

Enhancing understanding on safe motorcycle and three-wheeler use for rural transport

Final Report



Transaid, Amend and TRL

RAF2114A

June 2019

Preferred citation: Bishop, T. Barber, C. Adu, J. Afukaar, F. Muhia, G. Mwaipopo, H. Kiracho, E. Rettie, N. Krasnolucka-Hickman, A. Divall, D. Porter, G. 2018. Enhancing understanding on safe motorcycle and three-wheeler use for rural transport, Final Report, RAF2114A. London: ReCAP for DFID.

For further information, please contact: Tom Bishop, Amend, tbishop@amend.org

ReCAP Programme Management Unit
Cardno Emerging Market (UK) Ltd
Oxford House, Oxford Road
Thame, OX9 2AH United Kingdom



The views in this document are those of the authors and they do not necessarily reflect the views of the Research for Community Access Partnership (ReCAP) or Cardno Emerging Markets (UK) Ltd for whom the document was prepared.

Cover photo: Amend (Bagamoyo, Tanzania)

Quality assurance and review table

Version	Author(s)	Reviewer(s)	Date
1	Tom Bishop and Caroline Barber		31 st October 2018
		Annabel Bradbury (ReCAP PMU)	9 th November 2018
		SubhamayGangupadhy (ReCAP TP)	23 rd November 2018
2	Tom Bishop, Caroline Barber, Juliet Adu, Francis Afukaar, Grace Muhia, Hans Mwaipopo, Elizabeth Ekirapa-Kiracho, Neil Rettie, Aggie Krasnolucka-Hickman, Darren Divall, Gina Porter		31 st January 2019
		Annabel Bradbury (ReCAP PMU)	13 th February 2019
		Joseph Haule (ReCAP PMU)	15 th March 2019
		Subhamay Gangupadhy (ReCAP TP)	15 th March 2019
3	Tom Bishop, Caroline Barber, Juliet Adu, Francis Afukaar, Grace Muhia, Hans Mwaipopo, Elizabeth Ekirapa-Kiracho, Neil Rettie, Aggie Krasnolucka-Hickman, Darren Divall, Gina Porter		13 th June 2019
		Annabel Bradbury (ReCAP PMU)	20 th June 2019

ReCAP Database Details: Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks

Reference No:	RAF2114A	Location	Ghana, Kenya, Tanzania and Uganda
Source of Proposal	ReCAP Programme Management Unit	Procurement Method	Open tender
Theme	Transport Services	Sub-Theme	Motorcycles and three-wheelers
Lead Implementation Organisation	Transaid	Partner Organisations	Amend and TRL
Total Approved Budget	GBP 351,890	Total Used Budget	GBP 351,890
Start Date	18 th September 2017	End Date	30 th June 2019
Report Due Date	31 st January 2019	Date Received	31 st January 2019

Contents

Abstract	v
Key words	v
Acknowledgements	v
Acronyms, units and currencies	vi
Executive Summary	vii
1 Introduction	9
1.1 Research Objectives	9
1.2 Research Countries	9
2 Background	10
3 Approach and Methodology	11
3.1 Approach	11
3.2 Research Methodology.....	11
3.3 Stakeholder Consultation and Cross-Country Synergies	16
3.4 Research Limitations	17
3.5 Outputs.....	17
4 Results and Discussion	18
4.1 The Importance and Popularity of Motorcycle Taxis.....	18
4.2 Motorcycle Taxis are Not an Ideal Mode of Rural Public Transport.....	21
4.3 Effective Regulation by Governments	22
4.4 Legalisation and Regulation in Rural Areas	24
4.5 The Need to Professionalise the Motorcycle Taxi Sector	31
4.6 The Need for Improved Training	32
4.7 The Need for Robust Testing and Licensing.....	36
4.8 Crashes and Injuries.....	36
4.9 Sensitisation of Riders and Communities	37
4.10 Motorcycle Taxi Associations	38
4.11 Appropriate and Effective Enforcement.....	42
4.12 The Need to Reduce Crime	42
4.13 Personal Protective Equipment	44
4.14 The Need to Improve Rural Roads.....	44
4.15 The Potential of Technology	46
4.16 The Use of Motorised Three-Wheeler Taxis in Ghana.....	46
4.17 Innovations for Health-Related Trips and Emergency Transport	47
4.18 Health Services for Riders.....	48
4.19 Economic Empowerment	48
4.20 Members of Rural Communities who do not use Motorcycle Taxis.....	49
4.21 Improved Use of Data	50
5 Recommendations	50
5.1 Highest Priority Recommendations.....	50
5.2 Supporting Recommendations: Regulation of the Rural Motorcycle and Three-Wheeler Taxi Sector	52
5.3 Supporting Recommendations: Maximisation of Benefits of Rural Motorcycle and Three-Wheeler Taxis	54
5.4 Supporting Recommendations: Minimisation of Disbenefits of Rural Motorcycle and Three-Wheeler Taxis....	56
5.5 Recommendations for Further Motorcycle and Three-Wheeler Taxi-Related Research	57
6 Uptake and Embedment	57

7	Conclusions	59
8	References	60
Annex 1	Contribution to the ReCAP Logframe	61
Annex 2	Summary of 4-Day, 4-Country Workshop.....	67

Abstract

This Final Report presents the findings of the project ‘Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks’. The project was carried out in Ghana, Kenya, Tanzania and Uganda between September 2017 and January 2019.

Based on the findings of a comprehensive literature review and a stakeholder mapping and engagement exercise, an in-depth study was designed, including a number of activities that were carried out in all four countries and a number of country-specific activities. Activities included reviews of motorcycle and motorised three-wheeler regulatory frameworks and training, a survey of the benefits and disbenefits of motorcycle and three-wheeler taxis, key informant interviews and focus group discussions.

The study has revealed that motorcycle taxis are very important for rural travel, and are very popular among rural communities. They are especially important for health-related trips and also provide economic benefits, creating business opportunities, providing employment and supporting agriculture.

Despite the many benefits that motorcycle taxis provide to rural communities, riders and passengers suffer from crashes, crime, abuse and health issues, and they create safety risks for other road users. A very small proportion of people in rural areas does not – or cannot – use motorcycle taxis, but for the vast majority they are the most common form of day-to-day transport. Three-wheelers are far less prevalent in rural areas.

The results of the study can be used by governments and other key stakeholders to better understand the issues related to motorcycle taxis in rural areas and to develop policy and practice to maximise their benefits and minimise their disbenefits. This will include the uptake of two manuals that have been developed as part of this project: a motorcycle taxi instructors’ manual and an operating manual for motorcycle taxi association.

Key words

Motorcycles, Motorcycle taxis, Three-Wheelers, Rural transport, Rural access, Safety, Training, Regulatory framework, Enforcement, Africa

Acknowledgements

The authors would also like to acknowledge the invaluable input of the wider project team, including Sam Clark, Tendayi Kureya and his team at Development Data, John Hine and Cathy Green.

Research for Community Access Partnership (ReCAP)

Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

www.research4cap.org

Acronyms, units and currencies

ABS	Anti-lock Braking System
AfCAP	Africa Community Access Partnership
AsCAP	Asia Community Access Partnership
BAK	BodaBoda Safety Association of Kenya
CSO	Civil Society Organisation
DFID	Department for International Development (United Kingdom)
GBP	British pound sterling
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
km	Kilometre(s)
KSI	Killed or Seriously Injured
LATRA	Land Transport Regulatory Authority
LI2180	Legislative Instrument 2180 (Ghana)
NGO	Non-Governmental Organisation
NIT	National Institute of Transport (Tanzania)
NRSC	National Road Safety Council (Uganda)
NTSA	National Transport & Safety Authority (Kenya)
PMU	Programme Management Unit (of ReCAP)
PO-RALG	President's Office for Regional Administration and Local Government (Tanzania)
PPE	Personal Protective Equipment
ReCAP	Research for Community Access Partnership
SACCOS	Savings and Credit Cooperative Societies
SMS	Short Message System
SUMATRA	Surface and Marine Transport Regulatory Authority (Tanzania)
ToT	Training of trainers
TRA	Tanzania Revenue Authority
TRL	Transport Research Laboratory
UNRA	Uganda National Roads Authority
UKAid	United Kingdom Aid (Department for International Development, UK)
UNICEF	The United Nations Children's Fund
VETA	Vocational Educational and Training Authority (Tanzania)
WHO	World Health Organization

Executive Summary

The project ‘Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks’ was carried out in Ghana, Kenya, Tanzania and Uganda between September 2017 and January 2019.

The use of motorcycles in many African countries has increased greatly in recent years. Motorcycles are often used as taxis, with riders¹ charging a fare to carry passengers or goods. In rural areas, motorcycle taxis play a crucial role in connecting people to services and farmers to markets, and in many countries motorcycles are the most commonly found vehicle on rural roads. As motorcycles often travel off all weather roads along paths and tracks, they have changed the nature of rural transport, effectively ‘widening’ the impact of roads.

Motorised three-wheelers are also used in some countries, although their numbers are far fewer, especially in rural areas.

In some African countries, including Ghana, the use of motorcycles to carry fare-paying passengers is banned, although these bans are not always enforced, especially in rural areas. In Uganda, the use of motorised three-wheelers to carry fare-paying passengers is banned.

The overall aim of this project is to improve knowledge and understanding concerning effective ways of enabling rural people to benefit from the safe use of motorcycles and three-wheelers, with an emphasis on rural motorcycle taxis, rider training, appropriate regulatory frameworks and realistic enforcement methods.

During the project’s Inception Phase, a full understanding of the current situation in the four countries – and beyond – was developed through a comprehensive literature review and stakeholder mapping and engagement activities. Based on these, the methodology of the study was developed, to include the following activities:

- A review of the motorcycle- and three-wheeler-related regulatory frameworks and enforcement methods in all four countries
- A review of rider training in all four countries
- A survey of the benefits and disbenefits of motorcycle and three-wheeler taxis in rural areas of all four countries, covering 422 riders, 442 passengers, 96 vehicle owners, 108 freight owners and 67 people who said they rarely or never use motorcycle or three-wheeler taxis
- Investigations into the potential of technology in the motorcycle and three-wheeler taxi sector in Kenya, Tanzania and Uganda, as well as in Rwanda
- A reanalysis of existing motorcycle and three-wheeler related data with a rural focus in Ghana
- A study to understand the health-related benefits and impacts of motorcycle and three-wheeler use in Kenya
- The development of two manuals: one to improve the operations of motorcycle taxi associations, and one for rider training in Tanzania
- Investigations to understand the barriers to motorcycle and three-wheeler taxi use faced by some members of the study communities in Uganda.

As well as this Final Report, a separate Country Report has been produced for each of the four countries, providing more detailed information on country specific activities and findings.²

¹Throughout this report, the term ‘rider’ is used to mean the driver or operator of a motorcycle or three-wheeler. The term rider does not include passengers.

² The Country Reports for Ghana, Uganda, Tanzania and Kenya are available along with other project reports and Policy Briefs on the [ReCAP website](#).

The study identified that motorcycle taxis are by far the most common form of rural transport in all of the four project countries, and are very popular in rural communities.

Motorcycle taxis were shown to be especially important for health-related trips with, for example, an average of 83% of riders interviewed saying they have transported a passenger to a health facility in an emergency, and 85% of riders believing that they have saved someone's life by providing transport in an emergency. Motorcycle taxis provide economic advantages, creating employment and supporting agriculture and other economic activities.

Motorcycle taxis have also been found to have a number of disadvantages. The main disadvantage relates to crashes and injuries, with an average of 41% of riders and 11% of passengers interviewed having suffered an injury at some point while using a motorcycle taxi. Crashes and injuries have physical, financial and psychological impacts. The study also found that riders suffer from health issues that they attribute to riding motorcycles, including back pain, joint pain and breathing difficulties. Riders were found to be more at risk of crime and abuse than passengers.

The study found similarities between the four countries relating to motorcycle taxi use, but also some key differences. The biggest difference is that the use of motorcycles as taxis is illegal in Ghana but legal in the other three countries. The study found that many of the disbenefits – in particular injuries and health issues – appear more evident in Ghana than in the other three countries.

The study also found an apparent link between how riders first learned to ride and the likelihood of riders and passengers being involved in a crash. In Ghana, Tanzania and Uganda very few riders first learned to ride through formal training, and riders in these countries reported high rates of injuries. In Kenya, however, 19% of rural riders first learned to ride through formal training, and riders here reported the lowest rates of injuries of the four countries.

This report presents the findings of the study, together with a discussion and corresponding recommendations. Recommendations are divided into those considered to be the highest priority, and those which will support the delivery of the high priority recommendations. The highest priority recommendations are:

- The use of motorcycles and three-wheelers as taxis on low volume rural roads should be legalised
- Riders should be required to undergo effective, standardised training and testing to obtain a licence
- The capacity for delivering affordable motorcycle rider training should be increased
- Motorcycle and three-wheeler taxi riders should be required to belong to associations
- Associations should be supported and overseen by local government authorities

The findings of this study can be used by governments and other stakeholders to better understand the issues related to motorcycle taxis in rural areas and to develop policy and practice to maximise their benefits and minimise the disbenefits.

1 Introduction

The research project ‘Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks’ was carried out by a consortium led by Transaid and including Amend and TRL (the UK’s Transport Research Laboratory).

1.1 Research Objectives

The overall aim of the project was to improve knowledge and understanding concerning effective ways of enabling rural people to benefit from the safe use of motorcycles and motorised three-wheelers, with an emphasis on rural motorcycle taxis, rider training, appropriate regulatory frameworks and realistic enforcement methods.

The essence of the research was to use country studies and the synergies of inter-country exchanges to compile and present research evidence of best practices and appropriate regulatory frameworks to enable the safe operation of rural motorcycles and three-wheelers, in order to provide good, affordable and inclusive rural access for different groups of people.

Capacity building, knowledge dissemination, uptake and embedment are integral parts of the overall ReCAP programme. This research project has engaged fully with the relevant ReCAP partner institutions, transport service authorities, road safety departments, concerned non-governmental organisations (NGOs) and civil society organisations (CSOs), and has enabled international exchanges of good practice and ideas between the project countries. The outputs of this project will facilitate the uptake and subsequent embedment of improved practices, policies and strategies in the commercial motorcycle and three-wheeler sub-sector.

The project’s contribution to the ReCAP Logical Framework is included in Annex 1.

1.2 Research Countries

The research project covers four countries: Ghana, Kenya, Tanzania and Uganda, shown in Figure 1.

Figure 1 The four project countries



According to the latest data available from the World Health Organization (WHO, 2015) at the time that this project was developed, motorcycles and motorised three-wheelers made up 23% of the total registered

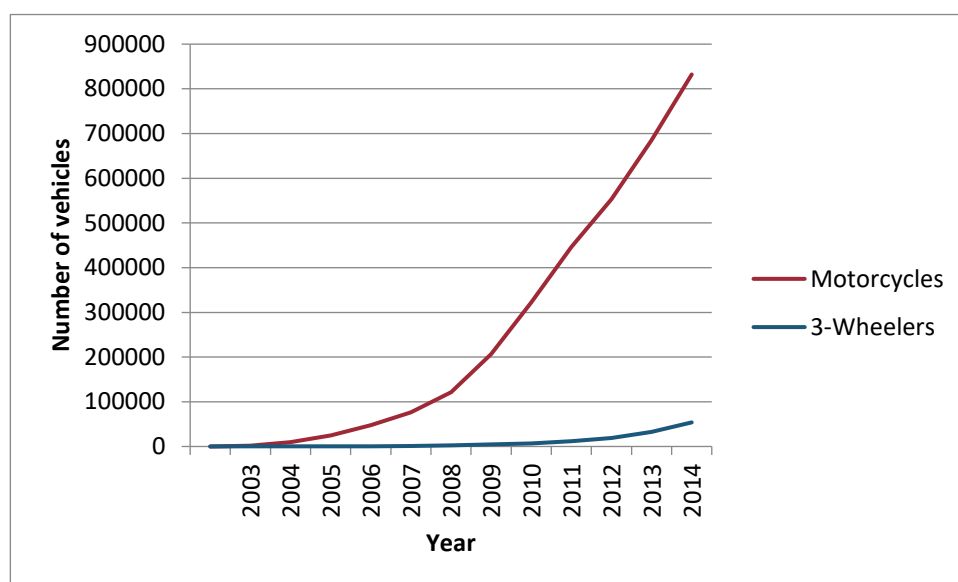
vehicle fleet in Ghana, 37% in Kenya and 34% in Tanzania. Comparable data was not available for Uganda at the time this project was developed, but more recent WHO data published during the course of this project put the figure for Uganda at 59% (WHO, 2018).

2 Background

The use of motorcycles and motorised three-wheelers has increased greatly in Africa in recent years. According to the latest data from the World Health Organization (2018), in 2016 the 26 sub-Saharan African countries for which data was available had a total of over 7 million motorcycles and three-wheelers. This compares to a total of around 34 million other registered vehicles, meaning that motorcycles and three-wheelers make up around 17% of the total vehicle fleet.

As an example of rates of growth and the comparison between the numbers of motorcycles and motorised three-wheelers, the number of registered motorcycles in Tanzania grew from 1,884 in 2003 to 832,149 in 2014, while the number of registered three-wheelers grew from 59 in 2003 to 59,874 in 2014 (Tanzania Revenue Authority, 2015), as shown in Figure 2.

Figure 2 Growth in registered motorcycles and three-wheelers in Tanzania, 2003 to 2014



Motorcycles are found in both urban and rural areas. In the rural areas of many African countries, motorcycles are often the most commonly found vehicles, and journeys that were previously made on foot or by bicycle are now made using a motorcycle. This has specifically been supported by the now widespread use of mobile phones in rural Africa and because motorcycle transport is very convenient.

Motorcycles are often used as taxis, with riders charging a fare to carry passengers or goods. In rural areas, motorcycles often fill a gap in the provision of 'conventional' transport services such as minibuses and rural taxis, providing transport directly from people's homes to main roads, village centres and essential services such as hospitals and markets. They provide employment, largely for young men who hire the motorcycles on a temporary basis to use as taxis, generating income for themselves and the owners.

However, motorcycle transport in rural areas is certainly not without risk. Previous AfCAP research has found high rates of crashes and injuries among rural motorcycle taxi riders, and while many of these crashes are relatively minor single-vehicle incidents, others have been found to cause more serious injury (Amend, 2013). This can result in serious consequences as a serious injury to a household's primary wage earner can push a family into poverty.

Attempts by governments to regulate the use of motorcycle taxis have largely failed to keep pace with the rapid influx of motorcycles into the continent and the high demand for their services by local populations. In 2012, the Ghanaian government imposed a complete ban on the use of motorcycles and three-wheelers

as taxis, on safety grounds. In Uganda, the use of three-wheelers as taxis is illegal, but there is no ban on motorcycle taxis. In Kenya and Tanzania, the use of both motorcycles and three-wheelers as taxis is legal.

3 Approach and Methodology

3.1 Approach

The project was divided into the following phases and tasks:

- Phase 1: Inception
 - Task 1.1: Engage National Experts
 - Task 1.2: Understand the Existing Situation in Each Country
 - Task 1.3: Prepare for Research Phase
 - Task 1.4: Inception Report
- Phase 2: Research
 - Task 2.1: Undertake In-Country Research
 - Task 2.2: Progress Report
 - Task 2.3: Preparation of Draft Country Discussion Papers
- Phase 3: Uptake and Embedment
 - Task 3.1: Four-Day Team Workshop
 - Task 3.2: Revision of Draft Discussion Papers
 - Task 3.3: One-Day Country Workshops
 - Task 3.4: Draft Final Report and Draft Country Reports
 - Task 3.5: Final Report and Final Country Reports
 - Task 3.6: Dissemination of Study Findings and Recommendations

With the assistance of a National Expert in each country, investigations were undertaken into the existing situation related to motorcycles and motorised three-wheelers. These included a comprehensive review of relevant existing literature, and mapping and engagement of stakeholders who have some responsibility for, or interest in, motorcycles and motorised three-wheelers.

The purpose of the literature review was to generate contextual and other background information to inform the development of research strategies to be utilised in the four focus countries. Initially intended to be an annex in the Inception Report, the decision was taken by the ReCAP Programme Management Unit to publish the literature review as a standalone document.

The stakeholder mapping and engagement exercise provided up-to-date information on current relevant issues related to motorcycles and motorised three-wheelers in the project countries.

The Literature Review and the project's Inception Report and Progress Report can be found on the 'Motorcycle Safety' page of the ReCAP website: www.research4cap.org/SitePages/MotorcycleSafety.aspx.

Based on the in-depth understanding of the existing situation in the four project countries, the detailed methodology was developed, and is described next.

3.2 Research Methodology

Three main activities were conducted across all four project countries. These activities were:

- A review of motorcycle and three-wheeler-related regulatory framework and enforcement methods
- A review of motorcycle and three-wheeler rider training
- A survey of benefits and disbenefits of motorcycle and motorised three-wheeler taxis among riders and other users in rural areas

An investigation into the potential of technology to enhance safe motorcycle and three-wheeler use for rural transport was also carried out in three of the project countries – Kenya, Tanzania and Uganda – and also in Rwanda, which is known throughout Africa as a centre for mobile phone technology. Ghana was not included in this investigation, as it was deemed more cost-effective to focus on East Africa.

In addition, country-specific activities were undertaken in each of the four main project countries, addressing specific research gaps identified during the Inception Phase. These activities were:

- In Ghana, analysis of existing motorcycle and three-wheeler related data with a rural focus;
- In Kenya, a study to understand the health-related benefits and impacts of motorcycle and three-wheeler use;
- In Tanzania, the development of two manuals: An ‘Instructor’s for the Competency-Based Curriculum for Training Motorcycle and Tricycle Riders’ and a ‘Manual for Motorcycle and Three-Wheeler Taxi Associations’;
- In Uganda, investigations to understand the barriers to motorcycle and three-wheeler taxi use faced by some members of the study communities.

The methodologies of all of the activities are described in detail next. The detailed findings of the activities are presented in the four Final Country Reports: one for each of the four main countries of the study.

3.2.1 Reviews of Motorcycle and Three-Wheeler-Related Regulatory Framework and Enforcement Methods

In African countries, government regulatory frameworks relating to motorcycles and motorised three-wheelers – and in particular their use as taxis – have often failed to keep pace with the rapid growth of their use. Similarly, the implementation and enforcement of regulations governing motorcycle and motorised three-wheeler taxis has also presented challenges to governments.

This activity looked at the regulatory frameworks, and how they are enforced, in each of the four project countries. Strengths and weaknesses from the different countries were compared, and consideration was given to how identified good practice could be applied in the other project countries.

An initial desk-based review was carried out for each of the countries to understand all legislation that related to motorcycles or three-wheeler use, such as use of helmets, carriage of passengers and goods and driving licence and insurance requirements. Interviews were then carried out with officials of the relevant regulatory and enforcement bodies at both national (headquarters) and local (district/county) levels to gather details on the level of enforcement, and the challenges faced in each of the areas of regulation identified.

The detailed findings of these reviews are presented in the four Final Country Reports.

3.2.2 Reviews of Motorcycle and Three-Wheeler Rider Training

According to the WHO (2017) the introduction of compulsory training and a skills test to obtain a motorcycle permit or licence has been shown to be an effective intervention in motorcycle and three-wheeler safety.

This study’s literature review highlights that in Ghana there are no training schools for motorcycle riders (Ablin Consult, 2010). It cites studies which found that in Kenya over 80% of riders acquired riding skills informally from their fellow riders (Nasong’o, 2015), and in Tanzania the vast majority of motorcycle taxi riders have undertaken no formal training (Amend, 2015).

Riders often have very little knowledge beyond that necessary to physically operate a motorcycle or three-wheeler. The rules of the road, road signs, signals and markings and other key pieces of knowledge are broadly unknown to them. Helmets are often worn only because the police require it, so once a rider is past the check point then the helmet is regularly removed. With better education and training riders would gain an understanding of the benefits of helmets, driving licences, insurance, road traffic laws and passenger safety. With a more comprehensive understanding, riders can perform more safely on the road and reduce the risk of crashes resulting in injury and death.

As part of this study, a review of motorcycle and three-wheeler taxi training in each of the four countries was carried out. This review included online desk research, drawing on existing knowledge from both Transaid and Amend, and interviewing stakeholders (including regulators, traffic police, training providers and associations) in each of the four project countries.

The detailed findings of these reviews are presented in the four Final Country Reports.

3.2.3 Survey of Benefits and Disbenefits of Motorcycle and Three-Wheeler Taxis

In general, and understandably, government policy makers are often more familiar with the situation in urban areas, as this is where they tend to live and work. In the major cities of many African countries, there are serious road safety issues surrounding motorcycle taxis (and also motorised three-wheelers in some cities), as well as issues related to crime and anti-social behaviour. As such, policy makers' general perceptions of motorcycle taxis are negative. Therefore, with a lack of understanding of issues in rural areas, when policies are developed, there is a risk that the situation in these areas is not taken into account.

A full understanding of the benefits and disbenefits of motorcycles and three-wheelers in rural areas will help decision-makers develop appropriate policies. As part of the project, a survey was undertaken across all four countries to obtain information on the advantages and disadvantages of motorcycle and three-wheeler taxis. The findings will give decision-makers a balanced view of their benefits and disbenefits in rural areas, from the point of view of those people who own, ride and use them, as well as those people who do not use them.

