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Empirical Research on Factors Contributing Road Accident Among Bajaj Drivers in Banadir Region, Mogadishu, Somalia

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*Driver's Age,
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Road Accident.*

This study was aimed at investigating the effects of driver's age on road accidents among Moto Bajaj drivers in Mogadishu. The study objectives include; identifying the proportion of driver exceeding the urban driving limit, determining the relationship between driver age and accidents, determining the relationship between speed of driving and road accident, and determining the proportion of drivers who meets the legal requirements for driving. Structured questionnaires were administered to Bajaj drivers and collected 385 records from the source population of Bajaj drivers. It was conducted through a field survey of 385 Bajaj drivers in the Banadir region. The source of the population was unknown to determine the sample size, Cochran (1977) formula was used for larger sample size determination to calculate the ideal sample size. This study was a descriptive cross-sectional study conducted from Jan to May 2022. The topic was the effects of Moto Bajaj driver's age on road accidents in Mogadishu, Somalia. The study found that preferred driving speed; drivers who prefer to drive between 30 - 49 Km per hour accounted for 47%, drivers who preferred to drive 50 - 69 Km per hour accounted for 52%, and those who prefer to drive >70 Km per hour accounted 1%. This indicates that 53% of the Baja drivers are the potential to drive at higher speeds. The study revealed the odds for driver's preferred speed of 50-69 km/hr were 19.116 times more likely to have an accident comparing those driving at low speed. And drivers preferring a speed of 70 km/hr are 18 times more likely to have an accident compared to others. The model correctly predicted 86.2% of cases where there was no accident and 85.9% of cases where there was an accident giving an overall percentage correct prediction rate of 86. The study recommends and provides advocacy to all concerned bodies, including the government institutions, organizations, private institutions, and decisions maker, to impose and actively engage the road safety policy and procedures, including driving age and speed limiting on certain roads in Banadir Region.

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INTRODUCTION

Globally, the most affected people by road traffic accidents are young people aged 15–29 years and it is expected that road accidents might become the fifth leading cause of death unless urgent action is taken (Tumwesigye et al., 2016). According to WHO (2018), the deaths caused by road accidents have increased from 1.24 million in 2013 to 1.35 million in 2018 (Boateng, 2021). Moreover, it is also estimated that annually 13 million deaths and 20–50 million disabilities globally occur due to road accidents (Tadesse et al., 2019). The African roads are the world's deadliest roads for many reasons. This includes human, mechanical, and environmental factors, which are the basic causes of road traffic accidents (Deme, 2019).

Studies showed that younger drivers are more prone to engaging in accidents compared to adult and experienced drivers (Aldridge et al., 1999). The low accident per driver rate in spite of the higher rate/kilometre is clarified by older drivers' leaning to limit driving speed. However, their very act of reducing their annual driving distances may contribute to the amplified risk of accidents per kilometre among older drivers. Accidents for all drivers per unit of distance moved are much higher in the dark hours than throughout the day. It is possible that the problem with young drivers being

involved in crashes during evening hours (David D. Clarke, 2005).

Speed is an important safety factor for a number of reasons. On the one hand, it determines the time possible for a driver to take evasive action in a dangerous situation and also the severity of the consequences after an accident. Third, it can be argued that reducing the variation of driving speed can also reduce the number of accidents by reducing the number of possible conflicts. Much empirical evidence shows that the choice of driving speed is significantly related to the probability of accidents and their severity (Olemo, 2016)

Problem Statement

A road accident refers to a collision involving one or more vehicles on the road or a pedestrian and results in death, injury, or damage to property (Odhiambo et al., 2015). Road traffic injuries place a heavy burden on global and national economies and household finances. With more than 13 million deaths and 20 – 50 million injuries being directly linked to road traffic accidents in the world, the social and economic burden presents a compromising scenario for Kenya as a nation. (Olemo, 2016)

In 2010, the United Nations General Assembly adopted resolution 64/2551, proclaiming a Decade

of Action for Road Safety so as to stabilize and reduce the increasing trend in road traffic fatalities. Interestingly RTAs in high-income countries are expected to fall by 2020, and More than 85% of RTAs occur in developing countries (Olemo, 2016)

In Somalia, in the period “between 2012 to 2021” the trade and importation of Moto Bajaj have increased. The number doubled in 2020. However, no one has ever researched about Moto Bajaj accidents in Mogadishu. On that, there is less information on the proportion of road traffic accidents attributed to Moto Baja in Mogadishu. For that reason, the study investigated the relationship between moto Bajaj driver age and road accidents in Mogadishu.

