

TITLE OF THE WORK:

**RISK PERCEPTION AS A DETERMINANT OF CONSISTENT HELMET USE AMONG STUDENTS AS
PILLION PASSENGERS AT MULTIMEDIA UNIVERSITY OF KENYA**

SUBMITTED BY

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DATE OF SUBMISSION

1st May 2026

DECLARATION

This research report is my original work and all ideas and information therein are from my research.

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TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
ABBREVIATIONS AND ACROYNMS	v
DEFINITION OF KEY TERMS AND VARIABLES	vi
ABSTRACT	viii
CHAPTER 1 – INTRODUCTION AND BACKGROUND	1
1.0 Introduction	1
1.1. Objectives of the Study	2
1.1.1. Study Aim	2
1.1.2. Specific Objectives	2
1.2. PROBLEM STATEMENT AND JUSTIFICATION	3
1.3. Significance of the Study	3
1.4. Delimitations of the Study	4
CHAPTER 2 – LITERATURE REVIEW	6
2.0 Introduction	6
2.1 Empirical Review	6
2.2.1 Dimensions of Risk Perception and Behavioral Outcomes	7
2.2.1 Socio-Demographics and the "Near-Miss" Catalyst	8
2.2.4 Contextual Barriers	8
2.2 Research Gap	9
2.3 Theoretical Framework	10
2.3.1. Relevant Theories	11
2.3.2 Comparative Analysis of Theories	13
2.3.3 Justification for Adopting the Health Belief Model (HBM)	14
2.4 Conceptual Framework	14
2.5 Chapter Summary	15
CHAPTER 3: METHODOLOGY	16
3.0 Introduction	16

3.1	Study Design	16
3.2	Study Site	16
3.3	Target Population	16
3.3.1	Inclusion Criteria	17
3.3.2	Exclusion Criteria	17
3.4	Sample Size and Sampling Techniques	17
3.5	Data Collection Tools and Administration	17
3.6	Data Analysis and Presentation	18
3.7	Ethical and Logistical Considerations	18
CHAPTER 4:	FINDINGS AND DISCUSSIONS	20
4.0	Introduction	20
4.1	Demographics and background of the study participants	20
4.2	Prevalence of helmet use at MMU	23
	Availability of the helmet	23
	Prevalence of helmet use	25
4.3	Students' perceptions of risk for crash and injuries	26
4.4	Relationships of socio-demographics, riding patterns & riding experience	28
4.5	Association of risk dimension perception and helmet use	30
4.6	Contextual and attitudinal factors	31
4.7	Chapter summary	34
CHAPTER 5:	SUMMARY, CONCLUSION AND RECOMMENDATIONS	35
5.0	Introduction	35
5.1	Study Recommendations	36
References		37
APPENDIX I:	Primary Questionnaire	40
APPENDIX II:	Focus Group Discussions Guide	45
APPENDIX III:	Study Area Map	46

ABBREVIATIONS AND ACROYNMS

FGD	Focus Group Discussion
FIA	Fédération Internationale de l'Automobile (Reference to the FIA Foundation)
HBM	Health Belief Model
LMICs	Low- and Middle-Income Countries
MMU	Multimedia University of Kenya
NTSA	National Transport and Safety Authority
PMT	Protection Motivation Theory
SPSS	Statistical Package for the Social Sciences
TBI	Traumatic Brain Injury
TPB	Theory of Planned Behavior
WHO	World Health Organization

DEFINITION OF KEY TERMS AND VARIABLES

Boda boda	The informal Motorcycle taxi industry in Kenya.
Safety	The sense of being safe.
Consistent Helmet Use	A habitual behavioral pattern of wearing a fastened, standard-compliant helmet during every motorcycle trip, regardless of distance or route familiarity.
Intention–Behavior Gap	The psychological phenomenon where an individual's stated intention to perform a safety behavior (e.g., wearing a helmet) does not translate into the actual action.
Multimedia University of Kenya (MMU)	The specific study site located along Magadi Road, serving as the primary environment for observing student pillion passenger behavior.
Optimism Bias	A cognitive predisposition, where individuals believe they are less likely to experience a negative event compared to others.
Pillion Passenger	A person seated behind the operator of a motorcycle. This study treats the pillion as an "active decision-maker" rather than passive cargo.
Risk Perception	The subjective assessment of the probability of a crash and the magnitude of its consequences, influenced by psychological and environmental factors.
Coping Appraisal	A cognitive process consisting of Response Efficacy (belief that helmets work) and Self-Efficacy (confidence in one's ability to use them).
Cues to Action	External triggers that prompt safety behavior, such as police enforcement, road safety signs, or witnessing a recent accident.
Perceived Barriers	Factors that discourage helmet use,
Perceived Benefits	The student's belief in the effectiveness of wearing a helmet to reduce the severity of head injuries.
Perceived Severity	The individual's evaluation of the physical, social, and economic seriousness of injuries resulting from a motorcycle crash.
Perceived Susceptibility	The individual's belief regarding the likelihood of being involved in a motorcycle crash while traveling as a pillion passenger.
Subjective Norms	The perceived social pressure from peers and the campus culture to either conform to or ignore safety regulations.

Threat Appraisal	The process of weighing the seriousness of a danger (crash) against the perceived rewards of a risky behavior (speed/convenience).
Cross-Sectional Analytical Design	An observational study design that analyzes data from a population at a single point in time to find associations between variables.
Focus Group Discussion	A qualitative data collection method used to explore the underlying attitudes and social dynamics of a small group of students (n=10).
Mixed-Methods Approach	The integration of quantitative (survey) and qualitative (FGD) data to provide a more robust understanding of the research problem.
Stratified Sampling	A sampling technique where the student population is divided into subgroups (faculties/year of study) to ensure representative data.

ABSTRACT

Despite increased road safety awareness campaigns, consistent helmet use among pillion passengers in Kenya remains low. At Multimedia University of Kenya (MMU), students frequently rely on motorcycles for daily transport, yet helmet compliance is poor. This study examined how students' risk perception influences helmet use as pillion passengers. Grounded in the Health Belief Model (HBM), Theory of Planned Behavior (TPB), and Protection Motivation Theory (PMT), the study adopted a mixed-methods cross-sectional design involving a stratified sample of 325 students and a focus group discussion involving 10 students. Quantitative data was analyzed using descriptive statistics, while qualitative data was thematically analyzed to explore attitudinal and contextual barriers. Findings show very low helmet use, with less than 10% of respondents reporting consistent use. Helmet use was largely dependent on rider provision and availability rather than individual safety intention. Risk perception was mainly shaped by prior crash or near-crash experiences, rather than general awareness of risk. Overall, there was a clear gap between awareness of risk and actual protective behavior, influenced by contextual and social constraints. The study recommends targeted awareness campaigns, peer-led interventions, and partnerships with transport operators to enhance consistent helmet use.

CHAPTER 1 – INTRODUCTION AND BACKGROUND

1.0 Introduction

Motorcycle transport has become an important mode of mobility in Kenya and many other low- and middle-income countries (LMICs), particularly for short trips and as feeders to public transport (Peden et al., 2004; World Health Organization [WHO], 2018, 2023). Around university campuses, motorcycle taxis (boda bodas) are widely used by students as pillion passengers for commuting to and from class, hostels, and nearby centres. While motorcycles are convenient and relatively affordable, they are also associated with a high burden of road traffic injuries, especially head injuries, among young people (Cholo et al., 2023; WHO, 2023).

Helmet use is one of the most effective measures for reducing the severity of head injuries and fatalities among motorcycle users. Systematic reviews show that certified, properly fastened helmets can reduce the risk of head injury and death by roughly 40–70% (Liu et al., 2008; Mahdavi Sharif et al., 2023). In Kenya, traffic regulations place a legal obligation on motorcycle riders to provide a helmet for both themselves and their passengers, reinforcing helmet use as a shared responsibility. Nevertheless, in practice, helmet use is often inconsistent especially among pillion passengers, who rely on the rider to provide a helmet, they find the helmet uncomfortable, dirty, or underestimate their own risk.

In Kenya, recent studies have documented the heavy health and economic burden of motorcycle taxi crashes and showed that while about two-thirds of operators in Nairobi were observed wearing helmets, only 15% of passengers did so, despite mandatory helmet laws (Nyachieo et al., 2024). These findings highlight a pronounced gap between legal requirements and everyday safety practices, particularly among passengers.

At Multimedia University of Kenya (MMU), many students regularly use motorcycles as pillion passengers due to the university's location along Magadi Road and the surrounding travel patterns. Yet, there is limited empirical evidence on how these students perceive the risks associated with motorcycle travel and how such perceptions influence their helmet-use behaviour. Understanding risk perception is critical because even when helmets are available and regulations exist, individuals are more likely to adopt protective behaviours when they judge themselves to be personally at risk and believe that the consequences of a crash would be serious (Brewer et al., 2007; Rosenstock, 1974; Rogers, 1983).