In each of the four project countries, the survey was carried out in a total of eight different rural settlements: two settlements in each of four different districts (counties in Kenya), with those four districts / counties being in two different agro-ecological zones.

Selection criteria for the settlements included that they should be a minimum of 3 km from the nearest urban centre.

In each settlement, a team of four Research Assistants undertook face-to-face interviews with respondents, who fell into the following five different user groups:

- Riders of motorcycle and three-wheeler taxis
- Passengers of motorcycle and three-wheeler taxis
- Owners of motorcycle and three-wheeler taxis
- Owners of freight, who use motorcycle and three-wheeler taxis to transport their goods
- Non-users – people who very rarely or never use motorcycle and three-wheeler taxis

Motorcycle and motorised three-wheeler taxi riders were approached at their 'stands' (where they congregate waiting for passengers), while passengers, vehicle owners, freight owners and non-users were identified through household surveys.

A total of 1,135 people participated in the survey of benefits and disbenefits of motorcycle and three-wheeler taxis. Table 1 shows the breakdown of the survey respondents.

Table 1 Survey Respondents

	Motorcycle taxis				Motorised three-wheeler taxis				Non-users
	Riders	Passengers	Vehicle owners	Freight owners	Riders	Passengers	Vehicle owners	Freight owners	
Number of Respondents	388	390	90	84	34	52	6	24	67

The sample sizes for motorcycle taxi riders and passengers were calculated to provide a statistically robust sample to measure variables of interest using the survey questionnaires. The target numbers of other

respondents were not designed to enable calculations of statistical significance, so the findings from these groups are indicative only.

Topics covered in the questionnaires were:

- Overall opinions
- Economics and finance
- Access and mobility
- Injuries
- Health issues (non-injury)
- Crime and personal security
- Access to services (such as licensing and training) and protective equipment

The questionnaires can be found in the project's Progress Report, which can be found on the 'Motorcycle Safety' page of the ReCAP website.

The detailed country-specific findings of the survey are presented in the four Final Country Reports, which are also available on the 'Motorcycle Safety' page of the ReCAP website.

3.2.4 Investigations into the Potential of Technology to Enhance Safe Motorcycle and Three-Wheeler Use

In rural Africa, mobile phones play an important role in enabling mobility by connecting demand to supply: not least, connecting people's need and desire to travel to the availability of motorcycle taxis.

However, the relationship between mobile phones and motorcycles goes beyond just linking demand to supply, and is likely to become closer as new technologies are developed. For example, the use of smartphone applications ('apps') is already starting to influence the use of motorcycle taxis – although with a focus on urban areas – such as 'ride-hailing' with safety functions and competitive pricing.

Other types of technology, in addition to smartphone apps, were also investigated.

Investigations were carried out in Kenya, Tanzania and Uganda, and also in Rwanda, which is known within Africa to be a 'tech hub' and also to have a more organised motorcycle taxi industry than its East African neighbours. The aim of the investigations was to learn about the benefits of technology where it is used, and to identify potential opportunities for innovations to be adapted for rural areas or shared from one area or country to another. Information was gathered through an initial literature review followed by meetings with technology entrepreneurs and motorcycle and three-wheeler taxi riders.

The detailed findings of these investigations are presented in a separate report ('The role of mobile technology in enhancing safe motorcycle and three-wheeler use for rural transport') as well as in the Final Country Reports for Kenya, Tanzania and Uganda.

3.2.5 Ghana: Analysis of Existing Data with a Rural Focus

The Ghanaian government is currently undertaking a review of the law that bans the use of motorcycles and three-wheelers from carrying fare-paying passengers, with some decision-makers recognising that the law has been ineffective in controlling their use.

During the Inception Phase of this project, research showed that while certain government institutions and partners hold fairly comprehensive data related to the use of motorcycles and three-wheelers, these data are not analysed and published in a way that enables an understanding of the situation in rural areas. It was identified that through further analysing existing data, more could be understood about the issues surrounding motorcycles and three-wheelers in rural areas.

Data on vehicle registrations, traffic counts and road traffic injuries were obtained and then analysed with a rural focus. The aim of this exercise was to provide decision-makers with a better understanding of both the positive and negative aspects of motorcycles and three-wheelers in rural areas, to ensure that any decisions taken about legalisation and regulation will be adequately informed.

The detailed findings of this analysis are presented in the [Final Country Report for Ghana](#).

3.2.6 Kenya: Understanding the Health-Related Benefits and Impacts of Motorcycle and Three-Wheeler Taxi Use

Kenya's Ministry of Health has allocated budgets to work with motorcycle taxi associations, primarily to address issues related to road traffic injury.

During this project's Inception Phase, through investigations into the existing situation related to motorcycle and three-wheeler taxis in Kenya, it was found that motorcycle taxi riders suffer from health problems that they attribute to their occupation. During discussions with riders in the small agricultural town of Limuru, complaints were anecdotally reported about painful hands, knees, feet and backs, as well as respiratory problems and eye infections. Riders blamed these on environmental factors including wind, bumpy roads and dust. Anecdotally, the team learnt that these health problems can sometimes lead to loss of control of the motorcycle, occasionally resulting in crashes.

During the project's Research Phase, the health issues suffered by motorcycle taxi riders were investigated further, through focus group discussions with riders and key informant interviews with health workers. This activity was carried out in coordination with the survey of benefits and disbenefits, in the same geographical locations.

A total of 71 motorcycle taxi riders participated in the focus group discussions. All riders were male. It should be noted that no three-wheeler taxi riders participated in the focus group discussions, as no three-wheeler taxis were found to be operating in the study locations.

In addition, interviews were conducted with a senior nurse at a dispensary, and with a medical doctor at a Level 4 Hospital. In two counties, health workers were reluctant to talk to the project team due to strikes related to the introduction of Cuban doctors to work in government hospitals.

The detailed findings of these investigations are presented in the [Final Country Report for Kenya](#).

3.2.7 Tanzania: Developing Manuals for Rider Training and Motorcycle Taxi Associations

Motorcycle rider training manual

In 2015, a motorcycle rider training curriculum was developed by Transaid in conjunction with Tanzania's Surface and Marine Transport Regulatory Authority (SUMATRA), with funding from AfCAP. During the Inception Phase of this project, it was identified that the uptake of this curriculum had been limited.

Interviews were carried out with officers at SUMATRA, the Traffic Police and driver training schools, to understand the reasons behind the limited uptake of the curriculum, and to assess the current status of motorcycle rider training in Tanzania.

Through these interviews, strong demand was identified for a motorcycle rider training manual to complement the curriculum and provide trainers with detailed guidance on delivering both theoretical and practical training. In coordination with stakeholders, and building on best practice from elsewhere, a motorcycle rider training manual was developed.

This manual can be found on the 'Motorcycle Safety' page of the ReCAP website.

Motorcycle taxi associations' operating manual

Motorcycle taxi associations are common in Tanzania. The government has attempted to regulate the motorcycle taxi industry by requiring riders to belong to a registered association. In rural areas, enforcement of this has been largely ineffective, and while some rural associations do exist, and provide important social services to members, most are unregistered and their potential is not being maximised.

Previous AfCAP research in Tanzania has looked at both the role of transport operators' associations and the potential of motorcycle taxi associations to improve road safety (Transaid, 2014; and Amend, 2015). As part of this project, investigations were carried out to understand associations' broader potential, and an 'operating manual' for rural motorcycle taxi associations was developed.

This manual can be found on the 'Motorcycle Safety' page of the ReCAP website.

Investigating the potential of a mobile business licensing service

During the Inception Phase, it was learned that SUMATRA were developing an idea to launch a new service for issuing motorcycle taxi business licences in rural areas. This project initially intended to provide guidance to SUMATRA during the development of this idea. However, during the course of the project, the idea was put on hold by SUMATRA, and consequently these investigations were not progressed.

The detailed findings of investigations are presented in the [Final Country Report for Tanzania](#).

3.2.8 Uganda: Investigations into Barriers to Motorcycle Taxi Use

During the Inception Phase, it was identified that while motorcycle taxis are widespread throughout rural Uganda, they are not accessible to all members of the community, with suggested reasons for this including cost, personal security, physical difficulties, and cultural issues related to gender, age and religion. As a result, these people may be excluded from economic, social and health-related activities and services.

Quantitative data were collected from people who do not use motorcycle and/or three-wheeler taxis in all four countries, through the survey of benefits and disbenefits. In Uganda, this topic was explored further by gathering qualitative information through key informant interviews with 14 people.

Topics for discussion included:

- Detailed understanding of the reasons why people do not use motorcycle and/or three-wheeler taxis
- The impact of the non-use motorcycle and/or three-wheeler taxis has on their lives – both positive and negative
- Any changes that could be made to related policy or practice that would improve the safety of motorcycle and/or three-wheeler taxis, and so reduce the number of people deterred from using them due to safety risks.

The detailed findings of these investigations are presented in the [Final Country Report for Uganda](#).

3.3 Stakeholder Consultation and Cross-Country Synergies

Following completion of the research activities, a draft country discussion paper was produced for each of the four countries, based on an initial analysis of the data. These draft country discussion papers were presented at a series of workshops.

3.3.1 4-Day, 4-Country Workshop

Firstly, a 4-day workshop was held in Ghana, which brought two key government stakeholders from each of the four countries together with the project team. This workshop was held from Monday 3rd to Thursday 6th September 2018, in Ada, close to the Ada East and Akatsi South locations where the survey of the benefits and disbenefits of motorcycle and three-wheeler taxis was carried out.

This workshop involved detailed discussion on the initial findings of the research activities, comparisons between the four countries and a site visit to one of the locations of the survey of benefits and disbenefits.

A summary of this workshop is included in Annex 2 of this report.

3.3.2 1-Day Country Workshops

Secondly, a 1-day workshop was held in each of the four main project countries, of which each brought together between 20 and 30 key local stakeholders.

These workshops allowed the project team to present the initial findings of the different research activities, including comparisons between the four countries, and provided opportunity for questions to be asked and ideas to be shared.

A summary of these four workshops can be found in the Final Country Reports for Ghana, Kenya, Tanzania and Uganda.

3.4 Research Limitations

It is important to highlight the limitations of this project. These were:

- The study focused exclusively on rural areas. While this was determined by the project's Terms of Reference, it was clear through consultation with stakeholders that there is strong interest in all four project countries for a similar study into motorcycle and three-wheeler taxis to be carried out in urban areas.
- For the survey of the benefits and disbenefits:
 - The survey relied on self-reporting, and as such responses are subjective. For example, the severity of riders' injuries was based on their judgement, rather than being a clinical opinion; distances travelled and time taken for journeys were based on individual respondents' perceptions of distance and time; and respondents may have had reasons not to reply truthfully to questions related to issues of money or compliance with traffic laws
 - Apart from the riders, who were found at their stands, the majority of respondents were found at home through the household survey. This led to an unequal distribution of participants, for example with the gender distribution representing the people at home at the time of the survey rather than of the wider population.
 - The sample sizes of motorcycle taxi riders and passengers were large enough to calculate statistical significance of some responses for the study settlements themselves – however, the findings cannot be inferred to be true for a wider geographical area.
 - The sample sizes of all owners, owners of freight, non-users, and all three-wheeler-related respondents, were too small to enable calculations of statistical significance. Therefore, the responses of these groups cannot be inferred to be true for anyone other than the respondents themselves.
 - In Ghana and Tanzania, the target number of 24 non-users was not achieved, due to the fact that in some of the communities where the survey was carried out it was not possible to find people who never or rarely use either motorcycle or three-wheeler taxis. In Ghana, only 15 non-users were interviewed (63% of the target), and in Tanzania, only four non-users were interviewed (17% of the target).
 - In Kenya, Tanzania and Uganda, very low numbers of motorised three-wheelers were found to be operating in the rural areas where the study was carried out.
- Traffic counts to obtain primary data related to helmet use and numbers of passengers were not carried out – rather, the study relied on the information collected through questionnaires, interviews and discussions. The decision to take this approach was taken because such primary data has been collected through previous studies, and because of budgetary and time constraints.
- In a small number of cases, key informants were unwilling or unable to provide the requested information. For example, in Kenya, a health-workers strike resulted in difficulties interviewing some key informants, while other stakeholders were uncooperative.

3.5 Outputs

A full list of the outputs of this project is:

- Inception Report
- Literature Review
- Progress Report
- Four Country Reports – one each for Ghana, Kenya, Tanzania and Uganda
- A report on the role of mobile technology in enhancing safe motorcycle and three-wheeler use for rural transport
- Final Report (this document)
- A Manual for Motorcycle and Three-Wheeler Taxi Associations

- An Instructor's Manual for the Competency-Based Curriculum for Training Motorcycle and Tricycle Riders
- A Technical Brief: Training of rural motorcycle and three-wheeler taxi riders in sub-Saharan Africa
- A Policy Brief: Opportunities to maximise the benefits of motorcycle and three-wheeler taxis in rural Africa
- A journal article: The potential role of mobile phone technology in rural motorcycle and three-wheeler taxis services in Africa
- A journal article: Understanding the benefits and disbenefits of motorcycle and motorised three-wheeler taxis in rural Africa

All outputs are available at:

- ReCAP Rural Access Library (<http://www.research4cap.org/SitePages/Rural%20access%20library.aspx>)
- The project web page of the ReCAP website (<http://www.research4cap.org/SitePages/MotorcycleSafety.aspx>);
- Transaid's Knowledge Centre (<http://www.transaid.org/home/knowledge-centre/>),

4 Results and Discussion

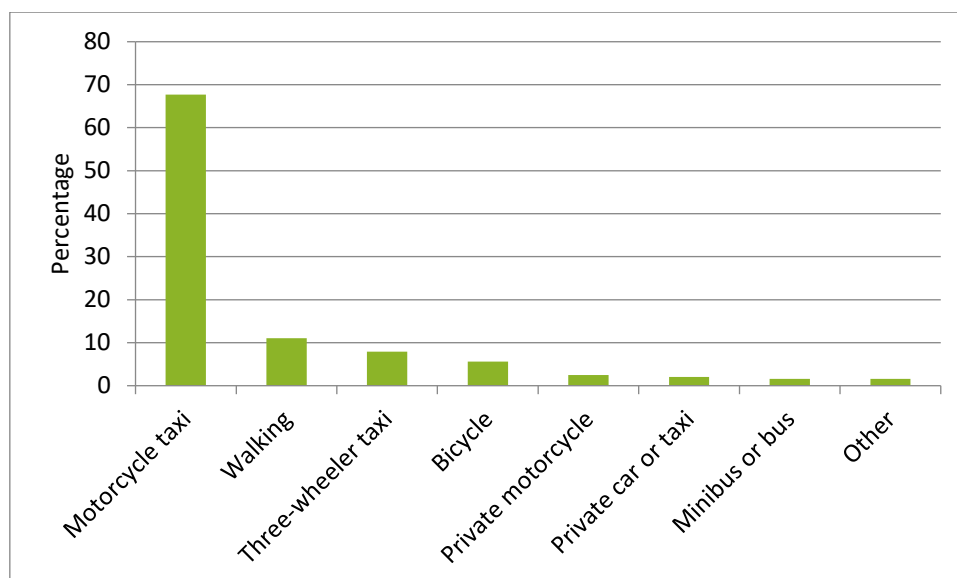
This section presents discussion on the findings of the study.

4.1 The Importance and Popularity of Motorcycle Taxis

In all four countries included in this study, motorcycle taxis were found to be of critical importance for rural transport, and highly popular among rural communities.

Across the four countries, an average of seventy-three percent of passengers had used a motorcycle taxi within the last week. Sixty-eight percent of passengers said that they had used motorcycle taxis more frequently than any other mode of transport within the last week, including walking, as shown in Figure 3.

Figure 3 Most frequently used mode of transport in last week (all four countries)



The finding that the use of motorcycle taxis more frequently than any other mode of transport was found to be statistically significant in each of the four countries individually and in all four countries combined

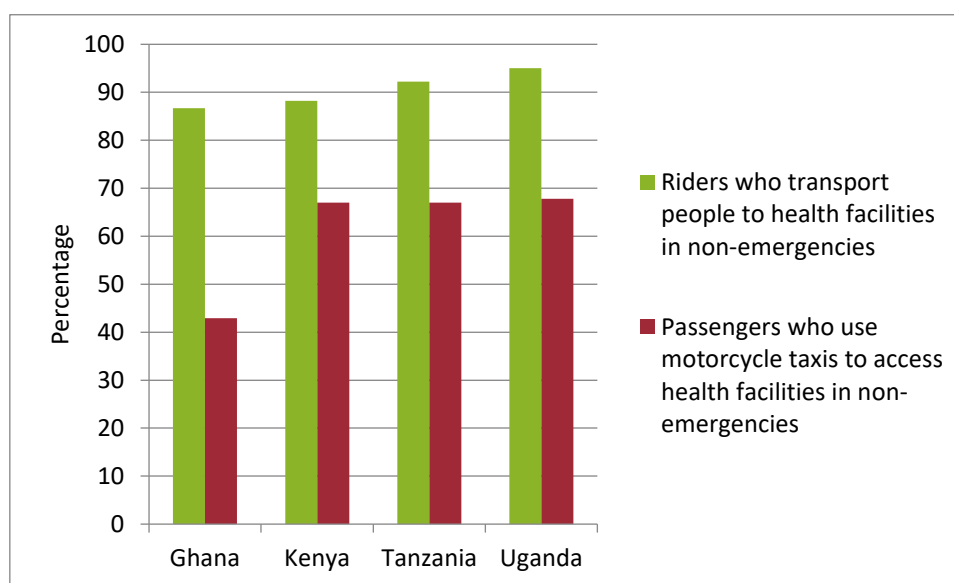
($p < 0.05$)³. This means that in the settlements where the study was carried out, motorcycle taxis are statistically more likely to be used than any other mode of transport.

Across the four countries, an average of almost 90% of passengers said that motorcycle taxis are available in their village and the surrounding area, compared to 33% saying that shared car taxis are available and 18% saying there is a bus service. In general, it proved challenging to find people who do not use motorcycle taxis.

Major benefits of motorcycle taxis were identified as the provision of access to healthcare, including in emergencies, and employment opportunities.

In all countries, the vast majority of motorcycle taxi riders said that they transport passengers to health facilities in non-emergency cases. In Kenya, Tanzania and Uganda, around two-thirds of passengers said that they have used a motorcycle taxi to access a health facility. The proportion is a little less in Ghana. This is shown in Figure 4.

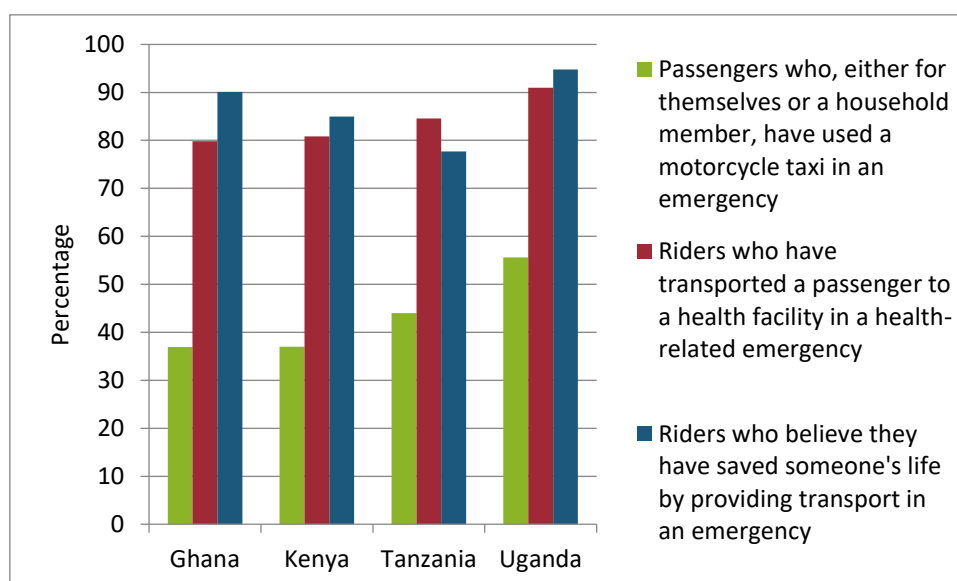
Figure 4 Use of motorcycle taxis for non-emergency health-related trips



In all four countries, over one-third of passengers said that either they or a member of their household has used a motorcycle taxi in an emergency, with this rising to over a half in Uganda. In all four countries, over three-quarters of motorcycle taxi riders said that they have transported a passenger to a health facility in an emergency, rising to over 90% in Uganda. In all four countries, over three-quarters of riders also said they believe they have saved someone's life, rising to 90% or more in Ghana and Uganda. This is shown in Figure 5.

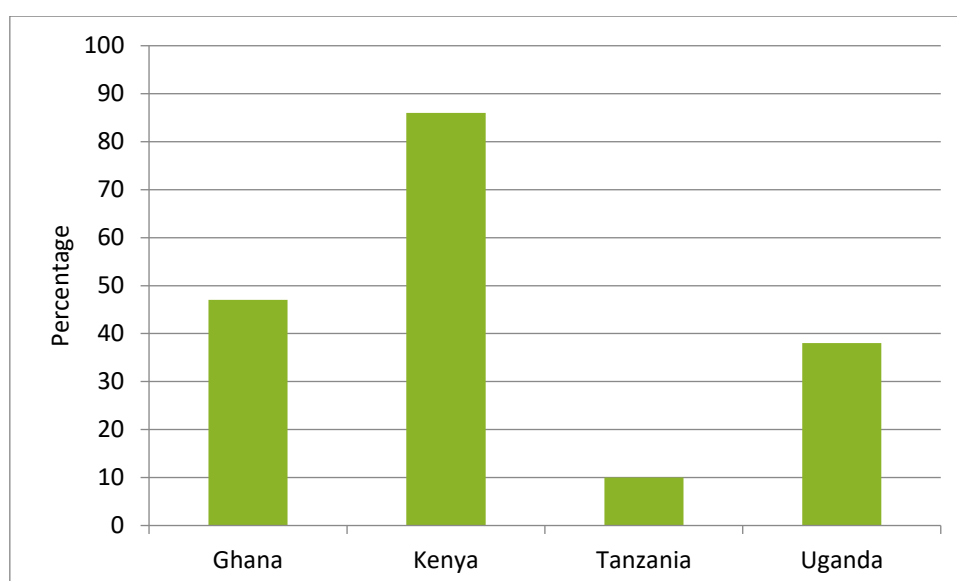
³ $P < 0.05$ means that when the P value (calculated probability) is less than 5%, the result is statistically significant at 95% confidence level.

Figure 5 Use of motorcycle taxis in an emergency



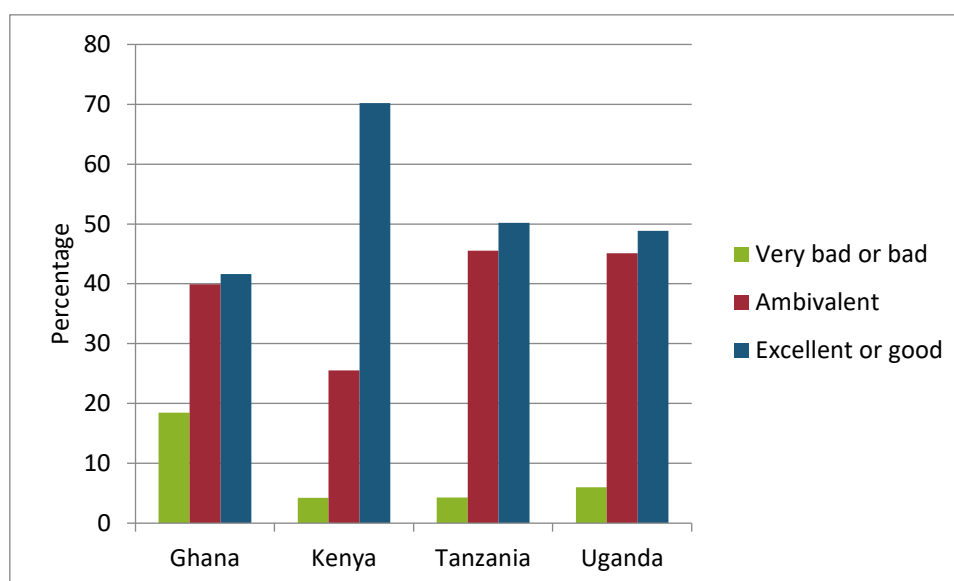
In all four countries, the majority of motorcycle taxi riders said that the 'best thing about motorcycle taxis' was earning money or generating employment. Riders reported earning more as a motorcycle taxi rider than in their previous jobs, as shown in Figure 6.

Figure 6 Percentage earnings as motorcycle taxi rider, above earnings in previous job



Motorcycle taxis are popular among rural communities. Asked to select from a scale of one to five, with one being 'Bad' and five being 'Excellent', in all countries, survey respondents' most popular responses were either 'Good' or 'Excellent'. Only a small proportion said 'Bad' or 'Very bad', as is shown in Figure 7. This shows that in general, the respondents felt that the benefits of motorcycle taxis outweigh the disbenefits.

