PRACTICE OF ROAD SAFETY MEASURES AMONG KENYATTA AND UNITED STATES INTERNATIONAL UNIVERSITY STUDENTS IN NAIROBI COUNTY, KENYA

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JANUARY, 2017
DECLARATION

This thesis is my original work and has not been presented for a Degree in any other University.

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DEDICATION

This research work is dedicated to my late aunt, Selina Imali who died in tragic road traffic accident ten years ago.
ACKNOWLEDGEMENT

First and foremost, all glory and honor be unto God for his grace that has seen me through this research project. My sincere gratitude goes to my supervisors, Dr. Daniel Akunga and Dr. Steve Mogere for their patience, dedication and valuable contribution during the course of this study. Special thanks go to my wife Dolophine for her patience and my daughter Sasha for giving me a reason to work harder. I want to thank my parents, especially my mother for being that ‘single constant’ in my life. I thank my data collectors and research participants without whom it would have been impossible to accomplish this work. I want to extent my gratitude to Professor Wambalaba for guiding me during data collection at the United States International University (USIU). Lastly, I wish to acknowledge Mr. Mugambi for his guidance in data analysis. May the good Lord whose grace surpasses all human understanding guide and bless you all.
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ABBREVIATIONS AND ACRONYMS

BAC  Blood Alcohol Concentration
BCC  Behaviour Change Communication
DALYs Disability Adjusted Life Years
FGD  Focused Group Discussion
GDP  Gross Domestic product
GNP  Gross National Product
GOK  Government of Kenya
HIV/AIDS  Human Immune Deficiency Virus or Acquired Immune Deficiency Syndrome
ITU  International Telecommunication Union
KNHF  Kenya National Health Framework
KU   Kenyatta University
LMIC  Low and Middle Income Countries
MOH  Ministry of Health
NACOSTI  National council of Science Technology and Innovation
NTSA  National Transport and Safety Authority
RTAs  Road Traffic Accidents
RTI  Road Traffic Injuries
SDC  Social Demographic Characteristics
USIU  United States International University
WHO  World Health Organization
DEFINITION OF TERMS

**Assessment**: is the process of documenting knowledge, attitude and practice of road safety measures among university students.

**Attitude**: a response of university students to the items in attitude scale stating their opinion on road safety measures

**Knowledge**: correct response of University students towards a structured questionnaire about road safety measures

**Low middle income countries (LMIC)**: Low income countries are defined as those with gross national income of $1,045 or less while middle income are defined as those with Gross national Income of more than $1,045 but less than $12,746 (World Bank, 2014)

**Practice of road safety measures**: response of University students towards items assessing the actual application or use of road safety measures

**Road safety measures**: ways and methods of reducing the risk of a person using the road network being killed or seriously injured

**Road traffic accidents (RTAs)**: events involving collision of a vehicle with another vehicle, or debris or a pole on the road or hitting someone resulting in loss of property, injuries or death.
ABSTRACT

Each year road traffic accidents (RTAs) account for 1.24 million fatalities and 20 to 50 million injuries worldwide. Over (90%) of this fatalities occur in low and middle income countries (LMIC). In particular, Kenya losses at least ten people daily to road traffic accidents. Vulnerable road users including university students account for over half of these fatalities. Several strategies have been employed to curb the rising cases of RTAs; unfortunately they have lacked local input due to scarce or unavailable data. Therefore this study sought to assess the practice of road safety measures among Kenyatta University (KU) and United States International University (USIU) students in Nairobi County. Cross-sectional descriptive study design was employed for this study. Data was collected using structured questionnaire, focused group discussion (FGD) and observation checklists. The study recruited 429 undergraduate students aged between 18 to 45 years after the initial sample of 384 students had been exposed to weighted sampling. Five departments in KU and three in USIU were included in this study. Quantitative data was analyzed using SPSS Version 20, while qualitative data was organized and analyzed thematically. Hypothesis testing was done using Chi-square and Correlation coefficient. A p-value of < 0.05 was considered significant. Overall 299 (69.7%) respondents displayed good practice of road safety measures, 330 (76.9%) respondents had adequate knowledge of road safety and a strong positive correlation with practice of road safety measures; Pearson’s r(429) = 0.128**, p = 0.008, 302 (70.4%) respondents displayed positive attitude towards road safety measures with a significant positive correlation with practice; Pearson’s r (429) = 0.281**, p = 0.001 and finally, Residence, Course undertaking and University attending were found to be significant with practice of road safety; \( \chi^2 (1) = 11.078, p = 0.001, \chi^2 (1) = 9.207, p = 0.002 \) and \( \chi^2 (1) = 15.529, p = 0.001 \) respectively. In conclusion there was a clear relationship between knowledge, attitude, sociodemographic characteristics (SDC) and resultant practice of road safety measures among the study group. Therefore the study recommends that National Transport and Safety Authority (NTSA) in collaboration with Ministry of Education (MoE) and Ministry of Transport (MoT) introduces road safety education all in learning institutions to help improve more on practice of road safety; work closely with universities in sharing road safety knowledge amongst them; incorporate behavior change communication (BCC) in interventions on road safety and consider sociodemographic characteristics when developing road safety interventions targeting vulnerable groups including university students. The researcher proposes a similar study among other universities in Kenya to find out to what extent these results could be extrapolated; a feasibility study on how best universities could work together to improve attitudes towards road safety and a qualitative study to better understand the influence of sociodemographic characteristics on practice of road safety measures.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Road traffic accidents (RTAs) have been increasing worldwide and becoming an important public health problem. Each year road traffic accidents cause 1.25 million deaths and over 20 to 50 million injuries (World Health Organization, 2015; Ning et al., 2016). If nothing is done, projections show by 2030 RTAs will become the fourth leading cause of death worldwide, currently holding the ninth position (Mathers & Loncar, 2006a). More than (90%) of these injuries occurred in low and middle income countries (LMIC) with over half of those killed or injured on world’s roads being vulnerable road users—pedestrians, cyclists and motorcyclists (Adeloye et al., 2016). In Kenya (42%) of those killed on our roads are vulnerable road users (National Transport and Safety Authority, 2015). Africa has the highest fatality rate in the world at 28.3 per 100,000 people, while Kenya has 59.9 per 100,000 people (Lagarde, 2007; Bachani et al., 2013). Each year over 3000 people are killed on the Kenyan roads and scores more injured costing the country (8%) to (9%) of its Gross Domestic Product (Peden, Kobusingye, & Monono, 2013). Despite the impact of RTAs very little attention has been paid to this epidemic as evidenced by poor funding leading to scarce research in this area. This makes it impossible to inform policy makers, because of inadequate and often incomplete road safety data (Wisborg, Montshiwa, & Mock, 2011).

In Kenya, the most productive age group between 15 to 44 years is also the most affected by RTAs representing almost a third of all fatalities (Macharia, Njeru, Mulimusiime, & Nantulya, 2009). Over half of those killed on Kenyan roads are vulnerable road users including, pedestrian, cyclists, motor cycle riders and passengers in public
transport, including university students (Mock, Quansah, Goosen, & Kobusingye, 2014). According to National Transport and Safety Authority (NTSA), Nairobi County leads in road traffic accidents, followed closely by Nakuru County. The two major roads fuelling these numbers are Nairobi Mombasa highway and Thika superhighway. In 2015, Nairobi County recorded 668 fatalities from road traffic accidents, and 65 of this fatalities occurred along Thika Superhighway (National Transport and Safety Authority, 2015). This brings into sharp focus the missing link in the prevention strategies being employed currently. This, therefore, led to the present study to assess the practice of road safety among Kenyatta and United States International University students who are vulnerable road users.

1.2 Statement of the problem

Worldwide Initiatives geared towards reducing road traffic accidents (RTAs) are funded to a tune of 33 million compared to 900 million United States Dollars for HIV and AIDs. However, a larger proportion of the 33 million for RTAs prevention is spent in developed countries despite (91%) of RTAs occurring in low and middle income countries (Toroyan, Peden, & Iaych, 2013). This could be attributed to unavailable or incomplete data to inform responsive prevention models targeting most vulnerable groups. Globally, school going children including university students are vulnerable due to their exposure to RTAs, yet their safety practices and attitude towards use of safety measures remain, largely unknown (Chen, 2010). It is likely that the current RTA prevention interventions targeting this vulnerable group do not consider views on safety practices and attitude towards safety facilities like use of seat belts and foot bridges, partly due to unavailable empirically documented evidence on safety practices among university students in Kenya, hence the need for this current study.
Projections show that by 2020 RTAs will decrease in high income countries by (30%) but double in low and middle income countries (Mathers & Loncar, 2006b). Worldwide RTAs are the leading cause of death among people aged 15 to 44 years old, while in Kenya, ages 15 to 49 years are leading in road traffic accidents, most of them coming from poor back grounds hence pushing RTAs impact to higher levels (Macharia et al., 2009; World Health Organization, 2015). Despite RTAs prevention efforts spearheaded by National Transport Safety Authority (NTSA), accidents have been increasing with a seven percent increase annually (Bachani et al., 2012). Equally, traffic regulations meant to reduce road traffic accidents are loosely enforced by the police (Yitambe, Mwanzo, & Mogere, 2005). This could be interpreted to mean that there is blatant disregard for the rule of the law coupled with low risk perception towards RTAs. Overall, very little attention has been paid to this epidemic evidenced by poor funding leading to scarce research in this area (Wisborg et al., 2011), making it impossible to have evidence based RTAs prevention strategies, especially among vulnerable groups like university students who have unique road safety practices that need to be considered before developing road safety interventions (Hoekstra & Wegman, 2011). In most parts of the world university students are a vulnerable group due to insufficient consideration of their specific needs when planning for road interventions (Hoekstra & Wegman, 2011). Why interventions on road safety among this vulnerable group are not working is not clearly documented, but thought to be closely linked to their practice of road safety measures.