This study examines to what extent is risk perception a determinant of consistent helmet uses among MMU students who ride as pillion passengers. It is intended that the findings will inform targeted road safety interventions within the university and contribute to broader discussions on youth, road safety, and motorcycle use in Kenya, building on national evidence such as A Fare Price and related work on motorcycle injuries (Cholo et al., 2023; Nyachieo et Al., 2024).

1.1.Objectives of the Study

1.1.1. Study Aim

To examine how risk perception influences consistent helmet use among students who travel as pillion passengers on motorcycles at Multimedia University of Kenya.

1.1.2. Specific Objectives

1. To determine the prevalence of consistent helmet use among MMU students who ride as pillion passengers.
2. To assess MMU students' perceptions of the risks of motorcycle crashes and injuries when riding as pillion passengers.
3. To examine the relationship between socio-demographic characteristics, riding patterns, and previous crash/near-miss experiences and students' risk perception.
4. To analyse the association between different dimensions of risk perception and consistent helmet use among MMU students as pillion passengers.
5. To explore contextual and attitudinal factors (e.g. peer influence, perceived enforcement, helmet availability, affordability, hygiene and comfort) that support or hinder consistent helmet use.

1.2. PROBLEM STATEMENT AND JUSTIFICATION

Despite the widely recognised protective role of helmets, many motorcycle pillion passengers in Kenya do not wear helmets consistently. Among university students, several factors may contribute to this behaviour: perceptions that "short distances are safe," trust in riders' skills, discomfort or inconvenience of helmets, hygiene concerns, peer influence, and assumptions that crashes are rare or unlikely to affect them personally (Bedru et al., 2022; Wadhvaniya et al., 2015).

Evidence from Kenya indicates that motorcycle crashes constitute a major share of road traffic

injuries and deaths, with passengers often less protected and less likely to wear helmets than riders (Cholo et al., 2023; Nyachieo et al., 2024). Research shows that passengers' helmet use remains strikingly low, even where legislation exists, with significant treatment costs associated with head and multiple injuries (Nyachieo et al., 2024). However, these national-level findings have not been translated into campus-specific evidence for MMU.

At MMU, informal observations suggest that a significant proportion of students travel on motorcycles without helmets, particularly as pillion passengers. However, there is: Limited data on the prevalence of consistent helmet use among MMU students as pillion passengers; Little understanding of how risk perception (perceived likelihood and severity of crashes and injuries) shapes their decision to wear or not wear helmets; and Limited evidence on contextual factors (e.g. peer norms, cost, availability and quality of helmets, perceived enforcement) that interact with risk perception to influence behaviour. Without such evidence, university-level interventions may be generic and less effective. This study is justified because it will: Generate empirical data specific to MMU students as pillion passengers; Help design evidence-based awareness campaigns, policies, or partnerships (e.g. with NTSA, boda boda associations, or campus security) to improve helmet use; Contribute to the road safety literature on risk perception and youth in Kenyan universities.

1.3. Significance of the Study

1. Theoretical and Academic Significance

This study contributes to the field of transport psychology and behavioral science by applying established frameworks such as the Health Belief Model (HBM) to the specific, under-researched demographic of university-aged pillion passengers in Kenya. While existing literature heavily focuses on motorcycle operators, this research shifts the lens to the passenger's agency. It provides empirical data on how cognitive biases (like "optimism bias") and risk perception levels directly determine safety compliance, thus enriching the body of knowledge on youth risk behaviour in Low- and Middle-Income Countries (LMICs).

2. Policy Significance for National Regulators (NTSA)

The findings will be of high value to the National Transport and Safety Authority (NTSA) and the Ministry of Transport. By identifying the specific barriers to consistent helmet use (such as hygiene concerns or perceived low risk for short distances), the study offers a roadmap for more effective public health campaigns. Instead of generic "wear a helmet" slogans, regulators can design interventions that address the subjective risks identified by the students.

3. Social and Economic Significance

By promoting consistent helmet use, this study aims to contribute to a reduction in the incidence of

traumatic brain injuries (TBIs) among the youth the country's most productive demographic. Reducing these injuries has a direct economic impact: For the Student: Prevents the interruption of education due to hospitalization and long-term recovery. For the Family: Mitigates the "fare price" described by (Nyachieo et al., 2024), where medical costs can devastate a household's financial stability.

4. Safety for the "Boda Boda" Sector

This study provides the groundwork for improving the relationship between passengers and riders. If students (as customers) begin to demand helmets based on a heightened perception of risk, it creates a market-driven incentive for operators to provide clean, high-quality safety gear, thereby professionalizing the sector and improving overall road safety.

1.4. Delimitations of the Study

Exclusion of Riders

While motorcycle operators (riders) are central to road safety, this study is delimited to pillion passengers only. This is because existing local evidence shows that passengers are the group with the lowest compliance and highest vulnerability (Nyachieo et al., 2024)

Safety Gear Limitation

The study will not investigate other safety equipment such as reflector jackets, knee guards, or closed-toe shoes. It focuses solely on helmets, as head injuries are the leading cause of boda boda-related fatalities in Kenya.

Demographic Limitation

The study does not include university staff or the surrounding Rongai community, focusing exclusively on students to ensure a homogenous sample that shares similar socio-economic and age-related risk profiles.

CHAPTER 2 – LITERATURE REVIEW

2.0 Introduction

This chapter provides a systematic examination of the scholarly landscape surrounding risk perception and safety compliance among motorcycle pillion passengers. Globally, motorcycle-related trauma remains a significant public health challenge, yet the behavioral drivers of protective gear use particularly among educated youth in developing economies remain complex and inconsistently documented. In order to examine the existing gaps in literature, this review was structured into three primary segments. First, it establishes a theoretical foundation by synthesizing the Health Belief Model (HBM), the Theory of Planned Behavior (TPB), and Protection Motivation Theory (PMT) to create a multidimensional lens for analyzing human behavior. Second, it explores the empirical evidence regarding global and regional trends in helmet compliance, with a specific focus on the unique socio-technical ecosystem of the Kenyan *boda boda* sub-sector. Finally, the chapter identifies critical gaps in existing literature, specifically the lack of focus on the pillion passenger as an active decision-maker within peri-urban university environments such as Multimedia University (MMU). By reconciling these theoretical frameworks with local empirical realities, this chapter constructs the conceptual scaffolding necessary to investigate why a persistent "intention-behavior gap" exists among student passengers.

2.1 Empirical Review

Risk perception is a core construct in health behaviour and injury-prevention research. It refers to an individual's subjective judgement about the likelihood and severity of a negative event here, motorcycle crashes and associated injuries. The prevalence of helmet use among pillion passengers demonstrates a pronounced global disparity and is largely influenced by the strength of policy enforcement and implementation.

Evidence shows that high levels of compliance can be achieved in settings where helmet laws are comprehensive and strictly enforced. For instance, countries such as Vietnam recorded substantial increases in helmet use following the enforcement of universal helmet legislation (Nguyen et al., 2013; Olson et al., 2016). Similarly Rwanda despite being a low-income country has also reported high compliance rates exceeding 90% among motorcyclists largely due to strong regulatory enforcement frameworks (WHO, 2018). However, much of Sub-Saharan Africa exhibits a substantial compliance gap between motorcycle riders and passengers. For example, Adjei et al. (2024) reported that in Ghana, while rider helmet compliance was approximately 27%, pillion passenger use dropped sharply to 5.7%.

In Kenya, this pattern mirrors broader regional trends but is further intensified by the dynamics of the boda boda transport culture. Cholo et al. (2023) found that in Kisumu, more than 80% of motorcycle crash victims were not wearing helmets at the time of the accident. A key divergence within the literature concerns the measurement of helmet use, particularly the issue of consistency. While many global studies focus on point-in-time prevalence, relatively few especially within the Kenyan university context examine helmet use as a consistent behavioural habit over time. Competing explanations also emerge regarding the causes of low prevalence. Some scholars attribute the phenomenon primarily to regulatory gaps, noting that enforcement mechanisms often target riders rather than passengers. Others, such as (Rundmo et al., 2011; Sharif et al., 2023) argue that helmet non-use may reflect a behavioural decision shaped by individuals' subjective assessment of risk and safety, rather than a lack of awareness.

2.2.1 Dimensions of Risk Perception and Behavioral Outcomes

Risk perception is commonly conceptualized through two key dimensions: perceived susceptibility, which refers to an individual's assessment of the likelihood of being involved in a crash, and perceived severity, which relates to the perceived seriousness of potential injuries should such an event occur. Within most health behaviour frameworks, it is generally assumed that individuals who perceive both a high likelihood of risk and severe potential consequences are more likely to adopt protective behaviours.

