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Effects of Police Roadblock Checks on Reduction of Road Accidents along Salgaa-Mau Summit Highway

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Abstract
Despite efforts by the Kenyan government to enhance road safety, Kenya ranks among the top countries with high road fatality rates. Therefore, this study examined the effects of police roadblock checks on reduction of road accidents along the Salgaa- Mau Summit Highway in Nakuru County. This study was grounded on the Systems Theory and the Deterrence Theory. The study used a descriptive research design. Stratified and simple random sampling techniques were used to identify and select 103 respondents from a population of 302 respondents consisting of 60 traffic police officers; 8 NTSA officers; 218 public service vehicle drivers; and 12 passengers. Four (4) senior officers from traffic police and NTSA were selected as key informants using purposive sampling. Questionnaires were used to collect data from traffic police officers, drivers, passengers and NTSA officers while interviews were used to collect data from senior officers. The SPSS (version 23) was used to conduct descriptive and regression analysis. Qualitative data were analysed using thematic analysis. This study established that police roadblock checks have a significant effect on reduction of road accidents as it accounts for 54.2% variation in road accidents. Results of regression analysis established that Roadblock Checks have a significant effect on reduction of road accidents (β_3= -0.526; P=0.001). The study also found out that police manning the roadblocks mitigate risks of accidents by detaining drunk and speeding drivers, removing non-compliant vehicles; enhancing compliance with road safety regulations; and arresting those violating traffic laws. However, the definitiveness of the police roadblocks has encouraged reckless driving outside the monitored zone, the difficulty of decelerating down the sloppy 11km stretch of the Highway and corruption among some of the traffic police officers have affected the effectiveness of roadblock checks in reducing road accidents.
Keywords: *Police, Roadblock Checks, Road Accidents*

1.1 Introduction

The debilitating effects of road accidents have been a major concern of policymakers across the globe. The World Health Organization (WHO) estimates that road accidents cause the death of up to 1.25 million people in the world with people suffering from non-fatal injuries estimated to be up to 50 million people. Low- and middle-income countries are the most affected with a double fatality rate to that of high-income countries and 90% of global road accident deaths (WHO, 2015). It is estimated that road accidents associated costs add up to $242 billion per year in addition to the loss of the economically active population as road accidents are the primary cause of deaths among youths aged between 15-29 years (Blincoe *et al.,* 2015). To promote road safety and reduce road accidents, the Decade of Action for Road Safety 2011–2020 and 2021-2030 was adopted by the UN General Assembly. UN member countries adopted Sustainable Development Goals SDG3 which seeks to reduce road accident fatalities and injuries by 50% by 2030.

Roadblocks are a preventive strategy aimed at reducing the risk of road accidents by deterring and detecting violations of road safety regulations. While police roadblocks do not guarantee a reduction in road accidents, police presence on the highways and roads leads to a reduction in violations of traffic regulations which subsequently reduces the risk of road accidents (Scott, 2010). Khan (2011) observes police conduct roadside motor vehicle inspections and remove vehicles at high risk of being involved in accidents due to defective and non-functional mechanical systems.

Studies by the European Transport Safety Council (2010) have shown that a combination of stationary and mobile police roadblock checks reduces casualties by 6% and fatal accidents by 14%; the use of speed camera technology reduces casualties by 19% with urban areas reporting larger reductions of up to 28%. Similarly, the use of roadblock checks and other measures by the Federal Highway Administration in the USA has led to road accidents death rate of 10.4% per 100 000 people in the US which is way below the world's rate of 17.4% per 100 000 people (WHO, 2016). The effectiveness of roadblock checks in reducing road accidents can be enhanced through a high number of random testing of drivers' BAC which should be unpredictable in terms of time and place; use of speed cameras to monitor vehicles' speed; and random road watches where police mount roadblocks at different points on the road rather than one single stationary point for several consecutive days (Scott, 2010).

Over the years the government of Kenya has implemented numerous policies aimed at enhancing road safety and reducing road accident-related injuries and deaths by 50% by 2020 as envisioned in the National Road Safety Action Plan 2011-2020. Police and NTSA roadblocks have been mounted in different parts of the country to ensure compliance with road safety rules (Ndungu *et al,* 2015). Despite the implementation of these strategies, Muguro *et al.,* (2020) observe that police roadblocks have not had a significant impact on reduction of road accidents.

