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Exploring the Relationship Between Gender Difference and Transport Poverty: A Maputo Case Study

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Abstract

Sub-Saharan African cities have recently seen GDP growth and are expected to grow by a further 3.9% annually from 2022. However, the mobility patterns of women are not considered when it comes to transport planning in the Global South. Therefore, there is a risk that this growth is not sustainable as gender inequality and poverty levels remain amongst the worlds' highest for SSA cities. If we are to reach the United Nations Sustainable Development Goals target 11.2 ('by 2030, providing access to safe, accessible, and sustainable transport systems for all'), a comprehensive understanding of the relationship between gender and transport poverty is required in growing SSA cities.

This study will focus on Maputo as a case study of a growing urban economy in Sub-Saharan Africa. The main aim is to explore the relationship between transport poverty and gender difference and the associated inaccessibility issues. Focus group data provided by the GCRF/ESRC funded T-SUM project is analysed using thematic content analysis.

Key findings show that the male participants have a diverse set of main activities compared to female participants. Women's main activity tends to be trades and experience a disproportionately higher unemployment rate than men. Whilst all-female participants main activity happens within their neighbourhood, men travel to a broader set of destinations for their main activity. Overall, the results indicate that women's mobility is locally bound with fewer trips outside of their neighbourhood compared to men. Moreover, men also have a diverse set of mode choices and travel at different times of the day. In contrast, women have limited transport modes and tend to not travel at night due to fear of crime. In conclusion, this study demonstrates that women in Maputo are transport and socially disadvantaged compared to men and therefore experience a higher degree of transport poverty.

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1. Introduction

1.1. Background

The United Nations Development Programme aims to alleviate extreme poverty from 736 million people (United Nations Sustainable Development, 2021). However, evidence from multiple research has shown that poverty is not simply related to low income (UN, 1995; Narayan et al., 2000; Alkire and Santos, 2014;). Instead, poverty is linked to many interlocking dimensions, with transportation being one of the most influential factors of poverty (Narayan et al., 2000). This transport poverty is caused by direct and indirect interactions of transport and social disadvantage (Lucas, 2012; Lucas et al., 2016). Therefore, transport planning and policymakers need to understand transport poverty issues and implement strategies to eradicate extreme poverty.

The concept of transport and social disadvantage is a complex construct characterised by fear of crime, high cost of fares, poor public transport services, low income, low skills, ill health and poor housing (Lucas, 2012; Lucas et al., 2016). Transport and social disadvantage occur due to various factors, including land use, transport systems and individual circumstances (Curie & Delbosc, 2011). Research has found that inaccessibility arises due to the intersection of transport and social disadvantage. Accessibility is the ability of people and business activities to reach the desired goods, activities and facilities (Bhat et al., 2000). Ultimately, accessibility is vital for economic and social development and enhancing the quality of life. Hence, every neighbourhood should have access to goods, services, opportunities, and social contacts in an ideal world.

Transport poverty, which is caused by a range of factors, is more prevalent in developing countries as fast-growing cities often face massive challenges related to inaccessibility. Sub – Saharan African cities are an example of such a case, with average annual GDP growth of 4.6% between 2000 and 2016 and projected to grow by 3.9% annually from 2022 (ODI, 2021). However, many of the existing methods of transport poverty apply to countries in the Global North and may not apply to low-income countries in the Global South (Dimitriou, 2013). There are fundamental differences between data availability and mobility constraints between the Global North and South

(Rynning et al., 2017). In addition, due to the more severe transport-related problems in Sub Saharan African cities, there is an urgent requirement for specific evidence-based investigations tailored to the Global South (Lucas et al., 2016).

One aspect of transport poverty that is under-researched is its link to gender differences. Transport is not gender-neutral, with the socio-economic roles and responsibilities of men and women widely varying, leading to different transport access patterns, needs, and use (Clarke, 2012). For instance, women's mobility in Sub Saharan African cities is constrained by limited and unaffordable transport, exacerbated by social and cultural factors (Clarke, 2012). Women in sub-Saharan African cities limited control over resources generally means that they have less access to private means of transport and are more dependent on public transport if they can afford the fares (World Bank, 2021). Ensuring women are not suffering from mobility poverty is vital for their access to economic, resources, education, health and other vital elements influencing women's empowerment (World Bank, 2021). However, there is often not much recorded evidence on the differences in gender travel patterns between men and women and the relationship between gender and transport poverty, especially in the Global South (Clarke, 2012; Lucas, 2012; Lucas et al., 2016).

1.2. Problem Statement

Although Sub – Sharan African cities have recently experienced growing GDP – per capita, however, there is a risk that this may lead to development that is not sustainable and inclusive. For instance, according to the Global Gender index 2018, it will take more than a century to close the gap between men and women in Sub – Saharan African cities (Chutel, 2018). In addition to gender inequality being among the world's highest for SSA cities, the poverty level is also concerningly high, as shown in Figures 1 and 2, respectively (Hakura et al., 2015). Therefore, if this gender and income inequality persist, it will be unlikely for Sub-Saharan African cities to achieve principle two of the sustainable development goals 2030 agenda, 'leave no one behind' (United Nations, 2021). A possible reason for this trend is the failure to implement transport planning that meets the needs of all, as transportation is vital for achieving gender equality and reducing poverty. The transport sector in the Global South has been gender blind by ignoring the innate differences between the mobility patterns of men and women (Uteng, 2012).

Furthermore, to date, most studies that consider transport poverty have been conducted in the context of Global North, whereby gender differences have been well documented (Lucas, 2012; Dimitriou, 2013; Lucas et al., 2016; Rynning et al. 2017). Therefore, if we are to reach the Sustainable Development Goals target 11.2, "by 2030, providing access to safe, accessible, and sustainable transport systems for all" (United Nations Sustainable Development, 2021), a comprehensive understanding of the relationship between gender and transport poverty is required in the context of growing Sub – Saharan African cities. Considering the aforementioned issues, this study will focus on Maputo, Mozambique, as an example of a growing urban economy in Sub-Saharan Africa. Data collected by the GCRF/ESRC funded [T-SUM](#) project will be analysed to identify the relationship between transport poverty and gender differences and the associated inaccessibility issues. Further information about the T-SUM project is provided in Chapter 3, section 3.2.2.

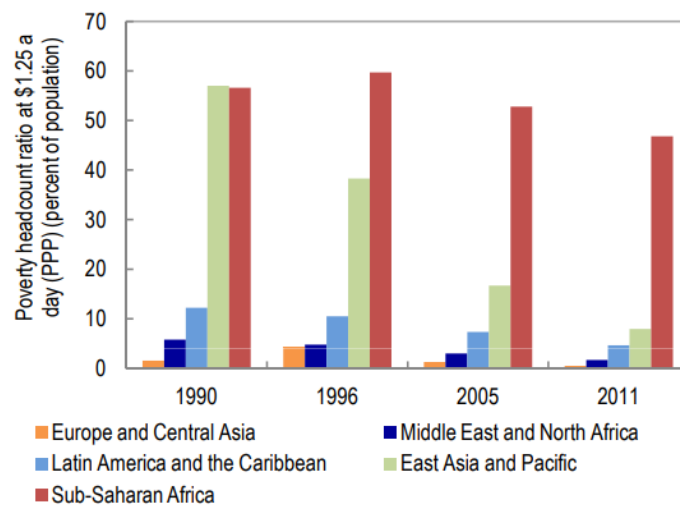


Figure 1. Poverty Head Count in Different Regions (Hakura et al., 2021)

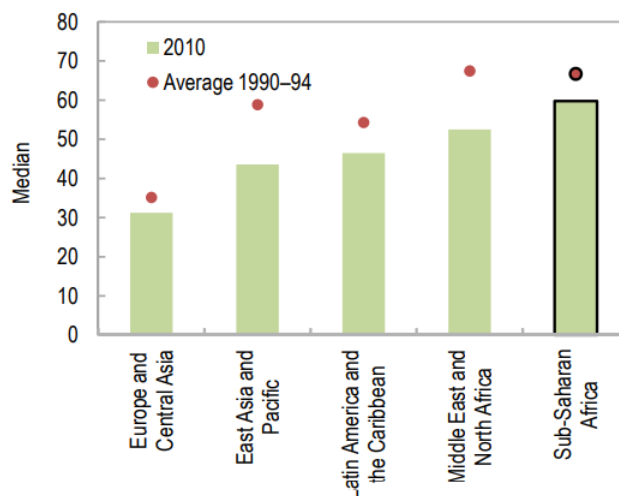


Figure 2. Poverty Head Count in Different Regions (Hakura et al., 2021)

1.3. Aims and Objectives

Aim:

To investigate transport and social disadvantages due to gender differences in growing Sub-Saharan African cities and to explore the inaccessibility issues arising from such differences, taking Maputo as a case study. Therefore, the following objectives have been developed:

Objectives:

- To identify whether a gender difference exists by exploring the differences in practice, experience and attitudes related to accessibility between male and female individuals – drawing on the analysis of focus group interviews conducted in Maputo.
- If gender differences do exist, explore the transport poverty and inaccessibility issues.

2. Literature Review

Relevant research regarding gender and transport will be discussed in this chapter. Following this, a comprehensive overview of transport and social disadvantage will be summarised. Moreover, factors that influence transport and social disadvantage due to gender difference will be discussed and the resulting inaccessibility issues arising from such problems.

2.1. Gender Differences in Accessibility

The UK department of transport has defined 'accessibility poverty' as the difficulty of reaching key activities (i.e. employment, education, healthcare services, markets etc.) at a reasonable time, ease and cost (Department for Transport, 2014a). Although accessibility and mobility are often related, however, both terms have distinct differences. Levine and Garb (2002) define mobility as the ease of movement and accessibility as the ease of reaching a destination (Levine and Garb, 2002). For example, where destinations are close by, good accessibility can be achieved irrespective of constrained mobility and where destinations are remote, mobility may be high with poor accessibility (Sager, 2008).

Accessibility varies significantly in urban areas and between genders (Morikawa, 2005). This is also the case in rural areas, whereby poor physical access is experienced by a broad cross-section of the population in sub-Saharan Africa. However, the impacts felt by women and their daughters are significantly more severe (Porter, 2011). Girl children living in Ghana, Malawi and South Africa have more difficulty accessing education than boys, whilst women's access to maternal health services is limited (Porter, 2011). Women access to employment is also more constrained than men in rural areas, with women often spending more time travelling on slower modes of transport to access work and a higher number of trips made by foot (Anand and Tiwari, 2006, Srinivasan 2008, Tanzarn 2008). Improved accessibility is conventionally linked to improved road construction, especially in rural areas. Road constructions are perceived as a solution to females' physical distance and time spent travelling to critical services (Porter, 2011). However, accessibility encompasses a wide range of factors and as such, this may not be a satisfactory solution in improving women and girl's accessibility. For instance, improved transport services and travel fares need to be

considered to achieve improved accessibility (Dawson and Barwell 1993; Ellis and Hine, 1998). The lack of accessibility has severe implications on an individual's livelihood opportunities and life chances. For example, poor females' access to schools in Sub-Saharan Africa was an important factor in girls' low educational achievement (Porter, 2007). Therefore, it is incumbent upon policymakers and development practitioners to fully understand the extent of gender differences in accessibility to truly empower women (Uteng, 2012).

2.2. Gender Differences in Mobility

Transport and its infrastructures are not gender-neutral. Although gender differences in transport are present worldwide, according to Porter et al. (2020), this issue is more prevalent in Sub Saharan African cities. Reasons for this include a combination of social-cultural factors and male dominance in the transport sector that ultimately leads to the constraint of female access to mobility resources. In addition to having less access to all means of transport, females in developing countries tend to take on greater responsibility for the household travel burden (Jennings, 2020). Therefore, women's travels are multipurpose compared to their male counterparts, as they make more frequent and shorter trips associated with health, shopping, and caring responsibilities. For instance, Jennings (2020) found that women were more likely to be travelling with children despite the extra cost. Ultimately, this shows a strong correlation between gender and transport and as such, it is vital to recognise the multiple ways in which women move, especially females in developing countries.

Despite these factors, across the globe, women's needs are rarely included in transport planning (Global Roadmap of Action Toward Sustainable Mobility: Gender, 2019). Transport planning focuses on work-commute trips and often neglects the mobility patterns of females. Multiple pieces of literature have found evidence for this lack of planning. For example, research conducted by INTALInc in 2019 found that all transport modes are less responsive to the travel requirements of females (Lwasa, 2019). Similarly, in Uganda, researchers found that the government was unaware of the essential needs of women, which will enable public access and movement (Alupo, 2020). Overall, these findings show that decision-makers should emphasise more on women's needs so that gender-sensitive transport can be provided.

2.3. Gender and Transport Poverty

Transport poverty occurs when a household is forced to consume more travel costs than it can reasonably afford (Gleeson and Randolph, 2002). However, transport poverty can be experienced at the individual level rather than the whole household (Booth et al., 2000; Thagesen, 2004). For example, one household member may experience transport poverty whilst another member of the same household may not experience any transport poverty. In addition to this, transport poverty is particularly polarised between genders (Booth et al., 2000; Thagesen, 2004). For instance, poverty is the defining factor of mobility for women (Uteng, 2012). This affects females' life chances, as the cost of transportation to the city centre is vital in affecting women's entry into employment (Glick, 1999). Additionally, unaffordability to use any form of public transport leads to women returning home earlier due to safety concerns hence, losing out on employment opportunities (Uteng, 2012).

Active travel modes such as bicycles as well as rickshaws and para-transits are influential in the mobility of women. However, the main pricing strategy is focused on the peak hour demand with little consideration of gender differences in mobility. As such, pricing is a significant constraint in the movement of females in low and middle-income countries (Uteng and Turner, 2019). For example, in Ghana, 40% of road traffic accidents were reported involving pedestrians, with the majority being women (Damsere-Derry et al., 2017). This is because a larger portion of women constitutes pedestrians due to the unaffordability to use other modes of transport other than walking (Damsere-Derry et al., 2017). Salon and Gulyani (2010) investigated gendered variations of daily travels of females living in the slums of Nairobi, Kenya. They found that most of the population could not afford the travel cost of motorised transport options in the city and as such limited their travel outside of the neighbourhood by mainly using walking as the mode of transport. However, deeper analyses showed that women were significantly more affected by the travel costs compared to men (Salon and Gulyani, 2010). Therefore, this indicates that travel cost and gender differences are influential in explaining travel choices. Uteng and Turner (2019) also found that affordability is a significant constraint in the accessibility of public transport for low-income women. Free public transport, bicycles and other innovative solutions have been suggested to improve mobility for low-income women (Uteng and Turner, 2019). Additionally, comparative analysis in Navi Mumbai, India, revealed that economic

empowerment could result in a three to four-fold increase in the average women's mobility (Gupta and Sharma, 2000).