1.3 Justification

Road safety interventions in developed countries have proved effective over time because they are based on evidence (Wisborg et al., 2011). Worldwide less than one percent
of disaster related research ever published talks about LMIC despite (85%) of disasters and (95%) of disaster related fatalities occurring in these countries (Mock et al., 2014). Road traffic accidents are underreported by almost half and the scarce data available is often incomplete (Lagarde, 2007). This has caused the epidemic of RTAs to attract very little attention mainly due to lack of valuable and valid information (Perel, Ker, Ivers, & Blackhall, 2007). United Nations acknowledging the need for urgent action set a target through the 2030 agenda of sustainable development goals (SDG), to half death and injuries caused by road traffic accidents by the year 2020 (Kumar, Kumar, & Vivekadhish, 2016).

Thika superhighway has brought several positive contributions to the economy because of smooth movement of people and goods. However it is also the second leading road in traffic fatalities after Mombasa road according to National Transport and Safety Authority (National Transport and Safety Authority, 2015). Thika superhighway and the Northern corridor passing through Naivasha, have been identified as high impact roads responsible for (80%) of RTA victims presenting for treatment in their respective Country hospitals (Mogaka et al., 2011). Kenyatta University and United States International University are both situated along Thika highway which is frequently used by university students making them vulnerable to road traffic accidents, despite this, there has been little effort to understand practice of road safety among university students making it hard to design targeted interventions (Montero, Spencer, & Ariens, 2012). Understanding the practice of road safety measures among university students is vital in formulating measures to curb road carnage.
1.4 Research questions

a. What is the practice of road safety measures among University students in KU and USIU?

b. What is the Knowledge level of road safety measures and its influence on practice of road safety among KU and USIU students?

c. What is the attitude towards road safety measures and how it influences practice of road safety among KU and USIU students?

d. What is the association between Sociodemographic characteristics (SDC) and practice of road safety measures?

1.5 Null hypothesis

a. Knowledge and attitude of road safety measures do not have influence on practice of road safety among KU and USIU students.

b. Sociodemographic characteristics (SDC) do not have effect on the practice of road safety measures

1.6 Objectives

1.6.1 Broad Objective

To assess the practice of road safety measures among of KU and USIU students in Nairobi County, Kenya.

1.6.2 Specific Objectives

a. To establish the practice of road safety measures among university students in KU and USIU.
b. To determine the knowledge level of road safety measures and its effect on practice of road safety among KU and USIU students.

c. To determine the attitude about adherence to road safety measures and how it influences practice of road safety among KU and USIU students.

d. To determine the association between sociodemographic characteristics with practice of road safety measures among KU and USIU students.

1.8 Limitations and Delimitations

1.8.1 Limitation

The study was done among KU and USIU chosen purposefully meaning the results of this study can only have reasonable generalizations.

1.8.2 Delimitation

The researcher limited this study to undergraduate students in KU and USIU, aged between 18 to 45 years who gave voluntary consent to take part in the study.

1.9 Conceptual Framework

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of road safety measures (speed, seat belts use, road crossing points, bus stop, vehicle overloading)</td>
<td>Practice of road safety measures</td>
</tr>
<tr>
<td>Attitude of road safety measures (perception, susceptibility, and road safety adherence)</td>
<td></td>
</tr>
<tr>
<td>Sociodemographic characteristics (gender, age, Residence, Course, religion, University attending)</td>
<td></td>
</tr>
</tbody>
</table>

Conceptual framework indicating factors related to practice of road safety

Figure 2.1 Conceptual framework of practice of road safety measures
The study set out to assess the practice of road safety measures among university students in KU and USIU. The illustration in figure 1.1 shows relationship between the dependent and independent variables. The framework illustrates factors affecting practice of road safety measures and they include Sociodemographic characteristics (SDC), knowledge of university students about road safety measures and their attitudes towards road safety measures. Several studies have shown that adequate knowledge of road safety measures has a positive influence on practice of road safety (Dong et al., 2011; Reang & Tripura, 2014). Other studies have also associated sociodemographic characteristics with practice of road safety measures (Bates et al., 2014; Redhwan & Karim, 2010). Additionally perceptions, safety adherence and susceptibility are believed to have influence on practices of road safety measures among university students (Mirzaei et al., 2014; Ibrahim et al., 2012; Morency, Gauvin, Plante, Fournier, & Morency, 2012).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter two focused on reviewing of literature on road safety, specifically on knowledge, attitude and sociodemographic characteristics about road safety and their influence the practice of road safety measures among university students.
2.2 Road safety measures

Road safety measures are used to reduce the risk of a road network user being seriously injured or killed. Road safety is directed at one of the following elements: patterns of land use, road itself, traffic control devices, motor vehicles, police enforcement and road users and their behavior (Elvik, 2000). Road traffic regulation are meant to control over speeding, drunk driving, use of mobile phone while driving and discourage fatigue driving (Toroyan et al., 2013).

2.3 Practice of road safety measures

2.3.1 Speed

Speed at impact determines the fatality of injury; an increase in speed by one kilometer per hour increases road traffic accident by around three percent (Hyder et al., 2012). Speeding is linked to other factors such as age, gender, state of the road and vehicle type (Bates et al., 2014). Contrary to this, poverty has been shown to have significant determinant on young drivers' fatal crash risks (Males, 2009). A study by United Kingdom Department of Transport (DfT) found that death or serious injuries decreased by (42%) following introduction of speed cameras (Gains, Nordstrom, Heydecker, & Shrewsbury, 2005). Speed limiting gadgets in vehicles, limiting engine power and calming measures hold the greatest promise for the developing countries including Kenya (Mohan, 2007).

2.3.2 Seat belt

Seat belts have been shown to reduce traffic injuries by around (40%) to (50%) in developed countries when used correctly and consistently (Toroyan et al., 2013). Unfortunately there is poor compliance of their use both among passengers and drivers in developing countries (Ogundele, Ifesanya, Adeyanju, & Ogunlade, 2013). In a 24 hour
observation study among vehicle occupants in Nigeria, compliance with use of seat belts was slightly above half (Popoola, Oluwadiya, Kortor, Denen-Akaa, & Onyemaechi, 2013). Several other studies have shown poor use of seat belt among both passengers and drivers (Iribhogbe & Osime, 2008; Klair & Arfan, 2014). In a study in Armenia, on Global burden of road traffic injuries and its relevance to emergency physician, it was reported that only (24%) of people who use cars wore seat belt despite (90%) of cars having seat belts (Chekijian & Truzyan, 2012).

2.3.3 Alcohol impairment

Alcohol influences driving by interfering with psychomotor and thinking capacity increasing the likelihood of being involved in reckless behavior like over speeding. Low income countries suffer from effects of alcohol intoxicated driving coupled with poor legislation and even its enforcement. In a study in New Zealand it was reported between (33%) and (69%) of fatally injured drivers had alcohol in their blood (Keall, Frith, & Patterson, 2004). Some drugs, whether legal or illegal, have effect on the reaction time, skill and concentration of a driver in the same way alcohol affects a driver. It becomes worse because those who use drugs sometimes use them with alcohol (Tunbridge, James, & Keigan, 2001). Use of breathalyzer is a strategy that is employed widely to reduce alcohol intoxicated driving. The machine measures blood alcohol level (BAC) in volume as a percentage- as blood alcohol rises so does the driver impairment hence the risk of causing RTAs. At 0.2 mg/dl blood alcohol level some studies point out that most of driving populations are impaired in some required skills although the level at which one is allowed to drive varies across the globe (Alford, Hamilton-Morris, & Verster, 2012). In Denmark BAC was reduced from 0.08 to 0.05 g/dl among first year drivers and there was mixed
result, but in general there was a positive effect on awareness of BAC from (40%) before the law to (70%) after the law. Police enforcement was seen as a major factor in this new law (Bernhoft & Behrensdorff, 2003). Enforcement BAC in low middle income countries is a challenge just as laws controlling sell of alcohol to children.