Kenya is among the top countries in the world with a road accident death rate of 29.1% for every 100000 people. Statistics on the status of road safety by the NTSA show a rising trend in road fatalities with 3,337 absolute fatalities in the year 2018/2019 as compared to 3,567 fatalities in 2019/2020 contributing to an increase of 6.9% (NTSA, 2020). The rising number of road fatalities can be attributed to the inability to effectively enforce road safety regulations (Ndungu *et al,* 2015). A study by Raynor and Mirzoev (2014) has revealed that corrupt officers who receive bribes allow PSV drivers to continue operating with defective vehicles increasing the risk of accidents on the road.

The Salgaa-Mau Summit junction stretch along the Nakuru-Eldoret highway has become synonymous with motor vehicle accidents where hundreds of lives have been lost on the road despite the presence of police roadblock checks on the road (Kahenda & Chepkwony, 2019). According to a multi-agency report, the section of the Northern Corridor covering the 20.7km stretch of Road from Sobea-Salgaa-Sachangwan-Kibunja-Mau Summit has the highest road traffic accident location in Kenya based on collision statistics over a 6year period from 2011 to 2016 (NTCTTCA, 2020). During the period the stretch recorded the highest number of road accidents in Kenya at a frequency of 152 crash incidences translating to an average of an accident per 7.34KM which is the highest ratio in the Country (NTCTTCA, 2020). It is based on this backdrop that the study sought to examine the effectiveness of police roadblock checks on reduction of accidents at the Salgaa-Mau Summit junction stretch along the Nakuru-Eldoret highway.

2.1 Theoretical Framework

2.1.1 The Deterrence Theory

The deterrence theory traces its roots to early works of classical philosophers such as Thomas Hobbes (1588–1678); Jeremy Bentham (1748–1832); and Cesare Beccaria (1738–1794). The theory is based on the principle that punishing crime offenders will deter the general population from committing the crime and reduce the probability of the offending behaviour from being repeated or re-occurring. This effectively minimizes crime rates in society. The deterrence theory works to reduce crime in society using two ways: through the imposition of penalties on an offender which acts as a deterrence that prevents the offender from repeating the same crime and from committing more crimes; and through normative deterrence where the knowledge that certain crimes are punishable under law deters people from breaking the law in the fear of being punished.

The effectiveness of punishment as a deterrence from committing crimes is dependent on two factors: The certainty of punishment and the severity of punishment. In this case, deterrence is effective in discouraging offending behaviour if the likelihood of being apprehended and punished is high. Police Roadblocks reduce the risk of accidents on the road by identifying and arresting drivers who are speeding, driving under the influence of alcohol and those with un-roadworthy vehicles. However, drivers are likely to comply with road safety regulations if the certainty of apprehension by police is high. To increase the probability of arresting non-compliant drivers, police need to use random roadblock checks placed at different points of the road rather than stationary roadblocks. They also need to use speed cameras to monitor drivers' speed from unmarked police vehicles hidden away from the visibility of the drivers in random spots.

2.1.2 The Systems Theory

The Systems Theory was developed by the 19th century sociologists Emile Durkheim, Talcott Parsons and Hebert Spencer. The theory posits that society is a system of complex interrelated and interdependent elements in the natural environment whose interactions with each other give rise to an orderly function of the society. Each of the elements in society has a role to play to ensure the survival and continuity of society. The different elements perform specialized functions that are dependent on each other. This gives rise to an orderly system that ensures a functional and cohesive society.

Similarly, the transport system is an interaction of interrelated and dependent elements whose interactions give rise to an order that ensures road safety is observed to minimize road traffic accidents. Traffic police officers coordinate with NTSA officers to mount roadblock checks to enforce traffic laws and enhance compliance; reduce the risk of accidents by identifying and arresting non-compliant road users; and investigate road accidents for purposes of prosecution by the law courts which impose penalties to deter violation of traffic laws. Road users comply with the road safety rules for fear of being apprehended by police at roadblocks.

3.1 Methodology

This study used a descriptive research design to examine the effects of police roadblock checks on reduction of road accidents along the Salgaa-Mau Summit junction. Stratified and simple random sampling techniques were used to identify and select 103 respondents were selected from a population of 302 respondents consisting of 60 traffic police officers; 8 NTSA officers; 218 public service vehicle drivers; and 12 passengers. Three (3) senior traffic police officers and 1 NTSA manager were involved as key informants. Purposive sampling technique was used to identify key

informants (Nakuru County Police Commander, 2 Sub-County Police commanders and NTSA Regional Manager).