Lucas (2012) theoretical framework, Figure 3, illustrates that transport poverty arises due to the direct and indirect interaction of transport and social disadvantage. This transport and social disadvantage occur due to various factors, as shown below in Figure 3. Transport poverty leads to inaccessibility to life chances, social capital, social networks, goods, services and decision making (Lucas, 2012). This will eventually result in the social exclusion of an individual.

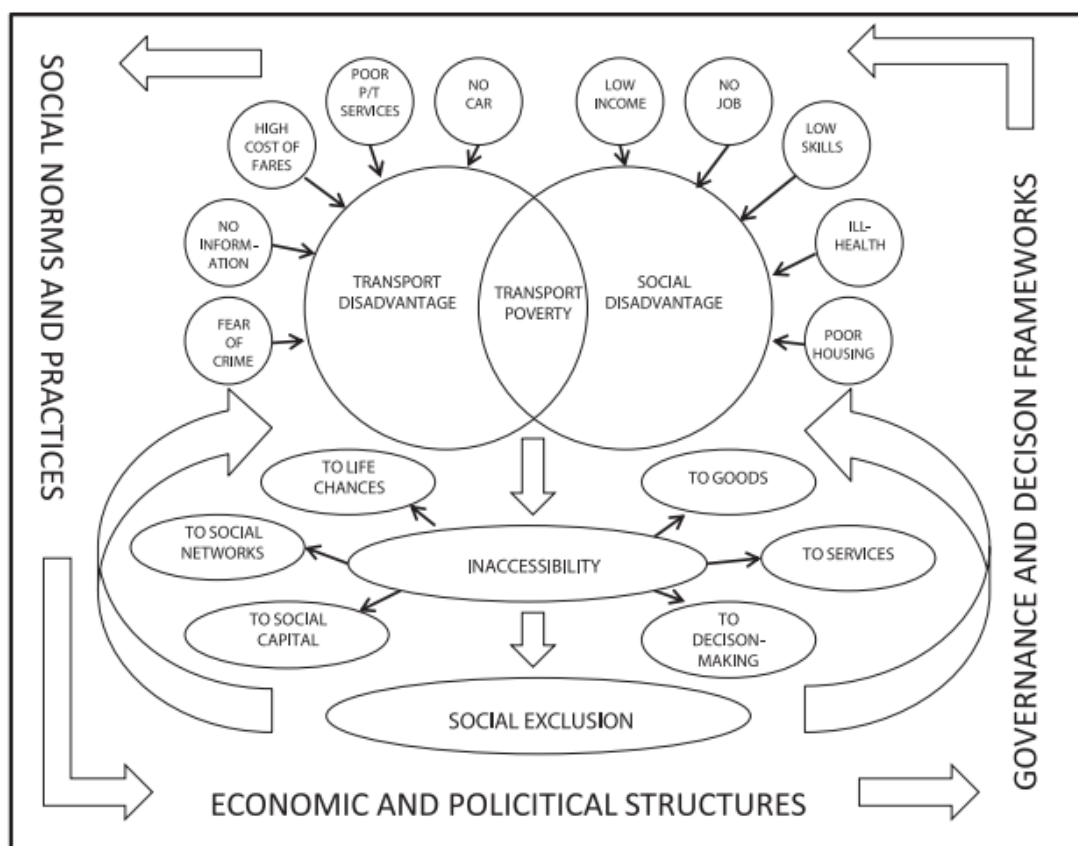


Figure 3. Diagram Showing the Relationship between Transport Disadvantage, Social Disadvantage, Transport Poverty and Inaccessibility (Lucas, 2012)

2.4. Gender and Transport Disadvantage

Transport disadvantage was discussed as early as 1973 by Wachs and Kumagai, whereby physical mobility in the US was identified as a significant contributor to social and economic inequality (Wachs and Kumagai, 1973). Following this, Banister and Hall (1981) stated that transport influenced social outcomes for different sectors of

society. This influence was due to the absence of adequate transport services and the impact of transport systems on both communities and individuals.

According to Poet et al. (2020), gender-based transport disadvantage has been glaringly evident in Sub-Saharan Africa. Transport disadvantage is strongly correlated with financial poverty; however, when combined with gender-based mobility constraints, transport disadvantage becomes more visible (Poet et al., 2020). Transport disadvantage interacts directly and indirectly with social disadvantage, which leads to transport poverty. This in turn, leads to inaccessibility, further leading to social exclusion (Lucas, 2012). On the other hand, Currie and Delbosc (2010) found that it is possible to be socially included but transport disadvantaged or to have good access to transport but socially excluded (Currie and Delbosc, 2010). This means that transport disadvantage does not necessarily always lead to social exclusion. Irrespective of this finding, transport disadvantage is highly associated with a lack of accessibility to goods and services, which can deteriorate the quality of life such as unemployment, difficult travel patterns, exposure to crime, poor education, lack of access to health centres and affordable food (Jennings, 2015). Hence, transport disadvantages should be at the forefront of policymaking. Structural drivers and conditions that contribute to transport disadvantage are discussed in the following sections.

2.4.1. Women have Limited Mode Choice

Lack of access to different transport modes is one of the factors that lead to transport disadvantages. Generally, women tend to have less access to different transport modes compared to men, especially in the Global South. Uteng (2009) investigated how the daily mobility patterns differ between men and women in the Norwegian immigrant community (Uteng, 2009). It was found that women were more dependent on public transport with a much lower level of car ownership and driving license. A similar pattern was found by Poet et al. (2020) in the context of SSA cities. Poet et al. (Ibid) explained that this was because women in SSA are more likely to be poor than men, and as such, women are more likely to walk and use public transport than men (Poet et al., 2020). In addition to this, low-income women in Norway were found to have a longer travel time, 84.5minutes per day, compared to their male counterparts, 79.8 minutes per day (Uteng, 2009).

Furthermore, Figures 4 & 5 also show that low-income men living in Norway have a broader time–distance interplay. In contrast, low-income women are more reliant on walking and public transport. Hence, low-income men are able to cover a wider geographical area, therefore, enabling men to have more access to opportunities such as employment. On the other hand, these findings may not apply to low-income individuals living in SSA cities, as lack of census data means there is a gap in the literature for gender differences in transport mode.

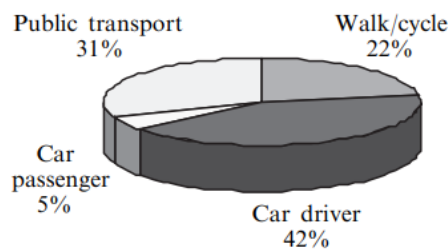


Figure 4. Modal Distribution for Low-Income Men in Norway (Uteng, 2009)

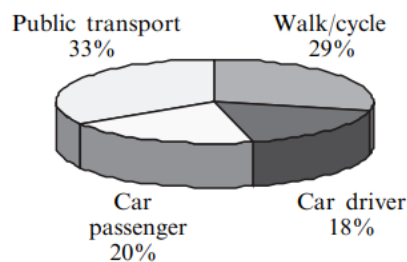


Figure 5. Modal Distribution for Low-Income Women in Norway (Uteng, 2009)

2.4.2. Gender and Personnel Security

Women’s perception of safety can influence their mode choice, whilst lack of safety can lead to a transport disadvantage. Fear of crime in South Africa was found to influence individual’s mode choices, distance and time of travel which impacts females more than males (Vanderschuren et al., 2019). In a separate study, Mathews (2017) identified women in South Africa as more prone to violence and harassment on public transport, hence influencing their options. This was found to have a detrimental effect on women’s willingness to travel, thus reducing their ‘right to the city’ (Mathews, 2017). Women’s level of harassment experienced differs in South Africa depending on the public transport used, with trains producing the highest level of harassment

(Vanderschuren et al., 2019). Figure 6 shows that women experience a broader type of harassment on trains in South Africa compared to men, Figure 7. Whilst, both men and women experienced mugging and pickpocketing, in contrast, women also experienced sexual and verbal harassment (Vanderschuren et al., 2019).

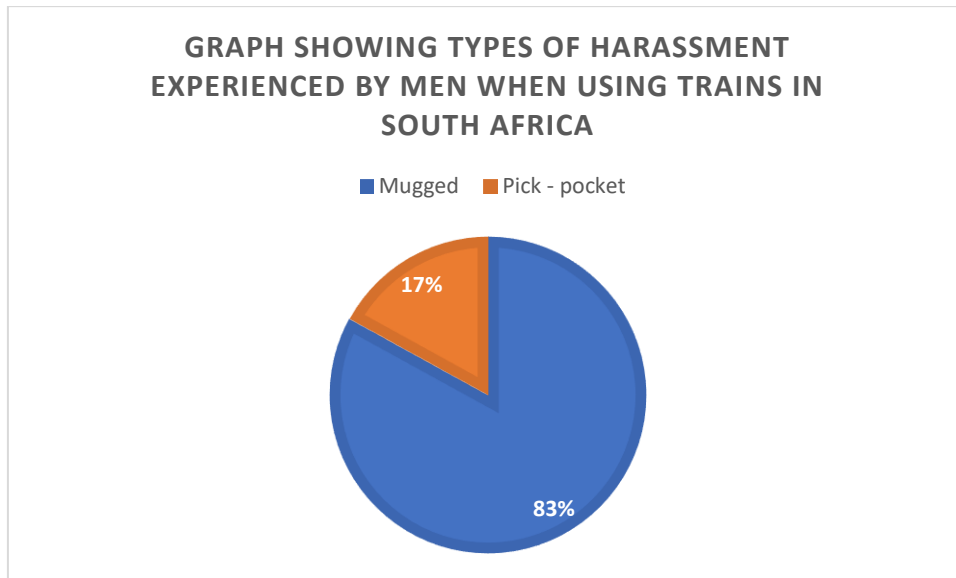


Figure 6. Types of Harassment Experienced by Men in South Africa when Travelling by Trains (Vanderschuren et al. 2019)

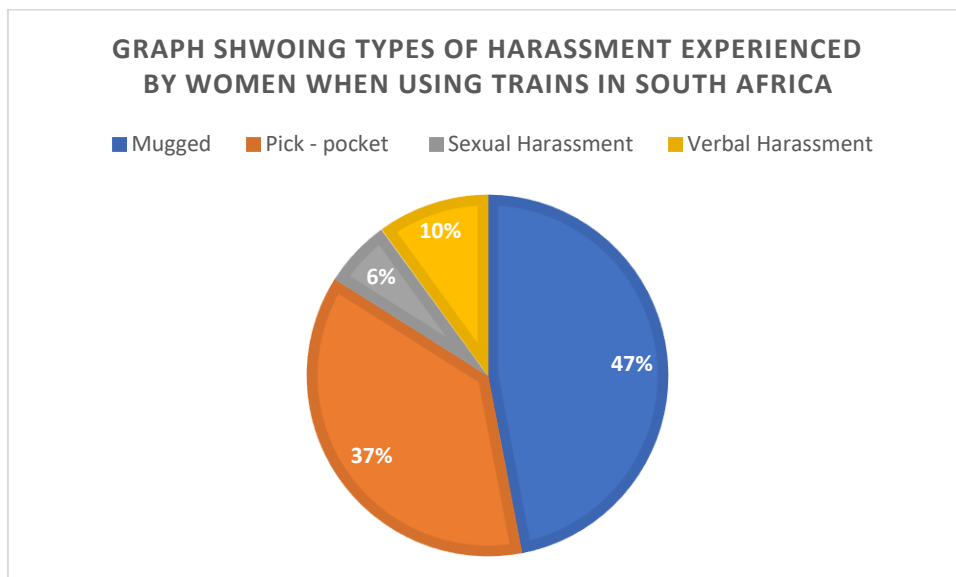


Figure 7. Types of Harassment Experienced by Women in South Africa when Travelling by Trains (Vanderschuren et al. 2019)

Vermaa et al. (2019) investigated young women's safety perception when travelling on a bus in Ahmedabad and Bangalore in India (Vermaa et al., 2019). It was found that if the bus stop was perceived to be safe, then individuals were also more likely to perceive themselves safe when travelling. Hence, this shows that the safety perception of women is influenced by the physical infrastructure and the travel experience. However, the research only focuses on two cities. It does not investigate if the safety issues are consistent in other cities as well as older women's perception of safety. Additionally, the study may not be applicable in the context of the Global South. Overall, it is vital to ensure that women feel safe when travelling to combat transport disadvantages due to gender differences.

2.4.3. The Impact of Poor Public Transport Services on Women

Public transport in SSA is dominated by privately operated vehicles known as paratransit. These include mid-sized city buses, minibuses, vans, mortised tricycles, motorcycles and bicycle taxis (Behrens et al., 2016). A higher proportion of women use paratransit such as boda bodas (motorcycle taxis) compared to men. However, women also take on the household travel burden, which means completing more frequent short travels. As such, they often face challenges such as, paying extra for baggage when travelling on paratransit (Behrens et al., 2016). Additionally, women are more impacted by fare increases and lower capacities on public transport than men (Jennings, 2020).

2.4.4. Gender and Walkability

Walking is the dominant form of mobility in Sub Saharan African cities due to poor infrastructure and topography (Oviedo et al., 2021). For example, 71% of all trips in Dakar, Senegal, are made by walking (Candiracci et al., 2010). On the other hand, local urban design in African cities is often focused on automobility resulting in precarious and unsafe walking conditions (Behrens, 2005; Pendakur, 2005). Therefore, African cities are essentially walking cities that are not walkable (Chege, 2019). Massingue & Oviedo (2021) investigated the influence of transport infrastructure on pedestrian behaviour in Maputo, Mozambique. It was found that walking was disproportionately used in terms of length and frequency by lower-income individuals. Additionally, women were found to adjust their walking habits around the time of day and location considered safest. This is because 80% of women walking alone felt at risk of theft or

sexual harassment (Massingue & Oviedo, 2021). Salon and Gulyani (2010) found that most people living in the slums of Nairobi walked. However, women and children were most affected (Salon and Gulyani, 2010). Oviedo et al. (2021) found that most male participants reported their walking experience in an informal settlement in Freetown, Sierra Leone, as overall pleasant. In contrast, over half of female participants reported their walking experience as unpleasant (Oviedo et al., 2021). The findings highlight that gender has a considerable influence on walkability issues. Women are generally associated with greater vulnerability and systemic disadvantage. Gender identity is related to the temporal dimension of access, hence reducing women's temporal window for walking and requiring strategies in doing so (Massingue & Oviedo, 2021).