Figure 7 Overall opinions of motorcycle taxis



In Kenya, it was found to be statistically significant that more respondents described motorcycle taxis as ‘Excellent’ or ‘Good’ ($p < 0.05$), rather than being ambivalent or describing them as ‘Bad’ or ‘Very bad’. In the other three countries, while ‘Excellent’ or ‘Good’ were the most popular combined response, this finding was not statistically significant.

Passengers said that the best things about motorcycle taxis are that they are easy, convenient, fast and provide access to places that other vehicles cannot go. Even those interviewed who reported that they do not use motorcycle taxis recognised their benefits.

4.2 Motorcycle Taxis are Not an Ideal Mode of Rural Public Transport

The characteristics of motorcycles that make them such an important and popular mode of transport in rural areas also contribute to the disbenefits related to this mode of transport. Examples of this are:

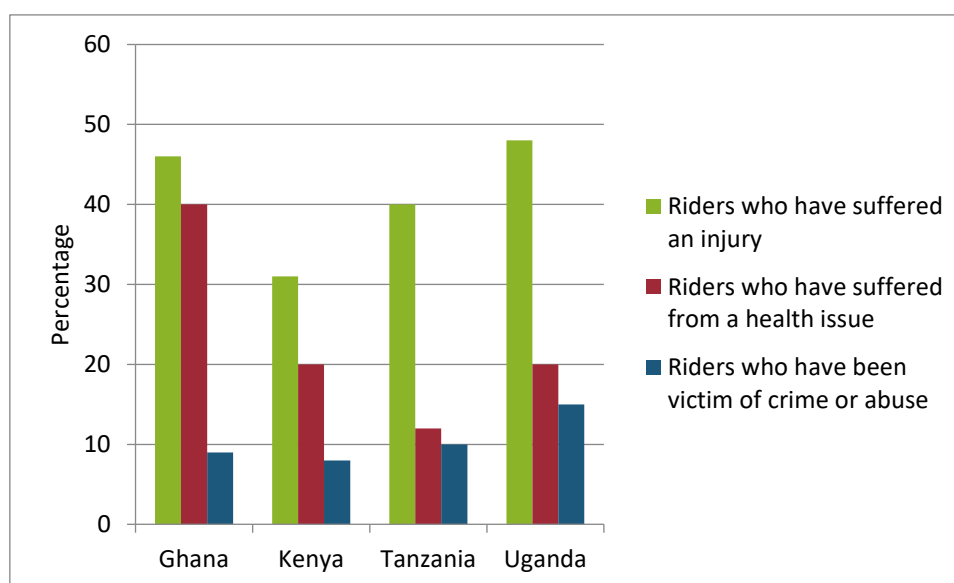
- Motorcycles can be ridden with little or no training, are profitable in comparison to alternative forms of employment and, findings show, are accessible and affordable for young, uneducated men in particular. While this makes them an attractive source of employment, it also means that many riders lack all but the most basic riding skills, self-discipline and are prepared to take risks to earn as much money as possible.
- Motorcycles can use roads that are in poor condition and narrow paths that four-wheeled vehicles cannot use. While this makes motorcycle taxis attractive to passengers who can get door-to-door service, and means can continue to provide access when roads are impassable to other vehicles, it also means that riders travel on surfaces that pose safety risks that can cause health problems, and ride in places that bring them into potential conflict with pedestrians and bicycles.
- Motorcycle taxis used during health-related trips can offer patients a timely transfer, however the use of a motorcycle on a bumpy road may also worsen the medical condition.
- The high degree of mobility that motorcycles offer appears to stimulate negative behaviour from riders outside of their home village. For example, during the research, stories were heard of youth from other villages using motorcycles to steal agricultural produce and engage in sexual promiscuity, taking school girls or married women away from their local area. Also, motorcycles allowed riders to avoid being stopped by a police officer with relative ease, if identified for a traffic offence, crime or misdemeanour.

The study found that disbenefits related to motorcycle taxis include:

- Injury rates among riders are high, with 46% of riders in Ghana, 31% in Kenya, 40% in Tanzania and 48% in Uganda having suffered an injury that has resulted in a loss of income, the need for medical attention, or has affected their family life.
- Riders suffer from health issues, with 40% of riders in Ghana, 20% in Kenya, 12% in Tanzania and 20% in Uganda saying that they have suffered from a health issue that they attribute to riding a motorcycle on rural roads.
- Both riders and passengers are victims of crimes, threats and abuse. This was especially the case in Uganda, where 15% of riders and 7% of passengers said they had been victims.

These three findings are shown in Figure 8.

Figure 8 Disbenefits among riders



4.3 Effective Regulation by Governments

Despite the fact that motorcycle taxis are not an ideal mode of rural public transport, there is little doubt that – due to their importance and popularity – they will remain a dominant mode of transport in rural areas of the study countries for the foreseeable future. It is therefore in governments' interest to recognise the importance of the motorcycle taxi sector and to strengthen regulation.

While none of the four countries in this study were observed to be effectively regulating the motorcycle and three-wheeler taxi sector, this study has identified positive examples of country-specific government-led good practice that could be scaled up and considered for application in other countries. These examples include:

- In Tanzania, a Memorandum of Understanding between the public transport regulatory authority and local government authorities attempted to increase their capacity for issuing motorcycle taxi business licences and bring the licensing service closer to the riders, while at the same time ring-fencing revenue to be used for motorcycle safety initiatives.
- In Tanzania, a motorcycle taxi rider training curriculum was developed in 2015. The Traffic Police, which oversee the registration of driving schools, is advocating that all schools adopt this curriculum to ensure that all riders are trained to a consistent standard. Efforts to develop a motorcycle rider training curriculum are currently underway in Ghana.

- In Kenya, Pettans Driving School has been successful in applying for bursaries from local government development funds to support training for rural motorcycle taxi riders.
- In Kenya, attempts to register all motorcycle taxi riders are being led by the Boda Boda Safety Association of Kenya, with support from the Traffic Police. Riders are issued with registration cards which can be scanned using a mobile phone to reveal details such as address, next of kin and insurance.
- In Kenya, the National Health Insurance Fund is promoting health insurance to motorcycle taxi riders.
- In Tanzania, the Ministry of Works' Low Volume Roads Manual (2016), which was developed with the support of AfCAP, included guidance for District Engineers on how to consider motorcycle safety when planning, designing, constructing and maintaining rural roads.

The study has also identified examples where government policies or practices have a negative impact on the motorcycle taxi sector. Such examples include:

- In Ghana, there is evidence that the ban on the use of motorcycle taxis has reduced the potential benefits and increased the potential disbenefits that they can provide to rural communities. This is discussed further in Section 4.4.1.
- In all countries, motorcycle rider testing was observed to focus on theoretical knowledge such as the understanding of the law and road signs rather than practical skills. The assessments riders take to obtain their licence involved minimal or no assessment of riders in on-road situations and little beyond the demonstration of the most basic control of the motorcycle.
- In all countries, there were examples of a lack of cooperation and coordination between various departments of government, resulting in the weakening of efforts to effectively regulate the motorcycle taxi sector. Examples include the initial reluctance of VETA to adopt the motorcycle training curriculum in Tanzania, and the lack of coordination between NTSA and the Traffic Police in Kenya.
- In all countries, there were stories of political interference in the motorcycle taxi sector, resulting in difficulties to effectively regulate the motorcycle taxi sector. Examples include the mass ownership of motorcycles for rent as taxis by politicians in Uganda and the failure to implement the Memorandum of Understanding between SUMATRA and local governments due to political issues at the district level.
- In all countries, petty corruption by some Traffic Police officials seeking or accepting bribes rather than imposing official fines for traffic offences was observed.
- In Tanzania, materials such as the motorcycle safety booklet 'Endesha Salama' (meaning 'Ride Safely' in Swahili), produced by the Ministry of Works with the support of the European Union, and the advice on motorcycle safety for District Engineers and Community Development Officers developed under a DFID-funded programme, have not been widely distributed and adopted.
- In Kenya, the scale-up of motorcycle training initiatives was shown to be hindered by high rates of turnover and transfers of police officers.
- In all countries, political interference in the work of government officials – including technocrats, regulators and enforcement authorities – has had negative impacts on the motorcycle taxi sector. For example, in Tanzania, local politicians did not support the issuing of motorcycle taxi business permits by local officials.

Any changes to regulation must be done in a consultative way, engaging with all stakeholders.

4.4 Legalisation and Regulation in Rural Areas

4.4.1 Negative effects of the ban in Ghana

The ban on the use of motorcycles taxis in Ghana was introduced primarily to address safety issues in urban areas. Even though the law (LI2180) invokes a blanket ban across the country, it has not been strictly enforced in rural areas. In some cases authorities in rural areas have turned a blind eye to motorcycle taxi use or have attempted to implement local forms of regulation.

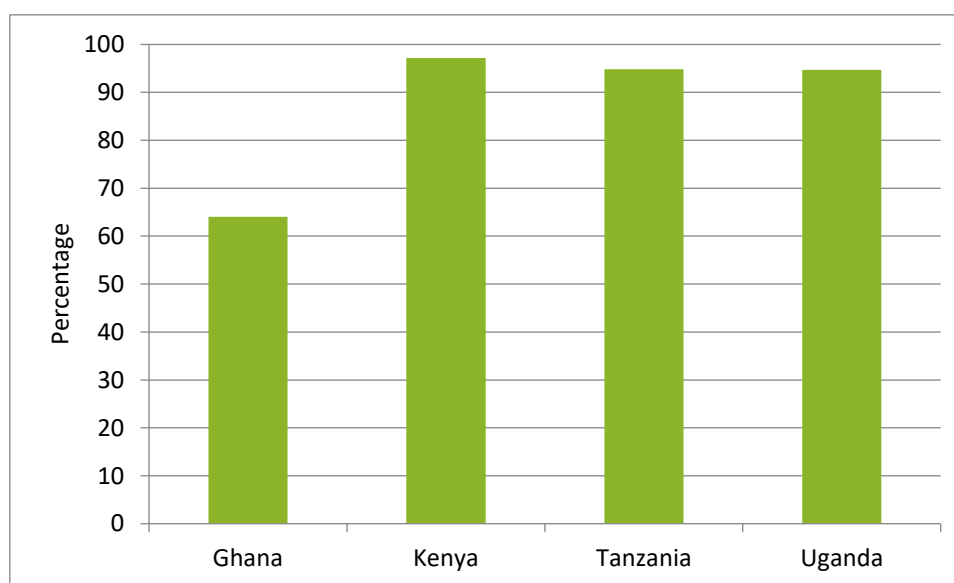
Despite the fact that the ban has not been strictly enforced in rural areas, the findings of this study appear to show that the ban in Ghana may have reduced the potential benefits and increased the potential disbenefits of motorcycle taxis. In the other countries of this project, where the use of motorcycles as taxis is legal, the study populations appear to benefit more greatly from the positive aspects of motorcycle taxis than the study populations in Ghana. Similarly, in the other project countries, the negative aspects of motorcycle taxis appear to be less evident than the negative aspects in Ghana.

While it is not possible to directly attribute the benefits being less evident and disbenefits being more evident in Ghana to the ban, this pattern has been identified upon analysis of many key variables analysed as part of the study.

Benefits less evident

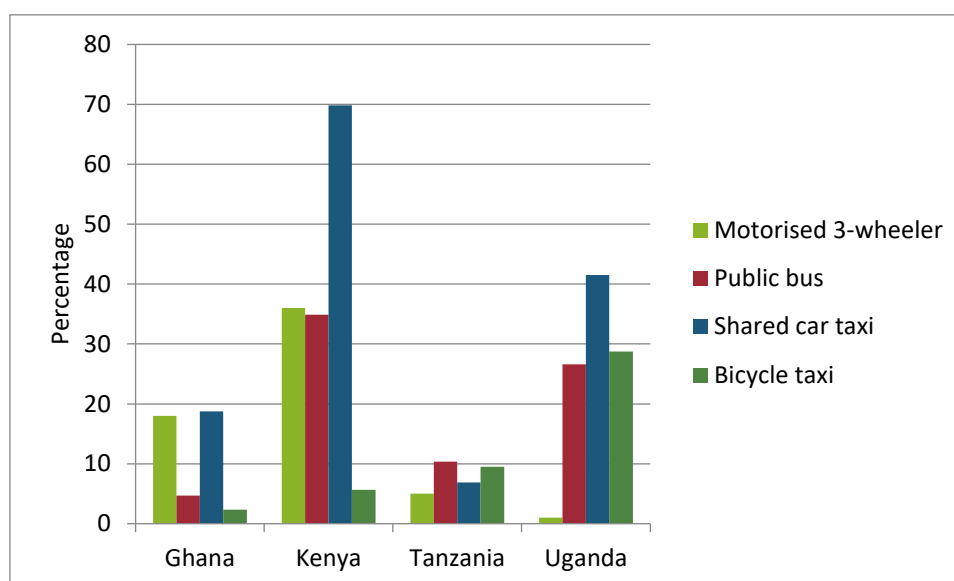
In Ghana, only 64% of survey respondents reported that motorcycle taxis are available in their village and the surrounding area, compared to at least 95% in each of the other three countries. This is shown in Figure 9.

Figure 9 Motorcycle taxis available in village and surrounding area



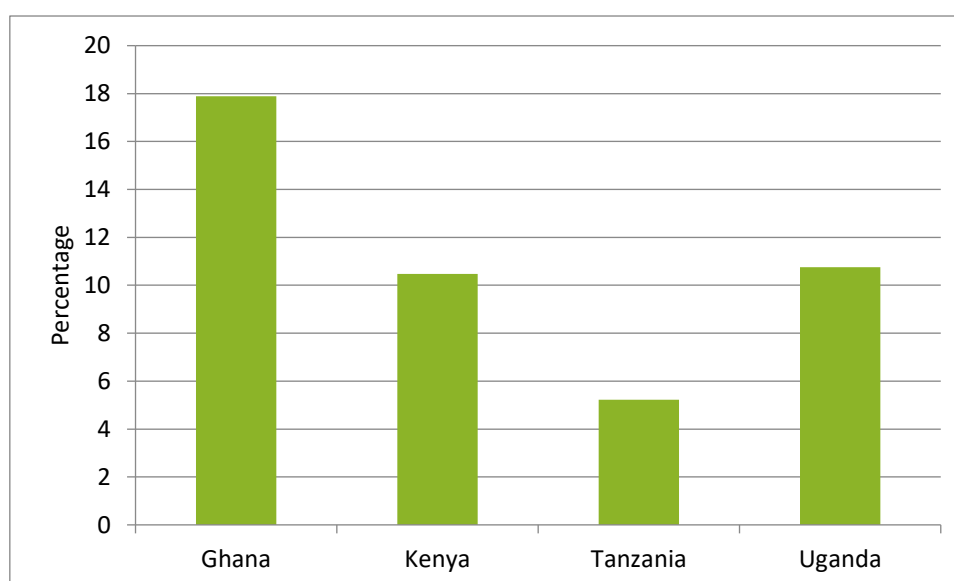
Similarly, Ghana has the lowest levels of availability of public buses, shared car taxis and bicycle taxis of the four countries in the study. It does, however, have the second highest level of availability of motorised three-wheelers, after Kenya. This is shown in Figure 10.

Figure 10 Availability of other modes of public transport in village and surrounding area



The lack of availability of motorcycle taxis and other public transport modes in Ghana may be one of the reasons why Ghana has the highest proportion of survey respondents who said that walking was their most commonly used mode of transport, as is shown in Figure 11.

Figure 11 Walking as most commonly used mode of transport

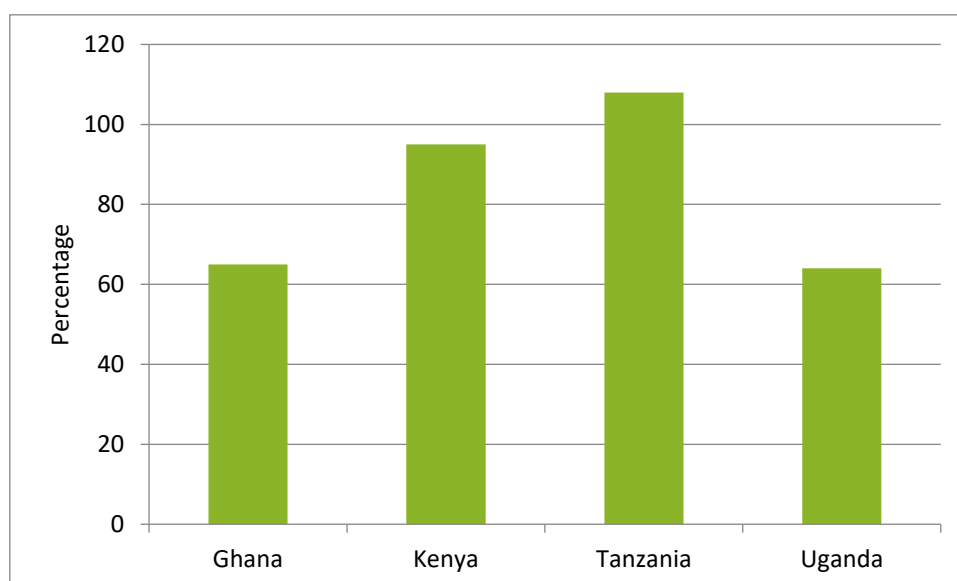


Ghana has the highest proportion of survey respondents who said that their overall opinion of motorcycle taxis is bad or very bad, as is shown in Figure 7 in Section 4.1.

As well as a lower general level of use of motorcycle taxis in Ghana, they were also found to be used less than in the other countries for health-related transport and emergency transport. For example, 43% of passengers interviewed in Ghana said they had used a motorcycle taxi for non-emergency access to a health facility in comparison to 67% in both Kenya and Tanzania, and 68% in Uganda.

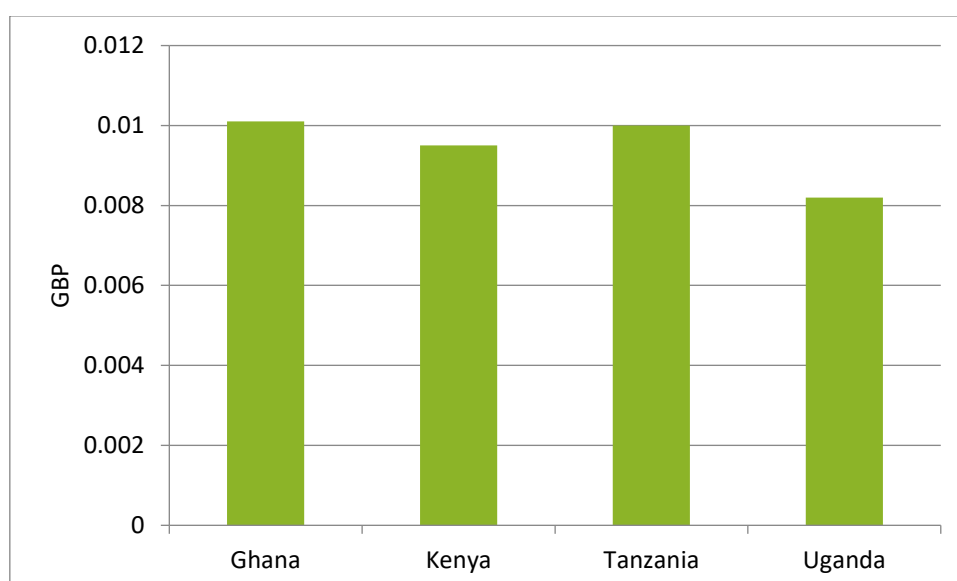
As well as the reduced availability of motorcycle taxis as a transport option for rural communities in Ghana, motorcycle taxi riders in Ghana were found to earn less than their counterparts in Kenya and Tanzania as a proportion of national average income. In Ghana, riders were found to earn 65% of the national average income, compared to 95% in Kenya and 108% in Tanzania. In Uganda the figure was 64%. This is shown in Figure 12.

Figure 12 Riders' weekly income as a percentage of national average income (GNI)



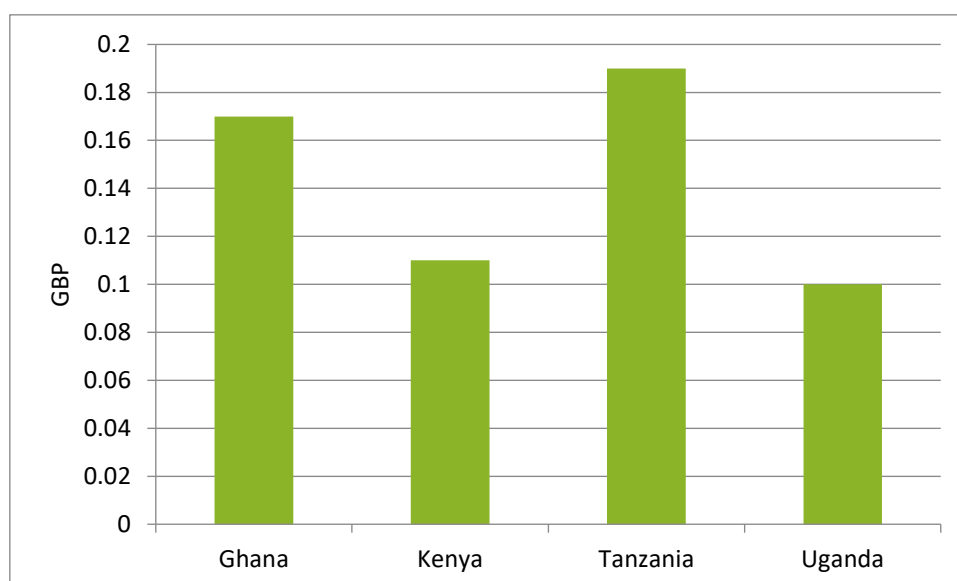
As well as yielding the least profit for riders, motorcycle taxi trips in Ghana were also not cheap for freight owners or passengers in comparison to the other countries. Ghana has the highest cost per freight kilogram kilometre, at GBP 0.0101 (1.01 pence), very slightly higher than Tanzania and Kenya, at GBP 0.0100 and GBP 0.0095 respectively. Uganda had the cheapest freight costs. This is shown in Figure 13.

Figure 13 Trip cost per freight kilogram kilometre



Tanzania has the highest cost per passenger kilometre, at GBP 0.19, although the cost in Ghana is only slightly less, at GBP 0.17. Uganda had the cheapest passenger fares. This is shown in Figure 14.

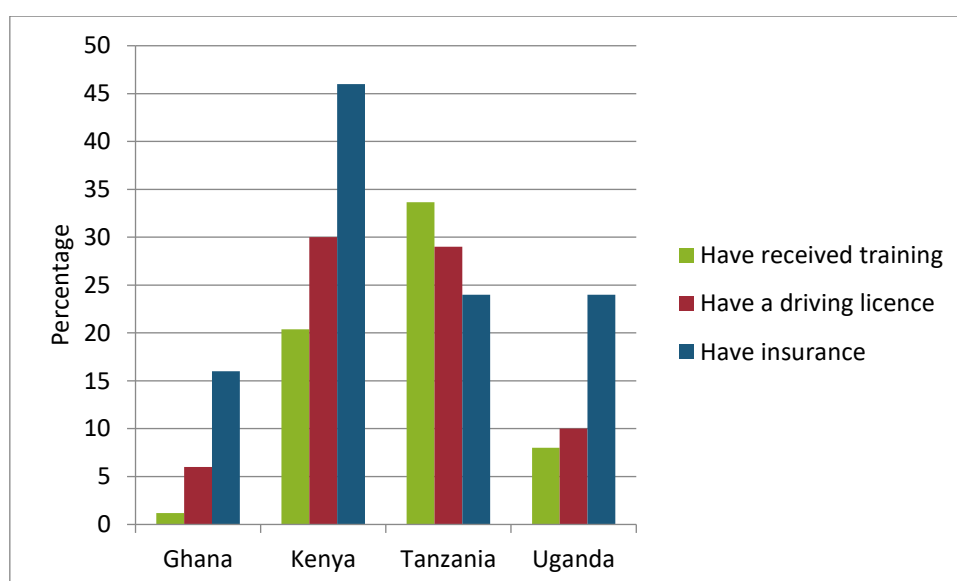
Figure 14 Trip cost per passenger kilometre



Disbenefits more evident

Ghana had the lowest proportions of riders who have ever received formal training, who have a driving licence and who have insurance. This is shown in Figure 15.

Figure 15 Riders' training, licences and insurance



Relating to injuries, the study collected information on frequency and description of injuries reported by riders as well as on a number of proxies for injury severity, including the number of days of normal activity missed and the amount of money spent on medical treatment. Overall, riders in Ghana appear to have suffered the most frequent and most severe injuries. Ghana had the highest proportion of riders who:

- Have suffered an injury more than once ever
- Have suffered an injury within the last one month
- Have suffered an injury to the head, neck and face in the last three years
- Describe their most serious injury in the last three years as severe
- Have missed over 30 days normal activity as a result of an injury in the last three years
- Still suffer some physical, economic or financial impact from an injury in the last three years

This is shown in Figures 16, 17 and 18.