### 2.3.4 Hand held mobile phones

Mobile phone usage has doubled worldwide since the year 2000 with a quarter of the world population owning mobile phones, and this surge is fueled by third world countries (World Bank, 2015). Use of mobile phone distracts the driver from the primary job of driving by distracting their judgment (Wilson, Fang, Wiggins, & Cooper, 2003), and in many developed countries use of mobile phones while driving has been banned, although in others hand free devices are still in use. Research has shown hand free devices are no better than hand held mobile phones (Ishigami & Klein, 2009). Use of hand held mobile phone ten minutes before a crash increases the risk of crash four times irrespective whether they were hands-free or hand held (McEvoy et al., 2005).

### 2.4 Knowledge of road safety measures

In a study among undergraduate medical students on awareness and practice of road safety measures in South Indian State, they reported knowledge of road safety measures to be high (Kulkarni et al., 2013). A study on knowledge of road safety among medical students in Seer region in Saudi Arabia knowledge of traffic regulation was moderate to high in more than (75%) of the students, while more than (90%) of them believed in the importance of the use of seat belts. The reasons given for not using seat belt were forgetfulness and anxiety (Al-Khaldi, 2006). In a study on knowledge and practice about road Safety among undergraduate medical students of Agartala Government Medical
College and Govinda Ballabh Pant hospital knowledge of road safety was reported to be high among the study participants (Reang & Tripura, 2014). In a study in Tripoli, Libya, concerning driver’s attitudes and awareness of traffic safety, the study revealed the study participants had good knowledge of road safety (Yahia, Ismail, Almselati, & Ladin, 2014).

2.5 Attitude of road safety measures

A study in Saudi Arabia among healthcare students revealed most (75%) of the students had positive attitude about road safety measures (Al-Khaldi, 2006). In another study in Ethiopia among commercial drivers, majority (51.7%) of drivers had negative attitude towards risky driving behaviors. It further revealed that drivers of secondary education and with high average monthly income were more likely to have risky driving behavior (Hassen, Godesso, Abebe, & Girma, 2011). In a study on driver’s attitude towards traffic safety violations and risk taking behavior in Kumasi, Ghana, gender and age had significant influence on attitudes towards traffic violations although not with a high margin. In the same research men were more influenced by perceived gains from traffic violations than females (Akaateba & Amoh-Gyimah, 2013). A study in Ain Sham university, Cairo on risk perception and pedestrian injuries among students it was reported that students who "perceived it safe to cross the road from any point" or "did not perceive it to be safer to cross at a zebra crossing" were less likely to "look both ways" before crossing the road. Similarly, there was a positive association between road safety education and participants’ road crossing behaviors (Ibrahim, Day, Hirshon, & El-Setouhy, 2012). In a study in Tripoli, Libya on attitudes and awareness of traffic safety among drivers, age and gender were found to influence both attitudes and practice of road safety (Yahia et al., 2014).
CHAPTER THREE: METHODOLOGY

3.1 Study Design

This study used descriptive cross-sectional study design, favored because it enabled the researcher to collect data within a specified period of time while the respondents were in their respective universities.

3.2 Variables

3.2.1 Dependent variable

The dependent variable for this study was the practice of road safety measures among KU and USIU students. Specifically the researcher assessed practice of road safety using the following: road crossing points, vehicle boarding sites, intoxicated driving, use of traffic lights, over speeding and use of hand held mobile phone while driving.

3.2.2 Independent variables

This study had three independent variables- sociodemographic characteristics, attitude and knowledge of road safety measures. Sociodemographic characteristics were gender, age, residence, University attending, course undertaking and religion; knowledge of road safety was assessed using the following: seat belt use, road crossing points, bus stop and use of public transport; attitude towards road safety measures was assessed using: perception, susceptibility and adherence to road safety measures among university students.

3.3 Location of the study

The study was done in Kenyatta and United States International University in Nairobi County. The two universities were chosen purposefully because they are situated
along Thika Superhighway. Thika superhighway is the ranked second in road traffic accidents after Nairobi Mombasa road (National Transport and Safety Authority, 2015). Thika Superhighway and the Northern corridor have been identified as high impact roads in the country responsible for (80%) of all RTA victims presenting in their respective county hospitals (Mogaka et al., 2011). Thika Superhighway is regularly used by students from both KU and USIU regularly making them vulnerable to road traffic accidents.

3.4 Study population

The study targeted undergraduate university students from KU and USIU. Overall population for this study was 43,000 students; specifically Kenyatta University had 38,000 students while United States international university had 5000 students.

3.5 Sampling Technique and Sample size

3.5.1 Sampling Technique

Kenyatta University (KU) and United States International University (USIU) were chosen purposefully because they are situated along Thika superhighway which is the second leading road in road traffic fatalities in Kenya. Fisher et al method was used to calculate the sample. Later the sample was exposed to weighted sampling to balance the samples in the two universities, noting KU had produced larger sample than USIU as the sample was allocated to each university using Probability Proportionate to Size (PPS) which uses the population to allocate the sample. Random sampling was used to select five schools in KU out of 15 schools, while in USIU all the three schools were included in the study. The schools were exposed further to random sampling to departmental level where one department was chosen randomly in each school. Selection of students to take part in the study in each department, the sample was exposed to Systemic Random Sampling
(SRS) where K\textsuperscript{th} value was calculated on the strength of sample in each department which gave interval between one participant and the other. The first respondent was selected randomly using the student’s admission numbers.

3.5.2 Sample size calculation

Sample size was calculated using fisher et al., 1991 formulae with (95%) confidence interval and sampling error of (5%). In the main campus of Kenyatta University we had around 38,000 students while United States International University had 5,000 students bringing the total to 43,000 students. Using Fisher et al., formulae $n = \frac{Z^2pq}{d^2}$.

Where:

- $n$ = desired sample size (>10,000) required.
- $Z$ = standard normal deviate at the required confidence level (1.96 Confidence level of 95%).
- $p$ = proportion estimated to have a particular characteristic (no reasonable estimate a default of 50% or 0.5 is used).
- $q = 1 - p$
- $d =$ Level of statistical significance (set at 0.05)

Sample $(n) = \frac{1.96^2 \times 0.5 \times (1-0.5)}{0.05^2} = 384$.

After getting a sample of 384 university students, Probability Proportionate to Size (PPS) was used to allocate the sample to the two universities according to their population. KU got 339 students while USIU got 45 students. This was later exposed to weighted sampling to normalize the sample between the two universities. The sample in USIU was increased to 90 students bringing the total sample to 429 university students.
3.6 Pre-testing

The research instrument was pretested in a similar population among Jomo Kenyatta University of Agriculture and Technology (JUAT) students in school of health sciences. The university is located along Thika superhighway around 15 kilometers to Thika town. Pre-test was done among 40 students and focused group discussion (FGD) among 8 students. Pretesting was undertaken to ensure clarity, validity and reliability of the questions being asked, and later the tool was revised accordingly and finalized.

3.7 Validity and Reliability

3.7.1 Validity

Validity of the data collection tools was assured when pre-test was done before actual data collection and revised accordingly before being employed for actual data collection. This ensured that the questions were appropriate, acceptable and clear to respondents.

3.7.2 Reliability

Reliability of the data collection tools was established during the pre-test in order to check the consistency of responses provided. Research assistants were trained on tool being used in this study.

3.8 Data Collection Techniques

3.8.1 Structured Questionnaire

A structured questionnaire was used to collect data from the university students who consented to take part in the study. The questionnaire was administered in the lecture
rooms. The first student was chosen randomly using the admission numbers, then the rest were chosen systematically until the required number was reached.

3.8.2 Focus Group Discussion (FGD)

Focus group discussion (FGD) guide was used to collect data and clarify issues regarding road safety measures. A total of four FGDs- two for each university- were held with each discussion comprising of 8 participants. Student leaders and students from other departments not chosen for survey earlier took part in the discussion. They were recruited using convenient sampling. FGDs were guided by the researcher which assisted in avoiding a few individuals dominating the discussion thus creating bias. The discussion took 40 to 50 minutes. The research assistant helped in taking notes on the key issues that were coming out during the discussions. A tape recorder was also used to record the discussion. Later the information was transcribed and major issues emerging from the discussion captured. The participants were informed about use of the tape recorder before beginning of the discussion.

3.8.3 Observation Checklist

Observation of road safety practice among KU and USIU students was done on Saturdays and Sundays at 10.00 am and 1.00 pm. This was informed after carrying out a sample survey before the study that showed around 80 to 85% of the people using the foot bridge were university students. This means that not all students observed were students, but majority of them were university students. The observer stood near the bus stop just next to the main gates of the two universities which have footbridge crossing Thika Superhighway, using a Checklist was able to note the practice of road safety measures among university students.
3.9 Logistical and ethical consideration

Approval for this study was obtained from the graduate school of Kenyatta University, while ethical clearance to conduct the research from Kenyatta University Ethical Review Committee. In United States International University approval to carry out research was obtained from the universities research committee. Permit for the research was obtained from National Council of Science and Technology (NACOSTI) in the Ministry of Higher Education Science and Technology (MOHEST). Research assistants were chosen among graduates who had qualified within two years and trained on the research tools. They also took part in pretest at Jomo Kenyatta University (JKUAT). They were also closely supervised to make sure they were collecting the required information. Informed consent was obtained from the study participants and they were assured of privacy and confidentiality of the information given.

