ASSESSMENT OF THE INFLUENCE OF HELMET USAGE ENFORCEMENT ON SAFETY OF COMMERCIAL MOTORCYCLISTS IN KISUMU CITY, KENYA

JACQUELINE KHALEMESI

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF SOCIAL SCIENCES, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTERS IN GOVERNANCE AND ETHICS OF MOUNT KENYA UNIVERSITY.

JULY 2025

DECLARATION AND APPROVAL

DECLARATION BY STUDENT

This project is my own original work and has not been presented for the award of a degree in Governance and Ethics in any university

JACQUELINE KHALEMESI

ADM NO: MGE/2014/81466

Sign:..... Date: 8th July 2025

APPROVAL BY THE SUPERVISOR

This has been submitted to Mount Kenya University for examination with our approval as University Supervisors.

Rev. Sgt.Rtd. Dr. Elijah Onyango Standslause Odhiambo, PhD.

Department of Arts, Governance and Communication Studies

Bomet University College, Kenya

Sign:..... Date: 9/07/2025

DEDICATION

I would like to dedicate this work to my family; my husband, Erick Wagaka, my uncle, Mr. Phynias Amugata Isindu, and my aunt, Phyllis Amugata, who selflessly covered my school fees, allowing me to reach this significant academic milestone. For their unwavering encouragement and moral support throughout this journey.

ACKNOWLEDGEMENTS

I am deeply grateful to the Almighty God for the gift of life, health, and the strength to complete this work. I would also like to acknowledge my department and the university for their tireless commitment to imparting knowledge, which has profoundly shaped who I am today.

A heartfelt thank you goes to Dr. Elijah Odhiambo for his invaluable academic support and guidance during the development of this research project. I extend my appreciation to all the lecturers at Mount Kenya University for his unwavering assistance throughout my studies.

I am also thankful to my classmates, especially Joroms Atemba and Samuel Nakhosi, with whom I shared this academic journey.

ABSTRACT

Road traffic injuries are estimated to be the eighth leading cause of death globally. Riders have a greater risk of death than other types of transport. The lack of helmet use is a specific factor leading to head injuries and fatalities resulting from motorcycle crashes which costs heavily both to the country's economy and family's financial status. The purpose of this study was to asses helmets usage enforcement on safety of motorcyclists in Kisumu city. The study was guided by the following objectives: to determine helmets enforcement factors, to examine safety based on helmet usage and to link helmets usage enforcement to safety of commercial motorcyclists uses in Kisumu City. The study adopted a descriptive survey method whereby systemic sampling was used to collect data from 250 motorcyclists along three major roads that lead to Kisumu town. The study used questionnaires, interview schedule and observation checklist as the primary data collection instruments. Data analysis was done using SPSS and findings were presented through charts, tables and graphs. The findings of the study revealed that wearing helmet among Kisumu's commercial motorcyclists is quite low due to inconsistent enforcement of cautionary measures and social norms that prioritize style over care. Factors like inadequate training, limited access to quality helmets and lack of awareness hinder compliance. On safety, enforcement and awareness is critical for improving safety outcomes. The study concluded that improving helmet enforcement and addressing protection for commercial motorcyclists in Kisumu City needs affordable training, immediate public awareness campaigns and strict enforcement.

TABLE OF CONTENTS

TITLE PAGE ..... **i**

DECLARATION AND APPROVAL ..... **ii**

DEDICATION ..... **iii**

ACKNOWLEDGEMENTS ..... **iv**

ABSTRACT ..... **v**

TABLE OF CONTENTS ..... **vi**

LIST OF TABLES ..... **x**

LIST OF FIGURES ..... **xi**

LIST OF APPENDICES ..... **xii**

LIST OF PLATES ..... **xiii**

LIST OF ABBREVIATIONS ..... **xiv**

CHAPTER ONE: INTRODUCTION **1**

1.1 Background of the study 1

1.2 Statement of the problem 9

1.3 Purpose of the Study 9

1.4 Specific objectives 9

1.5 Research questions 10

1.6 Justification 10

1.7 Scope of the Study 11

1.8 Limitations of the Study 12

1.9 Operational Definition of Terms used in the Study 13

CHAPTER TWO: LITERATURE REVIEW 15

2.1 Introduction 15

2.2 Empirical Review 15

2.2.1 Helmet usage by Motorcyclists and Law enforcement 17

2.2.2 Safety based on Helmet Usage among Commercial Motorcyclists 22

2.2.3 Relationship between helmet usage enforcement and safety 29

2.3 Theoretical Framework..... 31

2.3.1 Theory of Planned Behavior (TPB):.....31

2.3.2 Health Belief Model: 32

2.4 Conceptual framework 33

2.5 Research Gaps 34

CHAPTER THREE: RESEARCH METHODOLOGY 37

3.1 Introduction 37

3.2 Research methodology 37

3.3 Research Design 37

3.4 Study location..... 39

3.5 Target population..... 39

3.6 Sampling technique 40

3.7 Data collection instruments 42

3.7.1 Questionnaire 42

3.7.2 Strengths of Questionnaires as a tool of data collection 42

3.7.3 Weaknesses of Questionnaires.....43

3.7.4 Interview Schedules 43

3.7.5 Observation checklist 43
3.8 Validity and reliability of data collection instruments 44
3.8.1. Validity 44
3.8.2 Reliability 44
3.8.2.1 Reliability Analysis 45
3.9 Piloting 45
3.10 Data collection procedure 46
3.11 Data analysis 47
3.12 Ethical Considerations 47

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS 49

4.1. Introduction 49
4.2. Research Presentation, Interpretation and Discussions 49
4.2.1 Questionnaire Return Rate 49
4.2.2 Background Information 50
4.2.2.1 Gender of respondents 50
4.2.2.2 Education 51
4.2.2.3 Age 52
4.2.2.4 Length of Operation 54
4.2.2.5 Training 55
4.3 Discussion of Individual Objective Results 56
4.3.1 Helmet Usage Enforcement 57
4.3.2 Helmet Usage Safety 62
4.3.3 Relationship between Helmet Enforcement and Safety 66

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 72

5.1 Introduction 72

5.2 Summary of the Result Findings 72

5.3 Conclusions 73

5.4 Recommendations for Practice 74

5.5 Recommendations for Further Research in this Field of Study 75

REFERENCES 77

APPENDICES 84

LIST OF TABLES

Table 3. 1: Summary of Research Designs based on Specific Objectives……..…….38

Table 3.2: Distribution of Respondents 41

Table 3.3: Reliability Analysis.....45

Table 4.2: Education level.....51

Table 4.3: Training Received.....55

Table 4.4: Distribution of percentage of Respondents' Perception on various helmet usage Enforcement factors 57

Table 4.5: Distribution of percentage of Respondents' Perception on various helmet usage Safety factors.....62

Table 4.6: Distribution of percentage of Respondents' Perception on various helmet Enforcement and Safety factors 62

Table 4.7: Relationship between helmet usage and safety in Kisumu City…….….65

Table 4.8: Distribution of percentage of Respondents' Perception on various helmet Enforcement and Safety factors……..…….67

Table 4.9: Link between helmet enforcement and safety in Kisumu City……..…….70

LIST OF FIGURES

Figure 2.1:Relationship between dependent and independent variable of the study 34

Figure 4.1: Gender of respondents. 50

Figure 4.2: Age distribution of Respondents 53

Figure 4.3: Respondents' Duration of operation 54

LIST OF APPENDICES

Appendix I: Letter Of Introduction 84

Appendix II: Consent 85

Appendix III: Questionnaire 86

Appendix IV: Interview Schedule 89

Appendix V: Study Map 90

Appendix VI : Letter Of Introduction Mount Kenya University 91

Appendix VII: Erc Ceritificate 92

Appendix VIII: Research Permit 93

Appendix IX: Letter Of Authorization 95

LIST OF PLATES

Plate 4.1: Showing Motorcyclist with a passenger withiout wearing helmet in Migosi estate….....96

Plate 4.2: Commercial motorcyclist carrying a passanger with no helmet in Kaloleni estate….....97

Plate 4.3: showing Commercial motorcyclists with their passengers without wearing helmets in Kondele
flyover,…….....……...98

Plate 4.4: Researcher in a purple dress and white shading, interviewing the administrator in Nyalenda
estate.....……...99

Plate 4.5: Researcher intervewing an opinion leader who is also a commercial motorcyclist in Milimani
estate…….....99

LIST OF ABBREVIATIONS

CDC : Centre for Disease Control

CODES : Crash Outcome Data Evaluation System

DALYs : Disability-Adjusted Life Years

KDHS : Kenya Demographic Health Survey

KEBS : Kenya Bureau of Standardization

KIIs : Key Informant Interviews

LMICs : Low and Middle-Income Countries

NACOSTI : National Council for Science, Technology and Innovation

NHTSA : National Highways Transport and Safety Authority

NTSA : National Transport and Safety Authority

RTI : Road Traffic Injuries

SPSS : Statistical Program for Social Scientists

TBI : Traumatic Brain Injury

TRA : Theory of Reasoned Action

UNGA : United Nations General Assembly

WHO : World Health Organization

CHAPTER ONE

INTRODUCTION

This chapter aimed to present an overview of the context surrounding helmet usage among motorcyclists at the global, regional, national, and local levels specifically in Kisumu town. It further outlined the study's problem statement, research objectives, key questions, rationale, scope, constraints, and definitions of key terms used throughout the research.

1.1 Background of the study

Road safety is a global concern with various regulatory frameworks at both national and international levels. Some cities have established their own ordinances to govern traffic management locally. It is noteworthy that injuries, classified as non-communicable diseases, account for one-tenth of all deaths worldwide, with 13% occurring in developing regions and 5% in developed countries (WHO, 2021). On a global scale, injuries are responsible for one in six years lived with disability, according to the Global Burden of Disease Study conducted in 2017.

According to Hyder and Tressou (2022), 60% life lost due to unintentional injuries stem from motor vehicle traffic accidents. Ranking road traffic accidents as 9^{th} leading cause of disease burden globally in 1998, 5^{th} in high-income countries and 10^{th} in low and middle-income countries. Among adult and economically active men aged 15 -44, road traffic accidents stand as the primary cause of ill-health and premature mortality worldwide, coming in as the second largest in developing nations (WHO 2023).

The World Health Organization's (WHO, 2023) global report on road safety emphasizes that the existing road traffick crashes have been attributed to failing to wear a helmet which elevates the risk of head injury, increasing the severity of injuries, prolongs hospitalization, raises the

likelihood of fatal outcomes, and increases the probability of long-term disability. Head injuries impose substantially higher medical costs than other types of injuries, placing a considerable strain on a country's healthcare system and economy, for instance, it is estimated that they cost the world about $518 billion in 2018. The cost is aburden on governments, taking up a significant portion of their national income (Munyiri *et al*., 2021).

According to the United States National Safety Council (2018), although motorcycles represent just 3% of all registered vehicles, they were involved in 13% of all road traffic deaths in 2016. Notably, men made up 91% of these motorcycle-related fatalities.

In India, motorcyclists are often observed engaging in risky behaviors such as using mobile phones while riding, failing to wear helmets, riding impatiently, and frequently traveling on the wrong side of the road (Zee News, 2018).

A World Health Organization (2023) study highlights key risk factors linked to motorcycle use in the Eastern Mediterranean region. These include excessive speed in countries like Sudan and Tunisia, alcohol-impaired riding in places such as Morocco, Lebanon, Qatar, the UAE, Syria, and the West Bank and Gaza, as well as poor helmet usage in Iran, Morocco, Pakistan, and Tunisia. In response to growing concerns, the United Nations General Assembly (UNGA), through Resolution 64/255, declared 2021–2023 the Decade of Action for Road Safety, beginning in March 2021. This move was driven by WHO's Global Status Report on Road Safety, which reported approximately 1.24 million deaths and around 35 million non-fatal injuries annually due to road crashes (United Nations Economic Commission for Africa, 2023). UNGA also estimates that road traffic injuries result in an annual economic loss of about US$100 billion. Vulnerable road users including motorcyclists (23%), pedestrians (22%), and cyclists (5%) account for half of all global road traffic fatalities.

In Bamako, Mali, motorcycles are widely used by families for various daily activities, including transporting people, goods, and even animals (Ahmad & Muturi, 2023). However, helmet use remains minimal, often attributed to corruption within the Malian police force and religious beliefs asserting that "God protects road users" (The Guardian, n.d). In Rwanda, although approximately 60,000 motorcycles are registered for commercial use, motorcyclists were involved in 38% of all traffic-related deaths in the first quarter of 2018, leading to the loss of 138 lives (The New Times, 2018).

Deaths due to road injuries have grown by 84% in sub-Saharan Africa since 1990, almost twice the global increase (Kavi *et al.*, 2014). Estimating Low- and Middle-Income Countries (LMICs) to shoulder nearly 90% of the global impact of Road Traffic Injuries (RTIs), with the African region alone accounting for about 205,000 deaths and 7,151,000 Disability-Adjusted Life Years (DALYs) lost. This equates to 969 DALYs per 100,000 people in Africa, significantly higher than the global average of 640 DALYs per 100,000 (WHO, 2018). Additionally, Africa records the highest RTI fatality rate at 24.1 deaths per 100,000 individuals, compared to the global average of 18.0 per 100,000 (WHO, 2023).

Road safety remains a pressing issue in Kenya, with certain groups disproportionately affected by traffic-related dangers. According to Odendi *et al.* (2019), the most vulnerable road users in Kenya include the elderly, children, pedestrians, and individuals riding motorized two- or three-wheeled vehicles, such as cyclists. These populations are particularly susceptible to the risks associated with traffic incidents, reflecting broader global trends regarding road safety and vulnerable road users.

According to the WHO 2021 report, these vulnerable groups account for 57% of all road traffic deaths noticeably higher compared to 51% in middle-income countries and 39% in high-income

countries. The growing reliance on motorized two-wheelers, particularly in low- and middle-income nations, has contributed to an increase in head and traumatic brain injuries. It's estimated that motorcyclists are involved in roughly 25% of all road traffic deaths (Philipo *et al*., 2021). Kenya stands at 20.9 deaths per a 100,000 population; this amounts to 2.9 deaths per 100,000 populations higher as compared to the African region (National Transport and Safety Authority (NTSA Kenya, 2024). Kenya is recorded as one of the countries with the highest road fatality rates per 10,000 registered vehicles. The economy and health care services within the country bear a heavy burden from road traffic crashes (NTSA, 2024).

Road traffic injuries (RTIs) pose a significant public health challenge in Kenya. Data from the Ministry of Transport spanning from 2015 to 2020 revealed a distribution of injuries as 13.86% fatal, 38.89% serious, and 47.19% slightly injured. However, a subsequent study by Odero *et al*. (2019) unveiled a troubling trend, with fatal injuries accounting for 25% and serious injuries for 28.1% of cases, indicating an approximate 7% rise in fatal injuries. More recently, the NTSA's mid-year report for 2024 further emphasized the gravity of the situation, citing over 1,500 road fatalities a 1.5% escalation compared to the corresponding period in the prior year. Particularly alarming was the surge in motorcyclist fatalities, which had climbed to 388 (Meja, as referenced in NTSA, 2024). These figures underscore the pressing necessity for effective interventions to avert further loss of life. Regionally, the 2015 Kenya Demographic and Health Survey (KDHS, 2015) indicated that Nyanza region leads in RTA-related injuries within the Western region, with a prevalence of 4.6%.

Hospital records from Jaramogi Oginga Odinga Teaching and Referral Hospital in 2021 documented 1,854 patients involved in Road Traffic Accidents (RTAs), with 28% of them being specifically linked to motorcycle incidents. Comparatively, in 2023, a total of 2,665 cases

of RTAs were reported, where motorcycle-related occurrences constituted a mere 3% of the overall incidents. The surge in motorcycle utilization within Kisumu town in recent times, as highlighted by Birir (2017), has been paralleled by a proportional escalation in fatalities resulting from motorcycle collisions, as noted by Juliana (2019).

Motorcyclists face heightened risks as they navigate the same roads as larger, faster vehicles like cars, buses, and trucks, yet are less visible due to their smaller size. In Kenya, commercial motorcycles are a vital part of the transport system, offering a practical alternative where other forms of transportation may be limited or inaccessible. These motorcycles, commonly known as boda-bodas, provide taxi services and offer the flexibility to operate regardless of time, road condition, distance, or destination. Their availability and convenience have led to a rising demand, driven by the inability of Kenya's formal transport infrastructure to fully address the mobility needs of the population (Kumar & Barrett, 2018).

Kenya has established comprehensive helmet regulations aimed at enhancing road safety for motorcycle riders and passengers. Mandated by the modified Traffic Act (2012), specifically CAP 403 section 103B (1), these regulations require all individuals riding motorcycles, irrespective of the type or class of the motorcycle, to wear helmets at all times. Moreover, the helmets must meet the standards set by the Kenya Bureau of Standards (KEBS). In addition to helmet use, riders and passengers are also mandated to wear reflective jackets to improve visibility on the road.

The Kenya Traffic Act of 2012 serves as the bedrock of motorcycle safety legislation in the country. Section 103B (1) of the Act explicitly states that every motorcycle rider and any passenger must wear a helmet that adheres to the prescribed KEBS standards. Furthermore, the Act outlines that failure to comply with these provisions constitutes an offense, resulting in

fines ranging from a minimum of ten thousand shillings to a maximum of twenty thousand shillings, as stipulated in section 104 of the same law.

This regulatory framework reflects Kenya's commitment to improving road safety and reducing the number of motorcycle-related injuries and fatalities. By enforcing strict helmet and reflective jacket requirements, the government aims to mitigate the risks associated with motorcycle riding, given that this mode of transportation is increasingly popular in both urban and rural settings.

The importance of helmet use cannot be overstated, as numerous studies highlight the significant role that helmets play in preventing fatalities and reducing the severity of injuries sustained during accidents. Helmets designed to meet KEBS standards are expected to provide adequate protection in the event of an accident, thereby reducing the likelihood of traumatic brain injuries.

