

**Characterising user needs and practices in secondary cities:
insights into the role of bicycles in mitigating mobility poverty in
Malawi and Kenya**

PROJECT REPORT

June 2023

World Bicycle Relief

Institute for Social Development, University of the Western Cape

RESEARCH REPORT

This report was written by Winnie Sambu, Gail Jennings, Alisha Myers (World Bicycle Relief).

PROJECT TEAM ROLES & CONTRIBUTIONS

This project comprised members from World Bicycle Relief and the Institute for Social Development, University of the Western Cape.

- World Bicycle Relief: Winnie Sambu, Gail Jennings, Alisha Myers, Nixon Ouku, Mercy Nyangweso, Abel Maruwo, Chinsisi Kanyerere, and Faith Yotamu.
- University of the Western Cape: Mulugeta Dinbabo, Remoneilwe Mogatosi, Abdulrazak Karriem, and Stanley Egenti.

Research protocol

The research protocol guiding this report was developed by Alisha Myers and Winnie Sambu (World Bicycle Relief) and Gail Jennings (research consultant), and reviewed by Mulugeta Dinbabo and Razack Karriem from University of the Western Cape and Roger Behrens from the University of Cape Town. The University of the Western Cape ethics documentation were prepared by Mulugeta Dinbabo and Razack Karriem, and Gail Jennings and Winnie Sambu prepared the ethics documentation for Kenya and Malawi. Winnie Sambu and Gail Jennings developed the interview tools (survey, focus groups, and key informant interviews), which were reviewed by members of the project team.

Data collection

Primary data collection was led by World Bicycle Relief teams. In Malawi, the data collection was led by Abel Maruwo, Chinsisi Kanyerere and Faith Yotamu. In Kenya, data collection was led by Nixon Ouku, Mercy Nyangweso, and Remoneilwe Mogatosi.

Data analysis and report writing

Quantitative data analysis was led by Winnie Sambu. Stanley Engeti from the University of the Western Cape undertook initial analysis of the quantitative data. Qualitative data analysis was conducted by Gail Jennings. Alisha Myers developed the conceptual framework.

Report drafting and review

Winnie Sambu, Gail Jennings, and Alisha Myers drafted the report. The entire project team reviewed the report and provided feedback.

Further acknowledgements

The project team is grateful to Roger Behrens, University of Cape Town, who reviewed the data collection tools and shared insights and improvements. We thank Sulma Nunes from World Bicycle Relief and Priscilla Kippie from the University of the Western Cape for administrative support.

This research project was funded by a grant from the Volvo Research and Educational Foundations, to whom we are grateful. We thank Jane Summerton of VREF for her continuous support and interest in our work.

For questions and feedback, please email:

Quantitative data: Winnie Sambu wsambu@worldbicyclerelief.org

Qualitative data: Gail Jennings gail@gailjennings.co.za, or

Analysis framework: Alisha Myers, amyers@worldbicyclerelief.org

TABLE OF CONTENTS

1	Summary	vi
1.	Introduction.....	1
1.1	Purpose of this study.....	2
1.2	Research location.....	2
1.3	Research questions.....	3
1.4	Theoretical and conceptual frameworks.....	3
1.4.1	Mobility poverty	4
1.4.2	The ‘Bicycle Usage’ Framework.....	4
1.4.3	Other relevant social science frameworks	6
2	Research design.....	8
2.1	Study setting	8
2.2	Data collection	8
2.2.1	Qualitative data.....	8
2.2.2	Quantitative data.....	9
2.3	Ethics review and data management.....	10
2.4	Data analysis.....	10
2.5	Study limitations	11
2.6	Findings outline	11
3	Characterising marginalisation in the case cities	13
3.1	Zomba, Malawi.....	13
3.2	Kakamega, Kenya.....	14
4	Mobility needs and practices in the case cities.....	17
4.1	Zomba	17
4.1.1	How often and to where do people travel in Zomba	18
4.1.2	How people travel in Zomba	19
4.2	Kakamega	23
4.2.1	How often and to where do people travel in Kakamega.....	23
4.2.2	How people travel in Kakamega	25
5	Bicycle use and ownership in the case cities.....	28
5.1	Zomba	28
5.1.1	Using the Bicycle Usage Framework to understand bicycle use.....	28
5.2	Kakamega	31
5.2.1	Using the bicycle usage framework to understand bicycle use	31
6	Everyday experiences of mobility poverty	35
6.1	Zomba	35

6.1.1	Daily decision-making about travel.....	35
6.1.2	Living with and mitigating mobility poverty	39
6.1.3	6.1.3 The consequences of mobility poverty	41
6.2	Kakamega	48
6.2.1	Daily decision-making about travel.....	48
6.2.2	Living with and mitigating mobility poverty	53
6.2.3	The consequences of mobility poverty.....	54
7	The role of bicycles in mitigating mobility poverty	60
7.1	Distance and comfort.....	63
7.2	Mitigating time and financial poverty	63
7.3	Improved access and accessibility	63
7.4	Improved access to education.....	64
7.5	Increased access to mobility	64
8	Key findings from the two case cities.....	65
8.1	Which groups are most marginalised?.....	65
8.2	What are the transport needs of marginalised individuals or groups?.....	65
8.3	How do needs differ across groups.....	66
8.4	Lived experiences of mobility poverty	67
8.5	Key challenges of access to bicycle transport	67
8.6	Applying the Bicycle Usage Framework to solutions development.....	71
8.6.1	Limitations and future improvements to the Bicycle Usage Framework.....	72
8.7	Conclusion	74
9	References.....	76
10	Appendices.....	79
10.1	Questionnaire.....	79
10.2	Focus group guide.....	99
10.3	Key Informant Interview guide	102

List of Tables

Table 1: Data collection methods in Zomba and Kakamega	10
Table 2: Key variables used in the analysis of quantitative data	11
Table 3: Demographic characteristics among survey participants, Zomba	13
Table 4: Demographic characteristics among survey participants, Kakamega	15
Table 5: The percentage of respondents reporting travel and average number of trips over 7-day recall period, by destination, Zomba	19
Table 6: The percentage of respondents reporting use of travel mode at least once in the 7-day period preceding the survey, Zomba.....	21
Table 7: The percentage of respondents reporting travel and average number of trips over 7-day recall period, by destination, Kakamega	25
Table 8: Percentage of respondents reporting use of travel mode at least once in the 7-day period preceding the survey, Kakamega.....	27
Table 9: Factors underlying lack of bicycle ownership, Zomba	29
Table 10: Important considerations during bicycle acquisition in the future, Zomba.....	31
Table 11: Factors underlying lack of bicycle ownership, Kakamega.....	32
Table 12: Important considerations during bicycle acquisition in the future, Kakamega	34
Table 13: Reasons why the majority of respondents chose walking as a primary mode of travel, by trip purpose, Zomba	36
Table 14: Reasons why respondents choose motorised travel as a primary mode of travel, by trip purpose, Zomba	38
Table 15: Key barriers affecting travel, by trip purpose, Zomba	46
Table 16: Percentage of respondents unable to travel at least once due to affordability constraints, lack of transport or distance barriers at least once over a 30-day recall period, Zomba.....	47
Table 17: Factors underlying choice of primary transport mode, by trip purpose, Kakamega	48
Table 18: Top factors underlying choice of motorcycles as a primary mode of travel, by trip purpose, Kakamega	49
Table 19: Key barriers affecting travel, by trip purpose, Kakamega.....	58
Table 20: Gender, age and Income differences - % of respondents reporting lack of travel due to affordability constraints, lack of transport or distance barriers at least once over a 30-day period, Kakamega	59
Table 21: Factors that would increase bicycle usage, Kakamega	69
Table 22: Factors that would increase bicycle usage, Zomba	70
Table 23: Conceptual frameworks to inform understanding of mobility	73

List of Figures

Figure 1 The ‘bicycle usage framework’	5
Figure 2: the Mobility Donut, developed by Mobycon	6
Figure 3: Participants in a focus group discussion participate in a participatory mapping process to visually describe travel distances and modes within their community, Kakamega	9
Figure 4: A mobility map showing services and community points of interests for women participating in the FGD discussion, Zomba	17
Figure 5: Travel destinations over a 7-day recall period, Zomba	18
Figure 6: Primary mode of travel, by trip purpose	22
Figure 7: Participatory Action Research: a mobility map showing services and community points of interests for women participating in focus groups in Kakamega.....	23
Figure 8: Travel destinations over a 7-day recall period, Kakamega	24
Figure 9: Primary mode of travel, by trip purpose, Kakamega	26
Figure 10: Bicycle access channels among bicycle users, Zomba	29
Figure 11: Common uses of bicycles among bicycle users, Zomba.....	30
Figure 12: Common uses of bicycles among bicycle users, Kakamega.....	33
Figure 13: Primary modes of travel used by those travelling to both local and main markets, by trip purpose, Zomba	38
Figure 14: Mechanisms employed by survey respondents to finance travel when faced with affordability constraints	41
Figure 15: Activities unable to undertake due to time spent travelling, 7-day recall period, Zomba ...	48
Figure 16: Primary modes of travel used by those travelling to both local and main markets, by trip purpose, Kakamega.....	50
Figure 17: Mechanisms employed by survey respondents to finance travel when faced with affordability constraints, Kakamega.....	53
Figure 18: Reasons why respondents choose bicycles as a primary mode of travel to health facilities, Zomba	60

1 Summary

People living with low incomes in African cities have limited access to affordable and appropriate public transport services, which has exacerbated their inequitable access to essential services such as water sources, markets, education, and healthcare, and constrains their ability to sustain livelihoods. This mobility or transport poverty contributes to social exclusion, food insecurity, and poverty entrenchment. Long distances and time spent travelling have an impact on productivity and leisure, and limits social engagement. Women and girls are particularly vulnerable because they must travel long distances to access water, energy, and markets.

Cycling as a mode of travel would seem a potential mode to mitigate these challenges, but it is a less common practice than it used to be. Cycling rates are particularly low among women and girls. Bicycles have a long history of use in sub-Saharan Africa, but this mode has declined since the motorisation of the 1970s (Vanderschuren and Jennings 2017).

This report responds to an identified area for research: the access and mobility needs of users, in particular vulnerable and marginalised users in low-income countries (Porter, Abane, and Lucas 2020). In-depth knowledge about intersectionality and user-diversity is sparse, and understanding the movement patterns and needs among people on the periphery of cities is limited. As Lucas notes, ‘there is a dearth of qualitative and quantitative analysis to evaluate the outcomes of ... [both adequate and poor] accessibility or mobility’, and there is very little work concerning the ‘lived travel experiences’ of excluded or vulnerable groups (Lucas and Tsoneva 2019 p. 19). The gap in knowledge about vulnerable and marginalised people and their walking or cycling practices is even more evident. The sparse information about walking and cycling for transport that does exist often draws rather narrowly from conventional travel surveys or transport planning paradigms (Porter, Abane, and Lucas, 2020).

This research aims to contribute to the knowledge by focusing on understanding the user needs and practices among marginalised individuals in two secondary cities in east and southern Africa: Kakamega (Kenya), and Zomba (Malawi). This study also investigates whether there are differences in user needs and experiences.

Kenya and Malawi were selected as case countries because of their differences in population size, demographic characteristics, socioeconomic status, and welfare levels. Bicycles are an important mode of transport in both countries, but usage is higher in Malawi, where bicycles account for 80 to 90 percent of traffic on rural roads.

Data collection was both qualitative and quantitative. Key informant interviews (KIIs), focus group discussions (FGDs), and participatory action research (PAR), were used to gather qualitative data. A questionnaire was used to collect qualitative data during focus groups. An intercept survey was used to select survey participants in market settings or points of interest within communities. Three institutions granted ethical approval for the study. Quantitative data was analysed using Stata17 statistical software. Qualitative data was analysed thematically.

Through key informant interviews, we first sought to understand who are most marginalised in terms of access to services (health care, markets, education, community engagement, etc), and the role of transport in this inaccess. Through a survey and focus group discussions, we then sought to understand user needs and practices: where individuals travel, how they travel (by what mode), their trip purposes and decision-making around mode and trip purposes, and the trips they are unable to take because of mobility poverty. To understand the role bicycles could play in mitigating this mobility poverty, we also asked questions about bicycle ownership and use.

This work is situated within the conceptual framework of mobility poverty and social exclusion, in that it is concerned with the social consequences or outcomes of inaccess and the way in which individuals are unable to participate in key life-enhancing opportunities. Such an approach to transport firmly conceptualises transport and mobility, or the lack of it, as a social problem (Lucas 2012). Data on the viability of a bicycle to address mobility poverty is analysed through the lens of a ‘bicycle usage framework’.

Overall, we found that people are most likely to walk as a main mode of travel, as they are unable to afford motorised modes. As the available literature notes, this increases time poverty, and limits access to markets, education, health facilities and other amenities, with life-limiting consequences and impacts. Bicycles are readily available, within the constraints of household access dynamics, but not easily affordable. Although bicycles are not able to mitigate all mobility needs, particularly in terms of longer distances, and mobility of care trips, bicycles are almost unanimously regarded as assets that meet mobility and transport needs otherwise. The reasons marginalised individuals do not cycle more are cost, in terms of owning or renting bicycles, or taboos imposed on women by a patriarchal social structure.

1. Introduction

People living with low incomes in African cities have limited access to affordable and appropriate transport services, which has exacerbated their inequitable access to essential services such as water sources, markets, education, and healthcare, and constrains their ability to sustain livelihoods. This mobility poverty contributes to social exclusion, food insecurity, and poverty entrenchment. Long distances and time spent travelling have an impact on productivity and leisure, while social engagement is limited. Women and girls are particularly vulnerable because they must travel long distances to access water, energy, and markets.

The access and mobility needs of users, in particular vulnerable and marginalised users in low-income countries, is a key area that needs research (Porter, Abane, and Lucas 2020; Lucas and Tsoneva 2019): in-depth knowledge about intersectionality and user-diversity is sparse, and understanding the movement patterns and needs among people on the periphery of cities is limited. The gap in knowledge about vulnerable and marginalised people and their walking or cycling practices is even more evident (Porter, Abane, and Lucas 2020). As Lucas notes (Lucas and Tsoneva 2019), ‘there is a dearth of qualitative and quantitative analysis to evaluate the outcomes of ... [both adequate and poor] accessibility or mobility’, and there is very little work concerning the ‘lived travel experiences’ of excluded or vulnerable people. The sparse information about walking and cycling for transport that does exist often draws rather narrowly from conventional travel surveys or transport planning paradigms (Porter, Abane, and Lucas 2020).

Public transport planning provision is often focused upon commuter, peak-time travel, and on motorised transport and congestion mitigation. Yet, what is known is that vulnerable and marginalised users find travel by public transport to be costly, and passengers endure long journeys, poor and convoluted connections, and multiple safety and security concerns. This mitigates against the travel that is necessary for social and economic inclusion, and for example access to education, employment, and healthcare (Lucas and Tsoneva 2019). The challenges are exacerbated when users live on the urban periphery or in secondary cities, and when they travel between rural and urban areas. This exclusion also leaves up to 70% of urban Africans under-served, without access to core services such as housing, water and sanitation, energy, and transport (Beard, Mahendra, and Westphal 2016).

Cycling as a mode of travel would seem a potential mode to mitigate these challenges, but it is a less common practice than it used to be. Cycling rates are particularly low among women and girls. Bicycles have a long history of use in sub-Saharan African cities such as Nairobi (Kenya) and Dar es Salaam (Tanzania), but this mode has declined since the motorisation of the 1970s (Vanderschuren and Jennings 2017). There is little scholarly work about bicycle travel in the periphery of secondary African cities;

the bulk of such work reflects research about cycling potential in major African cities (Mogaji 2022; Nkurunziza et al. 2012; Mendiata et al. 2022; Acheampong 2017), and is situated within relatively conventional transport planning arenas (Behrens et al. 2016; Irlam and Zuidgeest 2018; Jennings et al. 2021). There is nonetheless agreement in the literature that cycling ‘offers considerable potential, especially amongst poorer households’ (Behrens et al., 2016; Fiala et al., 2021).

This work is particularly interested in the intersectional nature of exclusion, marginalisation, and vulnerability, and the particular possibilities or applicability of cycling mobility. Cycling is not necessarily a mobility solution for everyone, nor is this mode necessarily able to mitigate all challenges related to exclusion and marginalisation (Jennings 2018; 2021).

1.1 Purpose of this study

This research contributes evidence around the transport needs and experiences of marginalised people in secondary cities across sub-Saharan Africa, focusing on Kenya and Malawi.

Through key informant interviews, we first sought to understand who are most marginalised in terms of access to services (health care, markets, education, community engagement, etc), and the role of transport in this inaccess. Through a survey and focus group discussions, we then sought to understand user needs and practices: where individuals travel, how they travel (by what mode), their trip purposes and decision-making around mode and trip purposes, and the trips they are unable to take because of mobility poverty. We are particularly interested in understanding the trade-offs individuals make when deciding when, why, and how to travel.

To understand the role bicycles could play in mitigating mobility poverty, we also asked questions about bicycle ownership and use.

1.2 Research location

This is a comparative study of two African countries located in two different regions: Kenya (Eastern Africa) and Malawi (Southern Africa). The specific locations within these two countries are Kakamega (Kenya) and Zomba (Malawi). There are two main reasons for this selection. First, Kenya and Malawi provide interesting case studies as they differ in population size, demographic characteristics, and socioeconomic status, as well as different levels of economic growth and development. Welfare levels also differ across the two countries: 37% of Kenyans lived below the international poverty line of US\$1.90 a day in 2015, compared to 69.2% of the population in Malawi in 2016 (World Bank, 2021). Bicycles are an important transport mode in both countries, particularly in rural areas and secondary cities, but usage appears to be higher in Malawi where bicycles comprise between 80 and 90 % of traffic

on rural roads (UN Environment, 2016). This research explores whether there are variations in user transport needs and experiences and the potential links to the aforementioned differences.

1.3 Research questions

The study is guided by the following research questions:

- Who are most marginalised in respect to access and mobility, transport, and why? What are the mobility needs of marginalised people living in the secondary cities, and how do these differ across groups?
- How do marginalised individuals experience, describe, and define everyday mobility and transport poverty and its implications?
- What are the existing conceptual frameworks that provide insight into the intersectionality of transportation with issues of resilience, livelihoods, and social exclusion?
- To what extent does the application of the bicycle usage framework provide information on the viability of bicycles as a transportation solution for marginalised groups in the case cities?
- Are bicycles a viable transport tool for marginalised individuals or groups located within or in the periphery of case cities?
- What measures could be put in place to increase access to bicycle transport within these individuals and groups?

1.4 Theoretical and conceptual frameworks

This section will first define transport and mobility poverty, then briefly explain the ‘bicycle usage conceptual framework’. The social disadvantage and marginalisation that results from mobility poverty can be further understood through livelihood frameworks

This responds to the following research question:

- What are the existing conceptual frameworks that provide insight into the intersectionality of transportation with issues of resilience, livelihoods, and social exclusion?

Elements of each of the frameworks described below offer the opportunity for analysis to explore the essential role a transport system plays in increasing inclusion or resilience, and reducing vulnerability at individual and household levels.

1.4.1 Mobility poverty

An equitable transport system allows everyone to satisfy their mobility needs, irrespective of income, age, gender, or disabilities. We define ‘mobility poverty’ as the circumstances under which inaccessible or unsuitable transport negatively impacts a person’s quality of life (employment, income-generation, healthcare or participation in society). Mobility poverty can thus lead to social exclusion (Porter, Abane, & Lucas, K, 2020; Uteng and Turner, 2019). A social exclusion approach identifies the social consequences or outcomes of mobility and transport poverty, and the way in which individuals are unable to participate in ‘key life-enhancing opportunities’. This poverty results in, among others, reduced ability to search for or travel for work, poor access to healthcare facilities and markets, non-attendance at school, lower educational levels, food insecurity, and increased physical and family isolation. Such an approach to transport firmly conceptualises transport and mobility, or the lack of it, as a social problem (Lucas, 2012; Jennings et al., 2018). Mobility poverty is not necessarily explicitly concerned with resilience, although low resilience is a likely feature of social exclusion.

1.4.2 The ‘Bicycle Usage’ Framework

This research uses what we have named the ‘Bicycle Usage Framework’ as its primary analysis framework. World Bicycle Relief (WBR), an organisation that mobilises communities in rural regions around the world with bicycles, developed the Framework to inform their programme theory of change, and later to understand bicycle mobility within a market systems framework (described below). The ‘bicycle usage framework’ is a framework by which to evaluate the opportunities and potential challenges a mobility solution, such as a bicycle, offers to counter mobility poverty.

The core pillars of this framework – availability, access, utilisation, and sustainability, are drawn from the food security framework (World Food Summit 1996) and the market systems approach (Springfield Centre 2015), to evaluate the complexity of factors that impact the uptake of a transport mode, such as the bicycle. The pathways to food security are availability, access, use, and stability; each pathway can also be applied to a mode of transport, such as a bicycle. Each pathway is dependent on the other to achieve a positive state of being – ‘food security’ or, in this instance, mobility security.

The bicycle usage framework takes a systems approach to analysis of mobility needs. It outlines the dimensions of ‘supply’, ‘demand’, and ‘systems’ as they relate to availability, access, utilisation, and sustainability. The systems approach emerged from market systems development principles, which consider the enabling environment, demand and supply factors, supporting services and systems around a specific market (Campbell 2014; 2016; Springfield Centre 2015; Thorpe 2017). The optimal functioning of a supply and demand exchange is facilitated through an ‘enabling environment’ of information, infrastructure, skills and capacity and coordination, or ‘rules’, such as legislation,

regulations, cultural norms, and practices. An inclusive market system requires one to ask ‘who is excluded, and why’ and ‘who can help make the required change’ (Springfield 2015). The ‘bicycle usage framework’ overlays concepts from these two frameworks, food security and market systems, with a focus on marginalization and exclusion, to provide a systematic analysis of factors impeding uptake and use bicycles.

The four pillars of the bicycle usage framework are:

- **Availability:** Are bicycle available? Are they available to marginalised groups?
- **Access:** Do marginalized groups have geographical, physical, or financial access bicycles?
- **Use:** How do marginalized people engage with bicycles? What is the frequency of use? What are end-user needs? Are bicycles culturally appropriate? Are they gender appropriate?
- **Sustainability:** How is the bicycle sustained? What is the cost of owning a bicycle?

The pathways to increased uptake of bicycles – availability, access, usage, and sustainability – are both functions of the market (supply, demand, systems) and dynamics at community, household, and individual levels. We hypothesise that an analysis of the pathways will help identify the key barriers to increase uptake and usage of bicycles. This research will overlay the bicycle usage framework, with a primary focus on demand, the end-user, with the theory of mobility poverty, to determine the specific role the lack of mobility plays in enhancing, or constraining, the lives of the most marginalised and vulnerable.

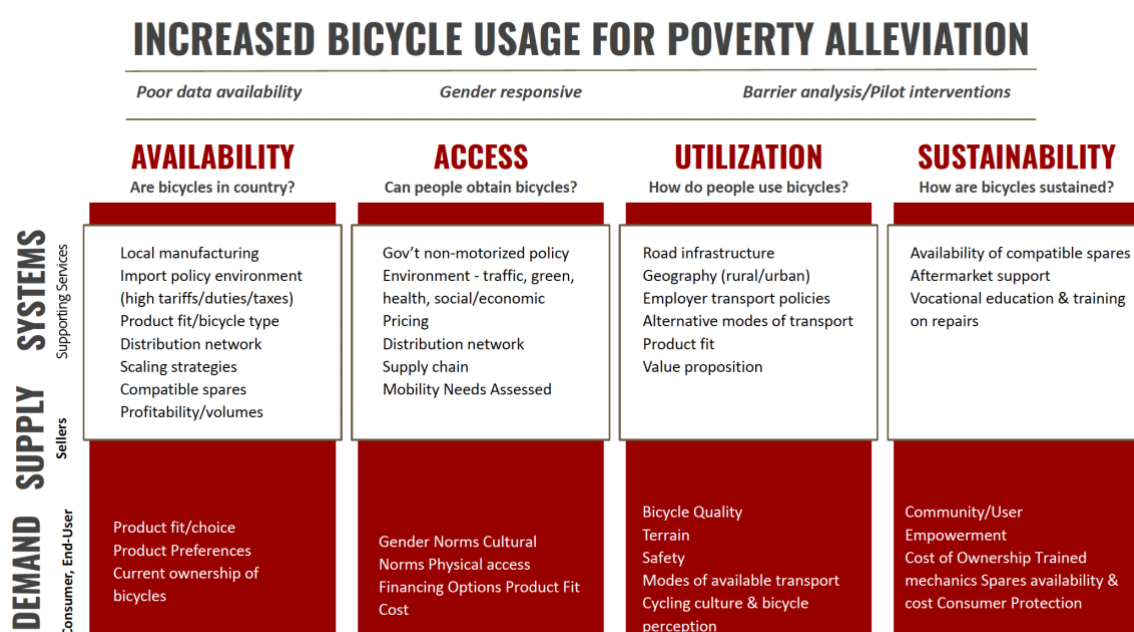


Figure 1 The ‘bicycle usage framework’

1.4.3 Other relevant social science frameworks

This section presents two additional frameworks from the social and behavioural sciences that provide insights into the intersectionality of mobility and access with issues of resilience, livelihoods, and social exclusion.

The Mobility Donut

The Mobility Donut, developed by Mobycon, is a conceptual framework specific to mobility¹. Using two concentric rings, the Mobility Donut offers three categories of mobility analysis: at the core ‘mobility poverty’; at the periphery, ‘excessive mobility’; and in the middle, ‘mobility happiness’, a state when transport is accessible, available, safe, affordable, and can be used appropriately (ability and freedom).

The Mobility Donut shows at one end the impact of mobility poverty on an individual and society, and

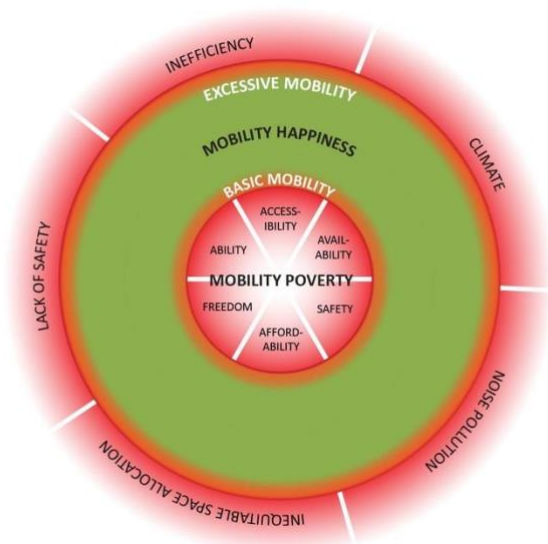


Figure 2: the Mobility Donut, developed by Mobycon

at the other, outside the ring, the negative impact of hyper-mobility on the environment. The Mobility Donut builds on the work of Economist Karen Raworth’s Donut Economy (Raworth, 2017) which depicts the balance between three conditions: at the core, people’s basic human needs; a safe and just middle space; encircled by an ecological ceiling, beyond which are the harmful effects on the planet, resulting from excessive lifestyle activities. The dimensions of mobility poverty in the donut core nicely complement the bicycle usage framework pillars and will situate our findings on marginalisation and

exclusion.