Figure 16 Frequency of riders' injuries, and injuries to head, neck and face

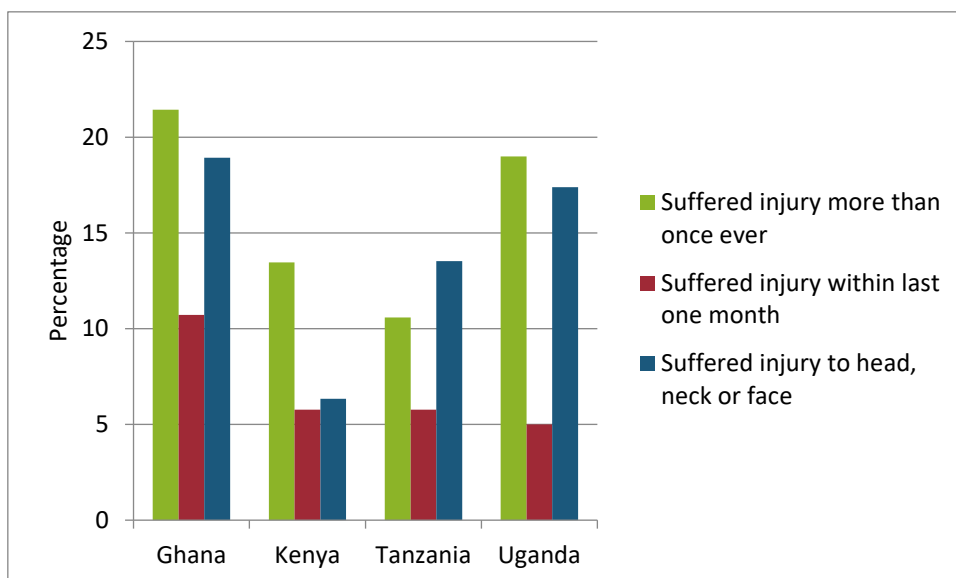


Figure 17 Riders who describe their injury as severe and who have missed over 30 days' activity

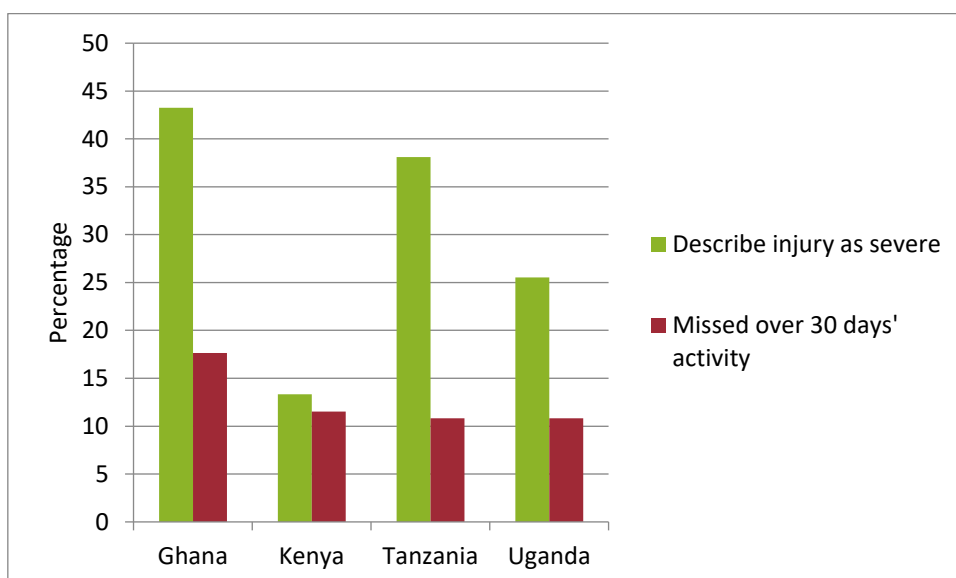
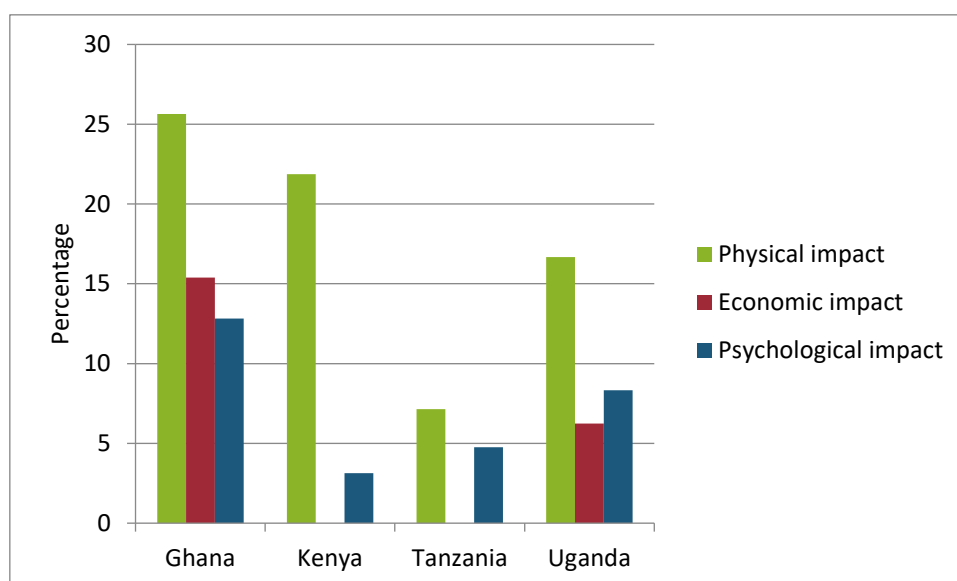
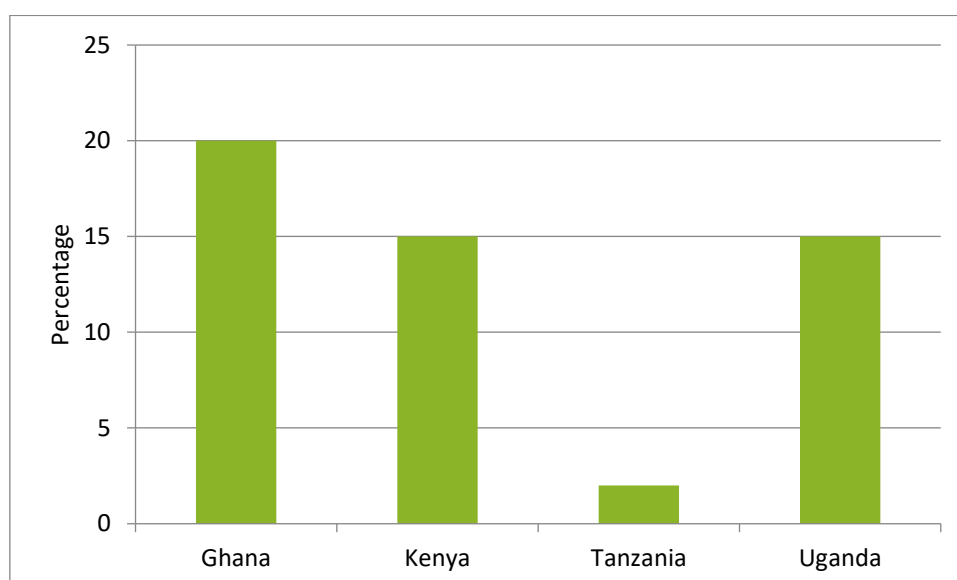


Figure 18 Riders still suffering impact of an injury



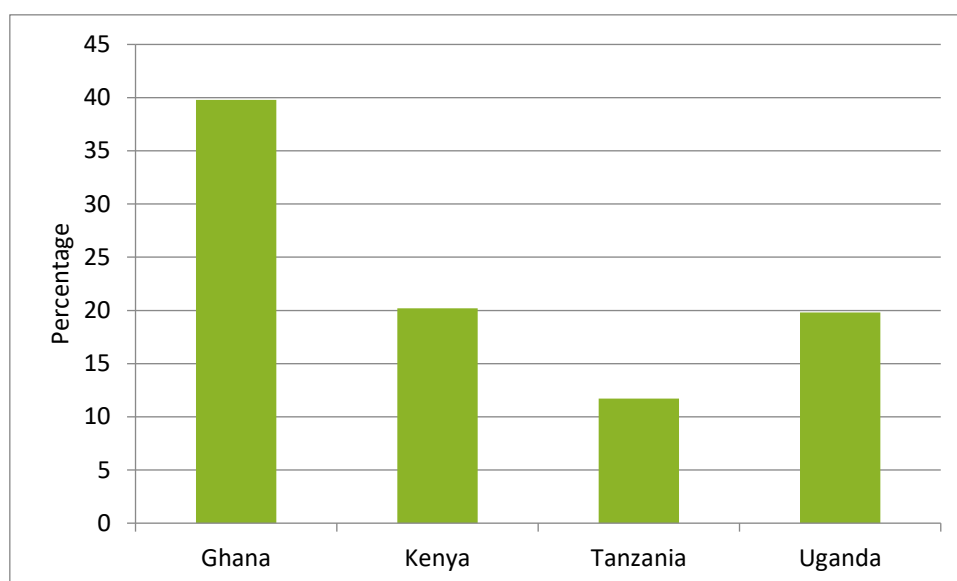
Ghana has the highest proportion of riders who say that they never wear a helmet, as is shown in Figure 19.

Figure 19 Riders who say that they never wear a helmet



Ghana also had the highest proportion of riders who have suffered from a health issue that they attribute to riding a motorcycle taxi, as shown in Figure 20.

Figure 20 Riders who have suffered from a health issue that they attribute to riding



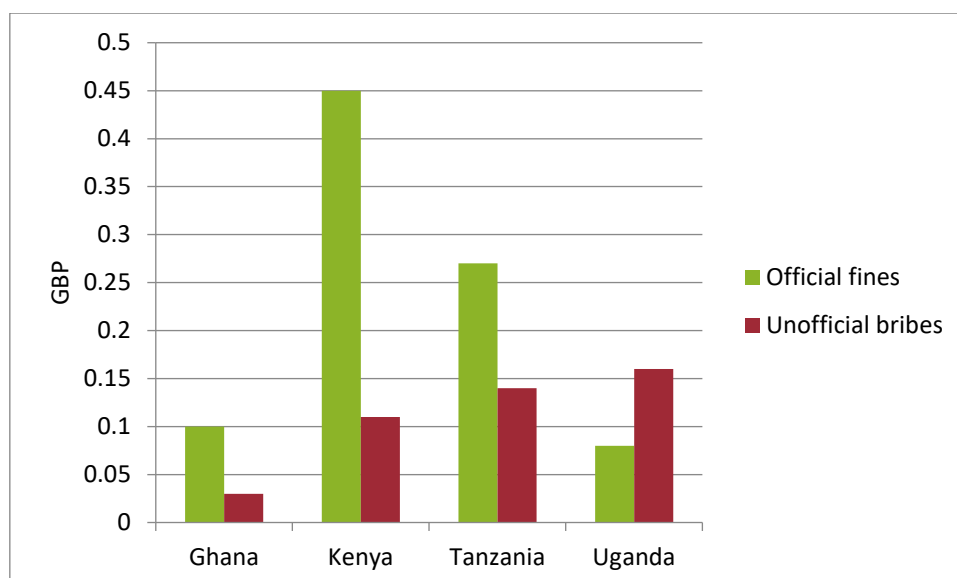
As mentioned at the start of this section, it is not possible to directly attribute the motorcycle ban to the less evident benefits and the more evident disbenefits in Ghana when compared to other countries. However, the study has shown that in Ghana motorcycle taxis on the whole are less available, more expensive for passengers and less profitable for riders than in other countries, and that riders in Ghana are less likely to have received training, more likely to have suffered a serious injury, less likely to wear a helmet, and more likely to have suffered from a health issue than riders in other countries.

4.4.2 Positive effects of regulation in Kenya

Conversely, in Kenya, where regulation was found to be the strongest, the benefits that motorcycle taxis bring to rural communities appear to be more evident and disbenefits appear to be less evident. Although as with Ghana, a direct link between these two findings is difficult to prove.

Not only did the review of the regulatory frameworks of the four countries reveal that Kenya's laws related to motorcycle taxis were the most comprehensive, they also appear to be better enforced: riders in Kenya pay more in official fines than in the other four countries and less in unofficial bribes than in both Tanzania and Uganda (although more than in Ghana) as shown in Figure 21.

Figure 21 Average daily amounts paid by riders in official fines and unofficial bribes

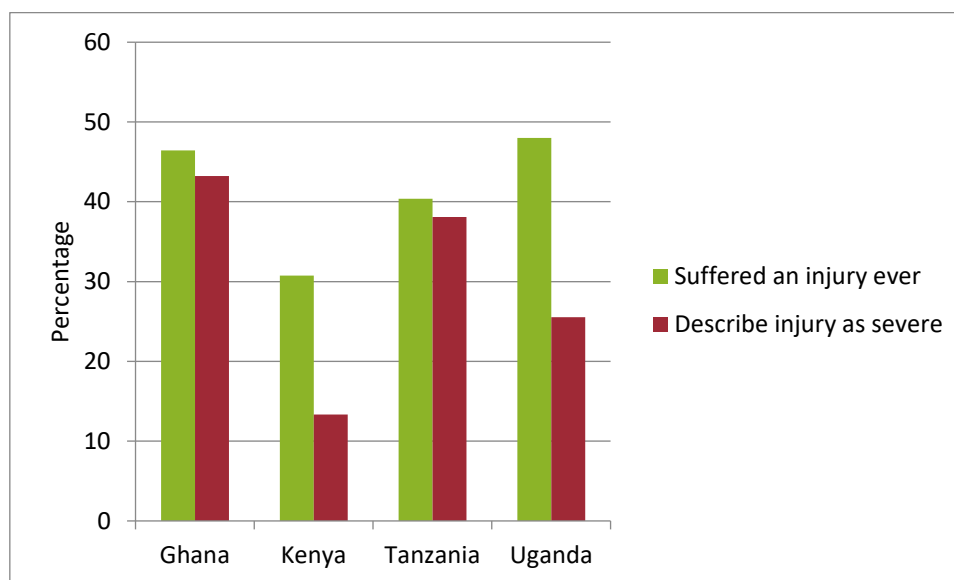


As can be seen from the charts in Figures 6, 7 and 9 in the previous sections, motorcycle taxis are popular, highly profitable to riders and available in the rural areas of Kenya where the study was undertaken.

Kenya has the highest proportion of riders who have a driving licence (20%), insurance (46%), learned to ride in a driving school (19%), are members of a motorcycle taxi association (54%), and the second highest proportion (after Tanzania) of riders who have ever received formal training (20%).

Kenya has the lowest proportion of riders who have ever been injured (31%) and the lowest proportion of riders who describe their worst injury as severe (13%). This is shown in Figure 22.

Figure 22 Riders who have suffered an injury ever and who describe worst injury as severe



4.4.3 The need for a different approach in rural areas

It is important to note that the data presented in this report was collected exclusively from rural areas. The charts presented earlier in this section demonstrate how regulation and enforcement appear to increase the benefits and reduce the disbenefits of motorcycle taxis in rural areas.

This study did not investigate motorcycle taxis in urban areas. However, stakeholders throughout this study have made it clear that road safety and crime concerns related to motorcycle taxis in urban areas are highly prevalent in all four countries. Also, the activity that analysed existing crash data in Ghana identified far higher numbers of crashes in urban areas and on highways than on low-volume rural roads.

As such, any policy considerations that are based on the findings of this study should keep this in mind. For example, when policy-makers in Ghana are reviewing the ban on the use of motorcycle taxis, the findings of this study should only be considered to influence rural transport policy. It may be necessary to explore how motorcycle taxis can be managed differently in rural and urban areas, such as through the use of bylaws.

4.5 The Need to Professionalise the Motorcycle Taxi Sector

It appears that Kenya has a slightly more 'professional' cadre of riders than the other countries in this study. As discussed in Section 4.4.2, the proportion of riders who have licences, insurance and were members of an association was highest of the four countries, and the proportion who had been formally trained was the second highest (after Tanzania). Still, the majority of riders in Kenya remained untrained, without licences, without insurance, and were not members of an association. While it is not possible to directly attribute the way Kenya manages motorcycle taxis to this level of 'professionalism', Kenya does have the most comprehensive legislation, appears to have the strongest levels of enforcement, and is most advanced in its efforts to support associations.

While the motorcycle taxi sector undoubtedly provides important employment opportunities for young men in rural areas, it should not be considered to be a way to keep young men busy at the expense of their safety and the safety of passengers due to a lack of regulation. This study has identified that in those countries with the lowest levels of regulation by government – Ghana and Uganda – the benefits to both riders and passengers are limited in comparison with countries where government is more proactive in regulation – Kenya and Tanzania.

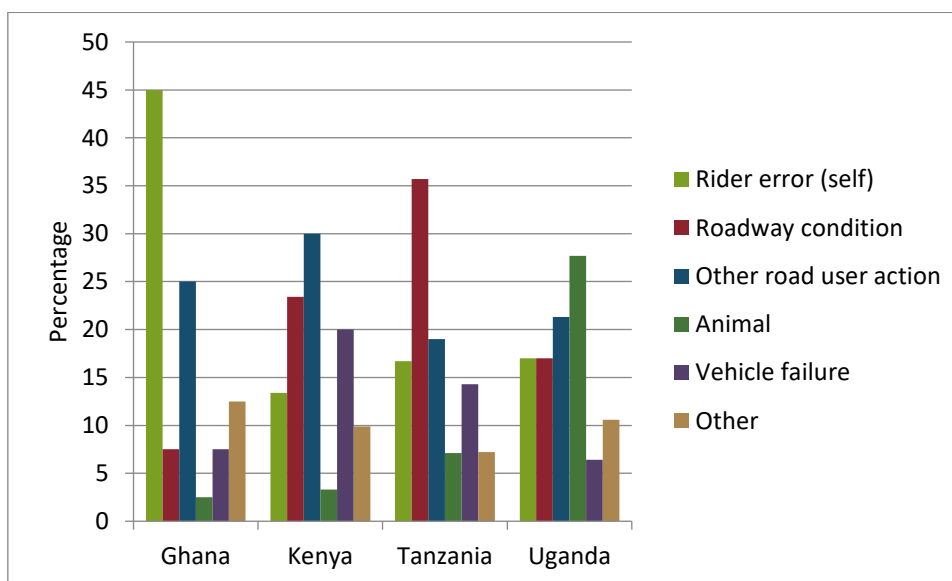
Bearing in mind the importance of motorcycle taxis as a mode of transport, efforts should be made to ensure that riders are treated as professional public transport operators. If motorcycle taxi operations are viewed as a serious and professional vocation, there will be greater emphasis on training, and in turn, safety, which will contribute to improving the perception of riders in the eyes of policy-makers, law enforcers, their passengers and members of the general public.

4.6 The Need for Improved Training

4.6.1 Causes of crashes are often linked to rider error

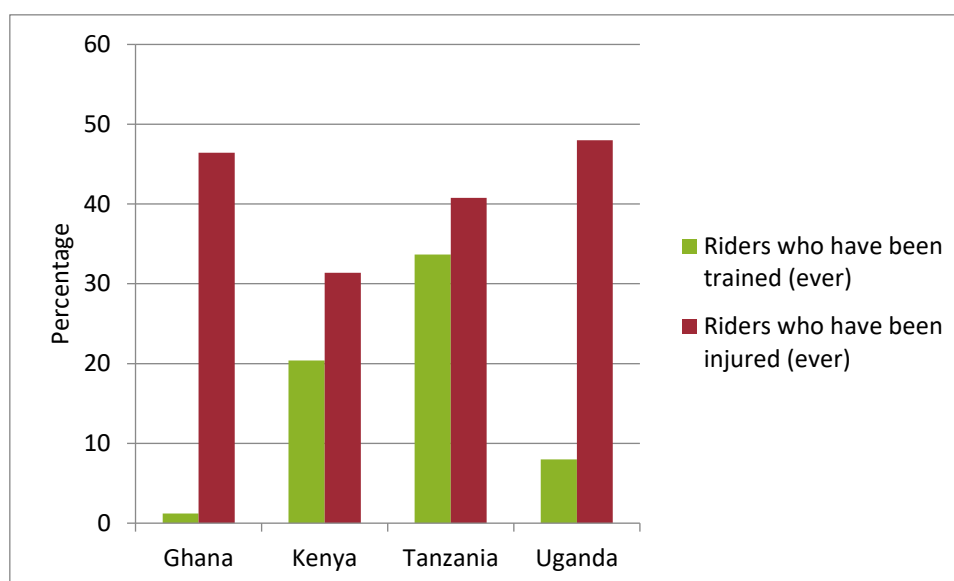
Riders provided different reasons to explain the primary cause of crashes in which they were involved. Rider error (self), the actions of other road users, the condition of the road, and vehicle failure were the most common contributory factors across all four countries. This is shown in Figure 23.

Figure 23 Main causes of crashes, as identified by riders



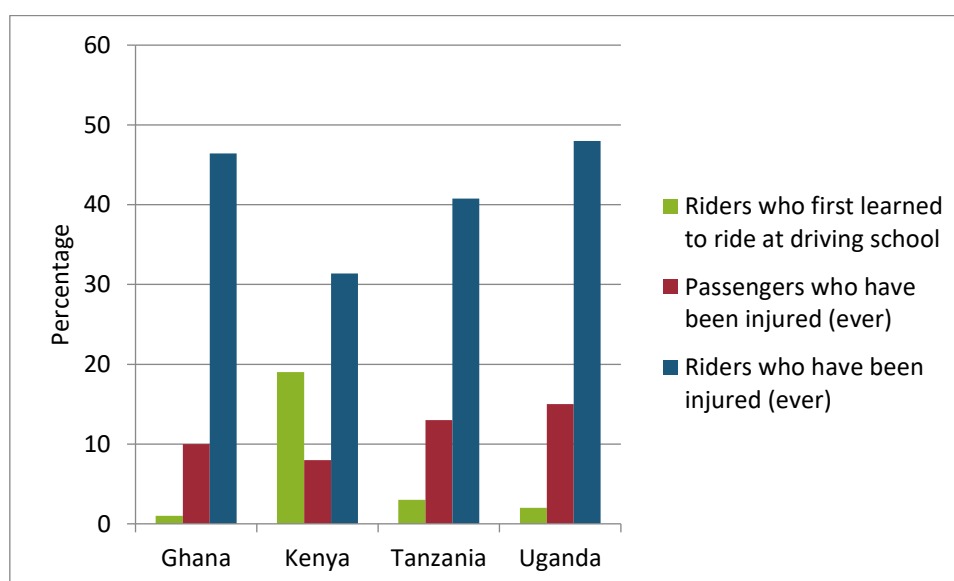
The survey found that Kenya and Tanzania have a higher proportion of riders who have received formal training (defined as a training course for which they were awarded a certificate), than in Ghana and Uganda. Kenya and Tanzania also have lower rider injury rates than Ghana and Uganda, as is shown in Figure 24.

Figure 24 Riders who have been trained (ever) and injured (ever)



There appears to be a link between how riders first learned to ride and the likelihood of riders and passengers being involved in a crash. In Ghana, Tanzania and Uganda very few riders first learned to ride through formal training (1%, 3% and 2% respectively), and riders in these countries reported high rates of injuries. In Kenya, however, 19% of rural riders first learned to ride through formal training and riders reported the lowest rates of injuries. This is shown in Figure 25. It reinforces the importance of formal training when riders start their riding career as a strategy to reduce injuries to riders and passengers.

Figure 25 How riders first learned to ride vs injured in a crash



There is also evidence to suggest that formal training reduces the severity of injuries from accidents involving motorcycle taxis. Data shows that Kenya had the lowest proportion of severe injuries sustained, while Ghana, which had very low training levels (1%), had the highest proportion of riders who have suffered a severe injury, have been injured more than once and who are still suffering from some physical, economic or psychological impact of an injury. While the severity of the injury was self-reported by the riders rather than a clinical assessment, this could suggest a link between the level of training received and the severity of injuries sustained.

4.6.2 Riders who have received formal training are more likely to wear a helmet

On average, across the four countries, only 43% of rural riders said they 'always' wear a helmet, with Tanzania having by far the highest rates of helmet use according to the riders. Helmet use among passengers was far lower than among riders (15%). Furthermore, the study found that helmets were often only worn because the police require it. Once a rider has passed a police checkpoint it is common for the helmet to be removed.

In Kenya and Tanzania, riders who have been trained were more likely to always wear a helmet. This is shown in Figure 26.

Figure 26 Riders who have been trained vs not trained and who always wear a helmet



In Kenya, a statistically significant relationship (95% confidence) was identified between riders who have been trained and who always wear a helmet compared to those who have not been trained ($p < 0.05$), demonstrating the safety benefits that can be achieved through training. The reason for this could be that those riders who have undergone formal training, have a greater understanding of existing regulations and are more likely to comply.

4.6.3 Quality of training

The study has found that in general, across all four countries, the standard of formal training being delivered to motorcycle riders is low. Training is often only theory-based, without a practical training component, and is limited in its scope and duration. It is often run for short periods of time per day, and for a limited number of days. Many driving schools lack access to standardised training materials for the training of motorcycle and three-wheeler riders and therefore develop their own materials which vary greatly from school to school. In some cases, training schools adopt materials that are used to train drivers of four-wheeled vehicles, so the focus is often not appropriate for motorcycle riders.

This study advises that governments are vigilant in their oversight of training schools. For example, in Tanzania, some training schools were found to be charging riders in rural areas for training, on the false premise that they would be able to obtain a licence using the training certificate. In response to this, the Traffic Police should be required to re-register all driver training schools to ensure that they are capable of providing motorcycle rider training.