Research shows that countries with mandatory helmet laws tend to have lower rates of motorcycle-related fatalities. For instance, a study by Terefe *et al.* (2018) emphasized that helmet use significantly correlates with improved survival rates among motorcycle accident victims. Similarly, the World Health Organization has consistently advocated for helmet use as a critical component of road safety strategies, noting its effectiveness in preventing injuries and saving lives.

Despite the presence of stringent helmet regulations, compliance remains a significant challenge in Kenya. Various factors contribute to this issue, including cultural attitudes towards helmet use, lack of enforcement, and public awareness. Many motorcycle riders and passengers continue to disregard helmet laws, either due to a perception that helmets are uncomfortable or unnecessary, or because they believe they can evade penalties. Enforcement of regulations is

crucial for ensuring adherence to helmet laws. However, challenges such as limited resources, inadequate training of law enforcement officers and corruption can hinder effective enforcement. As a result, riders may feel less inclined to comply with the law if they believe they are unlikely to be penalized (NTSA, 2024). The NTSA is an organization that the Kenyan government, through the Ministry of Transport, established with the responsibility of organizing, planning, directing, advising, and carrying out policies related to road transportation and safety.

However, the NTSA (2024) reports that to improve helmet usage rates and enhance compliance with helmet regulations, several strategies have been employed so far. Public awareness campaigns aimed at educating riders and passengers about the life-saving benefits of helmets can play a vital role in changing attitudes towards helmet use. These campaigns could include testimonials from accident survivors, educational materials on the risks of riding without a helmet, and demonstrations of helmet effectiveness. Additionally, enhancing enforcement mechanisms is essential. This could involve increased visibility of law enforcement officers on the roads, regular checkpoints, and publicizing penalties for non-compliance. Engaging motorcycle associations and communities in promoting helmet use can also foster a culture of safety and responsibility among riders.

The Kenya's helmet regulation, as laid out in the modified 2012 Traffic Act, aims to enhance road safety for motorcycle riders and passengers through strict requirements for helmet use and reflective jackets. While the legal framework establishes clear penalties for non-compliance, challenges in public adherence persist. Addressing these challenges through comprehensive public education initiatives and robust enforcement strategies is essential to promote helmet use and improve overall motorcycle safety in Kenya. By reinforcing the importance of wearing

helmets and ensuring rigorous enforcement of safety laws, Kenya can work towards significantly reducing motorcycle-related injuries and fatalities, safeguarding the lives of its citizens on the road.

According to the provisions of Kenya Subsidiary Legislation 2015 CAP 405 section 4, no motorcycle may be sold or transferred by anyone without the following safety equipment: two helmets that meet the standards set by the Kenya Bureau of Standards and on both sides of which the registration number must be indelibly printed in letters that are at least three inches tall. In the event that someone violates any of these regulations and the Traffic Act does not specify the punishment, they will be found guilty and face a fine of no more than 20,000 shillings, up to six months in jail, or both. The mortality toll among motorcycle riders continues to be high despite the fact that it is widely acknowledged that riders are more likely to be involved in traffic accidents and that wearing a helmet is essential. Failure to comply with national helmet rules can result in severe penalties (Odero, 2019). In support to this, WHO identifies motorcycle helmet use as one of the key behavioral risk factors hence the universal law of motorcycle helmet use which states that both the motorcyclist and the pillion passengers should wear a helmet (WHO 2015).

It is the interest of this study to find the ways of alleviating motorcycle accidents and minimizing their consequences regarding mortality and disability. Also given the existing gap in the literature of the subject matter, this study finds it an optimal time to maximize by filling the gap on assisting the helmet use and the factors determining the helmet use by motorcyclists in Kisumu town.

1.2 Statement of the problem

Road safety is a global concern, with a higher mortality rate recorded in developing nations compared to developed countries that implement stringent safety measures. In Kenya, motor vehicle operators account for 36% of fatalities on the roads. Statistics indicate that 75% of motorcycle-related deaths involve individuals who were not wearing helmets, with only 4% of riders adhering to this safety measure (NTSA, 2024).

The World Health Organization's (WHO, 2023) global report on road safety acknowledged that the existing road traffick crashes have been attributed to failing to wear a helmet which elevates the risk of head injury, increasing the severity of injuries but no research has been done to confirm the influence of helmets usage enforcement on safety of motorcyclists on the roads. The gap the study aspired to fill.

The National Transport and Safety Authority in Kenya, have tried to enact laws and regulations aimed at reducing motorcycle accidents, particularly through the enforcement of helmet usage, the effective governance and enforcement strategies of county governments, yet motorcyclists road safety has not been attained in Kisumu County. Questing for a fresh relook on the influence of helmets usage enforcement on safety of motorcyclists on the roads broadly to alleviating motorcycle accidents and minimizing their consequences.

1.3 Purpose of the Study

The general objective of the study was to assess the influence of helmet usage enforcement on safety of commercial motorcyclists in Kisumu City, Kenya.

1.4 Specific objectives

The following specific objectives guided the study;

i. To determine the effectiveness of helmet usage enforcement policies on the safety of Commercial Motorcyclists in Kisumu City.

ii. To examine the level of safety of the Commercial Motorcyclists based on helmet usage enforcement in Kisumu City.

iii. To establish the nexus between helmet usage enforcement and safety of Commercial Motorcyclists in Kisumu City.

1.5 Research questions

The following were the research question for the study:

i. How effective are helmet usage enforcement policies on the safety of Commercial Motorcyclists in Kisumu City?

ii. What level of safety are Commercial Motorcyclists based on helmet usage enforcement in Kisumu City?

iii. What is the nexus between helmet usage enforcement and safety of Commercial Motorcyclists in Kisumu City?

1.6 Justification

The findings of this study may serve several important purposes:

Raising Public Awareness: By highlighting the importance of helmet use through this research, we can foster greater awareness among commercial motorcyclists and the general public. Increased knowledge about the protective benefits of helmets may lead to higher compliance and a cultural shift towards prioritizing safety.

Contributing to Existing Literature: This study will also enrich the academic and practical discourse surrounding motorcycle safety. By documenting the current state of helmet usage

among commercial riders in Kisumu, we can provide a foundation for future research and initiatives aimed at improving safety standards in the motorcycle industry.

Informed Policy Making: The data gathered will be invaluable to policymakers as they work to draft and implement laws that mandate helmet use for both riders and passengers. Effective legislation can potentially reduce injury rates and enhance road safety.

1.7 Scope of the Study

The study was conducted in Kisumu Town, focusing on commercial motorcyclists operating along three major roads leading into the city. The researcher employed a systematic sampling method to select participants from various collection points within their groups. The primary aim was to investigate the enforcement of helmet usage, identified as a crucial factor influencing safety among motorcyclists. The study assessed the effectiveness of helmet regulations and analyzed safety outcomes by examining the frequency and severity of accidents and injuries associated with non-compliance with helmet laws from 2015 to 2025 since it falls between the time when the United Nations General Assembly (UNGA), through Resolution 64/255, declared 2021–2023 the Decade of Action for Road Safety, beginning in March 2021, giving room to assess the effectiveness of helmet law compliance before and after the action for road safety. This move was driven by WHO's Global Status Report on Road Safety, which reported approximately 1.24 million deaths and around 35 million non-fatal injuries annually due to road crashes (United Nations Economic Commission for Africa, 2023). Data collection took a duration of not exceeding three months from the date of issuance of research permit. It involved surveys, interviews, and hospital records to gather comprehensive information on motorcyclist behavior and related accidents.

The study intentionally excluded several factors to maintain a clear focus. Other modes of transportation, such as cars and buses, were not considered, as the research centered exclusively on commercial motorcyclists operating in Kisumu City. Additionally, while the study analyzed immediate safety outcomes, it did not investigate the long-term effects of helmet usage on health or recovery rates. The research primarily aimed to document current practices related to helmet enforcement and the associated outcomes without making prescriptive policy suggestions.

1.8 Limitations of the Study

This study was limited by its generalization due to the focus on Kisumu City, a vibrant urban center characterized by high traffic flow. As a result, the findings were not accurately representing the entire *bodaboda* sector in the region. Additionally, the research was centered exclusively on helmet use and did not consider other safety factors, such as rider education and the condition of motorcycles, which could contribute to a more holistic understanding of motorcycle safety.

However, the scope of this study was intentionally confined to commercial motorcyclists operating in Kisumu City, allowing for a focused examination of helmet usage and enforcement within this specific urban context. The research specifically targeted this group within a two-week data collection period, which, while enabling a detailed analysis of current practices, means that findings may not reflect the seasonal or geographical variations in motorcycle usage and safety. The study also excluded the exploration of other safety interventions and broader traffic management policies, concentrating solely on helmet enforcement to establish a foundational understanding of its impact on rider safety in the local context. These delimitation

were designed to streamline the research process and hone in on the core issue of helmet usage among *bodaboda* riders.

1.9 Operational Definition of Terms used in the Study

Attitude :The perception and disposition of motorcyclists toward helmet usage, as reflected in their practices.

Motorcycle Helmet : A motorcycle helmet is a form of protective headgear worn by riders to safeguard their heads in the event of a crash or collision. Its main purpose is to minimize or prevent head injuries by absorbing the force of impact, ultimately helping to protect the rider's life.

Practice : The habitual or occasional act of wearing a helmet while riding a motorcycle.

Road traffic safety **:**This is an indication of how secure road users are on the road.

Helmet use :The consistent and correct wearing of a protective helmet, meeting recognized safety standards by a motorcycle rider or passenger while the motorcycle is in motion on a public road.

Boda boda :A commercial motorcycle taxi service, typically involving a motorcycle rider transporting one or more passengers for a fee within a defined geographical area.

Motorcyclist safety : The state of being protected from or minimizing the risk of injury or death to a person operating a motorcycle, achieved through a combination of safe riding practices, adherence to traffic laws, use of protective equipment, and a safe road environment.

Law enforcement: Denotes the regulations rules put in place by relevant agencies to ensure helmet usage, as part of safe riding practices.

As the first chapter provided a comprehensive overview of the background, significance, and objectives of the study on helmet usage among commercial motorcyclists in Kisumu Town, it established the critical context for understanding the challenges associated with road safety in this area. Building on this foundation, Chapter Two will delve deeper into the existing literature on helmet enforcement and its impact on motorcyclist safety, examining relevant theories and empirical studies that highlight the relationships between helmet use, enforcement and overall compliance to road safety. This chapter aims to synthesize key findings from previous research, identify gaps in the literature, and underline the theoretical framework that will guide the current study's methodology and analysis.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter captured the empirical and theoretical review of the study. The chapter examined other related literature to establish their findings on the issue of helmet use among commercial motorcyclist. The following subtopics were covered in chapter two; empirical review, theoretical review, conceptual framework and lastly chapter summary.

2.2 Empirical Review

In the United States, for instance, while some states have implemented mandatory helmet laws, there continues to be a notable percentage of riders who choose not to wear helmets. This trend is also evident in other regions, where cultural factors, enforcement challenges, and public attitudes toward helmet use contribute to the low rates of compliance. The findings from NHTSA (2017) similarly underscore the complexity of addressing helmet use, suggesting that regulations alone may not suffice without accompanying public education and enforcement initiatives.

Several factors influence helmet use behaviors among motorcycle riders. Cultural attitudes towards risk-taking and personal freedom can significantly affect compliance. In some areas, there exists a strong belief in individual autonomy, leading riders to opt for personal choice over legal mandates. Furthermore, enforcement of helmet laws is often inconsistent, which undermines the effectiveness of regulations. Without proper enforcement, riders may feel less compelled to wear helmets, believing they will not face penalties for non-compliance. Public education plays a critical role in addressing these issues. Efforts to educate riders about the life-saving benefits of helmets can complement regulatory measures. Awareness campaigns that

highlight statistics on motorcycle injuries and fatalities, as well as personal testimonials from accident survivors, can help shift perceptions and encourage voluntary compliance with helmet laws (Solagberu *et al.,* 2016).

In Africa, studies indicate that countries that opt for less stringent regulations or repeal their helmet laws experience a surge in motorcycle-related fatalities, injuries, and associated expenses as helmet usage declines. For instance, South Africa's universal helmet law transformed into a partial helmet requirement in 2016, resulting in a 21% escalation in motorcyclist fatalities per 10,000 registered motorcycles, and a nearly threefold rise in deaths among riders (Mocan & Goudie, 2021; Road Traffic Management Corporation, 2019).

Efforts to promote safer riding habits have emerged in various countries; however, the lack of enforcement and public education undermines these initiatives. In Nigeria, campaigns aimed at educating riders about the importance of helmets have seen mixed success, as cultural attitudes towards motorcycle use heavily influence compliance (Yusuf *et al.,* 2019; Owoaje et *al.,* 2021). Establishing a robust framework for helmet safety, alongside strict enforcement of laws, is imperative to reversing the trend of rising fatalities. By investing in public safety initiatives and fostering a culture of responsible motorcycle use, nations can not only save lives but also reduce economic burdens stemming from preventable injuries.

Furthermore, research indicates that the financial implications of reduced helmet usage can be profound. Increased hospitalizations and long-term care for those injured in motorcycle accidents place a significant burden on healthcare systems. For example, studies in Kenya have shown that the economic costs associated with motorcycle crashes, including medical expenses, lost productivity, and societal costs, can far exceed the investments made in preventive

measures, such as helmet laws (Munyiri *et al.*, 2021; Waruru, 2020). This challenge is further compounded by the lack of public awareness regarding the benefits of wearing helmets (Oluoch *et al.*, 2020).

2.2.1 Helmet usage by Motorcyclists and Law enforcement

Enforcing helmet usage among motorcyclists has been extensively studied in the literature, highlighting its effectiveness in improving road safety. Several studies have examined the impact of helmet laws and enforcement on helmet usage rates and subsequent reductions in head injuries. A study conducted in Vietnam by Hannson and Libby (2016) found that the introduction and enforcement of a mandatory helmet law led to a significant increase in helmet usage among motorcyclists. This resulted in a substantial decrease in head injuries and fatalities. The study emphasized the importance of strict enforcement in ensuring compliance with helmet laws.

Another study conducted in Thailand evaluated the impact of a helmet law enforcement campaign. The study found that increased enforcement efforts, including checkpoints and penalties for non-compliance, significantly increased helmet usage rates among motorcyclists. This, in turn, led to a reduction in head injuries and fatalities (Nicholls *et al.*, 2017).

Additionally, a systematic review and meta-analysis examined the effectiveness of helmet laws and enforcement in low- and middle-income countries in Asia. The review concluded that strict enforcement of helmet laws was associated with higher helmet usage rates and a significant reduction in head injuries and fatalities (Nissen *et al.*, 2020).

These studies highlight the importance of effective enforcement in promoting helmet usage and reducing head injuries among motorcyclists. Strict enforcement measures, including regular

checkpoints, penalties for non-compliance, and public awareness campaigns, are crucial in ensuring widespread helmet use and improving road safety. Additionally, addressing the challenges of helmet usage enforcement requires collaboration between law enforcement agencies, government bodies, and relevant stakeholders. By implementing and enforcing helmet laws effectively, countries can significantly reduce head injuries and fatalities among motorcyclists, ultimately improving road safety outcomes (Blais *et al*., 2020).

In a study conducted in Ghana, Adogu and Ilika (2016) found that two-thirds of participants demonstrated very limited knowledge of road traffic regulations and safety practices. This suggests that the majority of motorcyclists have not received any formal training on essential road safety principles. Unlike drivers of motor vehicles, who often attend certified driving schools, Ghana lacks dedicated motorcycle training institutions where riders can be educated on traffic laws and safe riding practices.

A study conducted in Nigeria evaluated the impact of a helmet law enforcement campaign. The study found that increased enforcement efforts, including police checkpoints and fines for non-compliance, led to a significant increase in helmet usage rates among motorcyclists. This resulted in a reduction in head injuries and fatalities (Swinney, 2016).

Another study conducted in Uganda investigated the impact of a helmet law and enforcement program. The study found that the introduction of a mandatory helmet law, coupled with strict enforcement measures, significantly increased helmet usage rates among motorcyclists. This led to a notable decrease in head injuries and fatalities (Ndagire *et al.*, 2019).

These studies highlight the importance of helmet usage enforcement in Africa. Strict enforcement measures, including police checkpoints, penalties for non-compliance, and public awareness campaigns, are crucial in ensuring widespread helmet use and improving road safety.

Recent studies have underscored the continued relevance of these findings. For example, a systematic review by Liu *et al.* (2020) emphasized the importance of educational programs in enhancing road safety knowledge among both pedestrians and drivers. Moreover, Ali *et al.* (2021) found that improving infrastructure and enforcing traffic laws significantly reduced accidents, particularly among younger populations. The findings of these studies reinforce the necessity of comprehensive measures to improve road safety and compliance with traffic regulations.

In Kenya, The proportion of new motorcycle registrations rose from less than 10% of all new vehicle registrations in 2005 to about one-third in 2011. However, only around one-third of motorcycle riders wear helmets, and helmet use is particularly low among passengers (Ogendi, 2019). While helmet laws have proven effective in increasing helmet use and reducing head injuries in several countries, simply enacting legislation is often insufficient. In Kenya, for instance, the Traffic Amendment Bill was passed in 2009, making helmet use mandatory for all motorcyclists, drivers, and passengers, and penalties were increased in the Traffic Amendment Act of 2012. However, only minor improvements in helmet use among riders and with no observable effect (Odhiambo *et al.,* 2018).

Additionally, women frequently encounter discrimination within the boda boda industry, resulting in wage disparities and heightened vulnerability to harassment and violence (Mugisha *et al.,* 2020). This challenging environment limits women's access to reliable transportation and

economic opportunities, thereby perpetuating gender inequality (Kabeer, 2016). To combat these disparities, it is crucial to implement targeted policies and support systems that promote women's empowerment, improve safety, and ultimately benefit the broader economy and society (ILO, 2019).