Sustainable Livelihoods Framework

The foundational Sustainable Livelihoods Framework (SLF), developed by DIFD (now known as Foreign, Commonwealth and Development Office), defines a sustainable livelihood as:

... ‘the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next

¹ <https://mobycon.com/updates/the-elements-of-the-mobility-donut-finding-the-balance/>

generation; and which contributes net benefits to other livelihoods at the local and global levels in the short and long term' (Chambers and Conway, 1991, p.6).

The approach places people at the centre as the owners of five key capitals, or assets: financial, social, human, natural, and political. The five capital assets presented in the SLF encourage thinking beyond the traditional focus of transport on access to goods and services, such as livelihoods, education, and health (Porter, Abane & Lucas, 2020).

2 Research design

2.1 Study setting

Kakamega is a town in Western region of Kenya and is headquarters of Kakamega county, one of the 47 devolved governments in Kenya. With a population of just under 1.7 million people in 2019, of which 52% are female, it is one of the most populous counties in Kenya (KNBS, 2019). A third of the population lives in poverty (KNBS, 2018). Zomba is in southern Malawi. As of 2018, the number of people living in the wider Zomba district was just under 1 million; of these, about 105,000 were in Zomba city, the administrative capital of the district (NSO, 2019). Approximately 70% of people in Zomba district live below the country's poverty line.²

Agriculture is one of the main sources of livelihood in both Zomba and Kakamega, but other sectors are rapidly developing due to increased urbanisation, which in Kakamega is partly driven by the establishment of the county government headquarters. Transport constraints are one of the key issues that affect people's lives in these settings. Services are few and scattered, causing people to travel long distances to access essential services such as healthcare facilities, schools, and markets. The cost of transport is prohibitive; thus, walking is the main mode of transport for most trips. This is further compounded by the state of the road infrastructure, which is often poor, and worsened during the rainy season, further negatively impacting travel.

2.2 Data collection

This research uses both qualitative and quantitative data. The data was collected through two main phases. Qualitative data was collected in phase one, and the findings used to identify the key marginalised categories to be included in the second phase of the data collection (quantitative). The findings from phase one were also used to refine the quantitative data collection instrument.

2.2.1 Qualitative data

Qualitative research was collected through Key Informant Interviews (KIIs), Focus Group Discussions (FGD) and Participatory Action Research (PAR) methods. These methods provide detailed data and insights into reasons for mode choice, mobility constraints faced by identified marginalised people or groups, bicycle use among these individuals or groups, perceptions towards bicycles (vs other means of transport) as a mobility tool for women and girls, and the extent to which these are affected by gender norms and cultural factors.

² Government of Malawi. n.d. Zomba District Socio-Economic Profile. 2017-2022.

Purposive sampling was used to select key informants in the communities living in urban areas. These include government officials working in departments/ministries concerned with transport and infrastructure, social welfare, agriculture, and other forms of livelihoods; and representatives from non-governmental organisations working in the communities.



Figure 3: Participants in a focus group discussion participate in a participatory mapping process to visually describe travel distances and modes within their community, Kakamega

2.2.2 Quantitative data

Quantitative data was collected through intercept surveys using a questionnaire with closed and open-ended questions to elicit relevant information such as socio-demographic characteristics, livelihoods, socio-economic levels, main transport modes, safety, consequences of mobility poverty, among others. Participants were selected through an intercept survey at market settings or points of interest within communities. A simple random sampling approach was used, where potential respondents in the markets and points of interest were randomly approached, informed about the study objectives, and asked to participate. As the survey aimed for a gender distribution that mirrors the national population distribution of both countries, the random sampling was stratified by gender.

Table 1: Data collection methods in Zomba and Kakamega

Data collection method	Zomba		Kakamega	
	Number	Details	Number	Details
Key Informant Interviews (qualitative)	6	Ministry of Gender, Children, Disability, and Social Welfare; Ministry of Transport; Ministry of Health; Ministry of Agriculture; Zomba District Council; Civil Society representative	7	Ministry of Education Science and Technology; Ministry of Trade and Industry; Ministry Transport and Infrastructure Development; Ministry of Health; Ministry of Culture Sports and Gender; Civil society representative
Focus Group Discussions (qualitative)	3 , each comprising 8 people	Casual workers or low-income earners (men + women) Small traders (men + women) Women only FGDs - low Income earners or household care work	3 , each comprising 8 people	Casual workers or low-income earners (men + women) Small traders (men + women) Women only FGDs - traders and care work
Detailed interviews (quantitative survey)	173	50% men, 50% women	200	54% women, 46% men

2.3 Ethics review and data management

The study received ethical clearance from three institutions. First, given that the project team comprised researchers from the University of the Western Cape (South Africa), the research protocol was reviewed by the university's ethics committees. Thereafter, the protocols were reviewed and approved by national research agencies in Malawi (National Committee on Research in the Social Sciences & Humanities) and Kenya (National Commission for Science, Technology & Innovation), in line with local guidelines surrounding research.

In both Zomba and Kakamega, FGD and KIIs data were collected in October 2022. FGDs were recorded and transcribed. KIIs were also audio recorded and transcribed, or verbatim notes or summaries were used where audio recording was not possible. We analysed the data from the FGDs and then used the findings to refine the quantitative questionnaire.

Quantitative data was collected in November and December 2022 in both locations. The data from the surveys were digitally captured using tablets, and then uploaded to a secure server. All enumerators were trained in survey administration, data quality, data security protocols, ethics, and consent. Other quality control assurance measures included close supervision of the survey process including during interviews and regular and random checks of the data collected.

2.4 Data analysis

Qualitative data was analysed thematically.

Descriptive and bivariate analysis were used to analyse the quantitative data to provide average estimates on demographics and socio-economic status, modes of travel, and the effects of transport constraints, bicycle ownership and usage. The study also explored associations between modes of travel and other variables of interest, including demographic and geographical characteristics among others. All quantitative analysis was done with Stata17.

Table 2: Key variables used in the analysis of quantitative data

Key characteristics	Key variables	Definition
Demographics	Gender	Men, Women
	Age	Age at the time of the survey
Economic status	Economic occupation	Type of work engaged in: agribusiness, retail, service sector, or other employment.
	Income terciles: poorest, middle, richest	Three income groups derived from respondent's total earnings (income) from employment.
Bicycle uptake	Bicycle ownership	% of households with bicycles
	Bicycle usage	% of respondents using bicycles for travel
Transport behaviour	Mode choice	Transport modes used for travel (e.g., to places of work, markets, for leisure and social activities) over the 7-day period preceding the survey. Primary transport mode usually used for travel (e.g., to places of work, markets, for leisure and social activities)
	Mode choice determinants	Factors underlying respondents' primary modal choice, disaggregated by travel purpose (destination)
	Travel purpose	Travel destinations over the 7-day period preceding the survey.
	Frequency of travel	Number of trips taken by respondent over the 7-day period preceding the survey, disaggregated by travel purpose (destination)
	Transport-related mobility constraints	% of respondents reporting inability to travel over a 30-day period due to transport barriers

2.5 Study limitations

When interpreting the findings, one must be conscious of the following limitations. The surveys were conducted in markets, in urban and peri-urban settings, and so the samples comprised people either working in or accessing the markets on the day of the survey. Additionally, the quantitative survey was not designed to be representative of the population, either at national, provincial or survey location level.

2.6 Findings outline

In the next sections, we present the findings. We have organised the findings under the following key thematic headings that respond to the study's research questions:

- Characterising marginalisation in Zomba and Kakamega
- Mobility needs and practices in the case cities
- Bicycle use and ownership in the case cities
- Everyday experiences of mobility poverty
- The role of bicycles in mitigating mobility poverty

We conclude with a final chapter that summarises the key findings and implications, and areas for future research.

3 Characterising marginalisation in the case cities

3.1 Zomba, Malawi

The quantitative findings are based on analysis of data from 173 respondents surveyed in Zomba, with a 50% split across gender. The average age among survey respondents is 38 years. Overall, nearly three quarters of survey respondents were aged below 45 years, and youths (18-24 years)³ were least represented. There are no significant differences in age groups across men and women.

Table 3: Demographic characteristics among survey participants, Zomba

	Total (all respondents)	Men	Women	<i>p value</i> (Gender disaggregation)
n	173	86	87	
Age groups				
18-24 years	10%	12%	9%	0.893
25-34 years	32%	33%	32%	
35-44 years	33%	34%	32%	
45+ years	24%	22%	26%	
Income (earnings) tertial				
Poorest	38%	34%	43%	0.066
Middle	29%	26%	33%	
Richest	32%	41%	24%	

The majority of people in the area under study in Malawi live in relatively precarious economic circumstances, whether they are women, men, the youth or the elderly, or people living with disabilities or chronic illness. Among survey respondents, the majority (93.1%) reported that they were gainfully employed, and a further breakdown shows that a total of 83.8% of the respondents were found to be self-employed. A large share (88.9%) of those employed were found to be traders who engage in buying and selling in the market.

The educational levels of survey respondents reveal that the majority lack basic education as more than half (54%) of the total sampled respondents had either not completed primary school or not undertaken any formal schooling. A fifth (19%) reported that they had primary level qualification but did not complete secondary schooling, 13% have secondary schooling qualification. Only 2.3% of the respondents were found to have a diploma and 0.6% a bachelor's degree.

Social welfare, agriculture, and public health officials indicate that people living in poverty constitute the majority in this area; people farm on a small-scale, and earn cash by casual or piece work, or by selling of farm produce/livestock, in order to purchase non-food items (such as soap, fabric, cooking

³United Nations definition of youth

oil) and services (healthcare, education, milling, and transport). Livelihoods are also sustained by working on other people's farms, such as by rearing people's cattle, cultivating other people's land, or working during harvest time.

According to key informant interviewees, people 'lack basic necessities' such as food, shelter, and clothing. Most of the households visited by social welfare depend on Social Cash Transfers (Transfer Project, 2017), which are either MK7000 (US\$6.8) or MK15000(US\$14.5) a month, almost all of which is spent on maize as a staple meal. Casual daily wages are in the region of MK1000(US\$0.99) to MK5000 (US\$4.9), while bicycle- and motorcycle-taxi fares are in the region of MK500 (US\$0.48)-MK3000 (US\$2.91), depending on distance and load, one-way. Average reported earnings per month among survey respondents is MWK90868.16 (US\$88.1).⁴ This translates to approximately US\$2.7 a day. There are significant differences across gender; the average monthly earnings among men (MWK106417.7; US\$103.2) are nearly 1.5 times that of women (76416.24; US\$74.1).

Roads in the area are largely poor-quality unsealed and inadequately maintained gravel, and a routine concern by focus group respondents is that during rainy seasons, bridges wash away and roads become impassable, exacerbating trip distances and marginalisation.

'Poverty as a problem itself also causes mobility/ transport challenges': fares for motorised transport are expensive, and bicycles – although cheaper than other modes – are still relatively costly to purchase or rent. Walking is the default mode of transport unless it is imperative to find the fares to travel longer distances, under urgent circumstances, or where trade-offs are deemed to make sufficient economic sense. This mobility poverty leads to the consequences identified in the literature but vividly described by individuals as part of this study.

Poverty combined with long distances and high transport costs, and lack of access to financing to purchase bicycles or other vehicles, hinders community members from accessing education, healthcare, and markets, hence their economic and social status in the community continues to worsen, say interviewees, setting up a vicious cycle of exclusion.

3.2 Kakamega, Kenya

The quantitative findings in this section are from analysis of data from the 200 respondents surveyed in Kakamega. The survey interviewed slightly more women (54%) than men (47%). The average age is 37 years. Like Zomba, the majority (74%) of survey respondents were aged below 45 years, and youths

⁴ This is based on an exchange rate of US\$1=MWK1030.9. <https://www.oanda.com/currency-converter/en/?from=USD&to=MWK&amount=1>

(18-24 years)⁵ were least represented (Table 10). There are some significant differences in age groups across men and women, with men having a larger share of youths than women.

Table 4: Demographic characteristics among survey participants, Kakamega

	Total (all respondents)	Men	Women	<i>p</i> value (Gender disaggregation)
n	200	93	107	
Age groups				
18-24 years	14%	22%	7%	0.012
25-34 years	34%	30%	36%	
35-44 years	26%	20%	31%	
45+ years	27%	28%	26%	
Earnings tertile				
Poorest	35%	28%	41%	0.017
Middle	34%	44%	25%	
Richest	31%	28%	34%	

Kenya's ministry of gender and social enterprise regards women, men, children, and the elderly, as all in need of social protection: '*Most of the people*' are vulnerable, says the department, as '*they are poor*'. Their sources of livelihood are casual, piecework, '*getting something small for what they do on the day ... depending on their daily activities*'. They are at the mercy of the weather, and at times on the whim of transport providers and daily price fluctuations.

Poverty in Kakamega county is '*fueled by factors such as poor road network*', and as a consequence, '*accessibility to health services [is] a problem*'. Rain, which is good for agriculture (Kakamega is part of a rainfall forest region), '*poses a challenge especially if most roads are gravelled or earth roads.*' The survey found that 93% of the total respondents reported that they were in some form of employment, majority self-employed owning formal or informal (unregistered) businesses.⁶ A smaller share (20%) of the respondents were either working full time or part-time in various organisations. Majority of the respondent (32%) worked from roadside kiosk, another 27% from markets, 9% from retail shops, 12% in business or government offices, 7% in service industry (e.g., restaurants), and the remainder from their own residences (6%) or other locations (8%).

Nevertheless, income levels are low. The average reported earnings per month among survey respondents is Kshs.18395 (US\$148.8).⁷ This is much higher than the average earnings reported in

⁵United Nations definition of youth

⁶ Employment includes self-employment, traders, and business people.

⁷ This is based on an exchange rate of US\$1=MWK1030.9. <https://www.oanda.com/currency-converter/en/?from=USD&to=MWK&amount=1>

Zomba, suggesting that economic levels are better in Kakamega. Unlike Zomba, there are no significant differences in earnings across gender. A large number of survey respondents attended and completed secondary school; 28.5% of the respondents had completed secondary school while 15.5% had a certificate or diploma degree, and 5.5% had a Bachelor's degree. The remainder (53%) had some form of education lower than secondary schooling, and only 3% had not attended any formal education. The higher level of education among survey respondents in Kakamega compared to those surveyed in Zomba may explain the income differentials observed across the two locations.

Government has '*a challenge in maintaining roads*', and given the rains, plus heavy axle loads (this is a cane-sugar farming area), roads '*do not even hit three months*' in terms of their maintenance life span. Trucks rarely adhere to weight regulations. '*Money is just never enough to improve the infrastructure to the desired level,*' say road maintenance interviewees: '*Infrastructure projects tend to be very expensive and ...you have to prioritise those funds as far as developing infrastructure or improving health services, or improving social services and the likes.*' Officials do recognise, though, that ultimately, improved roads mean improved services and health care.

During public participation or stakeholder engagement sessions, government interviewees say that community members '*mostly ask for roads*'. '*They just want a road that can take them from wherever they are going up to their gates of their homes. That is as simple as it is. They just want good roads.*'

In Kakamega county, focus group participants describe primary trips as being to- and from the market in the peri-urban centre, Shianda (either to deliver produce to market, or to purchase at the market and resell in their own village); to access healthcare; to buy firewood; to visit relatives; to attend church and savings club meetings; to fetch water; and for children to attend school. Trips are between 300 m to 14 km, on unsealed, laterite or gravel roads.

Unlike the study area in Malawi, where multiple modes of transport were available but unaffordable, in rural and peri-urban Kakamega country there are few minibus-taxis '*going to the interior*'; boda boda operators '*prefer doing their businesses within the town*', leaving travellers to go by foot or bicycle.

4 Mobility needs and practices in the case cities

4.1 Zomba



Figure 4: A mobility map showing services and community points of interests for women participating in the FGD discussion, Zomba

Travel constitutes an important daily routine for many people in Malawi. The average amount of time that survey respondents reported spending on travel over a 7-day period is 4.1 hours. Men reported spending slightly more (4.5 hours) time than women (3.7 hours). The survey did not find statistically significant travel time across age groups, economic occupation, or income groups.

People travel for work purposes, to access essential services (healthcare and schools), and to undertake household chores such as grocery shopping or fetching water and firewood. Respondents travel to a variety of locations, often for multiple purposes. The average number of unique trips made by survey respondents over a 7-day period was six. An assessment of travel destinations over the 7-day period preceding the survey shows that the most visited places include places of employment (reported by 91% of respondents), local markets (a destination for by 81% of respondents), religious institutions (visited by 78%), and farms (reported by 55% of respondents). Mobile money agents and water sources were other commonly visited destinations.

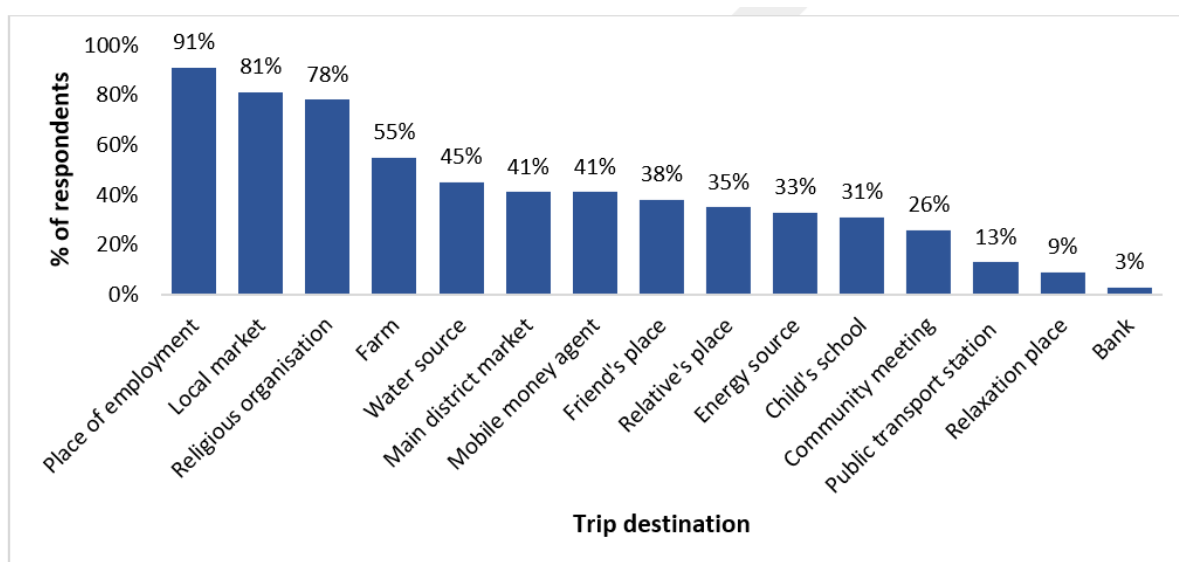


Figure 5: Travel destinations over a 7-day recall period, Zomba

4.1.1 How often and to where do people travel in Zomba

People tend to visit destinations repeatedly, and the frequency of travel can vary with trip purpose. In the survey, the average number of total trips that respondents reported making over the 7-day period preceding the survey was 23 (approximately three per day if people made trips every day). There are no significant differences in the number of trips undertaken by men and women, but there are significant differences across age groups; the youth (18–24-year-olds) and eldest group (45-year-olds and over) made the fewest trips (approx. 21) compared to other age groups, followed by 35–44-year-olds (23 trips) and 25–34-year-olds (24 trips). Nevertheless, the age disaggregated data shows small differences, suggesting that people of all age groups are travelling on a frequent basis.

Household water sources are the most frequently visited destinations, with an average of nine trips over a 7-day period, mainly undertaken by women. Travel to workplaces and local markets are also highly frequented destinations with more than four visits on average per week. The data suggests an association between gender and travel for work, business, or livelihood purposes. More men than women report travelling to places of employment in the 7-days preceding the survey. Similarly, significantly more men than women reported travelling to larger markets in the district, and to mobile money agents. On the other hand, women's travel appears to be more focused on household chores; a notably higher share of women than men reported travelling for households chose purposes such as fetching water. In fact, three quarters of women indicated they had travelled to water sources, compared to a much lower share (15%) of men.

Significant differences were observed across socio-economic status, with a higher share of individuals from the richest income group reporting travel for income, shopping, or livelihoods (places of work, district-level markets, and mobile money agents) than the poorest groups. The opposite was observed

for travel to water sources, where the percentage of those in the poorest income groups was significantly higher than those in the richest income group, potentially due to the fact that richer individuals are more likely to access water in their households, compared to poorer individuals who must travel to access this commodity.

Table 5: The percentage of respondents reporting travel and average number of trips over 7-day recall period, by destination, Zomba

	Trip destination	Place of employment	Local market	Religious organisation	Farm	Water source	Main district market	Mobile money agent
% of respondents reporting travel	All respondents	91%	81%	78%	55%	45%	41%	41%
	Gender							
	Men	97%	77%	78%	57%	15%	51%	50%
	Women	86%	86%	78%	54%	75%	31%	32%
	<i>p-value (chi2)</i>	<i>0.016</i>	<i>0.109</i>	<i>0.968</i>	<i>0.696</i>	<i>0.000</i>	<i>0.007</i>	<i>0.017</i>
	Income groups:							
	Poorest	85%	77%	83%	52%	55%	38%	36%
	Middle	92%	80%	73%	61%	47%	29%	31%
	Richest	98%	88%	77%	55%	32%	55%	55%
	<i>p-value (chi2)</i>	<i>0.032</i>	<i>0.339</i>	<i>0.363</i>	<i>0.606</i>	<i>0.044</i>	<i>0.02</i>	<i>0.026</i>
Frequency (average trips) among travellers	All travellers	4.8	4.4	1.7	3.4	9.5	1.8	2.4
	Gender:							
	Men	5.1	4.7	1.8	3.6	7.9	1.8	2.7
	Women	4.5	4.2	1.6	3.2	9.9	1.8	1.9
	<i>p-value (chi2)</i>	<i>0.067</i>	<i>0.147</i>	<i>0.444</i>	<i>0.334</i>	<i>0.557</i>	<i>0.777</i>	<i>0.048</i>
	Income groups:							
	Poorest	4.6	4.5	2.0	4.1	9.9	1.6	2.0
	Middle	5.1	4.3	1.6	3.5	10.5	2.1	2.6
	Richest	4.8	4.3	1.4	2.5	7.5	1.9	2.5
	<i>p-value (chi2)</i>	<i>0.549</i>	<i>0.908</i>	<i>0.184</i>	<i>0.001</i>	<i>0.447</i>	<i>0.349</i>	<i>0.521</i>

*Disaggregated analysis focuses on destinations with at least 40% of respondents reporting travel.

4.1.2 How people travel in Zomba

For people living in urban, peri-urban and rural settings of Malawi, walking is the main mode of travel for most trips. Nearly all respondents (95%) report walking for travel purposes at least once in the 7-day period preceding the survey. More than a quarter of respondents (28%) report using bicycles at least once. The most common motorised mode of travel is minibus taxis, used by 41% of respondents, while motorcycles were used by 16% of the respondents. Overall, nearly half (48%) of respondents used either motorcycles or minibus taxis.

The choice of transport mode differs across gender and economic status, but no significant differences emerge across age groups. The share of men using bicycles, motorcycles, or minibus taxis is notably higher than that of women. A similar observation is made with motorised transport, with a much higher share of usage among individuals in higher socio-economic strata. The differentials across gender and economic groups are also evident in the number of trips undertaken by either walking, bicycles, or motorised transport. Women report a much higher number of trips undertaken by walking (21) compared to men (14) over the same period. On the other hand, men report a higher number of trips undertaken using bicycles or motorised transport. Across economic groups, the number of trips where walking was used is much higher among the poorest economic group, while the number of trips where motorised transport was used is significantly higher among the richest group (Table 5: The percentage of respondents reporting travel and average number of trips over 7-day recall period, by destination, Zomba).

In some cases, transport modes can vary depending on the trip purpose. Walking emerged as the most popular primary mode of travel to workplaces, local markets, household water and energy sources, and accompanying children to school within and outside the respondents' localities. Motorised modes of travel (particularly minibus taxis) tend to be used for long distance travel. For example, 80% of respondents reported that they used minibus taxis to travel to district-level markets which tend to be larger than local markets and are located within urbanised centres, which are far from most rural residential areas of the district. In comparison, 86% of respondents relied on walking to travel to local markets which tend to be closer to rural settlement areas.

Overall, bicycles emerged as one of the least commonly used primary mode of travel. However, bicycles were cited as the primary mode of travel to health facilities by nearly 30% of respondents, suggesting that bicycles are an important transport tool for accessing healthcare. Motorcycles and other motorised transport were also used by a notable share of the respondents to access health facilities. The use of bicycles, motorcycles, and minibus taxis for travel to health facilities is likely due to people needing to travel long distances to health facilities, which tend to be few and scattered, forcing health service seekers to either spend long hours walking or seek transport means that would get them to the facility faster.