3.10 Data Analysis

Quantitative data was obtained from the respondents and entered into excel sheet, cleaned, coded and exported to SPPS Version 20 Software for analysis. Using descriptive statistics data was presented in frequencies, figures and tables. Descriptive statics were used to explain the Sociodemographic characteristics, knowledge, attitude and practice of road safety measures among university students. Inferential statistics were also used: correlation coefficient was employed to find the relationship between knowledge and attitude with practice of road safety measures and chi-square was used to find association between Sociodemographic characteristics with practice of road safety measures among university students. A p value of <0.05 was considered significant for this study.
Qualitative data was transcribed and analyzed according to the emerging themes and later changed to quantitative data using composite scoring comprising of nine knowledge, attitude and practice questions. These questions were used to assess the knowledge level, practice and attitude towards road safety measures among KU and USIU students. Analysis was done using the scores, for each positive response the candidate earned one point; if the candidate did not know, the candidate earned zero point, and if the candidate gave negative answer, the candidate earned negative one. Finally, these points were cumulatively added to create a knowledge, attitude and practice scores. A scale was developed for each variable for the purpose of categorization. Practice of road safety had a maximum score of positive nine while the minimum score negative nine. It was categorized into good (4 to 9), and bad (-9 to 3) practice of road safety measures. Similarly knowledge had a maximum score of positive 9 and the minimum score was -9. Anybody who got between 4 and 9 had adequate knowledge, while those who got between -9 and 3 had inadequate knowledge of road safety measures. Lastly attitude of road safety measures had maximum score of 19 and the minimum score of negative 19. It was categorized into positive (1 to 19) and negative (-19 to 0) attitude towards road safety measures.
CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

Chapter four was dedicated to the presentation of the results and discussion of this study. The purpose of this study was to assess the practice of road safety measures among KU and USIU students in Nairobi County. The results were presented in form of tables, graphs, and figures and discussed according to the study objectives.

4.2 Results of the study

4.2.1 Sociodemographic Characteristics of University Students

<table>
<thead>
<tr>
<th>SDC</th>
<th>KU</th>
<th>USIU</th>
<th>Total</th>
<th>χ²</th>
<th>df</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>178 (52.5%)</td>
<td>38 (42.2%)</td>
<td>216 (50.3%)</td>
<td>3.009</td>
<td>1</td>
<td>0.083</td>
</tr>
<tr>
<td>Females</td>
<td>161 (47.5%)</td>
<td>52 (57.8%)</td>
<td>213 (49.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-23</td>
<td>243 (71.7%)</td>
<td>66 (73.3%)</td>
<td>309 (72%)</td>
<td>13.693</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td>24-29</td>
<td>71 (20.9%)</td>
<td>8 (8.9%)</td>
<td>79 (18.4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30</td>
<td>25 (7.4%)</td>
<td>16 (17.8%)</td>
<td>41 (9.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>153 (45.1%)</td>
<td>36 (40.0%)</td>
<td>189 (44.1%)</td>
<td>0.760</td>
<td>1</td>
<td>0.383</td>
</tr>
<tr>
<td>Rural</td>
<td>186 (54.9%)</td>
<td>54 (60.0%)</td>
<td>240 (55.9%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>285 (84.1%)</td>
<td>68 (75.6%)</td>
<td>353 (82.3%)</td>
<td>16.790</td>
<td>2</td>
<td>0.001</td>
</tr>
<tr>
<td>Islam</td>
<td>41 (12.1%)</td>
<td>8 (8.9%)</td>
<td>49 (11.4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>13 (3.8%)</td>
<td>14 (15.6%)</td>
<td>27 (6.3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Course</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>220 (64.9%)</td>
<td>250 (58.3%)</td>
<td>250 (58.3%)</td>
<td>29.139</td>
<td>1</td>
<td>0.001</td>
</tr>
<tr>
<td>Arts</td>
<td>119 (35.1%)</td>
<td>179 (41.7%)</td>
<td>179 (41.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Car ownership</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>173 (51.0%)</td>
<td>40 (44.4%)</td>
<td>213 (49.7%)</td>
<td>1.235</td>
<td>1</td>
<td>0.266</td>
</tr>
<tr>
<td>No</td>
<td>166 (49.0%)</td>
<td>50 (55.6%)</td>
<td>216 (50.3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall 429 respondents took part in this study, 339 (79.0%) respondents were from Kenyatta University (KU), while 90 (21.0%) were from United States International
University (USIU). Males were represented by 216 (50.3%) respondents, while 213 (49.7%) were females, and they were equally distributed; $\chi^2 (1) = 3.009; p = 0.083$. Ages 18 to 23 years had the highest distribution of 309 (72.0%) respondents, while those above 30 years, 41 (9.6%) were least represented in this study. There was significant difference in ages among the respondents; $\chi^2 (1) = 13.69, p = 0.001$. Respondents from rural area were 240 (55.9%), while the remaining 189 (44.1%) respondents were from urban area and they were equally distributed; $\chi^2 (1) = 0.760, p = 0.383$. Majority of the respondents 350 (82.3%) were Christians followed by 40 (11.4%) Muslims and remaining 27 (6.3%) were from other religions. There was significant differences in religion among the study group; $\chi^2 (1) = 16.790, p = 0.001$. Respondents doing science courses were 250 (58.3%), while arts Courses were 179 (41.7%) and there was no significant differences between these two groups; $\chi^2 (1) = 29.139, p = 0.001$. Overall 213 (49.7%) respondents said they or their families owned a vehicle, while 216 (50.3%) respondents did not, and they were equally distributed ($p = 0.266$) as shown in table 4.2
4.2.2 Practice of Road Safety Measures among KU and USIU students

Overall 299 (69.7%) respondents displayed good practice of road safety measures and 130 (30.3%) had bad practice of road safety measures. Specifically 78 (86.7%) respondents from USIU had good practice of road safety measures and 221 (65.2%) respondents were from KU as shown in figure 4.1 above.

Figure 4.1 Practice of road safety measures among KU and USIU students
4.2.3 Assessment of the practice of road Safety among KU and USIU students

### Table 4.2 Assessment of the practice of road safety among KU and USIU students

<table>
<thead>
<tr>
<th>Variables assessing Practice of Road Safety</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. If the road is clear I rarely use the foot bridge</td>
<td>184 (42.9%)</td>
<td>245 (57.1%)</td>
</tr>
<tr>
<td>ii. I do not always board a vehicle at the bus stop</td>
<td>249 (58%)</td>
<td>180 (42%)</td>
</tr>
<tr>
<td>iii. I love vehicles that over speed as you reach your destination on time</td>
<td>126 (29.4%)</td>
<td>303 (70.6%)</td>
</tr>
<tr>
<td>iv. When crossing the road I always use pedestrian zebra crossing points</td>
<td>184 (42.9%)</td>
<td>245 (57.1%)</td>
</tr>
<tr>
<td>v. If I board a vehicle and driver drives while using mobile phone it is none of my problem</td>
<td>127 (29.6%)</td>
<td>302 (70.4%)</td>
</tr>
<tr>
<td>vi. I like just a little bit intoxicated driver as they drive without fear.</td>
<td>57 (13.3%)</td>
<td>371 (86.5%)</td>
</tr>
<tr>
<td>vii. I only put on a seat belt when I see the police</td>
<td>191 (44.5%)</td>
<td>238 (55.5%)</td>
</tr>
<tr>
<td>viii. I always obey traffic lights as a pedestrian</td>
<td>258 (60.1%)</td>
<td>171 (39.9%)</td>
</tr>
<tr>
<td>ix. I always board overloaded vehicles anyway</td>
<td>145 (33.8%)</td>
<td>284 (66.2%)</td>
</tr>
</tbody>
</table>

The table above gives specific variables that were used to assess the practice of road safety among university students. The results revealed 249 (58%) respondents do not always board a vehicle at the bus stop. Of this 199 (58.7%) respondents were from KU while 55 (55.6%) respondents were from USIU. On the question of a driver using hand held phone while driving 127 (29.6%) respondents felt that it was not their problem, 105 (75.4%) respondents were from KU, while 22 (24.4%) respondents were from USIU. The study further established 184 (42.9%) respondents rarely use foot bridge if the road is clear, 144 (41.3%) were from KU, while 44 (48.9%) respondents from USIU. All students
observed during the observational survey used foot bridge while crossing Thika superhighway. During Focused Group Discussion (FGD) the discussant said they do not use the foot bridge at night because of security reasons, one discussant said ‘…..who want to be mugged up there, I would rather run across the road……’ Discussant 6 from KU