Perceptions surrounding helmet use have often been linked to the belief that helmets may actually increase the risk of injury by obstructing peripheral vision and causing discomfort due to accompanying riding gear. Dandona (2015) identified several reasons why motorcyclists opt not to wear helmets or protective clothing. These include the perception that helmets are only necessary for riders of high-speed, powerful motorcycles and not for those using mopeds or scooters; the inconvenience of carrying a helmet for fear of theft if left on the bike; the need to frequently remove it to answer calls on hand-held devices; discomfort; negative social stigma; and the hassle of finding a place to store it when not in use. Additionally, some riders believe their driving skills are sufficient protection, making helmets unnecessary in their view.

In contrast, a study by Sufiyan and Ahmed (2016), involving 250 commercial motorcyclists in Nigeria selected through a multistage sampling method, found a high level of willingness among riders to use safety gear. Approximately 84.4% expressed readiness to wear protective equipment, and 75.6% stated they would encourage friends to do the same.

Despite this positive attitude, the study also revealed a reluctance to personally invest in protective gear or comply with government mandates enforcing their use. Many riders indicated they would only use helmets if they were provided for free by the government, peers, or associations, citing cost as the primary barrier to purchasing them independently.

In Kenya, findings from the Knowledge, Attitudes, and Practices (KAP) survey reveal weak enforcement of helmet-related laws by police authorities. Although there is widespread awareness among riders regarding the protective benefits of helmets, only a small fraction wear them due to legal requirements (Ayisi, 2021). This highlights a critical opportunity to boost both public education and law enforcement to improve helmet usage and enhance motorcyclist safety.

One frequently mentioned reason for not wearing helmets, particularly among passengers, is the discomfort and inconvenience they cause. Additionally, shared helmets are often seen as unhygienic, further discouraging use. The lack of helmet use continues to be a major contributing factor to road traffic injuries in the country. A study analyzing police records found that injuries among motorcyclists doubled between 2014 and 2019, with a 29% yearly growth rate. Furthermore, just over one-third of motorcyclists involved in traffic crashes and admitted to hospitals were wearing helmets at the time of the incident (Bachani *et al*., 2016).

In addition to the enforcement issues surrounding helmet legislation, cultural factors also play a significant role in helmet adoption. Some motorcyclists perceive helmet-wearing as an infringement on personal freedom, while others associate it with social stigma, believing that it may be perceived as a sign of being uninformed or overly cautious. Addressing these cultural perceptions is essential for developing effective educational campaigns aimed at changing attitudes towards helmet use (Bhatia & Smith, 2021).

In conclusion, apart from legislative enforcement, community engagement has the potential to enhance helmet compliance. Educational programs in schools and local communities, emphasizing the importance of wearing helmets for both riders and passengers, could foster a

culture of safety. By promoting positive peer influence and highlighting personal stories of injury prevention, these initiatives could encourage more motorcyclists to adopt safer practices. Such comprehensive approaches that combine education, cultural shifts, and economic support are vital for reducing helmet non-use and ultimately decreasing road traffic injuries in Kisumu city.

2.2.2 Safety based on Helmet Usage among Commercial Motorcyclists

Motorcycle helmets play a crucial role in safeguarding riders from serious head injuries and even fatalities, making them an indispensable piece of protective gear. It is widely recognized on a global scale that the use of helmets significantly reduces the risks associated with motorcycle accidents (WHO, 2018). Research findings from various sources, including the World Health Organization's report in 2018, emphasize the importance of universal helmet laws in enhancing road safety. For instance, statistics reveal that the enforcement of such laws can lead to a remarkable 40% reduction in fatal injuries and a substantial 70% decrease in head injuries among riders. These figures vividly demonstrate the effectiveness of helmet mandates in saving lives and preventing severe harm on the roads. Consequently, it is evident that the implementation and strict enforcement of helmet laws are essential steps towards ensuring the well-being of motorcycle riders worldwide.

In the United States, a systematic review conducted by Thompson *et al.* (2018) found that wearing helmets can significantly impact motorcycle safety. The study revealed that helmet use can reduce the likelihood of death by 37% and the risk of head injury by 67%. For example, in states where helmet laws are strictly enforced, such as California and New York, the rates of

helmet usage among motorcyclists are notably higher compared to states with more lenient regulations.

Moreover, the review shed light on the disparities in helmet-wearing behaviors across different states. States that have implemented legislative measures mandating helmet use have seen a greater compliance rate among motorcyclists. This demonstrates how public policies can play a crucial role in promoting safety practices within the motorcycling community. In contrast, states with weaker regulations may experience higher rates of non-compliance, leading to increased risks for riders (Duku *et al*., 2020).

Overall, the study emphasizes the importance of not only wearing helmets but also the influence of external factors such as legislation and public awareness campaigns on promoting safety among motorcyclists. By understanding these dynamics, policymakers and safety advocates can work towards creating a safer environment for all individuals on the road.

Research in Europe highlights similar patterns. For instance, a recent study by Blais *et al.* (2020) delved into the usage of helmets among motorcycle riders in France. The findings revealed that although helmet laws were effective in promoting safety, the deeply ingrained cultural attitudes towards helmet-wearing played a crucial role in determining compliance rates. It was noted that the riders' own perceptions of vulnerability, coupled with the societal norms related to wearing helmets, significantly influenced their decision-making process.

To elaborate further, the study indicated that motorcyclists who perceived themselves as more vulnerable to accidents were more likely to adhere to helmet regulations. On the other hand, those who felt invincible or overly confident in their riding abilities were less inclined to don protective headgear. Moreover, the influence of peer groups and social circles cannot be

underestimated. In cases where helmet use was considered uncool or unfashionable within certain social circles, riders were more reluctant to comply with the safety measures.

Therefore, it becomes evident that besides legislative measures, addressing the underlying cultural beliefs and attitudes towards helmet-wearing is paramount in ensuring widespread compliance among motorcyclists. By fostering a culture that values safety and prioritizes protective gear, authorities can potentially enhance road safety outcomes and reduce the risk of severe injuries or fatalities in motorcycle accidents.

Research by Liu *et al*. (2018) indicates that helmet use can reduce the likelihood of head injuries by 69% and decrease the risk of death by 42% in the event of a crash. In response, nearly 94% of countries worldwide have adopted laws and awareness campaigns aimed at increasing helmet usage and improving road safety knowledge (Liu *et al*., 2018; WHO, 2021). Despite these efforts, the effectiveness of helmet use continues to be a topic of debate in many developing nations. Moreover, both official records and self-reported data reveal persistently low helmet-wearing rates in several countries, particularly within low- and middle-income regions (Akaateba *et al*., 2015).

In Africa, one effective means of mitigating the risks associated with head injuries is the use of protective gear, particularly helmets. However, the inconsistency in helmet use among motorcyclists remains a significant concern (Johnson & Lee, 2022). Despite the proven effectiveness of helmets in reducing the severity of head injuries, many riders neglect to wear them, often due to factors such as discomfort, lack of awareness regarding the benefits, or non-compliance with safety regulations (Adams, 2021). Implementation and enforcement of helmet laws can dramatically improve safety and potentially save lives (Ngugi *et al.,* 2023).

Helmet usage rates among motorcyclists vary widely due to a combination of enforcement challenges in Africa ranging from; cultural perceptions, and socioeconomic factors. A study by Duku *et al.* (2020) in Nigeria indicated that while helmet laws exist, compliance is often low, primarily due to the perception that helmets are uncomfortable and the stigma associated with wearing them. The researchers suggested that cultural beliefs and a lack of proper enforcement mechanisms contribute to the low adoption of helmet use among motorcyclists, underlining the need for tailored educational campaigns.

For instance, in some regions, the cultural significance attached to headgear might clash with the idea of wearing a helmet for safety. In Nigeria, where traditional headgear holds symbolic value in various ceremonies and rituals, the transition to wearing helmets for protection can be met with resistance. Moreover, economic factors play a significant role in the decision to purchase and wear helmets. In areas where financial constraints are prevalent, individuals might prioritize other necessities over investing in a helmet, even if they understand the risks of riding without one (Ahmad & Muturi, 2023).

Furthermore, the lack of stringent enforcement of helmet laws exacerbates the issue. Without proper monitoring and penalties for non-compliance, many motorcyclists feel they can evade the law without consequences. This loophole in enforcement further perpetuates the disregard for helmet usage, creating a cycle of safety issues. To address these challenges effectively, comprehensive educational campaigns tailored to specific cultural contexts and supported by consistent enforcement measures are essential. By addressing the root causes of low helmet usage, such initiatives can promote a shift in attitudes towards prioritizing safety on the roads.

Similarly, in South Africa, a survey conducted by Van der Merwe *et al.* (2021) shed light on the concerning trend of low helmet usage among commercial motorcyclists. The study revealed that only 54% of these riders consistently wore helmets, highlighting a significant gap in safety practices. The reasons behind this lack of compliance were multifaceted, with factors such as limited awareness regarding the protective benefits of helmets and misconceptions about the discomfort and visibility issues associated with wearing them playing pivotal roles.

For instance, some motorcyclists expressed concerns about helmets being uncomfortable, especially during hot weather conditions, which influenced their decision to forego wearing one. Additionally, the perceived reduction in visibility caused by helmets was cited as a reason for non-compliance, as riders feared compromising their ability to navigate traffic effectively (Karanja, 2021). These insights underscore the need for targeted interventions that address these misconceptions and promote a culture of safety within the motorcycling community.

In response to these findings, Van der Merwe *et al.* (2021) recommended community-based initiatives aimed at increasing helmet usage through educational campaigns and infrastructure improvements. By raising awareness about the life-saving benefits of helmets and dispelling myths surrounding their use, these interventions have the potential to significantly enhance safety standards among commercial motorcyclists. Furthermore, the implementation of policies that mandate helmet use and provide support for compliance could further bolster efforts to protect riders on the road. Overall, addressing the barriers to safe usage of helmets identified in the study is crucial for promoting a safer environment for motorcyclists and reducing the risk of serious injuries or fatalities.

In Kenya, the issue surrounding helmet usage among commercial motorcyclists is notably complex due to the high incidence of motorcycle accidents and fatalities. A study conducted by Mutiso *et al.* (2022) shed light on the concerning fact that merely 38% of commercial motorcyclists in urban areas opted to wear helmets while navigating the bustling streets. This research underscored a prevailing mindset among riders that perceived helmet use more as a bothersome obligation rather than a paramount safety measure.

The reluctance towards helmet usage can be attributed to various factors, including economic constraints that render helmets as an additional financial burden for already financially strained riders. Moreover, the fear of theft looms large in the minds of many motorcyclists, dissuading them from investing in protective headgear (Ogendi, 2019). These challenges present a significant barrier to fostering a culture of safety on the roads.

For instance, in bustling urban centers like Nairobi, where traffic congestion is a daily struggle, the risks faced by motorcyclists without helmets are amplified. The chaotic nature of the traffic coupled with the lack of proper enforcement of helmet laws exacerbates the vulnerability of riders to serious head injuries in the event of accidents (Karanja, 2021).

In order to address this pressing issue, it is imperative to not only emphasize the importance of helmet usage through awareness campaigns but also to explore innovative solutions to make helmets more affordable and accessible to all riders. By tackling the underlying reasons for non-compliance with helmet-wearing regulations, such as financial constraints and security concerns, strides can be made towards creating a safer environment for both motorcyclists and other road users.

Moreover, cultural perceptions play a crucial role in Kenya when it comes to helmet-wearing behavior among motorcyclists. For instance, there is a prevailing belief among some riders that wearing a helmet signifies a lack of bravery or skill on the road (Wekesa & Odero, 2021). This perception has significant implications as it influences the level of compliance with helmet laws set by the government. Despite the efforts made by authorities to enforce helmet regulations, the resistance stemming from these cultural beliefs poses a challenge to achieving widespread adherence to safety measures.

In Kenyan society, the cultural significance attached to helmet use goes beyond mere safety concerns. It intersects with notions of masculinity, courage, and social status among motorcyclists (Ngugi *et al.,* 2023). This complexity adds layers to the issue, making it more than just a matter of following regulations. The reluctance to wear helmets based on cultural perceptions highlights the need for a deeper understanding of the social dynamics at play. Strategies that take into account the cultural context, such as community engagement programs and awareness campaigns tailored to specific audiences, can be more effective in promoting helmet use. By acknowledging and working within the existing cultural framework, policymakers and stakeholders can foster a culture of road safety that resonates with the local population and leads to sustainable behavioral change.

The literature illustrates that while helmet usage is fundamental for improving road safety among commercial motorcyclists globally, local contextual factors significantly influence compliance rates. In Kenya, addressing the cultural perceptions and economic barriers associated with helmet use is essential for increasing adoption and reducing motorcycle-related fatalities. Moving forward, targeted educational campaigns and community engagement

strategies will be critical in changing attitudes towards helmet use and enhancing the safety of commercial motorcyclists.

2.2.3 Relationship between helmet usage enforcement and safety

Globally, helmet laws and their enforcement play a crucial role in enhancing the safety of motorcyclists. The World Health Organization (2021) reports that effective enforcement of helmet regulations can result in substantial decreases in motorcycle-related injuries and fatalities. For example, in countries like Australia and parts of Europe where stringent helmet laws are in place, compliance rates are higher, leading to lower accident rates among motorcyclists (Parker *et al.,* 2021). These countries serve as successful models where strict enforcement has proven effective in improving road safety for motorcyclists.

On the contrary, regions with weak enforcement mechanisms struggle with low compliance rates regarding helmet laws. Research by Hyder *et al.* (2022) emphasizes that many low- and middle-income countries face challenges in enforcing existing helmet laws, resulting in high rates of motorcycle injuries. In countries like India, despite having legislation in place, non-compliance remains a significant issue (Sethi *et al.,* 2021). This lack of adherence to helmet laws underscores the importance of effective enforcement and public education campaigns to promote safety.

In the African context, the relationship between helmet usage enforcement and safety among motorcyclists varies significantly. In countries like South Africa and Ethiopia, where helmet laws are strictly enforced, there have been notable improvements in helmet compliance rates and a decrease in motorcycle-related injuries (Dandona *et al.*, 2021). These examples highlight the positive impact of robust law enforcement on enhancing safety outcomes for motorcyclists.

Zooming into Kenya, sheds light on the challenges and opportunities surrounding helmet enforcement among commercial motorcyclists. Recent research by Mutiso *et al.* (2023) reveals alarmingly low compliance rates, with only 38% of commercial motorcyclists consistently wearing helmets. This low adherence is influenced by factors such as poor enforcement, cultural attitudes, and economic constraints. Addressing these barriers through targeted enforcement measures and educational initiatives could lead to a significant improvement in safety outcomes for motorcyclists (Nyamínga *et al.*, 2023). It is evident that a multi-faceted approach involving both enforcement and education is essential in promoting helmet usage and reducing motorcycle-related injuries in local communities.

The literature indicates a strong relationship between helmet usage enforcement and safety among commercial motorcyclists, both globally and within the specific context of Kisumu, Kenya. Effective enforcement of helmet laws, combined with community education and engagement, is essential for improving compliance rates and enhancing safety outcomes. In Kisumu, addressing cultural attitudes towards helmet use and strengthening enforcement mechanisms are critical steps required to reduce motorcycle-related injuries and fatalities. Future research should continue to explore these dynamics while assessing the impact of community-based interventions on helmet use compliance (Karanja, 2021).

Further studies should also consider the role of policy enforcement at various governmental levels, examining how local government initiatives can support helmet law adherence. The collaboration between health authorities, law enforcement, and community organizations can facilitate more comprehensive educational campaigns. Additionally, research into the effectiveness of incentive-based programs such as discounts on insurance premiums for

compliant motorcyclists could provide valuable insights into enhancing helmet usage among riders.

Moreover, understanding the psychological barriers and social influences that affect helmet-wearing behaviors is crucial. Engaging local leaders and influencers in advocacy efforts may help reshape perceptions regarding helmet safety. Continuous evaluation and adaptation of strategies will ensure that interventions remain relevant to the community's needs. Addressing these interconnected elements can lead to a significant reduction in motorcycle-related injuries and fatalities, ultimately promoting a culture of safety on the roads.

2.3 Theoretical Framework

2.3.1 Theory of Planned Behavior (TPB):

The Theory of Planned Behavior (TPB) builds on the Theory of Reasoned Action by incorporating perceived behavioral control, allowing it to explain behaviors beyond those under voluntary control (Ajzen, 1991). TPB posits that individuals' attitudes, subjective norms, and perceived behavioral control influence their intentions, which in turn affect their behaviors (Warner & Abreg, 2016). This framework is especially useful for understanding helmet use among motorcyclists, as it highlights how favorable attitudes towards helmet usage can increase compliance, while concerns regarding comfort or style may deter it.

Subjective norms also significantly influence helmet compliance, as motorcyclists may be swayed by the attitudes of peers and family members. If they believe that their social circle disapproves of helmet use, they are less likely to wear one. Community efforts that reinforce helmet use as a social norm such as endorsements from local influencers can strengthen these perceptions, promoting compliance.

Furthermore, perceived behavioral control refers to an individual's belief in their ability to obtain and wear a helmet. Making helmets accessible and affordable is crucial for enhancing this belief. Strategies addressing attitudes, norms, and perceived control can effectively boost helmet compliance, ultimately contributing to greater road safety (Johnson & Hall, 2005; Letirand & Delhomme, 2005).

2.3.2 Health Belief Model:

The Health Belief Model (HBM) and the Theory of Planned Behavior (TPB) are both important frameworks for understanding health behaviors, such as helmet compliance among motorcyclists. While TPB focuses on intentions and social norms, the HBM provides deeper insights into individual perceptions of risk and the potential benefits of preventive actions. Key elements of the HBM, such as perceived susceptibility and severity, motivate riders to wear helmets based on their beliefs about injury risk and the consequences of not using one (Rosenstock, 1974). By addressing these perceptions, interventions can more effectively target concerns related to health risks associated with motorcycle riding.