2.5. Gender and Social Disadvantage

Both men and women tend to play different roles in society whereby some tasks are strictly viewed as men's work and others as women's work (Blackden and Bhanu 1999; World Bank 2001). Therefore, women, especially in Sub-Saharan Africa, are often socially disadvantaged in their accessibility and mobility. For example, studies in Durban, South Africa and Ibadan, Nigeria, have found that many more women than men are unemployed, working women have lower-paying jobs and are less likely to have job security compared to men (Venter et al., 2007; Abidemi, 2002). Additionally, childcare may be viewed strictly as women's responsibility, thus childcare obligations may require low-income women to seek employment closer to home compared to men (Chapple, 2001). In some cases, women who have young children tend to withdraw or reduce the amount of time they work in the labour market (Ilahi 2000).

Women also experience a higher level of time poverty due to the disproportionate household burden placed on them. Time poverty is influenced by many factors, including household composition, such as the number of household members, age, and dependents (i.e. children) (Blackden and Wodon, 2006). Social and cultural norms also play an essential role in the gender division of labour (Blackden and Wodon, 2006). In Tanzania, women were found to have a heavier workload compared to men (Mason and Khandker, 1997). In Uganda, girls were found to work 21.6 hours per week, whereas boys worked 18.8 hours a week (Ritchie et al., 2004). As a result, this prevents women from participating in income-generating activities as well as leisure activities. In

addition to this, time poverty, when combined with remoteness or long journeys, restricts women’s access to healthcare services (Porter, 2011).

2.6. New Theoretical Framework for Transport Poverty in SSA cities

The theoretical framework (Figure 3) shown in section 2.3 by Lucas (2012) explains the relationship between transport disadvantage, social disadvantage, transport poverty and how this can lead to inaccessibility. However, the framework was designed with a focus on cities in the Global North. Therefore, it may not apply to growing cities in the Global South. Previous research indicates that some of the factors contributing to transport disadvantage are not applicable in the context of growing SSA cities. Additionally, the theoretical framework neglects factors that may lead to social disadvantage in the context of the Global South. Furthermore, the theoretical framework was designed almost ten years ago and may not consider the current nuance in transport poverty. Considering the aforementioned factors, the following theoretical framework, Figure 8, based on Lucas (2012), is constructed.

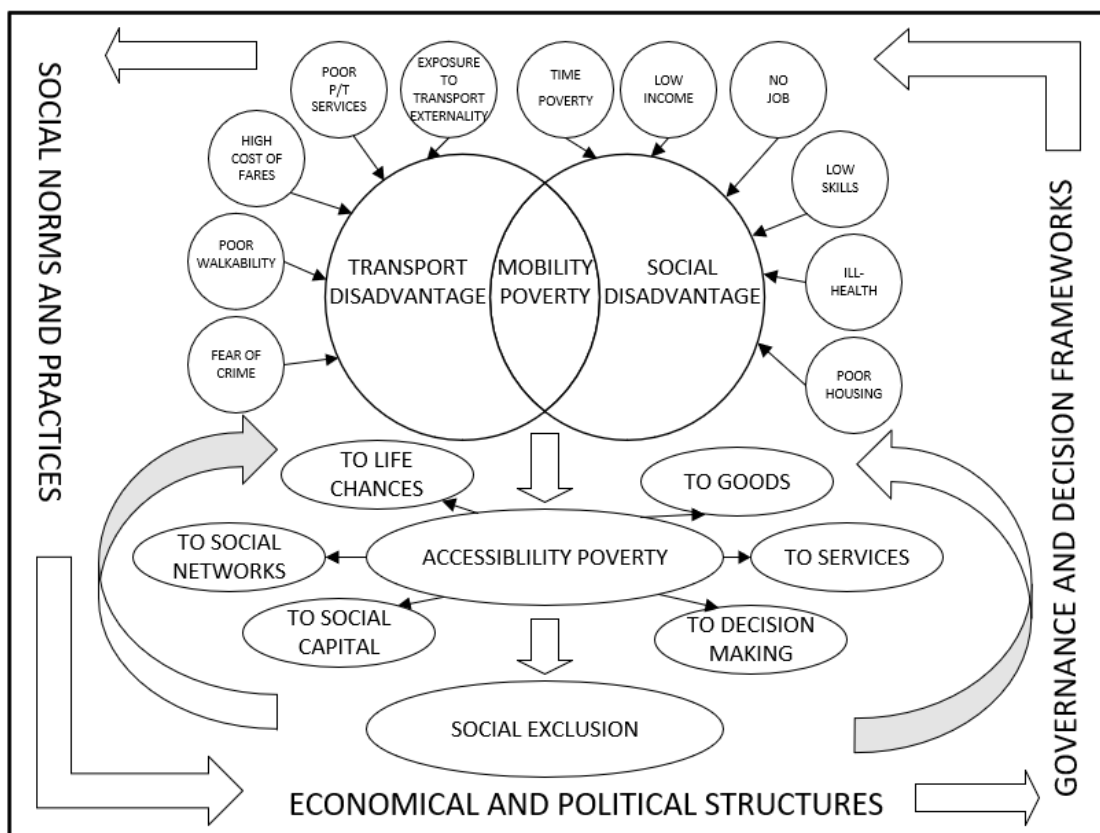


Figure 8. New Theoretical Framework for Transport Poverty in SSA Cities (Adapted from Lucas, 2012)

The theoretical framework (Figure 3) shown in section 2.3 by Lucas (2012) explains the relationship between transport disadvantage, social disadvantage, transport poverty and how this can lead to inaccessibility. However, the framework was designed with a focus on cities in the Global North. Therefore, it may not apply to growing cities in the Global South. Previous research indicates that some of the factors contributing to transport disadvantage are not applicable in the context of growing SSA cities. Additionally, the theoretical framework neglects factors that may lead to social disadvantage in the context of the Global South. Furthermore, the theoretical framework was designed almost ten years ago and may not consider the current nuance in transport poverty. Considering the aforementioned factors, the following theoretical framework, Figure 8, based on Lucas (2012), is constructed.

The following factors that contribute to transport disadvantage have been included in the new theoretical framework; ‘exposure to transport externality’ and ‘Poor walkability’ as shown in Figure 8. These factors were not contained in the previous framework by Lucas (2012). One reason for this could be due to cities in the Global North having good walkability infrastructure. In contrast, cities in the Global South tend to have poor walkability infrastructure, which is supported by extensive research (Massingue & Oviedo, 2021; Oviedo et al., 2021; Chege, 2019; Salon and Gulyani, 2010; Candiracci et al., 2010; Behrens, 2005; Pendakur, 2005). Additionally, ‘no car’ as a source of transport disadvantage from the initial Lucas (2012) framework (Figure 3, section 2.3.) has been replaced with ‘exposure to transport externality’ (Figure 8). This is because private car usage leads to a high level of pollution, congestion, and urban sprawl (among other negative externalities). This is supported by ongoing international research conducted by the T – SUM project (T – SUM, n.d.).

In terms of social disadvantage, the initial theoretical framework by Lucas (2012) neglects time poverty. However, numerous researchers have found in the context of SSA cities that time poverty influences people’s mobility, with women being more time impoverished (Jennings, 2020; Porter, 2011; Blackden and Wodon, 2006; Ritchie et al., 2004; Chapple, 2001; Ilahi 2000; Mason and Khandker, 1997). As such, time poverty has been included as a source of social disadvantage in Figure 8. The new theoretical framework (Figure 8) adapted from Lucas (2012) will be used to analyse the results in Chapter 4.

3. Methodology

3.1. Overview

The method used in this investigation consists of qualitative research to analyse focus groups. The focus groups were conducted by researchers working on the T – SUM project. Participants were given individual questionnaires before the focus group discussions. The anonymised transcripts of the focus groups and questionnaire results were then provided by the T -SUM project. This study analyses the provided data using thematic analysis.

Three neighbourhoods (Chamanculo, Muhalaze and Maxaquene) with different characteristics in Maputo, Mozambique, were investigated for gender-specific issues relating to transport poverty. Although all three neighbourhoods were analysed, however, specific focus was placed on the neighbourhood of Chamanculo. This is because two focus group transcripts were provided for this neighbourhood, categorised into male and female. Therefore, sampling in this neighbourhood enabled a clear distinction for gender-related issues. In contrast, the focus groups for the neighbourhoods of Muhalaze and Maxaquene had a mixed-gender sample.

This study implements thematic analysis by categorising the codes from the focus group transcripts into their corresponding themes. The themes were identified using an accessibility framework and placed in an Excel spreadsheet as a matrix format. A first-level code analysis then follows this to determine the themes influencing accessibility. Finally, a second-level coding was conducted by classifying the themes into practice, experience and attitudes. Figure 9 below shows an overview of the method.

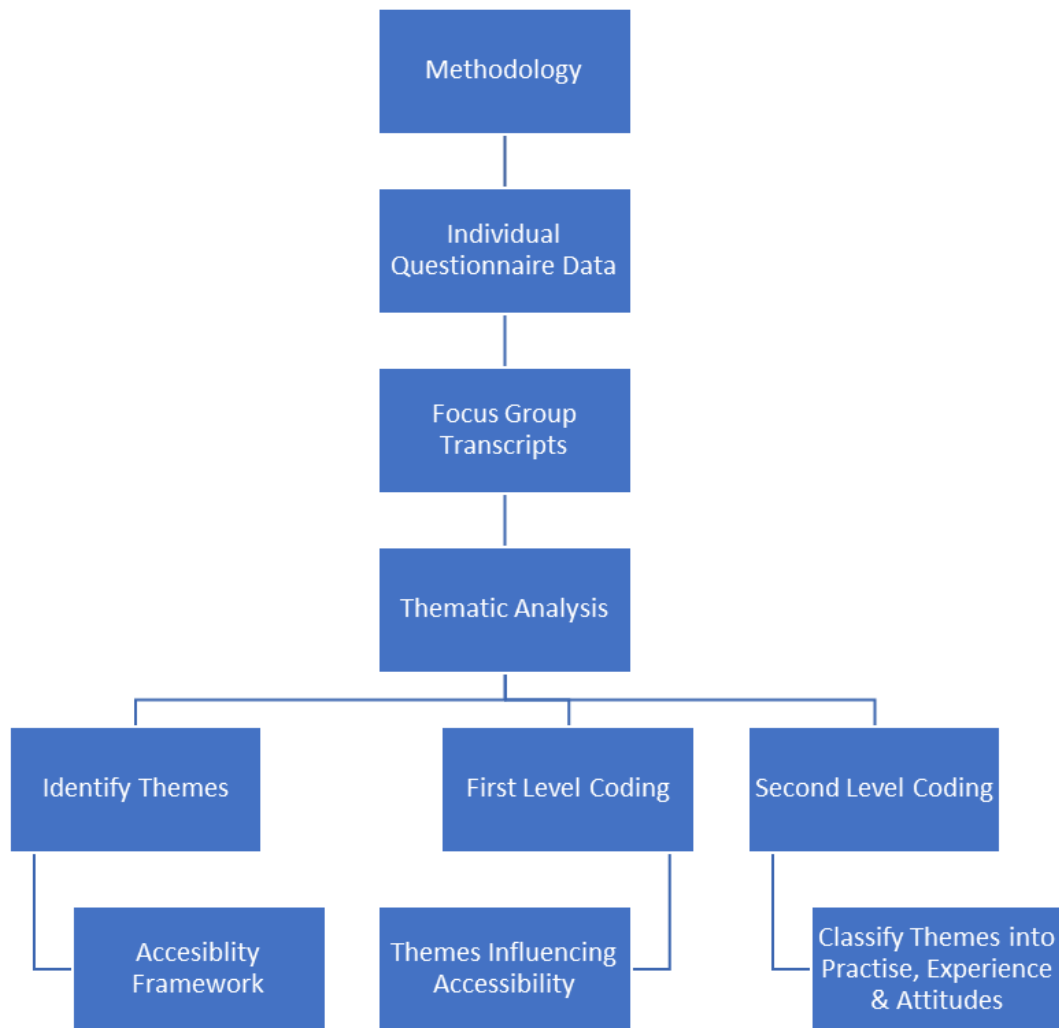


Figure 9. Overview of the Method

3.2. Background of Maputo

Maputo is the capital of Mozambique, with a country population of 28 million, of which 48% are men and 52% are women (National Institute of Statistics, 2017). Mozambique’s GDP grew by 4% in 2019, with Maputo contributing 20.2% (World Bank, 2021; Mariani, 2021). On the other hand, the Human Development Index has remained unchanged between 2018 and 2019, positioned at 180 (UNDP, 2021). As such, residents in Maputo still experience high poverty levels, with approximately 54% of the city’s residents living below the poverty line (Mariani, 2021). This high poverty level can be traced as far back as 1995, with 50% of the population in Greater Maputo assessed to be in absolute poverty (Schubert, 1995). Therefore, as was the case in the past, most residents in Greater Maputo are likely to suffer from transport poverty. This is a prevalent issue for residents living in Maputo, as transport accounts for the third

most monthly expenditure, at 12.5%, after housing at 31% and food at 20.7% (JICA, 2014).

Women were also historically found to experience high levels of poverty, which is a trend that is likely to have persisted to the present time. For example, under-employment rates of working men were 5% compared to women, which was at 15% (Jenkins, 2000). Hence, females in Maputo can be explicitly categorised as a transport disadvantaged group. Women in Maputo are often involved in street trading. For example, Schubert (1995) found that 50% of all economically active women participated in street trading (Schubert, 1995).

According to data collected in 2012, walking is the main mode of transport in Maputo (45.9%), followed by chapas (32.9%) and buses (9.2%), as shown in Figure 10 (JICA, 2014). Although car usage is rising in Maputo, however, car usage is significantly low, with only 4% of households owning one or more cars. When combined with taxi's the usage is at 10.2% (census data, 2017; JICA, 2012). Other modes of transport (i.e. train, boat and motorcycle) combined to 1.9% usage in 2014 (JICA, 2014).