More often than formal training, riders undergo some form of sensitisation – commonly delivered by Traffic Police officers – that cover only theoretical messages such as the most basic laws and the meaning of road signs, but with little or no practical component.

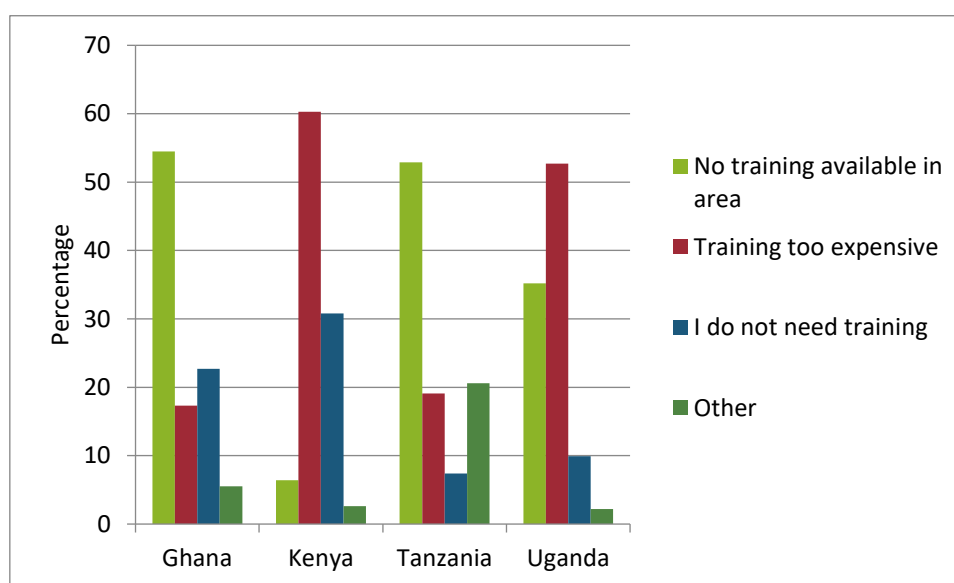
Basic training and sensitisation is better than no training or sensitisation at all. But it is inappropriate for riders to be granted driving licences when they have not received comprehensive training, including practical training on how to control the vehicle.

The 2015 motorcycle rider training curriculum that was developed in Tanzania and the manual that has been developed as part of this project contain the minimum training requirements that should be met before a rider is issued with a driving licence. While these materials were designed specifically for Tanzania, only minor changes would be required for them to be applicable in Ghana, Kenya, Uganda and other countries in Africa.

4.6.4 Training can be difficult to access for riders of motorcycle and three-wheeler taxis in rural areas

In Ghana and Tanzania, riders cited a lack of locally available training as the main barrier to undertaking formal training. In both Kenya and Uganda, the main barrier was reported to be the cost of training. This is shown in Figure 27.

Figure 27 Reasons given by riders for not undertaking formal training



In response to this, stakeholders, such as the training schools and regulators consulted throughout this research, commented that driving schools find it difficult to make a profit in rural areas where the population density is low.

With the majority of driving schools in the project countries being based in urban areas, provision of affordable training in rural areas is a challenge, although some efforts are underway to address this. For example:

- In Kenya, Pettans Driving School have been able to access funding from county-level government bursaries and community development funds to fund the training of rural riders. With this funding, they offer training at a reduced price, recognising that riders in rural areas would otherwise not be able to afford to pay.
- In Kenya, an individual member of the Kenya Police Service – Chief Inspector Boniphace Otieno – is championing training and sensitisation efforts for motorcycle riders across the country by promoting coordination with NTSA, county governments and motorcycle taxi associations.
- In Tanzania, VETA, influenced by lobbying from the Traffic Police, have recently begun using the motorcycle rider training curriculum that was developed by Transaid for SUMATRA in 2015, with support from AfCAP. During late 2018 and early 2019, VETA provided training to 62 trainers, who will go on to train riders using the curriculum.

- In Tanzania, the curriculum developed by Transaid for SUMATRA has been distributed to all Regional Traffic Officers. The Traffic Police are currently seeking assistance to train officers to be able to oversee the training provided by driving schools to ensure that they are following the curriculum, recognising that they currently have insufficient capacity to do this.

4.6.5 Recognition of the need for training

In both Ghana and Kenya, the second most commonly-cited reason for not undertaking formal training was “I do not need training”. This suggests that the riders who gave this response believe their riding ability to be sufficient for their needs, and that they do not experience any negative consequences from not having undertaken formal training, such as the lack of ability to obtain a driving licence or being subjected to fines or other payments to authorities.

4.6.6 Production of a manual to improve motorcycle rider training

As part of this project, an instructor’s manual has been developed, which complements an existing motorcycle and three-wheeler rider training curriculum that was developed in 2015 in Tanzania. The instructor’s manual covers modules such as road signs, signals and markings, being ready to ride, basics of motorcycle riding, manoeuvring exercises, negotiating the road safely, defensive riding, customer care, HIV/AIDS awareness, crash management and first aid.

4.7 The Need for Robust Testing and Licensing

During the course of this research, weaknesses were found in the process of testing motorcycle riders and issuing driving licences. In many cases, the tests did not adequately assess the practical ability of the rider to control the vehicle, but rather evaluate theoretical knowledge of laws and road signs. In some cases, riders were found to be able to obtain a driving licence despite not having undertaken any training or form of assessment.

As discussed in Section 4.5, in order to professionalise the motorcycle taxi sector, a robust process of testing and licensing is required.

The content of the test for riders should reflect the content of the national training standard to ensure that a candidate has met the minimum required standard, and should assess both the theoretical knowledge and practical competence of the rider. Limiting the practical test to manoeuvring exercises does not adequately test the candidate’s ability to manage his or her vehicle.

Around the world, many countries are moving towards having a form of national transport and safety authority or driver and vehicle licensing authority. These authorities are mandated to oversee and manage a variety of transport related activities, including the registration and oversight of driver training schools, the effective testing of drivers and riders and the issuance of driving licences.

Having one authority responsible for all matters relating to vehicles and drivers (including motorcycle riders) would streamline activities and ensure a harmonised approach without conflicting priorities (both financial and political). In Tanzania, for example, government regulation related to motorcycle and three-wheeler taxi operations is currently divided between the Traffic Police (who are responsible for overseeing training and conducting driving tests), TRA (within is responsible for issuing driving licences), and SUMATRA (which is responsible for issuing business licences). A lack of cooperation between these authorities has resulted in poorly trained riders being issued driving licences and business permits.

4.8 Crashes and Injuries

Issues related to crashes and injuries have been discussed in several of the earlier sections of this discussion, including that Ghana – where motorcycle taxis are illegal – had the highest rates and severity of injuries, and that Kenya and Tanzania had the lowest rates of injuries and the highest rates of training. However, certain other areas related to crashes and injuries warrant discussion.

4.8.1 Injury rates in comparison to previous studies

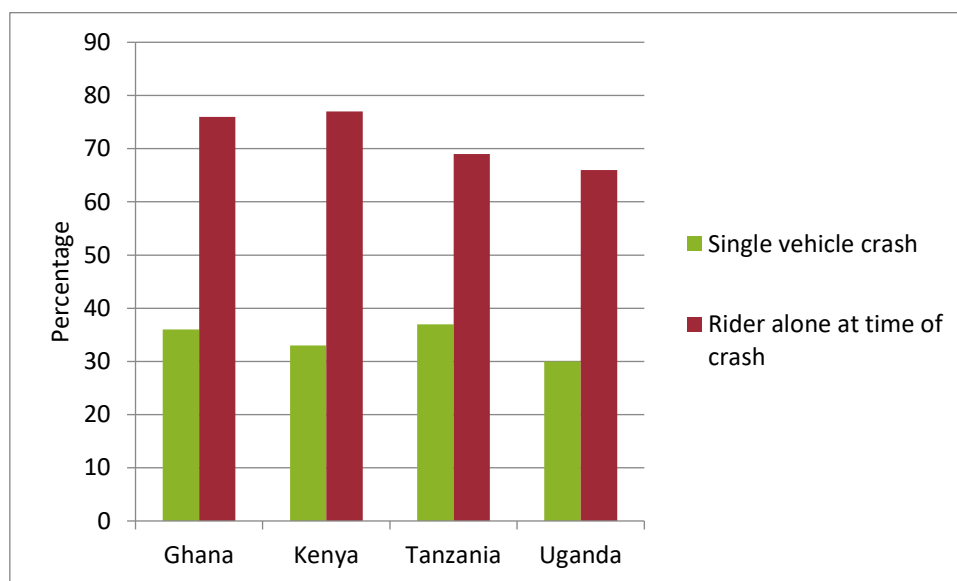
Previous AFCAP-supported studies have found very high crash rates among rural motorcycle taxi riders. Two separate studies carried out by Amend in rural Tanzania in 2013 and 2015 found that 79% and 96%, respectively, of riders had been involved in a crash in the last 12 months. However, in these earlier studies, the question that was asked of riders was “Have you been involved in a crash?”, which did not identify the consequences that the crash had on the rider.

In this study, riders were asked about injuries that had “resulted in them losing money, requiring medical attention, or affecting their family life”. The intention of this was to discount any minor injuries that had not negatively impacted the rider in a meaningful way. The study found that 46% of riders in Ghana, 31% in Kenya, 40% in Tanzania and 48% in Uganda had, at some point in their life, while working as a motorcycle taxi rider, suffered an injury that met this definition. These rates are lower than the percentages found through the earlier studies, which included more minor injuries.

4.8.2 Single-vehicle crashes, when riders are alone

In all four countries, ‘Single vehicle crash / fall’ was most commonly identified by riders as the type of crash in which they had suffered their worst injury. Furthermore, in all four countries, the majority of riders were alone – without a passenger – at the time when they suffered their worst injury. This is shown in Figure 28. Similarly, a 2013 study by Amend in Tanzania found that 56% of motorcycle crashes had involved a fall without hitting anything (Amend, 2013).

Figure 28 ‘Single vehicle crash’ and ‘Rider alone at time of crash’



It seems that riders are more likely to be riding alone when crashes occur. The finding that riders were more likely to be alone at the time of the crash was statistically significant in both Ghana and Kenya ($p < 0.05$), but not in Tanzania and Uganda. This may suggest that riders are less careful when alone, and that crashes are caused by rider error.

4.9 Sensitisation of Riders and Communities

While the sensitisation of riders should not be regarded as a substitute for comprehensive training, it certainly has a role to play in improving the safety of motorcycle taxis. Sensitisation is relevant for both riders and other members of the community.

Sensitisation activities typically focus on a specific target audience, with groups of up to twenty participants. Sessions are relatively short, ranging from fifteen minutes to one hour, and are normally delivered in-situ, for example at a motorcycle taxi association stand, or where riders are waiting to obtain licences. They are delivered free of charge and attendance is not mandatory.

For riders, alongside delivering shortened versions of what would be covered through formal training such as the law, road signs, personal protective equipment, insurance, etc., relevant topics to be involved include health and lifestyle issues that are relevant to riders, such as use of alcohol and drugs, and the importance of having regular health check-ups.

Sensitisation for riders is best delivered by someone in a position of authority – perhaps a police officer, the leader of a motorcycle taxi association, or a government official such as a Community Development Officer. Police and government officials may be able to coordinate with motorcycle taxi association leaders to maximise participation.

In the wider community, sensitisation of passengers is important, with a focus on explaining how passengers can keep themselves safe. Topics for passengers could include how to identify a safe rider and a safe vehicle, the risks of overloading and overspeeding, and the benefits of wearing a helmet.

In Kenya, it was found that 21% of the motorcycle taxi riders that were interviewed had been a student directly before becoming a rider. This suggests that schools may be suitable venues in which to deliver motorcycle taxi-related sensitisation, with topics possibly including discouraging youths from dropping out of school to become a rider. Topics in schools could also be targeted at young people, explaining the risks of teenage pregnancy and sexually transmitted infections.

All sensitisation activities should be delivered in a way that is appropriate to context, carried out using local languages and by people who understand the local cultural norms.

The motorcycle taxi associations' operations manual that has been developed as part of this project gives some guidance on how associations' leaders can deliver basic advice to their members on riding technique, vehicle safety checks, and general customer service.

4.10 Motorcycle Taxi Associations

There is strong belief among many stakeholders in the project countries that motorcycle taxi associations are important for the effective management of the sector.

Motorcycle taxi riders and owners commonly form themselves into associations for a variety of reasons, including social support, personal security, to obtain credit and to lobby government. In rural areas, where many riders do not have insurance for their vehicle, their health, or other eventualities, motorcycle taxi associations play an important role in social security. Riders sometimes pay a joining fee and/or a monthly membership fee. In return, if they suffer an injury, illness, theft or other problem, the association provides financial support.

In rural areas of the project countries, many of the associations are informal and unregistered.

Governments recognise numerous benefits of working with associations, such as:

- Requiring associations to enforce regulations in line with laws such as helmet-wearing and number of passengers
- Registering individual riders, for example to enable identification in the case of their involvement in a crash or a crime
- Enabling communication with riders, through their leaders, for example, to be able to coordinate training and sensitisation activities

4.10.1 Associations and their role in regulation

In Ghana, as motorcycle and three-wheeler taxis are illegal, the law does not provide associations. Despite this, 42% of the riders interviewed as part of this study said they belong to an association (defined as an association with a leadership structure).

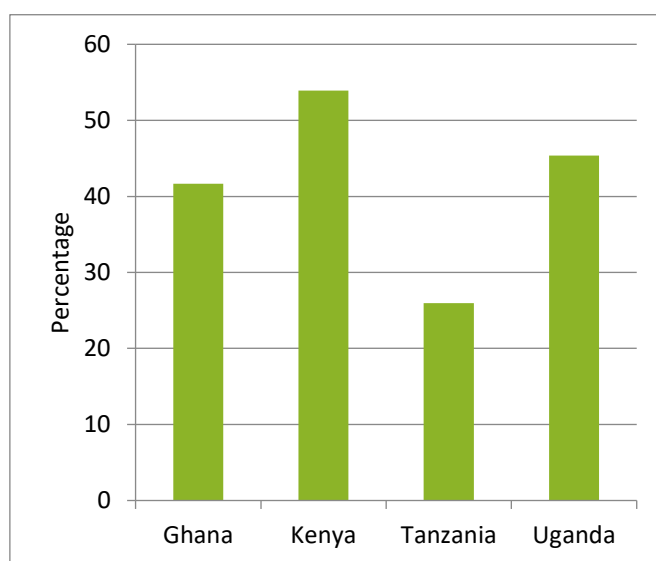
In Kenya, legislation requires motorcycle and three-wheeler taxi riders to be members of a registered association with a minimum of 100 members. This project found that 54% of the riders interviewed belonged to an association.

In Tanzania, the Transport Licensing Regulations (Motor Cycle and Tricycles) of 2010 require that riders are members of a registered association. However, it was learned during the course of this project that this requirement was no longer being enforced, as it had been identified that leaders of some associations were using their positions to extort money from riders by requiring them to pay excessive joining fees and membership fees. This project found that 26% of the riders interviewed belonged to an association.

In Uganda, the law does not require riders to be members of motorcycle taxi associations. During the Uganda workshop, the Secretary of the NRSC advised that they had consulted with lawyers about this and determined that people were considered free to associate or not associate and therefore could not force motorcycle taxi riders, by law, to associate. However, the NRSC did recognise the potential benefits of mandating motorcycle riders to belong to associations. This project found that 46% of the riders interviewed belonged to an association.

The percentage of riders who said that they were an active member of an association is shown in Figure 29.

Figure 29 Association membership



4.10.2 Survey findings related to motorcycle taxi associations

This project found that the links between association membership and improvements related to motorcycle taxi operations were inconclusive, with in some cases membership appearing to be associated with benefits but in other cases membership appearing to be associated with disbenefits. Figures 30, 31 and 32 show the correlations between riders who are / are not members of an association and riders who have received training, have driving licences and own their own vehicle.

Figure 30 Association membership and have received training ever

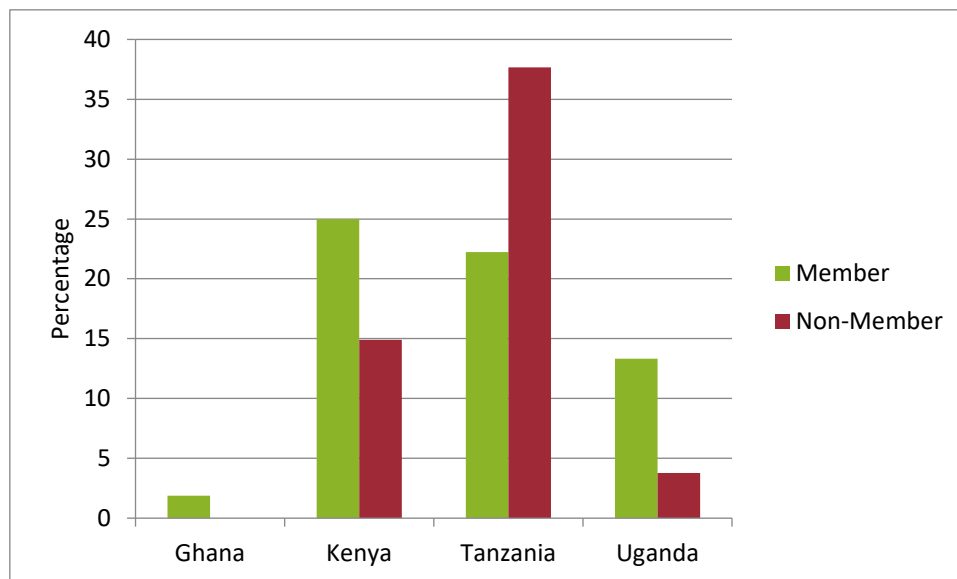


Figure 31 Association membership and possession of driving licence

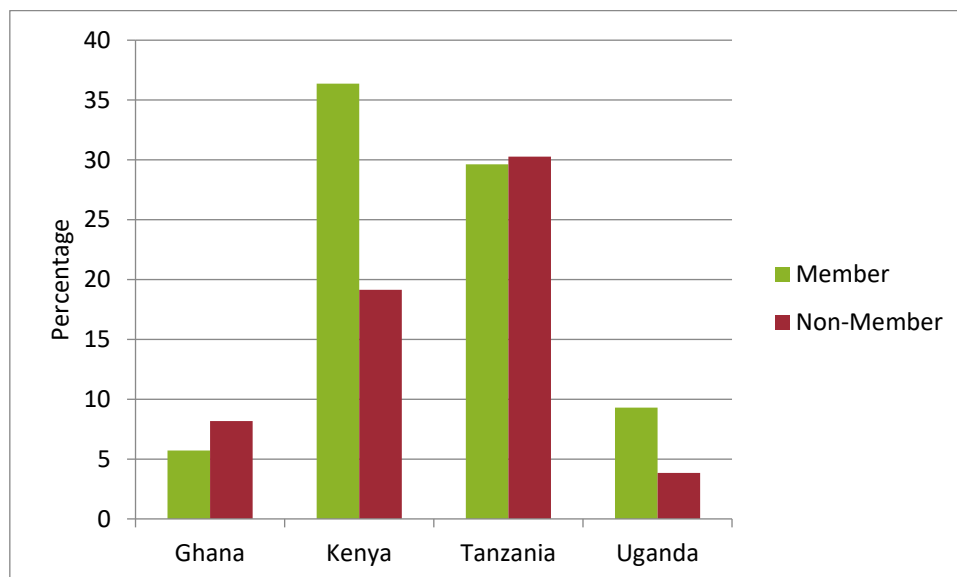
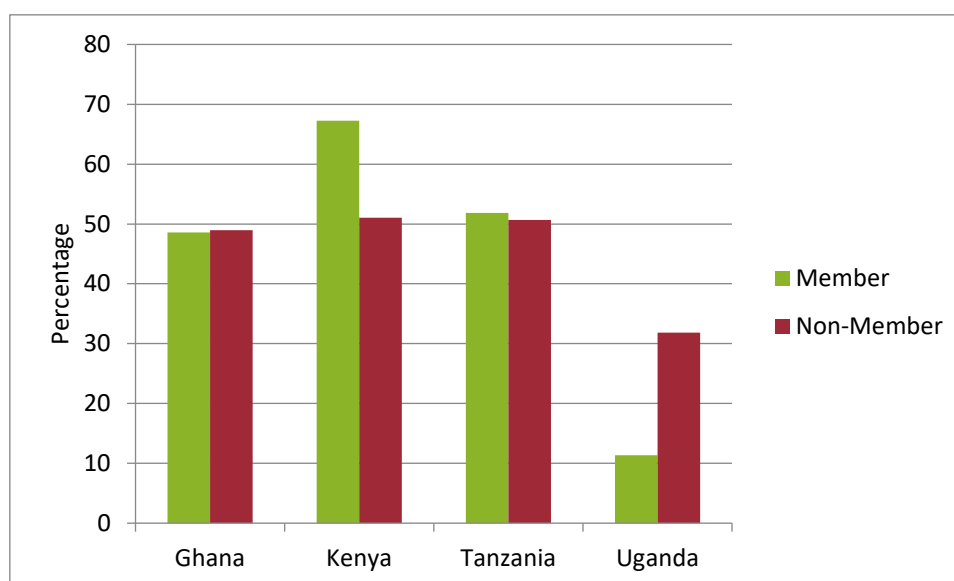


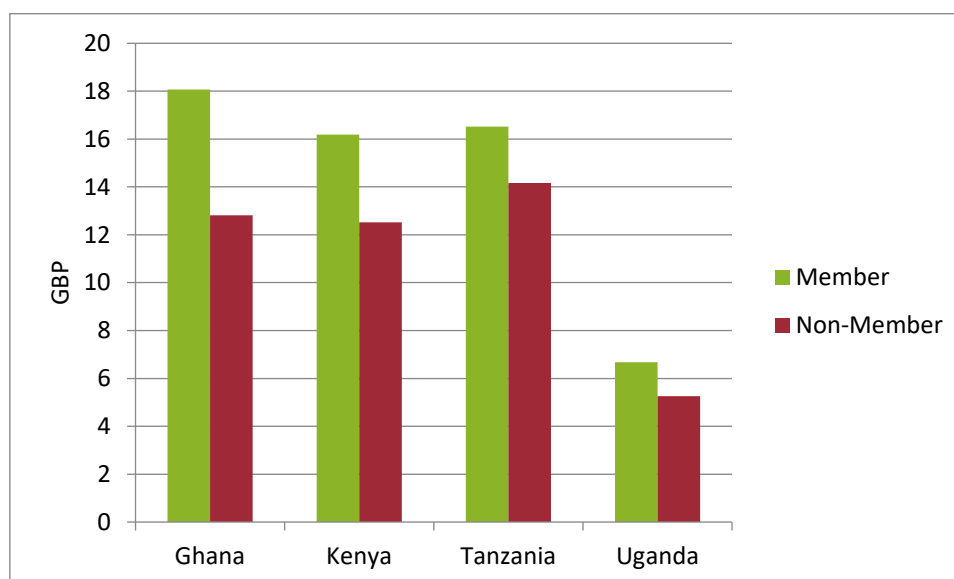
Figure 32 Association membership and vehicle ownership



In some countries, association members were more likely to have received training, obtained a driving licence and bought their own vehicle, while in other countries, members were less likely to have done so.

One interesting variable for which the survey results were consistent across all four countries was their 7-day profit: in all countries, association members had made more profit than non-members. This is shown in Figure 33.

Figure 33 Association membership and 7-day profit



4.10.3 Challenges and opportunities

Through this project's consultation with stakeholders, a number of challenges were identified that prevent the potential benefits of motorcycle taxi associations from being maximised.

In Tanzania, some association leaders have been found to be unscrupulous, using the associations to enrich themselves. The survey found that Tanzania had the highest one-off joining fees and the second highest monthly membership fees. SUMATRA explained that their requirement for riders to belong to an association in order to obtain a business licence had resulted in leaders charging high fees. Members in Tanzania also earned only GBP 1.12 more in profit than non-members in the last seven days. This could explain the reason why Tanzania was found to have the lowest percentage of riders who were members.

In Kenya, BAK's initiative to register all riders seems to have had many potential benefits, but is struggling due to a lack of funding. Also in Kenya, the requirement for riders to be a member of an association with a minimum of 100 members seems unrealistic for rural areas.

Despite these challenges, associations do appear to provide opportunities to improve the management of the motorcycle taxi sector. The fact that association members have been seen in all four countries to earn more profit than non-members can be promoted by regulators and local governments to encourage riders to join associations.

The operations manual developed as part of this project can assist in maximising the potential benefits of associations.

4.11 Appropriate and Effective Enforcement

Enforcement of motorcycle taxi-related laws and regulations has been identified as a major challenge in all of the project countries. This is particularly the case in rural areas, with authorities having limited resources, resulting in low levels of police presence away from urban areas and major highways. During discussions with the police conducted by the project team, some officers described their approach to enforcing laws in rural areas as 'humanitarian'.

Examples of such leniency on the part of the police included when riders and/or passengers do not wear a helmet. During focus groups and informal discussions, riders often cited the lack of availability of helmets in the local area as a reason for not having been wearing one when stopped by the police. Rather than imposing fines, some officers in Luwero district in Uganda have chosen to try to educate riders on the benefits of wearing a helmet and to encourage them to seek out and purchase one in a nearby urban area. Where the 'humanitarian' approach is not taken, official fines or unofficial bribes and dashes are levied. From the survey results, Kenya had the highest rate of riders paying an official fine, while Uganda had the highest payment of unofficial bribes and dashes.