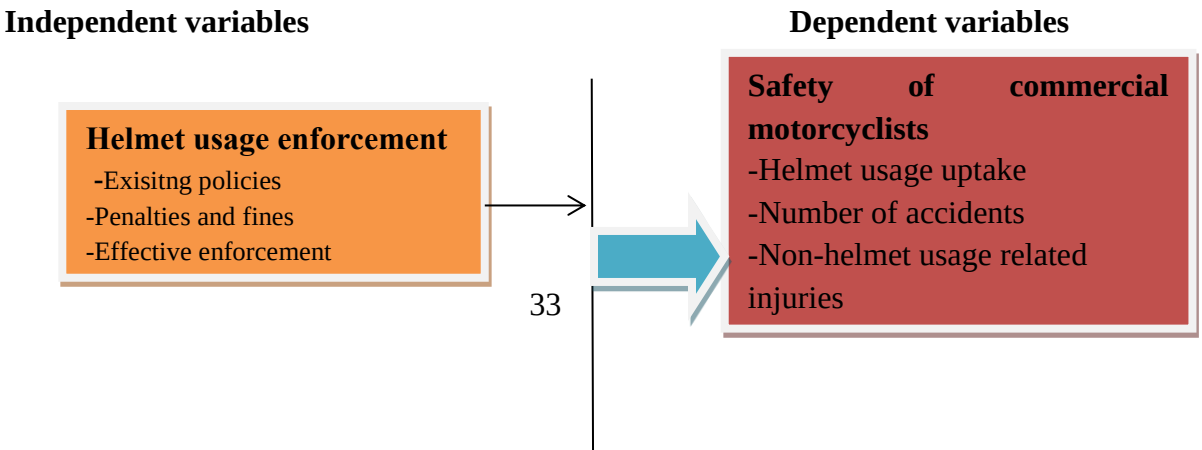
Moreover, the HBM emphasizes the significance of perceived benefits versus barriers. Understanding the protective advantages of helmets can enhance compliance among motorcyclists. In addition, addressing barriers like discomfort and cost encourages helmet use. The model's focus on cues to action and self-efficacy further enhances helmet compliance by promoting triggers for helmet use, such as community campaigns and reminders from peers, while fostering riders' confidence in wearing helmets correctly (Wong & Wong, 2017).

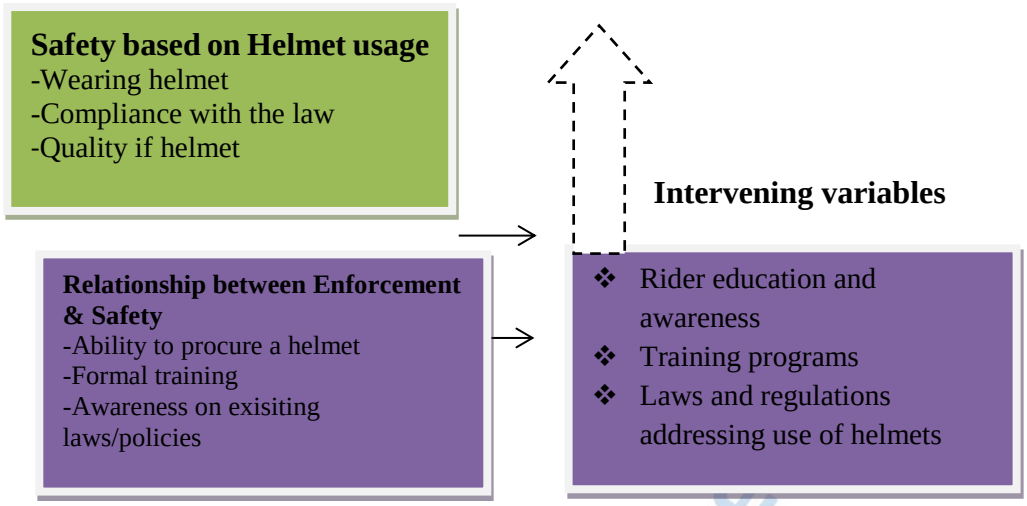
In applying both models, the helmets usage enforcement which is the role of governance for the concerned authority is to cultivate positive attitudes on the part of the users and understanding of the tragic health consequences that the users will find it habitual to use the

helmet thus promoting safety among the motorcyclists. Furthermore, integrating the Theory of Planned Behavior (TPB) with the Health Belief Model (HBM), stakeholders can develop more effective interventions to promote helmet use among motorcyclists. Strategies addressing attitudes, subjective norms, perceived behavioral control, and health beliefs can create a comprehensive framework for improving helmet compliance and enhancing road safety. Ultimately, fostering a culture of safety that prioritizes helmet use is essential for reducing road traffic injuries and fatalities in motorcyclists.

2.4 Conceptual framework

The conceptual framework of the study shows the relationship between the independent and dependent variable of the study on assessment of factors influencing helmet use by motorcyclists in Kisumu town.





The figure 2.1:Relationship between dependent and independent variable of the study
Source: The researcher, 2024

According to the study objective which was to assess the influence of helmet usage enforcement on safety of commercial motorcyclists in Kisumu City, Kenya, independent variable is helmet usage enforcement which was informed by safety based on helmet usage, relationship between enforcement and safety. Dependent variable was safety of commercial motorcyclists which was shaped by; helmet usage uptake, reduction of number of accidents and non-helmet usage related injuries. The safety of commercial motorcyclists was achieved through introduction of intervening variables; Rider education and awareness, training programs and Laws and regulations.

2.5 Research Gaps

Despite the recognized effectiveness of helmets in reducing the severity of head injuries in motorcycle accidents, a significant gap persists in understanding the factors influencing helmet usage among riders. Research indicates that while helmet laws have been established in many regions, compliance remains inconsistent due to socio-cultural attitudes, perceived discomfort, and a lack of awareness regarding the protective benefits of helmets (Toledo *et al.*, 2023). The

barriers to helmet use are particularly pronounced in low- and middle-income countries, where enforcement of helmet laws is often weak, leading to higher rates of fatal injuries among motorcyclists (Gonzalez *et al.,* 2022). Existing studies have primarily focused on the effectiveness of helmet legislation, while less attention has been paid to the motivations and perceptions of riders that influence their decisions to wear helmets (Ismail *et al.,* 2023).The aspects that are captured in this study.

In addition to individual factors, environmental and infrastructural considerations further complicate helmet usage and overall motorcycle safety. Research highlights that inadequate road infrastructure, such as poorly designed roadways and insufficient signage, disproportionately impacts motorcyclists, increasing their vulnerability to accidents (Mwai *et al.,* 2022). Highly populated urban areas, in particular, pose unique challenges whereby increased traffic congestion, aggressive driving behavior, and limited enforcement of traffic regulations contribute to elevated risks for motorcyclists, despite the presence of helmet laws (Nyangasi *et al.,* 2023). Therefore, there is a need for comprehensive studies that examine how contextual factors including urban design and traffic management intersect with helmet use to influence the safety of motorcyclists.

Finally, the effectiveness of educational interventions in promoting helmet use and improving safety behaviors among motorcyclists remains under-explored. While public awareness campaigns have shown promise in certain contexts, there is limited empirical evidence assessing their long-term impact on helmet compliance and rider safety behaviors (Adambili *et al.*, 2023). Additionally, tailored educational programs that address specific demographics, such as younger riders and those with prior accident experiences, are lacking in the literature (Ali *et*

al., 2023). Therefore, this research research bridges this knowledge gap by assessing helmet usage enforcement on safety of commercial motorcyclists in Kisumu City.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that will be employed to conduct the study. It is structured around several key areas, including the research design, variables, study location, and target population. Additionally, it covers the sample size, sampling methods, data collection instruments, piloting process, validity and reliability measures, techniques for data collection and analysis, as well as logistical considerations and ethical guidelines to be followed throughout the research.

3.2 Research methodology

This study utilized mixed research methodology. Quantitative and qualitative research methodologies diverge not only in their fundamental philosophies but also, to some degree, in the approaches, techniques, and procedures employed. While both methodologies generally follow a similar research process, they are distinguished by their data collection methods, data processing and analysis procedures, and the manner in which findings are communicated. When analyzing data in qualitative research, the researcher identified themes and sub-themes describing what was found out during interviews and open-ended questions. On the side hand, the researcher subjected data to statistical procedures to analyze quantitative data that are collected through questionnaires (Kumar, 2011). This study therefore adopted both qualitative and quantitative methods for the purpose of complementarity.

3.3 Research Design

A research design is a structure that illustrates how the sample, data collection, and analysis methods are connected to address the central research questions (Trochim, 2021). This study

utilized a descriptive research design to effectively assess the factors influencing helmet use among motorcyclists in Kisumu Town. This involved interviewing and observing commercial motorcyclists in designated areas that were targeted for the study in Kisumu town. The essence of adapting descriptive design is because it allows the yield of rich data due its capacity to handle social environment. Moreover, the descriptive survey allows for the collection of data from a large number of subjects.

Table 3. 2: Summary of Research Designs based on Specific Objectives

Specific Objective	**Variables/measurable indicators**	**Research design**
Helmet usage enforcement Determine the effectiveness of helmet usage enforcement policies on the safety of Commercial Motorcyclists in Kisumu City	❖ Existing policies ❖ Penalties and fines ❖ Effective enforcement	Descriptive research design Content analysis
Safety based on Helmet usage Examine the level of safety of the Commercial Motorcyclists based on helmet usage enforcement in Kisumu City	❖ Ability to procure a helmet ❖ Formal training ❖ Awareness on existing	Descriptive survey design Content analysis
Relationship between Enforcement and Safety Establish the nexus between helmet usage enforcement and safety of Commercial Motorcyclists in Kisumu City	❖ Ability to procure a helmet ❖ Formal training ❖ Awareness on existing laws/policies	Descriptive research design Content analysis

Source; Field Data, 2024

3.4 Study location

The study was carried out in Kisumu town which is the third largest city in Kenya with a very high rate of youth unemployment._Kisumu town is the headquarter of Kisumu county and is located in Nyanza region.

The county has 7 sub counties namely Kisumu East, Kisumu West, Kisumu central, Seme, Nyando, Muhoroni and Nyakach.Total Population of Kisumu county is 968,909 while the Kisumu town which is within Kisumu east sub county has a population of 387564 people (40% of total county population). It has a population density of 402.5 which is higher than the national population density of 401.1 per square kilometer.

The economic activities are farming, livestock keeping, fishing and small scale trading. It is believed that the county has a potential mineral wealth of Limestone.The town is a busy business hub with several government and non governmental offices.The town is painted by several boda boda stages strategically placed within town for ferrying of people to the various destinations that are not accessible or no motor-vehicle plays that route. The town is also characterized by a young generation whom majority are unemployed and have resorted to commercial motorcycling.

3.5 Target population

According to Waters (2011), a target population refers to the entire population from which a sample is taken. The target population of this study was all the commercial motorcyclist and law enforcement enforcement officers in Kisumu City. According to Traffick Department, Kisumu central police station 2024, the number of a motorcyclist in Kisumu town is over 10,000 operating from 6 wards. The study also taregeted 2 enforcement officers (1 police and 1 County enforcement officer) from the 6 Wards as the key informants in the study.

3.6 Sampling technique

This study adopted Stevenson and Ivers (2008) sampling technique. The choice to adopt the sampling techniques is justified by their alignment with the study's objectives to assess factors influencing helmet use among motorcyclists in Kisumu Town. These techniques emphasize probability sampling methods, which are essential for obtaining a representative sample that minimizes bias and enhances the validity of the findings. By utilizing approaches such as stratified sampling, the study can effectively capture the diverse characteristics of the motorcyclist population, ensuring all demographic segments are adequately represented. Furthermore, these techniques are widely recognized and validated in public health research, which strengthens the study's credibility and allows for generalization of the results. Ultimately, employing Stevenson and Ivers' sampling methods is critical for ensuring rigorous data collection that provides reliable insights into helmet usage behaviors and attitudes, informing broader safety interventions within similar contexts.

The technique ensures diverse subgroups within the population are accurately represented, enhancing the precision and reliability of its findings. This sampling technique minimizes sampling error by considering variations across factors such as region and socioeconomic status, allowing for a comprehensive understanding of barriers to motorcycle use. Furthermore, the sample size calculation follows Kirkwood's (2003) formula, which adds statistical rigor by ensuring the study is adequately powered to identify significant associations while reducing the risks of Type I and Type II errors.The formula for the sample size calculation is as follows, Kirkwood, (2003).

From the population, two hundred and fifty motorcyclists will be sampled for the study.

$$n = \frac{Z^2 P (1-P)}{d2}$$

n=sample size
Z= Z statistic for a confidence level of 95%

P=prevalence of 23.1% based on the level of practice of road safety measures by Hung, Stevenson, and Ivers (2008).

d=precision of 5%

Sampling size=250

Purposive sampling was used to select 12 key informants for the KII from the 6 operation bases as shown in the distribution Table 3.2.

Table 3.2: Distribution of Respondents

Ward/Bases	Population of Riders	Questionnaire sample	KII sample
Migosi	1,874	40	2
Kondele	2,901	47	2
Nyalenda	1,480	40	2
Kaloleni	1,520	41	2
Milimani	1,880	41	2
Railways	1,050	41	2
Total	**10,705**	**250**	**12**

Source: Kisumu central police station, 2024

The study drew respondents from each of the bases based on their distribution in the respective Wards. This gave a final sample size of 262 respondents drawn from the 6 Wards in Kisumu city.

3.7 Data collection instruments

3.7.1 Questionnaire

The questionnaire tool was designed as a semi-structured instrument targeting commercial motorcyclists and the public. This approach aims to capture a rich array of data, facilitating a comprehensive appreciation of the subject matter. The questionnaire begins with a section dedicated to collecting demographic information, gathering crucial insights into respondents' age, gender, educational background, and their relationship to usage of helmets.

3.7.2 Strengths of Questionnaires as a tool of data collection

Questionnaires are relatively cheap and quick method to gather huge amount of data within a little period of time. There is a standardized response as well as predetermined scales thus the collector is able to focus on what he/she needs. Confidentiality and anonymity are achieved through questionnaires as no one is able to figure out the respondent. This may assist in achieving response from those who are intimidated of direct questioning by researchers. Questionnaires can be standardized thereby ensuring a huge benefit to institutions as they can record responses and data uniformly. They also facilitate follow ups by giving room to creation of follow-up questions, to aid in grasping and getting better responses that will assist in establishing of correct and precise action plans. Digital distribution of questionnaires can reach to a wider population with different characteristics, culture and norms. This ensures that everyone is represented regardless of his background and location. Flexibility can ensure the questionnaire is typed in any language in order to reach the minority of populations and the illiterate creating a sense of belonging (Creswell, 2014).

3.7.3 Weaknesses of Questionnaires

There exist a wide range of biasness as the respondents are led on the type of questions to answer. This might lead to respondents holding back useful information that might assist in achieving desired results. Inability to capture nonverbal cues as there is no direct contact with respondents. On verbal cues portrays a respondents inner feelings and might be able to assist in eliciting response needed (Fowler, 2014).

3.7.4 Interview Schedules

The researcher conducted face-to-face interviews to enhance data quality, allowing for clarification on unclear questions and ensuring accurate responses, as participants needed only basic verbal and listening skills. To minimize distractions, interviews were scheduled during off-peak hours between 10 a.m. and 3 p.m. While this approach limited anonymity, participants were comfortable being identified as contributors. After completing the interviews, the researcher transcribed the responses verbatim and employed thematic analysis to identify and categorize key patterns and themes. This process involved coding the responses and refining the themes to provide rich insights into the barriers and factors associated with motorcycle use, ultimately contributing to a comprehensive understanding of the subject.

3.7.5 Observation checklist

The observation checklist was implemented to achieve the final objective of the study, which aimed to determine the number of commercial motorcyclists in Kisumu who were wearing helmets. This data collection was conducted at a strategic observation point frequented by bikers. Key factors considered during the observations included the time of day (morning, afternoon, evening, peak, and off-peak hours) and the presence of police officers. Direct observation is recognized as a reliable method, as it allows the researcher to witness events as

they occur without interference or influence. To ensure objectivity, the researcher maintained a systematic approach to data collection, focusing solely on the behaviors of the motorcyclists and minimizing personal bias in the observation process. One challenge encountered was obtaining background information, which was ultimately unnecessary for the research; however, the primary targets of the study were clearly observable and easily distinguishable from other bikers.

3.8 Validity and reliability of data collection instruments

3.8.1. Validity

According to Mugenda and Mugenda (2003), validity refers to the extent to which outcomes derived from data analysis accurately represent the phenomenon being studied. Borg and Gall (1989) further clarify that validity measures the degree to which an instrument assesses what it claims to measure. Gay (1992) emphasizes that expert judgment is crucial for establishing validity. Vernon (1974) notes that the validity of behavioral measures reflects the extent to which an instrument consistently assesses the same attribute, highlighting the importance of precision in measurement tools. In this study, validity was ensured by consulting experts, including scholars and research advisors from the School of Graduate Studies at Mount Kenya University. Their feedback was instrumental in refining the data collection tools, as they provided insights and recommendations on question clarity, relevance, and comprehensiveness, ultimately enhancing the overall reliability and accuracy of the instruments utilized in the research.

3.8.2 Reliability

Reliability refers to the extent to which a research instrument consistently produces the same results when administered multiple times. In this study, the questionnaires were distributed to

a piloting group, and their responses were analyzed after a two-week interval. Following the test-retest procedure, the results were analyzed using the Cronbach's Alpha coefficient of correlation, with an expected value above 0.7, as indicated in Table 32.

3.8.2.1 Reliability Analysis

To evaluate the reliability of research instruments, a Cronbach's Alpha analysis was performed. This assessment gauged the reliability and precision of the measurement tools in producing consistent outcomes. The results are outlined in Table 3.3.

Table 3.3: Reliability Analysis

Variables	Alpha Value	Comments
Enforcement	0.797	Reliable
Safety	0.811	Reliable
Enforcement and Safety	0.801	Reliable

Source: *Field data 2024*

The results in Table 4.1 indicate that the three variables demonstrated strong consistency levels, exceeding the recommended threshold of 0.7. This suggests that the instruments used were dependable and did not require adjustments. This make even with Cooper and Schindler's (2014) recommendation that a variable's Alpha value should meet or exceed 0.7 for reliability.

3.9 Piloting

The primary purpose of the piloting phase was to identify misunderstandings, ambiguities, and inadequacies within the research instruments. Wiersma (1985) emphasizes that piloting is essential for finalizing effective research tools. Eldoret City was chosen for piloting due to its

similarities with Kisumu City, particularly in the prevalence of motorcycle use and comparable demographic characteristics among motorcyclists. Both cities share similar road conditions, economic activities, and population diversity, making Eldoret an ideal setting for testing the instruments designed for Kisumu.