Primary data was collected through questionnaires and interviews while secondary data was collected from police records on the number of accidents along the road. Questionnaires were administered to traffic police officers, NTSA officers and drivers using the Nakuru-Eldoret Highway. The interview was conducted with the NTSA and traffic police senior officers. The content of the questions in the instruments was assessed by the university supervisor to ensure that only items that accurately measured the study variables were included. Reliability of the instruments was determined using the Cronbach Alpha Co-efficient. The instruments were reliable as they yield a coefficient of 0.766. Data were analysed quantitatively and qualitatively. The statistical Package for Social Sciences (Version, 23) was used to conduct the descriptive analysis and regression analysis. Qualitative data were transcribed and organized in themes per study objectives.

4.1 Findings of the Study

To establish the effect of police roadblock checks on reduction of road accidents. Respondents were therefore asked to indicate their extent of agreement on whether roadblock checks conducted by police officers/NTSA officials on roadblocks had contributed to the reduction of road accidents using a Likert scale of 1-5 (5-strongly agree; 4-agree; 3-neutral; 2-disagree; and 5-strongly disagree as indicated in Table 4.1:

Table 4.1: Roadblock Checks

Statement	Mean	Std. Dev.
Conducting Compliance checks on the state of Vehicles, identify & remove non-compliant vehicles from the roads	4.450	.808
Enforcing traffic laws such as random Breath Testing to check on alcohol levels and enforcing speed limits	4.550	.701
Detecting, Arresting and prosecuting traffic offenders	4.440	.715
Conducting investigations into the causes of accidents	4.460	.657
Enhancing levels of compliance due to the perceived risk of apprehension	4.420	.571
Aggregate Mean & Standard Deviation	**4.464**	**.690**

An aggregate mean of 4.464 in Table 3.1 indicates that the respondents strongly agreed that roadblock checks mounted along the highway by police and NTSA officials ensure that road users comply with road safety regulations reducing the risk of road accidents along the Salgaa-Mau Summit Highway. The findings of this study as indicated in Table 3.1 indicate that the respondents strongly agreed that conducting random breath testing to check on alcohol levels and enforcing speed limits (Mean=4.550; Std. Dev. =0.701) contribute to reduction of road accidents along the Salgaa-Mau Summit Highway. Checking compliance with the recommended alcohol levels ensures that drivers who are at risk of causing accidents due to intoxication and saturated alcohol levels are not allowed to drive. This ensures that only sober drivers who are able to focus and concentrate on the road are allowed to drive minimizing the chances of causing accidents. Reckless driving and speeding, a major cause of accidents on the sloppy 11km stretch of the

Salgaa-Mau Summit Highway with steep descent which often makes it hard for vehicles to decelerate down the slope. Therefore, checking on compliance with the recommended speed levels ensures that drivers who are driving recklessly and speeding are detained reducing the risks of accidents.

The effectiveness of these checks is dependent on the nature of the roadblock checks. Scott (2010) observes that random road watches where police mount roadblocks at different points on the road to check on alcohol levels and use unmarked police vehicles hidden on the roadside to monitor speed limits are effective techniques that enhance the apprehension of drunk and speeding drivers. NTSA officers use speed cameras to monitor drivers' speed from cars packed away from the visibility of the drivers in random spots increasing apprehension of non-compliant drivers. However, police manning the highway mainly use stationary checkpoints with minimal random checks and patrols. As a result, the drivers are aware of the check points and tend to comply with traffic laws when around these areas with police presence. Consequently, the definitiveness of the police roadblocks has encouraged dangerous and reckless driving in areas that are outside the monitored zone decreasing the effectiveness of police checks in reducing road accidents.

The respondents also agreed that conducting compliance checks on the state of vehicles, identify & remove non-compliant vehicles from the roads (Mean=4.450; Std. Dev. =0.808) contribute to reduction of road accidents along the Salgaa-Mau Summit Highway. Khan (2011) observes that vehicles with defective and nonfunctional mechanical systems increase the risk of being involved in road accidents. Therefore, checking on the state of the vehicles ensures that un-roadworthy vehicles are removed from the road reducing the risk of road accidents. However, Raynor and Mirzoev (2014) observe that corrupt officers who received bribes from drivers allowed them to continue operating with defective vehicles. This increases the risk of accidents on the road.