However, empirical research frequently reveals a knowledge-behaviour gap, where awareness of risk does not necessarily translate into consistent safety practices. For example, Bachani et al. (2017) observed that in several East African contexts, pillion passengers often demonstrate high awareness of the dangers associated with head injuries, indicating strong perceptions of severity. Despite this awareness, their perceived susceptibility remains relatively low. Many passengers believe that crashes are unlikely to occur during short or familiar journeys, leading to the common sentiment that "it won't happen to me."

Among university student populations, this phenomenon is often linked to optimism bias. Students frequently acknowledge the general risks associated with motorcycle travel particularly on busy routes but they tend to discount their own personal vulnerability. This perception of relative invincibility can weaken the motivation to adopt protective behaviours such as consistent helmet use. At the same time, the literature presents competing interpretations of this behaviour. Some scholars argue that non-use of helmets reflects an underestimation of the likelihood of a crash, while others suggest that passengers may instead place excessive confidence in the competence and skill of the rider thereby externalising their safety. These differing explanations point to multiple

cognitive processes shaping safety decisions. Consequently, this study seeks to disentangle these dimensions of risk perception in order to better understand how they influence helmet use among university students travelling as pillion passengers.

2.2.1 Socio-Demographics and the "Near-Miss" Catalyst

The literature shows mixed results regarding the impact of personal history on risk perception. Previous Experiences: There is a strong convergence in literature suggesting that "vicarious trauma" (witnessing a crash) or personal "near-miss" experiences significantly spike risk perception. Although individuals may possess adequate knowledge regarding helmet safety, this does not always translate into consistent use, indicating a gap between awareness and behaviour (Bachani et al., 2017). So this means that action is often only triggered by a negative event. Significant divergence exists regarding gender, with some studies suggesting that females are more likely to engage in protective behaviours such as helmet wearing (Skalkidou et al., 1999).while others argue that for female students, attitudinal barriers (e.g., hairstyle preservation) outweigh risk-aversion, leading to lower compliance than their male counterparts. This study aims to resolve these competing narratives within the MMU student demographic.

2.2.4 Contextual Barriers

The transition from risk perception to actual safety behaviour is usually influenced by contextual and situational factors rather than awareness alone. Research has shown that individuals may recognize the risks associated with unsafe transport behaviour but they still fail to adopt protective practices due to external and behavioural constraints. For instance, adolescents' non-compliance with helmet use has been linked not only to perceived invulnerability but also to practical barriers such as inconvenience, cost, and social expectations (Germen et al., 2009). Similarly, Akaateba et al. (2015) found that helmet use in Ghana was largely affected by contextual factors such as discomfort, short travel distances, and perceptions that helmets are unnecessary for certain trips, demonstrating that immediate circumstances often outweigh perceived long-term safety benefits.

In addition to these barriers, concerns related to comfort and usability play a critical role in shaping helmet use behaviour. Discomfort, particularly in warm climates, and interference with vision or personal appearance have been consistently identified as deterrents to helmet use (Akaateba et al., 2015). While empirical research specifically addressing hygiene concerns remains limited, studies on shared mobility and safety equipment suggest that perceptions of cleanliness and personal suitability can influence willingness to use shared protective gear (Fishman et al., 2024). This shows that individuals may prioritize immediate and tangible concerns such as discomfort or perceived

uncleanliness over abstract risks such as potential injury.

Affordability and availability also present significant structural barriers. In many low- and middle-income settings, passengers rely on riders to provide helmets, and inconsistent provision limits opportunities for use. At the same time, the cost of purchasing personal helmets may be prohibitive, particularly for students, thereby constraining their ability to act on safety knowledge (Akaateba et al., 2015). Additionally, even where individuals own helmets, the inconvenience associated with carrying them during daily activities may discourage consistent use. This creates a gap between risk perception and behaviour, highlighting that helmet use is not solely an individual decision but is shaped by broader socioeconomic and environmental conditions.

2.2 Research Gap

The existing literature demonstrates a clear understanding of why motorcycle accidents are dangerous, but it fails in explaining the inconsistency of helmet use among educated youth.

The review reveals that while "Risk Perception" is a recognized determinant, its influence is not linear. It is moderated by socio-demographic traits and heavily suppressed by contextual barriers like hygiene and peer pressure. There is a lack of empirical focus on the pillion passenger as an active decision-maker. Most Kenyan studies focus on the rider or the crash victim. Furthermore, there is no peer-reviewed evidence specifically documenting how the peri-urban environment of Multimedia University (i.e., Magadi Road) with its specific traffic density and student social dynamics shapes these variables.

2.3 Theoretical Framework

The perception people have of boda boda safety and whether they decide to wear protective gear is influenced by a variety of both internal and external determinants. These determinants are often multifaceted in nature and are perceived to be shaped by a complex interplay of psychological biases, socio-economic pressures, and the prevailing regulatory environment (Rosenstock, 1974).

To better understand how risks related to road safety are perceived and to suggest effective frameworks for exploring the root causes of non-compliance, various theoretical models have been proposed. Traditionally, much of this theoretical advancement has concentrated more on the motorcycle operator (the rider) rather than other types of road users, such as pillion passengers, who frequently play a more passive role in the transportation process. While some models have

placed emphasis on individual cognitive characteristics and health beliefs, others have focused on the situational barriers and the socio-ecological dimensions of peer influence and social norms.

These theories and models all have their own distinct strengths and weaknesses, and no single framework provides a complete scientific coverage of the wide variety of factors involved in consistent helmet use. Although no single model has gained universal dominance within the traffic psychology and public health communities, they have nonetheless shaped our understanding of the "intention-behavior gap" in road safety in significant ways. Given the unique complexities of the university student demographic and the informal nature of the Kenyan "boda boda" sector, a multi-theoretical approach is necessary.

This section establishes the theoretical foundation of the study by examining the psychological and behavioral frameworks that explain how individuals perceive risk and translate those perceptions into safety actions.

2.3.1. Relevant Theories

1. The Health Belief Model (HBM)

The Health Belief Model (HBM) was developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels and remains a cornerstone theory for explaining health-protective behaviors. This model is based on the assumption that an individual's willingness to adopt a health-related behavior is influenced by their perception of a health threat and their belief in the effectiveness of the recommended action to reduce that threat (Rosenstock, 1974).

It is built on six main constructs. These include *Perceived Susceptibility*, which refers to an individual's belief about the likelihood of experiencing a specific risk, such as being involved in a crash; *Perceived Severity*, which relates to beliefs about the seriousness of potential injuries; *Perceived Benefits*, referring to the perceived effectiveness of a protective measure such as wearing a helmet; and *Perceived Barriers*, which include factors that may discourage the behavior, such as cost, hygiene concerns, or discomfort. The model also incorporates *Cues to Action*, which are triggers that prompt the behavior, such as police enforcement or witnessing a road accident, and *Self-Efficacy*, which refers to an individual's confidence in their ability to perform the behavior, for example insisting on wearing a helmet as a pillion passenger.

In the context of students at Multimedia University (MMU), the Health Belief Model provides a useful framework for understanding the role of risk perception in influencing consistent helmet use among

million passengers. It suggests that a student is more likely to wear a helmet consistently if they believe that the likelihood of a crash particularly along high-traffic routes such as Magadi Road is significant (perceived susceptibility) and that the consequences of a head injury would be severe (perceived severity). However, the perceived barriers component helps explain why some students may still choose not to wear helmets despite recognizing the risks. Concerns such as poor helmet hygiene, discomfort, or aesthetic issues like “helmet hair” may outweigh the perceived safety benefits, thereby discouraging consistent helmet use.

2. The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) was proposed by Icek Ajzen in 1985 to explain how attitudes and social influences shape human behavior. It posits that behavior is primarily driven by an individual’s intention to perform a particular action. It assumes that people make rational decisions by considering the potential consequences of their actions before choosing whether to engage in a behavior (Ajzen, 1991).

It is based on three main predictors of behavioral intention. The first is *Attitude toward the Behavior*, which refers to an individual’s positive or negative evaluation of performing a particular action, such as wearing a helmet. The second is *Subjective Norms*, which describe the perceived social pressure from peers, friends, or society to either perform or avoid the behavior. The third construct is *Perceived Behavioral Control*, which refers to the individual’s perception of how easy or difficult it is to perform the behavior, often influenced by the availability of resources or external constraints.

This theory helps explain how peer influence and social perceptions can affect safety practices. For instance, if a student’s peers perceive helmet use as unnecessary or “uncool,” the resulting subjective norms may discourage the student from wearing one despite being aware of the risks. In addition, the concept of perceived behavioral control highlights practical limitations that may prevent helmet use. If a boda boda rider does not provide a helmet, the student’s ability to perform the safety behavior is reduced, even if their attitude toward helmet use is positive.

