capture perceptions of factors influencing road accidents. Secondary data were obtained through documentary reviews of official records and reports from institutions such as LATRA, the National Bureau of Statistics (NBS), and the Police Traffic Section, providing complementary and validated insights. Quantitative data were processed using IBM SPSS. Descriptive statistics were used to summarize patterns in respondents' views, while inferential statistics, particularly multiple regression analysis, were applied to test hypotheses and establish causal relationships among driver behavior, pedestrian behavior, vehicle faults, and accident prevalence. Correlation analysis was also employed to determine the strength and direction of relationships between variables.

$$Y= \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \varepsilon \quad (1)$$

Where:

Y= Road Accident

α_0 = the constant coefficient, ε=error

X_1 = Driver's Behaviors,

X_2 = Motor Vehicle's Faults,

X_3 = Pedestrian's Behaviors

Result and Disscusion

The Road Accidents rate in Tanzania

Between 2018 and 2021, road traffic accidents in Tanzania showed a steady decline, with total accidents dropping from 3,464 to 1,698, deaths from 1,788 to 900, and injuries from 3,746 to

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1,958. This suggests notable improvements in road safety, likely linked to stricter traffic regulations, public awareness campaigns, or road infrastructure upgrades. However, from 2022 to 2023, the trend reversed, with accidents slightly rising to 1,733 deaths surging to 1,647, and injuries increasing to 2,716. These figures indicate that while overall accidents remained relatively low, the severity of crashes grew, underscoring the need for stronger law enforcement, enhanced emergency response, and continuous education on road safety. Table 1 presents the results.

The data used in this study covers the period from 2018 to 2023 and was obtained from the Tanzania Police Force, the primary authority responsible for collecting and reporting road traffic accident statistics in the country. This timeframe was selected because it provides the most recent and reliable official records available, thereby ensuring accuracy and relevance. Furthermore, the six-year span captures two contrasting trends a steady decline in accidents, deaths, and injuries between 2018 and 2021, followed by a reversal from 2022 to 2023. Examining this period therefore enables the study to assess both the effectiveness of past interventions and the resurgence of challenges in road safety.

Table 1. The Road Accidents and Causalities in Tanzania

Category / Year	2018	2019	2020	2021	2022	2023
Number of road accidents	3,464	2,704	1,714	1,698	1,720	1,733
Number of deaths	1,788	1,440	1,270	900	1,545	1,647
Number injured	3,746	2,834	2,126	1,958	2,278	2,716

Source**:** Ministry of Home Affairs, 2023

Road Accidents and Casualties in **Tanzania (2018 -2023)**

From 2018 to 2021, road traffic accidents in Tanzania showed a general decline in deaths and injuries across most groups of road users, but this progress reversed in 2022. Among drivers, fatalities remained relatively stable, rising slightly from 178 in 2018 to 190 in 2022, while injuries fluctuated, dropping to 159 in 2021 before increasing to 226 in 2022. Passengers were the most affected group, with deaths decreasing sharply from 707 in 2018 to 173 in 2021 but later climbing to 625 in 2022; injuries followed the same trend, falling until 2021 and then rising again. Pedestrians also remained highly vulnerable, with deaths declining from 467 in 2018 to 267 in 2021 before rising to 344 in 2022, while injuries mirrored this pattern. Motorcyclists experienced reduced casualties between 2018 and 2021, with deaths dropping from 313 to 225 and injuries from 648 to 184, but both increased again in 2022. Cyclists showed a steady decline in fatalities and injuries until 2021, followed by a slight rise in deaths to 72 in 2022. Cart pushers recorded relatively low but consistent casualties throughout the period. As shown in Table 2.