Table 6: The percentage of respondents reporting use of travel mode at least once in the 7-day period preceding the survey, Zomba

	Walking		Bicycles		Motorised transport (motorcycles or minibus taxi)	
% of respondents reporting mode usage						
	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>
All respondents	95%		28%		49%	
Gender						
Men	92%	0.029	38%	0.004	60%	0.002
Women	99%		18%		37%	
Age groups						
18-24 years	100%	0.540	11%	0.324	44%	0.333
25-34 years	95%		27%		41%	
35-44 years	93%		32%		49%	
45+ years	98%		33%		60%	
Income tertile						
Poorest	91%	0.089	29%	0.986	42%	0.000
Middle	98%		27%		29%	
Richest	98%		29%		73%	
Number of trips						
All respondents	17.6		1.0		1.5	
Gender						
Men	14.1	0.000	1.5	0.006	2.5	0.007
Women	21.2		0.5		1.2	
Age groups						
18-24 years	18.4	0.471	0.4	0.544	1.8	0.185
25-34 years	19.3		0.8		1.4	
35-44 years	17.0		1.2		1.7	
45+ years	15.6		1.1		2.8	
Income tertile						
Poorest	20.8	0.012	0.9	0.788	1.4	0.004
Middle	16.4		0.9		1.2	
Richest	14.9		1.1		3.0	

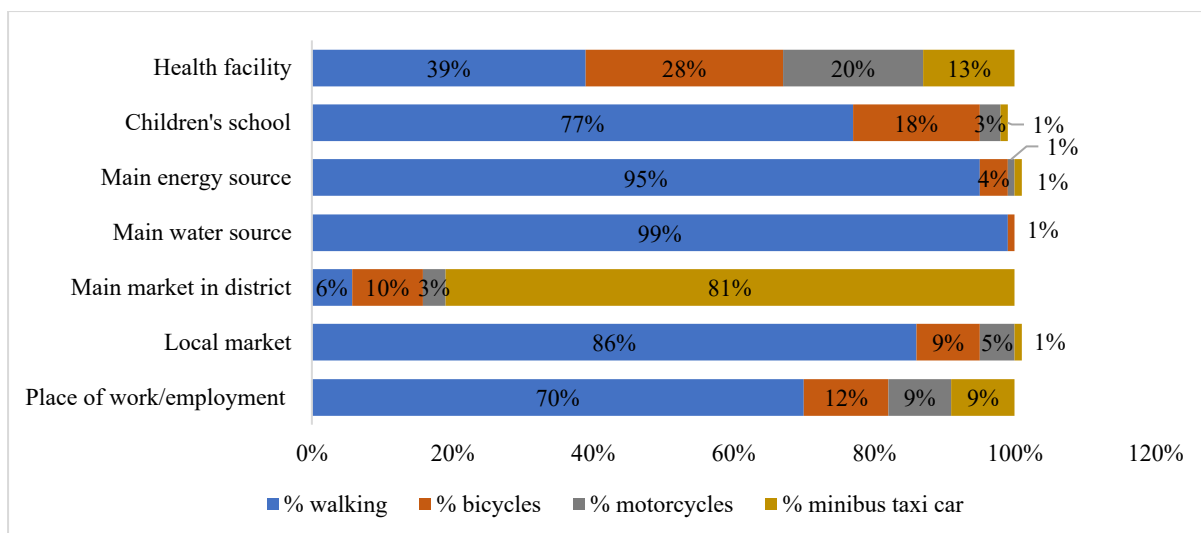


Figure 6: Primary mode of travel, by trip purpose

[illegible]

Survey respondents report spending an average of two hours per day on travel. There are no significant differences in the time travelled among women and men, but there are notable variations across age groups. On average, youths (18–24-year-olds) spend significantly less time (1.6 hours) than older age groups: 2.1 hours among 23–34-year-olds, 2 hours among 35–44-year-olds, and 2.1 hours among those aged 45 years or older.

4.2.1 How often and to where do people travel in Kakamega

Like in Zomba, the findings from Kakamega show that respondents tend to travel to multiple destinations over a short period of time and travel to multiple places in a day or week. On average, the total number of trips made by survey respondents over a 7-day recall period was 17.6. Additionally, the average number of unique trips taken by survey respondents over the 7-day period was five, suggesting

23

Draft final report for VREF input, not for circulation/citation

that while people travel repeatedly, they also tend to visit the same places multiple times. The analysis found no significant variations in the number of total or unique trips across gender.

Employment/work locations, local markets, religious organisations, and mobile money agent places are some of the most visited destinations. The most common destination is work/employment locations, to which 91% of survey respondents report travelling at least once in the 7 day-period preceding the survey. The average number of trips to work is approximately six per week. Local markets are the other common destination, travelled to by 85% of respondents an average of eight times per week. Mobile money agents were also popular destinations, with nearly three quarters of survey respondents visiting with an average number of trips of three per week.

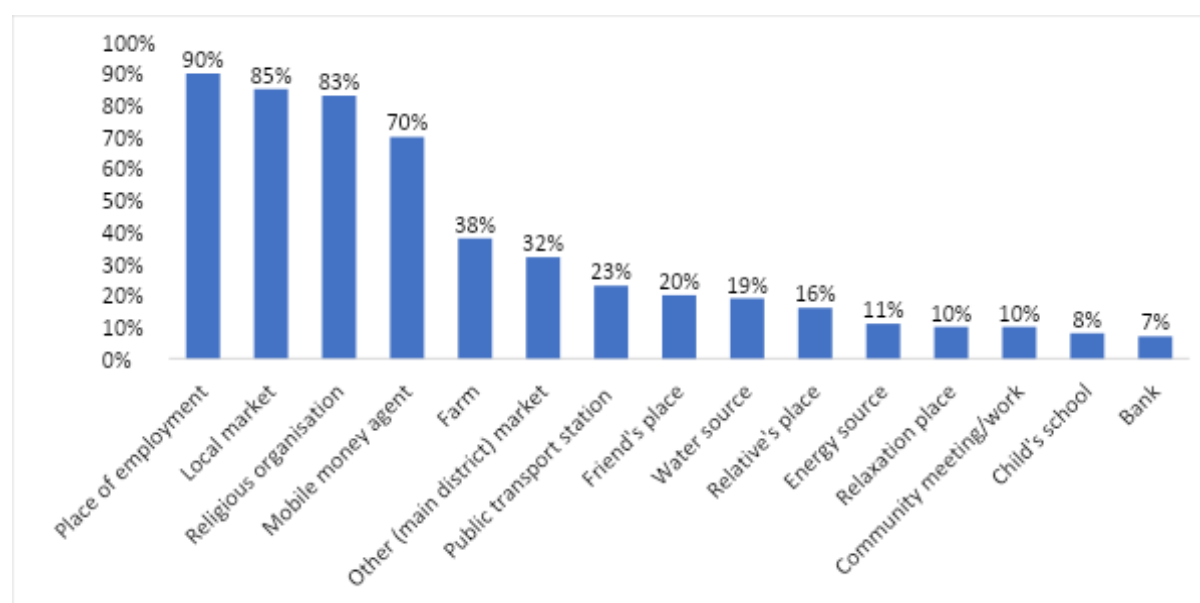


Figure 8: Travel destinations over a 7-day recall period, Kakamega

Among both men and women, travel is mainly undertaken for income generating or livelihood (social) activities, rather than for leisure or social engagements. Only a tenth of survey respondents report travelling for leisure, while 20% report travelling to see friends and 16% to visit relatives. A small share of survey respondents report travelling for household chores such as fetching water and firewood, perhaps because the majority have these household essentials at their homesteads (e.g., piped water) or can have them delivered to their homes (e.g., firewood). While travel to religious institutions also emerged as a common objective (reported by 83% of survey respondents), these destinations are less frequented compared to workplaces or markets; the average number of trips to a religious venue over a 7-day period was one.

Table 7: The percentage of respondents reporting travel and average number of trips over 7-day recall period, by destination, Kakamega

	Trip destination	Place of employment	Local market	Religious organisation	Mobile money agent
% of respondents reporting travel	All respondents	90%	85%	83%	70%
	Gender				
	Men	90%	75%	76%	67%
	Women	91%	93%	89%	73%
	<i>p-value (chi2)</i>	<i>0.936</i>	<i>0.000</i>	<i>0.019</i>	<i>0.338</i>
	Income groups:				
	Poorest	91%	89%	87%	69%
	Middle	91%	76%	78%	76%
	Richest	89%	90%	84%	65%
	<i>p-value (chi2)</i>	<i>0.845</i>	<i>0.051</i>	<i>0.347</i>	<i>0.315</i>
Frequency (average trips) among travellers	All travellers	5.8	4.5	1.2	3.4
	Gender:				
	Men	6.1	4.7	1.2	3.8
	Women	5.5	4.5	1.3	3.1
	<i>p-value (chi2)</i>	<i>0.011</i>	<i>0.544</i>	<i>0.593</i>	<i>0.032</i>
	Income groups:				
	Poorest	5.2	4.5	1.3	3.1
	Middle	6.1	5.3	1.3	3.7
	Richest	6.0	3.9	1.1	3.3
	<i>p-value (chi2)</i>	<i>0.0307</i>	<i>0.0017</i>	<i>0.278</i>	<i>0.438</i>

4.2.2 How people travel in Kakamega

Walking is the most common mode of travel in Kakamega. More than 90% of those surveyed reported walking for travel purposes at least once in the 7-day period preceding the survey. After walking, motorcycles are the most used modes of travel with more than half (61%) of survey respondents using them. Other motorised modes of travel such as matatus (minibus taxis) and tuk-tuks are also used but are not as common as motorcycles. Bicycles are the least used mode of travel, with less than 10% of respondents reporting usage over the recall period.

The choice of travel mode can vary with destination. In Kakamega, two thirds of people surveyed used motorised modes of travel to get to work. In fact, more than half (57%) of respondents used motorcycles as the primary mode of travel to work, again pointing to the high demand for this mode for travel. Motorcycles are also popular for travel to health facilities, district markets, local markets, and travel to children's schools. Walking emerged as the primary mode of travel for the majority of those travelling to local markets, and water and energy sources. These destinations are more common among women

than men.

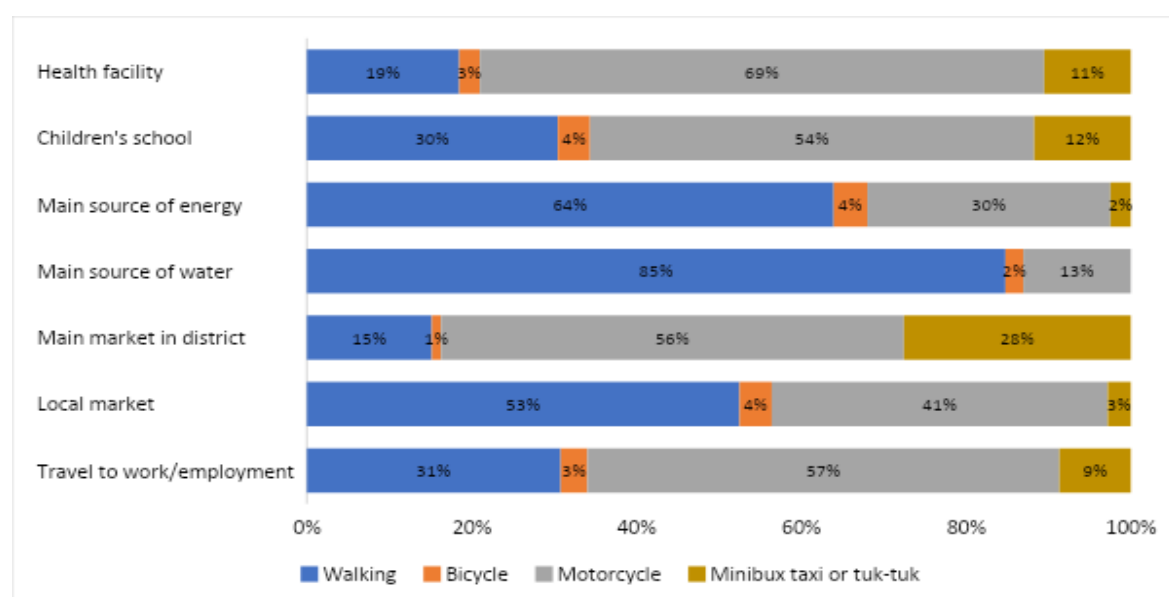


Figure 9: Primary mode of travel, by trip purpose, Kakamega

Overall, women appear to rely more on walking than men while men appear to use motorised travel modes more than women (**Table 11**). The share of men reporting usage of motorcycle taxi over the 7-day recall period is nearly 20% more than the share of women reporting the same. Additionally, men make significantly more trips on motorcycles (average of six) than women (average of three), while women make more walking trips (12) compared to men (approximately 9). The findings indicate no significant differences in travel modes across age groups (**Table 11**).

However, there are some variations across socio-economic status. Motorised modes of travel appear to be more popular among individuals who have higher earnings from employment (richest group). A greater percentage (68%) of persons in this group used motorcycles, compared to 50% in the poorest group. Nevertheless, these findings still point to the popularity of motorcycles among even the poorest groups. Another finding that supports this is that we find no significant differences in the number of trips made by motorcycles across income groups, but we find differences in the number of trips made by matatus. The latter are more expensive than motorcycles, and this may explain why higher income individuals may use them more frequently than low-income individuals.

Table 8: Percentage of respondents reporting use of travel mode at least once in the 7-day period preceding the survey, Kakamega

	Walking		Bicycles		Motorcycles		Minibus taxi/other motorised	
% of respondents reporting mode usage								
	% of respondents	P- value	% of respondents	P- value	% of respondents	P- value	% of respondents	P- value
All respondents	94.0%		6.0%		60.5%		23.0%	
Gender		0.008		0.149		0.011		0.253
Men	89.2%		8.6%		69.9%		19.4%	
Women	98.1%		3.7%		52.3%		26.2%	
Age groups		0.556		0.638		0.492		0.933
18-24 years	92.6%		3.7%		70.4%		22.2%	
25-34 years	95.5%		6.0%		56.7%		25.4%	
35-44 years	90.4%		3.8%		55.8%		23.1%	
45+ years	96.3%		9.3%		64.8%		20.4%	
Income tertile		0.384		0.659		0.078		0.019
Poorest (1)	97.1%		4.3%		50.0%		17.1%	
Middle	92.6%		5.9%		64.7%		17.6%	
Richest (3)	91.9%		8.1%		67.7%		35.5%	
Average number of trips								
All respondents	10.6		0.4		4.6		0.8	
Gender		0.0003		0.2369		0.0004		0.175
Men	8.7		0.5		6.1		0.5	
Women	12.3		0.2		3.4		1.0	
Age groups		0.9359		0.756		0.808		0.340
18-24 years	10.0		0.2		4.9		0.8	
25-34 years	11.0		0.3		5.1		0.6	
35-44 years	10.4		0.3		4.3		1.2	
45+ years	10.6		0.6		4.3		0.5	
Income tertile		0.000		0.547		0.1475		0.028
Poorest (1)	11.9		0.2		3.6		0.6	
Middle	12.3		0.5		5.0		0.4	
Richest (3)	7.3		0.5		5.4		1.4	

5 Bicycle use and ownership in the case cities

5.1 Zomba

Bicycles play an important role in mobility in Malawi, and especially in peri-urban and rural settings. In Zomba, the vast majority of people (86%) interviewed reported they had used bicycles within the 30-day period preceding the survey, either for travel to markets, health facilities, farms, or other destinations. No significant differences were found across gender, suggesting that the vast majority of both men and women use bicycles In Zomba.

5.1.1 Using the Bicycle Usage Framework to understand bicycle use

Availability

Very few non-owners (2%) report unavailability of bicycles as the reason for lack of ownership. This suggests that bicycles are largely present in markets they access and is likely a key factor the high bicycle usage in Zomba, particularly in comparison to Kenya (discussed in the next section). However, a large share of survey respondents indicates a need for quality and highly durable bicycles, with over 80% of them reporting that this is a factor they would consider if purchasing bicycles in the future. It is worth noting that this emerged as the most cited consideration for future acquisition, above bicycle price. A potential explanation for this is that consumers may be unsatisfied with the quality of bicycles available in the market. In some cases, respondents mention the need to have strong bicycles that can ferry heavy goods or farm produce.

Bicycle design and style is not the most important consideration during future bicycle purchase, suggesting that product fit/choice it is not the most important factor driving bicycle uptake. Just over a quarter (28%) of survey respondents in Zomba reported that they would consider bicycle design or style during bicycle acquisition in the future.

Access

In Zomba, bicycles appear to be easily accessible. People access bicycles through a variety of ways. The majority (55%) of survey respondents who use bicycles rent them at a cost, while nearly 20% borrow from relatives or friends. A smaller percentage (16%) own the bicycles they use, with a significantly higher share of men than women reporting ownership. Across socio-economic groups however, a larger share (96%) of respondents in the richest income group used bicycles than the share of those middle-income group (82%) or poorest group (79%). These findings suggest that even in places

of extreme poverty, access to transport tool like a bicycle is still segmented and benefits those who are least poor. The findings also indicate that even when they do not own bicycles, people in Zomba can access them through other channels. The accessibility of bicycles is likely a key driver of high bicycle usage in Zomba.

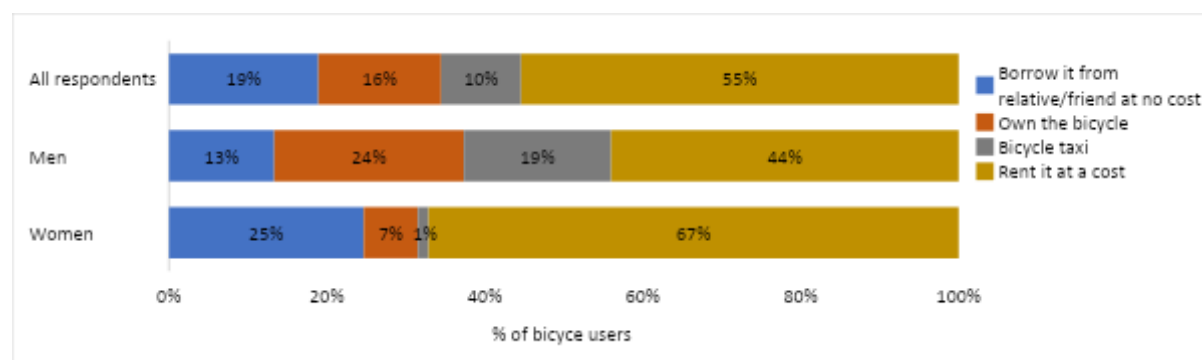


Figure 10: Bicycle access channels among bicycle users, Zomba

*Chi square analysis reveals that the differences in bicycle access modes across men and women are statistically significant ($p=0.000$).

Bicycles are seen as an affordable transportation mode, particularly in comparison to motorised transportation. It is thus an economically accessible transportation tool, particularly for poor households who record improvements in socio-economic circumstances. Despite this, the majority of households do not own bicycles. In fact, only 14% of those surveyed reported that their households owned a bicycle. This suggests a great unmet need for bicycles which exists largely due to affordability constraints. Cost is one of key drivers of bicycle ownership. Among those who report that they do not own bicycles, the vast majority cite affordability constraints as the main reason: they either cannot afford to purchase a bicycle or find the cost of maintenance prohibitive. Additionally, when asked what would increase their usage of bicycles, access to affordable bicycles (own or bicycle taxis) emerged as the most cited factor.

Table 9: Factors underlying lack of bicycle ownership, Zomba

	% All respondents	% Men	% Women
Cost of acquisition	93%	91%	95%
Cost of ownership – maintenance/spare parts	9%	10%	8%
Not interested	2%	4%	0%
Lack of bicycles available near me	2%	4%	0%
Disabled/ physical	1%	0%	1%
Road traffic is dangerous	1%	0%	1%
No road space on which to ride	1%	1%	0%

Utilisation

Bicycle usage in Malawi is very popular. Even road safety concerns do not deter bicycle usage. Bicycle users in Zomba report spending approximately three hours per week travelling on bicycles. Bicycle owners spent significantly more (average of 4.7 hours) than non-owners (2.9 hours). Bicycle users use them for a variety of purposes, but the most commonly cited use is for travel to health facilities, followed by travel to work. Nearly three quarters of bicycles users reported using them for travel to health facility. The least common use of bicycles includes fetching water or travelling for leisure. While the majority of respondents did not use bicycles as primary mode of transport for many of the trips they make, a large share (59%) reported using bicycles to access other modes of transport, indicating that bicycles are an important secondary mode of travel. The fact that bicycles can be used for a variety of purposes is one of the key factors that make them so popular in this context.

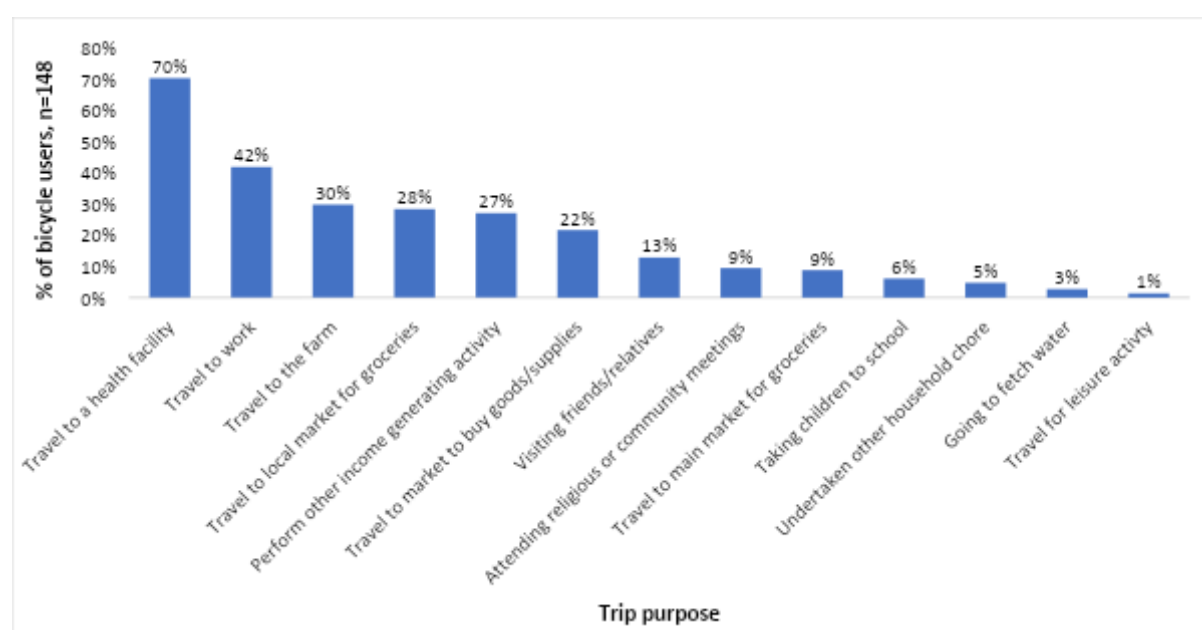


Figure 11: Common uses of bicycles among bicycle users, Zomba

Very few report that road safety is a deterrent. Similarly, very few report lack of bicycle infrastructure as a deterrent to bicycle ownership.

For some respondents, bicycle use would increase if they were to travel shorter distances to workplaces, suggesting that bicycles may be better suited for some trips, and is not necessarily a mobility solution for all forms of travel.

Sustainability

The large share of survey respondents reporting that they would consider the quality and durability of bicycles during future acquisition of bicycles suggest that the sustainability of bicycles is an important factor for bicycle owners. However, the high cost of highly durable bicycles is potentially a key barrier to ownership. Interest in the highly durable (and sustainable) bicycles is likely driven by the fact that

cheaper bicycles are costly in the long run due to high frequency of repair and high cost of maintenance and spare part. Ease of maintenance emerged as a factor that nearly a third of respondents reported they would consider when acquiring bicycles in the future. A quarter of respondents also reported that ease of acquiring spare parts of the bicycles as one of three considerations they would consider when acquiring bicycles in the future.

Table 10: Important considerations during bicycle acquisition in the future, Zomba

	% All respondents	% Men	% Women
Quality/ durability	82%	81%	82%
Cost	40%	43%	37%
Ease of maintenance	31%	34%	29%
Style/ design	28%	34%	22%
Ease of riding	27%	27%	28%
Ease of acquiring spare parts	24%	27%	21%
Carrier	9%	5%	14%
Lightweight	8%	5%	10%
Ease of acquiring bicycle	5%	5%	5%
I don't know	5%	1%	8%
Other	2%	3%	1%

5.2 Kakamega

Bicycle usage and ownership in Kakamega is fairly low. Only 13% of those surveyed (equivalent to 26 respondents) reported that their households owned at least one bicycle. The average number of bicycles per household is one. Majority (64%) of bicycles were purchased, while the remainder were donations from NGOs or relatives.

5.2.1 Using the bicycle usage framework to understand bicycle use

Availability

Only 10% of non-owners reported that they did not own bicycles due to unavailability of bicycles in their local markets. Moreover, only 12% of respondents reported that they would consider ease of access to bicycles as one of the top three considerations during bicycle acquisition. In summary, two conclusions are drawn from these findings: 1) bicycles are widely available and easily accessible within Kakamega and its environs, and 2) consumers are willing to travel to other farther locations to obtain

bicycles if they are unable to find any locally, provided the bicycles can meet other important considerations such as the cost and quality.

Bicycle design was less prioritised, with only 10% of respondents indicating that better design would improve their usage of bicycles. This finding implies that bicycle design is not the most important consideration for consumers.

Access

Bicycle usage is higher than ownership. Approximately a quarter (24%) of survey respondents (equivalent to 47 persons) reported that they used bicycles to travel to some of the destinations they frequented. This suggests that access to bicycles is not necessarily tied to ownership. In fact, among those who used bicycles, the majority (55%) borrowed bicycles from family and friends, 15% rented them at a cost, while 30% used bicycles they owned. Those who do not use bicycles report that the main reason for this is not owning one. A few mentioned their inability to cycle as the reason for lack of usage.

More men (32%) than women (16%) use bicycles, but there are no statistically significant differences in how they access the bicycles. Among men and women who use bicycles, the majority (53% in both cases) borrow from relatives or friends, while the remainder either own them or rent them at a cost.

When asked about the factors that would improve their usage of bicycles, two thirds of respondents indicated that cheaper bicycles would encourage increased usage, suggesting a prevailing cost barrier to ownership or access. Cost emerged as the most important barrier to ownership; nearly 90% of respondents without bicycles reported that price was the reason for their inability to own a bicycle. Related to this, the cost of spare parts and maintenance also emerged as a deterrent to bicycle ownership for over a quarter of non-owners. Moreover, 70% of respondents reported that the cost of the bicycle was one of the top three factors they would consider when acquiring bicycles. These findings indicated that affordability is the most important driver of bicycle ownership.

Table 11: Factors underlying lack of bicycle ownership, Kakamega

	% All respondents	% Men	% Women
Cost of acquisition	88%	90%	86%
Cost of ownership – maintenance/spare parts	26%	30%	23%
Lack of bicycles available near me	10%	9%	10%
Road traffic is dangerous	6%	1%	10%
Not interested	3%	4%	3%
Unable to cycle	2%	0%	4%
No road space on which to ride	1%	0%	2%
Don't know	1%	3%	0%
Disabled/ physical	1%	1%	0%

Utilisation

The most common uses of bicycles among survey respondents include travel to work and markets while the least common uses are travel for household chores and exercise (**Figure 11**). Bicycles are also used as secondary transport modes; 14% of respondents In Kakamega reported using bicycles to access other modes of transport. Bicycles users report that they spent an average of 2.6 hours per week travelling on bicycles, and only 10% of them spent at least five hours per week travelling on bicycles. This Is comparatively lower than the time reported by respondents in Zomba.