3. Protection Motivation Theory (PMT)

The Protection Motivation Theory (PMT) was introduced by Ronald Rogers in 1975 to explain how individuals respond to fear appeals and perceived threats. The theory proposes that when people encounter a potentially harmful situation, they engage in a cognitive evaluation process that involves two stages: threat appraisal and coping appraisal (Rogers, 1975). During this process, individuals

assess the seriousness of the threat and their ability to respond effectively to it. Their final behavior is therefore influenced by how they balance the perceived danger with their confidence in the available protective action.

PMT is built around two main appraisal processes. *Threat Appraisal* involves evaluating the potential danger associated with a risky behavior and weighing it against the perceived benefits or rewards of that behavior, such as the speed and convenience associated with motorcycle travel. *Coping Appraisal*, on the other hand, focuses on the individual's evaluation of the protective response. This includes Response Efficacy, which refers to the belief that the protective action such as wearing a helmet will effectively reduce injury, and Self-Efficacy, which reflects the individual's confidence in their ability to consistently perform the protective behavior.

Protection Motivation Theory is particularly relevant in explaining how previous crash or near-miss experiences influence helmet use behavior. According to PMT, an individual who has previously experienced a motorcycle crash or a near-miss incident is likely to develop a heightened threat appraisal, becoming more aware of the potential dangers associated with riding without protection. This increased perception of risk can strengthen their protection motivation, thereby increasing the likelihood that they will adopt safer behaviors such as consistently wearing a helmet.

2.3.2 Comparative Analysis of Theories

The three theories provide complementary but distinct perspectives on pillion passenger behavior. The Health Belief Model (HBM) is superior in its ability to break down risk into smaller variables like susceptibility and severity, which are the primary focus of this study. Its inclusion of "Perceived Barriers" makes it more appropriate to the Kenyan context, where hygiene and helmet availability are a big challenge. However, HBM is often criticized for its lack of focus on the social and environmental influences that dictate behavior in a collective society (Glanz et al., 2015). On the other hand, the Theory of Planned Behavior (TPB) excels where HBM fails: it accounts for the Subjective Norms; the social pressure prevalent in a university campus environment. While TPB provides a robust explanation for the intention to wear a helmet, it often falls short in explaining the "Intention-Behavior Gap" why students who intend to be safe still fail to use helmets consistently when faced with a dirty or unavailable helmet. Protection Motivation Theory (PMT) shares many similarities with HBM but places a heavier emphasis on the cognitive processing of "fear." While it is useful for analyzing the impact of safety campaigns, it is less effective than HBM at identifying the specific structural barriers (like affordability) which is central to the MMU student experience.

2.3.3 Justification for Adopting the Health Belief Model (HBM)

This study adopts the HBM as its primary framework because its constructs align most closely with the research objectives. Since the study specifically seeks to determine if Risk Perception is a determinant, the HBM's focus on susceptibility and severity provides the most direct pathway for empirical measurement. To address HBM's social limitations, this study integrates elements of "Subjective Norms" from TPB to ensure the university's social context is fully captured and some aspects of PMT to account for the Experiential/Fear Factor. This framework provides a strong multidimensional model that is relevant to the Kenyan *boda boda* sector, where safety is often a negotiation between personal fear, social image, and practical barriers.

2.4 Conceptual Framework

The conceptual framework of this study represents a multi-theoretical approach to understanding the determinants of consistent helmet use. It is grounded primarily in the Health Belief Model (HBM), which suggests that health-seeking behavior is a result of a personal cost-benefit analysis. However, recognizing that university students are heavily influenced by social identity and self-agency, the framework is supported by the Theory of Planned Behavior (TPB) and Protection Motivation Theory (PMT) to bridge the "intention-behavior gap."

Perceived threat, perceived benefits Vs barriers and cues to action were the independent variables, these constructs establish the cognitive foundation for safety, and therefore the data regarding each independent variable was collected and analysed in relation to the dependent variable that is consistent helmet use.

Moderating variables included perceived self-efficacy and systemic factors such as availability of helmets provided at the MMU gate by riders. To account for the complexity of the decision-making process, the following variables were considered intervening variables; Subjective norms and protection motivation which serves as the psychological anchor that converts health beliefs into a concrete intention to act. All this ensures that the analysis accounts for both internal psychological drives and external environmental constraints

2.5 Chapter Summary

The literature reviewed in this chapter highlights a profound paradox: while there is a high global awareness of the severity of motorcycle-related head injuries, actual helmet compliance among pillion passengers in Sub-Saharan Africa remains alarmingly low. The empirical evidence suggests that in the Kenyan context, safety is a negotiated outcome influenced by perceived susceptibility, social "subjective" norms, and immediate contextual barriers such as helmet hygiene and availability. The review also identifies a significant research gap that is, existing studies largely overlook the pillion passenger's role as an active decision-maker. This gap shows the need for the present study to examine the psychological and contextual determinants of consistent helmet use at Multimedia University.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter presents the methodology employed in this study, detailing the research design, study site, target population, sampling procedures, data collection methods, and analytical approaches. The aim is to provide a clear account of how data were systematically collected and analyzed to examine the relationship between risk perception and consistent helmet use among Multimedia University (MMU) students. Ethical and logistical considerations are also discussed to demonstrate adherence to research standards and safeguards for participant welfare.

3.1 Study Design

The study adopted a cross-sectional analytical design using a mixed-methods approach. Quantitative data were collected through a structured questionnaire to measure helmet-use behaviour and risk perception, while qualitative data was obtained via a focus group discussion (FGD). This approach allowed for both measurement of behavioural patterns and exploration of underlying attitudes, peer influence, and contextual factors affecting helmet use.

3.2 Study Site

The study was conducted at Multimedia University of Kenya, located along Magadi Road in Nairobi. MMU hosts students from diverse socio-economic backgrounds. Motorcycle taxis (boda bodas) are a common mode of transport among students, facilitating travel between the campus, nearby shopping centers, and public transport hubs.

3.3 Target Population

The target population comprised all MMU students who use motorcycles as pillion passengers. The accessible population included students present on campus during the data collection period who reported at least one motorcycle pillion trip within the past three months. The unit of analysis was the individual student.

3.3.1 Inclusion Criteria

Registered MMU undergraduate or postgraduate student.

Has travelled as a pillion passenger on a motorcycle at least once in the past three months.

Provided informed consent to participate.

3.3.2 Exclusion Criteria

Students who do not use motorcycles at all.

Students unavailable during the data collection period.

Students unwilling to participate.

3.4 Sample Size and Sampling Techniques

A sample size of approximately 325 students was targeted for the structured questionnaire component of the study, while 10 participants were purposively selected for the focus group discussion. The questionnaire sample size was determined using a standard formula for proportions based on the assumed prevalence of consistent helmet use, desired confidence level of 95 percent ($p < 0.05$), and margin of error, with adjustments for non-response.

A stratified sampling strategy was applied: Students were stratified by faculty and year of study to ensure representation across programmes and levels. Within each stratum, convenience sampling was used to select participants who met the inclusion criteria. Data collection occurred in classrooms, hostels, and common areas with prior permission from university authorities.

3.5 Data Collection Tools and Administration

Data was collected using two primary tools (see appendices I & II):

1. Structured Questionnaire – Self-administered questionnaires captured:

Socio-demographic characteristics (age, gender, programme, and year of study,)

Riding patterns and frequency of motorcycle use.

Helmet-use behaviour and factors influencing use.

Risk perception, including perceived susceptibility to crashes, severity of injury, and perceived benefits/barriers to helmet use (drawing on constructs from the Health Belief Model, Protection Motivation Theory, and Theory of Planned Behaviour).

Contextual and attitudinal factors, including peer influence, perceived enforcement, helmet availability.

2. Focus Group Discussion (FGD) – A single FGD was conducted with 10 purposively selected students, 5 males and 5 females representing diverse faculties, genders, and study levels. Discussions explored attitudes, beliefs, peer influence, perceived risk, and barriers or facilitators of helmet use. The session was audio-recorded and transcribed for analysis.

3.6 Data Analysis and Presentation

Quantitative data was exported to SPSS v.22 for cleaning and analysis. Descriptive statistics included frequencies, percentages, means, and standard deviations (or medians and interquartile ranges) depending on variable type. Measures of association employed to examine relationships

between a selected socio-demographics variables and riding patterns and riders' experiences. Qualitative data from the FGD were transcribed and subjected to thematic analysis, identifying patterns in attitudes, social norms, perceived risks, and barriers or facilitators to helmet use. Data triangulation between quantitative and qualitative findings was employed to enhance the robustness and interpretability of results. Findings were presented using tables, charts, and narrative descriptions, clearly illustrating patterns of helmet use and associated risk perceptions among MMU students.