Additionally, this study revealed 191 (44.5%) respondents only put on seat belt when they see traffic police officer, 151 (44.5%) respondents were from KU and 40 (44.4%) from USIU. During observational study none of the students was observed to have used seat belt after boarding public transport vehicle. During FGD ‘the respondents said ‘….. Seat belts are dirty and even the police themselves do not use them….’ Respondent 2 from USIU
4.2.4 Knowledge level of road safety among KU and USIU students and its influence on practice of road safety measures

![Knowledge level of road safety measures among KU and USIU students](image)

**Figure 4.2 Knowledge of road safety measures among KU and USIU students**

Overall 330 (76.9%) study participants displayed adequate knowledge of road safety measures, 78 (86.7%) respondents were from USIU and 250 (74.3%) respondents from KU. Inadequate Knowledge of road safety was displayed by 99 (23.1%) respondents, 87 (25.7%) were from KU and 20 (23.1%) from USIU as shown in figure 4.3.
4.2.5 Assessment of Knowledge of road safety measures among KU and USIU students

Table 4.3 Assessment of Knowledge of road safety among KU and USIU students

<table>
<thead>
<tr>
<th>Variables used to assess Knowledge of road safety</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. The foot bridge is specifically designed for road safety purposes</td>
<td>372 (86.7%)</td>
<td>57 (13.3%)</td>
</tr>
<tr>
<td>ii. Bus stops are the main points for boarding public transport</td>
<td>291 (68.1%)</td>
<td>138 (32.2%)</td>
</tr>
<tr>
<td>iii. Speed limit on Kenyan highways is set at 80km/hour</td>
<td>300 (69.9%)</td>
<td>129 (30.1%)</td>
</tr>
<tr>
<td>iv. Pedestrian crossing signs are only found near schools</td>
<td>85 (19.9%)</td>
<td>344 (80.2%)</td>
</tr>
<tr>
<td>v. Use of mobile phone while driving distracts the driver from the main job of driving</td>
<td>349 (81.4%)</td>
<td>80 (18.6%)</td>
</tr>
<tr>
<td>vi. Alcohol blow devices main purpose is to reduce road traffic accidents</td>
<td>228 (53.1%)</td>
<td>201 (46.9%)</td>
</tr>
<tr>
<td>vii. Safety Seat belt only reduce serious injuries or death to the driver and front passengers</td>
<td>165 (38.5%)</td>
<td>264 (61.5%)</td>
</tr>
<tr>
<td>viii. When traffic lights turns Red it means give way for the vehicles</td>
<td>246 (57.3%)</td>
<td>183 (42.7%)</td>
</tr>
<tr>
<td>ix. It is not an offence in Kenya to board a vehicle that is overloaded</td>
<td>79 (18.4%)</td>
<td>350 (81.6%)</td>
</tr>
</tbody>
</table>

The respondents were asked if they believed foot bridges were designed for road safety purposes, 272 (86.7%) respondents agreed with the statement, 284 (83.8%) respondents were from KU and 88 (97.8%) respondents from USIU. On speed limit 300 (69.9%) respondents said speed limit on Kenyan highway is set at 80km/hour, 226 (66.7%) respondents were from KU, and 74 (82.2%) respondents from USIU. When asked if alcohol blow device helps to reduces road traffic accidents 228 (53.1%) respondents said
yes, 168 (49.6%) were from KU and 60 (66.7%) from USIU. On the statement, ‘seat belts reduces serious injuries to the driver and front passengers only’, 165 (38.5%) respondents agreed with statement, 127 (37.5%) respondents were from KU, while 38 (42.2%) respondents were from USIU as shown in table 4.3.

The results further revealed there was strong positive relationship between knowledge of road safety measures with practice of road safety measures; Pearson’s r (429) = 0.128**, p = 0.008.

### 4.2.6 Attitude towards road safety measures and its effect on Practice of road safety among KU and USIU students

![Figure 4.3 Attitudes of road safety measures among University students](image)

Overall 302 (70.4%) respondents had positive attitude towards road safety measures, 66 (71.1%) respondents were from USIU and 238 (70.2%) respondents from KU. Negative attitude towards road safety measures was displayed by 125 (30.6%) respondents.
respondents. Correlation was used to find the relationship between attitude and practice of road safety measures among university students from KU and USIU and the results revealed a significant positive correlation between attitude and practice of road safety measures; Pearson’s $r (429) = 0.281^{**}$, $p = 0.001$
### 4.2.7 Assessment of the attitude towards road safety measures among KU and USIU students

**Table 4.4 Assessment of the attitude towards road safety measures among KU and USIU students**


<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think construction of foot bridges on Kenyan roads is a waste of resources</td>
<td>288</td>
<td>94</td>
<td>18</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>(67.1%)</td>
<td>(21.9%)</td>
<td>(4.2%)</td>
<td>(3.7%)</td>
<td>(3%)</td>
</tr>
<tr>
<td>It is a waste of time trying to locate a bus stop when a vehicle can pick you anywhere along the road</td>
<td>127</td>
<td>103</td>
<td>68</td>
<td>94</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>(29%)</td>
<td>(24%)</td>
<td>(15.9%)</td>
<td>(21.9%)</td>
<td>(8.6%)</td>
</tr>
<tr>
<td>Speed does not cause road traffic accidents or death, but carelessness does.</td>
<td>147</td>
<td>97</td>
<td>57</td>
<td>69</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>(34.3%)</td>
<td>(22.6%)</td>
<td>(13.3%)</td>
<td>(16.1%)</td>
<td>(13.8%)</td>
</tr>
<tr>
<td>Zebra crossing are rarely observed by drivers</td>
<td>61</td>
<td>65</td>
<td>84</td>
<td>128</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>(14.2%)</td>
<td>(15.2%)</td>
<td>(19.6%)</td>
<td>(29.8%)</td>
<td>(21.2%)</td>
</tr>
<tr>
<td>A good driver can use mobile phone while driving without causing road traffic accidents</td>
<td>197</td>
<td>105</td>
<td>59</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>(45.9%)</td>
<td>(24.5%)</td>
<td>(13.8%)</td>
<td>(9.8%)</td>
<td>(6.1%)</td>
</tr>
<tr>
<td>Alcohol enhances concentration of the driver while driving</td>
<td>300</td>
<td>76</td>
<td>24</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>(69.9%)</td>
<td>(17.7%)</td>
<td>(5.6%)</td>
<td>(3.5%)</td>
<td>(3.3%)</td>
</tr>
<tr>
<td>I don’t like using a seat belt when I board a vehicle</td>
<td>150</td>
<td>87</td>
<td>98</td>
<td>62</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>(35%)</td>
<td>(20.3%)</td>
<td>(22.8%)</td>
<td>(14.5%)</td>
<td>(7.5%)</td>
</tr>
<tr>
<td>Traffic lights are a waste of time as they keep someone waiting for long</td>
<td>259</td>
<td>116</td>
<td>31</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>(60.4%)</td>
<td>(27%)</td>
<td>(7.2%)</td>
<td>(3.5%)</td>
<td>(1.9%)</td>
</tr>
<tr>
<td>I don’t care if the vehicle I am boarding is overloaded</td>
<td>222</td>
<td>107</td>
<td>53</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>(51.7%)</td>
<td>(24.9%)</td>
<td>(12.4%)</td>
<td>(7.2%)</td>
<td>(3.7%)</td>
</tr>
</tbody>
</table>
Table 4.4 above presents specific variables used to assess attitude of university students towards road safety measures. On question of whether it is speed or carelessness that causes road traffic accidents, 147 (34.3%) respondents strongly disagreed with the statement. This study further revealed 91 (21.2%) respondents agreed strongly that Zebra crossings are rarely observed by drivers with 69 (20.4%) respondents coming from KU and 22 (24.4%) respondents from USIU.