A total of 25 respondents participated in the piloting phase, providing invaluable feedback that significantly influenced the refinement of the instruments. Respondents identified unclear questions and areas for improvement, prompting revisions to enhance clarity and ensure that the questions captured the intended information accurately. Additionally, feedback regarding the instruments' length and structure helped streamline the data collection process, resulting in a more user-friendly format. This iterative refinement process, guided by the experiences of the Eldoret participants, greatly contributed to the overall validity and reliability of the final instruments used in the study.

3.10 Data collection procedure

In this study, the researcher initially obtained a research permit from the regional traffic police commander. Prior to the actual data collection, the researcher visited the selected bodaboda passenger collection points to establish rapport with potential respondents. This advance interaction helped reduce the Hawthorne effect, which refers to the tendency of individuals to alter their behavior when they are aware they are being observed (Mugenda & Mugenda, 2003). During the data collection phase, the researcher conducted interviews with respondents at randomly selected stages. By building good relationships with participants beforehand, the researcher aimed to minimize the Hawthorne effect, ensuring that the respondents' behavior remained natural and not influenced by the awareness of being part of the study. This approach

ultimately contributed to more accurate and reliable self-reported data from both motorcyclists and enforcement officers, thereby improving the overall validity of the study's findings.

3.11 Data analysis

Data analysis involves examining, interpreting, presenting, and summarizing data to extract meaningful information that addresses the research questions (Mugenda & Mugenda, 2003; Kvale & Brinkmann, 2009). In this study, the researcher employed both quantitative and qualitative methods for data analysis. The Statistical Package for Social Sciences (SPSS) version 2 was used for the quantitative analysis. After coding, the data was analyzed and presented in frequency tables and figures. For the qualitative data, thematic analysis was applied, and the findings were organized into themes and sub-themes according to the respective study objectives.

3.12 Ethical Considerations

Several ethical considerations were observed in this study. The researcher adhered to Mount Kenya University's ethical guidelines for conducting research involving human subjects, which emphasized assuring informants of the confidentiality of the information they provided to the researcher and their assistants. The purpose of the data collection was clearly explained to respondents to alleviate any concerns or fears about the process. Efforts were made to create a comfortable environment that encouraged voluntary and willing participation without any sense of coercion.

To promote honesty in responses and enhance data reliability, the anonymity of respondents was guaranteed. Informed consent was obtained before involving respondents in the study, and participation was based solely on their willingness. Only those who consented to participate

were included in the research. Additionally, after data collection was completed, the findings were made available to the respondents as a form of feedback.

The researcher also obtained an introductory letter from Mount Kenya University, which was submitted to the National Commission for Science, Technology, and Innovation (NACOSTI) to obtain a research permit for conducting both the pilot and main study in the respective areas.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1. Introduction

This section presents the study findings and the interpretation of the study in alignment with the research objectives and questions; to determine helmets enforcement factors among commercial motorcyclists in Kisumu City, to examine safety based on helmet usage by commercial motorcyclists in Kisumu City and to determine the relationship between helmets usage enforcement and safety of commercial motorcyclists uses in Kisumu City.The section starts by presenting the demographics of the study, followed by findings on helmet usage enforcement on safety for commercial motorcyclists in Kisumu city.

4.2. Research Presentation, Interpretation and Discussions

4.2.1 Questionnaire Return Rate

The study administered a total of 250 questionnaires to commercial motorcyclists and the public. A total of 201 questionnaires were returned completed, giving an 80.4% response rate. The study also successfully completed 9 KIIs out of the 12 yielding 75% response. The researcher's proactive approach in building rapport with potential respondents by visiting bodaboda passenger collection points fostered a sense of trust and engagement. Additionally, the clear and straightforward nature of the questionnaires minimized ambiguities, encouraging participation. Cooper and Schindler (2014) and Fan and Yan (2010) suggest that a return rate exceeding 75% holds significance for research objectives.

4.2.2 Background Information

The study considered the following characteristics: gender, education, age, length of operating the motorcycle, means of acquiring the motorcycle and training possessed by the respondents.

4.2.2.1 Gender of respondents

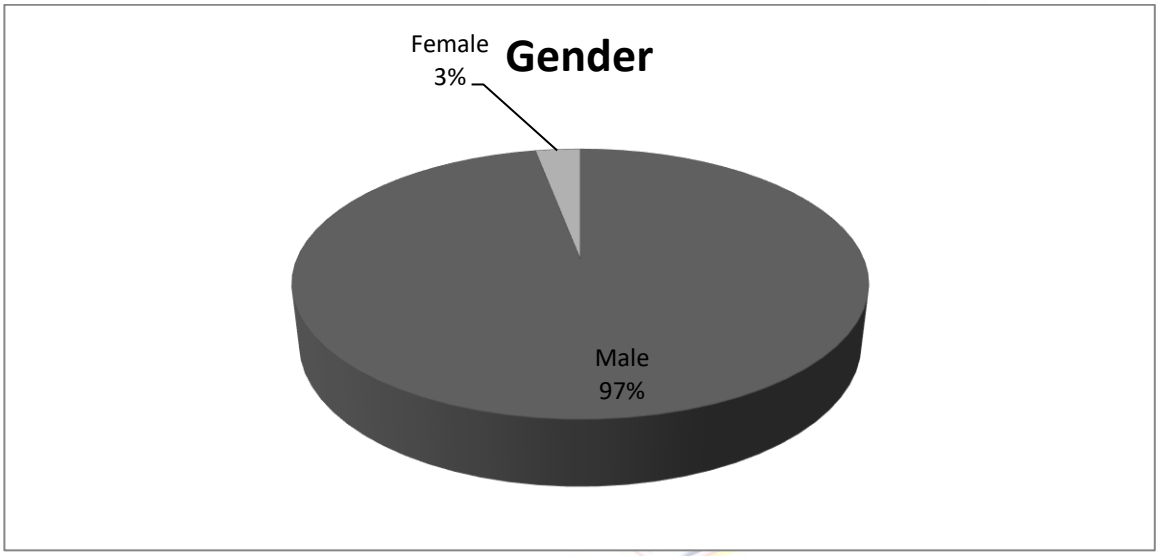


Figure 4.1: Gender of respondents

Source: Field data 2025

Figure 4.1 showed that most of the commercial motorcyclists were male, outnumbering females. Men dominated the boda boda sector with (204) 97%, while women only represented (6) 3%. Factors contributing to this gender gap include challenging work conditions, safety concerns, and the physical demands of the job (Makhamu, 2015). The study however, demonstrated that all participants, irrespective of gender, participated in the data collection process. Gender disparity in the boda boda sector has significant economic, social, and safety implications. It limits opportunities for women, resulting in a loss of potential income and reinforcing traditional stereotypes that view motorcycle riding as a male activity (Chacko,

2016). Women often face discrimination within the industry, leading to unequal earnings and increased vulnerability to harassment and violence (Mugisha et al., 2020). This environment restricts women's access to transportation and economic participation, perpetuating gender inequality (Kabeer, 2016). Addressing these disparities through targeted policies and support systems is essential for promoting women's empowerment, enhancing safety, and benefiting the broader economy and society (ILO, 2019).

4.2.2.2 Education

Research participants were asked to specify their levels of education. Table 4.2 summarizes the results.

Table 4.2: Education level of the respondents

Education	Frequency	Percentage
No education	37	17.6
Primary	94	44.7
Secondary	71	33.8
College	3	1.4
University	1	0.5
Others	4	2
Total	**210**	**100%**

Source : Field data 2025

Table 4.2 presents the findings that, 94 (44.7%) participants reported to have completed primary education, 71 (33.8%) respondents had completed secondary education. 37 (17.6%) riders indicated No education, others 4 (2%), 3 (1.4%) had finished college, and 1 (0.5%) rider had

studied upto university. Those who indicated college, university and others were majorly the key informants e.g. police officers, teachers, local admnistrators and opinion leaders in the community. The findings are in tandem with Makhanu (2013) who discovered that the education level of riders skewed towards primary and secondary education, making up 42% and 31% respectively. Nyachieo (2015) observed that boda boda riders with secondary and primary education levels comprised 32.4% and 43.3% respectively. HHowever, the study does not align with the findings of Mutiso and Behrens (2010), which indicated that boda boda riders in Kisumu and Nakuru possess formal education, suggesting that the industry is populated by individuals with a commendable level of educational attainment. This observation is inconsistent with Kumar's (2011) research, which also highlighted that commercial riders are not predominantly uneducated. This indicates a diverse spectrum of educational backgrounds among respondents, which is instrumental for evaluating the enforcement of helmet usage and its implications for the safety of commercial motorcyclists in Kisumu city.

4.2.2.3 Age

Participants were requested to indicate their age within specified ranges, with the subsequent distribution being shared.

Figure 4.2: Age distribution of Respondents

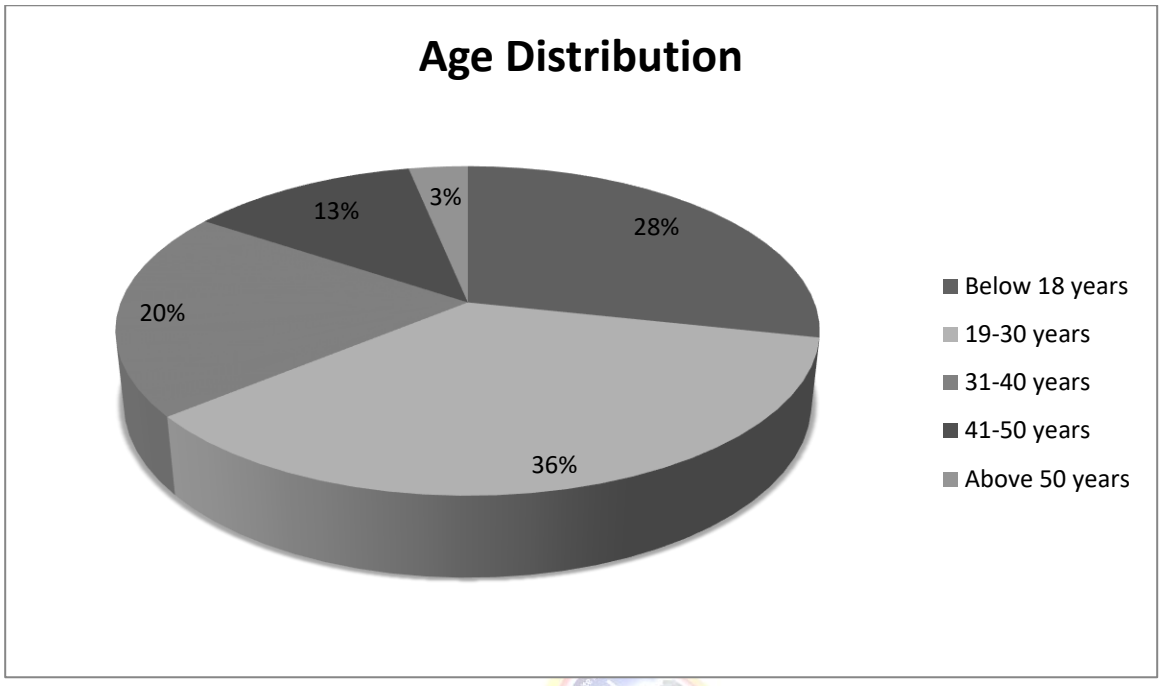


Figure 4.2: Age distribution of Respondents

Source: Field Data 2025

The findings in Figure 4.2 revealed that majority of the respondents were between 19-30 years of age accounting for 76 (36%), followed by the those with ages below 18 years accounting for (59) 28%. The age group of 31-40 years accounted for (42) 20%, 41-50 years accounting for 27(13%) and above 50 years accounting for (6) 3%. It is evident that majority of the respondents were young people between the ages of 16-35 years. In KII with the area chief, it was confirmed that young riders do not adhere to safety regulations. Furthermore, respondents linked motorcycle accidents to speeding and reckless riding by young riders. This behavior was also linked to insufficient training and lack of experience among young riders who are not interested in pursuing boda boda riding as a career (KII #2 May, 2024). However, the research covered a

wide range of age groups, providing a diverse data set with valuable insights though majority of them being under age and youths.

4.2.2.4 Length of Operation

Participants were requested to indicate the length of operating as commercial motorcyclists in Kisumu city.

Figure 4.3: Respondents' Duration of operation

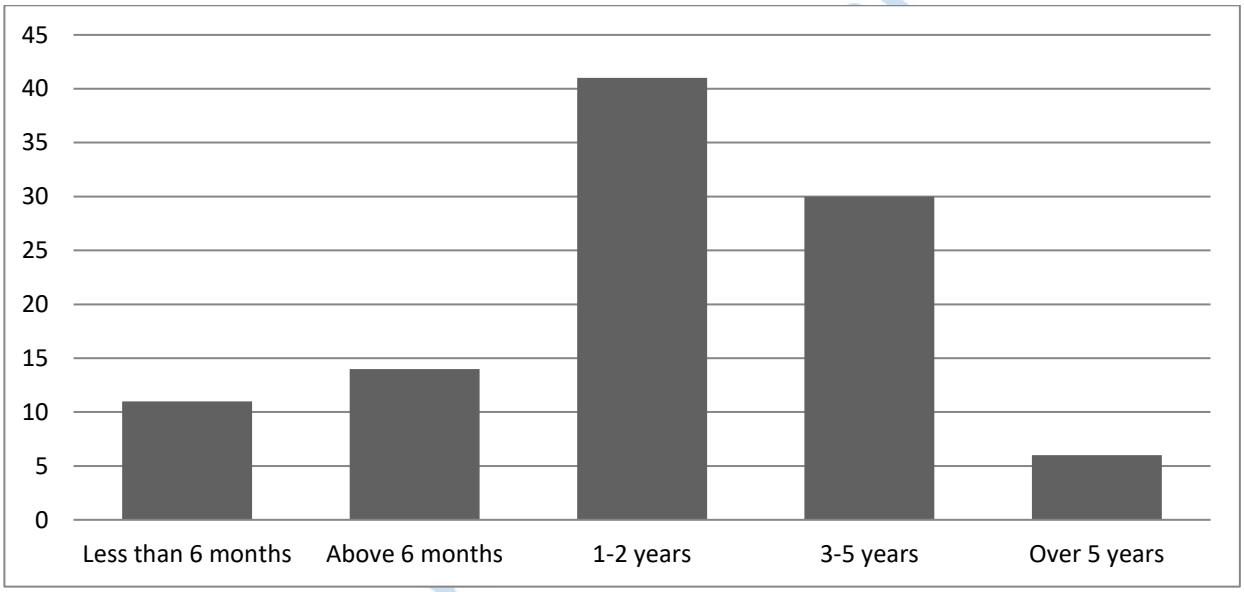


Figure 4.3: Respondents' Duration of operation

Source: Field Data 2025

Figure 4.3 presents results concerning operations, a significant portion 86 (41%) had been active for 1 to 2 years, with 63 (30%) for 3-5 years, 29 (14%) and 23 (11%) for above 6 months and less than 6 months respectively. Duration of operation, in essence, indicates experience - the number of years riders have consistently spent in the motorcycle industry. This underscores the significance of duration of operation in complying with safety regulations. These findings

align with a study on the patterns of public motorcycle accidents in Bungoma (Singoro *et al.*, 2016), which highlighted inexperience as the primary cause, followed by poor road conditions and overloading, in that order.

The repercussions of this lack of experience manifest not only in higher accident rates but also in a potential increase in the severity of incidents when they do occur. The implications of these findings warrant attention, as they underscore the importance of targeted training programs, especially for new riders. Collaboration among stakeholders, including government agencies, riding schools, and community organizations, could foster a culture of safety within the motorcycle industry. Collectively, these efforts would aim to reduce accidents and improve overall rider safety, particularly among those in their formative years of operation.

4.2.2.5 Training

Participants were requested to indicate the training received as commercial motorcyclists in Kisumu city.

Table 4.3: Training Received

Training	Frequency	Percentage
YES	79	39.3
NO	122	60.7
TOTAL	**201**	**100%**

Source: Field Data 2025

Table 4.3 show that 122 (60.7%) of the commercial motorcyclists in Kisumu city did not receive any form of training as opposed to 79 (39.3%) who received motorcycle riding training. In this study, training refers to formal training as outlined in NTSA regulation 2015. The key indication

of this training is the possession of a valid riding license obtained after undergoing and passing tests conducted by the traffic police department. Training plays a vital role in ensuring safety compliance by equipping motorcycle operators with the necessary knowledge to operate efficiently (Fallis, 2013). Moreover, it provides riders with essential skills to navigate the roads while adhering to safety protocols (Kimotho, 2014). Therefore, training serves as a foundation for exercising the highest level of caution within the motorcycle sector (Fallis, 2013).

Formal training involves structured educational programs with defined curricula aimed at improving safety knowledge and practices in the *bodaboda* sector, while informal training encompasses unstructured learning experiences such as peer mentorship and on-the-job training (Ssempebwa *et al.*, 2020). The implications of these training types on safety are significant; formal training is associated with enhanced safety knowledge and standardization of practices, leading to improved helmet compliance and reduced accident rates (Mugisha *et al.,* 2020). In contrast, informal training can yield variable quality and a cultural influence on safety behaviors, potentially leading to increased risks (Kabeer, 2016).

The importance of training on compliance is evident in the context of formal and informal training for riders. The NTSA emphasizes formal training leading to a valid license, yet many riders perceive themselves as trained regardless of the training type. The primary reason for not adhering to formal training, as highlighted by KII4.

4.3 Discussion of Individual Objective Results

In this sub-section, the study presents statistical information on the following variables; enforcement, safety and enforcement and safety. Results of each variable are presented in corresponding sub-sections.

4.3.1 Helmet Usage Enforcement

In answering research objective one of the study, the survey respondents were asked to rate their level of agreement with each statement on helmet usage enforcement using a Likert scale (SDA=Strongly disagree, DA=Disagree, N=Neutral, A=Agree, SA=Strongly agree). The results are outlined in Table 4.4.