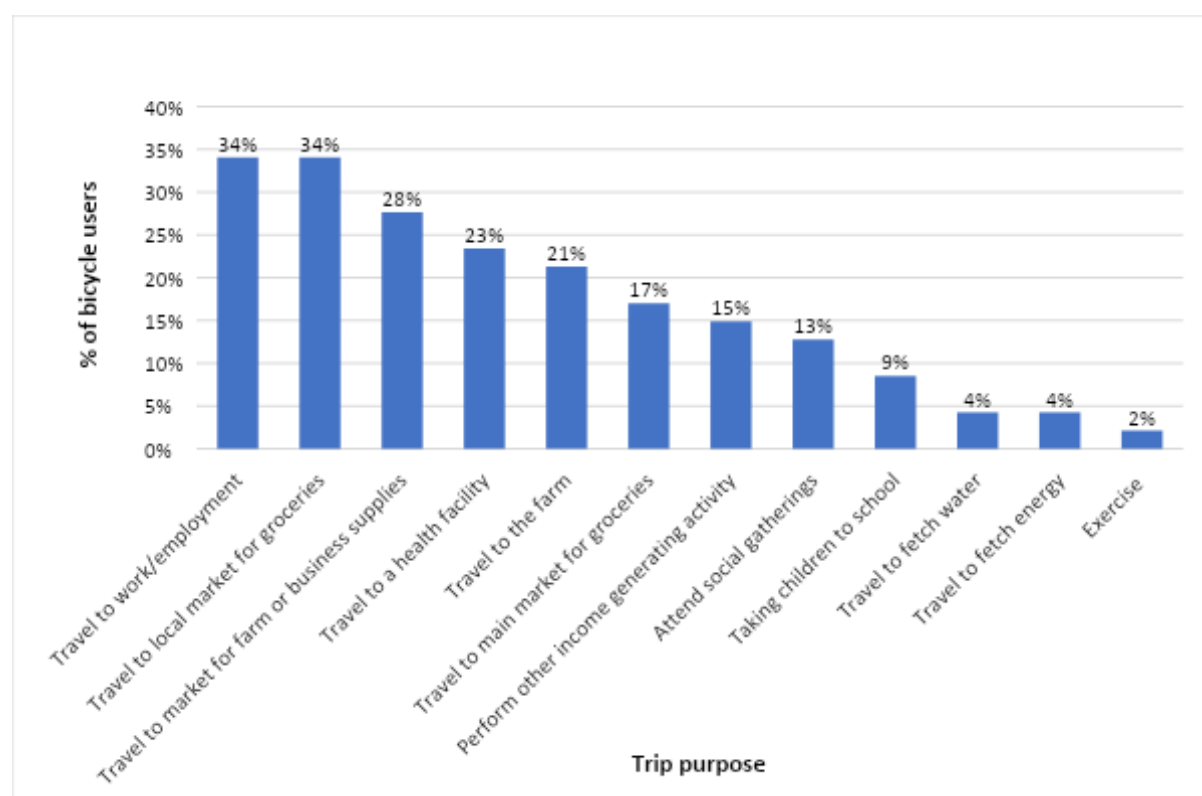


Figure 12: Common uses of bicycles among bicycle users, Kakamega

Better road conditions and access to bicycle infrastructure (e.g., paths) emerged as other common factors that would increase bicycle usage, indicating that the necessary infrastructure may be either non-existent or insufficient in their communities. Improved road safety, which is related to road conditions, was selected by approximately a quarter of respondents, indicating that it is a potential driver of improved bicycle usage.

Sustainability

As was the case of Zomba, a larger number (nearly 70%) of survey respondents in Kakamega report that they would consider the quality and durability of the bicycle during future bicycle acquisition, indicating that sustainability of the bicycle is a key consideration. Ease of acquiring spare parts and

maintenance services, key to bicycle sustainability, were reported by a notable share of survey respondents.

Table 12: Important considerations during bicycle acquisition in the future, Kakamega

	% All respondents	% Men	% Women
Cost	70%	66%	74%
Quality/ durability	68%	71%	64%
Ease of acquiring spare parts	29%	33%	24%
Ease of maintenance	25%	28%	21%
Ease of riding	24%	22%	25%
Style/ design	19%	15%	22%
Ease of acquiring bicycle	12%	14%	10%
Lightweight	6%	3%	7%
Other	1%	1%	0%
Don't know	1%	0%	1%

6 Everyday experiences of mobility poverty

This section responds to our research question where we sought to understand how communities experience, describe, and define everyday mobility and transport poverty and its implications. Analysis focused on how people make decisions about transport modes.

All reported speech is drawn from focus group discussions.

People make decisions about transport mode primarily on cost, trip purpose, distance, urgency, convenience, and availability (to a lesser extent). Topography and the weather also play a role, although not as important as cost and other factors. Survey participants report that the most common factors that influence their choice about primary modes of travel are affordability, accessibility, and convenience.

6.1 Zomba

6.1.1 Daily decision-making about travel

Cost constraints

‘Transport is not a problem here; the problem is money.’

The range or variety of mode options is ‘not the challenge’, but ‘people travel on the means of transport that they can afford’. ‘Accessibility ... need[s] to be bought.’

Owning a private vehicle or a motorcycle is ‘for the rich’, while ‘oxcarts are for the poor and are also only for emergencies.’ Motorbike-taxis and bicycle-taxis (kabazas) are ‘available everywhere’, but people choose to walk rather than use scarce financial resources to pay for transport unless absolutely necessary.

Transport constitutes on average a third of household expenditure in Zomba. In the context of high poverty rates, households prioritise the least costly transport modes. Unsurprisingly, affordability emerged as the most common factor considered by survey respondents. Walking is the most common primary mode of travel for a variety of trip purposes, primarily because it is affordable. Walking is also attractive for short trips, and the likely reason why it is a popular mode of travel for access to household water and energy sources.

In certain areas, when roads are wide enough and the terrain less steep, *‘it is very possible to use a minibus, but how can this work if you don’t have money in your pocket?’* Thus, *‘when there is no money, we just walk.’*

Table 13: Reasons why the majority of respondents chose walking as a primary mode of travel, by trip purpose, Zomba

	Work place	Local market	Water source	Energy source	Child's school	Health facility
Number of respondents walking	113	144	102	105	113	66
Reason for walking:						
Affordable	43%	34%	9%	20%	31%	45%
Convenient	40%	40%	55%	51%	41%	39%
Easily accessible	31%	33%	24%	19%	28%	29%
Distance	7%	10%	11%	1%	4%	2%
Only mode of transport available	6%	8%	16%		14%	11%
Number of people travelling with	1%	1%		6%	1%	
Well suited for terrain/roads	1%	3%			2%	
Best for transporting goods/produce			1%	5%		
Other	1%					2%

Gender constraints

'We just walk by foot. Natural tyres.'

Women have relative freedom of movement when it comes to household chores and mobility of care, but travelling 'for fun' is less acceptable. Participants describe situations where their husbands escort them on trips not for security or personal safety reasons necessarily but for coercive motives or suspicion: *'journeys such as going to the hospital, he cannot stop you. But there are other places, maybe you just want to see a friend then .. he stops you.'*

Even when participating in 'traditional' gender-role trips, however, women are less likely than men to have access to faster and easier modes. Explains one health worker, *'it is mostly women who visit the hospitals and if at all a household has a bicycle, it is the husband who uses the bicycle, leaving women to walk on foot to hospitals... This is usually an issue of power balance.'*

When a bicycle is available, though, and not needed by the men in the household, there appear to be few constraints (other than clothing protocols, such as wearing leggings beneath a skirt, or a wrapper over a skirt) to women using it. Women are highly likely to know how to ride a bicycle, hence their strong desire to own their own bicycles, which would save on bicycle-taxi costs, or the weariness and slow nature of walking.

Physical constraints

21 km takes 'one hour with tears on eyes' to ride...

The survey did not find any statistically significant differences in transport modes used across age groups. However, young children and elderly community members, who are least likely to have access

to cash fares, are most likely to have to travel by paid-for transport modes, say interviewees. This is mainly to reduce physical fatigue from walking for long periods, and especially when carrying heavy loads. Older focus group respondents describe how walking eventually becomes too wearying, and they are compelled to find transport fares to '*ease our pains*'.

Nearly half of respondents who rely primarily on walking for travel to work or market report that it (walking) does not allow them to easily access their places of work. They report that because of the long distances they walk, they often arrive late at their places of work/business. Because of this, they sell to a smaller number of customers, impacting negatively on their incomes. This is worsened in situations where they leave their homes late due to other household responsibilities or experience bad weather. Commuting to work via walking is therefore seen as an inhibitor to proper time management by many of the respondents. Another limitation of walking that they report is physical fatigue and sickness (such as back pain) due to prolonged periods of time spent walking. Physical fatigue is worsened in cases where respondents must carry their children or household members on their backs while travelling to health facilities.

Distance constraints

Among those who primarily use motorised modes of transport, affordability is not necessarily the main consideration. When motorised transport is used, it is often for long-distance travel. Motorised transport is especially popular among farmers travelling to markets to acquire inputs because they are suitable for ferrying heavy loads such as inputs (e.g., seeds and fertilisers) from the markets to farms, and among respondents travelling to health facilities. These modes of travel are preferred because they are faster and less tiring compared to walking, which are important considerations when needing to access markets or healthcare during emergencies.

People tend to walk to locations that are relatively close to their homesteads or require shorter travel duration but will most likely use motorised transport or bicycles for longer trips. A comparison of travel modes used by those who travelled to both a local market and a district market within the 7-day period preceding the survey shows that while 87% of them walked to the local market only 13% walked to access the district market. Conversely, nearly three quarters (72%) used motorised transport to travel to district market, compared to 5% who used these modes to access local markets. The vast majority (83%) of respondents who rely on walking as primary mode of travel to local markets report that walking allows them to easily access the market, while 88% of those who use motorised travel to district markets report that motorised transport allows them to easily access these markets.

Table 14: Reasons why respondents choose motorised travel as a primary mode of travel, by trip purpose, Zomba

	Main market	Health facility
n	87	105
Distance	49%	18%
Convenient	31%	47%
It is affordable	28%	37%
Easily accessible	22%	36%
Best for transporting goods/produce	18%	1%
Only mode of transport available	5%	4%
Safety considerations	5%	3%
Number of people travelling with	3%	3%
Well suited for terrain/roads		3%
Other		4%

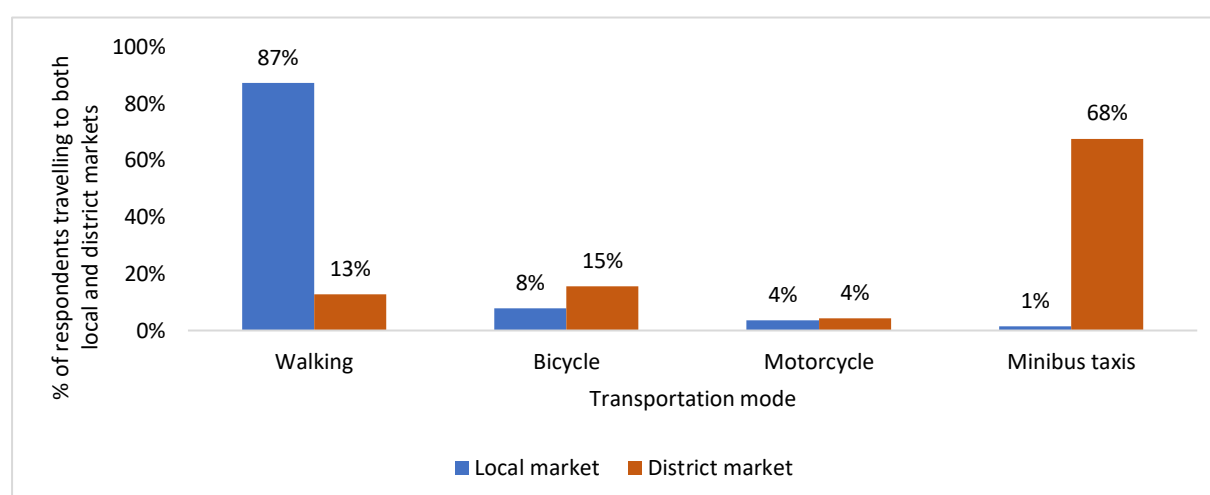


Figure 13: Primary modes of travel used by those travelling to both local and main markets, by trip purpose, Zomba

Convenience

Convenience emerged as an important consideration for survey respondents. Besides being affordable, convenience is one reason why walking is preferred as a primary mode of travel for most trips because it is considered suitable. Bicycles are also viewed as convenient, in addition to being affordable and easily accessible. These are the likely reasons why bicycles emerged as a primary mode of travel to health facilities for nearly 30% of survey participants. Another advantage of bicycles that people report using to transport sick family members to health facilities. Among those using bicycles for travel to health facilities, the majority (73%), reported that bicycles enabled them to easily access health facilities. In comparison, only 43% of those who primarily walk to health facilities report that walking allows them to easily access the health facilities. The majority of those who walk, however, report it does not allow them to easily access health facilities for various reasons: health facilities are located far away from their homes causing them to travel long distances to access healthcare, time is wasted

walking for long durations which in turn results in health seekers arriving late at the health facilities, fatigue due to physical exhaustion, and the fact that walking is unsuitable for the sick.

Safety constraints

Just under a quarter (24%) of respondents reported that they had needed to cancel travel plans at least once in the 30-day period prior to the survey due to safety concerns. There are no significant variations across gender, suggesting that both men and women are concerned about safety during travel. Safety considerations mainly stem from concerns about physical safety, with some reporting concerns about being attacked by thugs while travelling. Others express concern about long travel distances causing them to return from work in the night when there is increased safety risk, and for this reason, they would rather not travel in ways that expose themselves to theft and assault. Others report that bad weather (such as heavy rains) make travel less safe and has caused them to cancel travel plans on several occasions.

6.1.2 Living with and mitigating mobility poverty

Finding ways to travel

‘You sell a chicken or a broken chair just to make sure that you are able to travel.’

Walking is neither possible nor appropriate for every necessary trip. When travelling longer distances (upwards of 5 km or so), with loads or with others in their care, or when under time pressure to get to the market early or return home to attend to household commitments, individuals need to find a way to pay for transport. Emergencies and concomitant unexpected travel require rapid actions to raise money. This includes borrowing money to pay for transport. More than 60% of respondents surveyed report borrowing money from relatives or friends in the 30 days preceding to pay for transport. No significant variations were observed across gender, age groups or the type of businesses operated by the respondents. These findings indicate that overall, financial constraints affect all regardless of demographic and socio-economic characteristics and suggest high levels of poverty among people living in these communities.

Besides borrowing from family and friends, other actions used to raise money usually involves selling of household items, livestock, or produce – *‘we sell anything that can bring money fast.’* Almost inevitably, these sales are made below market value: *‘maybe we may have relatives staying at [x] who complain that they are sick. Then we usually catch our chicken and sell it out in the market perhaps at a low price so that we should source money for transport.’* Participants also report selling maize, ‘wrappers’ (fabric sarongs), even ‘a broken chair’, *‘just to make sure that you are able to travel’*. Among

those surveyed, more than a third (39%) reported that they had sold household assets such as livestock within the six months preceding the survey to pay for transport costs.

Some respondents first attempt to sell household items to their neighbours rather than at the market, because of the cost itself of travelling to the market. Neighbours also lend to and borrow cash from each other. Other respondents take quite the opposite approach: although poverty and high transport costs are shared challenges, participants report high levels of shame when seeking cash for transport fares. ‘When selling your items, you don’t sell to the neighbour but at a distance, you don’t want [your] neighbour to know that you have a problem.’ Only as a last resort would they borrow or sell to a neighbour.

Casual workers describe exchanging household items or produce instead of cash to pay for transport: maize, beans, peas, groundnuts, ‘even chickens’, a cow, ‘a trouser’, and crockery. One FGD respondent notes that ‘all my pots are [now] gone’. At other times respondents will use items as surety, until they are able to pay: ‘If you really want to visit a friend and we don’t have money we could give out something to someone as surety for money, we agree that when I will have money I am going to take it back.’ In the survey, just over a tenth of respondents reported making in-kind payment for their travel.

When people are unable to raise the cash needed to pay for transport or make in-kind payments, they may opt to travel on a credit basis. In such cases, the consumer and transport provider will enter into an agreement for the latter to provide a transport service and for the traveller to settle the debt at a future date. In Zomba, this emerged as common practice, with more than a quarter (28%) of respondents reporting having done this within the 30-day period preceding the survey. Survey participants, however, report that they have experienced some challenges with these kinds of arrangements. For example, delayed payments attract interest making transport even more expensive while some report that they are sometimes unable to pay for the transport service altogether. Both these situations lead to disagreements or loss of trust between the traveller and transport provider. Some also report anxiety that comes with these arrangements, particularly when they receive regular reminders from the transport provider to the point where they feel harassed.

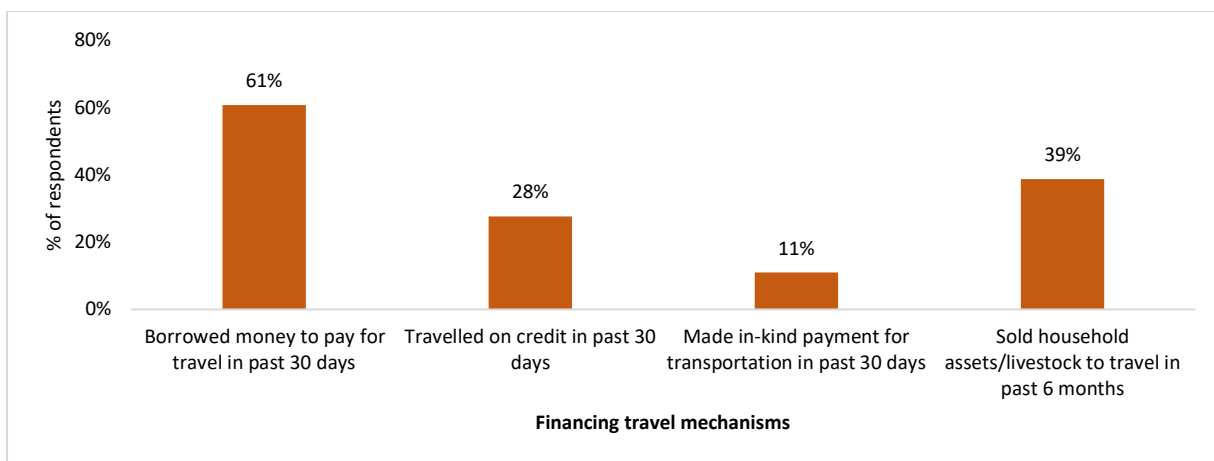


Figure 14: Mechanisms employed by survey respondents to finance travel when faced with affordability constraints

Tactics to save travel costs

Participants describe various ways in which they attempt to reduce transport costs, such as purchasing transport on only certain legs of the trip. For example, petty traders routinely walk to the market to purchase vegetables, arguing that if they don't *'find vegetables to order ... I would lose my money. However, when I find vegetables, I use transport on my way back home.'*

Similarly, other traders take paid transport to the market early in the morning, to gain access to better quality produce or the chance of better prices for their own produce, but then walk the return trip. Some respondents walk part way of a longer journey, until they reach a point where the bicycle- or motorbike-taxi trip leg would be within their budget.

Hard bargaining is a tactic respondents resort to, to reduce stated minibus taxi fares: taxi conductors *'they start with MK2000 and you pretend as if you do not want to board... and they will come to negotiate with you then they will say, it is okay if you pay MK1500.'*

6.1.3 6.1.3 The consequences of mobility poverty

Anxiety and uncertainty

'It troubles much the heart ...'

Participants speak repeatedly about the anxiety and fear around time-pressure and emergencies, and whether they will be able to fulfil their family duties or care for those who rely on them if they are not able to access faster transport at times. Particularly, participants talk about how to cope with health emergencies – their own or those of their children or elderly parents.

'Emergencies come at a time when you have nothing. No money, no bicycle', says another participant. *'You wait until you get something and then travel, even if you find that burial already took place.'*

‘Mostly during emergencies such as sickness, funerals of relatives, we are always under pressure on how will be able to travel? It troubles much the heart because of not knowing what to use to travel to the place.’

Where participants can plan regarding travel to health-care facilities, such as when friends or family members are approaching childbirth, they mitigate travel risks by serving as ‘escorts’: ‘we escort her regardless [of] lack of transport.’ Community members also escort elderly people, on foot, to hospital, ‘since they can’t go alone’.

The consequences of poor access to affordable transport can be extreme: ‘It happens that a child can die just because you failed to access the transport, but if you can have a bicycle then you can just have the child at your back and ride your bicycle going to the hospital.’

Yet even bicycle travel can be a source of anxiety. Participants describe the process of decision-making when borrowing a bicycle from within the community, weighing up the possibility of hidden costs arising out of bicycle use: ‘It may be that you only have MK1000 and you need to borrow a bicycle. So, you ask yourself if I pay this money and borrow a bicycle what if it develops a fault, what will I do? So, when you have at least MK1500 then it’s better, but otherwise if having MK1000 it’s better to walk.’

Participants report that it costs anything between MK500 and MK2000, depending on the time period for which they wish to borrow a bicycle, or whether the owner is foregoing his or her own earning potential by lending the bicycle. Everyone notes that a bicycle must be returned in the same condition at which it was borrowed: *‘if anything [is] broken, you need to go and repair it before it is returned to the owner.’*

Fare fluctuation or whimsical price changes is another cause for anxiety: *‘As we board the minibus, [touts] tell you that transport fare to town is MK700 but on the way the conductor changes the fare to MK1200 which is very unfair to us.’*

There are times when minibus-taxi operators are sympathetic to people needing to hasten back on a return trip: *‘we try to search for money in the pocket and if it is not enough for transport fare, we try to negotiate with the bus conductor by telling him that ‘please help me it’s getting late’.*

However, participants report that the price gauging is more likely: in the words of one focus group respondent, *‘we are worried with minibus conductor’s behaviour because of transport cost[s]. When riding a minibus, we agreed on the fare but when dropping[you] off they tell you a different price higher than what we agreed in the first place when boarding’.*

Loss of productive time

Although in the literature there are researchers that suggest travel time and journey time matter less to people with lower-incomes, in this study it is evident that time does matter. Waiting for transport is a frequent complaint, which vehicle ownership would mitigate: *‘Some of us, the challenges that we face ... is the lack of our own machines. Because if we had our own, we cannot go to the stage [transport stop] and wait for someone’s machine. Also, we will not be bothering waiting, just get ours and go.’*

Independent forms of mobility (both cycling and walking) are thus valued for their relative predictability and sufficiency. Bicycles are significantly faster than walking, which is time-consuming and *‘people waste so much time which they would have used for other productive things.’* Walking in particular requires that people *‘get up earlier in the morning and prepare our journey.’*

When participants are able to rely on themselves for travel, *‘movements become easy... maybe there is something happening somewhere at specified time so it helps you plan to attend the occasion in time.’*

Reduced access to market, and diminishing returns

Agricultural extension workers report that, for farmers, ‘access to good markets is a problem hence [farmers] fail to sell their products.’

Waiting for transport, when farmers don’t have individual modes of travel, can result in late arrival at the market, and reduced access to purchasing better quality or cheaper produce or other market goods, or reduced access to customers. *‘We use other people’s transport to go to the markets. We get to the stage, wanting to get to the destination by 6am, [but] we get there sometimes at 8am because of waiting.’*

Sometimes the cost of travel halves the profit of daily wages, and reduces the value of market sales. As one focus group participant explains, [when] *‘you have [few] business items, you just put it on the bicycle and off to the market. If you [had] used paid transport to the market, that little business would not [have made] any profit.’*

Traders describe circumstances where they have to think carefully before travelling some distance to purchase produce from other areas, or travelling to harvest, which affects the livelihoods of both farmers and traders. *‘The challenges are these, when we want to buy crops from other areas, we need transport to get there and nowadays transport is [more] expensive than crops Not only that, but after harvesting we also need transport to carry our crops from the garden to home, so the crops that have been harvested [are] less compared to transport they charged.’*

Limited access to services

Overall, key informants from government and social service organisations observe an environment in which many people are excluded from accessing basic services in the community. When services are

not within easy walking distance, individuals and communities unable to afford vehicle transport face reduced access to healthcare, financial and social services, education, and livelihood support.

Social grants

Social services give examples of the elderly *‘failing to travel to a place where they are supposed to receive money through the social cash transfer program due to long distances, poor access to transport services and unaffordable transport costs. In such scenarios, they are duped and end up receiving less or no funds at all.’*

Agricultural assistance

Agricultural support organisations indicate that one of the consequences of poor access to affordable transport for farmers is a *‘lack of access to [agricultural] inputs’* Extension workers don’t always manage to visit farmers because of their own poor access to transport, coupled with poor road quality. Agrodealers travel to local areas to sell inputs to small-scale farmers, say key informants, but due to the poor roads, [costs], and long distances, they *‘tend to sell the inputs at very high prices. Due to this, such small farmers only have access to poor quality inputs’*. This ‘lack of access to knowledge on new agricultural techniques [also] exacerbates poverty.

Healthcare and education

The provision of schools and health-care facilities in the area is sparse, and affordable transport to reach services is virtually non-existent, say interviewees. The catchment area for health facilities is planned to be that no one travels for more than 9 km, but many health facilities are further apart. Some locations in the district do not have health facilities at all.

The standard for schools is 5km, but as with health facilities, the reality is often different, and children travel long distances to access education (or not at all). Interviewees report that some school catchment areas are 10-15 km, while health centres are 12-14km. Girls have safety challenges as they *‘tend to do self-boarding in very poor locations in order to be closer to school.’* Too often, *‘students fail to attain education, and this leads to increased illiteracy levels and a continued cycle of poverty.’*

Because the majority of the community members rely on walking as a means of transport, *‘they fail to access the best health services they deserve,’* conclude key informants. Individuals delay making trips to clinics, don’t return for follow-up, or are unable to adhere when referred to tertiary centres for specialist care. One participant notes that after borrowing money for a trip to hospital, *‘they tell us that there are no drugs in their stores ... whereby we are supposed to go to Zomba Central Hospital. So due to lack of money, we do get back home to sell something [to] money and travel to Zomba.’*

Of great concern to case workers interviewed are that on many occasions *‘parents fail to take their children to immunisation’*, leading to significant negative health outlooks for their futures.

Loss of social and family connections

‘My heart desires to go, but I have never done it because of lack of transport.’