Table 2. The State of Road Accidents in Tanzania

	2018		2019		2020		2021		2022	
	Deaths	Injury	Deaths	Injury	Deaths	Injury	Deaths	Injury	Deaths	Injury
Drivers	178	352	153	280	151	183	173	159	190	226
Passengers	707	2,035	469	1,608	502	1,355	173	1,419	625	1,581
Pedestrians	467	593	381	450	311	265	267	162	344	203
Motorcyclists	313	648	309	437	236	288	225	184	307	233
Cyclists	114	88	111	55	65	30	62	32	72	30
Cart pushers	9	30	17	4	5	5	-	2	7	5

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Source: Ministry of Home Affairs, 2023

Demographic Profile of Respondents

The study considered gender, age, education, and driving experience as key demographics influencing road accident dynamics in urban Tanzania. Among the 392 respondents, 241 (61.6%) were male and 151 (38.4%) females, reflecting the male-dominated nature of vehicle driving in urban areas. This gender imbalance suggests that male drivers are more likely to contribute to accident occurrence, although both genders are affected as victims. Age distribution showed that most respondents (43%) were aged 25–40 years, followed by 41–50 years (37.6%), under 25 years (14.2%), and above 51 years (5.2%).

This indicates that young and middle-aged adults who are most active in commuting and urban transport are disproportionately exposed to road accident risks. Regarding education, the majority of respondents held a secondary school qualification (49.5%), followed by certificate/diploma holders (33.2%), degree holders (10.1%), and primary school level (7.2%). This variation highlights that most urban transport workers have basic to intermediate education, which may limit awareness of road safety regulations and risk management. In terms of driving experience, 49.2% had 10–15 years, 23.4% more than 15 years, 19.3% between 5–10 years, and 8.1% less than 5 years.

This shows a moderately experienced workforce, providing valuable insights into accident causation while reflecting variability in skill and confidence levels. Generally, the demographic profile suggests that gender, age, education, and driving experience significantly influence road users' exposure, awareness, and behavior, thereby affecting the prevalence of road accidents in Dar es Salaam. These characteristics provide a foundation for understanding patterns in accident causation and informing targeted road safety interventions.

Table 3. Demographic Information

Variable	Respondent Category	Frequency	Percentage
Gender	Male	241	61.6
	Female	151	38.4
	Total	**392**	**100.0**
Age group of respondents	Under 25 years	56	14.2
	25-40 years	167	43.0
	41-50 years	147	37.6
	More than 51	20	05.2
	Total	**392**	**100.0**
Level of Education	Primary School	28	07.2
	Secondary School	194	49.5
	Certificate/ Diploma	130	33.2
	Degree and above	40	10.1
	Total	**392**	**100.0**
Experience in using urban roads in the city	Less than 5 years	32	08.1
	5-10 years	75	19.3
	11-15 years	193	49.2
	More than 15 years	92	23.4
	Total	**392**	**100.0**

Source: Field Data, 2025

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Effects of Driver's Driving Behaviors on Prevalence of Road Accidents

The study findings indicate that driver behaviors significantly influence the prevalence of road accidents in Dar es Salaam. Respondents strongly agreed that driving under the influence of alcohol (mean = 4.14, SD = 1.19), excessive speeding (mean = 3.96, SD = 1.27), dangerous overtaking (mean = 3.98, SD = 1.16), disregard for traffic signals (mean = 4.08, SD = 1.21), and general negligence (mean = 4.10, SD = 1.13) are major contributing factors. These high mean scores reflect widespread perception that reckless and negligent driving practices are critical determinants of road accidents. The results underscore that unsafe driver behaviors ranging from impaired driving and high-speed operation to violations of traffic regulations substantially increase the risk of collisions, highlighting the need for targeted interventions, stricter enforcement of traffic laws, and public education campaigns to mitigate accident prevalence and improve urban road safety.