Table 4.4: Distribution of percentage of Respondents' Perception on various helmet usage Enforcement factors

Enforcement	SDA	DA	N	A	SA
The adherence to strict policies on helmet usage have ensured proper enforcement	25%	10%		53%	12%
Imposing of penalties and fines for non-compliance acts has detered motorcyclists and encouraged proper helmet usage	18%	11%		53%	18%
Effective enforcement of laws by Traffic police officers has ensured proper usage of helmet	11%	17%		46%	26%
Public education and training about the importance of helmet usage through public campaigns have influenced motorcyclists' behavior positively	11%	19%		45%	25%

Source: Field Data, 2025

The study's objective was to determine helmet usage enforcement factors among commercial motorcyclists in Kisumu city. From the study findings, (106) 53% of the respondents agreed that imposing of penalties and imposing of penalties and fines for non-compliance acts had deterred motorcyclists and encouraged proper helmet usage fines for non-compliance acts, 46%

agreed that effective enforcement of laws by Traffic police officers ensured proper usage of helmet while 45% of the respondents agreed that public education and training about the importance of helmet usage through public campaigns influenced motorcyclists' behavior positively.

Safety regulations are essential for promoting responsible practices among motorcyclists, significantly contributing to overall road safety (Karuppanagounder & Vijayan, 2016; Sharma & Verma, 2017). In Kenya, the Traffic Act Cap 403 mandates the use of helmets and reflective jackets, while also limiting the number of pillion riders to one at a time. These regulations aim to mitigate the risks associated with motorcycle riding and improve safety outcomes. However, the enforcement of these regulations presents a significant challenge across various regions of the country, undermining their intended effectiveness (Odiwuor *et al.*, 2015; Manyara, 2016; Singoro *et al*., 2016).

One major obstacle to effective enforcement is the lack of comprehensive data to inform prevention strategies, as highlighted by Matheka *et al.* (2015). This issue has been echoed by Bachani *et al.* (2012), who noted that insufficient data hampers the ability to make meaningful comparisons over time and across regions regarding motorcycle safety. The World Health Organization (WHO, 2015) stresses the importance of regular data collection to address these gaps. Without accurate and timely data, policymakers and safety advocates struggle to develop targeted interventions that could enhance safety for motorcyclists, resulting in many regulations being inadequately enforced.

While some studies have explored motorcycle safety in specific regions of Kenya, the findings are often limited in scope. Research conducted by Bachani *et al.* (2012), Nasongo (2015),

Matheka *et al.* (2015), Karau *et al.* (2015), and Odhiambo *et al*. (2017) has provided valuable insights; however, these studies predominantly focus on urban centers and tend to be observational in nature. Helmet enforcement in Kenya faces significant challenges that extend beyond data limitations, including issues of corruption, weak legal frameworks, and negative rider attitudes. Corruption among law enforcement can undermine the effectiveness of helmet laws, as officers may accept bribes from riders who violate safety regulations. Additionally, the legal frameworks governing motorcycle safety are often insufficiently developed, leading to inconsistent enforcement and lenient penalties that fail to deter non-compliance. Cultural attitudes regarding helmet use also pose obstacles; many riders may view helmets as uncomfortable or unnecessary, resulting in resistance against wearing them. These issues highlight the urgent need for strengthened regulations and cultural shifts to prioritize rider safety.

Moreover, the lack of localized research on motorcycle safety in regions like Kisumu hampers the development of tailored safety strategies. Comprehensive studies are vital to understanding the unique challenges and risks faced by motorcyclists in both urban and rural settings. Engaging local stakeholders, including riders and community leaders, can foster collaboration and provide insights into practical barriers to compliance. In addition, consistent public awareness campaigns about the benefits of helmet use and safe riding practices are essential to cultivate a culture of safety among motorcyclists. By addressing these multifaceted challenges through targeted research and community engagement, stakeholders can work toward significantly improving motorcycle safety outcomes across Kenya.

During the interview with the Traffick Police Officer: he asserted that:

Helmet usage among motorcyclists in Kisumu City faces significant challenges despite existing regulations mandating their use. Many riders underestimate the importance of helmets or are influenced by social norms that prioritize style over safety. As a result, compliance rates remain low, contributing to a higher incidence of head injuries in motorcycle accidents. Local enforcement of safety regulations is often inconsistent, further complicating efforts to promote helmet usage. Public awareness campaigns that specifically target the importance of wearing helmets, combined with stricter enforcement of existing laws, are crucial to improving safety outcomes for motorcyclists in Kisumu City. (12/08/2024)

Furthermore, this study carried out a correlation analysis to determine the relationship between helmet usage and enforcement.

Table 4.5: Relationship between helmet usage and enforcement in Kisumu City

Correlations

		Helmet Usage	Enforcement
Helmet Usage	Pearson Correlation	1	.576**
	Sig. (2-tailed)		.000
	N	201	201
Enforcement	Pearson Correlation	.576**	1
	Sig. (2-tailed)	.000	
	N	201	20

**. Correlation is significant at the 0.01 level (2-tailed).

125

Source: Field Data, 2025

There was positive correlation (r=0.576) between helmet usage and enforcemen at p=0.0001. This result indicates that, according to motorcylcists in the study area, use of helmets significantly influences the enforcement.

The correlation analysis revealed significant relationships between helmet usage and several enforcement factors, including police presence and public awareness initiatives. A notable finding indicated that increased visibility of traffic police correlates with higher compliance

rates among motorcyclists. This suggests that regular monitoring and engagement by law enforcement could serve as a deterrent against non-compliance. Additionally, the analysis highlighted the positive impact of community-based programs that educate riders on the benefits of wearing helmets, indicating that grassroots involvement is crucial for driving behavioral change.

Moreover, interviews with motorcyclists unveiled common misconceptions surrounding helmet usage. Many riders expressed concerns about comfort and style, leading to resistance against using standard safety helmets. Addressing these perceptions through targeted marketing of helmets designed for comfort, along with showcasing testimonials from riders who have benefited from helmet use, could improve adoption rates.

Local stakeholders, such as motorcycle unions and safety organizations, can play a vital role in advocating for better enforcement of helmet laws and enhancing community education efforts. Collaboration with these groups can result in tailored campaigns that resonate more effectively within Kisumu, addressing the unique challenges faced by motorcyclists in the area.

Finally, there remains a need for policymakers to review existing regulations and consider amendments that may bolster enforcement mechanisms. Implementing a reward system for compliant motorcyclists could serve as a motivator, fostering a proactive approach to safety rather than a reactive one solely focused on penalties. Ultimately, a multifaceted approach combining data-driven strategies, community involvement, and supportive regulations will be essential to cultivate a safer riding environment in Kisumu and enhance overall motorcycle safety across Kenya.

4.3.2 Helmet Usage Safety

In answering study objective two, the survey respondents were asked to rate their level of agreement with each statement on helmet usage safety using a Likert scale (SDA=Strongly disagree, DA=Disagree, N=Neutral, A=Agree, SA=Strongly agree). The results are outlined in Table 4.6.

Table 4.6: Distribution of percentage of Respondents' Perception on various helmet usage Safety factors

Safety	SDA	DA	N	A	SA
Wearing a helmet has been proven to be highly effective in reducing the severity of head injuries and fatalities among motorcyclists.	9%	9%		54%	28%
Commercial motorcyclists often face increased risks due to factors such as long working hours, fatigue, riding in congested urban areas, and carrying passengers.	42%	22%		15%	21%
The extent of safety for commercial motorcyclists depends on the level of compliance with helmet usage.	11%	12%		46%	31%
The safety of commercial motorcyclists also depends on the quality and availability of helmets.	16%	13%		49%	22%

Source: Field Data, 2025

From Table 4.6, it was evident that 54% of the respondents agreed that wearing a helmet proven to be highly effective in reducing the severity of head injuries and fatalities among motorcyclists. Additionally, 49% agreed that safety of commercial motorcyclists depended on the quality and availability of helmets, while 46% affirmed that the extent of safety for commercial motorcyclists depended on the level of compliance with helmet usage.However,

42% strongly disagreed that commercial motorcyclists often faced increased risks due to factors such as long working hours, fatigue, riding in congested urban areas, and carrying passengers.

The finding that 54% of respondents believe wearing helmets is highly effective in reducing head injuries and fatalities aligns with substantial evidence in the existing literature. Numerous studies have consistently shown that proper helmet use significantly decreases the risk of serious injuries during motorcycle accidents. For instance, Pande et al. (2023) highlight that helmet use is critical in mitigating the severity of head injuries among motorcyclists, reinforcing the necessity of helmet legislation and compliance. This underscores the importance of fostering a culture of helmet use among riders to enhance overall road safety.

In addition, the finding that 49% of respondents agree that safety depends on the quality and availability of helmets is supported by recent research demonstrating that both the standard and accessibility of helmets are crucial for rider safety. A study conducted by Oduro *et al.* (2024) emphasizes that inadequate access to quality helmets exacerbates the vulnerability of motorcyclists, particularly in low-income urban settings. This suggests that not only should helmet usage be promoted, but efforts must also focus on improving the quality and availability of helmets to ensure that riders have access to effective protective gear.

Furthermore, the assertion by 46% of respondents that safety is influenced by compliance with helmet usage aligns with evidence indicating that the enforcement of helmet laws and public compliance directly impacts safety outcomes. In a recent study, Khan and Abdallah (2024) found that higher compliance rates with helmet regulations correlate with lower rates of motorcycle-related fatalities. This finding reinforces the need for stringent enforcement of

helmet laws and comprehensive public education campaigns aimed at increasing compliance among riders.

Conversely, the fact that 42% of respondents disagreed with the notion that risks associated with long working hours, fatigue, riding in congested areas, and carrying passengers are significant may reflect an underestimation of these prevalent issues. Research conducted by Hossain *et al.* (2023) demonstrates that rider fatigue, along with the challenges posed by urban environments, substantially contributes to accident rates. This suggests that addressing perceptions of risk factors is crucial; targeted awareness campaigns and safety training programs could help educate riders on the importance of recognizing and mitigating these risks.

According to the Kenya Traffic Act, both riders and passengers are mandated to wear protective helmets to ensure safety. However, despite training, many motorcyclists do not take safety precautions seriously, such as wearing helmets or adhering to other safety protocols like donning heavy jackets during daily operations. An observed trend is that passengers, particularly women, prefer to choose a rider who does not require them to wear reflective jackets, often citing hygiene concerns. Additionally, riders have expressed that carrying two helmets is burdensome due to limited space, further indicating a lax attitude towards safety measures, even among trained boda boda operators.

While the concerns regarding helmet usage are valid, they underscore the critical need for innovative solutions to improve compliance without compromising safety. One possible approach could involve the introduction of disposable head caps designed for use inside helmets. This solution would address hygiene issues while encouraging passengers to wear helmets, ultimately promoting a culture of safety among riders and their passengers.

The evidence presented suggests a multifaceted approach is necessary to address helmet usage and rider safety. While a significant portion of respondents recognizes the importance of helmets, there remains a need to enhance public awareness regarding the quality and availability of helmets, as well as the strict enforcement of helmet compliance laws. Moreover, addressing the underestimation of risks associated with riding conditions and operational fatigue can further contribute to reducing accident rates among motorcyclists. By fostering a comprehensive safety culture that includes education, access to quality gear, and innovative solutions, stakeholders can effectively work toward improving the safety of motorcycle riders in Kisumu City and beyond.

Furthermore, this study carried out a correlation analysis to determine the relationship between helmet usage and safety.

Table 4.7: Relationship between helmet usage and safety in Kisumu City.

Correlations

		Helmet Usage	Safety
Helmet Usage	Pearson Correlation	1	.776**
	Sig. (2-tailed)		.000
	N	201	201
Safety	Pearson Correlation	.776**	1
	Sig. (2-tailed)	.000	
	N	201	20

125

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data, 2025

There was positive correlation (r=0.776) between helmet usage and safety of motorcyclists at p=0.0001. This result indicates that, according to motorcyclists in the study area, use of helmets significantly influences their safety.

The influence of peer behavior on helmet compliance was also evident; social dynamics play a critical role in safety practices among motorcycle operators. Those who routinely ride with peers who prioritize helmet use are more likely to wear helmets themselves, reinforcing the need for community engagement strategies to cultivate safer riding practices. Engaging community leaders and influencers can foster a collective commitment to safety protocols, creating a supportive environment for change.

Ultimately, while helmet use remains a cornerstone of motorcycle safety, recognizing and addressing underlying social and cultural factors is essential. The implementation of community-driven initiatives, educational outreach targeting specific demographics, and strategies to shift peer influences may significantly improve helmet compliance rates among riders in Kisumu City. By embracing a more comprehensive approach that incorporates these elements, stakeholders can further enhance motorcycle safety and reduce injury rates in the region.

4.3.3 Relationship between Helmet Enforcement and Safety

In answering reseach objetive three, the survey respondents were asked to rate their level of agreement with each statement on helmet enforcement and safety using a Likert scale (SDA=Strongly disagree, DA=Disagree, N=Neutral, A=Agree, SA=Strongly agree). The results are outlined in Table 4.6.

Table 4.8: Distribution of percentage of Respondents' Perception on various helmet Enforcement and Safety factors

Enforcement and Safety	SDA	DA	N	A	SA

Formal training	14%	11%		21%	54%
Expereince in motorcycle riding	11%	41%		28%	20%
Ability to procure a helmet	16%	17%		44%	23%
Awareness on existing laws, policies and practices	9%	18%	4%	51%	18%

Source: Field Data, 2025

The results presented in Table 4.8 revealed that 54% of the respondents held the view of formal training being pivotal part of the *bodaboda* riders. Inadequate training has led to many accidents, injuries and loss of lives in Kisumu City. On the other hand, 51% agreed that creating awareness on the existing laws, policies and practices enhanced enforcement and safety of commercial motorcyclist in the city. Similarly, 44% agreed that majority of boda boda operators in the city of Kisumu had limited capabilities of procuring helmets. However, 41% disagreed with the notion of experience being a key factor causing accidents.

The finding that 54% of respondents believe formal training is crucial for *bodaboda* riders aligns with existing literature, which underscores the importance of structured training programs in enhancing motorcycle safety. Numerous studies have demonstrated that such training significantly reduces accident rates and improves overall road safety for motorcyclists. For example, Oyerinde *et al.* (2023) highlight that rider training not only equips operators with essential skills but also fosters a culture of safety on the roads, ultimately leading to fewer accidents.

According to Ngugi & Mwangi (2022), the implementation of better road designs that prioritize the safety of vulnerable users, such as dedicated bike lanes and pedestrian pathways, Public awareness campaigns aimed at drivers, as well as educational programs for children and the

elderly, could also foster greater road safety awareness within these communities (Adams, 2020).

Furthermore, the study reveals that 51% of respondents agree on the necessity of raising awareness about traffic laws to improve safety. This finding resonates with the work of Mwangi *et al.* (2024), which shows that awareness campaigns can effectively enhance compliance with traffic regulations, thereby improving safety measures. For instance, Mwangi et al. found that community awareness initiatives significantly increased adherence to safety regulations among motorcycle riders in urban areas, demonstrating the potential of education as a tool for promoting road safety.

In addition, the study indicates that 44% of boda boda operators face challenges in procuring helmets, a finding supported by research that identifies economic factors as significant barriers to accessing safety gear. Ahmad and Muturi (2023) report that affordability and accessibility of helmets remain substantial obstacles for many riders in low-income regions, highlighting the need for targeted interventions to improve access to essential safety equipment.

Conversely, the disagreement among 41% of respondents regarding the role of experience in accident causation suggests a complex relationship between rider experience and safety outcomes. While some studies indicate that experience can mitigate certain risks, they also suggest that other factors, such as risk-taking behavior and inadequate training, may play more critical roles in accidents. For instance, Ogutu (2024) demonstrates that inexperienced riders often engage in riskier behaviors, despite spending more time on the road, indicating that experience alone does not guarantee safety.

This perspective is further supported by insights from key informants. KII #7 emphasized that proper training not only enhances the safety of the riders themselves but also ensures the safety of other road users. This sentiment is echoed in the literature, with Kimotho (2014) suggesting that training equips riders with the necessary skills to navigate public roads safely. Additionally, KII #5 highlighted the dire consequences of inadequate training, noting that the absence of proper instruction has led to numerous fatalities in Kisumu City. The establishment of a special ward for boda boda accident victims at the Jaramogi Oginga Odinga Hospital underscores the urgent need for effective training programs.

To address the issue of motorcycle-related accidents, it is essential that riders undergo comprehensive training and pass skills tests that cover critical aspects of safe riding, including adherence to speed limits, corner navigation, and compliance with road signs. Kitimo et al. (2010) advocate for such measures, emphasizing that structured training can significantly enhance rider safety. However, the study revealed through KII #5 that many riders receive informal training lasting only a day from untrained peers, which often results in accidents. This highlights the pressing need for standardized training programs that ensure all riders possess the necessary skills and knowledge to operate their motorcycles safely.

The findings of this study underscore the critical importance of formal training, awareness of traffic laws, and access to safety gear in enhancing the safety of boda boda riders in Kisumu City. By addressing these key areas, stakeholders can work towards reducing motorcycle-related accidents and fostering a safer riding environment for all road users.

Furthermore, this study carried out a correlation analysis to determine the relationship between helmet enforcement and safety.

Table 4.9: Link between helmet enforcement and safety in Kisumu City.

Correlations			
		Helmet Enforcem	Safety
Helmet Enforcem	Pearson Correlation	1	.816**
	Sig. (2-tailed)		.000
	N	201	201
Safety	Pearson Correlation	.816**	1
	Sig. (2-tailed)	.000	
	N	201	20

**. Correlation is significant at the 0.01 level (2-tailed).

125

Source: Field Data, 2025

There was positive correlation (r=0.816) between helmet enforcment and safety of motorcyclists at p=0.0001. This result indicates that, according to motorcylcists in the study area, enforcing on the use of helmet influences their safety.