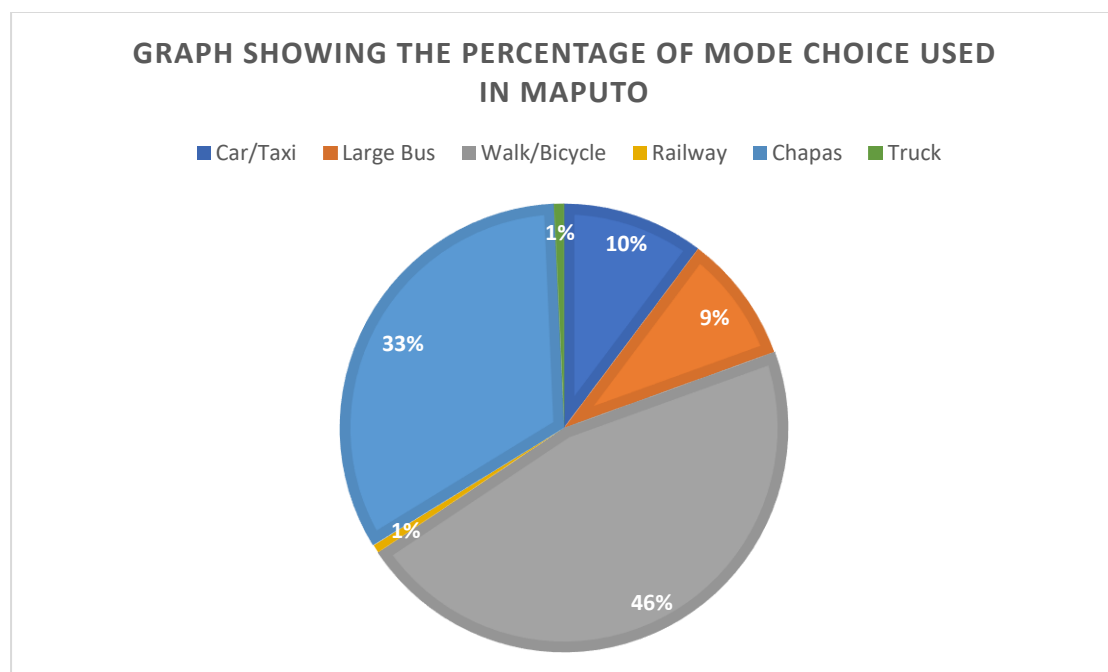


Figure 10. Modal Split in Maputo (JICA, 2014)

The bulk of Maputo’s public transport consists of paratransit’s (i.e. chapa’s), which are semi-informal transport. These are critical to transportation in Maputo, and public transport authorities have recognised them to be important to Maputo’s transport system (Klopp and Cavoli, 2019). Modal integration is the main issue for Maputo’s transport system without good connections between trains, chapa’s and buses. However, there are also other challenges specific to each transport mode. Table 1 below describes the main motorised modes of transport in Maputo and their associated challenges. In addition to this, Maputo has infrastructure issues such as lack of road infrastructure and poor road quality, which is constraining the transportation system (JICA, 2014). There are also safety concerns regarding pedestrian mobility, such as vehicles obstructing sidewalks and lack of facilities (e.g. guardrails) to protect pedestrians (JICA, 2014).

Transport Mode	Description	Challenges in using the Transport Mode
Chapas	<ul style="list-style-type: none"> • These are privately operated minibuses and account for approximately 60% of all motorised trips. • Initially was introduced due to the lack of capacity of public transport companies to meet the travel demand. • Together with ‘MyLoves’ are recognised as paratransit (informal transport). • 88% of the chapas are 15L (15 seats) and 12% of the chapas are 26L (26 seats). 	<ul style="list-style-type: none"> • Tend to operate along the more profitable routes therefore, areas with low demand are poorly served. • Operated based on “fill and go” system whereby vehicles depart at full capacity, creating long queues of passengers waiting to board. • The 15L chapas, due to their smaller size, can carry out more flexible manoeuvres however, these are often dangerous and illegal manoeuvres. • Mostly overcrowded. • License to operate on set routes.
MyLoves	<ul style="list-style-type: none"> • These are pick-up trucks (open vans) and informal. • Due to its high capacity and flexibility, it is mainly used in peri-urban 	<ul style="list-style-type: none"> • Not legalized (licensed) by the municipalities. • Lack of safety. • Poor personnel security.

	<p>neighbourhoods whereby accessibility is difficult hence, providing travel means for passengers from the most remote neighbourhoods.</p> <ul style="list-style-type: none"> • Mainly operate during the peak hours as feeders for large bus stops and terminals. 	<ul style="list-style-type: none"> • Usually overcrowded.
Buses	<ul style="list-style-type: none"> • Accounts for about 17% of motorised trips. • Most buses are operated publicly however, a small number are operated on a public – private agreement. 	<ul style="list-style-type: none"> • Publicly operated buses tend to operate within the same areas as chapas hence creating direct competition with chapas. • Some of the older vehicles are unserviceable due to a backlog of maintenance hence, the full fleet size is often not in operation.
Trains	<ul style="list-style-type: none"> • There are three railways in operation which accounts for approximately 1% of motorised trips. • Although the number of passengers using trains is increasing, however, its primary purpose is transporting freight. 	<ul style="list-style-type: none"> • The small number of operations means that the level of service is low. • Lack of service results in overcrowding.

Table 1. Description and Challenges of Motorised Trips in Maputo (JICA, 2014)

3.2.1. Justification of Maputo as a Case Study

Maputo provides a compelling case study in exploring the relationship between gender differences and transport disadvantages. This is because Maputo provides a good representation of the challenges and opportunities that growing Sub – Saharan African cities may experience. For example, like many other growing cities in the Global South, Maputo is experiencing rapid population growth in urban areas with decreasing population growth in rural areas (Figure 11). In addition to this, Maputo’s GDP per Capita is projected to increase by 2.3 times between 2012 to 2035 (JICA, 2014). This is similar to many parts of Africa, with average annual growth of 3.9% from 2022 (Africa’s economic growth in a new global context, 2021). However, this growth in GDP is often associated with an increase in private vehicle motorisation, which can

lead to various negative externalities. For instance, Maputo’s car ownership is expected to increase by 1.5 times between 2012 to 2035 (JICA, 2014). In Maputo, like many other growing African cities, the mobility patterns of women are not taken into account when it comes to policy decisions. Therefore, Maputo provides a good representation of the transport issues experienced by women in growing Sub – Saharan African cities. Research into this case study can enable policymakers to better understand the approaches required in achieving inclusive mobility in growing cities in the Global South. For example, it can aid in achieving the Sustainable Development Goals target 11.2, which states, “by 2030, providing access to safe, accessible, and sustainable transport systems for all” (United Nations Sustainable Development, 2021).

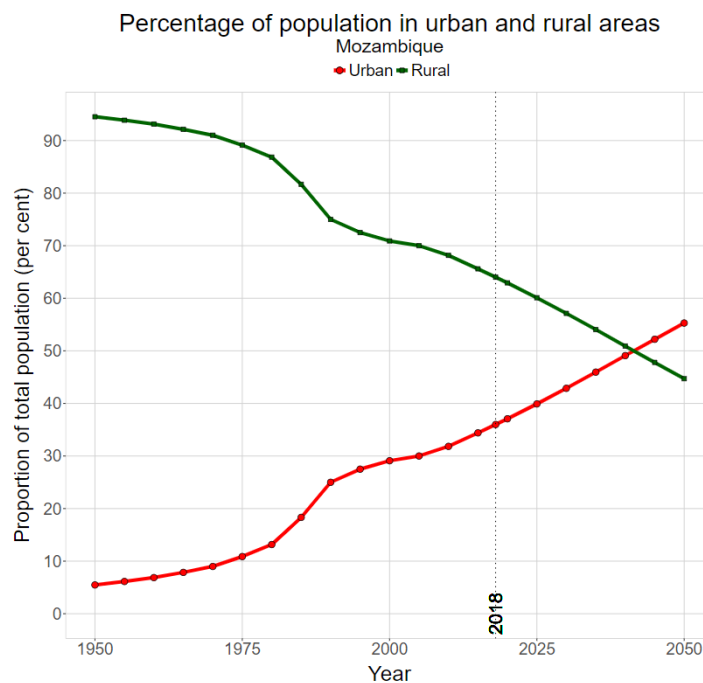


Figure 11. Population Pojection in Urban and Rural Areas in Mozambique (World Urbanization Prospects - Population Division - United Nations, 2021)

3.2.2. Study Location

This investigation analyses focus group transcripts in three different neighbourhoods (Table 2). Each neighbourhood has a different characteristic based on the criteria for study area selection, outlined below.

1. Low income neighbourhood with low levels of motorisation and poor access to the city’s main areas of activity due to distance and access to public transport.

2. Low - Medium income neighbourhood with increasing levels of motorisation, long distance to the city's main areas of activity and poor access to public transport.
3. Medium income neighbourhood with increasing levels of motorisation, mid/short distances to the city's main areas of activity and better access to public transport.

Focus Group Reference Number	Location	Income Levels	Levels of Motorisation	Access to Public Transport	Distance to the town centre
1	Chamanculo	Low - Medium	Low but increasing	Moderate	Short
2	Chamanculo	Low - Medium	Low but increasing	Moderate	Short
3	Maxaquene	Medium	Low but increasing	Moderate	Medium
4	Muhalaze	Low	Low	Poor	Long

Table 2. Characteristics of Each Neighbourhood

The study location, including the three different neighbourhoods, are shown on the maps below.

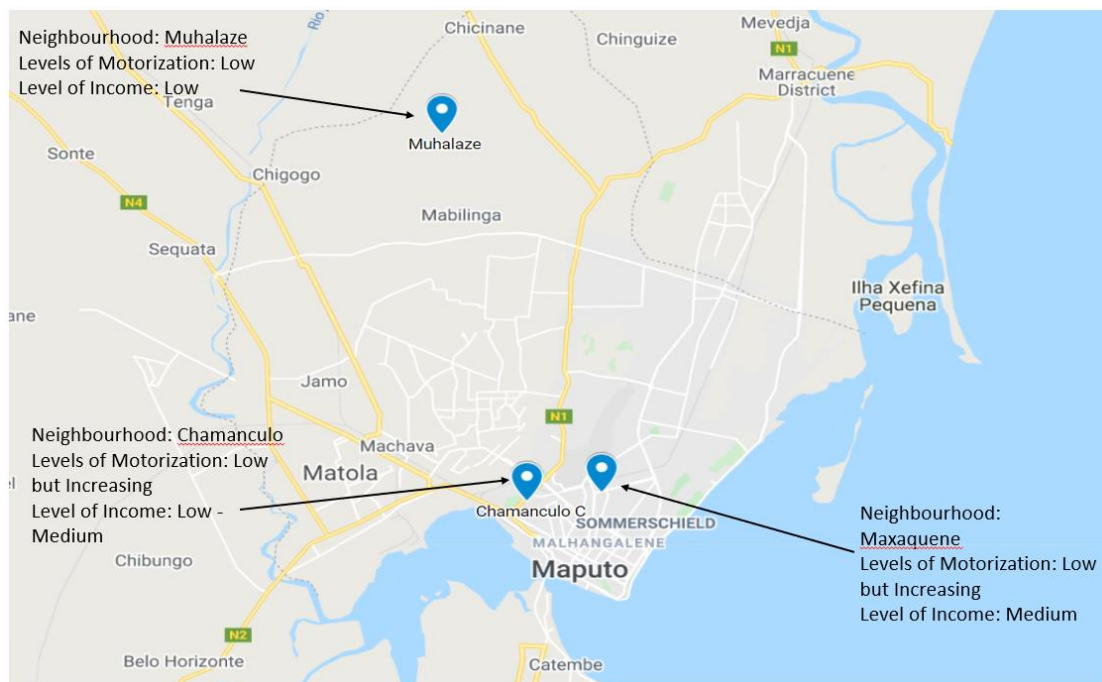


Figure 12. Map Showing the Study Location of the City of Maputo, including the 3 Different Neighbourhoods (Google Maps, 2021)

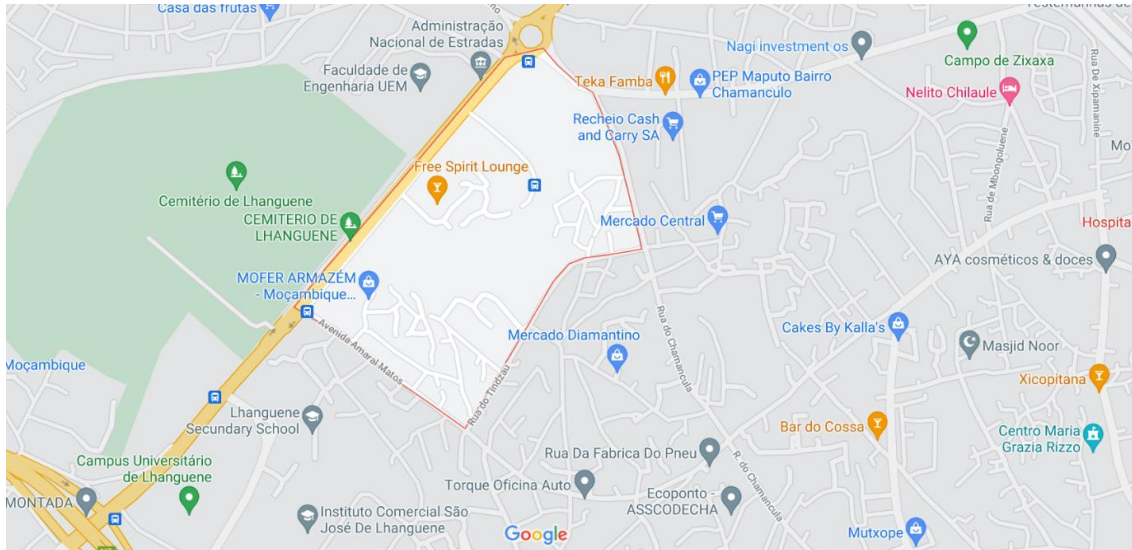


Figure 13. Map Showing the Neighbourhood of Chamanculo (Google Maps, 2021)



Figure 14. Map Showing the Neighbourhood of Maxaquene (Google Maps, 2021)

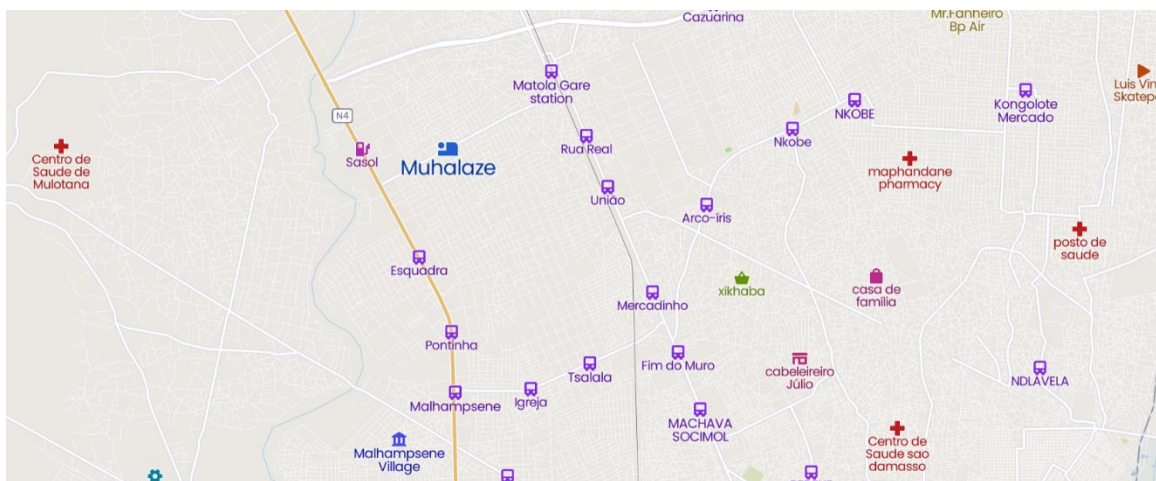


Figure 15. Map Showing the Neighbourhood of Muhalaze (Mapcarta, 2021)

3.2.3. T – SUM Project

Focus group workshops were carried out by researchers working on the T-SUM project in Maputo, Mozambique. T – SUM (Transition to Sustainable Urban Mobility) project is an interdisciplinary project that aims to identify the conditions under which sustainable and inclusive transport and land use development can be achieved by growing cities in the Global South, taking Freetown and Maputo as case study cities (T - SUM, n.d.). Two parallel pilot studies were conducted in Maputo, Mozambique and Freetown, Sierra Leone. In Maputo, the T – SUM project works as a collaborative project with the Metropolitan Transport Agency (AMT), the Observatory of Mobility and Transport (OMT) and the Eduardo Mondlane University Foundation (FUEM) in identifying the characteristics, dynamics and challenges of the current urban and mobility trends in the Maputo Metropolitan area (T – SUM, n.d.).