While the law is enforced officially, through fines, and unofficially, through bribes, a major impediment to riders complying with the law seemed to be a lack of education around what the laws require and a lack of understanding of the benefits of compliance beyond merely doing what the law says. Education appears to be a key requirement prior to enforcing new laws and regulations. Enforcement of new regulations, which change how motorcycle and three-wheeler riders operate, is recommended to be done in an appropriate and sensitive manner in order to avoid unrest, protest and even riots by riders. Education is critical in this and a suitable approach should involve effective community policing aimed at educating the rider and reducing the impression amongst riders of a 'them vs us' environment.

The effectiveness of enforcement has the potential to be improved by engaging with associations, which can not only educate their members on the necessary rules and regulations, but can also assist the authorities in improving road safety and compliance with the law. Associations could adopt a code of conduct for riders (see the 'Manual for Motorcycle and Three-Wheeler Taxi Associations', which was developed as part of this project) which incorporates specific requirements for members to obey, such as helmet use, possessing the necessary documentation (driving licence and insurance), and carrying only one passenger.

To increase compliance with regulations, such as possession of a driving permit and uptake of rider training, deliberate strategies are required. These services should be decentralised and brought closer to more rural communities. The cost of rider permits should also be reviewed as many riders in rural areas find the cost of getting a riding licence beyond their means. Currently, as enforcement is often weak there is limited motivation to obtain a licence.

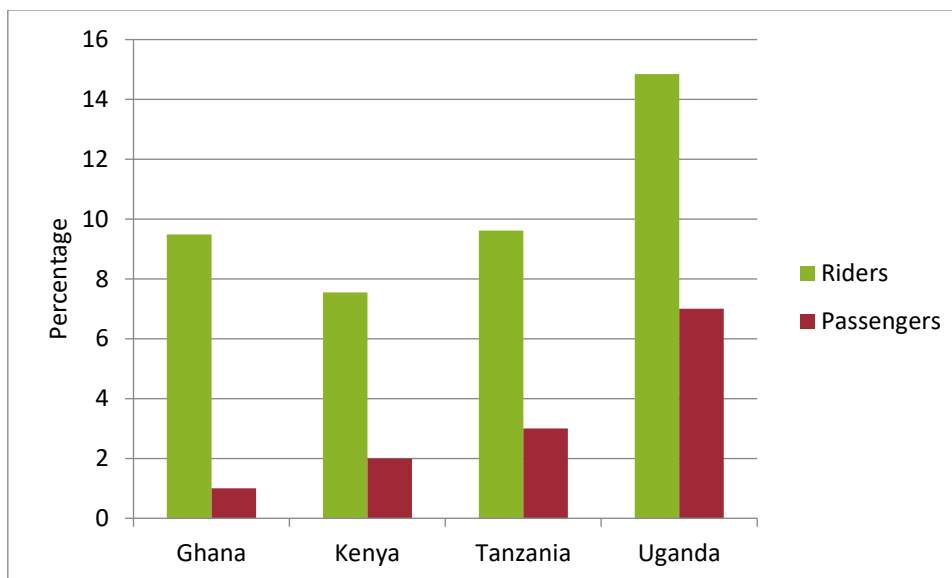
4.12 The Need to Reduce Crime

In all four countries, motorcycle taxi-related crime was identified by both riders and passengers as the second worst factor about motorcycle taxis, after risk of a crash. Among riders, concern about crime was greatest in Uganda, with 31% saying that motorcycle taxi-related crime was the worst factor. Among

passengers, concern about crime was greatest in Kenya, with 10% saying that motorcycle taxi-related crime was the worst factor.

In Uganda, 15% of riders and 7% of passenger said that they had been a victim of crime, abuse or threats. This compared to 9% and 1% in Ghana, 8% and 2% in Kenya and 10% and 3% in Tanzania, respectively. This is shown in Figure 34.

Figure 34 Victims of crime, abuse and threats



In all countries, riders were statistically more likely to be a victim of crime, abuse or threats than passengers ($p < 0.05$).

In Uganda, among the 101 riders interviewed, twelve cases of crime and six cases of abuse or threats were identified, with some riders being victim of both. The most common types of crime were theft/snatching and assault without taking property. In both Ghana and Tanzania, the most common types of crime were robbery using force.

In all countries, the item most commonly stolen from riders was money. In Kenya, two cases of a motorcycle being stolen were identified, and in Ghana one case of a motorcycle being stolen was identified. In Kenya, Tanzania and Uganda, cases of mobile phones being stolen from riders were identified, but not in Ghana.

In Uganda, the perpetrators of crimes were most commonly armed with a stick or used their bare hands. In Ghana, meanwhile, three cases used a gun and three other cases used a large knife. In Tanzania, a gun was used in two cases and a large knife in two cases. In Kenya, perpetrators most commonly used their bare hands, but in one case a small axe was used and in another case a handkerchief covered in a drug was used.

In Ghana, Kenya and Tanzania, the most common perpetrators of crime, abuse or threats against riders were the passengers that the riders were carrying at the time of the crime. In Uganda, the perpetrators were most commonly on foot.

Conversely, crimes, abuse and threats against passengers were most commonly carried out by the riders of the motorcycle taxis they were using.

In Uganda, two passengers said they had been assaulted and one passenger said they had had agricultural produce stolen. In Tanzania, one passenger said they had had agricultural produce stolen. All other cases identified among passengers involved verbal abuse or threats. No cases of sexual violence were identified.

During the workshops, stakeholders commonly said that they believe crime can be reduced through riders belonging to motorcycle taxi associations, and each rider being registered. Technology may also offer security solutions, for example through the reduced need to carry cash as a result of mobile money services, and the use of tracking devices.

4.13 Personal Protective Equipment

While effective training and enforcement can reduce the number of crashes, crashes will likely still occur to some degree. Personal protective equipment (PPE) is a vital component in reducing the severity of injuries and numbers of fatalities that occur amongst riders and their passengers. Critical to injury reduction is the protection of the extremities (head, hands and feet/ankles) through use of appropriate and effective PPE in the form of helmets, gloves and boots. However, the research showed that such safety equipment was often sub-standard or simply not available.

It was found that helmets were often of poor quality and did not meet national safety standards. They were often not available in suitable sizes; one rider interviewed wore three woolly hats under his helmet to prevent it rattling on his head while riding. When high quality helmets were available alongside inferior versions, riders often cited opting for the cheaper option. This was attributed to their lack of understanding of the benefits of a suitable sized, quality helmet, and their belief that a helmet is only required to satisfy the police at check points.

A common concern cited by passengers was the hygiene of helmets. With a single helmet being worn by numerous passengers each day, many passengers were concerned about infections or fungus and so decline to wear it, thus increasing their risk of death or serious injury in the event of a crash. Riders should ensure that they regularly clean and disinfect their helmets and could even provide a form of disposable head covering that could be provided to passengers.

The Citizen newspaper: Motorcycle helmets and skin infections

On 13th August 2018, The Citizen newspaper published an article entitled 'Health risk on the two-wheeler'. The article cited a 2012 study from Lagos, Nigeria, which concluded that shared helmets could transmit infections from person to person and recommended regular cleaning with a sterilant. The article quoted Dr Andrew Foi, a skin specialist at Tanzania's national hospital, as encouraging motorcycle users to avoid direct contact between skin and a helmet.



Owners who rent motorcycles to riders have a moral duty to provide suitable PPE to the rider for them and their passengers to wear and protect themselves while using their vehicle. This moral duty should be reinforced by legislation. This should also go beyond just the requirement of providing two helmets when a motorcycle's ownership is changed, as is currently the case in Kenya.

4.14 The Need to Improve Rural Roads

The condition of rural roads has been found through this project to contribute to both motorcycle crashes and health issues among motorcycle riders.

In Tanzania, of the 40% of riders interviewed who had been injured in a crash in the last three years, over one-third said that the road condition was the main cause of the crash. In Kenya, of the 31% who had been injured in a crash in the last three years, almost one-quarter said that the road condition was the main cause of the crash.

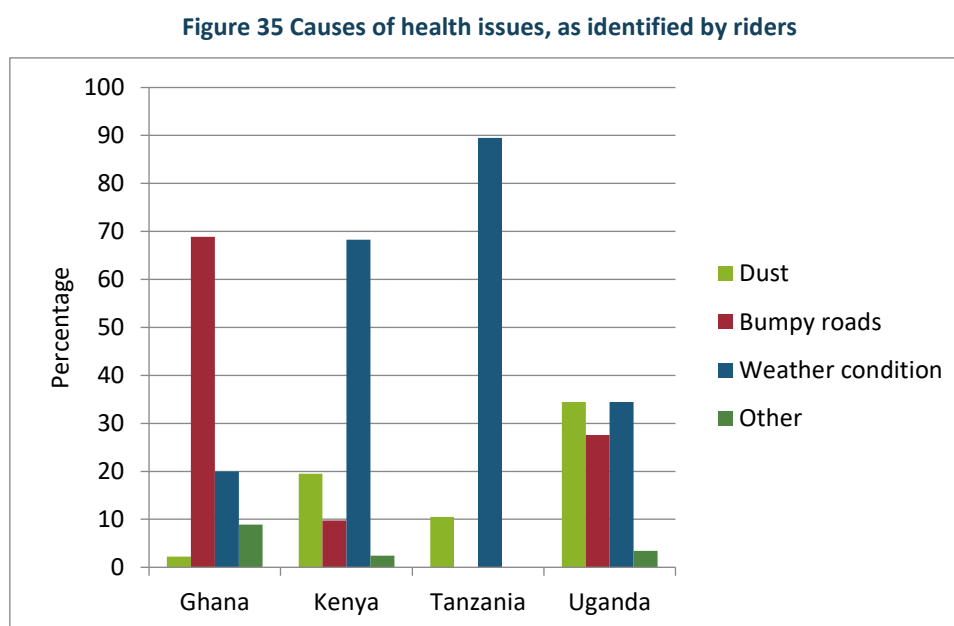
This study did not look into the specific elements of road conditions that led to the crashes, but previous AfCAP research in Tanzania (Bishop *et al*, 2014) found that motorcycle crashes on rural roads were caused by factors such as:

- Narrow roads, when oncoming four-wheeled vehicles fail to slow down when encountering a motorcycle, forcing it to the side of the road
- Unpredictable unsealed road surfaces, including loose gravel, large stones, bumpy and rutted sections, sections that are muddy and slippery when wet. As well as creating risks in themselves, these defects lead to unpredictable driving behaviour, causing riders to zigzag and ride on the wrong side of the road

- Differences in road surface types causing differences in the level of the road surface, for example where concrete surfaces are used adjacent to softer earth surfaces
- Road shoulders in poor condition, including loose material, overgrowth with vegetation and steep gradients, which present a risk when motorcycles are forced on to the shoulders when passing oncoming vehicles
- Poor lines of sight, with blind corners and roadside obstacles
- Ineffective drainage, which lead to floods and erosion
- A lack of signage warning of hazards

In Ghana, 40% of riders interviewed said that they have suffered from a health issue that they attribute to riding a motorcycle on rural roads, and in both Kenya and Uganda that figure was 20%.

Figure 35 shows the causes of the health issues, as identified by the riders.



In Ghana, the vast majority of the riders who said they suffered from a health issue attributed that issue to bumpy roads. In Uganda, over one-quarter of riders attributed their health issue to bumpy roads, while around one-third attributed their issue to dust. In both Kenya and Tanzania, the vast majority of riders identified the cause of their health issue as weather conditions – either cold, sun, rain or wind.

These findings demonstrate that opportunities exist to reduce the risk of crashes and health problems by improving the condition of rural roads.

Improving rural roads also has the potential to increase the accessibility and mobility benefits provided by motorcycles, for example by extending access to more remote communities. AfCAP-supported research in Liberia found that upgrading footpaths to motorcycle-navigable tracks is cheap, cost-effective and can have a positive impact on rural people's lives and livelihoods.

However, it must be recognised that improving rural roads and tracks results in increased numbers of vehicles and increased speeds, which can bring about safety risks. The safety of motorcyclists and other road users must be given careful consideration in all work to improve rural roads (Peters *et al*, 2018(1)).

In 2016, a Low Volume Roads Manual was published by Tanzania's Ministry of Works, Transport and Communication, developed with the support of AfCAP. This requires District Engineers to consider motorcycle safety in planning, designing, constructing and maintaining rural roads. At the same time as this manual was being prepared, advice for District Engineers was also developed to complement the manual.

4.15 The Potential of Technology

This study has seen that mobile phones play a key role in the motorcycle taxi sector, connecting passengers to riders. In urban areas, the use of smartphone 'ride-hailing' applications, which connect passengers to riders of both motorcycle and three-wheeler taxis, is increasing. But in rural areas, internet-based ride-hailing applications are not yet in use, with reasons including low population density and relatively low levels of access to the internet. It was found that across the four countries, an average of 75% of riders had a mobile phone that was in working order, but only 36% had access to the internet.

Old-style mobile phones, which do not have access to the internet, were found to be popular among motorcycle taxi riders. This is largely because, compared to smartphones, they are cheap, less easily damaged, less attractive to thieves, and have longer battery life. Passengers commonly store the numbers of their preferred local riders in their phone address book, and vice versa.

Despite the relatively low uptake of smartphones and access to internet in rural areas, technology offers the potential to address motorcycle taxi-related issues. For example, the use of mobile money is widespread in rural areas, allowing less cash to be carried and so reducing security risks. Mobile phone technology has also been identified as being used in a number of projects by non-governmental organisations, for example, to improve emergency response and to improve health services to women.

A number of local organisations who were innovating with technology to improve motorcycle safety at the time of the study, involving use of helmets and other personal protective equipment, were identified.

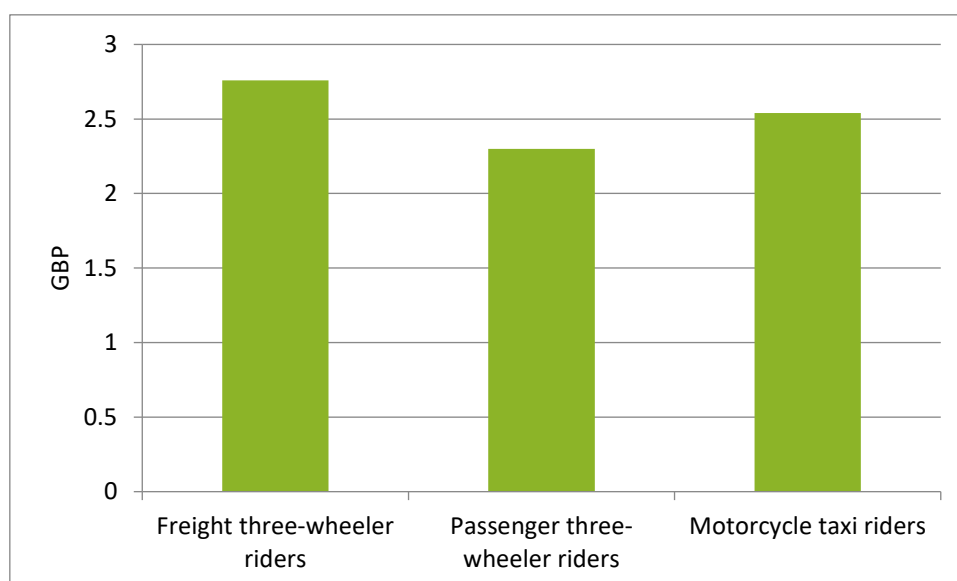
4.16 The Use of Motorised Three-Wheeler Taxis in Ghana

Ghana was the only country in this study where more than a small number of motorised three-wheelers were found to be operating in rural areas, although it is unclear why this is the case.

Thirty-two three-wheeler drivers participated in the survey of benefits and disbenefits in Ghana. Of these, 13 (41%) were drivers of three-wheelers designed to carry passengers and nineteen (59%) were drivers of three-wheelers designed to carry freight, although freight three-wheelers were seen to carry passengers and vice versa.

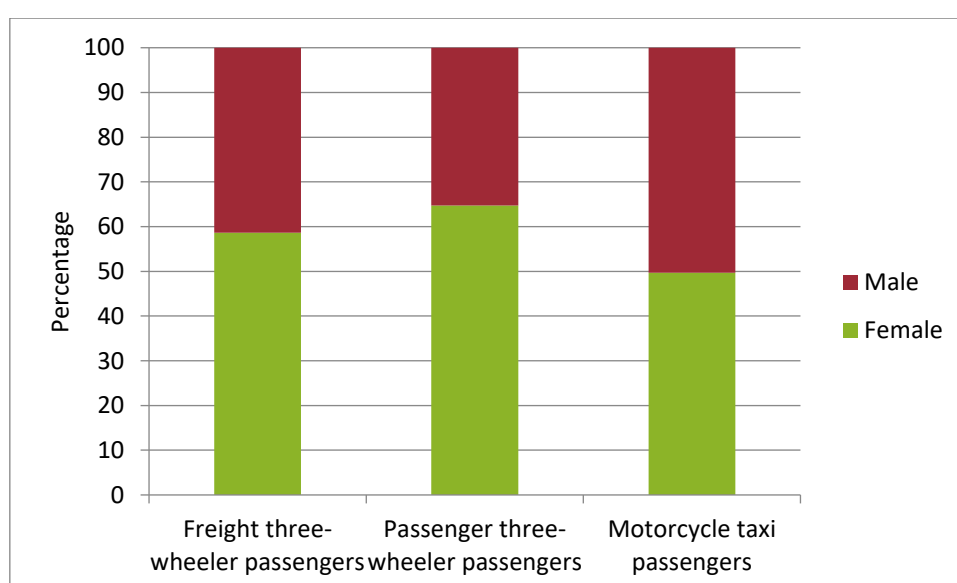
The average purchase price of a three-wheeler designed for passengers was found to be more than double the price of those designed for freight, at around GBP 1,976 and GBP 964 respectively. However, drivers of three-wheelers designed for freight were found to have earned greater average daily profit in the past seven days, at GBP 2.76 per day, compared to GBP 2.30 per day for drivers of three-wheelers designed for passengers. Drivers of passenger three-wheelers had lower average profits than motorcycle taxi riders, as shown in Figure 36.

Figure 36 Ghana: Reported average daily profit, past seven days



In Ghana, more females than males were found to use both types of three-wheelers. However, three-wheelers designed for passengers were found to be particularly popular with female passengers, with almost two-thirds of passengers on the riders' most recent trips being female. This is shown in Figure 37.

Figure 37 Ghana: Gender of passengers on riders' most recent trips



Injury rates among three-wheeler taxi drivers were found to be far lower than among motorcycle taxi riders, with 15% of drivers of freight three-wheelers, and 5% of drivers of passenger three-wheelers, saying they had suffered an injury at some point. This compares to 46% among the Ghanaian motorcycle taxi riders who were interviewed.

In Uganda, the use of motorised three-wheelers as taxis is illegal. However, during the interviews with people who do not use motorcycle taxis, it was identified that those who are afraid of crashing and those who have physical difficulties may be willing and/or able to use three-wheelers.

4.17 Innovations for Health-Related Trips and Emergency Transport

This project has identified that motorcycle taxis are critical for health-related trips and emergency transport, with over three-quarters of riders in all countries saying that they had transported a passenger

to a health facility in an emergency, and over three-quarters also saying that they believe they have saved someone's life.

However, undoubtedly motorcycles are not always the ideal form of transport for someone who is sick, injured or vulnerable in another way. As such, initiatives that modify motorcycles in a way that allows them to still provide access on rural roads, but to provide more comfortable, stable transport have the potential to benefit rural communities. Examples include the eRanger, which has been used in Kenya and other countries.

Similarly, motorcycle taxi riders are often not appropriately trained to handle someone who is sick, injured or vulnerable. Initiatives such as the Tanzania Rural Health Movement, which provide basic training to riders to assist people in emergencies, have potential to provide great benefits to rural communities.

4.18 Health Services for Riders

Health issues suffered by motorcycle taxi riders is not something that has been addressed in previous literature. However, with 40% of riders interviewed in Ghana saying that they have suffered from a health issue that they attribute to riding a motorcycle, and 20% in each of Kenya and Uganda, riders' health is clearly a concern.

The focus group discussions with riders and the interviews with health workers that addressed this issue in Kenya found that common complaints were lower back pain, numbness in legs and hands, chest infections, eye problems, headaches and hearing problems, skin infections and fatigue/exhaustion. The issue of erectile dysfunction was also raised during the discussions, although riders tended to explain this as an issue for other people rather than themselves.

As well as the health issues directly attributed to riding a motorcycle, a number of lifestyle-related health issues were identified. Sexual promiscuity, with the knock-on effects of teenage pregnancy and sexually-transmitted diseases, was discussed – although riders tended to talk about this in relation to others rather than themselves. Use of alcohol and illegal drugs was also identified among riders as an issue that can have a negative impact on their ability to ride and therefore increase the risk of crashes.

Riders could benefit from guidance that helps them to minimise the risk of acquiring a health issue, including through guidance on how to maintain the motorcycle, use of personal protective equipment and making positive lifestyle choices. Rural health workers could be trained in how to address riders' health issues, including through both prevention and treatment. Riders could be encouraged to be open about their issues, and also to obtain insurance. Insurance companies could be encouraged to provide packages that cover riders' health issues.

4.19 Economic Empowerment

4.19.1 Motorcycle ownership

As well as providing riders with a means of earning money from day-to-day, motorcycle taxis also provide opportunities for longer-term economic empowerment for people living in rural communities.

A key way to ensure longer-term benefits, and to make sure those benefits are shared among rural populations, is to increase vehicle ownership among riders. This is demonstrated by the fact that this project's survey found that Kenya and Tanzania had the highest levels of ownership among riders (61% and 51% respectively) and riders earned the most as a percentage of Gross National Income (96% and 110% respectively).

In Uganda, where only 13% of riders owned the motorcycle they use, riders earned only 69% of Gross National Income. Through conversations with Ugandan stakeholders, it was learned that it is common for politicians and other relatively wealthy individuals to own many motorcycles, and to rent them out to riders in return for a fee. While it may appear that the motorcycle owners are assisting communities, providing employment and access, it was found that they keep the majority of the profit to themselves. Riders in

Uganda earned an average of only GBP 6.15 in profit during the seven days before the survey, which is far lower than other countries.

The study identified initiatives to increase vehicle ownership among riders. For example, in Uganda the microfinance organisation Tugende provides small loans to enable riders to buy their motorcycles. In Kenya, some motorcycle taxi associations register themselves as SACCOS (Savings and Credit Cooperative Societies), enabling them to provide loans to members.

4.19.2 Women's empowerment

This project found that just 1% of riders and 3% of vehicle owners were women, while women were found to be common users of motorcycle and three-wheeler taxis, either as passengers or freight transporters. In Ghana, 69% of the freight owners interviewed were women, who commonly used three-wheelers to transport agricultural produce from the farm to the market.

A number of initiatives were identified that are attempting to address the gender imbalance of riders and owners.

In Tanzania, the NGO Pikilily trains women in motorcycle taxi operations, including in repair and maintenance, First Aid, self-defence, road safety and emergency transport.

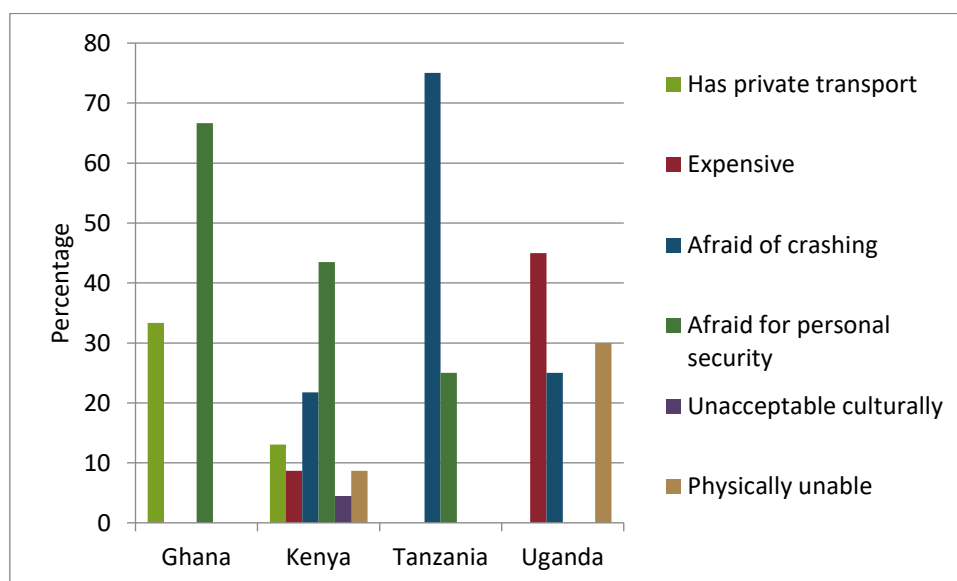
An AfCAP-supported study in Liberia and Sierra Leone has investigated the opportunities for rural women to become motorcycle taxi riders (Peters *et al*, 2018(2)). The study found that women were interested and willing to train as motorcycle taxi riders, and men are generally supportive of the idea, although many male motorcycle owners were found to be unwilling to lease their vehicles to women.