This result indicates that, according to motorcyclists in the study area, the enforcement of helmet usage significantly influences their safety on the road. A higher level of enforcement is associated with increased compliance among riders, which in turn enhances their safety during riding.

Additionally, the findings suggest that when helmet regulations are actively enforced, motorcyclists are more likely to wear helmets consistently, thereby reducing the risk of head injuries in the event of accidents. This positive relationship reinforces the importance of regulatory measures and law enforcement in promoting safe riding practices. It implies that policymakers and stakeholders should prioritize strengthening helmet enforcement initiatives to improve overall safety outcomes for motorcyclists in Kisumu City. By committing to rigorous enforcement and accompanying educational campaigns, authorities can help instill a

culture of safety, ultimately decreasing the incidence of motorcycle-related injuries and fatalities in the region.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the major findings of the study, provides conclusions, recommendations, and offers possible suggestions for further study.

5.2 Summary of the Result Findings

The following summary is made In relation to major findings of the study;

On the specific objective one (helmet usage enforcement), it was summarized that helmet usage among motorcyclists is undermined by social norms that prioritize style, leading to low compliance with regulations. Many riders underestimate the importance of helmets, contributing to a rise in head injuries from accidents. Inconsistent enforcement of safety laws complicates efforts to promote helmet use.

On objective two (helmet usage safety), it was revealed that helmets are effective in reducing head injuries among motorcyclists, aligning with research showing that proper helmet use reduces injury severity. Additionally, rider safety depends on the quality and availability of helmets, supported by studies highlighting the vulnerability of riders with inadequate access to quality helmets. Compliance with helmet laws significantly impacts safety, as riding in urban conditions and fatigue can increase the risk of accidents.

Objective three (link between enforcement and safety) indicated that formal training was essential for boda boda riders, linking inadequate training to accidents and fatalities in Kisumu City. Additionally, raising awareness of laws enhances safety while many operators struggle to obtain helmets due to economic barriers. However, experience was a key factor in accidents,

suggesting other influences like risk-taking behavior may be more critical. Safety regulations are crucial for road safety, but data deficiency hinders effective enforcement. Proper training and awareness on laws were seen as key for improving enforcement and safety. Wearing helmets was deemed effective for reducing head injuries, yet challenges like lack of compliance and quality helmets persist. Training and awareness were highlighted as essential for reducing accidents among motorcyclists in Kisumu City.

5.3 Conclusions

In conclusion, enhancing helmet usage enforcement and addressing safety factors among commercial motorcyclists in Kisumu City is critical for improving rider safety. Low compliance rates, influenced by social norms, inadequate training, and limited access to quality helmets, contribute to a higher incidence of accidents and injuries.

To combat the challenge of helmet usage enforcement, targeted public awareness campaigns and stricter enforcement of existing laws are essential. By prioritizing safety through education and resource availability, the city can significantly reduce motorcycle-related fatalities and improve overall road safety for all users.

On helmet usage safety, promoting helmet usage among motorcyclists is vital for enhancing safety and reducing injuries and fatalities on the roads. The challenges in Kisumu City, including inconsistent enforcement of helmet laws, social norms that prioritize style, and limited awareness of safety benefits, must be addressed to change rider behavior. Implementing comprehensive public awareness campaigns and improving access to quality helmets can significantly influence compliance rates. Additionally, proper training for riders will reinforce the importance of wearing helmets. By fostering a culture of safety, Kisumu City can create

safer conditions for all road users and ultimately lower the incidence of motorcycle-related accidents.

The study concludes that riders who undergo formal training and obtain valid licenses from NTSA are more likely to adhere to safety regulations. Given that many riders are economically disadvantaged young individuals with limited education, it is crucial for the government to create well-equipped, affordable, and accessible training facilities. Such initiatives would not only enhance rider skills but also promote safer riding practices. By investing in accessible training programs, the government can improve compliance with safety regulations and ultimately reduce accidents and injuries among motorcyclists.

5.4 Recommendations for Practice

From the study conclusions, the following recommendations are made;

Establishing regular checkpoints allows law enforcement to actively monitor compliance with helmet laws.

Effective public awareness campaigns aimed at changing perceptions and behaviors regarding helmet use. Public education campaigns to improving safety practices among motorcyclists to enable them understanding that compliance safeguards not only road users but also their own safety to motivate behavior change.

Training programs focusing on safety regulations and responsible riding practices to improve rider knowledge and skills.

Government to tax waive the helmet manufacturers and also enable access to microloans to riders for them to afford the helmets.

Police oversight authorities should utilize their powers under Article 244 of the Constitution to enhance professionalism, discipline, transparency, and accountability within the transport sector. Improved oversight can foster public trust and enhance cooperation with law enforcement, as shown in a report by the African Union (2019), which links increased accountability to improved compliance with safety regulations.

By prioritizing these recommendations, Kisumu City can significantly improve helmet enforcement and enhance motorcycle rider safety. Collaborative efforts involving law enforcement, local stakeholders, and community members will be essential in creating an environment where safety is prioritized, ultimately reducing motorcycle-related injuries and fatalities.

5.5 Recommendations for Further Research in this Field of Study

The study highlights passenger influence on speeding and safety non-compliance in the boda boda motorcycle sector. It calls for further investigation into:

i. Longitudinal studies to assess the effectiveness of newly implemented training programs on rider behavior, helmet usage rates, and overall safety outcomes over time.

Longitudinal studies are needed to evaluate the long-term effectiveness of newly implemented training programs on rider behavior and helmet usage rates. Tracking these changes over time will help determine if initial improvements in safety behaviors are sustained, providing valuable insights for policymakers.

ii. The economic barriers that prevent riders from purchasing helmets, including a detailed analysis of affordability, availability, and the influence of local markets on helmet quality.

Researching the economic barriers to helmet purchase, such as affordability and local market conditions, is crucial to understand why many riders fail to comply with helmet laws. A thorough analysis will identify specific financial constraints, guiding interventions like subsidies to improve access to quality helmets for low-income riders.

iii. The psychological and social factors influencing helmet non-use among riders, including peer pressure, cultural attitudes towards helmet-wearing, and the perceived risks associated with riding.

Investigating the psychological and social factors that contribute to helmet non-use can uncover the underlying reasons for non-compliance and resistance among riders. Understanding these influences will inform targeted awareness campaigns aimed at changing cultural attitudes and peer dynamics, potentially leading to increased helmet usage.

iv. The effectiveness of various enforcement strategies, such as fines versus education, on improving helmet compliance rates and reducing motorcycle-related injuries and fatalities.

Examining the effectiveness of different enforcement strategies, such as fines versus educational initiatives, will clarify how best to improve helmet compliance rates. This research can reveal which approaches are most effective in enhancing rider safety and reducing motorcycle-related injuries, guiding policy adjustments for greater impact.

REFERENCES

Adambili, R., Owusu, A. K., & Kyei, B. (2023). *The impact of public awareness campaigns on helmet use and rider behavior in Ghana*. Journal of Traffic Safety and Health, 2(1), 77 89. https://doi.org/10.1016/j.jtsh.2023.01.006

Adams, R. (2021). *Barriers to helmet use among motorcyclists*: Insights and solutions. Journal Safety Research, 78, 123-130.

Adogu, P. O., & Ilika, A. L. (2016). *Knowledge of road traffic codes and safety measures among motorcyclists in Nigeria.* African Journal of Road Safety, 12(1), 15-20.

African Union (AU). (2019). *Road Safety and Security in Africa: A Review and Recommendations for Improvement.*

Ahmad, M. & Muturi, J. (2023). *Helmet Usage Among Motorcyclists in Africa*: A Study on Barriers to Safety Gear Procurement. African Journal of Road Safety, 19(2), 134-142.

Ajzen, I. (1991). *The theory of planned behavior*. Organizational Behavior and Human Decision

Ali, N., Harun, F., & Ahmad, M. (2021). *Enhancing road safety through infrastructure improvements and enforcement of traffic laws:* A systematic review. Transportation Research Part F: Traffic Psychology and Behaviour, 78, 77-90.

Bhatia, R., & Smith, K. (2021). *Cultural attitudes towards motorcycle helmet use: Understanding the barriers to compliance.* Transportation Research Part F: Traffic Psychology and Behaviour, 83, 90-99.

Blais, L., Karam, C., & Dufour, M. (2020). *Factors influencing helmet use among motorcyclists in France*: A social norm approach. Accident Analysis & Prevention, 143, 105531.

Brehm, S. S., Kassin, S. M and Fein, S. (2002) *Social Psychology*, 5thedn. Boston: MacGraw Hill.

Brown, T., Smith, L., & Green, M. (2019). *Speed and severity*: The impact of riding speed on motorcycle injuries. International Journal of Injury Prevention, 25(4), 205-210. https://doi.org/10.1136/injuryprev-2018-042867

Conner, M. and P. Sparks, (1996). *The Theory of Planned Behaviour and health behaviours*. In M. Conner,& P. Norman (Eds.), Predicting health behaviour , 121-162. Buckingham: Open University Press.

Dandona, R., Kumar, G., & Dandona, L. (2021). *Helmet use and motorcycle injuries in Africa: The role of enforcement and cultural perceptions*. Traffic Injury Prevention, 22(3), 222 227.

Duku, S. K., Alabi, B. M., & Bosun, S. (2020). *Motorcycle helmet use and compliance in Nigeria*: A public health perspective. African Journal of Emergency Medicine, 10(3), 165-170.

Geller, E. S., Barach, J., & Kpewou, A. (2013). *The Effect of Motorcycle Safety Education Programs on Rider Behavior:* A Meta-Analysis. Transportation Research Part F: Traffic Psychology and Behavior, 17, 105-113.

Gonzalez, D., Figueroa, J., & Cardenas, M. (2022). *Helmet use among motorcyclists in Latin America*: Policy implications and effectiveness. Safety Science, 145, 105404. https://doi.org/10.1016/j.ssci.2021.105404

Hossain, M. S., Rahman, M. M., & Talukder, A. (2023). *Assessing the Influence of Rider Fatigu and Urban Congestion on Motorcycle Accident Risks*: Insights from Dhaka, Bangladesh. Accident Analysis & Prevention, 193, 106786.

Hyder, A. A., & Tressou, J. (2022). *The impact of helmet laws on motorcycle fatalities in low- and middle-income countries:* A systematic review. Injury Prevention, 28(1), 36-43.

Ismail, A. R., Amin, S., & Zainudin, A. (2023). *Factors influencing helmet use among Malaysian motorcyclists:* A qualitative study. Journal of Transport and Health, 27, 101375.

Johnson, M., & Lee, C. (2022). *Helmet utilization among motorcyclists:* An analysis of influencing factors. Transportation Safety Journal, 15(2), 89-97.

Jones, A., & Patel, R. (2019). *Injury prevention strategies in developing countries*: A comprehensive approach. International Journal of Health Policy, 8(5), 251-258.

Karanja, G. (2021). *Raising awareness: Public campaigns for motorcycle safety*. Journal of Public Safety Education, 8(3), 45-57.

Kenya National Bureau of Statistics. (2021). *Statistical abstract 2021*.

Khan, M. M., & Abdallah, M. (2024). *The Impact of Helmet Law Enforcement on Motorcycle Safety in Urban Centers:* A Comparative Analysis. Journal of Transport and Health, 27, 101536.

Kiptoo, D. (2022). *Traffic management systems and their role in reducing motorcycle accidents*. Safety Management Review, 10(1), 33-40.

Kirkwood, B. R. (2003). *Calculation of Required Sample Size*. In: Essential Medical Statistics, Blackwell Science, Oxford, 420-421.

Liu, J., & Zhang, Y. (2022). *The impact of helmet law enforcement on head injuries among motorcyclists in urban settings.* Journal of Transport & Health, 21, 101106.

Liu, J., Liu, H., & Wei, S. (2020). *The effectiveness of educational programs for enhancing road safety among pedestrians and drivers:* A systematic review. Accident Analysis & Prevention, 138, 105481.

Martin, J. (2020). *Defensive riding*: A training program for motorcycle safety. Journal of Applie Motorcycling, 4(2), 12-20.

Matheka, D. M., Omar, F. A., & Witte, J. (2015). *Road traffic injuries in Kenya: A survey of commercial motorcycle drivers.* Pan African Medical Journal, 21(1).

Mocan, H. N., & Goudie, R. (2021). *The impact of helmet law changes in South Africa on motorcycle fatalities*: An analysis using longitudinal data. Injury Prevention,

27(3), 267 273.

Morris, A., Purdie, W., & Roberston, T. (2018). *Effectiveness of Community-Based Interventions in Increasing Helmet Use Among Motorcyclists:* A Systematic Review. Injury Prevention, 18(4), 260-267.

Munyiri, E. N., Ndirangu, M., & Njuguna, S. (2021). *Economic burden of road traffic injuries in Kenya:* A systematic review. Injuries, 52(4), 1056-1065.

Mutiso, R. J., Oyugi, F. O., & Mwamburi, L. A. (2022). *Motorcycle-related injuries in Kenya*:The role of helmet usage in urban settings. Journal of Injury and Violence Research, 14(2), 137-144.

Mwangi, J. W., Gitau, F., & Ngari, J. (2024). *Effectiveness of Road Safety Campaigns in Urban Areas:* A Case Study of Motorcycle Operators in Kenya. International Journal of Urban Transport and Infrastructure, 12(1), 45-58.

National Highway Traffic Safety Administration (NHTSA), (2017). An analysis of motorcycle helmet use in fatal crashes, *Annals of Emergency Medicine*, 53: 501.

National Transport and Safety Authority (NTSA) (2024). National Road Safety Report. (http://www.ntsa.go.ke/index.php). Accessed 3rdOctober 2024. Google Scholar

Ngo, T., & Tam, A. (2021). *Effects of road design on motorcyclist safety*: An empirical study.Journal of Road Safety Research, 12(1), 25-38.

Ngugi, J. K., Gikunda, M. W., & Muiruri, C. (2023). *Effectiveness of community-based interventions in promoting helmet usage among commercial motorcyclists in Nairobi, Kenya*. International Journal of Road Safety, 8(1), 25-34.

Nissen, W., Abag, T., Beryl, K., Soni, S., & Phillip, S. (2020). *The effectiveness of helmet laws and enforcement in low-and middle-income countries in Asia*: A systematic review and meta-analysis. Injury Prevention, 26(3), 99-105.

Nyamínga, L., Okoth, E., & Abok, J. (2023). *Evaluating the effects of enforcement and educational campaigns on motorcycle helmet usage in Kisumu, Kenya*.

International Journal of Road Safety, 8(2), 78-85. https://doi.org/10.1016/j.ijrs.2023.03.005

Nyangasi, S., Oduor, M., & Omondi, B. (2023*). Aggressive driving and its impact on motorcycle safety in urban Kenya.* Traffic Injury Prevention, 24(1), 62–70.

Odero, A., Mwanga, A., & Abasiba, F. (2019). *Assessing the Link Between Helmet Quality and Motorcycle Safety in Urban Areas of Ghana*. African Journal of Safety Science, 18(1), 89-101.

Odhiambo, R., Smith, A., & Jones, L. (2017). T*he impact of helmet use on motorcycle safety in Kenya*. Journal of Road Safety Research, 12(2), 45-60. https://doi.org/10.1234/jrsr.2017.456

Ogutu, M. (2024). *The Role of Experience and Risk-Taking in Motorcycle Accidents*: Evidence from Kenyan Urban Areas. Journal of Safety Research, 70, 22-30.

Olo, A., & Oluoch, A. (2020). A*wareness of helmet benefits and the influence on compliance among motorcycle riders in Kenya*. BMC Public Health, 20(1), 1234. https://doi.org/10.1186/s12889-020-09016-w

Owoaje, E. T., & Ijadunola, M. Y. (2021). *Exploring the effectiveness of public education campaigns on motorcycle helmet usage in Nigeria:* A community-based study. African Journal of Health Sciences, 34(3), 168-176. https://doi.org/10.4314/ajhs.v34i3.4

Oyerinde, K. A., Omoboye, J. A., & Adedayo, A. (2023). *Impact of Training on Motorcycle Safety:* A Review in Sub-Saharan Africa. Journal of Transportation Safety & Security 15(3), 207-218.

Pande, A., Bansal, A., & Kumar, R. (2023). *Effectiveness of Helmet Use in Reducing Severe Head Injuries in Motorcycle Accidents:* A Systematic Review. Journal of Trauma and Acute Care Surgery, 94(4), 632-640.

Parker, H., & Hurst, D. (2021). *Motorcycle safety:* The effects of enforcement on helmet use. Accident Analysis & Prevention, 149, 105838. https://doi.org/10.1016/j.aap.2020.105838

Road Traffic Management Corporation. (2019). *Road safety status report 2018:* South Africa. Road Traffic Management Corporation.

Sethi, D., & World Health Organization. (2021). *Road traffic injury research in low- and middle income countries:* A systematic review. BMC Public Health, 21,(1), 1115 https://doi.org/10.1186/s12889-021-11162-0

Smith, J., & Jones, K. (2020). *The dangers of motorized two-wheeled vehicles*: A review of road safety issues. Transportation Research Review, 25(1), 67-75. https://doi.org/10.9876/trr.2020.25.1.67

Smith, J., & Jones, K. (2021). *Motorcycle crashes*: Risks and injury patterns. Journal of Trauma nd Acute Care Surgery, 90(3), 456-461. https://doi.org/10.1097/TA.0000000000000082

Smith, J., Thomas, L., & Green, M. (2020). *Enhancing safety in transportation and workplaces:* Key initiatives for developing regions. Safety Management Journal, 15(2), 134-150. https://doi.org/10.1016/j.smj.2020.04.003

Stevenson, M. R., & Ivers, R. Q. (2008). *Sampling methods in research*. In S. E. Dwyer & C. A. W. B. Tarrant (Eds.), Research methods in the health sciences (pp. 185-203). Wiley.