The findings of this study indicate that respondents agreed that arresting and prosecuting traffic offenders (Mean=4.440; Std. Dev. =0.715); and conducting investigations into the causes of accidents (Mean=4.460; Std. Dev. =0.657) contribute to reduction of road accidents along the Salgaa-Mau Summit Highway. Arrest and subsequent prosecution of non-compliant drivers contribute to behavior change by preventing the repetition of non-compliant behavior and deterring other drivers from speeding, drunk driving and overtaking on the continuous yellow line. The respondents also agreed that enhancing levels of compliance due to the perceived risk of apprehension and identification of offenders who fail to comply with road safety regulations contributes to reduction of road accidents along the Salgaa-Mau Summit Highway (Mean=4.420; Std. Dev. =0.571).

Road users tend to comply with traffic rules and road safety regulations when they know traffic police or NTSA officers are on the road due to the perceived high risk of being apprehended. Therefore, drivers tend to refrain from speeding and drunk driving when police checks are mounted on different spots of the road minimizing cases of road accidents.

4.2 Regression Analysis

4.2.1 Model Summary

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.736[a]	.542	.523	.78233

a. Predictors: (Constant), Roadblock Checks,

The results of coefficient of determination in Table 4.1 indicate that the value of R square is 0.542 which is adjusted to 0.523. This implies that police roadblock checks account for 54.2% variation in road accidents.

4.2.2 Analysis of Variance

One way Analysis of Variance was used to determine the significance of the regression model as shown in Table 4.2:

Table 4.2: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	68.817	4	17.204	28.110	.000[b]
	Residual	58.143	96	.612		
	Total	126.960	100			

a. Dependent Variable: Road Accidents

b. Predictors: (Constant), Roadblock Checks

Table 4.2 shows that the significance of the regression model is 0.000 and the value of F statistics is 28.110. The significance of the regression model is less than the significance level of 0.05 implying that the regression model was statistically significant and a good fit.

4.2.3 Co-Efficient of Correlation

Multiple regression analysis was used to determine the significance of the correlation between roadblock checks and road accidents as indicated in Table 4.3:

Table 4.3: Coefficients of Correlation

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.689	.903		4.085	.000
	Roadblock Checks	-.526	.155	-.726	-3.392	.001
a. Dependent Variable: Road Accidents						

The following regression equation can be derived from Table 4.3:

$Y= 3.689-0.526 X_1+e$

The regression equation above indicates that while holding roadblock checks constant, at zero Road Accidents=3.689. A unit rise in Roadblock Checks leads to decrease in road accidents by 0.526 (P=0.000< 0.05). Therefore at 5% significance level and a confidence level of 95% Roadblock Checks have a significant effect on reduction of road accidents.

Contributions to Knowledge and Practice

This study contributes to knowledge and practice through the evaluation of the effectiveness of roadblock checks as a preventive strategy in reducing road accidents along the Salgaa-Mau Summit junction stretch along the Nakuru-Eldoret highway. The study has established detention of drunk

and speeding drivers; removal of non-compliant vehicles; enhanced compliance with road safety regulations; and arrests of those violating traffic laws as ways through which police roadblocks have contributed to the reduction of road accidents along the stretch. It also identifies the difficulty of decelerating down on the sloppy nature of the 11km stretch of the Salgaa-Mau Summit Highway with steep descent; the definitiveness of the police roadblocks; and corruption among some of the traffic police officers as the reasons why the stretch continues to record the highest number of road accidents despite the presence of police roadblock checks on the road. The study makes recommendations that may inform policies and measures aimed at enhancing road safety and reducing road accidents on the highway.

Conclusions of the Study

This study concludes that police manning roadblocks along the Salgaa- Mau Summit Highway mitigate risks of accidents by detaining drunk and speeding drivers; identifying & removing of non-compliant vehicles with defective mechanical systems; enhancing compliance with road safety regulations due to perceived risk of apprehension; and arresting those violating traffic laws. However, the sloppy nature of the 11km stretch of the Salgaa-Mau Summit Highway with its steep descent makes it hard for vehicles to decelerate down the slope; the definitiveness of the police roadblocks has encouraged reckless driving outside the monitored zone; and some of the traffic police officers take bribes allowing drivers violating traffic regulations and with un-roadworthy motor vehicles on the highway.

Recommendations

This paper recommends that the traffic police officers and the NTSA officers should increase the number of random checks along the Salgaa-Mau Summit Highway to address cases of canvassing drivers who comply with road safety regulations where police are present and violate the regulations when outside the monitored zone. The Kenya National Highway Authority should elongate the runaway ramps on the sloppy 11 km stretch of the Salgaa-Mau summit Highway with a steep slope to check on speeding vehicles. The National Police Service should impose severe penalties for corrupt police officers.

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