Table 4. Effects of Driver's Driving Behaviors on Prevalence of Road Accidents

Variable Construct Statement	N	Mean	Std. Dev.
Driving while drunk lead to increase in road accidents	392	4.1391	1.18988
Driving vehicles at high-speed lead to occurrence accidents	392	3.9636	1.26884
Dangerous overtaking by drivers lead to increase in accidents	392	3.9834	1.15984
Drivers disobeying traffic light led to increase in road accidents	392	4.0828	1.21307
Negligence of driver is major causes of accidents	392	4.0993	1.13392

Source: Field Data, 2025

The effects of Motor Vehicles Faults on Prevalence of Road Accidents

The study results indicate that motor vehicle faults significantly contribute to the prevalence of road accidents in Dar es Salaam. Respondents strongly agreed that wiper malfunctions during rain or snow (mean = 4.31, SD = 0.99), tire-related problems (mean = 4.20, SD = 1.01), brake failures causing loss of control (mean = 4.26, SD = 0.94), loose steering components (mean = 4.05, SD = 1.19), and vehicle lighting issues reducing visibility (mean = 4.10, SD = 1.14) are major factors. These high mean scores reflect a widespread perception that mechanical and technical faults in vehicles substantially increase the risk of accidents. The findings highlight the critical importance of regular vehicle maintenance, timely inspection, and adherence to safety standards to prevent accidents and enhance urban road safety.

Table 5. The Effects of Motor Vehicle's Faults on Prevalence of Road Accidents

Variable Construct Statement	N	Mean	Std. Dev.
Inability of wipers to clear windshield during snow or rain cause accidents	392	4.3146	.98682
Tire related problems cause increased road accidents	392	4.2020	1.01268
Vehicle brakes issues lead to lose of control hence road accidents	392	4.2649	.93796
Loose steering components lead to unexpected condition hence accidents	392	4.0464	1.18875
Vehicles lighting issues reduce driver visibility leading to accidents	392	4.1026	1.14093

Source: Field Data, 2025

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Effects of Pedestrian's Irresponsible Behaviours on Prevalence of Road Accidents

The study results indicate that pedestrians' irresponsible behaviors significantly contribute to road accidents in Dar es Salaam. Respondents strongly agreed that crossing at dangerous locations (mean = 4.11, SD = 1.17), ignoring road signs (mean = 3.95, SD = 1.17), being under the influence of alcohol (mean = 4.19, SD = 1.10), and crossing streets outside designated crosswalks (mean = 4.11, SD = 3.14) are major factors increasing accidents. Additionally, using mobile phones while walking was also perceived as a significant cause, though with slightly lower agreement (mean = 3.10, SD = 1.51). These findings underscore that pedestrians' unsafe practices, lack of attention, and risk-taking behaviors are critical contributors to urban road accidents, highlighting the need for targeted awareness campaigns, stricter pedestrian regulations, and improved infrastructure to ensure pedestrian safety.

Table 6. Effects of Pedestrian's Behaviours on Prevalence of Road Accidents

Variable Construct Statement	N	Mean	Std. Dev.
Pedestrians crossing at dangerous place in roads lead to accidents	392	4.1093	1.16908
Pedestrians using mobile phone while walking cause of accident	392	3.1026	1.50726
Pedestrians disregarding road signs lead to increased accidents	392	3.9470	1.17441
Alcohol drunken pedestrians are vulnerable to accidents	392	4.1887	1.10005
Pedestrians crossing streets outside crosswalk lead to accidents	392	4.1126	3.14023

Source: Field Data, 2025

Correlation Analysis Results

The study performed analysis to determine the strength and direction of relationship between predictor variables and dependent variable. In this regard, the study determined the correlation among predictor variables including driving behaviours, motor vehicle's faults, and pedestrian's irresponsible behaviours. The study also determines the strength of relationship between each of the predictor variables and prevalence of road accidents. Results displayed in Table 7 below shows the level of associations of the variables of the study based on Pearson correlation coefficients. In regard to relationships between predictor variables and the dependent variable, the results show that driver's driving behaviours (0.630) had a moderately strong and significant correlation with accidents prevalence, motor vehicle's faults (0.519) had a moderately weak but significant correlation with accidents prevalence, and pedestrian's irresponsible behaviours (0.498) had a moderately strong and significant correlation with accidents prevalence. The results imply that all variables had positive correlations with accidents prevalence. However, the average correlation was relatively weaker but positive.