Social exclusion is a primary challenge that *‘most of the community members face’*, say key informant interviewees, *‘as they are not included in decision making in the society.’* Further, *‘social relations are hard to maintain, leading to [more] issues of social exclusion.’* Participants describe lives where they long to participate in family, social, religious, and cultural activities, but are constrained by lack of transport costs. They talk of *‘failing’* to visit relatives, attend weddings and funerals, or simply something that *‘is just happening’* that they cannot spontaneously attend.

One participant noted that *‘my relatives have forgotten me in the village... it’s been long time since I visited them.’* Almost all participants regret being unable to visit elderly parents often enough, as their homes *‘are mostly far’*.

Weekends are spent at home or at church – *‘most of us don’t go anywhere on weekends. Although there are, for example, cultural events and entertainment at the local prison venue, participants ‘fail to go due to lack of transport.’* Sports games are further recreational opportunities that respondents *‘fail to go and watch’* *‘My heart desires to go,’* says one focus group respondent, *but I have never done it because of lack of transport.’*

Inability to travel

In general, missed travel is one of the most important consequences of mobility poverty. Transport-related constraints such as unaffordability of travel, lack of transport (either own or paid for), and long distances, are some of the key factors hindering travel. Overall, nearly half (41%) of respondents report inability to travel at least once in the 30-day period preceding the survey due to transport-related constraints, while more than half (53%) report that they lack a transport tool/equipment. A lesser share (18%) report that they were deterred by long distances at least once over the same period. These findings do not differ across gender, age groups, or Income levels, suggesting that people from all demographic groups and economic levels represented in the survey experience these barriers.

A fifth of survey respondents report that they were unable to travel to work within the 7-day period preceding the survey primarily due to transport related constraints. Other barriers they report that affected their ability to travel include sickness (reported by 9%), care for family members or other pressing commitments (7%), lack of time (reported by 5%), and lack of financial capital needed for their work or business (reported by 5%) among others.

Similarly, more than a quarter (28%) of traders report they were unable to travel to markets to source supplies for their business in the 7-day period preceding the survey due to transport constraints. Nearly a fifth of respondents reported that they were unable to travel for leisure during the 7-day period preceding due to transport constraints. A striking finding is that nearly half (41%) of those surveyed were unable to travel to health facilities in the preceding 30 days due to transport barriers. Approximately a third of survey respondents were unable to travel for leisure within the 7-day period preceding the survey; half of these were unable to do so due to transport-related barriers.

Table 15: Key barriers affecting travel, by trip purpose, Zomba

	Mobility-related constraints	Care for family/other commitments	Sickness or fatigue	Lack of financial resources for activity	Lack of time	Bad weather	Other constraints	No constraints or did not need to travel
Place of work	<u>20%</u>	7%	11%	5%	5%	5%	1%	47%
Markets to source supplies - traders	<u>28%</u>	2%	2%	17%	3%	0%	1%	47%
Farm - farmers	<u>14%</u>	3%	5%	1%	4%	3%	1%	69%
Markets to source farm inputs or sell produce - farmers	<u>5%</u>	0%	0%	5%	1%	1%	2%	86%
Water source	<u>2%</u>	0%	6%	0%	1%	0%	1%	91%
Energy source	<u>5%</u>	0%	2%	0%	1%	2%	1%	90%
Leisure or social activities	<u>16%</u>	1%	2%	2%	10%	1%	0%	68%
Health centre	<u>41%</u>	0%	0%	3%	2%	1%	0%	53%
Education institution	<u>13%</u>	0%	2%	1%	5%	1%	1%	78%
Religious institution	<u>18%</u>	5%	5%	4%	18%	2%	0%	47%
Community meeting	<u>13%</u>	0%	2%	1%	5%	1%	0%	79%
Another place	<u>38%</u>	0%	1%	2%	4%	2%	0%	53%

*Travel to work, markets, farm, and for leisure is based on a 7-day recall period. Travel to health centre, religious Institutions or other place based on a 30-day recall period. *Mobility constraints include cost of transport, lack of transport tool/equipment, and long distances *Lack of financial resources - relates to financial resources to undertake activity, e.g., purchasing farm inputs or business supplies, or money to contribute to religious Institution (e.g church) or to pay for leisure activity.

Table 16: Percentage of respondents unable to travel at least once due to affordability constraints, lack of transport or distance barriers at least once over a 30-day recall period, Zomba

	High cost of transport		Lack of transport		Long distance	
	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>
All respondents	41.0%		52.6%		17.9%	
Gender						
Men	44.2%	<i>0.403</i>	53.5%	<i>0.816</i>	15.1%	<i>0.339</i>
Women	37.9%		51.7%		20.7%	
Age groups						
18-24 years	27.8%	<i>0.65</i>	50.0%	<i>0.483</i>	16.7%	<i>0.814</i>
25-34 years	41.1%		55.4%		14.3%	
35-44 years	42.1%		57.9%		19.3%	
45+ years	45.2%		42.9%		21.4%	
Income quintile						
Poorest (1)	45.5%	<i>0.132</i>	62.1%	<i>0.112</i>	24.2%	<i>0.152</i>
Middle	29.4%		43.1%		17.6%	
Richest (3)	46.4%		50.0%		10.7%	

Time poverty

Beside reduced travel, time poverty is another consequence of mobility poverty, that impacts the amount of time spent on productive, social, and leisure activities.

In Zomba, the study found an average of 3.8 hours per day was spent on travel by survey participants. A tenth of respondents spent at least 6 hours on travel per day. There are no significant differences in travel time across gender, indicating that both men and women equally travel intensively. However, significant variations exist across age groups, with younger respondents (18–24-year-olds) reporting the least amount of travel time, and older age groups (45+ years) reporting the highest. Across economic groups, unemployed respondents spent the least amount of travel time, while those employed (including casual workers and hawkers) reported the highest.

Nearly half (44%) of participants interviewed reported that there were activities they would have wanted to do in the preceding 7-days but were unable to because their time was spent travelling. Some of the common activities these participants report they were unable to do include undertaking a business or livelihood activity. However, lack of participation in social or leisure activities emerged as some of the most common activities that they reported they would have wished to undertake but were prevented from doing so due to time spent travelling.

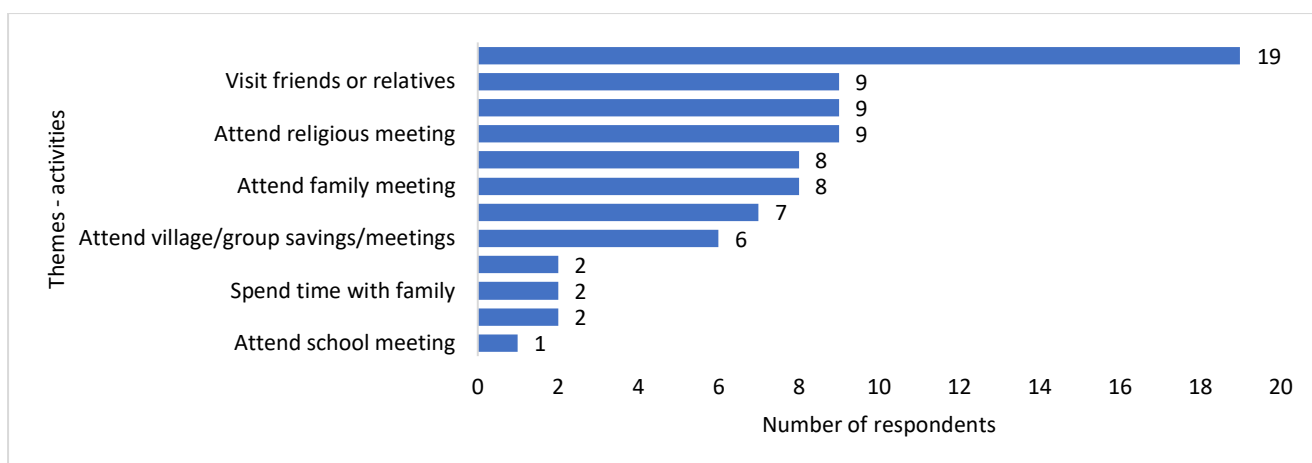


Figure 15: Activities unable to undertake due to time spent travelling, 7-day recall period, Zomba

6.2 Kakamega

6.2.1 Daily decision-making about travel

Cost, convenience, accessibility, and distance are the main factors in decision making in Kakamega. However, convenience emerged as the most common reason that respondents cited for selecting their primary mode of transport, whatever the trip they undertook, which likely points to the transport mode they felt could meet their mobility needs. Travel time/distance also play a role. Focus group discussants also report that weather and trip purpose also play a role. The latter is potentially related to other important factors such as convenience, distance, or terrain. On occasion, focus group respondents mention walking for the exercise value.

Table 17: Factors underlying choice of primary transport mode, by trip purpose, Kakamega

	Place of employment	Local market	District market	Water source	Energy source	Children's school	Health facility
Convenience	70%	70%	73%	59%	62%	74%	73%
Ease of accessibility	42%	38%	49%	22%	27%	40%	49%
Affordability	32%	35%	39%	29%	28%	37%	26%
Distance	12%	13%	18%	16%	10%	23%	22%
Well suited for terrain/roads	6%	3%	3%			4%	6%
Only mode of transport available	5%	5%	7%	8%	4%	9%	6%
Best for transporting goods/produce	4%	1%	9%		8%		
Number of people travelling with							1%
Safety considerations			3%				1%
Other		2%	1%				

Cost constraints

'One shilling matters.'

All motorised trips cost money that focus group participants do not easily have, so almost all transport decisions are weighed up in the light of fares. As one county official puts it, *‘with the kind of purchasing power that most residents of Kakamega [county] have, they would rather use cheaper means of transport [walking] as compared to more expensive modes of transport [vehicles].’*

Estimates from the survey show that transport constitutes about a third of household expenditure. The average monthly per capita transport expenditure among those who reported using motorised travel for travel to work on market (Kshs.462.90, U\$3.74) is nearly twice that of those using non-motorised transport (Kshs. 890.47, US\$7.20) such as walking and bicycles. Walking is therefore a low-cost alternative to other travel modes, which may explain why it is used frequently.

Walking does not cost *‘the price of fuel’* – although distances can be too far to walk.

A number of respondents say that they walk if they are travelling with friends, to take advantage of the opportunity to socialise.

Convenience

Motorcycles are a popular primary travel mode for destinations that tend to be far from household residence (e.g., work places, district markets, children's school, and health facilities. Motorcycles are largely popular because they are viewed as convenient and fast and can cover long distances within shorter duration.

Table 18: Top factors underlying choice of motorcycles as a primary mode of travel, by trip purpose, Kakamega

	Work place	District market	Children's school	Health facility
Convenient	70%	78%	74%	76%
Easily accessible	45%	55%	42%	53%
It is affordable	31%	36%	36%	23%
Distance	15%	16%	22%	23%
Only mode available	8%	9%	7%	8%
Well suited for terrain/roads	8%	5%	6%	7%
Best for transporting goods/produce	4%	8%		
Safety considerations		1%		

Distance in decision-making

Distance is a consideration for a notable share of those using motorcycles for travel to workplaces, district markets, children’s schools, and health facilities.

‘[For a] relatively close distance, [a] bicycle is the best way to go.’

Casual workers (security offices, market and street cleaners, boda boda riders, and subsistence farmers)

indicate that they walk to any destination that is ‘nearby’, but take motorcycle-taxis (boda bodas) or matatus (minibus taxis) for longer distances (3-6 km). For example, among survey respondents (n=56) who travelled to both local and district markets in the 7-day period preceding the survey, 38% of those who travelled to local markets used motorised transport while 55% walked. In comparison, only 4% of those who travelled to district markets walked, and the vast majority (95%) used either motorcycles or matatus. These variations are likely due to differences in time (and distance) travelled; travellers to district markets report spending an average of one hour one way to reach the destination, nearly twice the amount of time (30 minutes) spent travelling to local market.

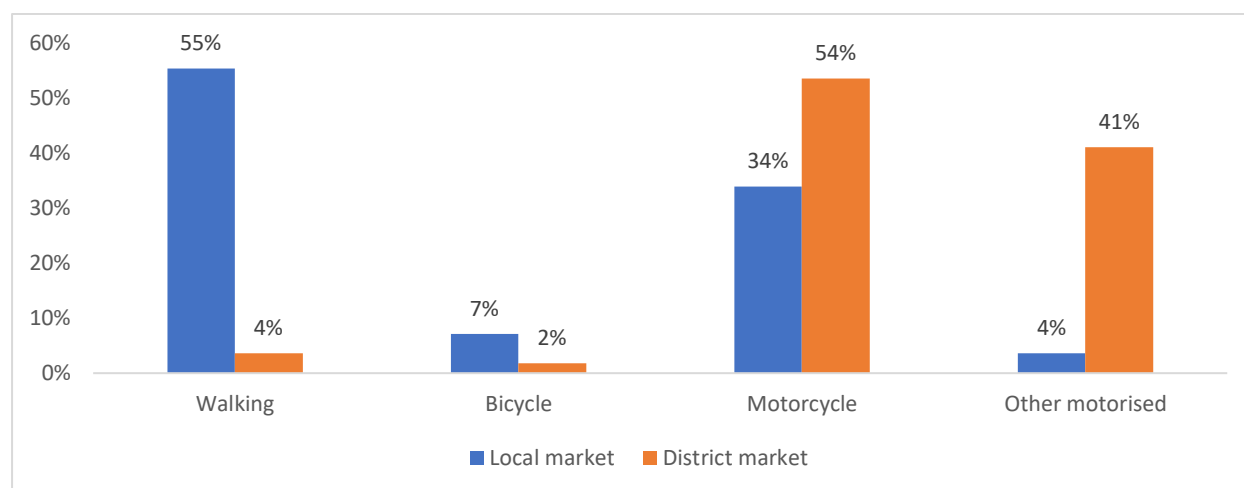


Figure 16: Primary modes of travel used by those travelling to both local and main markets, by trip purpose, Kakamega

Weather constraints

‘When it’s rainy I don’t use a motorcycle, I only carry my umbrella and walk to the stage and board a public vehicle. It is risky to ride during rain.’

During the rainy season, all travelling is ‘expensive’, and women focus group respondents report that there are ‘challenges using any means of transport’.

Heavy rains lead to rapid deterioration of road surfaces, increased inaccessibility by motorised transport, and obvious discomfort for passengers. Road crashes are more likely: *‘People become very [cautious] using bicycles and boda bodas because they tend to slip and can actually cause accidents if you insist to ride on a muddy surface.’*

Respondents say they are more likely to delay travel until the weather improves or until they can afford a mode that offers protection against the rain. Both boda bodas and bicycles are unpopular in the rainy season, during which time *‘there will be hardly any movement of modes of transport which do not have any covering’*. Motorcycle-taxis with umbrellas have a competitive edge. Walking reverts to being the *‘only option’*.

Trip purposes

Respondents make decisions based not only on cost but also on trip purpose, distance, and destination: *'It will depend on the type of plan I have. If I'm going to church, I use a motorbike, when I'm going to a very remote area where both the bicycle and the vehicle cannot access, I will be forced to walk. Sometimes when you are going to the market, and you have heavy goods you will have to use a motorbike. So it entirely depends on your destination.'*

Load carrying

'I were to go to the market and I have a heavy load I will board a vehicle, if I were to carry a less load I will take a motorcycle. If I don't have a heavy load I will just walk.'

Unsurprisingly, goods transport also affects mode choice, as matatus (taxis) charge for transport of loads, while boda bodas do not: *'With one sack of maize you just need one boda boda,'* explains one respondent. *'You won't go for a vehicle [that] will request you the cost of more than even the sack of maize.'*

Accompanying others to healthcare facilities

Motorised transport is particularly sought after when trips involve healthcare destinations, whether travelling alone or accompanying others. *'Because I have a baby I will have to go for clinical visits and for that, I will have to use a motorbike,'* says one respondent.

Likewise, a casual worker, who is a 'family man' and 'head of the household', says that while he sometimes walks for exercise, he is more likely to use a motorbike when accompanying an elderly person to a health centre. 'One respondent, who juggles being a market cleaner, mother, and farmer, also notes that if she *'has a patient it is easier to use a motorcycle to go to the hospital'*.

Distance, comfort, and health

Needs around personal comfort are usually secondary to cost motivations for transport choice, and often users are more concerned about the safety of their loads than their own comfort. Where people do raise concerns about personal comfort, these relate to ageing and joint/knee pain when walking long distances or travelling on poor-quality roads:

'The challenge that we face is poor roads; when you are using a boda-boda and because of all the shaking due to bad terrain you tend to feel a lot of pain. During rainy seasons you have to use the motorbike because of the terrain so you get to be rained on and spoil the goods you were carrying. These are the challenges that we face.'

One focus group respondent indicated that health plays a role in decision-making, particularly if distances are beyond a usual comfort-zone: *'If you have woken up feeling well then you can walk to*

exercise, and if you are not feeling well you can decide to use any mode of transport to reach your decision. As one of us has said, distance matters.'

Urgency or productive time

Women focus group participants describe taking a boda-boda (motorcycle-taxi) in the morning to market when they are in a hurry to get to the best quality produce, for example, but when returning home, and they are more at ease, they walk: one respondent, a house help, notes that if she is in a hurry, she will mostly use a motorbike or a tuk-tuk. *'I use motorbikes most of the time to go to the market but when coming back I prefer to walk to save on the transport cost. We as women we have to take care of ourselves because we are not used to getting help from our husbands, that's why in most cases you have to walk to save the 30/= . That is how we do it.'*

Yet at the same time, walking has advantages over boda bodas over shorter distances, as there is no need to 'wait around' for a vehicle.

Gender constraints

As the survey data indicates, women are very much less likely to own and ride bicycles than men. Key informants observe that the main modes of motorised traffic are boda bodas (motorcycle-taxis), which are almost exclusively driven by men. Bicycle-taxis (also known as boda bodas) are the second most common 'vehicle', again almost exclusively owned by or ridden by men. *'You will always find it is a man carrying a woman [as a passenger]. It is very hard to find it the other way round.'*

School-going girls are more likely than women to ride bicycles, say interviewees; otherwise, bicycles are used by men, the household head, or boys in the family. The key constraint is cited as bicycle design – high cross-bar designs are not easily accessible to women in the long skirts or wraps they are expected to wear – and possibly *'lack of technical know-how... maybe they don't know how to ride'*.

Very few women use motorcycles, say key informants. While acknowledging that the 'trend is changing' and a few women are *'beating the odds'*, the fact is that *'if you are along the road and you see a female, lady or a woman passing [by motorcycle] of course you see everybody looks and wants to see who is riding this motorcycle, and would want to know who the husband is, or coming from which home, because it is not a common phenomenon.'*

Few mode choices

Unlike the study area in Malawi, where multiple modes of transport are available but unaffordable, in rural and peri-urban Kakamega country there are few minibus-taxis *'going to the interior'*; boda boda operators *'prefer doing their businesses within the town'*, leaving travellers to go by foot or bicycle.

Capability and knowledge constraints

One key informant suggested that capability and knowledge are also important factors in mode choice. *‘If you don’t know how to ride a bicycle you might not use it’*. While it might seem an obvious statement, it is a key insight as it can often be assumed that this capability is more widespread than it is. Further, communities or individuals might not *‘have knowledge in terms of knowing the benefits of one mode of transport over the other i.e., a bicycle over a motorcycle’*. The majority of focus group respondents reveal evident capability in calculating trade-offs around cost-benefit to mode choice, but this is nevertheless a key informant insight that bears acknowledgement.

6.2.2 Living with and mitigating mobility poverty

Both men and women employ various mechanisms to cope with financial constraints that affect their ability to travel. The survey findings show that borrowing money from relatives and friends and travelling on credit (i.e., a pay-later arrangement) are some of the most frequently used strategies. Within the 30-day period preceding the survey, 27% of respondents reported borrowing money while 20% travelled on credit at least once over the same period. About one-third of those who travelled on credit reported experiencing challenges with this arrangement, including being inundated with frequent payment due reminders from the creditors, feeling harassed when payments are delayed, and inability to pay, which led to needing to sell off household assets to settle the debt. A few (percentage) respondents reported making in-kind payments in exchange for transport or selling household assets or livestock to raise travel funds.

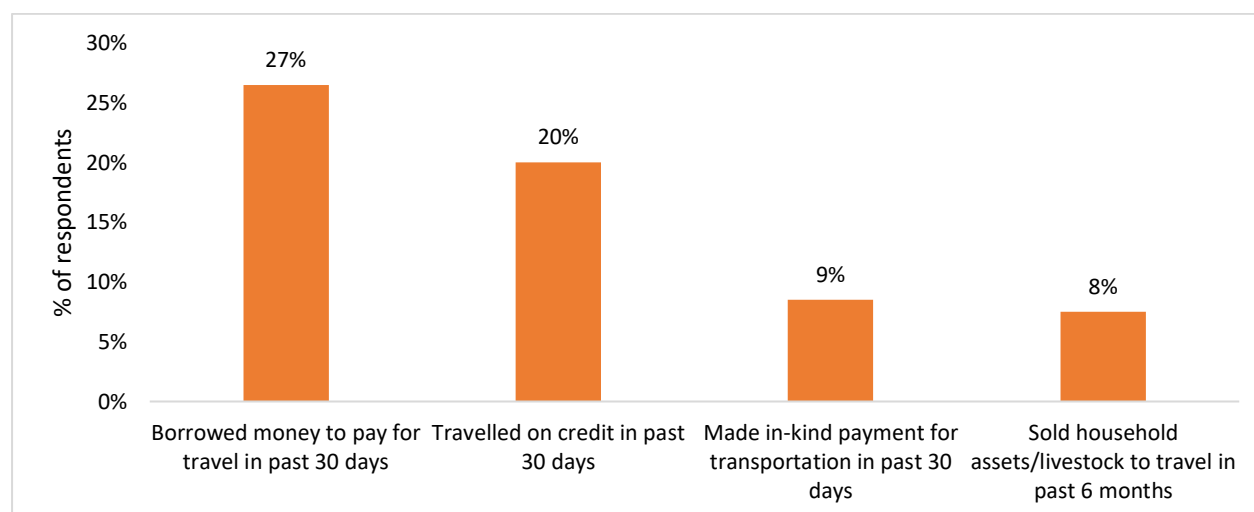


Figure 17: Mechanisms employed by survey respondents to finance travel when faced with affordability constraints, Kakamega

Tactics to save travel costs

Participants describe various ways in which they attempt to reduce transport costs, such as walking

some distance of a trip, or organising delivery of goods or stock.

Walking part-way

'I can have only 20/= then I decide to walk until I reach a distance where the boda-boda can take 20/= '

Respondents describe walking to motorised modes to save money on the 'feeder' trip, unless they are in a hurry: *'Deciding the mode of transport depends on the urgency, if you are not in a hurry you can walk to the stage and board a public vehicle but if you are in a hurry you will have to use the fastest means of transport.'*

Walking part-way is a relatively common way to save transport costs. Women who travel to markets to purchase household goods will walk there, but take a vehicle (boda boda or taxi) on the way home. As one respondent puts it: *'[I] decide the mode of transport to take depend on the cost/money and the distance ... for example, I might have ksh.20 for a distance of Ksh 50, so I have to walk until I reach a place where I can bargain for 20/=. There are also other distances that you will use the public vehicle. It is the money that decides which mode of transport to use.'*

Organising delivery

Another way to pay for only one leg of a journey is to organise delivery of stock or produce: *'Instead of paying the transport cost I can request my supplier to deliver using a motorcycle, and then pay one way – then I would have some money left.'*

But foregoing accompanying your own goods, by hiring someone else to deliver goods or to carry goods, is not always a cheaper option: as one petty trader explains, *'when I calculate the cost [of delivery] it becomes ... the biggest challenge I face.'*

6.2.3 The consequences of mobility poverty

Anxiety and uncertainty

Fare fluctuations

Participants share their anxiety around late arrival of transport, fare fluctuations, and potentially unsuccessful negotiations around reduced fares. Heavy rains, road construction, and fuel price increases, all increase fare prices, sometimes even during a trip itself. In one instance, a focus group participant relates an experience where a boda boda ran out of fuel mid-trip: *'transport has a lot of challenges. Sometimes you can use a motorcycle when in a hurry and unfortunately in the middle of the journey you cannot continue due to lack of fuel. In such a scenario you will be forced to walk, hence wasting time.'*

Poor vehicle maintenance and insufficient cash-flow frequently underly respondents' concerns and anxieties. In another example, a respondent described a situation wherein *'you can board a tuk-tuk or*

motorcycle to go to a certain place... along the way a breakdown occurs [which] will force you to board another tuk-tuk or motorcycle – forcing you to pay twice.'

Conflict between passengers and operators can also lead to unexpected and time-consuming walking trips: *'due to inconsistency in transport cost, conflict usually arises between the conductor and the passenger ... the police will then arrest the conductor and the drivers, and the rest are forced to walk.'* Illegal driving or lack of compliance also has a frequency reported impact on passengers: one respondent describes that the 'lorry' transporting her goods was impounded, and *'we had to join hands to raise some money to hire another lorry to transport our luggage.'*

Another frequent complaint is that fares change in the course of a single day, leaving passengers unable to plan ahead and budget: *'On your way to the market the price could be 50/=but by the time you get back from the market the price could increase to 200/= it. Then forces you to strain.'*

This fluctuation can have devastating consequences for casual workers, whose entire wages are spent on travel: *'In the morning I can use 50/=but when it rains in the evening the fare hikes to 150/=. So you find that the money you earned on your business from working the whole day ends in transport cost.'*

Risk of bicycle and stock theft

Bicycles are highly valued, and the risk of theft of a precious asset puts some respondents off using them to travel public sports matches and large funerals: *'you cannot go with a bicycle because it can be stolen, so in such events I will use a motorcycle.'*

Stock theft is another concern: respondents indicate that at times when they walk to market but send their stock by public transport (minibus- or motorcycle-taxi), someone else 'alights' with their stock.

As raised earlier, road maintenance, vehicle safety, and logistical challenges are causes of anxiety and fear of financial loss: when traders order produce or stock for delivery and 'a vehicle is involved in an accident, it's hard to travel or claim because the agreement was between the seller and me, not the driver or the owner of the vehicle.' Respondents also report the possibility that *'goods can be transported and delivered to the wrong destination.'*

Lying and shame

While in Malawi participants describe the shame of admitting poverty and having to hastily sell household items to liquidate assets, in Kakamega county participants describe how they simply do not travel, but lie about the reasons for this. *'There was a time I was to attend meetings, and I had to lie that I was sick to avoid attending the meeting because I did not have enough money.'* Respondents describe lying about reasons for having to miss church congresses or training because of travel costs, thus not only experiencing anxiety about being 'found out' for lying, but also missing out on opportunities for skills development and social engagement.