Research Objectives

- To identify the proportion of drivers exceeding the urban driving speed limit
- To determine the relationship between driver age and accidents
- To determine the relationship between driving speed and accidents
- To determine the proportion of drivers who meet the legal requirements for driving

Research Questions

- What is the proportion of drivers exceeding the urban driving speed limit?
- What is the relationship between driver age and accidents?
- What is the relationship between driving speed and accidents?
- What is the proportion of drivers who meet the legal requirements for driving?

METHOD AND MATERIALS

This study was a descriptive cross-sectional study conducted in January 2022, with a case being the effects of Moto Bajaj driver’s age on road accidents in Mogadishu. The study described the following variables age, sex, education level and marital

status, preferred speed, having a license, and the number of accidents of the Bajaj drivers.

Sampling Size and Sampling Techniques

The present study was conducted through a field survey of 385 Moto Bajaj drivers in the Banadir region. The source of the population was unknown and to determine the sample size, we used Cochran’s (1977) formula for larger sample size determination to calculate an ideal sample size given a desired level of precision, desired confidence level, and the estimated proportion of the attribute present in the population.

Sample size= $(1.96)^2 \cdot (0.5) \cdot (0.5) / (0.05)^2 = 385$.
Maximum variability. $p = 0.5$.

To determine the sampling techniques and the sampling designs, the study used systematic random sampling with a sampling interval of $5000/385=13$ in every 13th of the Bajaj after, the starting point from any number’ between’ 1 to 99. So that the sampling techniques started from 5th plus 13; the second will be $5+13, = 18$, and so on till the 385-sample size is reached.

Data Collection and Analysis

Ten scholar enumerators were hired for three days to collect the data and get the minimum requirement of 385 records from Bajaj moto drivers. The enumerators were trained on the ODK toolkit and how to use it prior to the data collection. As part of the quality assurance, the tool was pretested and checked for any misunderstandings for further correction and the questionnaires were revised based on the feedback received from the team. The analysis was done through SPSS Version 20.

Structured questionnaires were administered to Moto Bajaj drivers with the purpose of collecting 385 records from the source population (Bajaj drivers). The questionnaires were tested prior to deploying them and received after test-retest with an SPSS IMB Cronbach level greater than 0.80(80), which is the significant standardized value. The questionnaires consisted of a number of variables and the first section was the demographic factors including the age, sex, marital status, and education level of the drivers.

Data analysis was conducted using SPSS version 26. Under the variables, a frequency distribution table was used mainly for the demographic characteristics of the participants. Further logistic regression analysis was conducted for the following variables (gender, marital status, Age group, years with license grouped, years of driving grouped, and

preferred driving speed grouped) to show the predictability of the model regarding the outcome variables of whether they have an accident.

RESULTS

Demographic Characteristics

Table 1: Demographic characteristics of the respondents

Variables	Score	N	%
Gender	Female	5	1
	Male	380	99
Age group	13-25 Years	182	47
	26-35 Years	165	43
	>36 years	38	10
Education	Illiterate	71	18
	Secondary	149	39
	Diploma	49	13
	Bachelor	111	29
	Master	5	1
Marital status	Single	148	38
	Married	198	51
	Divorced	23	6
	Widow	16	4
Have an accident	Yes	330	85.9
	No	54	14.1
Preferred driving Speed	30 - 49 Km per Hour	181	47
	50 - 69 Km per Hour	200	52
	>70 Km per Hour	4	1
Have a license	Yes	233	39.3
	No	151	60.7
Years with license	1 Month to 2 years	97	41%
	3-5 yrs.	81	35%
	5 years and greater	56	24%
Years of driving	1 month -1 year	90	23
	2 - 3 years	208	54
	3 years and greater	87	23

Almost all drivers were male (99%), and the drivers' age group revealed that 47% were between 13-25 years, 43% were 26-35 years, and 10% were aged above 36 years. The range of age was 13 to 75, with an average of 27 years of age. Most of the Bajaj drivers were young.

The marital status of the participants was asked during the survey and the results showed that 38% were single, 51% were married, 6% were divorced,

and 4% were widows. This indicates that the majority are married, followed by married drivers.

The education level was asked, and the study revealed that 18% were illiterate, 39% had a secondary certificate, 13% had a diploma, 29% had a bachelor's degree, and 1 % showed to have a master's degree. This indicates that 82% of the Bajaj drivers are educated with the least education

level showed secondary school certificate to master’s degree.

The participants were asked to rate whether they had ever had an accident or not; 330 drivers had an accident and 54 did not, this means that about 85.9% of the drivers had at least one accident during the period.