3.3. Qualitative Methods and Analysis

Qualitative investigation involved the analysis of individual questionnaires and focus group transcripts using thematic analysis. The focus groups were conducted by researchers working on the T – SUM project. This investigation analyses the focus group data.

3.3.1. Focus Groups: A Justification for the Method

Focus group workshops were held by the T – SUM Project to investigate different topics relating to mobility and accessibility. However, this study will focus on identifying gender issues relating to transport poverty by analysing the focus group transcripts.

Focus groups allow underlying meanings and understandings to be discovered in social research, in this case, about gender, transport and social disadvantage and transport poverty (Bryman, 2016). This method was used to facilitate discussions between participants whilst enabling the opportunity to probe further about specific views. This is particularly useful in establishing the “why” element, which is often difficult to obtain through alternative methods. In addition to this, focus groups enable participants to challenge each other’s views through the process of arguments hence the perspective

of participants becomes clear (Bryman, 2016). This would not be possible through other methods such as interviews and questionnaires.

On the other hand, there are some limitations to using focus groups that need to be considered when analysing the results. Firstly, there may be dominant participants overpowering the discussions. This may lead to disproportionate influence on the group. Secondly, it is not necessarily clear if the views are that of the individual or whether the perspective is that of the cultural norm (Bryman, 2016). Furthermore, the findings may not be representative of the whole population due to the small number of participants. The method can also be impractical due to the intense resource requirement in organising and analysing transcripts (Bryman, 2016).

3.3.2. Sampling

Sampling consists of focus group discussions in three neighbourhoods: Chamanculo, Maxaquene and Muhalaze. Although this study analyses all three neighbourhoods, however, emphasis is placed on the neighbourhood of Chamanculo. This is because two focus group transcripts are provided for this neighbourhood categorised into male and female participants. As such, the neighbourhood of Chamanculo provides a clear distinction of gender-related issues for transport poverty. On the other hand, the neighbourhoods of Maxaquene and Muhalaze each had one focus group session with a mixed-gender sampling. Irrespective of this mixed-gender sample, analysis of these neighbourhoods were conducted, as they may still provide explanations for gender and transport poverty issues. All focus groups had a mix of age, ethnicity and occupation, shown below in Table 3. In addition to this, participants lived in their respective neighbourhoods for various lengths of time.

Focus Group Reference Number	Location	Gender	Number of Participants	Age	Number of Years Lived in the Neighbourhood
1	Chamanculo	Female	9	23 – 56	23 – 50
2	Chamanculo	Male	10	18 – 65	0.5 – 10
3	Maxaquene	Mix 5 Male 6 Female	11	19 – 61	5 – 20
4	Muhalaze	Mix 8 Male 7 Female	15	20 – 43	0.5 – 10

Table 3. Sample Information

3.3.3. Conducting the Focus Groups

There was a total of 4 focus groups, consisting of 8-12 participants per focus group. This range of 8-12 participants is similar to the range suggested by Bryman (2016) of 6-12 participants.

During the focus groups, participants were encouraged to discuss issues relating to mobility and accessibility related to:

- Behaviours and practices
- Rationales and motivations
- Expectations and suggestions related to policy and practices

Focus groups were conducted by the T-SUM project, two researchers were present on behalf of T-SUM. Prior to each focus group discussion, participants completed individual questionnaires (Appendix A). During the focus discussions, the researchers occasionally intervened at opportunities whereby participant views could be further explored. The researchers also led the participants onto the next questions due to discussions stalling, losing focus or time constraints. The topic guide and questions asked in the focus group workshops are shown in Appendix B. All focus groups were recorded, and transcripts were produced for each of them.

3.3.4. Thematic Analysis: A Justification for the Approach

Thematic analysis is commonly used in qualitative research to analyse focus groups (Braun and Clarke, 2006). There is a range of benefits in using thematic analysis for this research. Thematic analysis is advantageous for examining the perspective of focus group participants by highlighting similarities and differences as well as, identifying unanticipated insights (Braun and Clarke, 2006). In addition to this, thematic analysis enables a rich and detailed account of qualitative data whilst allowing the key features of the data to be summarised (King, 2004).

On the other hand, there are limitations in using thematic analysis. The researcher's views may affect the validity of the thematic analysis by influencing the results to become a more desired outcome (Javadi and Zarea, 2016). Therefore, the researcher should avoid bias when conducting a thematic analysis. Furthermore, the output

obtained from a thematic analysis is dependent on the quality of information input, and coding requires interpretation which affects the objectivity (Bryman, 2016). These limitations will be controlled in this study by ensuring that personal inferences and specific judgements on the research findings are avoided. Research findings will be interpreted based on the explicit and latent content of the transcribed data.

3.3.5. Conducting Thematic Content Analysis

Transcripts from the focus groups were analysed using thematic content analysis (TCA). This was implemented using the following four steps:

3.3.5.1. Preparation for Coding

The first step was familiarising with the data by reading the focus group transcripts. As Braun and Clarke (2006) described, this step can aid in better understanding the data and identifying patterns relating to the research aim.

3.3.5.2. Identifying the Themes

The core emergent themes were identified using a theoretical framework. In this investigation, the accessibility framework shown below in Figure 16 was used. One advantage of using a theoretical framework is that it prevents overlapping themes (Bryman, 2016). The accessibility framework in Figure 16 contains six core themes in total.

3.3.5.3. First Level Coding

The themes were organised in an Excel spreadsheet within a matrix format. Although specific software programmes for qualitative analyses are available, an Excel spreadsheet with a matrix of the themes and sub-themes was sufficient in this investigation. This is because software programmes are helpful tools when analysing extensive transcribed data however, in this research, the data was at a manageable level.

In the first level coding, the focus group transcripts were analysed, and the codes were placed in their corresponding themes. Once all codes were categorised into their themes, the next step was to summarise the key findings for each theme. This enabled

patterns of themes to be identified such as the themes influencing accessibility. In addition to this, the themes affecting gender related issues were identified.

3.3.5.4. Second Level Coding

In the second level coding, all the codes were re-coded in their respective themes. Similarly to the first level coding, the themes and sub – themes were organised using an Excel spreadsheet in a matrix format. However, this time, the themes were further categorised into practice, experience and attitudes. The key findings for each theme was then summarised.

This stage enables individuals' practices and experiences living in their neighbourhood to be identified and how this influences their attitudes towards accessibility. Furthermore, this stage also enables a clearer distinction of gender related issues, as differences in the attitudes of male and female participants are discovered.

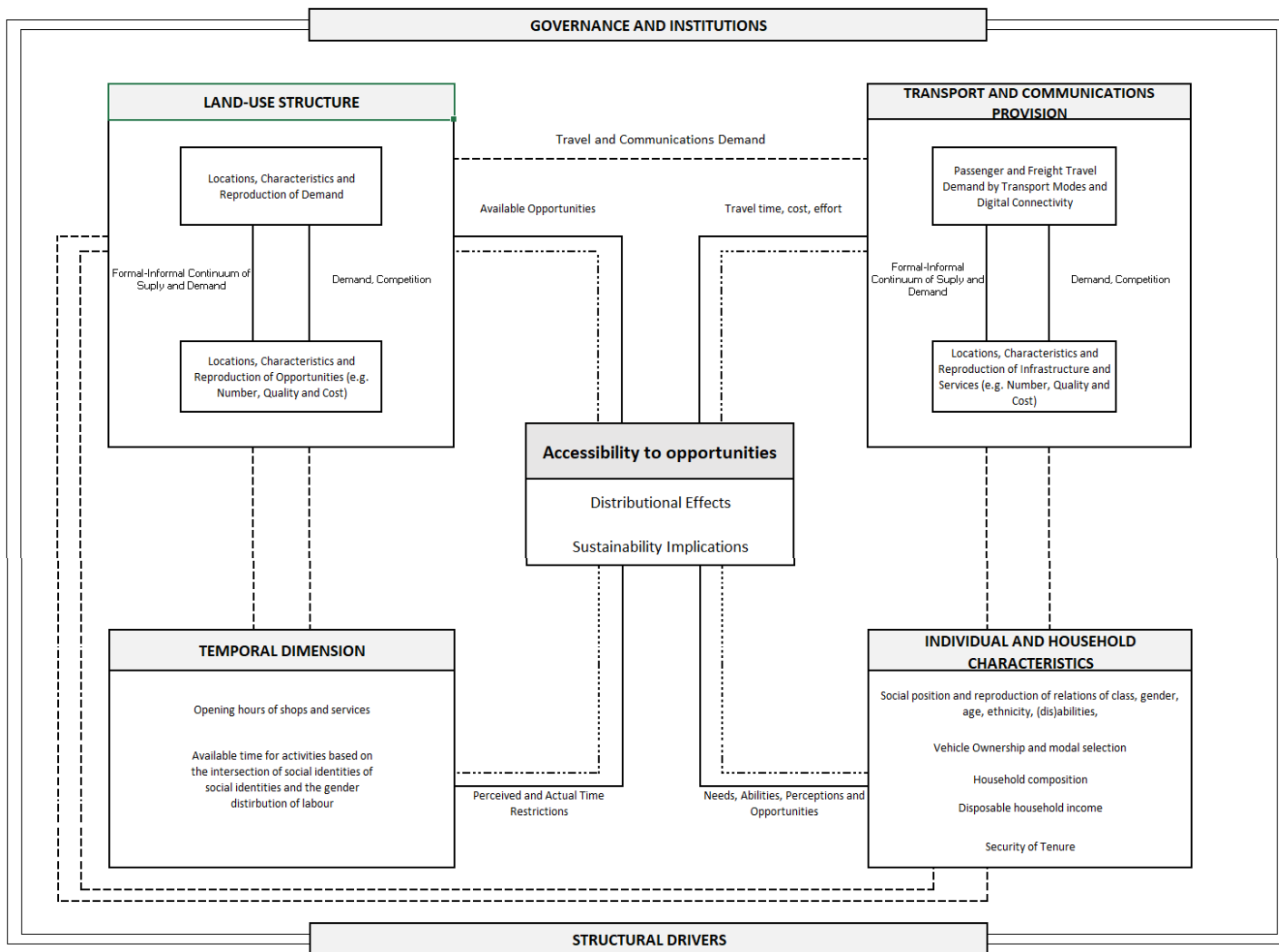


Figure 16. Accessibility Framework

3.4. Ethical Considerations

Prior to undertaking qualitative research, ethical approval was obtained by the T-SUM project to conduct the focus groups and share anonymised versions of the focus group data. Although the data is anonymised the following ethics, data protection and GDPR protocols are applied:

- Only use trusted computers and Wi-Fi networks.
- Password protect working computers.
- Protect working computers (use F-secure as provided by UCL).
- Only view and store the documents via UCL's OneDrive.
- Do not share the data.

Additionally, the ethics and data protection protocols highlighted in the UCL ethics lecture are applied throughout the research project. All data was collected and stored in accordance with the Data Protection Act 1998.

4. Results and Discussion

4.1. Introduction

The results of the individual questionnaires and focus groups are discussed in Chapter 4. The first part will involve exploring gender differences relating to transport poverty. Next, gender-neutral sources of transport poverty are identified. Finally, the inaccessibility issues directly arising from transport poverty is discussed. The adapted Lucas (2012) framework of transport poverty described in Chapter 2, section 2.6, will be applied to explain the findings.

4.2. Focus Group and Individual Questionnaire Analysis

The results from the individual questionnaires illustrate significant differences in the main activities, mode choices and frequency of travel outside of their neighbourhood for male and female participants. Whilst the focus groups results show 3 key findings of gender differences in terms of their location of main activity, participation in non – income generating activities and temporal dimension of travel.

4.2.1. Main Activity

Men were found to have a diverse range of main activities compared to the female participants. Informal trade was the most common main activity for the female participants, with trades being the main activity for 4 of the 9 female participants in the neighbourhood of Chamanculo (Figure 17). This finding is supported by research conducted by Schubert (1995), whereby 50% of all economically active women were found to participate in street trading (Schubert, 1995). In contrast, the main activity of men was found to be diverse, as shown in Figure 18. Moreover, women had a higher rate of unemployment, with 3 of the female participants being unemployed. Overall, the results demonstrate that women are socially disadvantaged due to unemployment and low income.