The study further established that 31 (7.2%) of respondents strongly agreed with the statement ‘I don’t like using a seat belt when I board a vehicle’ with 23 (6.8%) respondents from KU and 8 (8.9%) respondents from USIU. Additionally, 31 (7.2%) respondent agreed with statement ‘I don’t care if the vehicle I am boarding is overloaded’ with 25 (7.4%) respondent from Kenyatta University and 6 (6.7%) from United States International University
4.2.8 Association between Sociodemographic Characteristics with Practice of road safety

Table 4.5 Association between Sociodemographic Characteristics with Practice of road safety measures

<table>
<thead>
<tr>
<th>Sociodemographic Characteristics</th>
<th>Practice of Road Safety</th>
<th>χ²</th>
<th>df</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>150 (50.2%)</td>
<td>66 (50.8%)</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>females</td>
<td>149 (49.8%)</td>
<td>64 (49.2%)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>18 – 23</td>
<td>217 (72.6%)</td>
<td>92 (70.8%)</td>
<td>0.328</td>
</tr>
<tr>
<td></td>
<td>24 – 29</td>
<td>55 (18.4%)</td>
<td>24 (18.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;30</td>
<td>27 (9.0%)</td>
<td>14 (10.8%)</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>Rural</td>
<td>183 (61.2%)</td>
<td>57 (43.8%)</td>
<td>11.076</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>116 (38.8%)</td>
<td>63 (56.2%)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td>Christian</td>
<td>244 (81.6%)</td>
<td>109 (83.8%)</td>
<td>0.892</td>
</tr>
<tr>
<td></td>
<td>Islam</td>
<td>34 (11.4%)</td>
<td>15 (11.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>21 (7.0%)</td>
<td>6 (4.6%)</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Science</td>
<td>160 (64.0%)</td>
<td>90 (36.0%)</td>
<td>9.207</td>
</tr>
<tr>
<td></td>
<td>Arts</td>
<td>139 (77.7%)</td>
<td>40 (22.3%)</td>
<td></td>
</tr>
<tr>
<td>Car Ownership</td>
<td>Yes</td>
<td>138 (64.8%)</td>
<td>75 (35.2%)</td>
<td>4.825</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>161 (74.5%)</td>
<td>55 (25.5%)</td>
<td></td>
</tr>
<tr>
<td>University attending</td>
<td>KU</td>
<td>221 (65.2%)</td>
<td>118 (34.8%)</td>
<td>15.529</td>
</tr>
<tr>
<td></td>
<td>USIU</td>
<td>78 (86.7%)</td>
<td>12 (13.3%)</td>
<td></td>
</tr>
</tbody>
</table>

Sociodemographic characteristics (SDC) were compared against the practice of road safety measures among the study participants and there were mixed results. Residence, course undertaking and University attending were found to be significant; \( \chi^2 (1) = 11.078, p = 0.001 \); \( \chi^2 (1) = 9.207, p = 0.002 \) and \( \chi^2 (1) = 15.529, p = 0.001 \) respectively, while gender; \( \chi^2 (1) = 0.013, p = 0.909 \), age; \( \chi^2 (2) = 0.328, p = 0.849 \), religion; \( \chi^2 (2) = 0.892, p = 0.640 \) and car ownership; \( \chi^2 (1) = 4.825, p = 0.365 \) were not significant with practice of road safety measures (Table 4.3)
4.3 Discussion

This was a cross-sectional descriptive study that set out to determine the practice of road safety measures among Kenyatta University and United States international university students in Nairobi County. The results were discussed according to the objectives set out in this research. The study hypothesized that Knowledge and attitude of road safety measures do not have influence on its practice among KU and USIU students and sociodemographic characteristics do not have any relationship with practice of road safety measures among KU and USIU students.

4.3.1 Practice of road safety measures among KU and USIU students

The study established that the study participants displayed good practice of road safety measures with USIU students performing slightly better than KU students. These findings are consistent with other findings reported in Agartala Government Medical College and in Panjab University both in India (Kumar, 2014; Reang & Tripura, 2014). Looking at the numbers closely, practice of road safety measures among the study participants although good, it still needs improvement. The difference in practice of road safety among the two universities could be due to socioeconomic factors. However, contrary to these findings is a study on practice of road safety measures in Benha university in Egypt, where a self-administered questionnaire, revealed unsafe road use behavior was rampant among students (El-Gendy, El-Gendy, Dawah, Eldesouky, & El-Raoif, 2015).

Specific variables used to assess the practice of road safety measures revealed most of the respondents do not board public transport vehicles at a bus stop. Similar findings were reported in a study on road risk perception and pedestrian injuries among students of...
Sham University in Egypt, that reported poor adherence to road safety measures among university students (Ibrahim et al., 2012). Agreeing with these findings is another study on psychological predictors of mobile phone use while crossing the street among college students, (40%) of students admitted to having used mobile phone while crossing the road (Jiang, Ling, Feng, Wang, & Guo, 2016). This finding could be due to lack of enforcement of road safety measures by enforcing agencies, therefore boarding a vehicle at non designated places do not attract any consequences or punishment.

This study further established that a third of the respondents did not perceive it as a problem if a driver used hand held mobile phone while driving. These findings are consistent with a study in Iran amongst college students where (23.4%) of the students considered using mobile phone while driving as none hazardours (Mohammadi, 2011). In another study among undergraduate medical students in India, (20%) admitted to use hands free mobile devices while driving (Kulkarni et al., 2013). This could be partly due to increase in hand held phones in developing countries and the trend of using mobile phone while driving without thinking of consequaences, secondly it could be due to the false security of feeling in control despite using hand held mobile phone while driving.

The revelation that almost half of the respondents rarely use Foot Bridge or zebra crossing points when crossing the road differed with observational study because none of the students was observed to have crossed the highway without using footbridge. Further probe during focused group discussion (FGD) revealed university students do not use footbridge at night because of security concerns. Similar findings were reported in Uganda where pedestrian overpass use was low with males less likely to use it and the reason given
for nonuse was mainly time saving (Mutto, Kobusingye, & Lett, 2002), while in Kenya security concerns came out boldly in the focused group discussion.

Though several studies have reported that correct and consistent use of seat belt reduces fatalities and severity of injuries when involved in road traffic accident (Abu-Zidan, Abbas, Hefny, Eid, & Grivna, 2012; Ogundele et al., 2013), our current study established that use of safety seat belt was not a common practice among the students. In focused group discussion (FGD), non-use of seat belt was due to lack of enforcement, hence the participants did not see the need of using them, observing that, even law enforcers do not use seat belts when they board public transport. During observational study none of the students was observed to have used seat belt after boarding public transport. Similar findings were reported in a 24 hour observation study among vehicle occupants in Nigeria, where compliance with use of seat belts was slightly above half (Popoola et al., 2013). Several other studies concur with these findings on poor compliance of safety seat belt use among both passengers and drivers (Iribhogbe & Osime, 2008; Klair & Arfan, 2014). In our study the participants were never observed to have used seat belt at all and this could be due to poor enforcement of traffic rules by the law enforcers and ignorance on part of the study participants.

4.3.2 Knowledge level of road safety measures and its effect on practice of road safety among KU and USIU students

We predicted that the Knowledge of road safety measures do not have influence practice of road safety measures among Kenyatta University (KU) and United States International University (USIU) Students. There was strong positive correlation between Knowledge of road safety measures and practice of road safety. The hypothesis was not supported with the findings of this study thus the hypothesis was not accepted.
This study revealed most of the respondents had adequate knowledge of road safety measures. These findings were consistent with other studies in Saudi Arabia, Malaysia and India (Al-Khaldi, 2006; Redhwan & Karim, 2010; Reang & Tripura, 2014). Knowledge of road safety measures among the respondents could be attributed to unstructured and inadequate road safety information received in primary school especially on how to cross the road safely; otherwise the rest of information, often inadequate is gotten from social media.

Analysis of specific variables used to assess knowledge of road safety measures indicated that most of university students were not fully informed about speed limits on Kenyan roads, as most of them gave 80km/hour as the set speed on highway for all vehicles. Consistent with these results is a study on awareness of practice of road safety measures among undergraduate medical students in south Indian state, that showed only (50%) respondents could identify road safety signs correctly (Kulkarni et al., 2013). These results could be due to partly receiving incomplete information on road safety especially when media is covering crash incidences on the news.

Knowledge on alcohol blow device as a deterrent measure to RTAs among respondents was low. Despite alcohol being the main cause of road traffic accidents (Tiruneh, Dachew, & Bifftu, 2014), the public have very low knowledge on use of alcohol blow device in reducing fatalities. Alcohol blow device do not have overall effect on road traffic injuries meaning other road safety measures have to be sustained to realize its impact on overall road safety, they are still vital in deterring drunk driving and hence reducing road traffic accidents from drunk driving (Andreuccetti et al., 2011). The findings from our current study could be due to introduction of alcohol blow device on Kenyan roads and the
battle on its suitability in Kenyan courts coupled with lack of sustained public education on the importance of the device in road safety could explain the respondent’s inadequate understanding of this device among the study participants.

The study additionally revealed most of the respondents believe that seat belt reduce injuries and fatalities to front passengers and driver only. These findings were consistent with a study in India on awareness and practice of road safety measures, that reported only (20%) of students had enough knowledge on use of seat belts (Kulkarni et al., 2013). In our study respondents had inadequate knowledge on use of seat belts. This could be explained by inadequate, uncoordinated road safety knowledge dissemination that is often received through social media. Contrary findings were reported in a Nigerian study among hospital workers which reported their use of seat belt to be high (Bamidele, Adebimpe, & Adewole, 2012). This difference could be due to hospital workers being more versed with knowledge on road safety than the general public and the fact that they are in constant interaction with RTAs survivors, relatives and often have to deal with fatalities. A retrospective study in Nakuru County hospital found that despite the introduction of Michuki rules in 2004 injury severity scale remained the same. This means that seat belts alone do not have overall impact on road traffic injuries, hence the need for holistic approach in managing road safety (Chisholm, Naci, Hyder, Tran, & Peden, 2012).