Limited access to services

Water, sanitation, and healthcare

People depend on water from rivers or springs, and *‘connectivity is still a very big issue,’* say key informants. This *‘of course leaves us susceptible to water-borne diseases and the like.’* People – including children – carry some 25-50 litres of water in buckets or jerry cans over long distances. Health care centres are dispersed, and satellite centres are understaffed. People have to travel long distances to access health services, especially if they have been referred from primary to tertiary care.

Ambulances struggle to reach people in remote areas or when roads are poor. One consequence is that access to health-care costs more, as people weigh up the cost of a boda boda (and its discomfort) compared to that of renting a private vehicle taxi. Participants also delay going to hospital for non-emergency or routine medical care: *‘Sometimes I might be planning to go to the hospital but due to lack of money [for transport] I’m forced to postpone.’*

Education

Children living in remote areas are not able to access good schools, which are primarily situated on good roads, say key informants. *‘Teachers mostly prefer the good schools. This hinders learners from getting quality education, because ... you’ll find most of the teachers live along the [good] roads...’*

Broken links in routes to school, such as flooded roads or rivers, mean that children must travel longer distances, and either arrive late or have to get up earlier than usual in order to arrive on time. This leads to children getting to school *‘very tired’* and not able to *‘concentrate in class’*. At times children simply stay away from school altogether, particularly during heavy rains, or find informal boarding closer to school.

Parents describe putting their children’s needs ahead of their own when considering transport trade-offs, by forgoing trips to funerals or to market, for example because their children needed transport fares or items for school.

Effective government and management / service delivery

Focus group participants as well as key informants note that routine service delivery or governance practices are interrupted or hindered by limited access and unaffordable transport. Printed reports go undelivered because of *‘the cost of transport to the office and the rains’*. Weekly meetings among agricultural extension workers and healthcare workers shift to monthly, *‘due to complaints with regards to distance to the office and high transport costs.’* When office staffers are unable to get to work because of cost and distance, *‘this in turn affects our service delivery to the people’*.

Case workers are unable to attend to everyone in need, or might offer cursory care in an attempt to get to see everyone on their roster: they are *‘unable to finish the households at the end of the month ... or they will try and move so fast, you will find [they] tend to be overwhelmed or overworked.’* In addition,

the cost of travel reduces their overall income: *‘you will find that they will use [all] the amount on the roads’.*

Diminishing market returns

‘At the end of the day, [I] am working for the transport sector.’

As with case workers, above, the cost of access to markets diminishes the returns of small-scale farmers. One participant describes the complex calculations he makes before deciding whether and how to travel:

‘So even if a bag of fertiliser has been reduced ... to KES3500.00 ... the distance already makes the cost high. In terms of accessing markets for the produce, where you want to sell off your produce is a challenge, because now [I] am just a farmer who is only getting 2 litres of milk. and I have to hire a motorbike to drop for me the milk to the market. The value of milk is KES120.00, the distance to the market is KES70.00. At the end of the day, [I] am working for the transport sector.’

Isolation and marginalisation

‘If one cannot access somewhere, definitely it will limit you.’

Key informants suggest that community isolation *‘generates suspicion and increases oppression and marginalisation.’* Entrenched traditions, particularly regarding gender, are *‘one of the side effects of the poor mobility, as people don’t get to meet and experience other ways of doing things’.* This isolation has circular consequences, in that isolated communities are less likely to appeal to ‘outsiders’ too. Teachers, for example, who might bring *‘other ways of doing things’* very soon *‘look for transfer. Some are posted today [and] by evening they have already gone to the county office and leaving that school, because they are talking of no buildings, no accommodation, and such like things. We have very few teachers who will accept going to those areas.’*

Loss of social and family connections: trips not taken

The cost of transport affects family connections, social engagement, and social inclusion. Respondents talk about forgoing seeing family, or elderly or sick parents, as they cannot afford the trips. Respondents also talk about having to spend money on school fees rather than on public transport, and thus must walk more often than they would like.

One respondent noted how she had planned to visit a relative, but instead *‘had to cancel to pay school fees’.* Another notes that she had planned *‘to go see my sick mother but ... decided to send the money to save on costs’*, while a further *‘wanted to travel home to visit my sick mother but I decided instead of visiting her I just sent her that money for the upkeep and medication.’*

When younger family members or friends get married at their ancestral or parental homes, respondents note that they simply cannot attend: *‘You will have to use your transport to get to [Nakuru] and the fare*

is expensive ... so you then just decide not to attend to avoid spending a lot of money.’ Festivities such as weddings are an opportunity for one respondent, a dancer, to earn extra money, but the travel costs make it not worth his while. Respondents also describe missing meetings, savings group get-togethers, or seminars to improve their farming knowledge, because of transport costs.

Inability to travel

transport barriers can lead to delayed or missed/cancelled trips. Nearly half (46%) of survey respondents report that they were unable to travel at least once in the 30 days preceding the survey due to transport-related barriers, such as being unable to afford transport costs, lacking transport tool/equipment (either paid or owned by household), or being deterred by the long distances. Some of the commonly missed destinations include work or employment places, health facilities, and markets. The most common travel barrier reported is the cost of transport, cited by 36% of all respondents and 80% of those who were unable to travel.

There are no variations observed across gender, indicating that both men and women are affected by these transport barriers, except for lack of transport tool/equipment, which appeared to affect men more than women. Notably, variations exist across socio-economic status, with those in poorer income groups showing a higher likelihood of experiencing travel barriers than those in higher income groups (Table 4). The share of those unable to travel due to high cost of transport in the poorest income group was more than twice the share of those in the richest income group. Similarly, lack of access to a transport tool/equipment was reported as a challenge by approximately a quarter of those in the poorest income group, which is nearly double the number of those who reported the same in the richest group.

Table 19: Key barriers affecting travel, by trip purpose, Kakamega

	<u>Mobility-related constraints</u>	Other constraints	No constraints or did not need to travel to destination
Place of work	13.5%	2.5%	84.0%
Markets to source supplies - traders	13.5%	2.5%	84.0%
Farm - farmers	4.5%	0.5%	95.0%
Markets to source farm inputs or sell produce - farmers	8.5%	0.0%	91.5%
Leisure or social activities	5.5%	0.0%	94.5%
Household's main source of water	2.0%	1.3%	97.5%
Household's main source of energy	0.5%	1.0%	98.5%
Health centre	16.0%	0.0%	84.0%
Education institution	5.5%	0.0%	94.0%
Religious institution	8.5%	2.5%	88.0%
Community meeting	8.0%	1.0%	91.0%
Another place	19.1%	0.0%	80.9%

*Travel to work, markets, farm, and for leisure is based on a 7-day recall period. Travel to health centre, religious institutions or another place based on a 30-day recall period. *Mobility constraints include cost of transport, lack of transport tool/equipment, and long distances. *Other constraints include lack of time, bad weather, sickness or fatigue, lack of financial resources among others.

Table 20: Gender, age and Income differences - % of respondents reporting lack of travel due to affordability constraints, lack of transport or distance barriers at least once over a 30-day period, Kakamega

	High cost of transport		Lack of transport		Long distance	
	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>	% of respondents	<i>P- value</i>
All respondents	36.0%		20.5%		7.0%	
Gender						
Men	33.3%	<i>0.464</i>	26.9%	<i>0.037</i>	8.6%	<i>0.408</i>
Women	38.3%		15.0%		5.6%	
Age groups						
18-24 years	44.4%	<i>0.617</i>	33.3%	<i>0.344</i>	14.8%	<i>0.067</i>
25-34 years	38.8%		17.9%		7.5%	
35-44 years	32.7%		17.3%		9.6%	
45+ years	31.5%		20.4%		0.0%	
Income quintile						
Poorest (1)	57.1%	<i>0.000</i>	22.9%	<i>0.037</i>	14.3%	<i>0.408</i>
Middle	26.5%		26.5%		2.9%	
Richest (3)	22.6%		11.3%		3.2%	

7 The role of bicycles in mitigating mobility poverty

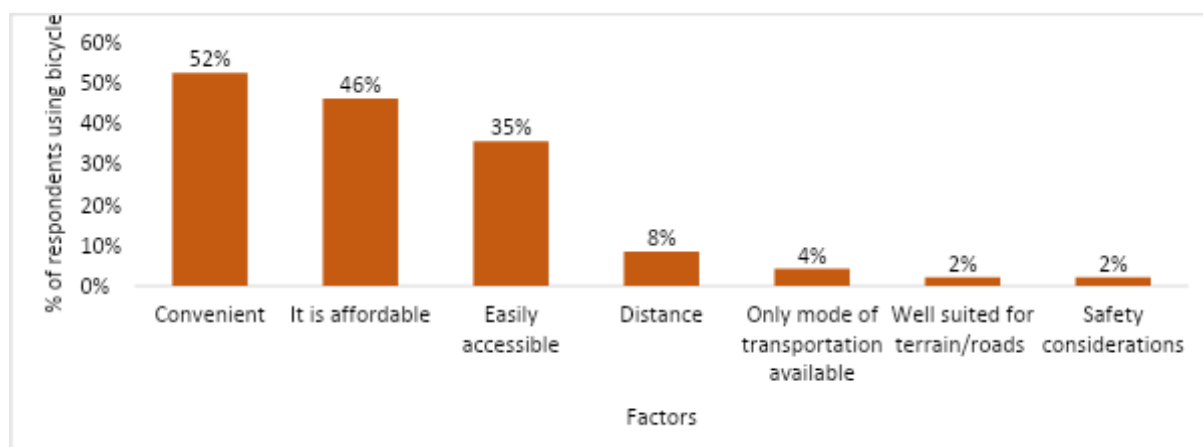


Figure 18: Reasons why respondents choose bicycles as a primary mode of travel to health facilities, Zomba

In both locations, bicycles are used for a variety of purposes, from income-generation activities to household chores. In Malawi, bicycles are an important travel mode for accessing healthcare facilities. In Kenya, however, motorcycles were frequently mentioned by respondents in Kenya as being important for travel to health facilities, particularly during emergencies.

In Malawi, respondents recognise the value of bicycles, not only for travel but also for income generation. In Kenya, respondents see value in using bicycles, particularly for short trips and to save on transport costs.

However, participants also recognise the limitations of bicycles. For example, bicycles are less frequently used during the rainy seasons when roads become impassable.

Bicycles can play a significant role in mitigating transport challenges [and help the community] to live a good life, observe interviewees. For example, ‘a bicycle can help farmers to access good markets and gain more profits to improve their livelihoods.’ ‘Bicycles are cheap, do not need fuel, easy to use hence can easily be used by everyone to improve their livelihoods’, say agricultural extension workers in Zomba.

Focus group participants in Zomba too have no doubt that access to bicycles would minimise transport challenges – so much so that one participant suggests that ‘a bicycle is the solution to all [transport] problems.’

Overall, respondents in Zomba reflect that bicycles ‘shorten time of travel’. Bicycle transport would enable petty traders to order and purchase in greater bulk, which is likely to lead to increased profit and reduced costs: as one participant puts it, ‘in our businesses, it can work better if we can have a bicycle. You can order less when you don’t have a bicycle but you can order more when you have one.’

But while recognising the value of bicycles, they are still unaffordable to a great many people. Improved access to financing could potentially improve bicycle ownership rates. When social services visit the community, ‘the issue of mobility always pops up ... One example of the interventions that they ask for is for instance loans, so that they can be able to buy bicycles/motorcycles.’

‘Doing business is cool, so if loan opportunity can be available, that [is] better.’

In households with bicycles, access dynamics can determine which household members can use them. In the survey, significantly more men than women reported that they were primary users of the bicycles in their households; 76% of men with bicycles in their households reported that they were the primary users of the bicycles, compared to 14% of women. Additionally, nearly all (95%) respondents with bicycles in their households reported that males have more access to bicycles than females in their household. Some of the reasons they cited for this dynamic is that compared to females, males (particularly adult men) are more likely to participate in income-generating activities for the household and take more trips, which places them at greater need of bicycles.

Respondents report that while faster and more convenient than walking, cycling is still difficult and tiring, requiring ‘energy’, and bicycles have to be pushed up hills⁸. Motorbikes are faster and easier: ‘with a motorbike you don’t use energy, you just apply gears [and] off you go, you can ride any speed you want.’

For almost all participants, owning or having access to a car is their ideal, and a motorbike second: ‘Let me just mention what I want, I would prefer to have a car ... We really want to have a motorbike but we cannot afford to buy it.’

In explaining why a bicycle would be a more realistic goal, however, many participants cite not only cost but self-sufficiency as a valued benefit: ‘We can say a car, but we can’t afford even taking of a motorbike ... a bicycle we can manage. If it’s broken we can also fix it.’

Participants take into account operations as well as capital costs of bicycles when compared to motorbikes: ‘Riding a bicycle is easier and cheaper, you just need energy to move, while motorbike you

⁸ Respondents prefer walking in hilly areas.

need to have money for fuel ...You cannot use motorbike when there is shortage of fuel at the gas station so it is very easy to use a bicycle’.

Owning a bicycle is ultimately preferable to owning a motorised vehicle as they ‘[don’t] require us to spend more on it like a car’, ‘help in body fitness’ and don’t require fuel. Their flexibility and predictability are highly valued: ‘When you want to travel, you just inflate it, take tea and off you go.’ Wasting productive time is no longer a factor of life: ‘When you wake up in the morning you do not need to go and wait at the stage for transport, you just ride and go. It makes life easy.

‘I would like to own a bicycle and use it for travelling but if God would provide a motorbike I would be grateful.’

Overall, focus group respondents in Kakamega are overwhelmingly in favour of owning or having access to their own transport vehicle: to mitigate cost concerns, loss of productive time, anxiety and uncertainty over security of stock and decision-making, and to provide independent mobility. However, almost all participants would like this vehicle to be a motorised one. Bicycle transport is not always or necessarily able to mitigate the constraints that focus group respondents describe: for example, urgent trips, long distance trips, or travel to purchase bulk stock, are ‘very hard’ by bicycle.

People who have no challenges with transport are those who are ‘wealthy’ or those who own bicycles, report focus group participants. Participants indicated that given the chance, they would prefer to own a car, or use a ‘tuk-tuk’ or a boda boda. ‘Bicycle usage is less costly as compared to boda-boda [but] if I could get a motorbike it could be very helpful. This is because of travel distance, and load-carrying challenges.’ The ‘slowness’ of bicycles means earlier preparations for travel; and they are not universal, in that ‘you cannot go everywhere with the bicycle’, particularly as ‘a bicycle cannot take you to hilly places’ – it requires ‘too much energy’... ‘You will have to push the bicycle which wastes time.’

‘As we know,’ says a participant in Kakamega, ‘there is nothing good without a bad side, the challenge that we face [with bicycles] is that during long distances you can’t use them as compared to motorbikes.’ Heavy goods, potholes, or transporting people, are other purposes for which bicycles are not ideal.

At the same time, however, participants in Kakamega acknowledge the multiple ways in which bicycles could mitigate the consequences of mobility poverty: from not having to ‘lie about being sick’ to ‘helping me with going to my destination’, ‘saving money’, ‘getting to my destination without excuse’, ‘carrying heavy goods to the market’, ‘exercise’, and ‘saving on the cost of transport’ and of repairs. ‘Bicycles are [a] sure bet; they are slow, minimizing accidents which is the goodness of using a bicycle.’

7.1 Distance and comfort

‘[For a] relatively close distance, [a] bicycle is the best way to go.’

For ‘relatively close distances’ however, many respondents agree that ‘a bicycle is the best way to go’. Further, respondents indicate that for lighter loads, they would make purchasing trips themselves rather than having to pay someone to transport goods: ‘I can just ride the bike to the supplier’.

A bicycle would ‘have saved the situation’ for one respondent, who describes the discomfort of head-loading. As she explains, she need not necessarily ride the bicycle, but could use it as a trolley or wheeled cart.

Overall, however, when respondents can afford to take a motorised option, they almost always prefer to do so, rather than walking or cycling: when affordable, motorcycle-taxis (boda bodas) mitigate a significant number of transport challenges: ‘The biggest limitation is money. The affordability factor. Most of the preferred modes of transport are the motorised forms. But now the motorised forms of transport [are] out of reach for the local Kakamega residents. That is why most of them would either walk or cycle.’

7.2 Mitigating time and financial poverty

Focus group participants agree that bicycles are ‘cheap to maintain and easy to use’, are not a ‘burden’ in terms of fuel, and require no costly licence. Bicycles offer particular value as scholar transport, not only to ‘motivate a learner to go to school’ but also to provide ‘relief’ to parents: ‘they would use it to go to school, that would be a relief instead of paying transport money.’

Women participants are eager for their children to have bicycles to assist with chores, and to mitigate the time-poverty and multi-tasking challenges that come with managing a household. One participant says that if she had a bicycle, she would send her son to collect supplies, saving her the time; another says that whereas most of the time she hires someone with a bicycle to collect water for her, if she had her own bicycle ‘it will be easy for the children to fetch water’ instead.

7.3 Improved access and accessibility

Participants in Kakamega concede that given the unlikelihood of their owning a motorised vehicle, a bicycle certainly has multiple benefits. One of these is that bicycles can travel where other vehicles cannot: ‘Even if the roads are in a bad state, a bicycle can penetrate anywhere ...’

Petty traders in Kakamega note that with a bicycle, they would be able to travel with goods in ‘small quantities’, using a bicycle to visit several markets rather than only one major market. Faster stock turnover is a further benefit: ‘If I get a bicycle, now I won’t wait so long for the deliveries to be done.’

7.4 Improved access to education

Key informants are unequivocal that access to a bicycle motivates learners to attend school, and more importantly, ‘schools that perform well’: ‘learners will be able to join those schools... and get a quality education.’

Just over a third (36%) of survey respondents in Kakamega with bicycles in their households reported that children were the primary users of the bicycles in the household. Children typically use bicycles for travel to school or to assist with household chores.

7.5 Increased access to mobility

Cost, convenience, accessibility, and distance are the main factors driving decision making in both Kakamega and Zomba. However, in Kakamega, convenience emerged as the most cited factor, above cost and accessibility. In Zomba, affordability was the most cited factor. The high supply of motorcycle taxi services in Kenya, including in Kakamega, likely makes this mode of travel affordable and accessible. Motorcycles are less common in Malawi and this, combined with the high levels of poverty in the country relative to Kenya, may explain the low uptake of motorised modes of transport.

Nevertheless, in both study locations, the average per capita spend on transport was lowest among those who walked or used bicycles for travel to work, and highest among those who used motorised transport. The affordability of walking is most likely the biggest driver for the high usage for the majority of trips, particularly in Zomba.

One key similarity between Zomba and Kakamega is the popularity of motorised transport for travel to large district markets, likely due to the distances people need to travel. In both Zomba and Kakamega, 84% of respondents survey reported using motorised transport as a primary mode of travel to main markets. In comparison, 54% of respondents in Kakamega and 86% in Zomba walked to local markets. These findings indicate the choice of motorised travel is to a large extent informed by distances to be travelled, particularly in Zomba. Walking and bicycles are preferred for short trips, while motorised transport are viewed as more suitable for long trips, even though they tend to be more costly.

In both Zomba and Kakamega, mobility constraints (affordability, availability of transport, and distance) emerged as some of the factors that limit travel. However, mobility constraints are more apparent in Zomba than in Kakamega. For example, in Zomba, nearly half of those surveyed reported that they had been unable to travel to health facilities, due to mobility constraints. The share of traders in Zomba that were unable to travel markets to source supplies was nearly double the share of traders in Kakamega.

8 Key findings from the two case cities

8.1 Which groups are most marginalised?

Social welfare, agriculture, and public health officials indicate that people living in poverty constitute the majority in both study areas, whether they are women, men, the youth or the elderly, or people living with disabilities or chronic illness. These individuals are marginalised not only by their precarious economic circumstances, but also by the poor road network and road conditions, and centralised rather than sufficiently dispersed facilities such as health care, education, and other amenities. Within these communities, however, women experience marginalisation and mobility poverty more acutely, as they have more intensive travel patterns, have greater responsibilities in that they are likely to have to care for and travel with others more vulnerable than themselves (such as children, the elderly and those who are ill), and have the least access to mobility resources (such as taxi fare and bicycles). Women are more limited in their movement and agency by the patriarchal social order within each study area, and more likely to feel they have failed to meet their familial obligations because of being unable to travel. Further, women are more likely to be poorer and less educated than men in the study areas.

Furthermore, the data seems to indicate that there are segments of marginalisation within in the poor in Kenya. Those in the ‘poorest’ tercile are the most marginalised when it comes to transport. Notably, variations exist across socio-economic status, with those in poorer income groups showing a higher likelihood of experiencing travel barriers than those in higher income groups

8.2 What are the transport needs of marginalised individuals or groups?

In understanding mobility and choice of transport mode, one of the key elements under investigation in this study was to identify mobility and transport behaviours of people living in urban peripheries or in secondary cities in Malawi (Zomba) and Kenya (Kakamega). The study findings show people mainly travel for income generation purposes, and less for social and other leisure activities. The most frequented destinations in the two locations include places of work and local market. Farms and mobility money agents also emerged as common destinations. While a large number of research participants report travelling for social activities such as visiting religious institutions, travel for community meetings and/or visiting friends and relatives is less common. One notable finding from this study is that in both Kakamega and Zomba, travel for leisure purposes is rare, partly because of time poverty since a large share of time is spent on income generation (including on travel for these purposes) and partly due to the fact that leisure is considered a luxury.

Findings from both the focus groups and surveys indicate that people generally wish to travel more, particularly for social or leisure needs or to attend to important family engagements. However, their ability to do so is often affected by transport barriers such as lack of transport or the high cost of travel. But we find that this occurs at a higher rate in Zomba than in Kakamega; more than three quarters (76%) of survey respondents in Zomba reported not travelling at least once in the 30-day period preceding the survey due to transport-related barriers, compared to just under half (46%) of respondents in Kakamega. The higher levels of economic marginalisation (income levels) of survey respondents in Zomba, compared to Kakamega, may explain these findings.

In both Zomba and Kenya, motorcycles, walking, bicycles, and minibus taxis are the four main modes of transport used by marginalised groups. However, the extent to which these travel modes are used in the two research locations differs significantly. In Kakamega, just under a third (31%) of survey respondents relied on walking as the primary mode of travel to workplaces, 57% used motorcycles, and 9% matatus (minibus taxis). In comparison, 70% of survey respondents in Zomba relied on walking as the primary mode of travel to workplaces, 12% used bicycles, 9% used motorcycles, while the rest (9%) used minibus taxis.

Walking is the most used transport mode in both Zomba and Kakamega. Non-motorised transport modes (walking or bicycles) are generally the dominant mode of travel in Zomba and are used more frequently than in Kakamega. The average number of trips that respondents in Zomba travelled by walking was 17.5 over a 7-day period, significantly higher than the number of walking trips (10.6) that respondents reported in Kakamega over the same period. On the other hand, average number of trips made using motorised transport (motorcycles or minibus taxis) in Kakamega over the 7-day period was approximately 6, much higher than the average reported in Zomba (one trip).

8.3 How do needs differ across groups

Women are generally more marginalised than men in both locations, both from an economic and transport perspective. For example, we find that women travel less frequently for livelihood activities, such as to places of work or mobile money agents. A higher percentage of women than men in Kakamega reported inability to travel at least once in the 30-day period preceding the survey due to lack of transport. In both locations, women make more walking trips than men, while men make more trips using motorised travel modes.

In both locations, the vast majority of respondents are own account workers (self-employed) engaged in some form of business (either farming, retail, or services). We found high levels of economic marginalisation, which likely explains lack of variation in travel needs and modes across economic occupation. However, even within groups that are economically marginalised, income levels tend to vary and this potentially contributes to significant differences observed in travel needs and modes within

income groups. The study found that individuals from the highest income group on average travelled more frequently for income generating purposes. They also used motorised transport more frequently than those from lower-income groups. In Kakamega, the highest share of those reporting inability to travel due to lack of transport or high cost of travel were in the poorest income groups. In Zomba, however, there were no significant variations, suggesting that all people are equally affected, likely due to insignificant differences in their socio-economic levels.

The study did not find striking differences in travel behaviour (trip purpose, frequency of travel) across age groups.

8.4 Lived experiences of mobility poverty

Anxiety around travel, social exclusion, lack of access to essential services, and inability to travel are some of the key consequences of mobility poverty. Traders report loss of income, as they miss opportunities to connect to potential customers, miss out on the best supplies, or report product losses due to poor transport.

Nevertheless, the findings show that people will find ways to travel, by either saving travel costs through or borrowing money to travel, travelling on credit, or selling household assets. In Kakamega, people report walking for part of a trip in order to reduce the amount of time spent on motorised transport and, ultimately, the amount of money they need to pay for transport. Another indication of the unaffordability of travel is the financing strategies reported; in Zomba, nearly two thirds of people borrowed money from friends or relatives to pay for transport. Although lower share in Kakamega, the share of respondents reporting the same is still notable (27%) and points to the fact that affordability constraints also occur among residents. Unlike Zomba however, a higher share of individuals from the poorest income group borrowed in Kenya. The findings from Malawi perhaps indicate very that there are no variations in income levels across the three income groups, and that the individuals from the richest groups are not necessarily better off than those in the poorest groups.

8.5 Key challenges of access to bicycle transport

In both Kakamega and Zomba, bicycles are the least common mode of travel when compared to walking, motorcycles, and minibuses. However, while bicycles are used in both Kakamega and Zomba, they are a more important mode of non-motorised transport in Zomba (and Malawi in general) than in Kakamega. In both Zomba and Malawi, just over a tenth of respondents reported that their households owned bicycles. However, there are significant variations in the share of respondents using bicycles for travel; in Zomba, nearly 90% of respondents reported that they sometimes or regularly use bicycles for travel, compared to a quarter (24%) of respondents in Kenya.

Bicycle use and ownership in Kenya is low, not only relative to Malawi but also in comparison with neighbouring countries (e.g., Uganda and Rwanda) and other Southern Africa countries like Zimbabwe, and Zambia. The 2014 Kenya Demographic and Health Survey found that 21% of households in the country owned bicycles, with a higher share in rural areas (25%) than urban areas (16%). In comparison, the 2015-16 Malawi Demographic and Health Surveys (DHS) found 40% of households in the country owned bicycles, with a much higher share in rural (42%) than in urban areas (30%). Bicycles have a long history of use in sub-Saharan African cities including in Kenya, this mode has declined since the motorisation of transport in the 1970s (Vanderschuren and Jennings, 2017).

While the bicycle ownership rate in Zomba is much higher than Kenya, it is still significantly lower than estimates from other studies that are representative at national or district level. In Malawi, where bicycle usage is higher, gender was found to have an association with bicycle usage compared to Kenya, where gender, age and employment do not appear to influence the bicycle usage.