3.7 Ethical and Logistical Considerations

Ethical approval was obtained from the MMU Ethics Review Committee. Participants gave informed consent after receiving information on the study purpose, voluntary participation, and right to withdraw without penalty. Anonymity and confidentiality were maintained; no identifying information was reported in outputs. Data was securely stored in password-protected digital files and used solely for academic and road safety purposes. Logistical arrangements, including permissions from university authorities, were made to facilitate smooth access to participants and appropriate venues for data collection.

CHAPTER 4: FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents and discusses the research findings on the risk perception as an influencing factor on helmet use by university students as pillion passengers of motorcycle taxis. The findings are presented using tables, figures, and graphs to highlight the studying findings. The chapter follows the research objectives: social and demographic characteristics; prevalence of the helmet uses by students as pillion passengers; students' perceptions of risk for crash and injuries while using motorcycle taxis; the relationships between socio-demographics, riding patterns and riding experiences; the association of risk dimension and helmet use; and finally, the contextual and attitudinal factors that influence or hinder helmet use. The presentation will intertwine both findings and support with the existing literature. A chapter summary will also be provided.

4.1 Demographics and background of the study participants

The study explored the basic social and demographic characteristics of the study participants whose data was collected using the primary questionnaire.

Registration status of the student at Multimedia University.

Table 4.1: Registration status of the participation as a student

Registered Student	Multimedia	Number of Participants	Percent
No		4	1.8
Yes		321	98.2
Total		325	100.0

About 98.2 percent (n=321) of the study participants reported that they are registered students of Multimedia University at the time of study while only 1.4 percent (n=4) reported not to be registered students of the university. It is also worth noting that all the participants reported to have travelled on a motorcycle taxi in the past three months prior to the study, which qualified them as participants.

Age of the participants

Of importance to this study was the age of the participants, which was in the range of 17 to 26 years of age, which is the traditional age for college going students in Kenya, with majority clustering around 18 to 24 years, implying that there were mainly in the first to fourth years of study. The ages of the study participants are tabulated in the Table 4.2.

Table 4.2: Age of the Participant

Table 4.2: Age of the Participant

Age	Number of Participants	Percent
17 – 19 years	67	20.1
20 – 22 years	218	67.1
23 – 25 years	38	11.7
25 and older	2	0.1
Total	325	100.0

In the lowest age category of 17 – 19 years had 20.1 percent (n=67) of the study participants, age 20 – 22 years comprised of 67.1 percent (n=218) of the participants, while age 23 – 25 years had 11.7 percent (n= 38) of the participants. The oldest category had only 0.1 percent (n=2) of the participants, the reason being that these could be students in the 5 or 6-year degree programmes or had overstayed at the university for various reasons. The ages of the study participants mirror those of two similar studies conducted in South East Asia in Thailand and Cambodia and where they were aged 18 to 26 years (Chumpawadee, et al., 2015; Yoshida & Koyanagi, 2018).

Gender of the study participants

Gender of the participants was an important variable in this study, as previous research has shown that males and females often differ in their travel behavior, risk perception, and use of transport modes, including motorcycle use (Polk, 2003). The gender distribution is presented in Table 4.3.

Table 4.3: Gender of the study participants

Gender	Number of Participants	Percent
Female	144	44.3
Male	175	53.9
Other	1	0.3
Prefer not to say	5	1.5
Total	325	100.0

As illustrated on Table 4.3, female participants comprised of 44.3 percent (n=144) of the study sample while male participants were slightly more than half, comprising of 53.9 percent (n=175). One study participant indicated other gender while 1.5 percent (n=5) preferred not to report their gender. This shows that there was an even distribution of the gender of the study participants.

Faculty of the study participant

The study also reported the faculty that the study participants belonged to and the distribution is presented in Table 4.4.

Table 4.4: Faculty that the study participants is affiliated to

Faculty of the student	Number of Participants	Percent
Faculty of Business	83	25.5

Table 4.4: Faculty that the study participants is affiliated to

Faculty of Computing and Information Technology	57	17.5
Faculty of Engineering	53	16.3
Faculty of Media and Arts	50	15.4
Faculty of Science	50	15.4
Faculty of Social Sciences	32	9.9
Total	325	100.0

As reported in Table 4.4, a quarter of the study participants (n=83) were from the Faculty of Business, 17.5 percent (n=57) were from the Faculty of Computing and Information Technology, 16.3 percent from the Faculty of Engineering, while the faculties of Media and Arts and Pure Sciences had each 15.4 percent (n=50) of the participant, and lastly the Faculty of Social Sciences had the least number of participants comprising of 9.9 percent (n=32).

Year of study

Of importance to the study was also the year in which the students were reported

Table 4.5: Year of study of the participant

Year of study	Number of Participants	Percent
1st Year	44	13.5
2nd Year	112	34.5
3rd Year	105	32.3
4th Year	54	16.6
5th Year	10	3.1
Total	325	100.0

As reported in Table 4.5, the study participants were drawn from first year to fifth year of study.

Frequency of motorcycle use per week

The number of times the study participants use motorcycle taxis as passenger per week was also assessed and reported in Table 4.6.

Table 4.6: Frequency of use of motorcycle taxi as a passenger per week

Frequency of use	Number of Participants	Percent
1 - 2 Days	160	51.9
3 - 4 Days	116	37.7
5 or more Days	32	10.4
Total	308	100.0

The sample size for the frequency of use of motorcycle taxi as passengers per week was adjusted because there were 17 participants who had indicated that they rode for 0 days in the past week, so they were removed.

Main purpose for using motorcycle taxis

The purpose for which the study participants use motorcycle taxis was assessed by the study. The findings are reported in Table 4.7

Table 4.7: Purpose of using motorcycle trips

Purpose of_motorcycle trips	Number of Participants	Percent
Going to or from class	251	77.2
Going to shops or nearby centres	45	13.9
Social or leisure activities	24	7.4
Other	5	1.5
Total	325	100.0

4.2 Prevalence of helmet use at MMU

The prevalence of helmet use among the study participants was assessed in order to establish their awareness of their own safety.

Availability of the helmet

The participants were asked to report whether the helmets are available while they are using motorcycle taxis. These findings are reported in Table 4.7

Table 4.8: Availability of the helmets

Situation with helmets	Number of Respondents	Percent
The rider provides a helmet	60	27.9
Sometimes the rider provides and sometimes I carry my own	8	3.7
There is usually no helmet available	143	66.5
Other	4	1.9
Total	357	100.0

The findings presented in Table 4.8 showed that 27.9 percent (n=60) of the respondents reported that that riders provide the passengers with the helmet. Another 3.7 percent (n=8) of the participants indicated that sometimes the rider provides the helmet while other time the passengers bring their own helmets. Further, nearly two-thirds of the respondents (n=143) reported that helmets are usually unavailable with only 2 percent (n=4) reported unspecified other reasons. These findings are consistent with evidence from Kenya indicating low helmet access and usage among motorcycle taxi passengers. The A Fare Price report by the FIA Foundation found that only 15% of pillion passengers were observed wearing helmets, highlighting limited availability and use. The report further notes that low helmet prevalence remains a major contributor to motorcycle-related injuries, reinforcing the role of access barriers in shaping passenger safety behaviours.

The FGD participants also gave their views on the riders having a second helmet for use by the

passengers.

Helmet use is not a priority. Wearing helmets is not part of the passenger culture. Lack of personal habit. Riders sometimes refuse to provide helmets. Passengers rely on personal judgment to select a "safe" rider. Some passengers feel sympathy for riders, believing it is expensive for them to purchase two helmets. [Views from the FGD1 participants on the riders having a second helmet for the passengers].

It is apparent that both the riders and passengers are usually conscious on the need for two helmets, one for each of them. There are however attitudinal barriers that makes the second helmet unavailable to the passengers. There was a gender dimension that came from the reflections of the FGD1 participants who further asserted that:

The girls didn't think so but it would be impossible to wear helmets if you have certain hairstyles like plaited ponytails. It would destroy your carefully curated appearance like if you have make-up on. [FGD participants views on gender reasons form non-use of helmets.

These findings point to a complexity of reasons including grooming and personal reservations (Konlan, & Hayford, 2022; Nyachieo & Kayi, 2022)

Prevalence of helmet use

The prevalence of the helmet use is determined by the number of times that the study participants reported to use the helmets while riding on motorcycles as passengers. The prevalence of helmet use is reported in Table 4.9.