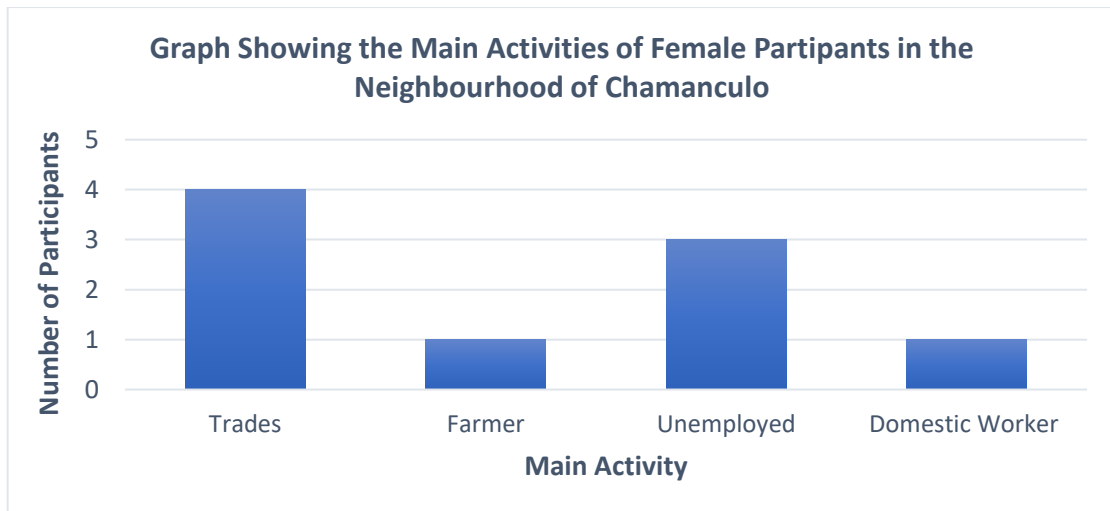


Figure 17. Women in the Neighbourhood of Chamanculo Main Activities

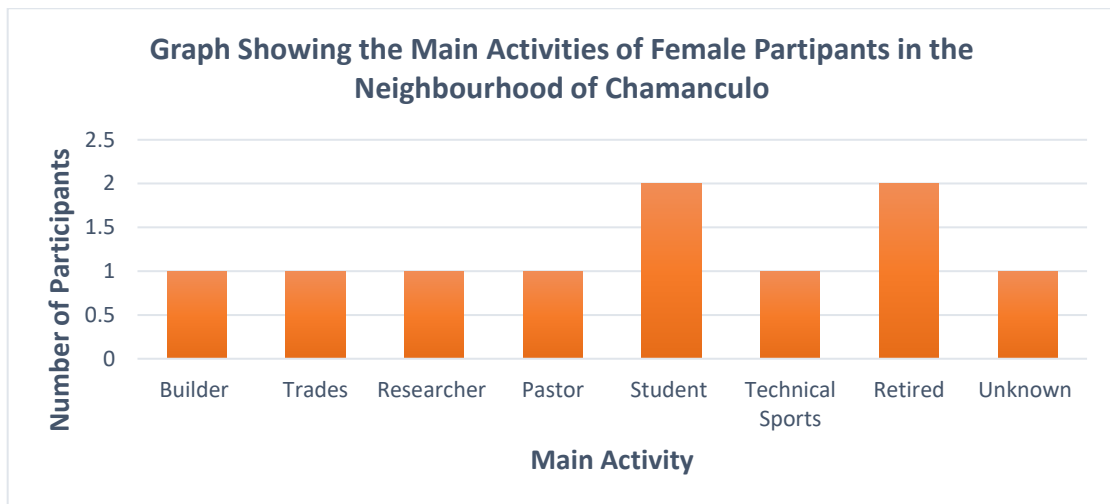


Figure 18. Men in the Neighbourhood of Chamanculo Main Activities

4.2.2. Mode Choice

The individual questionnaires show that men have a diverse set of mode choices, whereas women mode choices were limited. This finding was consistent in all 3 neighbourhoods. In Chamanculo, the female participants' transport mode was only limited to chapas and walking, Figure 19. In comparison, the transport modes used by the male participants extended to large buses, trains and individual vehicles, Figure 20.

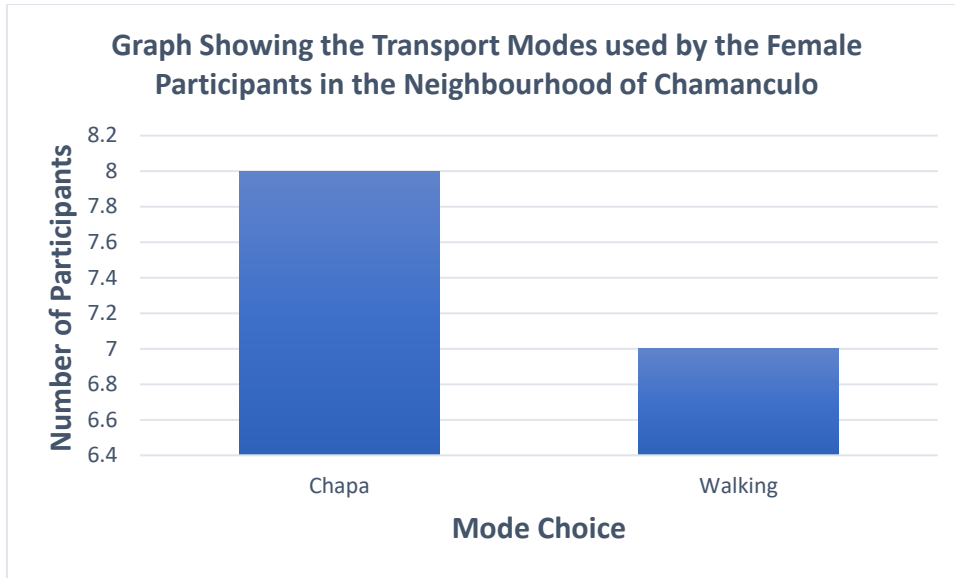


Figure 19. Women in the Neighbourhood of Chamanculo Transport Mode

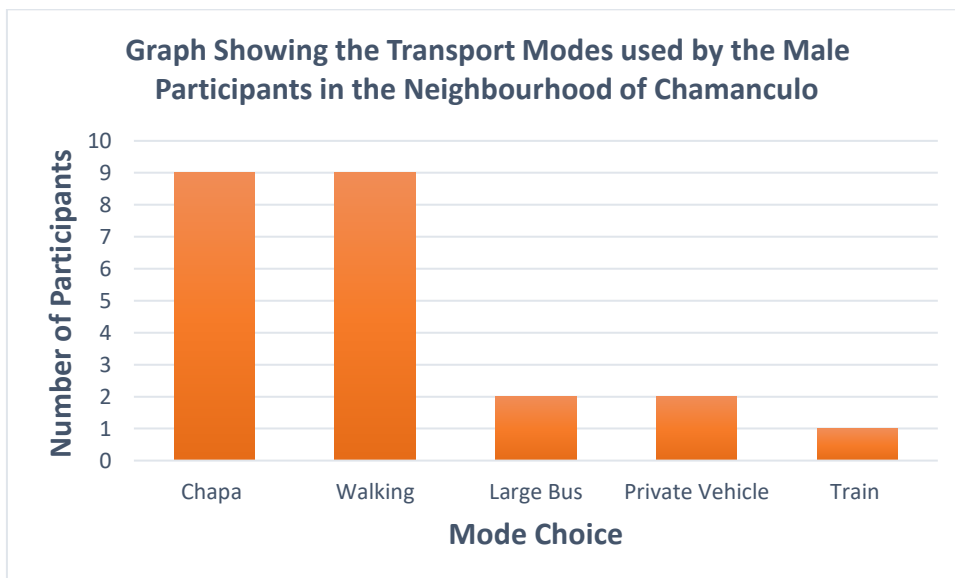


Figure 20. Men in the Neighbourhood of Chamanculo Transport Mode

Similarly to the neighbourhood of Chamanculo, women in the neighbourhood of Maxaquene transport mode is also limited to only chapas and walking (Figure 21). On the other hand, the transport modes used by the men in the neighbourhood of Maxaquene includes chapas, walking, large buses, trains, bicycles and private vehicles (Figure 22). Hence, this further signifies the extent to which men have a diverse set of transport modes whilst women transport options are limited.

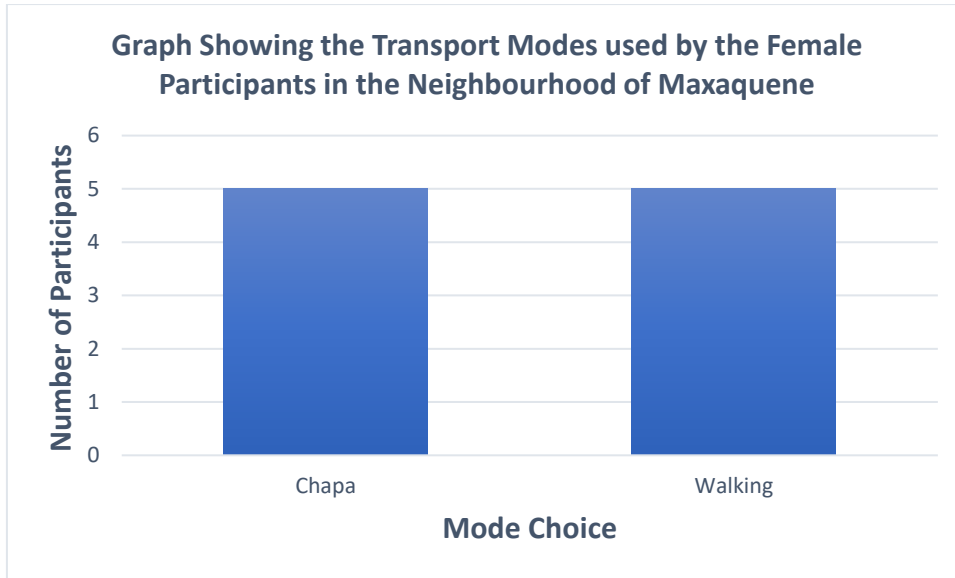


Figure 21. Women in the Neighbourhood of Maxaquene Transport Mode

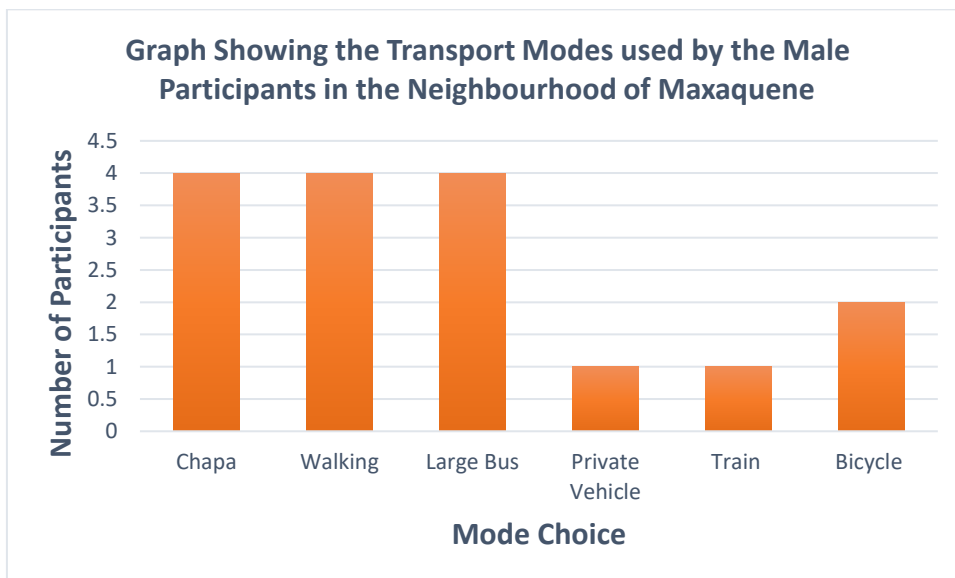


Figure 22. Men in the Neighbourhood of Maxaquene Transport Mode

Contrary to the neighbourhood of Chamanculo and Maxaquene, women in the neighbourhood of Muhalaze have more diverse transport options. Women's transport modes in Muhalaze extend beyond chapas and walking and include large buses and Mylove (Figure 23). However, this may be due to the characteristics of this neighbourhood, as it is a more rural neighbourhood with a long distance to the town centre. Hence, people in the neighbourhood may require using more transport modes to reach their destination. On the other hand, men in the neighbourhood of Muhalaze use a wider set of transport modes than women, with 2 of the male participants using private vehicles (Figure 24). Overall, the

findings from the individual questionnaire for all 3 neighbourhoods emphasises the degree to which women transport modes are limited. This finding coincides with previous research conducted whereby women in the Global South were found to have limited transport modes compared to men (Poet et al., 2020). The gender difference of this finding is explained in sections 4.2.4 and 4.2.5.