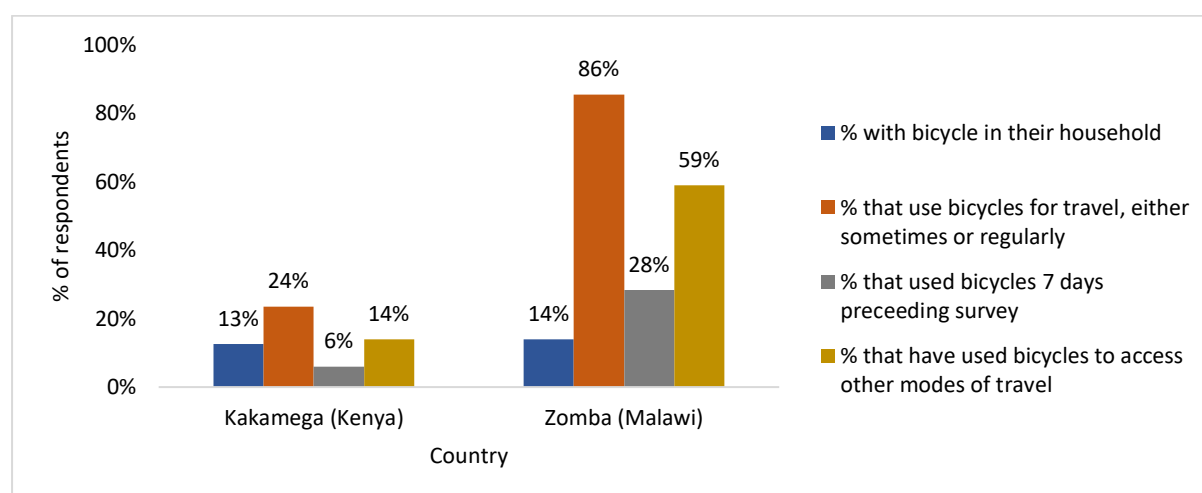


Figure 21: Bicycle ownership and usage, Zomba and Kakamega

Some of the channels through which people access bicycles in Kakamega and Zomba include ownership (at individual), borrowing from friends and relatives, rental (paid) or bicycle taxi. However, in the case of Malawi, people also access bicycles via bicycle taxi. It is worth noting that a high share of bicycle users in Malawi access bicycles through rental (chargeable) or bicycle taxi, while in Kenya, the majority of users either own them or borrow from relatives or friends. These findings indicate the existence of a vibrant bicycle service sector through which users can access bicycles and those owning bicycles can derive income either through renting out their bicycles or operating taxi business ferrying passengers. A recent study confirms the findings of the present study and reports that bicycle owners in Malawi (including Zomba) also use their bicycles to transport goods as an income generating activity.

The overwhelming majority of survey respondents in both Kakamega and Zomba report that bicycle cost is the main reason for lack of ownership, which underlies the low frequency of usage of bicycles. Given the high number of respondents reporting usage of bicycles in Zomba, and the value attached to

ownership and usage, improvements in income levels, including through access to financing opportunities, could potentially improve bicycle uptake.

Gender dynamics at household level, emerged as one of the determinants surrounding bicycle usage, particularly by women and girls who emerged as the least likely to be primary users of the bicycles in their households.

While in both Kakamega and Zomba, survey respondents generally expressed interest in owning and using bicycles, distance emerged as a determinant that potentially limits bicycle usage. In Kenya, focus group discussants reported that bicycles were most conducive for short-distance trips, such as travelling to local markets or use by children travelling to school. While availability and cost of spare parts and repair services did not emerge as the most commonly cited barriers to bicycle ownership and usage, research from other studies conducted in Malawi (JAA & WBR, 2023) found that bicycle owners find the cost of quality spare parts prohibitive. This results in them acquiring low-quality spare parts, which are easily found in their local markets, but which wear out easily, forcing bicycle owners to spend more on frequent repair. In the BFG survey, 80% of bicycle owners reported needing to replace spare parts monthly or more frequently, and 75% of bicycle owners reported concern about the cost of spare parts (JAA & WBR, 2023). Terrain and lack of availability of good roads and bicycle infrastructure are other factors that emerged as limiting bicycle usage. These can affect road safety, an issue that emerged as a consideration for some of the study participants. Some study participants reported that hilly terrains in their localities made cycling tedious, perhaps an indication of the need for availability for high quality and better designed bicycles in the market.

Table 21: Factors that would increase bicycle usage, Kakamega

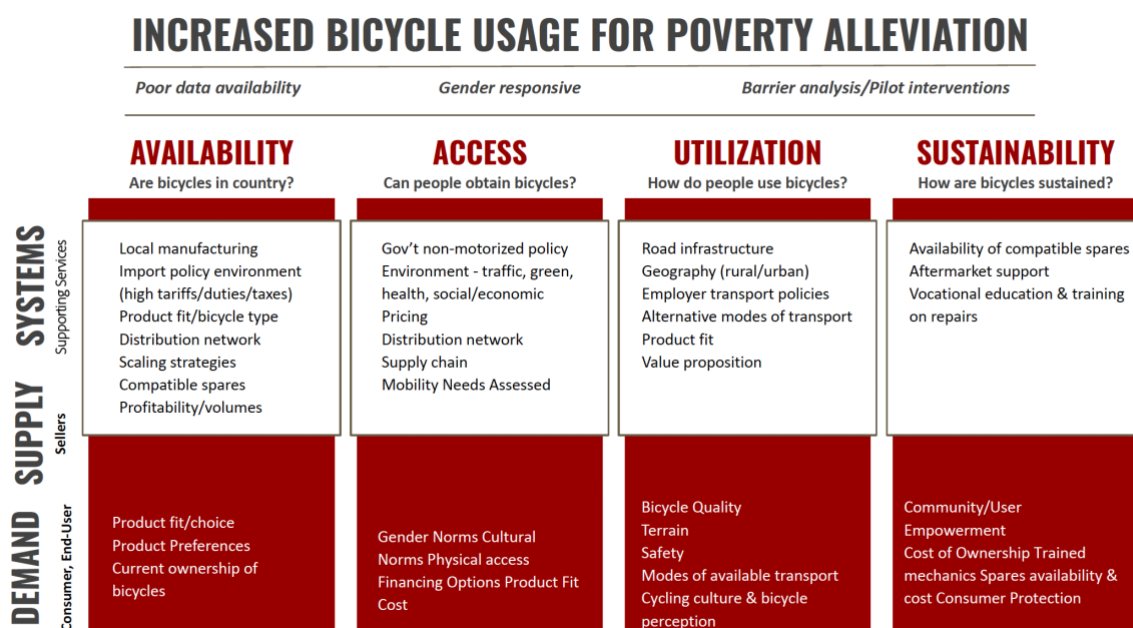
	% respondents	All	% Men	% Women
Cheaper bicycles	66%		66%	65%
Better road conditions/infrastructure	39%		41%	36%
Availability of bicycle paths	31%		28%	33%
Better road safety	24%		24%	23%
Improved access to bicycle repair facilities	14%		18%	10%
Shorter travel distances from home to work, or to other activities	14%		12%	16%
Improved access to spare parts	11%		15%	7%
A bicycle design more suited to my needs	10%		10%	10%
Secure bicycle parking/ storage	4%		3%	4%
I have no need to increase my bicycle usage	1%		2%	0%

Table 22: Factors that would increase bicycle usage, Zomba

	% All respondents	% Men	% Women
Cheaper bicycles	54%	52%	57%
Shorter travel distances from home to work, or to other activities	17%	19%	15%
Better road conditions/infrastructure	14%	13%	15%
A bicycle design more suited to my needs	12%	13%	11%
Owning own bicycle	11%	10%	13%
I have no need to increase my bicycle usage	10%	13%	7%
Better road safety	9%	6%	13%
Availability of bicycle paths	8%	4%	13%
Secure bicycle parking/ storage	6%	10%	2%
Improved access to spare parts	6%	12%	0%
Improved access to bicycle repair facilities	5%	8%	2%
Don't know	4%	2%	7%

8.6 Applying the Bicycle Usage Framework to solutions development

This section uses the Bicycle Usage Framework to assess our final research question: What measures could be put in place to increase access to bicycle transport within these individuals and groups?



The viability of bicycles to address mobility poverty are dependent on the overall availability of different modes of transportation, the cost of transport, and daily decisions people make about the trip purpose and distance. Bicycle use and ownership are a function of bicycle availability and access. Prevailing market factors, driven by systems and supply, determine what is available on the market to users and the cost. Access and use of bicycles are driven by individual circumstances, but influenced by broader systems, including cultural norms, policies, and terrain. The solutions presented below focus on demand feedback from our study respondents.

Availability

In Zomba and Kakamega, less than 2% and 10% of people cited availability of bicycles as a reason for lack of ownership. However, while bicycles are available on the market, the cost and quality do not meet the needs of the vulnerable. In both cities, people expressed desire for a highly durable, affordable, bicycle as a key they would consider if purchasing a bicycle. In a functioning market, demand preferences should drive systems and supply. To meet this expressed demand from the market, suppliers and policy makers should review the factors driving the price of bicycles, for example, import tariffs, duties, and taxes, to determine if there are regulatory changes that could increase the availability of affordable bicycles to the most marginalized.

Access

While there are many channels to access bicycles for use- purchase, rental, borrowing or rental – actual household bicycle ownership rates are low. In both Zomba and Kakamega ownership rates are slightly less than 15%; thus, there is a general unmet need for ownership. Respondents (more than 50%) cited cost as the primary constraint to use. According to our findings, ownership of bicycles increases usage. Both the cost of the bicycle and cost of spares and maintenance are unaffordable to the most vulnerable. Users could mobilize to raise awareness about the cost constraints to accessing bicycles. Policy makers and suppliers should investigate the opportunity to provide financing for bicycles and or spare parts to increase ownership rates. Similarly, they should review factors influencing access, such as pricing, distribution networks and supply chains. Policymakers can also review non-motorised transport policies to identify areas which may increase ownership of bicycles, particularly by women.

Bicycle use

In Kakamega, road safety and road conditions and infrastructure were cited as factors that impact use of bicycles. Respondents, primarily women, also highlighted a capability constraint, lack of knowledge how to ride a bicycle, as well as cultural norms as inhibitors of use. Those with poor bicycle riding skills can draw on knowledge from neighbours and friends. Should policymakers prioritise bicycles as a viable means of transportation in non-motorised transport policies, they can increase usage through infrastructure improvements and bicycle safety behaviour change campaigns. Shifting perceptions on women riding, or use of bicycles in general, could be addressed through behaviour change campaigns. Annual events such as World Bicycle Day offer new opportunities to promote greater awareness on use of bicycles and their essential role in addressing mobility poverty.

Sustainability

Finally, the sustainability of bicycles results from the quality of the bicycle, the ability of the user to maintain the bicycle (both through knowledge and availability of and access to spares) and the conditions of use. As mentioned above, infrastructure improvements through repair or creation of cycling infrastructure should be prioritized through policies. The availability of affordable and quality spare parts should be addressed through the market supply and the broader regulator environment.

8.6.1 Limitations and future improvements to the Bicycle Usage Framework

The Bicycle Usage Framework is useful to assess elements of bicycle mobility – availability, access, and use - as a viable solution, but it has limitations. Upon review of the findings, the key limitation of the framework is that it focuses on a static ‘systems’ analysis, and neglects to describe the desired

positive outcomes that would result from addressing the system level constraints. While the bicycle usage framework provides a sound guide for organising findings, it fails to incorporate the desired end-state resulting from availability, access, and utilization, of transport, in this case a bicycle. The cause and effect or ‘if-then’ relationship is not evident. For example, how bicycle uptake and use can lead to poverty reduction or empowerment outcomes. These overarching ‘goals’ are evident in the additional frameworks reviewed for this study. The research findings, and literature, will inform the future iteration of this framework.

The additional conceptual frameworks presented – the food security, market systems, mobility donut and sustainable livelihood frameworks, together with our study findings, offer insights and desired outcomes that help understand issues related to mobility in Malawi and Kenya, but also have limitations. These are highlighted in the table below.

Table 23: Conceptual frameworks to inform understanding of mobility

Analytical Framework	Insights relevant to understanding mobility	Limitations
Food Security	- Dimensions of availability, access, and use - Positive outcome of ‘security’ which is the result of these dimensions	- Specifically designed and used to analyse food security
Market Systems	- Dimensions of supply, demand, enabling environment and rules that impact availability, access, and use of bicycles - Systems change to addressing root causes - Addresses exclusion: why the market isn’t working for the poor - Asks: ‘who is excluded, and why’ and ‘who can help make the required change’	- Fails to speak to individual and or household outcomes or impact - Addresses the ‘what’ and ‘why’ but not ‘who’
Mobility Donut	- Concept of Mobility poverty, Mobility Happiness and Excessive mobility	- Few insights on the ‘enabling environment’ of use (social cultural norms, terrain, value proposition, and gender appropriateness) - Definition of ‘mobility happiness’ is unclear - No clear pathway for systems change
Sustainable Livelihoods	- Offers the five livelihood assets: financial, human, political, social, and natural that lead to outcomes - Systems analysis through examination of structures and processes and the link to the vulnerability context (which can include marginalization and exclusion)	- Not specific to mobility or transportation

A second iteration of this framework will state the mobility outcomes that result from bicycle (or transport) use. It will be broadened to focus on transport, not only bicycles. Leveraging concepts of availability, access, and use, it will aid in determining to what extent a mode of transportation, such as a bicycle, can offset mobility poverty among a population group. We introduce this goal as ‘mobility security’: *‘when people have at all times, physical and economic access to appropriate transport options that are affordable, safe, and meet their desired travel needs and preferences (including time requirements) in a gender appropriate and dignified manner.’* Our findings suggest that populations facing mobility poverty require more than one mode of affordable transportation to meet their needs. Using mobility security as an aspirational state, the framework will both define positive and negative outcomes that result from an individual or household having availability, access, and use of transportation to meet their mobility needs.

8.7 Conclusion

In this study, data was collected and analysed thematically in order to investigate travel needs and characteristics of people living with mobility poverty in Kakamega, Kenya, and Zomba, Malawi, in order to understand whether bicycles are a viable transport mode to mitigate this poverty in a meaningful way.

Mobility poverty is defined living with daily inaccessible or unsuitable transport opportunities, which negatively affect an individual’s quality of life (employment, income-generation, healthcare or participation in society).

Overall, people living with mobility poverty in the areas of study are people who also live in financial poverty; the intersectional nature of women’s travel, financial, social, cultural, and other burdens mean that women are significantly more marginalised, and live with greater mobility poverty, than do men. There are gender dynamics around ownership and usage, at community and intra-household level.

Further, the relatively high cost of acquisition and ownership are key contributors to low bicycle ownership rates among women non-owners.

Study respondents primarily need affordable transport, which in the context of their very low incomes and subsistence or small-scale farming practices, is not likely to be met by private sector transport providers such as minibus-taxis or boda bodas. Key is also access to a variety of modes, based on the trip purpose and distance. Walking is the cheapest and therefore the default travel mode in both study areas. Bicycles, although often out of their price range as capital expenses, offer the most promising combination of mobility and affordability.

Motorised transport (boda bodas or minibus-taxis) is used when it is affordable, or in cases of long distances or when heavy goods need to be transported. People experience significant mobility

constraints, which limit their travel choices and behaviour, resulting in routine trade-offs. Nevertheless, people find ways to travel, as travel is often linked to livelihoods (income generation)

Bicycles are viewed as a viable mode of travel, but there are limitations to its use. Bicycles are particularly important for income generation in Malawi. There is waning interest in bicycles in Kenya, as people would rather own motorcycles because they are fast and convenient. In Malawi, however, bicycles are seen as more affordable and aspirational, rather than other expensive transportation modes like motorcycles.

Despite aspirations to motorcycle ownership, the cost of bicycles is overwhelmingly the barrier to increased bicycle transport in both Kakamega and Zomba. Distance is another constraint. Given the concomitant concern with the cost of maintenance and spare parts, cheaper bicycles for individual purchase, if this equates to poorer quality bicycles, are not necessarily the answer, unless there is concurrent government investment in improved road conditions (which are one of the factors in bicycle's frequent damage).

In using the Bicycle Usage Framework to analyse the findings, the study finds that bicycles can mitigate mobility poverty through increased availability, access, utilisation, and sustainability. Policymakers must prioritise review of the regulatory environment impacting pricing and the availability of bicycles on the market. Access to finance could improve suppliers' ability to expand selection of quality bicycles and make quality bicycles and spare parts more affordable and accessible for those most vulnerable. Policymakers and users should influence the allocation of resources to infrastructure improvements and behaviour change campaigns on safe cycling and gender barriers to increase bicycle usage. A future iteration of the bicycle usage framework will be grounded in an aspirational concept: *'mobility security' when people have at all times, physical and economic access to appropriate transport options that are affordable, safe, and meet their desired travel needs and preferences (including time requirements) in a gender appropriate and dignified manner.*

Thus while a bicycle is not the answer to all transportation problems, it is one viable intervention to mitigate mobility poverty. Our findings demonstrate that bicycles are an alternative for many, should system constraints be met, such as cost (financing options and reduced tax), road conditions, and gender barriers.

9 References

- Behrens, Roger, Patrick Muchaka, Herrie Schalekamp, Pablo Salazar-Ferro, and Mark Zuidgeest. 2016. 'Mobility and Access in Sub-Saharan African Cities: The State of Knowledge and Research Environments'. VREF, Mobility and access in African Cities.
- Buvinic, Mayra, O'Donnell, Megan, Knowles, James C. Bourgault, Shelby (2020) 'Measuring Women's Economic Empowerment A Compendium of Selected Tools' Center for Global Development, Data2x
- Campbell, R. (2014) A Framework for Inclusive Market Systems Development. USAID
- Chambers, Robert & Conway, Gordon' Sustainable rural livelihoods: practical concepts for the 21st century' 1992 IDS Discussion Paper 296.
- Cornish, F., Breton, N., Moreno-Tabarez, U. *et al.* Participatory action research. *Nat Rev Methods Primers* 3, 34 (2023). <https://doi.org/10.1038/s43586-023-00214-1>
- Fiala, Nathan, Ana Garcia Hernandez, Kritika Narula, and Nishith Prakash. 2019. 'Wheels of Change: Impact of Bicycles on Female Education and Empowerment in Zambia'.
- Foley L, Brugulat-Panés A, Woodcock J, Govia I, Hambleton I, Turner-Moss E, Mogo ERI, Awinja AC, Dambisya PM, Matina SS, Micklesfield L, Abdool Karim S, Ware LJ, Tulloch-Reid M, Assah F, Pley C, Bennett N, Pujol-Busquets G, Okop K, Anand T, Mba CM, Kwan H, Mukoma G, Anil M, Tatah L, Randall L. Socioeconomic and gendered inequities in travel behaviour in Africa: Mixed-method systematic review and meta-ethnography. *Soc Sci Med.* 2022 Jan; 292:114545. doi: 10.1016/j.socscimed.2021.114545. Epub 2021 Nov 6. PMID: 34802781; PMCID: PMC8783052.
- Forrester, J., and Cinderby, S. (2014) [Guide to using Community Mapping and Participatory-GIS](#). Prepared as part of the Managing Borderlands project and funded by the Rural Economy and Land Use (RELU) programme of the Economic & Social and Natural Environment Research Councils.
- Irlam, James Hamilton, and Mark Zuidgeest. 2018. 'Barriers to Cycling Mobility in a Low-Income Community in Cape Town: A Best-Worst Scaling Approach'. *Case Studies on Transport Policy* 6 (4): 815–23. <https://doi.org/10.1016/j.cstp.2018.10.003>.
- Irwin, B., and R. Campbell. (2015). Market Systems for Resilience. USAID.
- Jennings, Gail, Behrens, Roger, Venter, Christo, and Zuidgeest, Mark. 2018. 'Scoping Study: Transport and Social Exclusion in African Cities – South Africa Scoping Study Report'. Research Report funded by VREF. University of Cape Town, University of Pretoria, INTALinC.

Jennings, Gail. 2018. 'Building a Socially Just Bicycle Programme in an Unequal City: The Case of Johannesburg'. Gauteng City-Region Observatory.

Jennings, Gail. 2021a. "'Cycling ... Is Not Going to Occur Naturally... ': A View on the Research Agenda for Bicycle Mobility in Urban South Africa'. Active Travel Studies. <https://activetravelstudies.org>.

Jennings, Gail. 2021b. 'Cycling for Change: Exploring the Role of Carbon-Consciousness among Cape Town's Intentional Cyclists'. In *Cycling Societies: Innovations, Inequalities and Governance*. UK: Taylor & Francis.

Lucas, K, Verlinghieri, E et al. (2016) Transport poverty and its adverse social consequences. *Proceedings of the Institution of Civil Engineers - Transport*, 169 (6). pp. 353-365. ISSN 0965-092X.

Lucas, Karen, and Emma Tsoneva. 2019. 'Transport and Social Exclusion in Five African Cities'. VREF, Intalinc.

Lucas, Karen. 2012. 'Transport and Social Exclusion: Where Are We Now?' *Transport Policy* 20 (March): 105–13. <https://doi.org/10.1016/j.tranpol.2012.01.013>.

Acheampong, Ransford A. 2017. 'Towards Sustainable Urban Transportation in Ghana: Exploring Adults' Intention to Adopt Cycling to Work Using Theory of Planned Behaviour and Structural Equation Modelling'. *Transportation in Developing Economies* 3 (2): 18. <https://doi.org/10.1007/s40890-017-0047-8>.

Campbell, Ruth. 2014. 'A Framework for Inclusive Market Systems Development'. USAID.

USAID. 2016. 'Local Systems and Market Systems'. USAID.

Mendiate, Classio Joao, Alphonse Nkurunziza, Julio A. Soria-Lara, and Andres Monzon. 2022. 'Exploring Users' Perceptions of Factors Influencing Cycling Route Choice: A Perspective from Quelimane, Mozambique'. *Transportation Planning and Technology* 45 (2): 119–37. <https://doi.org/10.1080/03081060.2022.2088535>.

Mogaji, Emmanuel. 2022. 'Cycling in Lagos: The Challenges, Opportunities, and Prospects'. *Transportation Research Interdisciplinary Perspectives* 14 (June): 100608. <https://doi.org/10.1016/j.trip.2022.100608>.

Nkurunziza, Alphonse, Mark Zuidgeest, Mark Brussel, and Martin Van Maarseveen. 2012. 'Examining the Potential for Modal Change: Motivators and Barriers for Bicycle Commuting in Dar-Es-Salaam'. *Transport Policy* 24 (November): 249–59. <https://doi.org/10.1016/j.tranpol.2012.09.002>.

Springfield Centre. 2015. 'Operational Guide for Making Markets Work for the Poor'. Funded by SDC and DFID.

Thorpe, Jodi. 2017. 'Market Systems Approaches and "Leaving No One Behind"'. BEAM Exchange.

Mobycon Mobility Donut: <https://mobycon.com/updates/the-elements-of-the-mobility-donut-finding-the-balance/>)

Porter, Gina, Albert Abane, and Karen Lucas. 2020. 'User Diversity and Mobility Practices in Sub-Saharan African Cities: Understanding the Needs of Vulnerable Populations'. VREF, Mobility and Access in African Cities.

Raworth, Karen. Doughnut Economics: seven ways to think like a 21st century economist. Chelsea Green Publishing, 2017.

Tanu Priya Uteng and Turner, Jeff (2019) 'Addressing the Linkages between Gender and Transport in Low- and Middle-Income Countries' Sustainability, 11, 4555; doi:10.3390/su11174555

The Springfield Centre (2015) The Operational Guide for the Making Markets Work for the Poor (M4P) Approach, 2nd edition funded by SDC & DFID

Transfer Project. 2017. 'Malawi's Social Cash Transfer Programme: A Summary of Impacts'.

UK Government's 1997 White Paper on International Development

Vanderschuren, Marianne, and Gail Jennings. 2017. 'NMT Travel Behaviour in Cape Town, Dar Es Salaam and Nairobi'. In Non-Motorized Transport Integration into Urban Transport Planning in Africa. New York: Routledge.

10 Appendices

10.1 Questionnaire

CONSENT FORM

Hi, my name is _____. I am working with World Bicycle Relief and the University of the Western Cape (South Africa). We are carrying out a study to understand about some aspects of your everyday life at household and community level. You have been selected to take part in this survey. We are particularly interested in learning about your experiences around issues of transportation and mobility within and outside your community, and challenges that you may be experiencing in your day-to-day travel. The survey will also collect data about your socio-economic and living conditions, your sources of livelihoods and transportation needs, community-level engagement and volunteer work within the community.

Your responses will help us better understand your life and some of the challenges you may be experiencing. All your responses will be anonymous, and the information you will share with us will be kept confidential and used solely for research purposes. The information gathered from this community may be shared publicly but you will not be personally identifiable.

Please be aware that your participation in the survey is completely voluntary and will in no way affect or influence any assistance you receive in this community from government or NGOs. There will be no negative consequences for you if you refuse to participate in the research. You discontinue their participation in the survey at any point should you wish to. During the survey, you can skip any questions that make you uncomfortable. Additionally, you will be able to ask questions at any point during the survey.

The survey will take about 45 minutes. If at any point you have questions regarding this study, please feel free to ask me or to speak with the survey manager.

Are you willing to participate in this survey?

- ☐ YES
- ☐ NO

If yes, please answer the questions honestly, openly and to the best of your knowledge.

SECTION 1: GENERAL INFORMATION

- Interview date: (DD/MM/YYYY)
- Interview Start Time:
- Interview End Time:
- Country
 - ☐ Malawi
 - ☐ Kenya
- Interview location: _____
- **GPS coordinates (interview location):** _____
- Geographical setting:
 - ☐ urban
 - ☐ peri-urban

- ☐ rural
- Respondent's village location [*this is the location where respondent lives and not necessarily their immediate family is resident*]: _____
- Respondent's names: _____
- Respondent's Date of Birth: _____
- Respondent's contact details [*phone number*]: _____

SECTION 2: DEMOGRAPHY

- 1) Age of respondent at the last birthday: _____
- 2) Gender of the respondent
 - ☐ Female
 - ☐ Male
 - ☐ Other
 - ☐ Prefer not to state
- 3) What is the highest level of education you have completed?
 - ☐ None – not attended any formal school
 - ☐ Pre-primary
 - ☐ Attended but did not complete primary school
 - ☐ Completed primary
 - ☐ Attended but did not complete secondary school
 - ☐ Completed secondary
 - ☐ Certificate/Diploma
 - ☐ University degree (Bachelors/Masters/PhD)
- 4) Are you the head of your household? [A household is defined as a group of people who stay together and eat from the same pot at least 4 nights a week]
 - ☐ Yes
 - ☐ No
- 5) If you are not the head of the household, what is your relationship to the head of the household?
 - ☐ Spouse/Partner...
 - ☐ Mother/Father
 - ☐ Brother/Sister
 - ☐ Child
 - ☐ Other (specify)
- 6) What is your role in the household? [Mark all that apply]
 - ☐ Income earner
 - ☐ Grocery shopping
 - ☐ Cooking
 - ☐ Cleaning dwelling
 - ☐ Washing clothes and/or dishes
 - ☐ Fetching water
 - ☐ Fetching firewood
 - ☐ Taking care of children or elderly persons
 - ☐ Accompanying children to school

☐ Other [.....]