<i>Table 4.9: Frequency of helmet use among study participants</i>		
Frequency of helmet use	Number of Participants	Percent
Never	198	60.9
Rarely	66	20.3
Sometimes	32	9.9
Most of the time	17	5.2
Always on every trip	12	3.7
Total	325	100.0

From the findings, it is clearly indicative that helmet use among the study participants with quite low, with about 61 percent (n=198) reported to have never used helmet. This implies that there is low prioritisation of their own safety given that only about 40 percent of the respondents reported various degrees of helmet use. About half of the latter group, 20.3 percent (n=66) reported that they rarely use helmets and about 10 percent (n=32) reporting that they sometimes wear helmets. Another 5.2 percent (n=17) reported to use their helmets most of the times while only a small minority of 3.7 percent (n=12) use helmets on every trip while riding on motorcycle taxis. A further

analysis of the association of helmet use based on gender showed no statistically significant findings because there were higher numbers of non-use of helmet by both genders.

These findings are complemented by the focus group discussion [FGD1] participants, where out of the ten participants, only three reported to have worn a helmet in the past three months. Upon probing the primary participants for the reasons why they fail to use helmets, they offered a number of these reasons. The main ones that came from the open-ended question in the questionnaire and the FGD participants, which included: believe that the area around Multimedia University is not very risky to warrant the use of helmet, the distance from Rongai to MMU is too short and thus no need to use the helmet, they cannot afford to buy own helmet, the safety gadgets spoil the passenger's hair and make-up, sometimes they forget to ask for the helmet, they do not like helmets, their friends never wear helmets as well [i.e., peer influence and non-use of helmet has become a norm among colleges students], helmets can affect their eye glasses, they are afraid of contaminating skin diseases, available helmets are usually dirty, the distance they ride is usually short to require the use of helmet, discomfort that comes with wearing helmet such as feeling too hot, and lastly, the rider do not offer or provide helmets. Participants' reports of helmet discomfort and beliefs that short or low-risk trips did not require a helmet are echoed in other studies.

Past research has also found low prevalence of helmet use by the riders and passengers. For example, in Greater Athens, Greece, 46% of non-users said that helmets were uncomfortable especially in warm weather and 18% indicated low perceived need during low-speed travel (Skalkidou et al., 1999). These reasons explain both the perception about safety and personal preferences whether to use or not to use helmet.

4.3 Students' perceptions of risk for crash and injuries

Risk perception is widely recognized as a key psychological factor influencing individuals' judgments and behaviors in transport settings. It shapes how people evaluate the likelihood and severity of potential crashes, as well as their willingness to adopt safety measures (Rundmo et al., 2011). In this study, the participants were asked to indicate their perception of motorcycle crash risk using a number of items that assessed their consensus about the likelihood of risk occurring while riding on a motorcycle as reported in Table 4.10.

Table 4.10: Assessment of participant's risk perception on motorcycle crash

Description	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Total
I am at high risk of being injured in a motorcycle crash when I ride	37 (11.4%)	34 (10.5%)	88 (27.1%)	54 (16.6%)	112 (34.5%)	325

as a passenger around MMU						
Even on short trips near campus, a serious motorcycle crash can happen.	24 (7.4%)	23 (7.1%)	56 (17.2%)	56 (17.2%)	166 (51.1%)	325
Wearing a helmet greatly reduces my chance of serious injury in a motorcycle crash.	19 (5.9%)	8 (2.5%)	35 (10.8%)	53 (16.3%)	210 (64.6%)	325
I would feel comfortable insisting on a helmet before getting on a motorcycle.	31 (9.5%)	31 (9.5%)	77 (23.7%)	47 (14.5%)	139 (42.8%)	325

As results in Table 4.10 show, there was a great consensus by the responded that they have a great awareness of the potential risk that can happen when they are passengers on a motorcycle. About half (n=166) of the respondents agreed that they were at high risk of being injured when riding on a motorcycle as a passenger around Multimedia University environment. Only about 22 percent (n=71) had disagreed about the aspect of high risk of injury and 27 percent (n=88) were not sure about being exposed to the risk of injury as motorcycle passengers.

In regard to the perception of risk of injury while on short motorcycle trip on or near campus, there was equally a great consensus by the participants that length or duration of the ride does not necessarily matter for a crash to happen. More than two thirds of the participants (n=222) agreed that even on short trips, motorcycle accidents can happen. On the contrary, only about 15 percent (n=47) of the participants disagreed on this fact that accidents do happen even on short rides and 17 percent (n=56) were not sure about this occurrence.

Related to perception of risk is the safeguards that individuals may take into action for not necessarily preventing the occurrence of motorcycle crash but reducing its severity. The responds were asked to indicate whether wearing helmets when riding as a motorcycle passenger reduces the chances of serious injury. Here, an excessive majority of the participants of over 80 percent (n=263) agreed and supported the fact that wearing helmets do reduce the intensity and severity of motorcycle crashes on that part of the passenger (and by extension to the rider). Only 8.4 percent (n=27) disagreed to this fact while another 10.8 percent (n=35) unsure whether wearing helmets can indeed prevent seriousness of motorcycle crash.

These findings indicate that participants generally demonstrated a high level of awareness regarding the risks associated with motorcycle travel. This aligns with existing literature which shows that risk perception plays a critical role in shaping safety behaviour. Individuals who perceive a higher

likelihood and severity of injury are more likely to adopt protective measures (Rundmo & Iversen, 2004)

Lastly on the perception, the participants were asked whether they insist on wearing helmet prior to boarding motorcycle as passengers. This is in fact as assessment of awareness of not only their own safety but on the likelihood of being involved in a crash. There was also high level of agreement that insisting on wearing helmet prior to motorcycle trips is indeed an indicator of perception of risk by the passengers—with over half of the participants (n=186) in support of this fact. On the other hand, close to 20 percent (n=62) disagreed on insisting on wearing helmet prior to boarding a motorcycle taxi and another 23.7 percent (n=77) being unsure on insisting on the use of helmet.

The findings on the risk perception by the study participants were augmented with those from the FGD participants who offered a variety of reasons as captured verbatim as below:

Risk perception is shaped by past riding experiences. Students interpret similar experiences differently. Motorcycle use is normalized within the MMU community, making it feel safer. Students often trust the rider who regularly transports them.
(Reflections on risk perceptions by FGD 1 participants).

Generally, it appears that the participants are aware of the safety and the risks that they expose themselves to when they fail to use any of the safety equipment while riding as passengers of motorcycle taxis. This awareness may then be used to influence positive behaviour change of safety.

4.4 Relationships of socio-demographics, riding patterns & riding experience

To explore the relationship between selected socio-demographics, riding patterns and riding experience the study employed a number of statistical analyses. The participants were asked if they consider means of transport other than motorcycle. The results are presented in Table 4.11 and it is the basis for exploring as the associations with socio-demographics variables.

Table 4.11: Participation option of considering other means of transport

Consider other means of transport	Number of Participants	Percent
No	31	9.5
Yes	294	90.5
Total	325	100.0

As reported in Table 4.11, an overwhelming majority of over 90 percent (n=294) of the participants would consider other means of transport besides motorcycle with only 9.5 percent of the participants reporting that they will not consider other means of transport. The focus group discussion participants stated the reasons why they prefer motorcycle transport over other modes.

These are the views they shared:

Time and Speed that motorcycles were perceived as the fastest mode of transport, allowing students to save time. Convenience - unlike matatus, which often wait until all seats are filled, boda bodas carry one passenger and leave immediately, making them more convenient. Accessibility - Motorcycles can reach areas that matatus and tuk-tuks cannot easily access, making them more accessible. [Views on use of motorcycle over other modes transport by FGD1 participants]

It is apparent that motorcycle transport is chosen over the other modes of transport because it offers flexibility and convenience that is not ordinarily the case with others. However, the study participants never specified the other modes but the most commonly available is the public transportation by use of matatus and buses.

Further analyses we conducted using Chi-square test on age, gender, year of study and purpose of use of motorcycle and are reported in Table 4.12.

Table 4.12: Chi-square test of association of considering other means of transport				
Socio-demographic variable		Yes	No	χ^2, p, n, df
Age	17 – 19 years	61	6	$\chi^2=1.30$ $p=.72$ df = 3 n=325
	20 – 22 years	195	23	
	23 – 25 years	36	2	
	25 and older	2	0	
Gender	Female	126	18	$\chi^2=3.66$ $p=.30$ df = 3 n=325
	Male	163	12	
	Others	1	0	
	Prefer not to say	4	1	
Year of study	1st Year	40	4	$\chi^2=1.21$ $p=.88$ df = 4 n=325
	2nd Year	101	11	
	3rd Year	97	8	
	4th Year	47	7	
	5th Year	9	1	
Purpose of use for motorcycle	Going to or from class	226	25	$\chi^2=2.28$ $p=.52$ df = 3 n=325
	Going to shops or nearby centres	43	2	
	Social or leisure activities	21	3	
	Other	4	1	

For the four variables assessed for their association with the participants deciding to use other means of transport besides motorcycles had no statistically significant chi-square variables. This implies that their age, gender, year of study and purpose for the motorcycle use are not the sole

determinants of considering other means of transport. This finding is consistent with existing literature which suggests that travel behaviour is not solely explained by socio-demographic characteristics but is significantly influenced by broader environmental and structural factors such as accessibility, availability of alternatives, and the built environment (Ewing & Cervero, 2010). This means that further investigations using alternative variables may be conceivable to explain why participants may choose other means of transport to go about their business including attending classes, for business/shopping or for leisure.