4.3.3 Attitude of road safety measures and its influence on practice of road safety among KU and USIU students

The study predicted that attitude of road safety measures do not have influence practice of road safety measures among Kenyatta University (KU) and United States International University (USIU) Students. There was a strong positive correlation between
attitude towards road safety measures and practice of road safety, thus the hypothesis was not supported.

The study established that university students had positive attitude towards road safety measures. Similar findings were reported in a study among healthcare students in Saudi Arabia which reported most (75%) of the students had positive attitude towards road safety measures (Al-Khaldi, 2006). The findings of this study could be attributed to the respondent’s good intention about road safety but good intentions alone do not necessarily translate into good practice of road safety.

Specific variables used to assess attitude of road safety measures revealed most of the respondents reported carelessness to be the main cause of road traffic accidents as opposed to over speeding. While most of the respondents believed carelessness is the main cause of road traffic accidents both speed and carelessness have been identified as the main causes of road traffic accidents (Yitambe et al., 2005). These findings could be due to the confusion in terminology between speed and carelessness. However, many people are of the opinion that over speeding is part of careless driving. Contrary to these findings a prospective Cohort study in France on attitudes associated with behavioral predictors of serious road traffic crashes and speed was reported as the main cause of road traffic accidents (Nabi et al., 2007).

4.3.4 Association of Sociodemographic Characteristics with Practice of road safety measures among KU and USIU students

The study predicted that there was no association between sociodemographic characteristics (SDC) and practice of road safety measures. Place of residence, course undertaking and university attending were sociodemographic characteristics significant with practice of road safety measures, while gender, age, religion and car ownership were
found to be insignificant with practice of road safety measures among university students. Therefore there were mixed results and our hypothesis was partially supported by the findings.

Place of residence was compared with practice of road safety measures among university students and found to be highly significant (p = 0.001). Concurring with these findings is a study in China, that showed drivers from low socioeconomic status had increased relative risk of being involved in crash than their more affluent counterparts (Chen, 2010). This significant difference could be due to exposure to a variety of sources of information on road safety measures among affluent study participants compared to low economic status ones. Contradicting these findings is a study in Libya where gender was shown to be significant contributing factor to road traffic accidents (Bates et al., 2014). These findings could be due to difference in exposure to vehicles, and place one is brought up, either in rural or urban area.

Course undertaking was compared with practice of road safety measures and found significant (p = 0.002). These findings are consistent with a study in Malaysian university that assessed knowledge, attitude and practice of road safety among students taking different courses. It found that there was significant association between a course of study and exposure to traffic accidents (Redhwan & Karim, 2010). This finding would be expected as health and engineering courses have units covering safety practices before they would venture into professional practice.

University attending was compared against practice of road safety measures and found to be highly significant (p = 0.001). These results are supported by two studies in India among undergraduate medical students that showed difference in their practice of
road safety measures among the two universities (Kulkarni et al., 2013; Reang & Tripura, 2014). In the current study the significance of university attending could be due to Kenyatta University being a public University, while United States International University being a private and the exposure to road safety information between students in these two universities.
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This section provides the summary of the key findings gives conclusions according to the objectives of the study and makes recommendations for future work related to road safety.

5.2 Summary

The following are the summary of the findings produced by this study:

a) Overall two hundred and ninety nine (69.7%) respondents practice good road safety measures, with USIU represented by seventy eight (86.7%) and KU two hundred and twenty one (65.2%) students

b) The results indicate three hundred and thirty (76.9%) students from both universities had adequate knowledge of road safety measures, with seventy eight (86.7%) students from USIU and two hundred and fifty two (74.3%) from KU. The relationship between knowledge and practice was strong; Pearson’s $r$ (429) = 0.128**, $p = 0.008$

c) Generally, three hundred and two (70.4%) respondents had positive attitude about road safety measures. USIU and KU students posted almost equal scores at sixty six (71.1%) and two hundred and thirty eight (70.2%) respectively. There was significant positive correlation between attitude and practice of road safety measures; Pearson’s $r$ (429) = 0.281**, $p = 0.000$

d) Sociodemographic characteristics were compared against Practice of road safety measures among university students. Residence, course undertaking and University attending were found to be significant; $\chi^2 (1) = 11.078, p = 0.001, \chi^2 (1) = 9.207, p$
Gender was compared against knowledge of road safety measures among KU and USIU students, and found to be slightly significant; \( \chi^2 (1) = 4.11, p = 0.043 \). Residence was compared against knowledge and found to be significant; \( \chi^2 (1) = 3.090, p < 0.050 \); University attending was compared against knowledge and found to be slightly significant; \( \chi^2 (1) = 6.091, p = 0.014 \). Sociodemographic variables were compared against attitude and gender was the only characteristics that was found to be significant; \( \chi^2 (1) = 10.142, p = 0.001 \)

5.3 Conclusion

Overall this study resulted in four conclusions based on objectives of this study:

i. Good practice of road safety measures was displayed by most of the participants with slightly above average score, and there was significant difference in practice of road safety measures among the two universities.

ii. The study participant’s had adequate knowledge of road safety measures especially they were knowledgeable on road safety legislation. However there was a positive correlation between knowledge and practice of road safety measures.

iii. Majority of the respondents had positive attitude towards road safety measures with a positive correlation with practice of road safety measures. The study group had positive attitude towards use of road crossing points.

iv. Lastly place of residence, course undertaking and university attending were sociodemographic variables with significant influence on practice of road safety while gender, religion and car ownership were not significant with practice of road safety among university students.
5.4 Recommendations

Based on the conclusions of this study, the following recommendations were made:

i. Despite good practice of road safety measures, the participants scored slightly above average, meaning there is still room for improvement, therefore the study recommends the introduction of mandatory road safety education in all learning institutions by the Ministry of Education (MoE) in conjunction with National Transport and Safety Authority (NTSA) through development of a responsive road safety curriculum for each category of education. This is reinforced by UNESCO report of 2006 that noted disaster, including road traffic accidents begins in schools, hence the remedy of tackling disasters must begin in schools.

ii. Given significant difference in practice of road of road safety measures among students in the two universities the study proposes sharing of road safety information among all universities with the aim of increasing knowledge and ultimately improving practice of road safety measures.

iii. Attitude was positively correlated with practice of road safety measures; therefore the study recommends that NTSA incorporates behavior change communication (BCC) in road safety interventions partnering with ministries of education and transport as integral part of safety interventions with aim of improving further on attitude towards road safety measures.

iv. Sociodemographic characteristics were positively correlated with practice of road safety measures, the study recommends all players in road safety sector including NTSA, Ministry of education and Transport should consider sociodemographic
characteristics when developing road safety interventions specifically targeting vulnerable groups like university students

5.5 Areas of further research

According to the research findings and conclusions drawn in this study, the researcher felt there are certain areas of road safety that needed further investigations. Therefore the researcher proposes:

i. Similar study targeting other Universities in the forty seven counties in Kenya to find out to what extent these results could be extrapolated

ii. Feasibility study on how best universities could work together to improve attitudes towards road safety measures among their students

iii. Qualitative study to better understand how sociodemographic characteristics influence the practice of road safety
REFERENCES


Elvik, R. (2000). Which are the relevant costs and benefits of road safety measures designed for pedestrians and cyclists? Accident; Analysis and Prevention, 32(1), 37–45.


Annals of Medical and Health Sciences Research, 3(3), 427–432. https://doi.org/10.4103/2141-9248.117950


APPENDIX

Appendix 1: Map of Nairobi County
Appendix 2: Informed Consent

My name is Chavaregi Hage. I am a Masters of Public health student studying in Kenyatta University. I am conducting a study on ‘Assessment of road safety measures among Kenyatta and United states international University students in Nairobi County, Kenya.’ The information obtained will be used by ministries of transport and public health to improve on strategies used in reduction of road traffic accidents among young people in Kenya.

Participation in this study will require that I record some information from you in form of a questionnaire or in participating in a focused group discussion (FGD). You have a right to refuse participating in this study at any stage of the study or stop the interview without attracting any penalties. Participating in this study is voluntary and you may ask questions relating to this study at any time.

If you participate in this study you will help us learn how road safety measures are utilized by the young people and this will help the ministry of transport and public health in coming up with policies to help reduce road traffic accidents among young people.

Confidentiality will be observed, your name will not be recorded on the questionnaire. The questionnaire will be safely locked in a cabinet with the chief researcher. Data will be destroyed within 5 years of publication in a research journal. If the results of this study are published your name or identity will not be revealed. Only group findings will be reported.

If you have any questions you may contact Dr. Daniel Akunga on 0722552157 or Dr. Steve Mogere on 0722619788 or Kenyatta University ethical review committee secretariat at kuerc@ku.ac.ke

Participant’s statement

The above information regarding participation in the study is clear to me. I have been given permission to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand my records will be kept private and I can leave the study at any time.