4.20 Members of Rural Communities who do not use Motorcycle Taxis

Improving basic access delivers strong development impacts in developing countries, but access only helps people if there are competitive, efficient and cost-effective transport services (DFID, 2015). Motorcycle taxis are the main form of transport service in the rural areas covered in this study, although the study also found that some members of rural communities do not use them.

The project's survey found a diverse range of reasons why people do not use motorcycle taxis. In both Ghana and Kenya, the main reason was a fear for personal security. In Tanzania, it was a fear of crashing. In Uganda, it was that motorcycle taxis are too expensive. This is shown in Figure 38.

Figure 38 Main reasons why people do not use motorcycle taxis



Across all four project countries, 19% of the people who said they rarely or never use motorcycle taxis said this is because of something that happened to them in the past. Eighteen percent said it is because of

something that happened to someone they know. The vast majority of events that had happened to them or someone they know were crashes and injuries. This demonstrates that fear of a crash or injury reduces the mobility of some members of rural communities.

In Uganda, 30% of non-users said that they were physically unable to use motorcycle taxis. This is consistent with the further investigations that were carried out into the barriers that certain groups of people in rural communities face in using motorcycle taxis. These investigations found that the biggest constraint for able-bodied people is affordability, with these people mainly being farm-hands and small-scale subsistence farmers who struggled to earn enough money to be able to pay for personal transport.

Among people with disabilities or a medical condition, some said that use of a motorcycle taxi was a physical impossibility, while others said that they feared being unable to stay on while in transit. For people facing these challenges, it is possible that three-wheelers may be a more suitable alternative, although the use of three-wheelers as taxis is currently banned under Ugandan law.

Some of the interviewees recognised that despite themselves not personally using motorcycle taxis, their availability in the local area has nonetheless had a positive impact on their lives.

4.21 Improved Use of Data

Analysing the existing data in Ghana has demonstrated the potential to improve the use of data to inform the development of policies. While the initial decision to prohibit the use of motorcycles as taxis in Ghana was made largely based on national-level crash data, by disaggregating the existing data, this project found that crash rates on low-volume rural roads were far lower than on urban roads and highways.

The findings of this project which have included identifying the benefits of motorcycle taxis in rural areas and that crash rates on low-volume rural roads are lower than those on urban roads and highways, warrant a review of the law prohibiting the use of motorcycle taxis.

This project has also identified the need to improve the collection of crash data in all four countries. Of all African countries, Ghana is often cited as an example of best practice in the management of crash data. However, all four study countries, and all other countries in sub-Saharan Africa (with the exception of South Africa), are classified by the WHO as 'countries without eligible death registration data' (WHO, 2018). While official statistics in Ghana report the number of road deaths in 2015 around 1,800, the WHO estimates the actual number to be around 7,000. The situation is similar for Kenya, Tanzania and Uganda.

5 Recommendations

The study has identified a number of opportunities to improve the operations of motorcycle and motorised three-wheeler taxis that would bring additional benefits to rural communities.

This section provides the recommendations based on the findings of this project. The recommendations are divided firstly into those which are considered to be the highest priority and have the potential to offer the greatest impact, secondly those which are desirable to support the delivery of the highest priority recommendations, and thirdly into those for further research.

The recommendations are relevant to the four project countries, and may also be relevant to other countries across sub-Saharan Africa.

5.1 Highest Priority Recommendations

5.1.1 The use of motorcycles and three-wheelers as taxis on low volume rural roads should be legal

In countries where the use of motorcycle and three-wheeler taxis is currently illegal, governments should consider legalising it – specifically on low volume rural roads – recognising the benefits to rural communities identified through this study.

Careful consideration should be given to the most effective legal framework for allowing motorcycle and three-wheeler taxis to operate on low volume rural roads, without leading to their unmanaged use on highways and in urban or peri-urban areas. This may involve the use of local bylaws.

Specifically, in Ghana, the government should consider legalising the use of motorcycle and three-wheeler taxis on rural roads. In Uganda, the government should consider legalising the use of three-wheeler taxis on rural roads.

5.1.2 Riders should be required to undergo effective, standardised training and testing to obtain a licence

The review of regulatory frameworks identified that in some countries the legal requirement for a rider to undertake training in order to obtain a licence is not explicit. It is recommended that this requirement be included in law in all countries.

The study has found that motorcycle training providers, including driving schools and the traffic police, train to different standards with different content and different levels of detail. It is recommended that countries adopt a standardised curriculum and support this with a manual for trainers, such as the curriculum and manual developed for Tanzania.

The study has also identified cases through which riders obtain official driving licences having undertaken only very basic training, or no training at all, and only a simple test, or no test at all. This must be addressed, with increased robustness of the entire process of training, testing and licensing.

The content of the test for riders should reflect the content of the national training standard, to ensure that a candidate has met the minimum required standard.

The theoretical component of the test should consist of questions based on the training curriculum and be drawn from across all modules. These questions should be of a written multiple choice type with the possibility of the test being conducted orally for those who are unable to read to a suitable standard. Successful passing of the theory component should be a prerequisite for undergoing practical testing.

Practical testing should also be in line with the training standard, and needs to be robust and corruption-free in order to assess a candidate's competence at controlling and safely riding a motorcycle or three-wheeler. The rider should be assessed for competence at controlling the vehicle safely under normal and emergency braking, as well as in manoeuvring the vehicle through set exercises such as a slalom and figure-8 manoeuvres. Riding on the public road should, where possible, also be assessed to ensure the candidate's capability to interact safely with other road users and ride in a defensive manner while obeying all road laws and regulations. The examining officer should follow the rider, ideally, on another motorcycle or three-wheeler or, failing that, in a car.

Conducting only manoeuvring exercises as the practical test does not adequately test the candidate and so riders could subsequently be licensed while unable to safely ride on the public road, obey the law and interact with other road users.

5.1.3 Capacity for delivering affordable motorcycle rider training should be increased

The provision of effective training to motorcycle taxi riders from rural areas is a key challenge that needs to be addressed in order to professionalise the sector and improve the services that motorcycle taxis provide.

The study has identified that in general, countries have low capacity for delivering effective motorcycle rider training, including low capacity for government regulation of training providers. Effective government oversight of the motorcycle rider training industry will be essential to increase standards and improve safety.

As effective training is likely to be unaffordable to the vast majority of riders from rural areas, governments should support innovative efforts to minimise the costs to riders. This should include consideration of ring-fencing revenue from the sector and the provision of bursaries to competent training schools, for example through the provision of local government bursaries, as in Kenya. Incentives should be provided to

encourage private driving schools to operate in rural areas and including, for example, satellite schools in district centres.

The structure of training programmes should recognise that trainees may need to continue to earn money during the course of the programme, which may require, for example, the training to take place in off-peak hours, allowing riders to work during the busiest times.

Training of trainers (ToT) is an important part of the process to improve motorcycle rider training. Driving schools should be required and supported by governments to develop an effective ToT process, together with a monitoring and evaluation process that includes a quality assurance mechanism in order to ensure all schools continue to meet the required standards.

5.1.4 Motorcycle and three-wheeler taxi riders should be required to belong to associations

Motorcycle taxi associations appear to provide opportunities to support the effective management and professionalisation of the motorcycle taxi sector through enabling the coordination of training, sensitisation and acquisition of licences, regulating the riding behaviour of members, providing social support that may not be covered by insurance and improving security.

Where the law permits, governments should require that motorcycle taxi riders belong to associations.

5.1.5 Associations should be supported and overseen by local government authorities

Without adequate support and oversight, many of the benefits that can be achieved through associations may not be realised.

Local government authorities would appear to be the most appropriate party to support and oversee associations. Associations should be required to register with the relevant local government authority, at which point they should be issued with the operations manual that has been developed for Tanzania as part of this project, after being tailored to other countries.

Responsibility for day-to-day support and oversight could be undertaken by officials who are responsible for community engagement, such as community development officers.

5.2 Supporting Recommendations: Regulation of the Rural Motorcycle and Three-Wheeler Taxi Sector

5.2.1 Effective cooperation is required between different government departments and with other stakeholders

Effective management of the rural motorcycle and three-wheeler taxi sector will involve cooperation between different areas and different levels of government. These are likely to include the departments responsible for:

- Development of transport policy, in particular motorcycle and three-wheeler related regulations and policies
- Registering vehicles
- Regulating motorcycle rider training
- Undertaking testing
- Issuing driving licences
- Issuing business licences
- Registering associations
- Enforcement of laws and regulations
- Collecting and analysing data
- Overseeing standards of personal protective equipment
- Planning, design, construction, maintenance and management of low volume rural roads
- Public health and emergency response
- Education

- Employment
- Women's affairs
- The affairs of elderly, disabled and vulnerable groups
- Community development
- Local government

As well as cooperation between government departments, the government will need to cooperate with the private sector including, for example, driving schools and the insurance industry; and civil society, including motorcycle taxi associations.

5.2.2 One government authority responsible for driver training, testing and licensing, and vehicle registration

Having one authority responsible for all matters relating to vehicles and drivers (including motorcycles and motorcycle riders) would streamline activities and ensure a joined up approach without conflicting priorities (both financial and political).

Testing should be conducted by an authority other than the traffic police.

5.2.3 Governments should address negative political interference

During this project, negative political interference was described as 'a monster'. It has been identified as a problem in all four project countries. For example, in Tanzania local politicians have been seen to not support the issuing of motorcycle taxi business permits by local councils on behalf of SUMATRA. And in Uganda, politicians owning large numbers of motorcycle taxis have a conflict of interest with enforcement of laws. The interference of politicians in the implementation of policies and enforcement of laws can directly contribute to road deaths and injuries.

Governments should make strong efforts to address this. Technocrats, supported by civil society and the private sector, should educate and advocate politicians to ensure they understand the consequences of their actions, and to explain how they can be part of the solution rather than the problem.

Similarly, corruption has been found to exist within many of the different areas and levels of government related to motorcycle and three-wheeler taxis ranging from the issuing of training certificates to the enforcement of laws. As with political interference, corruption can directly contribute to road deaths and injuries, and strong efforts are required by governments to eliminate it.

5.2.4 Enforcement should be strengthened gradually, supported by sensitisation activities

Sudden, strong enforcement of regulations is likely to lead to the alienation of riders and potentially communities, and may lead to conflict.

Currently, many riders in rural areas do not have a full understanding of the law and do not appreciate that laws are designed for the benefit of communities.

While there is undoubtedly a need for authorities to strengthen the requirement for motorcycle and three-wheeler taxi riders to comply with the law, enforcement efforts should be increased in a phased approach. For example, education campaigns on the benefits of helmet use and insurance should be carried out before strong enforcement of the requirement for riders to have these is applied.

To increase compliance to regulations, such as the possession of a driving permit and uptake of rider training, deliberate strategies are required. These services should be decentralised and brought closer to more rural communities. The cost of rider permits should also be reviewed as many riders in rural areas find the cost of getting a riding licence beyond their means.

Innovative enforcement techniques should be considered, which are appropriate to the local context. One opportunity could be for authorities to coordinate with motorcycle taxi associations, requiring association leaders to ensure compliance among members. Community policing may be appropriate. In Kenya, it may be possible to give the power to enforce motorcycle taxi-related laws to local chiefs.

5.2.5 Incentives should be provided for three-wheelers to operate in rural areas

In Ghana, motorised three-wheelers have been found to be safer than motorcycles, and also play a key role in the transportation of freight, in particular by businesswomen. Despite this, the operation of three-wheelers currently appears to be less profitable than the operation of motorcycles.

Recognising their potential benefits, especially including their advantage to those who face physical challenges to using motorcycles, governments should investigate the use of incentives to increase the prevalence of motorised three-wheeler taxis in rural areas, and to legalise their commercial use where they are currently prohibited.

5.2.6 Governments should collect and make effective use of data

This study's activity to review existing data in Ghana has demonstrated how it is possible to extract useful information, with the potential to influence policy, from existing data sources. Policy-makers should develop a full understanding of relevant data sources, and should correlate and critically analyse all relevant data to inform decisions.

Different government departments should coordinate with each other to ensure that relevant and useful data is collected. For example, if public transport regulators recognise the potential benefits of understanding whether the motorcycle involved in a given crash was operating as a taxi or not, they should coordinate with traffic police to ensure that such data is recorded in crash reports.

Also, the study's literature review identified that the WHO recognises weaknesses in the collection and use of data in all four project countries. Governments should recognise the importance of data and research, and should constantly strive to improve their data management systems either directly, or by outsourcing this role to third parties, as is the case in Ghana where the Building and Road Research Institute has a role in this.

5.3 Supporting Recommendations: Maximisation of Benefits of Rural Motorcycle and Three-Wheeler Taxis

5.3.1 Effective sensitisation should be delivered to riders and other members of communities

Sensitisation of riders should be used to remind riders of what was learned during their training, reinforce key messages, as well as address specific local issues that perhaps were not covered during formal training. However, the distinction between training and sensitisation must be understood by authorities. Sensitisation has a role to play, but is no substitute for training. Driving licences should not be issued to drivers who complete a session or course of sensitisation without additional practical training.

Sensitisation of riders should be an ongoing process, delivered by suitably-qualified parties such as the traffic police, local government community development officers and leaders or senior members of motorcycle taxi associations.

Sensitisation of riders can be carried out while riders are not busy, for example while they are at their stand waiting for passengers during a quiet time of day, or while they are waiting to obtain a permit or undertake registration.

Motorcycle taxi-related issues should also be addressed among other members of the population. For example, in schools it may be necessary to talk to students about not leaving their education to become a motorcycle taxi rider, and about the risks of teenage pregnancy and sexually-transmitted diseases.

5.3.2 Initiatives to enable vehicle ownership among riders should be promoted

This study has identified that profits are greater among riders who own their own motorcycle, compared to riders who hire their vehicle from a third party. It has also identified that riders who own their own motorcycle are slightly less likely to have been injured in a crash.

Governments should support initiatives to encourage and enable riders to save money or to obtain loans in order to buy their own vehicle.

5.3.3 Initiatives to enable women to benefit from motorcycle and three-wheeler taxis should be promoted

Overall, men appear to be the main beneficiaries of motorcycle and three-wheeler taxis in rural areas – especially economically. Men make up almost exclusively the rider population, and they also commonly make up the majority of owners and owners of freight. However, the study identified key ways in which women benefit from these vehicles, including in Ghana where women use three-wheelers to transport freight, and in Tanzania where Marie Stopes uses three-wheelers to bring health services to women in rural areas.

Governments should support initiatives to encourage and enable women to benefit more greatly from the motorcycle taxi sector, including economically.

5.3.4 Initiatives to enable vulnerable groups to benefit from motorcycle taxis should be promoted

The study found that there are people living in rural communities who do not use the services of motorcycle taxis, for reasons including fear of a crash or physical constraints.

Governments should support initiatives that address these reasons, thus allowing all members of rural communities to benefit. To address fear of a crash, the professionalisation of drivers through training and the use of personal protective equipment may assist.

For people living with physical constraints, and also people who are sick or injured, and pregnant women, three-wheelers or adapted motorcycles may be a more appropriate form of transport. In Uganda – and also in Nigeria – initiatives exist to provide reduced motorcycle taxi fares in maternal health and child health emergencies.

5.3.5 Initiatives to increase the use of technology should be promoted

The low proportion of those interviewed with access to internet on their phones (which averaged 36% across the four countries), coupled with the low population density in rural areas, suggests that technologies dependent on smartphones, such as ride-hailing apps, which are growing in use in urban areas, may not yet be commercially viable in rural areas.

However, the use of mobile phones is integral to the rural motorcycle taxi sector, and together mobile phones and motorcycle taxis play a key role in rural societies and economies. As such, initiatives that harness mobile phone technology to improve motorcycle taxi operations should be encouraged and promoted. An example is the use of bulk SMS messaging to send targeted messages to riders – something that could more easily be harnessed through coordination with associations.

The initiative in Kenya, where riders are being issued with registration cards with a QR code, which can be scanned by a smartphone to access the rider's information, should be observed by authorities in other countries and possibly replicated.

Initiatives using technologies other than mobile phones and smartphones – such as the development of wearable technology by Clad Light in Kenya, and the research into helmets by VETA in Tanzania – should be promoted. While these examples may not currently appear to be financially viable, governments, the private sector and academia should support such innovative research.

As the manufacture of motorcycles with ABS is mainstreamed in India, governments should consider imposing conditions requiring ABS to be fitted as standard to all motorcycles imported into their countries.

5.4 Supporting Recommendations: Minimisation of Disbenefits of Rural Motorcycle and Three-Wheeler Taxis

5.4.1 Motorcycles should be considered in the design of low volume rural roads

This study found that motorcycle taxis are the most common form of transport used by people living in rural communities in Uganda, Ghana, Kenya and Tanzania. It also found that the road surface and condition can contribute to the risk of both crashes and health issues, such as those caused by dust or vibrations. It is therefore essential that motorcycles are taken into consideration during the planning, design, construction and maintenance of low volume rural roads.

Guidance provided to local government engineers should require them to consider motorcycle safety, as is the case with the Tanzanian Ministry of Works' Low Volume Roads Design Manual and the guidance for district engineers that was produced as part of the DFID-funded Improving Rural Access in Tanzania programme (IRAT).

Consideration should also be given to the provision of infrastructure that is designed specifically for use by motorcycles, such as tracks and bridges, where it is safe to do so.

5.4.2 Efforts should be made to reduce the risk and severity of crashes

Much of the work that needs to be undertaken to ensure effective management of the motorcycle taxi sector will contribute to reducing the risk and severity of crashes. Training of riders, sensitisation of riders and communities, enforcement of laws, and the activities of associations all have the potential to improve road safety.

The increased use of good quality personal protective equipment also has the potential to reduce the risk and severity of crashes. However, this study found that the safety equipment being used and available for sale in rural communities is often sub-standard or simply not available. Helmet standards are inadequate and there are difficulties finding quality boots and gloves. Standards should be reviewed by governments and incentives/subsidies explored. Enforcement should also be strengthened in this area. Owners could also be obligated to provide basic protective equipment for their riders.

5.4.3 Rural health workers should be trained in how to deal with motorcycle rider health issues

This study found that motorcycle taxi riders suffer from health issues that they attribute to their work. Back pain, joint pain and eye infections are among common complaints.

Rural health workers should be provided with training on how to identify and treat such complaints, and also on how to prevent them. This may be of particular interest in Kenya – where the Ministry of Health has an interest in working with motorcycle taxi riders – and also in Ghana, where rates of reported health issues among riders were higher than the other countries in the study.

Motorcycle taxi associations should encourage their members to undertake preventive measures, and also to seek early treatment when symptoms appear, to ensure they are not exacerbated.

5.4.4 Insurance needs to be beneficial to motorcycle taxi riders

While the study found that riders were more likely to have insurance than other documentation such as driving licences and business permits, only one rider (from Kenya) was found to have ever used his insurance to make a claim. Through discussions with riders, it was identified that some riders do not understand how insurance works, while others are reluctant to use it because making a claim requires a police report, and they fear that the police will apportion blame to them.

Efforts need to be made to ensure that riders are able to benefit from insurance in the case of an injury, damage or health issue. This may involve government departments liaising with the insurance industry as well as with motorcycle taxi associations.

5.5 Recommendations for Further Motorcycle and Three-Wheeler Taxi-Related Research

5.5.1 Innovative ways of funding training in rural areas should be investigated

Increasing access to standardised training for rural motorcycle and three-wheeler taxi riders is a challenge that faces governments in all four of the project countries, and beyond.

Where innovative approaches to achieving this are attempted, these should be monitored and evaluated to understand their effectiveness.

Innovative ways of funding training in rural areas may include through local government bursaries, as in Kenya, or through ring-fencing motorcycle taxi revenue to be spent on training, such as licences, fines, etc.

5.5.2 Research should be carried out into the use of motorcycles and three-wheelers in urban areas

Through the stakeholder engagement carried out during this project, it was identified that there is a strong desire and need for research to be carried out into the use of motorcycle and three-wheeler taxis in urban areas.

Research is needed in major cities, including in peri-urban and suburban areas, and also in smaller cities and towns.

As with this study in rural areas, both the benefits and disbenefits in urban areas need to be understood. One specific topic that would be of interest to include that was not included in the rural study is air pollution.

5.5.3 Research should be carried out into the use of motorcycles and three-wheelers on highways

Research is also needed to understand the use of motorcycles and three-wheelers on highways. Such research could look at the prevalence of these vehicles on highways, and how they interact with other vehicles. It could look at the risks that they face, the risks they pose together and ways for these risks to be mitigated.

5.5.4 Research should be carried out into the economics of the motorcycle taxi sector

Studies of the economics of the motorcycle taxi sector could aim to answer questions such as:

- How much does the motorcycle taxi industry contribute to economy?
- Is government maximising revenue?
- Is revenue being used effectively, to improve the sector?
- Is there a positive return on investment from subsidising training in rural areas, in terms of reduced crashes?

6 Uptake and Embedment

Efforts are underway to promote and support the uptake and embedment of the policies and practices based on the findings of this research. These include:

A national consultative exercise on motorcycle and three-wheeler taxis in Ghana

The Ministry of Transport in Ghana is preparing for a national consultative exercise on the operations of motorcycles and motorised three-wheelers. LI2180 is currently under review, with the use of motorcycle and three-wheeler taxis being one of the key considerations. The Ministry recognises that the need to build consensus on the way forward is of paramount importance. ReCAP is supporting this national consultation exercise.

Mainstreaming of the manuals in Tanzania

Since the main consultation for this activity and the development of the training instructor's manual, further consultation was carried out with the Traffic Police and SUMATRA in December 2018 and again in May 2019. During this further consultation, the following information was obtained:

- The Traffic Police are currently working with VETA to provide training to 62 driving school trainers, using the 2015 SUMATRA/Transaid curriculum.
- A copy of the 2015 curriculum has been distributed to all Regional Traffic Officers, and the instructor's manual will also be distributed to them.
- There is currently a re-registration process underway for driving schools, including motorcycle training providers. The Traffic Police, which oversees driving schools, is refusing to sign off on registration unless they have an acceptable plan for training motorcycle riders, which includes using the 2015 curriculum.
- A cabinet paper has been prepared for an amendment of the Road Traffic Act. The amendment proposes a number of changes – including the use of the curriculum as standard training materials. It is expected to be presented to Parliament in late 2019.
- The Traffic Police are keen to see the curriculum and the manual being adopted as the national standard. This will involve recommendation by the Ministry of Home Affairs and then adoption by the Ministry of Works, Transport and Communication.
- SUMATRA has been disbanded and divided into two entities: one for marine transport and the other for land transport. The Land Transport Regulatory Authority (LATRA) will regulate the motorcycle and three-wheeler taxi sector.
- The current SUMATRA Transport Licensing (Motor Cycle and Tricycles) Regulations, 2010, will be repealed later in 2019 and replaced with a revised set of regulations under LATRA.
- LATRA management are considering implementing a requirement for drivers of commercial vehicles – including motorcycle and three-wheeler taxis – to undergo theoretical and practical competency tests, above and beyond those required to obtain a private driving licence.
- LATRA are currently seeking support to set up testing centres, and are considering the use of mobile testing centres for the theoretical component, which travel to rural areas.

Transaid are now exploring opportunities to build the capacity of a small number of motorcycle trainers in Tanzania in 2019.

In March 2019, Transaid held two workshops in Tanzania to share the headline findings from the research and to orientate stakeholders on the new manuals. Invitees included PO-RALG, who will be key to the uptake of the motorcycle taxi associations' operating manual.

The National Institute of Transport (NIT) and a driver training centre in Arusha have been informed about the new manuals and are looking forward to receiving them.

Follow-up on findings in Uganda

In Uganda, discussions are planned with the Transport Licensing Board around the ban on the use of motorised three-wheelers as taxis. Also, the findings of the study will be disseminated in the communities where the data was collected.

Preparation of generic manuals

Both the training instructor's manual and the motorcycle taxi associations' operating manual, which were developed specifically for Tanzania, are currently being edited into generic versions. This will allow them to be applied in other countries. The generic manuals will be available on the 'Motorcycle Safety' page of the ReCAP website as well as on the Transaid website.

Translation of manuals into French

Both the training manual and the associations' manual will be translated into French and distributed to stakeholders who have expressed an interest in the Democratic Republic of Congo and Madagascar. The

French versions of the manuals will be available on the 'Motorcycle Safety' page of the ReCAP website as well as on the Transaid website.

Interest in motorcycle rider training in Sierra Leone and Zambia

Transaid will be providing training to around 50 motorcycle taxi riders in Sierra Leone in March/April 2019, following on from training over 190 riders in late 2018. The intention is to promote and distribute the training manual to trainers.

Also, the Industrial Training Centre, the leading government training centre for professional driver training in Zambia, have been informed about the training manual and are looking forward to receiving a copy.

ReCAP Inter-Regional Implementation Meeting

In February 2019, the project's Team Leader and Motorcycle Safety Expert presented at the ReCAP Inter-Regional Implementation Meeting in Nepal and disseminate the research recommendations and manuals. There was strong interest in the project, especially among government officials from the Democratic Republic of Congo (DRC) and Sierra Leone. Since the meeting, AfCAP and Transaid have extended the project to cover a similar study in DRC, which is currently underway.