Table 7. Correlations

	Driver Behaviour	Vehicle Fault	Pedestrian Behaviour	Accident Prevalence
Driver Behaviour	1			
Vehicle Fault	.207	1		
Pedestrian Behaviour	.377	.347**	1	
Accident Prevalence	.630*	.519	.498	1
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Field Data, 2025

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Regression Model Summary

The correlation analysis revealed a positive and moderately strong relationship (r = 0.589) between the predictors driver's driving behaviours, motor vehicle faults, and pedestrian behaviours and the prevalence of road accidents. This indicates that variations in these predictors are associated with corresponding changes in accident prevalence, albeit with moderate strength. The coefficient of determination (R^2 = 0.347) further shows that 34.7% of the variance in road accident prevalence is explained by these predictors, with an Adjusted R^2 of 0.329 reflecting a minor adjustment for the number of variables in the model. Consequently, 65.3% of the variation in accidents is attributable to factors not included in the model. Additionally, the Durbin-Watson statistic of 1.546 suggests no severe autocorrelation in the regression residuals, confirming the reliability of the model's results

Table 8. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.589	.347	.329	.71941	1.546

Predictors: (Constant), Driver's Driving Behaviours, Motor Vehicle's Faults, Pedestrian's Irresponsible Behaviours

Dependent Variable: Accidents Prevalence

Source: Field Data, 2025

Multi Regression Analysis Results

The multiple regression analysis results indicate that the constant term has a predicted prevalence of road accidents of 3.296 units when all independent variables driver's behaviours, motor vehicle faults, and pedestrian behaviours are held constant, with a statistically significant p-value of 0.000 and a t-value of 8.781. Regarding the predictors, driver's behaviours positively and significantly influence road accident prevalence, with an unstandardized coefficient (ß) of 0.146, p = 0.044, and a standardized coefficient (Beta) of 0.114, indicating a moderate effect; collinearity statistics (Tolerance = 0.990, VIF = 1.011) confirm no multicollinearity issues. Motor vehicle faults also contribute positively and significantly (ß = 0.109, p = 0.006; Beta = 0.114) but have the weakest effect among the predictors, with Tolerance = 0.827 and VIF = 1.210 confirming no multicollinearity. Pedestrian behaviours have the strongest positive and significant effect on accident prevalence (ß = 0.217, p = 0.000; Beta = 0.230), with Tolerance = 0.773 and VIF = 1.293, indicating no multicollinearity. Overall, the findings demonstrate that all three predictors significantly influence road accident prevalence, with pedestrian behaviours exerting the greatest effect, followed by driver's behaviours and motor vehicle faults.

Table 9. Regression Coefficients

Model		Unstandardized Coefficients		Standardized	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.296	.375		8.781	.000		
	Driver Behaviour	.146	.072	.114	2.020	.044	.990	1.011
	Vehicle Fault	.109	.059	.114	1.861	.006	.827	1.210

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	Pedestrian Behaviour	.217	.060	.230	3.622	.000	.773	1.293
a. Dependent Variable: Accident Prevalence								

Source: Field Data, 2025

Hypotheses Test Results and Findings

This section provides statistical results of test of research hypotheses at 5% level of significance. Three hypotheses are tested based on results of multiple regression analysis of each predictor variable with respect to depended variable.

Hypothesis One (H1) States that Driver's Driving Behaviours and Their Social Impacts have Influence on Prevalence of Road Accidents in Dar Es Salaam

The test of the hypothesis was based on regression coefficient results taking into consideration the p-value (sig.). Regression results show that the p-value of drivers' behaviours component is 0.044 ($p < 0.05$) indicating that the influence of drivers' behaviours on the prevalence of road accidents was significant. This makes the null hypothesis to be rejected at 5% level of significance in preference to the alternative hypothesis. Therefore, drivers' behaviours and their social impacts have influence on the prevalence of road accidents in Dar es Salaam.