Name of the participant……………………….Signature/ Thumb……………..Date………………

Investigators statement

I, the undersigned, have explained to the study participant in a language he/she understands, the procedure followed in the study and the risks and benefits involved.

Name of the interviewer……………………….Signature/ Thumb……………..Date………………
Appendix 3: Structured Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is your gender?</td>
<td>Male □ Female □</td>
</tr>
<tr>
<td>2</td>
<td>What is your age (in years) as at your last birthday?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Where do you reside?</td>
<td>Rural □ Urban □</td>
</tr>
<tr>
<td>4</td>
<td>What is your religion? (Christian, Islam or others)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>What course are you undertaking?</td>
<td>Yes □ No □</td>
</tr>
<tr>
<td>6</td>
<td>Do you have a valid driving license?</td>
<td>Yes □ No □</td>
</tr>
<tr>
<td>7</td>
<td>Do you or your family own a car?</td>
<td>Yes □ No □</td>
</tr>
<tr>
<td>8</td>
<td>Have you or your family ever been involved in road traffic accident in last year?</td>
<td>Yes □ No □</td>
</tr>
</tbody>
</table>
### Part B: Knowledge of road safety measures

Please, tick ‘NO’ if you disagree with the statement, ‘YES’ if you agree & ‘DK’ if you don’t know the answer to the statement

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>The footbridge is specifically designed for road safety purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bus stops are the main points for boarding public transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Speed limit on Kenyan highways is set at 80km/hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Zebra crossing signs are only found near schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Use of mobile phone while driving distracts the driver from the main job of driving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Alcohol blow device main purpose is to reduce road traffic accidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Safety Seat belt only reduces serious injuries or death to the driver and front passengers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>When traffic lights turns Red it means give way for the vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>It is not an offence in Kenya to board a vehicle that is overloaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Part C: Practice of road safety

Please, tick ‘NO’ if you disagree with the statement, ‘YES’ if you agree with the statement & ‘DK’ if you don’t know the answer to the statement

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>If the road is clear I rarely use the footbridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I do not always board a vehicle at the bus stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I love vehicles that over speed you reach your destination on time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>When crossing the road I always use zebra crossing points</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>It is none of my business when a driver uses mobile phone while driving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I like just a little bit intoxicated driver they drive without fear.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I only put on a safety seat belt when I see the police</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>I always obey traffic lights as a pedestrian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I always board overloaded vehicles anyway</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part D: Attitudes about road safety**

I will ask you some questions where you should give me your opinion. On a scale of 1 to 5 please tick whether you: 1. Strongly disagree, 2. Disagree, 3. Neutral, 4. Agreed, 5. strongly Agreed

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>construction of footbridges on roads is a waste of resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>It is a waste of time trying to locate a bus stop when a vehicle can pick you anywhere along the road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Speed does not cause road traffic accidents, but carelessness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Zebra crossing are rarely observed by drivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>A good driver can use mobile phone while driving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Alcohol enhances concentration of the driver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I don’t like using a seat belt when I board a vehicle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Traffic lights are a waste time for people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>I don’t care if the vehicle I am boarding is overloaded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix 4: Observational Sheet

**OBSERVATION SHEET FOR ASSESSMENT OF ROAD SAFETY MEASURES AMONG KENYATTA AND UNITED STATES INTERNATIONAL UNIVERSITY STUDENTS IN NAIROBI COUNTY, KENYA**

<table>
<thead>
<tr>
<th>Date (dd/mm/yy)</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observers Names</td>
<td></td>
</tr>
<tr>
<td>Identification Number</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the sex of the student boarding the vehicle?</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does he/she use footbridge when crossing the highway or not?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>What is the type of vehicle he/she is boarding?</td>
<td>Matatu</td>
<td>Others specify</td>
</tr>
<tr>
<td>Mini bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is he/she boarding the vehicle at the bus stop?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>What is the seating position in the vehicle?</td>
<td>Front seat</td>
<td>Back seat</td>
</tr>
<tr>
<td>Does he/she use a seat belt correctly?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Did the driver ensure all passengers were belted?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Did the driver belt himself or herself?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

N/B: To be done on Saturday and Sunday at 8 am to 10 am then 1.00pm to 2 pm
Appendix 5: Focus Group Discussion (FGD)

‘First thank you all for accepting to participate in this focused group discussion (FGD). The discussion will be on assessment of road safety measures among Kenyatta and United states international university students, Nairobi County, Kenya. I would like the discussion to be informal if you do not understand a question please feel free to ask for clarification. Accompanying me are my two research assistants, one will be recording the discussion while the other will be taking notes of the discussion. I am here to ask questions, listen and make sure all have a chance to share.

Your identity or your name will not be revealed. I do ask that we all keep each other’s identities, participation and remarks private and hope you’ll feel free to speak openly and honestly. The recorded tapes are for accurate capture of data and that no one else outside this room will have access to these tapes and they will be destroyed after writing my report.

Each member of the group will be speaking at a time to allow everyone to give their inputs and make the discussion fruitful. The discussion will take around one hour. Feel free to ask any questions for clarification.’

<table>
<thead>
<tr>
<th>FOCUSED GROUP DISCUSSION (FGD)</th>
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<tbody>
<tr>
<td><strong>1</strong></td>
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<td><strong>5</strong></td>
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</tbody>
</table>
Appendix 6: Introduction Letter to Traffic Police, Nairobi Area

KENYATTA UNIVERSITY

OFFICE OF THE CHAIRMAN
DEPARTMENT OF COMMUNITY HEALTH

Our Ref: KU/DCH/RL/57 VOL.2

Dear Sir/Madam

RE: HAGE CHAVAREGI - F57/PT/13529/2009

Date: 3rd June, 2013

The above named is a Post graduate student in Kenyatta University. He is undertaking research on road safety among University students.

He needs data on road traffic accidents within Nairobi area. Please assist him with relevant data.

Thank you

DR. ISAAC OMONZO
SENIOR LECTURER & CHAIRMAN, DEPARTMENT OF COMMUNITY HEALTH
Appendix 7: Authorization for Research in Kenyatta University

KENYATTA UNIVERSITY
OFFICE OF THE DEPUTY VICE-CHANCELLOR (ACADEMIC)

Tel: (+254-20) 8710901-10 Ext 57491
Fax: (+254-20) 8711380
Website: www.ku.ac.ke

Ref. KIU/DVC/ACAD/EBT/VOL.2/896

25th October, 2013

Chavaregi Hage,
P.O. Box 1626 - 00100
NAIROBI,
Kenya.

Dear Chavaregi,

REF: REQUEST TO CONDUCT RESEARCH - CHAVAREGI HAGE

The above subject refers.

Your request to carry out research on "Assessment of road safety measures among Kenyatta and United States International university studies: Kiambu and Nairobi counties, Kenya" at Kenyatta University has been approved.

On completion of your research, you are expected to submit a hard and a soft copy of your research report/thesis to our University Library and the Institute for Research Science and Technology.

Please liaise with the Director, Institute for Research Science & Technology before commencing data collection for further guidance.

Thank you.

PROF. JOHN OKUMU
DEPUTY VICE-CHANCELLOR (ACADEMIC)

cc. Vice-Chancellor

JO/gnm
Appendix 8: USIU approval Letter

8th November, 2013

Hage Chavaregi
Kenyatta University,
P.O. Box 43844 00100
Nairobi, KENYA
Email: chahage3@gmail.com

Dear Mr. Chavaregi,

RE: PERMISSION TO CONDUCT RESEARCH AT USIU

You are hereby granted permission to conduct research at United States International University on the topic, “Assessment of Road safety among Kenyatta University and USIU about road safety in Nairobi and Kiambu County, Kenya”.

Your research period is expected to last Fall 2013 Semester.

Please contact Lucy Kahindi, the Administrator - Graduate Studies, at ikahindi@usi.ac.ke or +254-20-3606441 for terms and conditions.

Thank you.

Yours sincerely,

Prof. Francis W. Wambalaba, Ph.D., AICP
Professor of Economics and Associate DVC AA Research
United States International University
P.O. Box 14634, Nairobi, Kenya, 00800
fwambalaba@usi.ac.ke
PH: +254 20 3606442
Appendix 9: Research Authorization from NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254 20-318245, 318249
Email: secretary@nacostii.go.ke
Website: www.nacostii.go.ke

Ref No: NACOSTI/P/14/080/01633

Date: 6th August, 2014

Hage Chavregi
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Assessment of road safety among Kenyatta and United States International University students in Nairobi County, Kenya,” I am pleased to inform you that you have been authorized to undertake research in Nairobi County for a period ending 30th December, 2014.

You are advised to report to the Vice Chancellors of selected Universities, the County Commissioner and the County Director of Education, Nairobi County before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

SAID HUSSEIN
FOR: SECRETARY/CEO

Copy to:
The Vice Chancellors
Selected Universities.
The County Commissioner
The County Director of Education
Nairobi County.