4.5 Association of risk dimension perception and helmet use

Examining the dimension of risk and its influence on the helmet use was also explored by the study. Firstly, the respondents were asked to indicate their knowledge of laws on helmet use and the party that shoulders the responsibility of helmet use. Table 4.13 presents the findings on the knowledge of the legal requirement on helmet use.

Table 4.13: Legal requirement on helmet use

Law requires helmet use	Number of Respondents	Percent
No, I was not aware	66	20.3
Not sure	35	10.8
Yes, I was aware	224	68.9
Total	325	100.0

Findings indicate that slightly more than two-thirds of the participants (n=224) were aware about the legal requirement that both the rider and their pillion passengers were expected to wear helmets with only 20 percent (n=66) reporting lack of awareness of this requirement. Only 10.8 percent (n=35) reported not to be sure about the requirement by the law about helmet usage. This finding implies that knowledge of legal requirement may trigger the action of wearing the safety gear while riding on motorcycle as a passenger.

To further gain insights on the legal requirement on helmet use, the respondents were also asked to report who is responsible for safety gear use according to the traffic law. The findings are reported in Table 4.14.

Table 4.14: Party responsible for helmet use

Responsibility of helmet use	Number of Respondents	Percent
The motorcycle rider	95	29.23
The passenger	4	1.23
Both the rider and the passenger	177	54.46
I am not sure	49	15.08
Total	325	100.0

Although the responsibility of safety is borne by individuals, the study findings indicated that there was consensus on the consciousness of both the rider and passenger on helmet use. More than half of the participants (n=177) reported that it is a joint responsibility of both the riders and passengers to wear helmet with only about 1 percent (n=4) stating that the passenger is solely responsible and about 30 percent (n=95) reporting that the rider is responsible and another 15 percent (n=49) were not sure whose responsibility it is. This shows that even though one's safety is in the individual's subconscious, there is always an expectation that it's another person's responsibility to ensure the passengers safety while riding on motorcycles. The FGD participants also held similar views:

All participants reported that they were aware that the law requires helmet use for both riders and passengers. However, they stated that this knowledge does not influence their behaviour because: Helmet laws are rarely enforced. Helmet use is not part of the prevailing culture. [FGD1 participants' views on the legal requirement to wear helmet as both riders and passengers.]

Similar findings have been reported in previous studies, which highlight that ambiguity in responsibility between riders and passengers can reduce consistent helmet use, as safety behaviour becomes diffused rather than individually enforced (Pervin et al., 2009).

4.6 Contextual and attitudinal factors

The contextual and attitudinal factors that influence the helmet use are majorly shaped by one's experience in motorcycle crash. These experiences are reported in Table 4.15

Table 4.15: Respondent's experience in motorcycle crash

Involved motorcycle crash	Number of Respondents	Percent
Yes, I was in a crash and was injured	26	8.0
Yes, I was in a crash but was not injured	34	10.5
Yes, I was in a near crash that scared me	61	18.8
No, I have never been in a crash or near crash	198	60.9
Other	6	1.9
Total	325	100.0

The experience of getting involved in motorcycle crash as reported by the study participants has the likelihood of influencing the helmet use and consideration for other safety measures by the motorcycle passengers. There were various degrees of been involved in motorcycle crashed reported by the participants. Only about 40 percent of the participants reported to have experienced some form of crash, with 8 percent (n=26) indicating that they were involved in crashes and got injured. Another 10.5 percent (n=34) were involved in motorcycle crash but were not injured and 18.8 percent of participants (n=61) reporting to be involved in near crashes that scared them. A large

majority of 60.9 percent (n=198) reported to have never been involved in either crash or near crash while riding on motorcycles with only a small proportion of 1.9 percent (n=6) indicating other motorcycle crash experiences. Research from previous motorcycle studies shows that individuals who have experienced road traffic crashes or near-misses are more likely to adopt protective behaviors such as helmet use, as these experiences heighten perceived vulnerability and risk awareness (Hung et al., 2006; Passmore et al., 2010).

To assess how involvement in motorcycle crash may influence passengers to wear helmet while riding on motorcycles, Chi-square test of association was ran for the two variables. The findings are reported in Table 4.16.

Table 4.16: Chi-square test of association on frequency of wearing helmet and been involved in motorcycle crash

Frequency of wearing helmet	Been Involved in Motorcycle Crash					Total
	Yes, I was in a crash and was injured	Yes, I was in a crash but was not injured	Yes, I was in a near crash that scared me	No, I have never been in a crash or near crash	Other	
Never	16	18	30	130	4	198
Rarely	6	5	16	37	2	66
Sometimes	2	3	10	17	0	32
Most of the time	2	3	4	8	0	17
Always on every trip	0	5	1	6	0	12
Total	26	34	61	198	6	325

$\chi^2=24.1$, $p=.08$, $df = 16$, $n=325$

The association between the two measures had a Chi-square value of $\chi^2=24.1$ which is statistically significant at a p-value of 0.08 and 16 degrees of freedom. Examining the two most important categories of non-use of helmet (i.e., never and rarely) and having never been involved in motorcycle crash demonstrates a critical observation that one's experience (context) influences their actions (attitudes). This association shows that those participants who had an experience of motorcycle crash may consider wearing helmet for safety purposes as opposed to those who never had an accident. Although the chi-square test was limited by the number of cells with low count (i.e., slightly more than half) raising questions on its validity, it still offers a basis for exploring if contexts indeed influence the attitudes that compel actions for the motorcycle users.

The FGD participants held similar views on the possibility of getting injuries during crash or the motorcycles getting near-crashes. Their reflections on this is as reported here below.

The thought that you won't be unlucky twice and so you won't be involved in an

accident again. If people in your environment don't wear helmets you also won't after sometime. You forget the experience over time unless regularly reminded of the danger. You have hope for the future and that God will protect you. You are already used to the hard ghetto life and it gives you street cred anyway. [Thoughts about getting involved in motorcycle crashes or near crashes by the FGD1 participants]

These findings from the probing on the importance of the helmet use as a way of averting the severity of injury by the FGD participants showed that indeed even after witnessing crashes, the participants' helmet usage is still low. It implies that the attitude change may not be necessarily influenced by past experiences with crashes. Their insistence on the non-use of helmet further asserts the attitudes towards helmet usage as reported here below.

The environment. Most people don't wear helmets so even if you know the culture I am not there to help you wear helmets. There is no one enforcing helmet use. Reminding us every now and then would be helpful. The distance and route also feel safe so no need for one. [Attitudes on helmet non-use by FGD1 participants].

4.7 Chapter summary

The findings from this chapter posit important trends and knowledge about the students who use motorcycle taxis for their mobility in Kenya and elsewhere in the world. The participants were drawn from a cross-section of schools and faculties at the institution and represented all levels of undergraduate student body. The findings paint a scenario where students seldom consider their safety by wearing the basic safety gadget, the helmet, besides other measures. This reason for this could be contextual (i.e., unavailability, condition of the helmet, general practice by the motorcycle passengers, own's experience with accident and injury) as well as attitudinal (risk perception, legal requirement or condition of the helmet). Regardless of what compels the use or non-use of safety equipment, the findings are apparent that the risk perception among college students is low and considerations for sensitising and raising awareness is necessary.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The chapter summarises and presents the summary of the findings. It also draws conclusion based on the study objectives. The recommendations that will emanate from the study are presented. This chapter summary synthesizes research on the safety behaviors and perceptions of student pillion passengers using motorcycle taxis. The study explored the demographic trends, risk perceptions, and the various contextual and attitudinal factors that either promote or hinder the safety practice of wearing helmets while using motorcycle taxis when commuting. From the analysis of the social and demographic characteristics, the findings consistently showed that the majority of student pillion passengers are younger individuals, which ranged from late adolescence (17–19 years) to young adulthood (20–24 years). In terms of gender, there was a slightly higher proportion of male passengers (about 53 percent) among the study participants with the females being 46 percent. However, this gender distribution may not necessarily reflect the student population. The participants were drawn from across all the levels of undergraduate and came from all the schools/faculties at the institution. Majority also reported to use motorcycle taxis for an average of 1 – 4 days a week which represented nearly 85 percent of the study participants and mostly using the taxis to travel to school to attend classes.