Hypothesis Two (H2) States that Motor Vehicle's Faults and Associated Technical Issues have Influence on Prevalence of Road Accidents in Dar Es Salaam

The test of the hypothesis was achieved based on regression coefficient results taking into consideration the p-value (sig.). Regression results show that the p-value of motor vehicles faults component is 0.006 ($p < 0.05$) indicating that the influence of motor vehicles faults on the prevalence of road accidents was significant. This makes the null hypothesis to be rejected at 5% level of significance. Therefore, motor vehicle's faults and associated technical issues have influence on the prevalence of road accidents in Dar es Salaam.

Hypothesis Three (H3) States that Pedestrian's Behaviours and Their Social Impacts have Influence on Prevalence of Road Accidents in Dar Es Salaam

This hypothesis is tested based on regression coefficient results taking into consideration the p-value (sig.). Regression results show that the p-value of pedestrians' irresponsible behaviours component is 0.000 ($p < 0.05$) indicating that the influence of pedestrians' irresponsible behaviours on the prevalence of road accidents was significant. This makes the null hypothesis to be rejected at 5% level of significance in preference to the alternative hypothesis. Therefore, pedestrians' behaviours and their social impacts have influence on the prevalence of road accidents in Dar es Salaam.

Discussions

Influence of Driver's Driving Behaviours on Prevalence of Road Accidents

The regression analysis in this study indicates that driver's driving behaviours significantly and positively influence the prevalence of road accidents in Dar es Salaam, with a one-unit increase in risky behaviours associated with a 0.146-unit rise in accident prevalence (ß = 0.146, p = 0.044). High-speed driving was identified as a major contributor to accidents, reducing drivers' reaction time and increasing stopping distances, thereby elevating the likelihood and severity of collisions. This aligns with the Systemic Theory of Accident, which emphasizes that accidents result from interrelated systemic factors rather than a single cause (Adanu et al.,

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2024). Driver negligence, including distracted driving, fatigue, and failure to follow traffic laws, was also found to significantly increase accident prevalence, consistent with findings in Pakistan where oversight of road regulations contributed to frequent traffic incidents (Katopola et al., 2024). Dangerous overtaking, particularly in hazardous or congested areas, was identified as another critical factor, corroborating prior research indicating collisions frequently occur when drivers misjudge road conditions or attempt unauthorized crossings (Hulme et al., 2023). Ignoring traffic lights, especially running red signals at intersections, further elevates the risk of accidents and is often linked to broader infrastructural and institutional deficiencies, including unreliable signal systems and weak enforcement mechanisms (Rumutsa, 2025). Finally, driving under the influence of alcohol was found to substantially impair driver judgment, reflexes, and vehicle control, contributing to severe accidents, as supported by systemic models and prior Tanzanian studies emphasizing the role of weak policy enforcement and public unawareness in perpetuating unsafe driving behaviours (Adanu et al., 2024; Chen et al., 2021). Together, these findings emphasize the critical need for stricter enforcement of traffic regulations, targeted public awareness campaigns, and systemic interventions to reduce the prevalence of road accidents.