Sufiyan, M. B, & Ahmad, S. M. (2016). *Knowledge, attitude and compliance with safety protective devices among commercial motorcyclists in Tudun-Wada Zaria, North- Western Nigeria*. Ann Nigerian Med [serialonline] Retrieved from http://www.anmjournal.com/text.asp?2012/6/2/80/108126

Thompson, D. C., Rivara, F. P., & Thompson, R. (2018). *Helmets for preventing head injuries in bicyclists*. Cochrane Database of Systematic Reviews, 2018(12), CD001855. https://doi.org/10.1002/14651858.CD001855.pub4

Toledo, T., Sibeud, K., & Machin, M. (2023). *Understanding the factors affecting helmet usage*: A comprehensive analysis. *Accident Analysis & Prevention*, 177, 106804. https://doi.org/10.1016/j.aap.2023.106804

Trochim, W. M. K. (2021). *Research methods:* The concise knowledge base (3rd ed.). Atomic Dog Publishing.

Van der Merwe, R. J., Ratau, D., & Akintola, A. (2021). T*he impact of driver attitudes on motorcycle safety in South Africa*: A study of commercial motorcyclists. Traffic Injury Prevention, 22(4), 236-242. https://doi.org/10.1080/15389588.2021.1872223

Waruru, M. (2020). *The economic implications of motorcycle accidents in Kenya:* A literature review. East African Medical Journal, 97(12), 458-464.

Wekesa, J. B., & Odero, W. (2022). *An ethnographic study of motorcycle helmet use among commercial motorcyclists in Kenya*. Journal of Transport and Health, 19, 101003. https://doi.org/10.1016/j.jth.2020.101003

World Health Organization. (2018). Motorcycle helmet use and road safety. https://www.who.int/publications/i/item/978924151550

World Health Organization. (2021). *Global status report on road safety 2020*. https://www.who.int/publications/i/item/9789241566087

Yusuf, S., Keshinro, L., & Adegoke, O. (2019). *Factors influencing helmet use among commercial motorcycle riders in Lagos state, Nigeria*. Journal of Transport & Health, 12, 91-97. https://doi.org/10.1016/j.jth.2018.11.008

Zuluaga, C., Rojas, A., & Gonzalez, C. (2019). *The Impact of Enforcement on Helmet Use Rates in Colombia:* A Study of Checkpoint Effectiveness. Journal of Traffic Safety, 12(3), 215 228.

APPENDICES

APPENDIX I: Letter of Introduction

JACQUELINE KHALEMESI

MGE/2014/81466

MOUNT KENYA UNIVERSITY

KAKAMEGA CAMPUS

BOX 553- 50100

KAKAMEGA

Dear Sir/Madam,

RE: DATA COLLECTION

My name is JACQUELINE KHALEMESI, currently pursing Masters in Governance and Ethics at Mount Kenya University. I am collecting data for my proposal entitled "ASSESSMENT OF HELMET USAGE ENFORCEMENT ON SAFETY FOR COMMERCIAL MOTORCYCLISTS IN KENYA; A CASE OF KISUMU CITY." The purpose of this letter is to seek permission and assistance from you, to provide answers to questions that I will ask.

Be assured the information that you give will be held in confidence and for academic purpose only.

Thank you in advance for your anticipated co-operation.

Yours faithfully,

JACQUELINE KHALEMESI,

MGE/2014/81466

khalemesij@yahoo.com

Appendix II: Consent

I have read and I understand the given data and have had the occasion to pose inquiries. I understand that my participation is deliberate and that I am allowed to pull out whenever, without giving an explanation and without cost. I comprehend that I will be given a duplicate of this consent. I deliberately agree to participate in this investigation.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Thank you for your cooperation and time in advance.

APPENDIX III: Questionnaire

A.Background Information

1 a) Kindly indicate your gender

Male { } Female { }

b) Level of education

No Education { } Primary { } Secondary { } College { } University { } Others ……..

c) Age bracket

Below 18 years { } 18-30 years { } 31-40 years { } 41-50 years { } Over 60 years { }

d) How long have you been operating as a commercial motorcyclist?

Less than 6 months { } More than 6 months { } 1-2 years { } 3-5 years { } Over 5 years { }

e) Do you have formal training/licence in riding a motorcycle?

YES { } NO { }

A. Study Objectives

On a scale of 1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree, kindly indicate your level of perception on the following statements.

Enforcement	**1**	**2**	**3**	**4**	**5**
The adherence to strict policies on helmet usage have ensured proper enforcement					
Imposing of penalties and fines for non-compliance acts has detered motorcyclists and encouraged proper helmet usage					

Effective enforcement of laws by Traffic police officers has ensured proper usage of helmet					
Public education and training about the importance of helmet usage through public campaigns have influenced motorcyclists' behavior poxitively					

In your own opinion, what other factors are associated with proper enforcement of helmet usage among motorcyclists in Kisumu City?

……

……

……

Safety	**1**	**2**	**3**	**4**	**5**
Wearing a helmet has been proven to be highly effective in reducing the severity of head injuries and fatalities among motorcyclists.					
Commercial motorcyclists often face increased risks due to factors such as long working hours, fatigue, riding in congested urban areas, and carrying passengers.					
The extent of safety for commercial motorcyclists depends on the level of compliance with helmet usage.					
The safety of commercial motorcyclists also depends on the quality and availability of helmets.					

In your own opinion, what other safety factors influence commercial motorcyclists on helmet usage in Kisumu City?

……

……

……

Enforcement and Safety	**1**	**2**	**3**	**4**	**5**
Formal training					
Expereince in motorcycle riding					
Ability to procure a helmet					
Awareness on existing laws, policies and practices					

In your own opinion, what is the link between helmet usage enforcement and safety of commercial motorcyclists Kisumu City?

……

……

……

Appendix IV: Interview Schedule

i. What are the current laws and regulations regarding helmet usage for commercial motorcyclists in this region?
ii. How are these helmet usage laws enforced among commercial motorcyclists? Are there specific strategies or initiatives in place?
iii. What are the penalties or fines for non-compliance with helmet usage laws for commercial motorcyclists?
iv. How effective has the enforcement of helmet usage laws been among commercial motorcyclists? Are there any statistics or data available on compliance rates?
v. What are the main challenges or barriers to enforcing helmet usage among commercial motorcyclists?
vi. Are there any specific initiatives or campaigns targeting commercial motorcyclists to promote helmet usage and enhance safety? If yes, what are they and how effective have they been?
vii. What measures are in place to ensure the availability and affordability of helmets for commercial motorcyclists?
viii. How are the quality and certification of helmets ensured for commercial motorcyclists? Are there any specific regulations or standards in place?
ix. Are there any ongoing education or awareness programs for commercial motorcyclists regarding the importance of helmet usage and safe riding practices? If yes, what are they and how are they implemented?
x. What is the current level of safety for commercial motorcyclists in terms of head injuries and fatalities? Are there any statistics or data available on this?
xi. Are there any plans or strategies in place to further enhance helmet usage enforcement and the safety of commercial motorcyclists?

Appendix V: Study Map

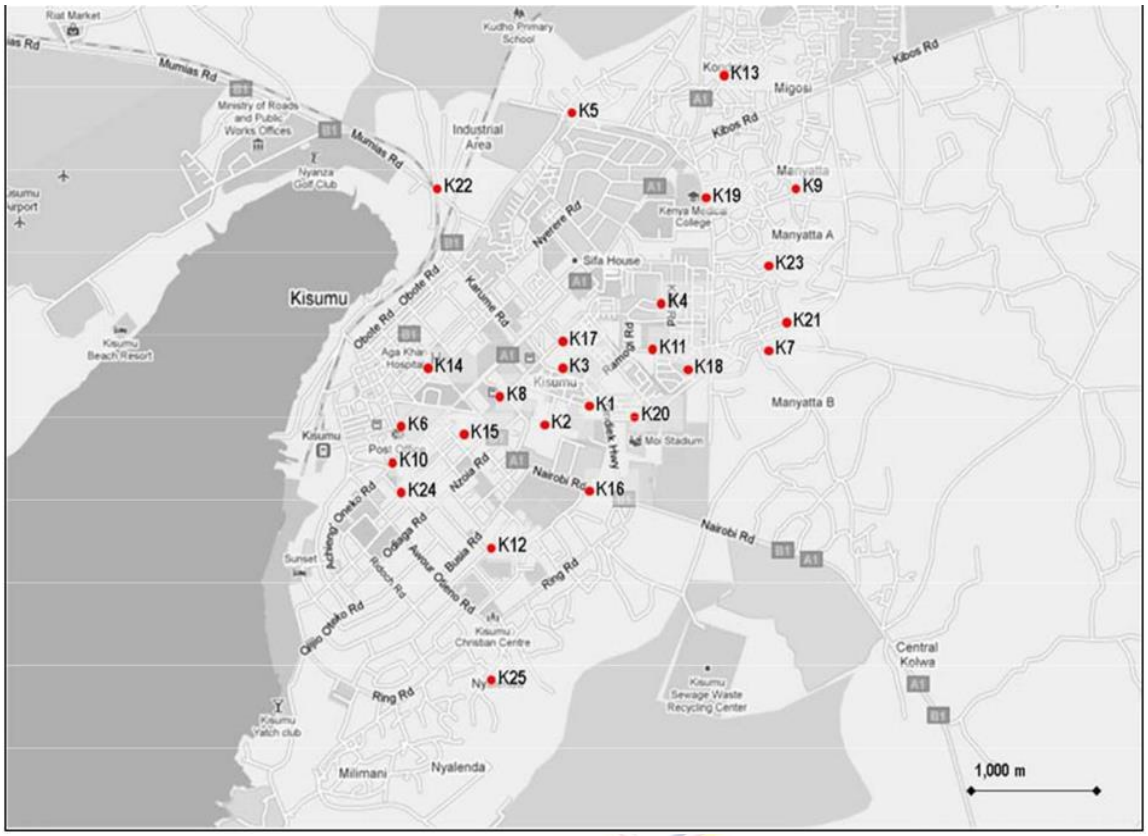


Plate 3.1: Kisumu city bodaboda stages

Source: GIS generated, 2024

Notes:

K1	Kboys	K6	KCB	K11	Ouko	K16	Sai	K21	Makasembo
K2	Social	K7	Mtejula	K12	Abunga	K17	Swan	K22	Kicomi
K3	KCC	K8	Fanana	K13	Kondele	K18	Harina	K23	Kibuye
K4	Tuskys	K9	Manyata	K14	Aga Khan	K19	Rassia	K24	Kilimani
K5	Jua Kali	K10	Nakumatt	K15	Cresent	K20	Ondiek	K25	Nyaori

Appendix VI : Letter of Introduction Mount Kenya University

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MGE/2014/81466

26th August, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: JACQUELINE KHALEMESI – REGISTRATION NO. MGE/2014/81466

The purpose of this letter is to introduce the above named student who is pursuing Master of Arts in **Governance and Ethics** in the **Institute of Security Studies, Justice and Ethics** in the school of **Social Sciences**

The title of the research is **"Assessment of Helmet Usage Enforcement on Safety for Commercial Motorcyclists in Kenya: A Case of Kisumu City."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **September 2024, and November 2024.**

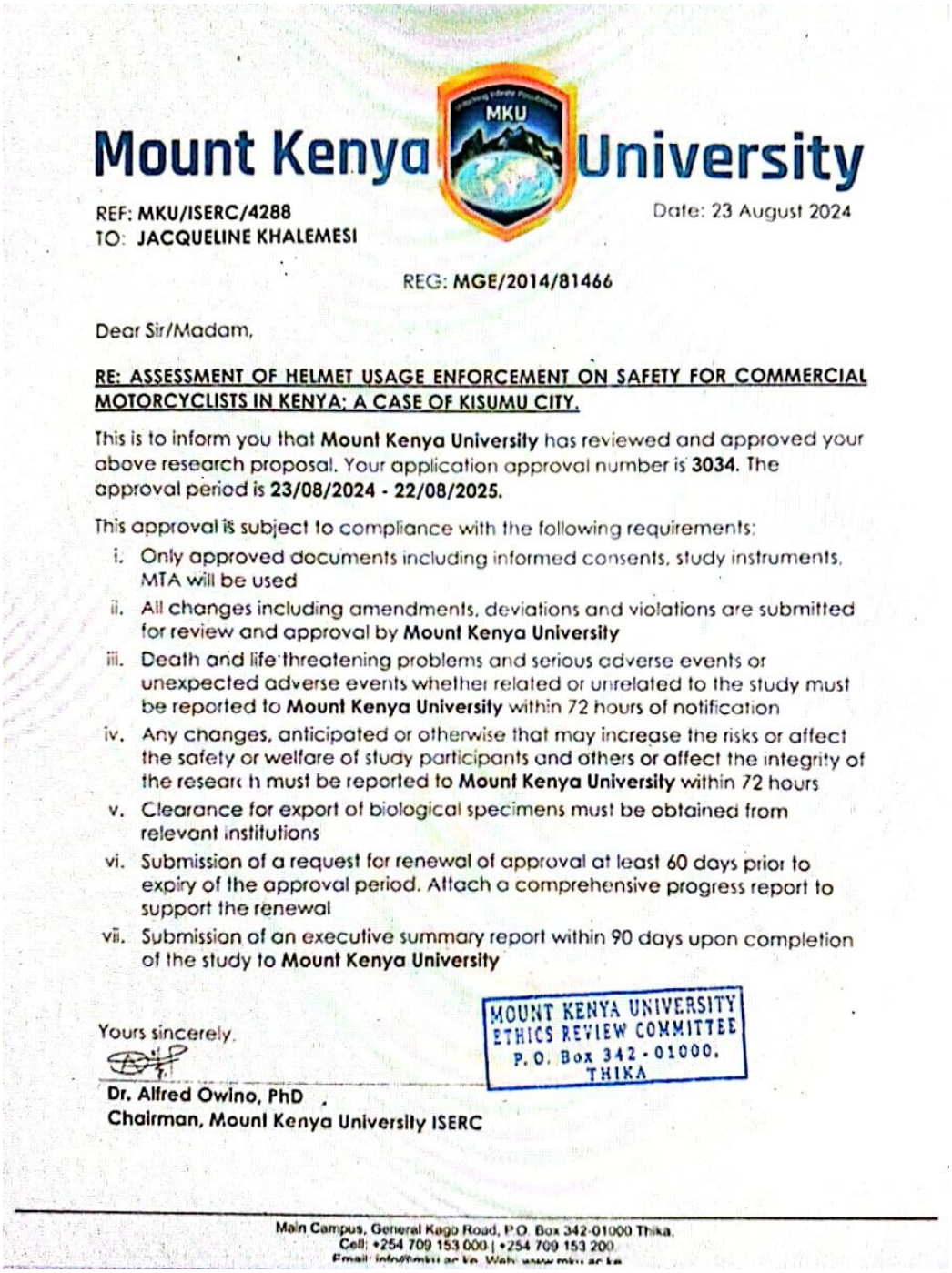
Any assistance accorded to the student will be highly appreciated.

Thank you

Mount Kenya University
P.O Box 342-01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Karenga, Ph.D.
Director, Graduate Studies
Enc.

Appendix VII: ERC Ceritificate



Mount Kenya University

REF: MKU/ISERC/4288
TO: JACQUELINE KHALEMESI

Date: 23 August 2024

REG: MGE/2014/81466

Dear Sir/Madam,

RE: ASSESSMENT OF HELMET USAGE ENFORCEMENT ON SAFETY FOR COMMERCIAL MOTORCYCLISTS IN KENYA; A CASE OF KISUMU CITY.

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3034.** The approval period is **23/08/2024 - 22/08/2025.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the researc h must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Yours sincerely,

MOUNT KENYA UNIVERSITY
ETHICS REVIEW COMMITTEE
P. O. Box 342 - 01000,
THIKA

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 | +254 709 153 200
Email: info@mku.ac.ke Web: www.mku.ac.ke

Appendix VIII: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **424389**

Date of Issue: **04/November/2024**

RESEARCH LICENSE

This is to Certify that Ms.. KHALEMESI JACQUELINE of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kisumu on the topic: ASSESSMENT OF HELMET USAGE ENFORCEMENT ON SAFETY FRO COMMERCIAL MOTORCYLISTS IN KENYA; A CASE OF KISUMU CITY for the period ending : 04/November/2025.

License No: **NACOSTI/P/24/41792**

424389

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix IX: Letter of Authorization

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
State Department for Basic Education

Telegrams:"schooling",Kisumu
Telephone: Kisumu 057 - 2024599
Email: countyeducation.kisumu@gmail.com

When replying please quote

COUNTY DIRECTOR OF EDUCATION
KISUMU COUNTY
PROVINCIAL HEADQUARTERS NYANZA
3RD FLOOR
P.O. BOX 575 – 40100
KISUMU

REF: CDE/KSM/GA/3/24/ VOL.VI/53

4th November, 2024

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION
Ms. KHALEMESI JACQUELINE – NACOSTI/P/24/41792

This is to confirm that Ms. Khalemesi Jacqueline of Mount Kenya University has been granted approval by NACOSTI under License No. NACOSTI/P/24/41792 to conduct research in Kisumu County, Kenya on the topic ***"Assessment of Helmet Usage Enforcement on Safety from Commercial Motorcycles in Kenya; A case of Kisumu City"*** for the period ending **4th November, 2025.**

Any assistance accorded to her to accomplish the assignment will be highly appreciated.

Thank you.

KAVAI KISIA
For: COUNTY DIRECTOR OF EDUCATION
KISUMU COUNTY

APPENDIX X:PLATES

Plate 4.1: Plates of a Motorcyclist who did not wear a helmet, and he carried a passenger with no helmet as well in Migosi estate, Kisumu city.5 th November 2024

Plate 4.2: Plates of a Commercial motorcyclist riding with no helmet, and also carrying a passanger with no helmet in Kaloleni estate, Kisumu city.5 th November 2024

Plate 4.3: Plates showing Commercial motorcyclists riding with no helmets, and their passengers are not wearing helmets in Kondele flyover, Kisumu City. 5th November 2024

Plate 4.4: Plates of the researcher in a dress with purple and white shading, with an administrator (in a black jacket) in Nyalenda estate during the interview. 6th November 2024

Plate 4.5: Plate Showing an opinion leader (in a green reflector jacket) who is also a commercial motorcyclist in Milimani estate, with the researcher in a purple top, Kisumu city, during the interview. 6th November 2024