The prevalence of helmet use by the student passengers is alarmingly low with only with less than 10 percent reporting to either use helmet always or most of the time, ranging from 3.7 percent to 5.2 percent. A majority of them representing 60 percent had never used helmet during their rides. The reasons cited for wearing or non-wearing were that the rider provides and unavailability of the helmets respectively. The participants perceptions of crash and injury were majorly informed by having been involved in crash or near crash suggesting that risk Perception is largely experiential, and as a result, even in the presence of moderate to high awareness of legal requirements and potential consequences, helmet use remains inconsistent because the perceived susceptibility to harm is not sufficiently significant for those without prior exposure to crashes.

For the contextual and attitudinal influence of helmet use, there were multiple factors that act as either facilitators or barriers to helmet use. The main hinderance or barriers was non-availability of helmet—with the most common reason cited being that riders often do not provide an extra helmet. There were also practical concerns for the non-use, the costs of quality helmets by the riders, discomfort in hot weather, and concerns about hygiene by the passengers. There are also cases of application of social norms, with the peers discouraging its use which is seen as old-fashioned or unnecessary. The other contextual influences are the legal requirement to wear helmets and the presence of police to enforce traffic rules. Non-use of helmet is also driven by a number of reasons

including groom (for women passengers), having witnessed and experienced a motorcycle crash and there is no corresponding attitude change of risk perception or safety proactivity, as well as riders's perception that passengers may not necessarily require helmet.

5.1 Study Recommendations

This section presents the study recommendations that are informed by the findings. The study recommendations are informed by the discussions that came forth from the focus group participants and practical solutions that are aimed at addressing the safety concerns about the university students who use motorcycle taxis as their primary or secondary mode of transportation.

- 1) Sensitisation and public awareness campaigns to be intensified among college student passengers, given the observed low levels of helmet use. These campaigns to go beyond general messaging to include peer-led initiatives, such as the use of student influencers and social media platforms, as well as structured debates and forums within university clubs and societies to stimulate engagement and attitude change.
- 2) Partnership with the safety crusaders and advocacy groups to work with students' communities on how to enhance their safe rides with motorcycles.
- 3) The government through the responsible agencies and ministries to prioritise safety and prepare information packages to be disseminated to motorcycle users-riders and passengers.
- 4) By integrating road safety education into the university curriculum and co-curricular activities institutions such as Multimedia University and other tertiary institutions will ensure that student body is well informed about the risks that are associated on using motorcycles.
- 5) Student organizations and associations to promote a culture of safety by encouraging members to refuse boarding motorcycles without helmets. This peer-driven accountability can help shift helmet use from an individual choice to a shared social expectation.
- 6) The government, through relevant agencies, to enhance enforcement of helmet laws by targeting both riders and passengers. Collaboration with stakeholders such as ride-hailing services (e.g., Bolt and Uber) to be encouraged to ensure that riders consistently carry an extra helmet for passengers.

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APPENDIX I: Primary Questionnaire

MMU Helmet Use and Risk Perception Questionnaire

This survey aims to understand motorcycle use, helmet practices, and risk perceptions among MMU students to inform road safety improvement efforts. Participation is voluntary and responses are anonymous.

Section A: Consent and Eligibility

1. Consent

Multiple choice

Do you agree to take part in this study on motorcycle use and helmet safety?

Yes, I agree

No, I do not agree

2. Student status

Multiple choice

Are you a registered student at Multimedia University of Kenya?

Yes

No

3. Motorcycle use

Multiple choice

In the past 3 months, have you travelled as a passenger on a motorcycle at least once?

Yes

No

Only respondents who answer “Yes” to Questions 2 and 3 continue.

Others are taken to the end of the form.

Section B: About You

4. Age

Short answer

How old are you?

5. Gender

Multiple choice

Female

Male

Other

Prefer not to say

6. Faculty

Dropdown or multiple choice

Which faculty are you in?

Faculty of Social Sciences

Faculty of Business

Faculty of Media and Arts

Faculty of Computing and Information Technology

Faculty of Engineering

Faculty of Science

7. Year of study

Multiple choice

1st year

2nd year

3rd year

4th year

5th year

Postgraduate

Section C: Your Motorcycle Use and Helmet Practice

8. Frequency of motorcycle use

Multiple choice

In a typical week during the semester, on how many days do you use a motorcycle as a passenger?

0 days

1–2 days

3–4 days

5 or more days

9. Main purpose of most trips

Multiple choice

What is the main purpose of most of your motorcycle trips?

Going to or from class

Going to shops or nearby centres

Social or leisure activities

Other

10. Helmet availability

Multiple choice

On most trips as a passenger, what is the usual situation with helmets?

The rider provides a helmet

I carry my own helmet

Sometimes the rider provides and sometimes I carry my own

There is usually no helmet available

11. Helmet use frequency

Multiple choice

In the past 1 month, how often did you wear a helmet when riding as a passenger on a motorcycle?

Always on every trip

Most of the time

Sometimes

Rarely

Never

12. Main reason for not always wearing a helmet

Multiple choice

(Display this question only if "Always on every trip" was NOT selected in Question 11.)

What is the main reason you do not always wear a helmet?

The rider does not offer a helmet

The helmet looks dirty

The helmet feels uncomfortable or too hot

The distance feels too short to need a helmet

I do not want to spoil my hair or makeup

My friends also do not wear helmets

I believe the area around MMU is not very risky

I cannot afford my own helmet

I forget to ask for a helmet

Other

Section D: Risk Perception and Attitudes

For Questions 13–18, use a 5-point Likert scale: (1 being strongly disagree and 5 being strongly agree)

Strongly disagree – Disagree – Not sure – Agree – Strongly agree

13. I am at high risk of being injured in a motorcycle crash when I ride as a passenger around MMU.

14. Even on short trips near campus, a serious motorcycle crash can happen.

15. Wearing a helmet greatly reduces my chance of serious injury in a motorcycle crash.

16. I would feel comfortable insisting on a helmet before getting on a motorcycle.

17. Before choosing a motorcycle for most trips, do you usually consider other transport options (such as walking, matatus, or private vehicles)?

Multiple choice

Yes

No

18. Why do you usually choose a motorcycle as your main mode of transport?

Multiple choice

It is the only practical option available to me

It is the fastest option, even though I am aware of the risks

It is more affordable than other options,

It is more convenient than other options,

I believe motorcycles are not very risky for short trips

Other

Section E: Legal Awareness and Responsibility

19. Awareness of helmet law

Multiple choice

Before today, were you aware that Kenyan traffic law requires both the rider and the passenger on a motorcycle to wear a helmet?

Yes, I was aware

No, I was not aware

Not sure

20. Responsibility for providing a helmet

Multiple choice

According to Kenyan law, who is responsible for ensuring that a passenger has a helmet?

The motorcycle rider

The passenger

Both the rider and the passenger

I am not sure

Section F: Experience and Suggestions

21. Crash or near-crash experience

Multiple choice

Have you ever been involved in a motorcycle crash or near-crash as a passenger?

Yes, I was in a crash and was injured

Yes, I was in a crash but was not injured

Yes, I was in a near crash that scared me

No, I have never been in a crash or near crash

22. What would help you wear a helmet more often?

Paragraph answer

In your own words, what one or two things would make it easier for you to wear a helmet every time you ride as a passenger?

APPENDIX II: Focus Group Discussions Guide

1. Who has used helmets in the past 3 months?
2. What are the reasons for not wearing helmets?
 - 2b . How do you decide which rider is trustworthy so that you don't feel the need to wear a helmet?
3. Why do you choose motorcycles over other transport options?
4. Why do you think there are different views on the risk of riding a bodaboda between Multimedia University and Rongai?
5. Why do you feel it's safer not to use a helmet because the distance is short?
 - 5b.. Would you change your decision if it was raining, at night, or busy on the road? Why?
6. What stops you from insisting or demanding that the rider gives you a helmet even if it's his own helmet?
7. Why is there a gap between awareness and behaviour when it comes to helmet use?
8. Why do you think experiencing or witnessing crashes does not always lead to behaviour change?
9. How is helmet use viewed among students—is it normal, unnecessary, or extra? Why?
 - 9b. Do people around you wearing or not wearing helmets influence your decision in any way?
10. Does gender in any way influence helmet wearing?
 - 10b. Isn't your safety more important than makeup or appearance?
11. Does knowing helmet laws actually affect your behaviour?
12. What strategies can be suggested to promote helmet use at Multimedia University of Kenya?

APPENDIX III: Study Area Map