7 Conclusions

This study, which is the first of its kind to take an in-depth look at the broad range of issues surrounding the use of motorcycles and motorised three-wheelers in rural areas of Africa, has revealed how critically important motorcycle taxis are for rural communities.

Motorcycle taxis are widely available in rural areas and provide many benefits to rural communities. By banning their use, governments may be depriving rural people from access to services and opportunities for economic development. Banning their use may also accentuate the negative aspects of motorcycle taxis, for example resulting in very low levels of training of riders, and so increasing the risk of crashes and injuries.

In Ghana, where the use of motorcycles as taxis is currently illegal, the study found that – in comparison to other countries – motorcycle taxis are less available in rural areas, are more expensive for passengers and less profitable for riders, and that riders are less likely to have received training, more likely to have suffered a serious injury, less likely to wear a helmet, and more likely to have suffered from a health issue. While it is not possible to directly correlate these findings to the ban, it appears that many of the negative aspects of motorcycle taxis are more evident in Ghana than in the study's other countries. In Kenya, on the other hand, a statistically significant correlation was identified between training and helmet use, with those riders who have been trained more likely to wear a helmet.

This project has provided evidence of the benefits that motorcycle taxis bring to rural communities. It has developed recommendations and manuals that will enable governments, through effective regulation and support for the sector, to improve the accessibility and safety of motorcycle taxi operations. In particular, improvements to the training, testing and licensing process are critical to improve the skills of riders and thereby reduce the risks of crashes and injuries.

Implementation of the project's recommendations has the potential to improve the lives of rural people in the four project countries and beyond. The findings of this study are currently supporting the review of legislation on motorcycle and three-wheeler taxis in Ghana, and the manuals produced as part of the project will support the strengthening of rider training and operations of motorcycle taxi associations in Tanzania and other countries.

8 References

- Ablin Consult, 2010. Consultancy service for a study on the use of motorcycles for transporting passengers for hire and reward in Ghana. Ghana Ministry of Transport.
- Amend, 2013. Road Traffic Injury on Rural Roads in Tanzania: Three studies into road traffic injury on rural roads. AFCAP Project Ref. TAN/115. Available from Amend
- Amend, 2015. The magnitude and characteristics of road traffic injury in Kilolo District, Tanzania. Available at: <http://www.research4cap.org/Library/BishopETAL-Amend-Tanzania-2015-KiloloBaseline+Annexes-AFCAPTAN2015B-v150616.pdf>
- Department for International Development (UK), 2015. Business Case and Intervention Summary – Improving Rural Access in Tanzania. Obtained directly from DFID in Tanzania
- Nasong'o WM, 2015. Motorcycle public transport services in Kenya: A study of their compliance with road safety regulations in Kitale Municipality. University of Nairobi (Master's Thesis). Available at: http://erepository.uonbi.ac.ke/bitstream/handle/11295/90787/Nasong%27o_Motorcycle%20public%20transport%20services%20in%20Kenya.pdf?sequence=3&isAllowed=y
- Peters, K, Mokuwa, E, Richards, P, and Jenkins, J, 2018(1). Policy Brief: Upgrading Footpaths to Motorcycle Taxi Accessible Tracks. Swansea University.
- Peters, K, Mokuwa, E, Richards, P, and Jenkins, J, 2018(2). Gender Mainstreaming in the Rural Motorcycle Taxi Sector in Rural Sierra Leone and Liberia. AFCAP Project Ref. RAF204K. Available at: <http://research4cap.org/Library/Petersetal-SwanseaUni-GM-2018-GMMotorcycleTaxiSectorRuralSierraLeoneLiberia-AfCAP-GEN2044K-180524.pdf>
- Tanzania Revenue Authority, 2015. Statistics available directly from TRA Headquarters, Samora Avenue, Dar es Salaam, Tanzania
- Transaid, 2014. An investigation into the role of transport operator associations in shaping Transport Services in Africa's rural areas. AFCAP Project Ref. AFCAP/GEN/127/A. Available at: <http://www.transaid.org/wp-content/uploads/2015/09/AFCAP-Transport-Operator-Associations-and-Rural-Access.pdf>
- Transaid, 2015. Tanzania motorcycle taxi rider training: assessment and development of appropriate training curriculum. Final Report. AfCAP Project TAN2015E. Africa Community Access Partnership (AfCAP), Thame, UK. 22p. Available at: <http://www.research4cap.org/Library/TRANSAID-2015-MotorcycleTaxi-TrainingFinalReport-AFCAP-TAN2015E-v150616c.pdf>
- WHO, 2015. Global Status Report on Road Safety, 2015. World Health Organization, Geneva, Switzerland. Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2015/en/
- WHO, 2018. Global Status Report on Road Safety, 2018. World Health Organization, Geneva, Switzerland. Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/

Annex 1 Contribution to the ReCAP Logframe

The project's contribution to the ReCAP Logframe is shown in the following table, with targets shown in black text and achievements shown in *blue italic text*.

It should be noted that as key outputs will be delivered towards the end of the project, changes to policy, regulation and practice, citations, presentations at conferences are expected beyond the end of the project contract. To demonstrate this, targets for achievements with one year and within two years of the end of the project have been added.

Intervention Logic	Indicator	Source of Verification	Baseline: Start of Project, Sep 2017	Target: End of Project, Jan 2019	Target: Within One Year of End of Project, Jan 2020	Target: Within Two Years of End of Project, Jan 2021	Assumptions
Outcome: Sustained increase in evidence base for more cost effective and reliable low volume rural road and transport services, promoted and influencing policy and practice in Africa and Asia	1. SUSTAINABILITY: Partner Government and other financiers co-funding research with ReCAP. Contributions in kind (K) and Core Contributions (C)	In kind support will be fully documented in line with the AFCAP guidelines			<i>Achievement: Transaid have secured GBP 10,000 to fund two workshops in Tanzania, to support uptake of the two manuals developed as part of this project.</i>		It is anticipated that in kind (K) contributions will be leveraged during the life of the project. This may take the form of additional Amend/Transaid staff time (beyond the contractual days) or securing funding in-country from government or private sector to support certain activities such as training, workshops or piloting an initiative. UK private sector support will also be investigated through Transaid's corporate partners.
	2. Concrete examples of change (applied or formally adopted), influenced by ReCAP research that will be applied to #km of road in focus countries.	N/A	N/A	N/A	N/A	N/A	N/A
	3. Number of citations in academic articles of	Conference	Target: 0	Target: 0	Target: 3	Target: 5	Within one year of the end of the project, it is expected that this

	ReCAP peer reviewed articles and/or working papers, conference papers, etc.	proceedings Google Scholar and similar sources		<i>Achievement: Cited in the Policy Brief 'Upgrading Footpaths to Motorcycle Taxi Accessible Tracks'.</i>			research will be cited in conference papers. Within two years, it is expected that this research will be cited in other research papers.
<p>Output 1: RESEARCH and UPTAKE: Generation, validation and updating of evidence for effective policies and practices to achieve safe, all-season, climate-resilient, equitable and affordable LVRR and transport services in African and Asian countries.</p> <p>(Low Volume Rural Roads : LVRR / TS – Transport Services)</p>	1.1 LVRR: Number of peer reviewed papers generated from ReCAP supported or related LVRR research projects made available in open access format.	N/A	N/A	N/A	N/A	N/A	N/A
	1.2. TS: Number of peer reviewed papers generated from ReCAP supported or related TS research projects made available in open access format.	Two academically – orientated research papers produced	0	<p>Target: A minimum of two academically-orientated research papers submitted for consideration.</p> <p><i>Achievement: Two journal articles have been submitted to ReCAP for sign off before submission for publication.</i></p>	Target: A minimum of two academically-orientated research papers published.		These will be submitted for consideration before the end of the project. They are expected to be published within one year of the end of the project.
	1.3 Engineering Research: National policies, manuals, guidelines and/or	N/A	N/A	N/A	N/A	N/A	N/A

	<p>research outputs that have been fully incorporated into Government/Ministerial requirements, specifications and recommended good practice as a result of ReCAP engineering research (including climate change adaptation and AfCAP and SEACAP adaptations).</p> <p>To include introduction of new policies and modification to existing policies.</p>						
	<p>1.4 TRANSPORT SERVICES Research: National policies, regulations and/or practices for rural transport services modified or introduced as a result of ReCAP research(including road safety and gender and AFCAP and SEACAP research)</p> <p>To include introduction of new policies and modification to existing policies.</p>	<p>New policies and practices will be fully documented in line with the AFCAP guidelines</p>	<p>Target: 0</p>	<p>Target: 0</p> <p><i>Achievement: The study findings are contributing to a national consultation process on motorcycle and three-wheeler taxis in Ghana.</i></p>	<p>Target: 4 (uptaken)</p>	<p>Target: 4 (embedded)</p>	<p>Within one year of the end of the project, it is expected that one concrete example of change will be adopted in each of the four project countries.</p> <p>Within two years, it is expected that those concrete examples of change will be embedded within policy or practice.</p>

	1.6. LVRR and TS information generated for dissemination, and disseminated, that is not peer reviewed. Total to include research papers, final research reports, workshop reports, manuals and guidelines.	ReCAP PMU	0	<p>Target: Final Report and four Final Country Reports accepted.</p> <p><i>Achievement: Final Report and four Final Country Reports submitted to ReCAP.</i></p> <p>Target: A minimum of two international policy briefs published.</p> <p><i>Achievement: Two policy briefs have been submitted to ReCAP for sign off before dissemination.</i></p>			
Output 2: CAPACITY BUILDING: The building of sustainable capacity to carry out research on low volume rural roads, and rural transport services in African and Asian countries.	2.1. African / Asian experts or institutions taking lead roles in ReCAP Research Projects.	Final Report / ReCAP PMU	Target: 0	<p>Target: 5</p> <p><i>Achievement: National Experts from each of the four countries, and the Ghana Rural Transport Advisor successfully</i></p>			

				<i>completed the project.</i> <i>A Zimbabwean organisation led the data analysis exercise.</i>			
	2.3. Research projects with female researcher inputs at senior technical level.	Final Report / ReCAP PMU	Target: 0	Target: 5 <i>Achievement: The Chair of QUAG, Gender and Social Inclusion Expert, and Ghana, Kenya and Uganda National Experts successfully completed the project.</i>			
Output 3: KNOWLEDGE: Generated evidence base of LVRR and transport services knowledge is widely disseminated and easily accessible by policy makers and practitioners (including education and training institutions).	3.2. ReCAP generated knowledge presented and discussed at high level international development debates and conferences	Proceedings of high level international development debates and conferences		Target: 2 <i>Achievement: The Kenya National Expert and Team Leader presented at the iTRARR conference in Mombasa in June 2018. The Ghana National Expert and</i>	Target: 1 The Team Leader and Motorcycle Safety Expert will present at IRIM in Nepal in February 2019.	Target: 2	

				<i>Motorcycle Safety Specialist/Trainer presented at the PIARC/SARF conference in Durban in October 2018.</i>			
	3.3.ReCAP generated knowledge disseminated through significant workshops and dedicated training, virtually or physically, that are rated by participants as effective.	Reports of Four-Day Team Workshop and One-Day Country Workshops	0	<p>Target: All workshops rated by a minimum of 90% of participants as 'effective'</p> <p><i>Achievements: Achieved. (Results of workshop evaluations are presented in Country Reports.)</i></p>			

Annex 2 Summary of 4-Day, 4-Country Workshop

Attendees

The four-day workshop in Ghana was attended by the following stakeholders:

	Name	Organisation	Position
1	Tom Bishop	Amend	Project Team Leader
2	Neil Rettie	Transaid	Project Motorcycle Safety Specialist
3	Aggie Krasnolucka-Hickman	Transaid	Project Communications and Knowledge Management support
4	Juliet Adu	Transaid/Amend	Project Ghana National Expert
5	Francis Afukaar	Transaid/Amend	Ghana Rural Transport Expert
6	Grace Wahome	Transaid/Amend	Project Kenya National Expert
7	Hans Mwaipopo	Transaid/Amend	Project Tanzania National Expert
8	Elizabeth Ekirapa	Transaid/Amend	Project Uganda National Expert
9	David Osafo Adonteng	National Road Safety Commission, Ghana	Director of Planning and Programmes
10	Patrick A. Bekoe	Department of Feeder Roads, Ghana	National Coordinator, AfCAP Projects
11	Boniface Otieno	Kenya Traffic Police	Chief Inspector
12	Rosemary Njogu	National Health Insurance Fund, Ministry of Health	Registration Officer
13	Deus Sokoni	Tanzania Police Force, Traffic Police	Chief, Legal Department
14	Johansen Kahatano	Surface and Marine Transport Regulatory Authority, Tanzania	Director, Road Transport Regulations
15	Winstone Katushabe	Ministry of Works and Transport Uganda	Commissioner for Transport, Regulations and Safety
16	Steven Kasiima	Uganda Police Force	Director Traffic and Road Safety

Paulina Agyekum of ReCAP also attended the first day of the workshop.

Summary of workshop discussion

Current situation in Ghana – ban on use of motorcycles as taxis

As Ghana is the only one of the four countries in which the use of motorcycles as taxis is illegal, there was interest among participants from other countries about the situation in Ghana.

It was explained that the initial idea for prohibiting motorcycle taxis was in response to safety concerns, and was based on the experience of several Nigerian cities. However, enforcement of the law has proved challenging and motorcycle taxis are known to be operating in the country, in particular in rural areas. They are popular with members of the public, and it is widely recognised that they bring many benefits to rural communities.

A committee has been established under the National Road Safety Commission, tasked with reviewing the Road Traffic Act, including LI2180 – the law that prohibits use of motorcycles as taxis – and advising government.

Current situation in Uganda

The participants from Uganda explained that they are interested to learn from the experience in Ghana, as there is interest in Kampala to also prohibit the use of motorcycles as taxis. As well as safety concerns, stakeholders in Uganda are concerned about security – with motorcycles used to carry out crime – and environmental pollution. The examples of Kigali in Rwanda, where authorities are considering prohibiting motorcycle taxis on safety grounds, and cities in some south Asian countries, where pollution and air quality are the main drivers behind potential prohibition, were cited.

Challenges to implementing prohibition in Kampala include strong motorcycle taxi associations with political connections, and the need to provide alternative means of public transportation. The Ugandan

participants were thinking they might be able to learn how to overcome these challenges based on experience in Ghana.

There was also interest among the workshop participants in two specific areas of the Ugandan findings – the high levels of crime against riders and passengers, and the high numbers of crashes involving animals.

How to prohibit motorcycle taxis in urban areas but not in rural areas?

There was consensus among the participants – backed by the initial findings of the study – that motorcycle taxis bring many benefits to rural communities, but also that – based on personal perception – motorcycle taxis are highly dangerous in urban areas. Discussion explored the options for allowing motorcycle taxis to operate in rural areas, but banning them in urban areas.

The project's Ghana Rural Transport Expert explained that in Ghana, if the law prohibits use of motorcycles as taxis, local bylaws cannot overturn that prohibition. Conversely, if the law does not prohibit their use, local bylaws can be applied to prohibit their use in certain areas. However, it is recognised that if motorcycle taxis were to be permitted to operate by national law, the decision of whether or not to impose bylaws in urban areas would be the responsibility of the city government. City authorities may see motorcycle taxis as a means of generating revenue, for example through permits, and so may not impose bylaws to prohibit them.

In Dar es Salaam, Tanzania, from time to time there are attempts by the city authorities and the Traffic Police to prevent motorcycle taxis from entering the city centre. But without continual strong enforcement, these attempts are limited in their success.

Another option discussed was prohibiting motorcycle taxis on certain classifications of roads, including highways and urban roads, but allowing them to use low volume rural roads. This would depend on the individual country's road classification system.

Need for research into motorcycles in urban areas

All participants agreed that there is urgent need for a research study into motorcycle and three-wheeler taxis in urban areas.

Need for improved management of motorcycle taxis in rural areas

There was also consensus that all four countries need to improve the way that motorcycle taxis are managed in rural areas. While the participants gave some examples of good practice from their countries, none were able to claim that they are currently maximising the benefits of minimising the disbenefits of motorcycle taxis.

Training

A key part of improving the services that motorcycle taxis offer in rural areas will be improving rider training. There was consensus among the government representatives participating in the workshop that training should be comprehensive. There was a lack of interest in schemes such as the United Kingdom's Compulsory Basic Training for learner motorcycle riders. However, there was also recognition that basic sensitisation has a role to play in improving the knowledge of riders.

In all countries there are challenges of funding training for rural motorcycle taxi riders, as it is recognised that training fees are likely to be unaffordable, and that attending a training course may involve travelling to an urban area. There is need of innovative models for providing rural training, with participants suggesting public-private partnerships and loans.

Enforcement and sensitisation

In Kenya, Tanzania and Uganda, authorities struggle to enforce laws related to motorcycle taxis, including use of personal protective equipment, number of passengers carried, and requirements related to training, licences and insurance. It is recognised that heavy-handed enforcement would be very unpopular. Rather, there was consensus that rural communities need to be sensitised so that they understand the law – and the benefits of adhering to the law – before strict enforcement can be applied.

Ideas for improving enforcement include cooperating with local government, using some form of community policing and engaging members of the public, in a similar way to the organisation Road Safety Ambassadors in Tanzania, which collates reports of dangerous driving through social media. Ghana is considering establishing dedicated motorcycle policing units.

Need for governments to improve collection and use of data

A presentation on the activity to reanalyse existing data in Ghana prompted a wider discussion about the need for improved collection and use of data to inform policy makers. For example, severity of injury needs to be recorded, categorising 'KSI' (Killed and Seriously Injured) separately from minor injuries. And reports of crashes involving motorcycles should identify whether the motorcycle was being used as a taxi or privately.

Improved collection and use of data will require coordination between different government departments.

Associations

There was agreement among the workshop participants that associations have strong potential to support the improvement of the motorcycle taxi sector in rural areas. In particular, associations ease communication and coordination between authorities and motorcycle taxi riders, but also have the potential to improve safety and security.

Of the four countries, it appears that Kenya has made the most progress in encouraging motorcycle taxi riders to form associations, with 54% of riders interviewed saying they belong to an association. This compared to 45% in Uganda, 42% in Ghana and 26% in Tanzania. In Kenya, not only is it a legal requirement for motorcycle taxi riders to belong to an association, but there is a national umbrella association – the BodaBoda Safety Association of Kenya (BAK) – which supports associations' formation.

The Chief Inspector of Kenya Police explained that BAK is currently undergoing the process of electronically registering motorcycle taxi riders, which includes issuing registration cards with electronic chips on which riders' personal data is stored. However, it was noted that the process of registration is time-consuming and expensive.

In Tanzania, where the lowest percentage of riders said they belonged to an association, the regulatory authority (SUMATRA) has temporarily suspended the requirement that a rider belong to an association in order to obtain a business permit, after identifying that associations' leaders were using this as a way to extort money.

All participants agreed that the motorcycle taxi associations' operations manual, which is being developed as part of this project, will help to realise the potential of associations.

Insurance

It was recognised by the workshop participants that insurance does not currently work in favour of motorcycle taxi riders. Often the only incentive for riders to have insurance is to avoid police in their local area imposing a fine or soliciting a bribe. It is very rare to hear of a motorcycle taxi rider in a rural area using insurance to claim for expenses incurred as a result of a crash.

With this study identifying that motorcycle taxi riders suffer from health issues, it was recognised that health insurance is important for riders, and that options must be explored to provide access to effective insurance.

Health impacts

The presentation of the project's findings on the health issues generated particular interest among the workshop participants, as it is an area that few had previously considered.

It was suggested that more detailed research into this area is needed.

Perceptions of riders

Workshop participants discussed the perceptions of riders. It was recognised that in general, policy makers live and work in major cities: they do not use motorcycle taxis themselves, and primarily view them as a

safety risk on urban roads. On the contrary, through the initial findings of this study, it was identified that motorcycle taxis are popular with rural communities. Participants agreed that a deeper understanding of rural issues is required in developing policy that will affect rural communities.

It was explained that riders feel victimised – by other drivers, the general public, and in particular by the police. This creates a gang mentality, with riders feeling like they have to stand up for themselves and their fellow riders. This can lead to riders taking the law into their own hands.

The project's National Experts from Kenya and Uganda stressed the need for riders to be better understood, including the benefits that they bring to communities, to reduce the negative perceptions that some people have of them.

Technology

The presentation of this project's investigations into the potential of technology generated discussion on a number of ideas. These included:

- Increased use of ride-hailing technology – including through non-smart phones – to connect riders to passengers, to increase the numbers of trips riders undertake
- The development of electronic motorcycle registration plates
- The use of mobile phones to track journeys, to improve rider security and to reduce motorcycle-related crime
- The use of computerised riding simulators to provide motorcycle training

Need to improve rural roads

The poor condition of rural roads was widely accepted by participants as being a contributory factor in motorcycle crashes.

The project's Team Leader explained how in Tanzania, Amend contributed to the development of a Low Volume Roads Manual and advice for District Engineers, to ensure that consideration is given to motorcycle safety in the planning, design, construction and maintenance of rural roads.

Participants agreed that such work is important and should be undertaken in other countries.

Political interference

Participants from all countries explained how political interference negatively impacts efforts to improve the regulation and safety of the motorcycle taxi sector.

Participants described political interference as 'a monster', and said that the advice of technical experts is not valued by politicians. Politicians do not care about research and data – they only protect their interests and those of the people who vote for them.

Examples were provided about politicians who own large numbers of motorcycles, renting them to young men within their constituencies. The local community may consider this to be a demonstration of the politicians' support for the local people, although in reality it is a means of generating profit. And the riders of motorcycles owned by politicians are known to use their connections to threaten police and avoid fines, even when they have committed an offence.

The participants from Tanzania explained how a Parliamentary Committee for road safety has been established, following advocacy from the Traffic Police and local NGOs supported by international institutions such as the WHO and Bloomberg Philanthropies. Long-term, concerted efforts have been made to sensitise politicians on road safety issues, and these efforts are now starting to bring about change.

Site visit

A site visit to meet officials at Akatsi South District Assembly and motorcycle taxi riders in Agbedrafor allowed the workshop participants to see and hear about the situation in rural Ghana.

At the District Assembly, officials explained how all motorcycle owners are required to pay a small registration fee. They are issued with a sticker as proof of payment, and their details are entered into a database. The main reason for this is to combat crime. They responded positively when told about the initial findings of the research.

Nat Dzedzey, Akatsi South District Assembly

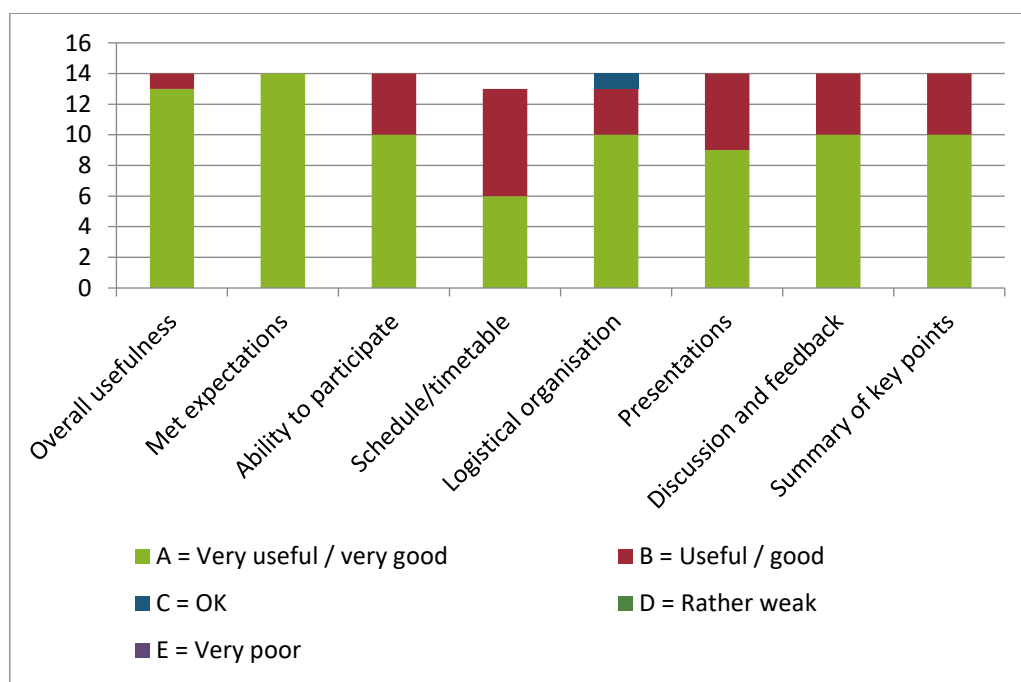
"Your research will help us to formulate policy to improve transport for rural people."

In Agbedrafor, workshop participants heard how many of the riders have been working as motorcycle taxi riders for several years, including some up to eight years. However, they complained that there are now too many motorcycle taxis, so too much competition, making it difficult to earn a profit. Riders also complained about local police requiring them to have licenses and insurance, despite the fact that there is nowhere to obtain these locally, and that training is unaffordable.

The project's Tanzania National Expert gave a presentation on effective operation of a motorcycle taxi, including safety and minimising running costs.

Workshop evaluation

This chart shows the responses to the evaluation form completed by the participants in the 4-day, 4-country workshop.



All participants (100%) rated the overall usefulness of the workshop as 'Very useful' or 'Useful'.