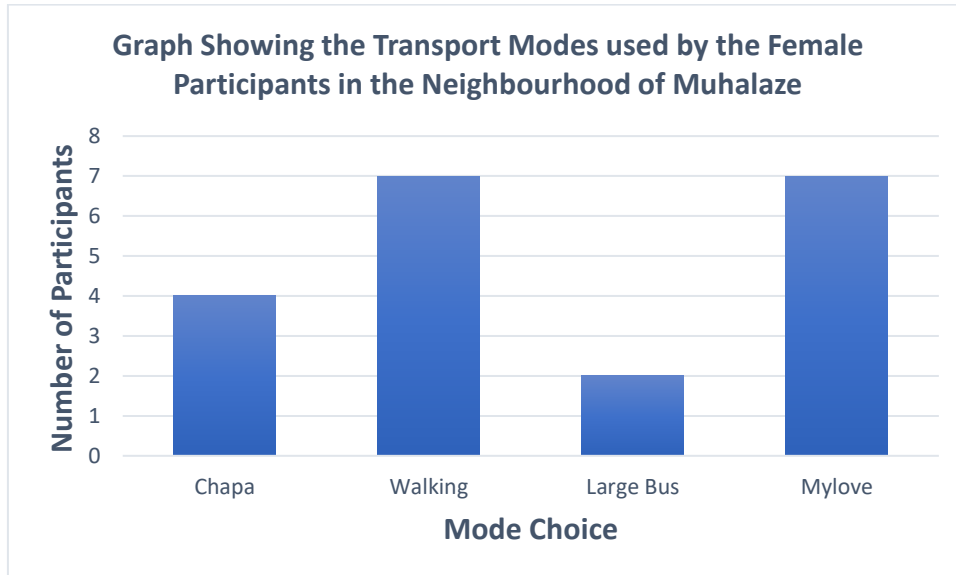


Figure 23. Women in the Neighbourhood of Muhalaze Transport Mode

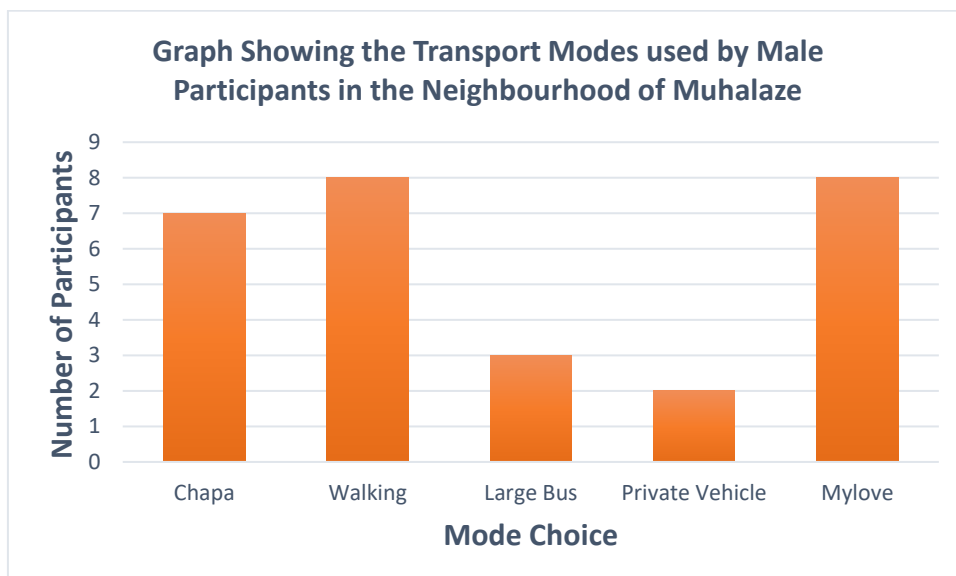


Figure 24. Men in the Neighbourhood of Muhalaze Transport Mode

4.2.3. Frequency of Travel Outside the Neighbourhood

The individual questionnaire shows that, on average, men tend to travel outside of their neighbourhood more frequently than women. Figure 25 shows that the average frequency of travel outside of the neighbourhood is smaller for the female participants compared to the male participants in all 3 neighbourhoods. Overall, the results demonstrate in terms of travel that men cover a wider geographical location than women. Possible explanations for this discrepancy is explained in section 4.2.4 and 4.2.5.

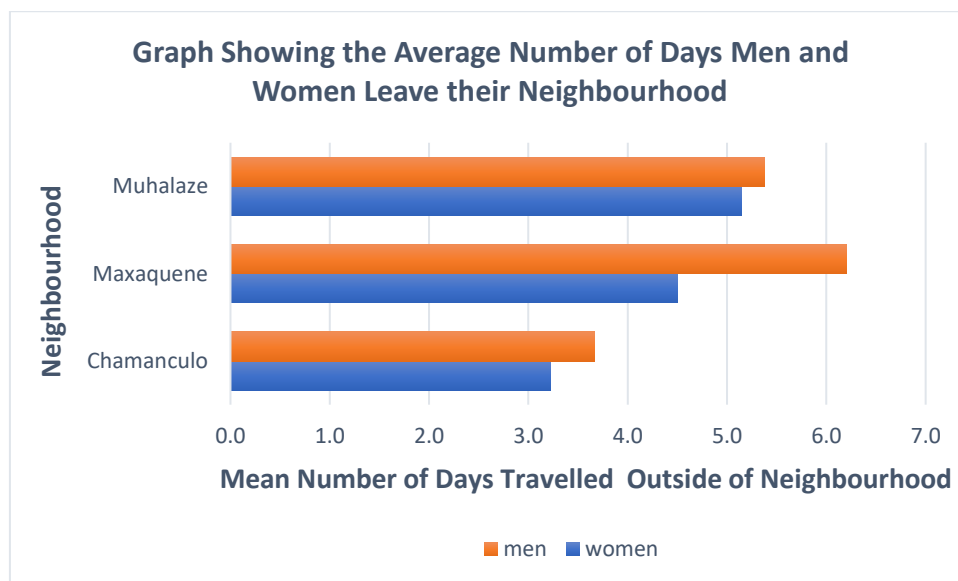


Figure 25. Frequency of Travel Outside of the Neighbourhood for Men and Women

4.2.4. Poor Public Transport Services

One possible reason for the gender difference in transport mode could be due to women being transport disadvantaged due to poor public transport services. For instance, as described in section 4.2.1, most women work in informal trade, and as such, they often travel with a load. However, it was highlighted by the female participants that overcrowding in public transport means that they are not allowed to board with a load, hence resulting in them walking to or from their main activity.

“Go on chapa, come back by foot. We come back by foot because chapeiros do not accept the load that we have. We return sometimes from txova or carrying because when you have a load, they no longer accept it, they want someone like that without a load that won't take up space.”

(Chamanculo – female)

“You have a package they won't let you, yes, you end up walking.”

(Chamanculo – female)

“And when you have a little package, you don't get in the chapa, they don't let you”

(Chamanculo – female)

Moreover, the mobility of pregnant women is severely constrained due to poor public transport services, which potentially limits women's transport mode and frequency of travel outside of their neighbourhood. This was a substantial issue discussed in all neighbourhoods and was even highlighted by the male participants in the neighbourhood of Chamanculo. One of the male participants stated that although there are priority seats in public transport (i.e. buses and trains) for specific groups such as pregnant and elderly people, however, these reserved seats are often occupied by passengers and not given to those specific groups.

“when I was younger the Bus was the only place where we had to give up chair to the older, pregnant women, but nowadays it does not happen, and it is normal in a Bus or TNS³, “smartkika” that he was saying where a pregnant woman comes in they look at you and then in the TPOMs train chairs for pregnant and elderly women but they say lady it was not who got you pregnant look you got the belly where you got it, stand up.”

(Chamanculo – male)

“A young college student, I said I wanted to give the space to my wife who is with a baby on her lap and answered am I the father? But he sat in the chair reserved for our pregnant or woman pregnant or with baby on his lap and so I do not like PMS.”

(Chamanculo – male)

In the neighbourhood of Maxaquene, participants highlighted that transport does not reach some neighbourhoods, which means walking a long distance to reach that destination. However, this issue was identified to be more onerous in the mobility of pregnant women.

“but also speaking of mobility for example to reach the Maxaquene D neighbourhood which is the other. On the other hand, in terms of transport, the fat people, pregnant because the transport doesn't get there or we have to go a long way to get there.”

(Maxaquene)

Pregnant women's mobility tends to be more severely impacted in the neighbourhood of Muhalaze. This may be due to the characteristics of this neighbourhood being more rural than the other neighbourhood and as such public transport tends to be even more limited in this neighbourhood. The main transport mode in Muhalaze is MyLove (pick-up trucks) which further constrains the mobility of pregnant women. One of the participants highlighted that this type of transport requires pregnant women to stand for long hours without a seat, as well as the lack of safety associated with this transport. Additionally, the participant raises the concern that whilst pregnant women can sit in the cabin of the pick-up truck, however, this comes with an added cost and will require carrying other passenger loads.

"Has anyone ever needed to use MyLove during pregnancy?"

"yes"

"What difficulties did you go through?"

"One of the things that characterizes the MyLoves are the floods that are too much and you had to be careful and it hit your own mind and there are no conditions to sit and should stand for long distances and then the car is full."

(Maxaquene)

"and you have no consideration for occupying the cabin when it is pregnant?"

"This has to do with money."

"They can let you occupy the front but carrying people's stuff"

(Maxaquene)

In addition to this, whilst travelling with children was discussed by the female participants. However, this discussion did not occur with the male participants. Thus, travelling with children tends to be more prevalent with women compared to men, which coincide with previous research (Jennings, 2020). It appears that poor public transport services constraints the mobility of women travelling with children, which provides further justification for women's limited transport mode and frequency of travel outside of their neighbourhood. For example, one female participant states that overcrowding in public transport results in difficulties when travelling with her child, such as having no available seat for her child.

“Even if I, for example, I have two children, if I want a chair for my son, where will my son sit? That older one.”

(Chamanculo – female)

Finally, poor public transport services also reduce the mobility of people with larger body sizes. Although this is an issue that can impact both genders, however, this discussion was only raised by the female participants. In fact, this discussion was perceived strongly by the female participants and was discussed numerous times. Therefore, it appears that reduced mobility of people with larger body sizes is particularly onerous for women. Some of the female participants stated that women with larger body sizes are not allowed to board public transport, especially when public transport tends to be overcrowded. Another participant highlighted that this problem often means that she must walk. This provides an explanation for women’s reduced transport mode as well as reduced geographical distance covered compared to men.

“Chapas are full, it is difficult, I am worse because I am fat, they touch me so I cannot enter. Once I was going to take the driving school, I was forced to argue with him (collector) so I can't get in because I'm fat. It's very difficult there. We have to go on a diet to be able to get on chapas.”

(Chamanculo – female)

“That's why we ended up choosing to go by foot.”

(Chamanculo – female)

“stop discriminating against fat women.”

(Chamanculo – female)

“More transport must be increased so that we are not neglected, we fat people”

(Chamanculo – female)

“And not only, I believe that it is discrimination because there is a lack of chapas to us that have large bodies because we are stopped by collectors, but it also ends up being discrimination, which chapas we will take.”

(Chamanculo – female)

“But the difficulty is that she said she has that body, so they end up barred.”

(Chamanculo – female)

“you have to enter like that with nothing, that little body (skinny) yes, they do.”

(Chamanculo – female)

Overall, the results indicate that poor public transport services mean women living in Maputo are transport disadvantaged. This impacts women’s mobility in various ways which are summarised in Table 4. In general, poor public transport services provides an explanation for women’s limited transport mode and frequency of travel outside of their neighbourhood.

Poor Public Transport Services Impact on Women’s Mobility	Description
Reduced mobility for pregnant women	Seats reserved for pregnant women are not allocated to them. Lack of safety in some transport for pregnant women. Transport does not reach some areas resulting in long walking distances for pregnant women.
Reduced mobility for women with larger body sizes	Women with a larger body size may be denied access to public transport.
Reduced mobility for women travelling with children	Women travelling with children may be denied access to public transport.
Reduced mobility for women travelling with a load	Women travelling with a load may be denied access to public transport.

Table 4. Summary of Poor Public Transport Service Impact on Women

4.2.5. High Cost of Fares and Low Income

Another possible explanation for women’s reduced transport mode and frequency of travel outside of their neighbourhood compared to men may be due to low income. As described in section 4.2.1, female participants were found to have a higher unemployment rate than male participants. Therefore, this indicates that women are

more likely to be poor than men, which coincides with considerable previous research (Poet et al., 2020; Damsere-Derry et al., 2017; Salon and Gulyani, 2010; Uteng and Turner, 2009). This, coupled with the high cost of fares, would potentially limit women’s transport options and travel outside of their neighbourhood. For example, one female participant describes that whilst buses are helpful, they are expensive. In addition to this, from section 4.2.4, female participants are more likely to be travelling with children and therefore exacerbates the high cost of fares, which is supported by findings from Jennings (2020).

“And have the buses helped?”

“The pass but are expensive.”

(Chamanculo – female)

“Even with babies on your lap, they do not accept.”

(Chamanculo – female)

4.2.6. Location of Main Activity

Significant gender difference in the location of main activity was found. No women in the neighbourhood of Chamanculo travels outside their neighbourhood for their main activity. Figure 26 shows that 7 out of the 9 female participants main activity happens within their neighbourhood. In comparison, the majority of men in the neighbourhood of Chamanculo main activity happens outside of their neighbourhood. Figure 27 shows that 4 of the male participants main activity happens outside of their neighbourhood whilst 3 more participants identifying the location of their main activity as a combination of inside and outside of their neighbourhood. Overall, women are more locally bound in terms of their mobility whereas, men travel to a wider set of destinations.

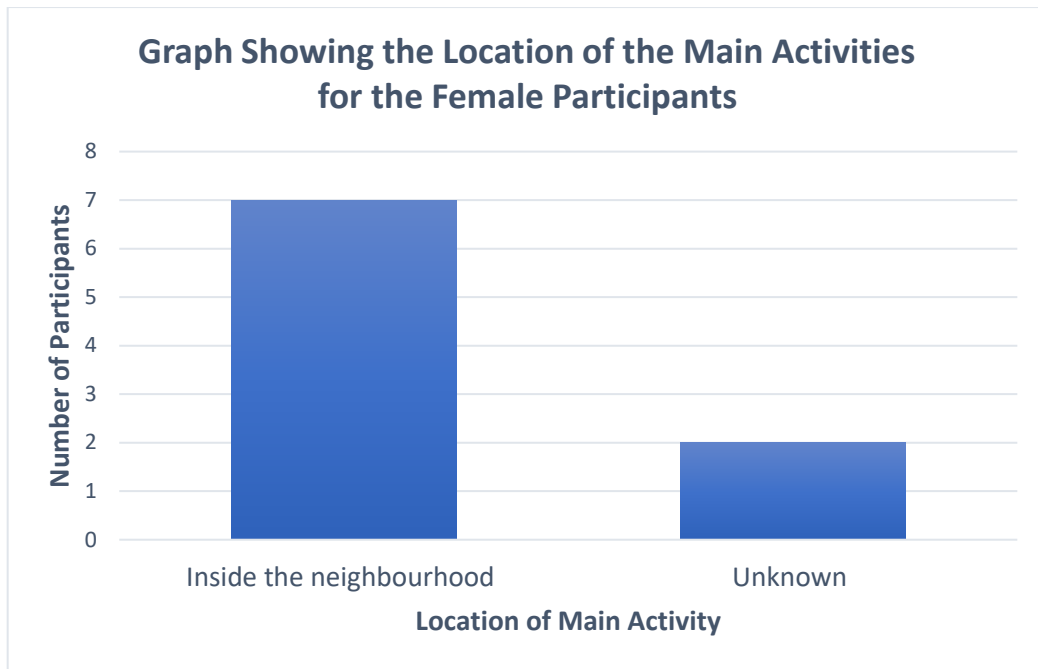


Figure 26. Location of Main Activity for Female Participants in Chamanculo

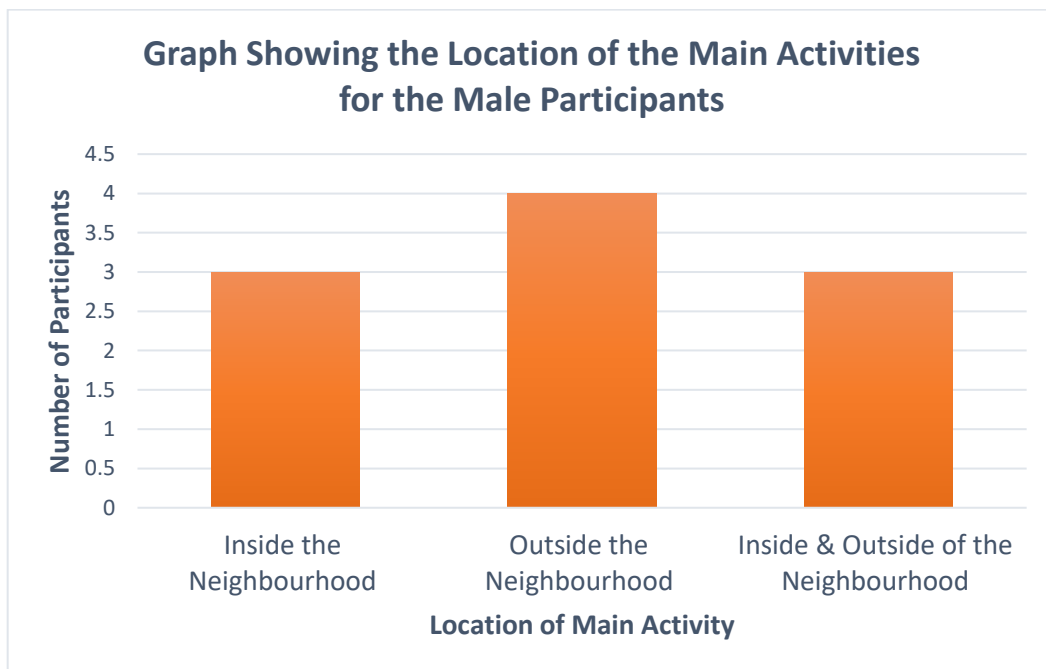


Figure 27. Location of Main Activity for Male Participants in Chamanculo

These findings could be due to females in the neighbourhood experiencing a higher level of time poverty due to the disproportionate household burden placed on them (Jennings, 2020; Blackden and Wodon, 2006; Mason and Khandker, 1997). Although the female participants did not raise specific discussions about time constraints, caring responsibilities were highlighted, which is one of the main characteristics of time