Regarding the driving speed, the Bajaj drivers were asked to rate their speed considering the following categorical variables 30 - 49 km per hour, 50 - 69 km per hour and >70 mm per hour. The study revealed that 47% of the participants prefer to drive 30 - 49 km per hour, 52% prefer 50 - 69 km per hour, and 1% prefer to drive >70 km per hour. This indicates that 53% of the Baja drivers are the potential to drive at higher speeds.

The length of time the drivers had a license was asked; the study revealed that 41% of the drivers had a license for about 2 years, 35% had about 3 to 5 years, and 24% of the drivers had a license for a period greater than 5 years of total license owner Bajaj drivers where about 60.7% of the drivers did not have a license.

Binary Logistic Regression Analysis

In this section, the model summary was discussed to identify variables related to the outcome variables of whether the driver is likely to have an accident or not. It provides the goodness of fit to the model. In this regard from 49% to 56%, variation in the model involvement is accounted for by gender, marital status, age group, years with license, years of driving, and preferred driving speed.

Table 2: Model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	276.065 ^a	.49	.56

This Omnibus Tests of Model Coefficients compare the constant model to the model with all the independent variables; the model showed

significantly better than the constant-only model Chi-Square [37.939, df=5, and p=0.00

Table 3: Omnibus Tests of Model Coefficients

Step 1		Chi-square	df	Sig.
	Step	37.939	17	.003
	Block	37.939	17	.003
	Model	37.939	17	.003

Table 4: Binary logistic regression model

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Male	1.33	1.272	1.094	1	0.296	3.782	0.313	45.781
Single	7.457	0.445	10.714	1	0.001	4.233	0.097	0.557
Married	18.904	3.516	0	1	0.999	16.126	0	.
Divorced	11.599	0.5	10.245	1	0.001	4.202	0.076	0.538
Widow	-1.393	0.561	6.174	1	0.013	2.248	0.083	0.745
13 to 25 years			4.773	2	0.002			
26 to 35 years	-1.63	0.934	3.045	1	0.081	4.196	0.031	1.222
36 and greater	-1.863	0.872	4.562	1	0.033	0.155	0.028	0.858
1 month to 2 years with license			1.743	2	0.418			
3 o 5 years with license	-0.65	0.495	1.724	1	0.189	0.522	0.198	1.378
5 years with license and greater	-0.499	0.588	0.722	1	0.396	0.607	0.192	1.921

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
1 month to 1 Year of driving			3.054	2	0.217			
2 years to 3 years of driving	-0.506	0.505	1.005	1	0.316	0.603	0.224	1.621
2 years to 3 years of driving	0.165	0.438	0.142	1	0.706	1.18	0.5	2.785
30-49 km/hr. Driver's preferred speed			3.093	2	0.213			
50-69 km/hr Driver's preferred speed	19.116	22366.321	23.1	1	0.003	2	0	.
70 km/hr Driver's preferred speed and greater	18.53	22366.321	3	1	0.001	3	2.32	22.34
Constant	44.704	4594.68	0	1	0.999	2594.9		

a. Variable(s) entered in step 1: gender, Marital status, Age group, Years with license, Years of driving, and Preferred driving speed.

Binary Logistic regression analysis predicted the Bajaj drivers' significance level to have an accident or not. On the result of a Chi-Square [37.939, df=5, and p=0.003] based on their (gender, marital status, age group, years with license, years of driving, and preferred driving speed). The model predictors, including education, male, and married, were not significant. The variables including marital status, age group, years with license, years of driving, and preferred driving speed, predictors "explain" from 49% to 56% of the variability are significant at the 5% level [Divorced Wald 10.245, p=0.001 (<0.05); high driving speed Wald=23.10, p=0.003 (<0.05)].

The study revealed the ODDs of a driver's preferred speed of 50-69 km/hr are 19.116 times more likely to have an accident comparing driving at a low speed and for a driver's preferred speed of 70 km/hr, B=18.530 are 18 times more likely to have accident comparing to those not. The model correctly predicted 86.2% of cases where there was no accident and 85.9% of cases where there was an accident giving an overall percentage correct prediction rate of 86%.

CONCLUSION

In summary, the study found that there are drivers who do not meet the legal requirement for driving, it is either they are under age or have no licences; this could be explained why there is a high number of driving accidents in the Capital city. There are drivers who prefer speed driving irrespective of

being in the capital city. The study revealed that drivers prefer high-speed driving as the drivers were not compliant with the driving limitation on the streets. Most drivers being very young adds the risk of extra burdens. The younger the driver, the more likely to have an accident.

Recommendations

The study recommends and provides advocacy to all concerned bodies, including the government institutions, organizations, private institutions, and decisions maker to impose and actively engage the road safety policy and procedures, including driving age and speed limiting on certain roads in Banadir Region.

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