Influence of Motor Vehicle Faults on Road Accident Prevalence

The regression results indicate that motor vehicle faults positively influence the prevalence of road accidents in Dar es Salaam, with a one-unit increase in vehicle faults associated with a 0.109-unit rise in accident prevalence (ß = 0.109, p = 0.006). Among the faults, brake system failures were identified as major contributors, as delayed or insufficient braking compromises drivers' ability to stop, particularly at intersections or sharp curves, increasing collision risk (Katsakiori et al., 2009). Tire-related issues, including worn tread, under-inflation, or blowouts, were also significant contributors, reducing vehicle stability and braking efficiency, thus increasing accident likelihood and severity. Vehicle lighting problems, particularly malfunctioning headlights, reduce visibility during nighttime or adverse weather, impairing drivers' ability to detect hazards and increasing risks of rear-end or pedestrian collisions (Fu et al., 2020). Loose steering components compromise vehicle control, especially at higher speeds or on curves, leading to collisions with other vehicles, obstacles, or pedestrians (Albalate & Fageda, 2019). Additionally, ineffective windshield wipers during rain or snow hinder driver visibility, preventing timely hazard detection and contributing to accidents. These findings are consistent with the Systemic Theory of Accident, which situates mechanical failures within broader systemic inadequacies such as poor maintenance practices, insufficient vehicle inspection, weak regulatory oversight, and limited public awareness regarding vehicle safety (Hulme et al., 2021). Overall, the study underscores the importance of regular vehicle maintenance, inspection, and adherence to safety standards to reduce accidents linked to motor vehicle faults.

Influence of Pedestrian Behaviors on Road Accident Prevalence

The regression results indicate that pedestrian behaviours significantly and positively influence the prevalence of road accidents in Dar es Salaam, with a one-unit increase in risky pedestrian behaviour associated with a 0.217-unit rise in accident prevalence (ß = 0.217, p = 0.000). The study identified several high-risk behaviours among pedestrians, including crossing roads at unsafe or non-designated locations, which increases accident risk due to reduced driver reaction time and inadequate pedestrian infrastructure, such as lack of walkways and poor signage. Mobile phone use while walking contributes to distraction and impairs hazard recognition, while disregard for traffic signals and road signs further elevates accident likelihood, reflecting

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systemic deficiencies in urban planning and enforcement (Fu et al., 2020; Albalate & Fageda, 2019). Alcohol consumption among pedestrians impairs judgment, coordination, and distance perception, exacerbating vulnerability to collisions, particularly during nighttime. Crossing outside designated crosswalks significantly increases collision risk, as drivers are less likely to anticipate pedestrian presence, highlighting the interaction between pedestrian behaviours, driver actions, and infrastructural inadequacies (Almatar, 2024). Overall, these findings underscore the need for multi-faceted interventions including public awareness campaigns, enhanced law enforcement, infrastructure improvements, and urban planning reforms to mitigate pedestrian-related accidents in Dar es Salaam.

Novelty of the Study

This study provides a comprehensive examination of factors driver behaviours, vehicle faults, and pedestrian actions and their effects on the prevalence of road accidents in Dar es Salaam. The study focuses on a single dimension, it applies the Systemic Theory of Accident to contextualize these factors within an interconnected urban transport system. By empirically quantifying the relative contributions of risky driving behaviours, mechanical failures, and unsafe pedestrian practices, the study offers an integrated understanding of accident causation in an urban Tanzanian setting. The findings provide valuable insights for policymakers and stakeholders, guiding the development of targeted interventions such as enhanced traffic law enforcement, public awareness campaigns, and infrastructural improvements to reduce road traffic accidents.

Conclusion

This study found that road accidents in Tanzania result from a complex interplay of driver behaviors, vehicle mechanical faults, and pedestrian actions, all compounded by systemic infrastructural and regulatory shortcomings. High-risk driver behaviors such as speeding, dangerous overtaking, ignoring traffic signals, and driving under the influence significantly increase accident prevalence, while poorly maintained vehicles, including faulty brakes, worn tires, defective lights, and loose steering components, further elevate risks. Pedestrian behaviors, including unsafe road crossing, distraction from mobile phones, alcohol consumption, and disregarding traffic signs, also contribute substantially to accidents, often exacerbated by inadequate infrastructure like missing crosswalks or sidewalks.

Suggestions

The study recommends comprehensive interventions, including enhanced driver education and public awareness campaigns, rigorous vehicle inspection and maintenance programs, improved pedestrian infrastructure, stricter enforcement of traffic laws, and the establishment of a national road safety coordinating agency. Future research should examine the influence of road design, the long-term impact of educational campaigns, and the potential of smart technologies to improve road safety.

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