7) How many people usually live in your **household**? _____

[A household is defined as a group of people who stay together and eat from the same pot at least 4 nights a week]

8) How many members of your **household** are children (aged below 18 years)? _____

[A household is defined as a group of people who stay together and eat from the same pot at least 4 nights a week]

The next set of questions are for respondents who do not live with immediate family members (wife/husband/children/dependents)

9) Do you live in the same village (and homestead) as your immediate family members (wife/husband/children/dependents)? [*Living and eating from same pot for at least 4 nights a week*]

☐ Yes – **Skip to Section 3**

☐ No

10) If no, why are you not resident with immediate family members? _____

☐ Employment/Work

☐ Other [.....]

11) Where do your immediate family members live in?

☐ Village _____

☐ Sub-county/Ward _____

☐ County/District _____

12) Approximately how much time would it take you to travel from your current residence to where your immediate family members live?

_____ hours

_____ minutes

13) How often do you visit your immediate family members?

☐ Several times per week

☐ Once a week

☐ Several times per month

☐ Once a month

☐ Every two months

☐ Several times per year

☐ Other [.....]

14) How often would you like to visit your family members?

☐ Daily

☐ Several times per week

☐ Once a week

☐ Several times per month

☐ Once a month

- ☐ Every two months
- ☐ Several times per year
- ☐ Other [.....]

15) Why are you unable to visit them as often as you would like to?

SECTION 3: EMPLOYMENT & INCOME

16) What is your current employment status?

- ☐ working full-time for pay
- ☐ working part-time for pay
- ☐ casual/contract worker
- ☐ own account worker (self-employed) – small business (informal/non-registered enterprise)
- ☐ own account worker (self-employed) – small business (registered enterprise)
- ☐ own account worker (self-employed) – small scale agriculture
- ☐ own account worker (self-employed) – other
- ☐ unpaid worker in a household business
- ☐ pensioner
- ☐ unemployed: has looked for work in the past 4 weeks
- ☐ unemployed: not looking for work

[If q16=unpaid worker in household business, unemployed or pensioner, skip to q23.]

17) Describe the nature of work that you do _____

18) Which of the following categories best describes your place of employment?

- ☐ roadside kiosk/stall
- ☐ market
- ☐ retail shop
- ☐ manufacturing or workshop
- ☐ services industry [e.g., restaurant]
- ☐ storage and warehousing
- ☐ municipal, government and administration services
- ☐ health services
- ☐ education institution
- ☐ own residence
- ☐ business offices
- ☐ other [.....]

19) Where is your place of employment located?

- ☐ within local village
- ☐ a neighbouring village
- ☐ another village within district/county
- ☐ main town centre in the district/county
- ☐ village in another district/county
- ☐ town in another district/county
- ☐ other [.....]

20) What is the name of the village/town/district where your place of employment is located?

21) Are you the primary income earner in your household?

- ☐ Yes
- ☐ No

22) What is your estimated average earnings over the past 12 months (before tax and other deductions) from your occupation/work mentioned above? [Record either week, month or annual estimate]

- ☐ Per week _____
- ☐ Per month _____
- ☐ Annual _____

23) What was your household's main source of income in the past 12 months?

- ☐ subsistence farming
- ☐ commercial farming
- ☐ wage employment
- ☐ registered non-agricultural enterprises (e.g., retail shop)
- ☐ pension
- ☐ gardening/horticulture
- ☐ petty trading (e.g., vendors, hawkers)
- ☐ tourism employment
- ☐ cash transfers from Government or NGO
- ☐ loans
- ☐ saving groups
- ☐ building/carpentry/brick moulding
- ☐ other [.....]

24) Please describe the type of the main dwelling that your household occupies.

- ☐ brick or concrete block house
- ☐ traditional house or hut structure (e.g., made of thatch and straw)
- ☐ flat or apartment in block of flats
- ☐ informal dwelling in an informal settlement or on farm
- ☐ other (specify)

25) What is the estimated average monthly household income (before tax and other deductions) ? [Record either week, month or annual estimate]

- ☐ Per week _____
- ☐ Per month _____
- ☐ Annual _____

26) What was your household's total expenditure in the last 30 days? _____

27) What was your household's expenditure on transportation in the last 30 days?

- ☐ Fares for travel on buses, taxis or matatus (excluding school) _____
- ☐ Children's school travel _____
- ☐ Motor vehicle or motorcycle petrol costs _____

- ☐ Motor vehicle or motorcycle insurance costs _____
- ☐ Maintenance/repairs for motor vehicle, motorcycle, or bicycle _____
- ☐ Other [.....] _____
- ☐ **Total** _____

SECTION 4: TRANSPORTATION AND MOBILITY

28) If employed, what transportation mode(s) do you currently use for travel to your place of employment? [mark all that apply] [please note that employment also includes self-employment – traders/business people]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

28 i) Of these, what is the main mode?

a) What are the main reasons why you choose to use this mode of transportation? [Mark all that apply]

- ☐ It is affordable
- ☐ Easily accessible
- ☐ Convenient
- ☐ Only mode of transportation available
- ☐ Best for transporting goods/produce
- ☐ Distance
- ☐ Number of people travelling with
- ☐ Well suited for terrain/roads
- ☐ Safety considerations
- ☐ Other [.....]

b) Does the transportation mode(s) allow you to easily access your place of employment?
[refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If Q29b=Sometimes or No or Not sure, why? _____

c) What is your ideal mode of transportation for travel to your place of employment?

29) What transportation mode(s) do you currently use for travel to the local market for grocery shopping? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) Does the transportation mode(s) allow you to fulfill your role as the householder responsible for shopping? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If Sometimes or No or Not sure , why? _____

c) What is your ideal mode of transportation for traveling to the local market for shopping?

30) What transportation mode(s) do you currently use for travel to the main market in your district/county for shopping? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) Does the transportation mode(s) allow you to fulfil your role as the householder responsible for shopping? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If Sometimes or No or Not sure, why? _____

c) What is your ideal mode of transportation for traveling to the main market in your district/county for shopping? _____

31) What transportation mode(s) do you currently use for travel to your main source of water? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)

- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]
- ☐ Not applicable - water is at household or delivered to household

a) **Does the transportation mode(s) allow you to easily collect main source of water?** [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) **If Sometimes or No or Not sure, why?** _____

c) **What is your ideal mode of transportation for traveling to your main source of water?**

32) What transportation mode(s) do you currently use for travel to your main source of energy for cooking? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]
- ☐ Not applicable - energy is at household or delivered to household

a) **Does the transportation mode(s) allow you to easily travel to collect fuel for cooking?** [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) **If Sometimes or No or Not sure, why?** _____

c) **What is your ideal mode of transportation for traveling to your main source of energy for cooking?** _____

33) What transportation mode(s) do you currently use to accompany children to school or attend school-related meetings? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)

- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) **Does the transportation mode(s) allow you to fulfill this role as a child caregiver in your household?** [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) **If Sometimes or No or Not sure, why?** _____

What is your ideal mode of transportation for traveling related to your children's education? _____

34) What transportation mode(s) do you currently use to attend the travel to health facility that you usually use, either for yourself or to accompany a member of your household? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) **Does the transportation mode(s) allow you to travel easily to the health facility?** [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) **If Sometimes or No or Not sure, why?** _____

c) **What is your ideal mode of transportation for traveling related to the health facility?**

35) Are you a farmer?

- ☐ YES
- ☐ NO Skip to Q40

36) Is your farm located outside of your residential home?

- ☐ YES
- ☐ NO – if NO, skip to Q38

37) What transportation mode(s) do you currently use to travel to your farm, either for yourself or to accompany a member of your household? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) Does the transportation mode(s) allow you to travel easily to your farm? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If sometimes, no, or not sure, why? _____

c) What is your ideal mode of transportation for traveling related to the health facility?

38) If a famer, what transportation mode(s) do you currently use to travel to the place/market/community centre where you usually source for your supplies? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) Does the transportation mode(s) allow you to travel easily to your farm? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If sometimes, no, or not sure, why? _____

c) What is your ideal mode of transportation for traveling related to the farm?

39) If a famer, what transportation mode(s) do you currently use to travel to the place/market/community centre where you sell your produce? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)

- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]
- ☐ I do not sell my farm produce [Skip to XX)

a) Does the transportation mode(s) allow you to travel easily to your farm? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If sometimes, no, or not sure, why? _____

c) What is your ideal mode of transportation for traveling related to the farm?

40) If living away from immediate family members, what transportation mode(s) do you currently use to travel to the visit your immediate family members? [mark all that apply]

- ☐ Walking
- ☐ Bicycle (own)
- ☐ Bicycle taxi
- ☐ Motorcycle (own)
- ☐ Motorcycle taxi
- ☐ Minibus taxi/matatu
- ☐ Car/Truck (own)
- ☐ Car/Truck (taxi)
- ☐ Other [.....]

a) Does the transportation mode(s) allow you to travel easily to your immediate family members? [refer to transportation modes listed in the initial question]

- ☐ Yes – all the time
- ☐ Yes - sometimes
- ☐ No
- ☐ Not sure

b) If sometimes, no or not sure, why? _____

c) What is your ideal mode of transportation for traveling to visit your immediate family members?

41) What activities would like to be able to do but are prevented from doing so by transportation limitations? _____

SECTION 5: TRANSPORT POVERTY / TRANSPORT-RELATED EXCLUSION, AND HOW PEOPLE EXPERIENCE THIS

42) How much time is spent traveling on a typical day? [include walking time to transport, and waiting time for transport, and time spent changing modes – i.e., whole journey time]

_____ Hours
_____ Minutes

- 43) In the last 7 days, which of the following places did you visit within or outside your village or location? How many times did you visit these places, what is the main mode of transportation [i.e. the mode of transport that covered the greatest distance] you used, and how much time did it take for you to travel to these places using the main mode of transportation?

<i>Place</i>	<i># Of visits in the previous 7 days</i>	<i>Total time taken one way (mins) [including access and wait times]</i>	<i>Main mode of transportation</i>
Main place of employment			
Local market (to source for household good market)			
Other market [for example, in town centre]			
Public transport station			
Religious organisation (e.g., church)			
Community meeting centre			
Farm			
Voluntary comm. work centre			
Friend's place			
Relative's place			
Place of relaxation			
Bank			
Mobile money agent			
Pre-primary school			
Primary school			
Secondary school			
Household energy source			
Household water source			
Other (specify)			
Other (specify)			
Other (specify)			

Main mode of transportation

Walking =1, Own bicycle=2, Bicycle taxi=3, Own motorcycle=4, Motorcycle taxi=5, Minibus taxi/matatu=6, Own Car/Truck=7, Taxi Car/Truck=8, Other (specify)

- 44) Was there a time in the last 7 days that you wanted to travel to your place of work/business and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

Lack of time

Long distance

Poor roads

High cost of transportation

Lack of transportation

Transportation tool (bicycle/car/motorcycle) broken

Transportation tool used by other household members

Bad weather

Safety concerns

Other [.....]

45) If a small trader/business person, was there a time in the last 7 days that you wanted to travel to the market/place where you source supplies and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

☐ Lack of time

☐ Long distance

☐ Poor roads

☐ High cost of transportation

☐ Lack of transportation

☐ Transportation tool (bicycle/car/motorcycle) broken

☐ Transportation tool used by other household members

☐ Bad weather

☐ Safety concerns

☐ Other [.....]

46) If farmer, was there a time in the last 7 days that you wanted to travel your farm and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

☐ Lack of time

☐ Long distance

☐ Poor roads

☐ High cost of transportation

☐ Lack of transportation

☐ Transportation tool (bicycle/car/motorcycle) broken

☐ Transportation tool used by other household members

☐ Bad weather

☐ Safety concerns

☐ Other [.....]

☐
47) If farmer, was there a time in the last 7 days that you wanted to travel to the market, either to source inputs or to sell your produce and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

48) Was there a time in the last 7 days that you wanted to travel for leisure or social activities and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

49) Was there a time in the last 7 days that you wanted to travel to your household's main source of water and were unable to do so?

☐ Yes

☐ No

• N/A - Do not perform this role for household

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns

☐ Other [.....]

50) Was there a time in the last 7 days that you wanted to travel to your household's main source of energy and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

51) Was there a time in the last 30 days that you wanted to travel to the health centre that you usually use and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

52) Was there a time in the last 30 days that you wanted to travel to an education institution (such as children's school) and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns

☐ Other [.....]

53) Was there a time in the last 30 days that you wanted to travel to a religious institution (e.g., church or related activity) and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

54) Was there a time in the last 30 days that you wanted to travel to a community meeting (including savings group) and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the reason?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members
- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

55) In the last 30 days, was there any other place that you wanted to travel to and were unable to do so?

☐ Yes

☐ No

a) If yes, what was the place you were unable to travel to?

b) If yes, what was the reason you were unable to travel?

- ☐ Lack of time
- ☐ Long distance
- ☐ Poor roads
- ☐ High cost of transportation
- ☐ Lack of transportation
- ☐ Transportation tool (bicycle/car/motorcycle) broken
- ☐ Transportation tool used by other household members

- ☐ Bad weather
- ☐ Safety concerns
- ☐ Other [.....]

56) In the past 7 days, were there any activities that you would have liked to spend time on, but were unable to do so because of time spent travelling?

- ☐ Yes
- ☐ No

a) **If yes, what activities would you have liked to spend time on?**

57) In the past 30 days, have you had to cancel travel plans due to safety concerns?

- ☐ YES
- ☐ NO – SKIP to Q59

58) If Q57=yes, please explain _____

59) In the past 30 days, have you ever borrowed money from relatives, neighbours or friends in order to pay for transportation?

YES

NO

60) In the past 6 months, have you sold household assets and livestock in order to pay for transportation?

- ☐ YES
- ☐ NO

61) In the past 30 days, have you been in a situation where you have travelled on credit, i.e., transport provider allowed you to travel on agreement that you would settle pay them at a future time?

- ☐ YES
- ☐ NO SKIP to Q64

62) If Q61=yes, are there any challenges you have experienced with this?

- ☐ YES
- ☐ NO

63) If yes, what challenges have you faced with this?

64) In the past 30 days, have you ever made an in-kind payment for transportation (e.g., bag of maize or other goods)?

- ☐ YES
- ☐ NO

SECTION 6: BICYCLE USAGE

65) Do you ever use a bicycle for any of the trips you have described above?

☐ Yes

☐ No **SKIP TO Q70**

a) If you do not use a bicycle, why? _____

66) What travel/activity do you use the bicycle for? [Mark all that apply] _____

- ☐ Travelling to work/place of employment
- ☐ Perform other income generating activity
- ☐ Travel to the farm
- ☐ Travelling to a health facility
- ☐ Travelling to local market for groceries
- ☐ Travelling to main market for groceries
- ☐ Travelling to market to buy goods/supplies
- ☐ Taking children to school
- ☐ Going to fetch water
- ☐ Going to fetch energy
- ☐ Other [_____]

67) Where do you get the bicycle that you use?

- ☐ I own it
- ☐ Borrow it from relative/friend at no cost
- ☐ Rent it at a cost
- ☐ Other [..... please specify]

68) What is the average amount of time you spend traveling by bicycle per week?

_____ [Hours]

_____ [Minutes]

69) What is the average number of bicycle trips you take per week? [Give response either per day or week]

_____ Per day

_____ Per week

70) Do you ever use a bicycle to access other forms of transportation? (e.g. transport to main road)

☐ Yes

☐ No

71) If you do not use a bicycle, have you considered using a bicycle for any of the trips you have described above?

a) If yes, for which types of trips? _____

b) If not, why have you not considered using a bicycle? _____

72) What would help you use a bicycle more often?

- ☐ Better road conditions/infrastructure
- ☐ Availability of bicycle paths
- ☐ Cheaper bicycles
- ☐ Better road safety

- ☐ Secure bicycle parking/ storage
- ☐ Improved access to bicycle repair facilities
- ☐ Improved access to spare parts
- ☐ A bicycle design more suited to my needs
- ☐ Shorter travel distances from home to work, or to other activities
- ☐ I have no need to increase my bicycle usage
- ☐ Other [.....]
- ☐ Don't know

SECTION 7: BICYCLE OWNERSHIP

[These questions apply to both users and non-users of bicycles]

73) Does your household own a bicycle?

- ☐ Yes
- ☐ No

[If q73=No, Skip to Q83]

74) How many bicycles do you have? _____

75) What brand(s) of bicycles do you have and how long have you owned them?

Brand	Years owned
_____	_____
_____	_____
_____	_____

76) How did you acquire this/these bicycle(s)? [mark all that apply]

- ☐ Purchased
- ☐ Donated by NGO
- ☐ Donated by Government
- ☐ Donation/gift from relative/friend
- ☐ Other [.....]
- ☐ Don't know

77) Who is the owner of the bicycle(s)? [mark all that apply]

- ☐ **Myself**
- ☐ Spouse
- ☐ Child – male
- ☐ Child - female
- ☐ Other relative – male
- ☐ Other relative - female
- ☐ Other person (specify) – male
- ☐ Other person (specify) - female

78) Who is the primary user of the bicycle(s)?

- ☐ Myself
- ☐ Spouse
- ☐ Child – male
- ☐ Child - female
- ☐ Other relative – male
- ☐ Other relative - female
- ☐ Other person (specify) – male
- ☐ Other person (specify) - female

79) Between the males and females in your households, who can you say has more access to the bicycle(s) for transportation use?

- ☐ Males
- ☐ Females
- ☐ Both (equal access)

80) If one gender has more access to the bicycle(s) than the other, please explain why?

81) Have you ever needed to replace parts of your bicycle?

82) Where do you acquire your spare parts from? _____

83) Who repairs your bicycle when it is broken?

- ☐ Self
- ☐ Household member
- ☐ Local mechanic
- ☐ WBR/Buffalo trained mechanic
- ☐ Other (specify)
- ☐ I don't know

84) In the last 6 months, how much money did you spend on maintenance of your bicycle, including purchase of spare parts and accessories, and mechanic costs?

_____ Local currency

Don't know

85) If you don't own a bicycle, what are the reasons?

- ☐ Cost of acquisition
- ☐ Cost of ownership – maintenance/spare parts
- ☐ Disabled/ physical
- ☐ Not interested
- ☐ Road traffic is dangerous
- ☐ No road space on which to ride
- ☐ Lack of bicycles available near me
- ☐ Other (specify)
- ☐ Don't know

86) From this list below, which are the three most important reasons you would choose a particular bicycle.

- ☐ Cost
- ☐ Quality/ durability
- ☐ Ease of acquiring bicycle
- ☐ Ease of maintenance
- ☐ Ease of acquiring spare parts
- ☐ Lightweight
- ☐ Ease of riding
- ☐ Style/ design
- ☐ Other
- ☐ I don't know
- ☐ No response

10.2 Focus group guide

Introduction and Consent

1. Welcome participants and introduce yourself and the note-taker and invite participants to introduce themselves.
2. Explain the purpose of the exercise.
3. Ask for consent to participate in FGD and taking of pictures for use in the report.
4. Ensure the group consists of the right people (composition and maximum number of 12, information needed should guide the composition of the group)
5. Compile a register of the participants indicate sex, venue, date of meeting, type of FGD
6. Assure confidentiality of people's identities
7. Describe focus group process and encourage openness and honest responses from all respondents.
8. Set ground rules:
 - a. No right or wrong answers
 - b. Participation by everyone
 - c. Participation through the facilitator
 - d. Respect the opinions of others
9. Discussions will last approximately 1 and a half hour
10. Be observant, always checking who is talking and who is not and encourage all to participate.
11. Use broad and not suggestive questions.
12. Always probe.
13. Fully capture the discussion and observations
14. Offer drinks, snacks, etc as required for people's time traveling and participating in the group

Introduction to the focus group discussion

Hello. First, thank you for agreeing to participate in this interview. My name is (xx) and I will guide the discussion today. I live in XX and I work for XX.

Our research is looking into the ways in which transport or mobility enable us to live our lives to the full, and to allow us fulfil our roles in our households or as income earners. Much of what we do every day, or what we want

to do every day, requires us to travel somewhere: whether it is getting to work, visiting family or friends, going to places of education, to the market, to the clinic, or to participate in community meetings and activities.

That is why, for the next 1 hour — 1h30 hour together, we will get to know each other, and most importantly, we will together discuss how you travel to meet your daily needs, and whether your travel options do meet your daily needs. We will discuss what challenges or difficulties your travel options present, and what you are missing out on in your life because of these challenges. We are also interested in uncovering whether bicycle travel could meet some of your travel needs, and whether it could resolve some of your travel challenges and limitations.

The key word today is openness: we want you to be as honest as possible - first because there are no right or wrong answers, and secondly because what you are going to share with me will stay anonymous, and eventually because the information you share with us will be very useful helping us understand how the bicycle market system works in Malawi, and how it can be improved. Please do note that your responses and participation do not mean that we can provide answers, assistance, or improvements to the system ourselves, but that together we can work to move things in the right direction.

We would like to record the interview — the data will be kept strictly anonymous. We will write a report and share our findings in the report, but we will not include any personal information and no-one will be able to identify that any of the information came from you. Do you give us your consent?

Please don't hesitate to ask questions or ask us to rephrase if this is not clear to you.

QUESTIONS

Let's start by introducing ourselves and what our primary role in our household is.

Now we would like to hear about where you go to in a 'typical' week or month, how you travel, and who you travel with [Probe around how first and last mile access (this is if they are using taxis or buses – how do they access motorized modes), and trips that are not part of a weekly routine, but might happen only as emergencies or monthly. Don't forget 'walking' or 'cycling' as travel modes. Probe around trips where the participant needs to accompany elders or children in their care. Also start probing around whether this is a trip they would like to be taking once a week but can only do it once a month/week/day].

How do you decide what mode of transport to take for different trips or travel purposes? [Probe around issues of cost, travel time, waiting time, ease of access, number of transfers, hour of the day, personal safety, amount of goods you are carrying, number of people travelling with them (this will affect their choice) etc - ask the participants for details of which trips they are referring to each time]. Probe also around whether there is a mode they would have preferred to take for X reason, but used this mode instead...

[This is where we could also make use of a map, and try to capture origins and destinations - to assess trip distances, for eg.]

So, you would say that the biggest challenges you have with transport are... [depending on the above responses... Verify, and no doubt the participants will add more].

Do you find yourself having to make ‘trade-offs’ about what kinds of trips to make, or where to go? For example, that you can either pay for books for school, or pay for a matatu/taxi to visit friends? That you choose to sell your goods closer to home rather than at a better market? Travel to a community activity or travel to the market [Probe around the kinds of trade-offs...]

In the last while, have you wanted to take part in an activity somewhere but were unable to do so because of transport? [Probe around what kind of activity, and the transport challenges – cost of travel, fears around personal safety, fears around social censure, transport not available, bicycle being used by someone else in the household already, partner does not like them travelling alone or for leisure, etc]

When you think of people in your community who have no challenges with transport, how do they travel? [probe around – do they own a car? Are they very wealthy? Do they have their own water-point and mill on the property? Etc]

If you could change one thing about the way you travel, what would it be? [probe around – having enough money to always pay for taxis? Purchase a car? Etc]

YOU PROBABLY WILL FIND THAT THESE HAVE BEEN ANSWERED EARLIER

[Some of you mentioned travelling by bicycle...] **We would like to hear more about your experiences using a bicycle for some of your transport needs. What are your reasons for using a bicycle for travel rather than other modes of transport?** [Probe around availability, cost, don't have to wait for a matatu, don't have to pay for transport, don't have to walk to the transport stop, etc]

What are your reasons for NOT using a bicycle for travel rather than other modes of transport? [Probe around availability, cost, access to a bicycle, access to a bicycle within the household, distances, type of bicycle, gender or other social norms, fears around not being able to fix a bicycle en-route, etc]

Think back to our discussion around the challenges around transport, and trips you would have liked to make but were unable to do so. Could a bicycle have helped you to make these trips? [Probe around reasons for yes, and reasons for no – it might be that the answers here don't entirely gel with their earlier responses, so probe around this if you can, but otherwise we'll look at this during analysis.]

Is there anything else you would like to discuss or share?

Thank you very much for your time ...

10.3 Key Informant Interview guide

Background and study purpose

This research aims to contribute evidence toward closing the knowledge gap around the transportation needs and experiences of marginalized populations in secondary cities across sub-Saharan Africa, focusing on the cases of Kenya and Malawi. The research focuses on identifying key marginalized user groups, ii) defining their transportation needs, and iii) understanding the factors underlying access to adequate transportation. This research is also interested in the viability of bicycles as a transportation solution for low-income and marginalized individuals in urban environments.

1. Please describe your role/organization's/businesses' role in the community.
2. Do you have staff/employees working in the community? If yes, what is their area of focus? How do they conduct their outreach work? Who are the target groups for the outreach work?
3. What are the main sources of livelihoods for people residing in the community(ies) that you work in?
4. What are some of the challenges faced by members of the community(ies) you work in?
5. What are the most common forms of transport for the community members? How does the use of these means of transport differ by type of travel (e.g., visit to health centres, markets etc), by men, women and children? Across various socio-economic groups? How does the terrain/seasonality/weather influence people's transportation options?
6. What are the main factors that influence access and use of the transportation options you have described? Are there any cultural issues that influence residents' access and use of the transportation options you have described?
7. What are the limitations of current transportation modes that you have described?
8. What are some of the transportation challenges experienced in your village or by people you work with? What barriers do people face related to infrastructure? [probe on costs, distances to health facilities, business centers, education facilities]
9. How do these transportation challenges affect members of the community you work with?
10. Have these challenges been discussed with relevant leaders/government/policy-makers [for community-level stakeholders]? If not, why is this the case?
11. What avenues/systems exist to communicate transportation challenges to local leaders and government officers?
12. Are bicycles commonly used in the community? If yes, what activities are they used for?
13. If bicycles are not a commonly used mode of transportation in the community, why do you think this is the case? [probe around cost, road infrastructure, safety, distances travelled]
14. What role do you think bicycles could play in mitigating the transportation challenges faced by members of the community you work in?