poverty. For example, whilst the female participants regularly raised concerns about the difficulty of travelling with their children, the male participants did not discuss this issue. Therefore, this indicates that the main household care responsibility lies with women. As such, females in the neighbourhood may be reluctant to conduct their activity outside their neighbourhood, as it may take a relatively long time to return to their home, which ultimately limits the amount of time they can spend looking after their family. One participant described the extraneous time taken to arrive at their home when returning from the centre.

“Even if I, for example, I have two children, if I want a chair for my son, where will my son sit? That older one.”

(Chamanculo – female)

“Even with babies on your lap, they do not accept.”

(Chamanculo – female)

“Chapa for town and then come around take off your shoes and slippers and make the same journey back home. And we would get home between 00:00am and 1am and between 2am - 2:30 it will leave home again.”

(Muhalaze)

Alternatively, the discrepancy in the location of main activity between men and women could be due to fear of crime. For instance, one participant highlighted the reluctance to leave their property unattended due to concerns of criminal activity. Hence, this provides alternative justification for female participants conducting their main activity inside their neighbourhood.

“I think life is a challenge, leaving the house is a challenge, it's not that I'm totally safe and I can't help but move if I don't have anyone. I just appreciate it when I get home and everything is in order”

(Muhalaze)

4.2.7. Participation in Non – Income Generating Activities

Non – income generating activities are defined in this investigation as any activities that do not produce income for an individual. Men were found to attend a wider range of non – income generating activities. Various non – income generating activities were highlighted during the focus group discussions by the male participants in the neighbourhood of Chamanculo. In contrast, the only non – income generating activities discussed by the female participants were shopping and attending markets. The non – income generating activities participated by the male and female participants are summarised in Figure 28 and Figure 29, respectively.

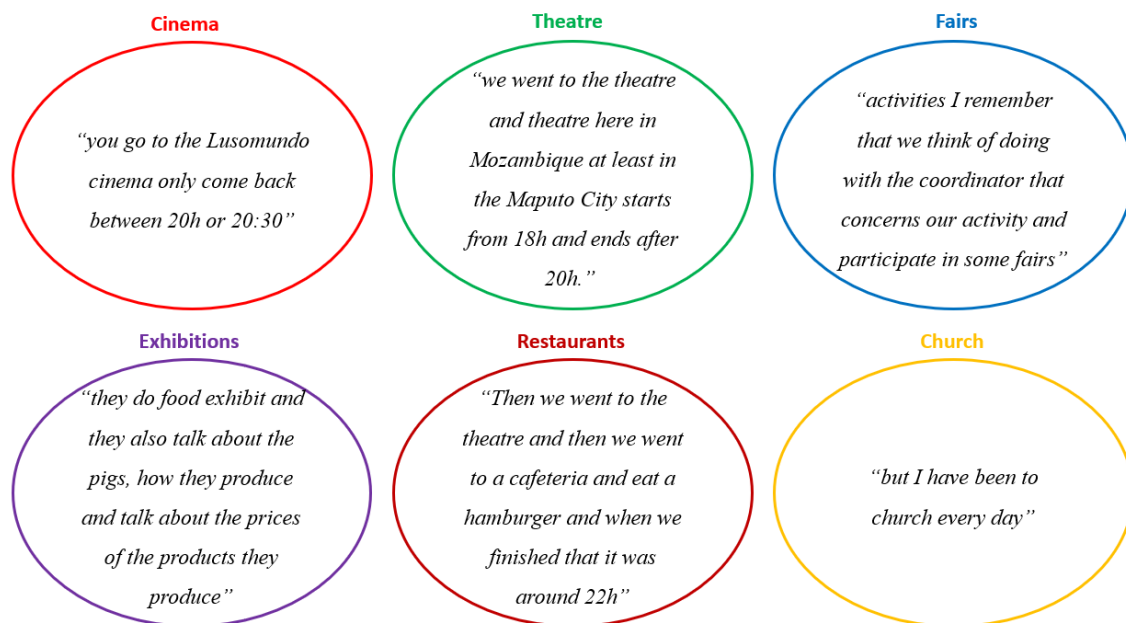


Figure 28. Visual Summary of the Non – Income Generating Activities Participated by Chamanculo Male Participants

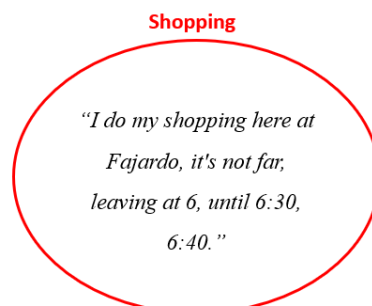


Figure 29. Visual Summary of the Non – Income Generating Activities Participated by Chamanculo Female Participants

The discrepancy in participation of non – income generating activities indicates that women are more socially disadvantaged than men. For instance, as described in section 4.2.1, women were found to have a higher unemployment rate and lower-income than men. As a result, women are less likely to afford the cost of participating in non – income generating activities. Additionally, as described in section 4.2.6, women are also likely to be suffering from time poverty. Hence, this time constraint would also limit them from engaging in non – income generating activities. For example, one participant from the neighbourhood of Muhalaze, stated that family and care responsibility means that they have limited time. However, sampling of this neighbourhood means that the gender of the participant cannot be identified.

“I have a car besides waking up at 4:30 to go to work, I can go at 7H and besides dawn to hospital I can go anytime I want as long as it's time for care. At 00:00 for example I'm in the family life and when I am there and time the party starts to cheer I have to leave, because of the time and when the night the chapa does not arrive here, to the tents near the hospital and have to walk to the house with the kids and now with my car”

(Muhalaze)

4.2.8. Temporal Dimension of Travel

The findings from the focus groups suggest that men travel during different times of the day. This was evident from the male participants frequently highlighting the difficulties of travelling during the evening hours. In contrast, the female participants had no discussions about travelling during the evening, other than when coming back from their main activity. Thus, indicating that women tend to not travel at night.

“Then we went to the theatre and then we went to a cafeteria and eat a hamburger and when we finished that it was around 22h and chapas no longer circulated”

(Chamanculo – male)

“you go to the Lusomundo cinema only come back between 20h or 20:30 and the chapas no longer reach the shopping area”

(Chamanculo – male)

“At 22 hours or ¼ of 22 hours because since of this moment has a lack of Chapas and shortage of chapas”

(Chamanculo – male)

The female participant’s reluctance to travel during the evening hours could be due to being transport disadvantaged as a result of fear of crime. Significant discussions were centred around this issue, with one female participant stating that they experience regular occurrences of robbery crimes when travelling. Moreover, two female participants highlighted that they require to implement mechanisms such as being accompanied when returning from their main activity during the evening. This coincides with research conducted by Masingue and Oviedo (2021), whereby women implemented strategies when travelling at night due to fear of crime. Overall, fear of crime reduces women’s temporal window for travel which complements the findings from Masingue and Oviedo (2021).

“we've lost count of the times we've been mugged.”

(Chamanculo – female)

“We keep doing it but ... for example, some come in at night, the person goes home but not safe, they must find mechanisms to get home as safe as possible, it is kind of complicated.”

(Chamanculo – female)

“I come back from the barraca at night but I can't go back alone, I have to pay kids to accompany me so I can arrive, because of robbers, they know that I sell so if I go back alone, it is not easy. I have to have two people, three people to accompany me because these children of ours are the ones who steal us and people who steal are not grown people, they are 18, 17 years old.”

(Chamanculo – female)

4.2.9. Gender Neutral Sources of Transport and Social Disadvantage

Although there are gender differences in transport and social disadvantage, however, the results also provide evidence for gender neutral sources. The two gender neutral factors include:

- Exposure to transport externality
- Poor walkability

4.2.9.1. Exposure to Transport Externality

Exposure to transport externality is consistent between gender. The general discussion on this topic shows that both male and female participants suffer from transport's negative externalities. One of the male participants stated that passengers are prone to diseases due to the overcrowding in public transport. In addition to this, both genders have raised issues of high levels of traffic congestion. Furthermore, in the neighbourhood of Maxaquene, participants have highlighted safety concerns for children due to cars travelling at high speed. Table 5 shows the different types of transport externalities that were discussed in the focus groups.

“we have to look at that in TNS when squeezing me with the colleague here I am exposed to many diseases as well as he as I can those bigger to more amenities because we open the windows”

(Chamanculo – male)

“If I get chapa, malanga, in 5 minutes I arrive but because of the traffic, sometimes I hour to arrive. Because there is a lot of traffic in the morning.”

(Chamanculo – female)

“Well with the roads we have we cannot hurry to arrive with the car, and after 16h on this road there is always traffic jam”

(Chamanculo – male)

“the cars go at high speed putting the children themselves at risk”

(Maxaquene)

Type of transport externality	Explanation
Diseases from transport	Overcrowding in public transport leads to concerns about infectious viruses spreading.
Congestion	Traffic congestion means it takes a very long time to access amenities such as markets.
Road Traffic Accidents	Cars driving on roads that are access points to other neighbourhoods but pass-through schools are causing safety concerns for children.

Table 5. Types of Negative Externalities Experienced by Participants

4.2.9.2. Poor Walkability

Poor walkability was discussed equally in all focus group discussions for each neighbourhood. This indicates that poor walkability as a source of transport disadvantage is gender-neutral. However, this finding contradicts previous research whereby women were more impacted by poor walkability due to their higher level of vulnerability (Massingue & Oviedo, 2021; Oviedo et al., 2021; Salon and Gulyani, 2010). On the other hand, similar discussions occurred in the neighbourhood of Muhalze and Chamanculo, whereby participants highlighted the need to walk cautiously at night and may need to travel as a group due to fear of crime. Hence, one can argue that this issue is more onerous for women due to their greater vulnerability, but this would need to be investigated in more detail to establish clear causation.

“When you compare the crime that is so much, said that in the neighbourhood and then looking across the city and is very different because in the city from 23pm must walk cautiously because they can be robbed phone or be ...stabbed or there are machetes men”

(Muhalaze)

“They usually are at night and weekend, as we go out in a group, nothing happens.”
“in the winter they walk at midnight”

(Muhalaze)

“once it was 3am and a few minutes would take an order here at the airport and the taxis wanted to charge me 200mts and I complained and walked to the Vulcan and saw Moluenes and then tried to go back to give him that 200 to let me pass in the area where there were the wrongdoers”

(Chamanculo – male)

Furthermore, one female participant in the neighbourhood of Chamanculo raised concerns about poor walkability infrastructure (i.e. jumping over ditches or holes). Subsequently, another participant in the neighbourhood of Maxaquene expressed the difficulty of walking due to parked cars obstructing the pavement.

“To leave the neighborhood, sometimes we have to become fish and spider man (laughs) because we have to jump, we can't walk”

(Chamanculo – Female)

“Those who drink put the cars on the sidewalk and we have no way to walk”

(Maxaquene)

4.3. Accessibility Poverty

The individual questionnaire and focus groups results indicate that women are transport and socially disadvantaged compared to men. According to the theoretical framework in Chapter 2, section 2.6, Figure 11, this intersection of transport and social disadvantage means that women are experiencing mobility poverty, which in turn leads to accessibility poverty. In this section, the main accessibility poverty issues will be discussed.

4.3.1. Inaccessibility to Decision Making

Inaccessibility to decision making is one of the accessibility issues experienced by women. This was a discussion that was raised in the female focus group discussions. For example, one female participant highlighted a lack of consultation with decision-making and felt neglected in any new policies implemented.

"It can work because we do not deny anything, in this country, nothing is denied. The problem is they do not summon us, do not ask us for opinion, what they want to do they do."

(Chamanculo – female)

4.3.2. Inaccessibility to Goods

Although women have access to markets for purchasing goods, however, accessibility may be poor. For instance, the female participants highlighted that accessibility to nearby markets tends to be difficult due to chronic traffic congestions. Additionally, the findings from section 4.2.3, whereby women were found not to travel outside their neighbourhood compared to men, indicate that women's accessibility to markets outside their neighbourhood is also limited.

"It depends where I go when it is in Malanga nearby when it is (market) Estrela is far, when it is Zimpeto it is far. If I get chapa, Malanga, in 5 minutes I arrive but because of the traffic, sometimes 1 hour to arrive. Because there is a lot of traffic in the morning."

(Chamanculo – female)

4.3.3. Inaccessibility to Services

Furthermore, the participants have highlighted inaccessibility to some key services. Although inaccessibility to these services may apply to both genders, however, females are impacted to a greater extent. For instance, one male participant stated that there is a lack of access to public ambulances, and the main accessibility is private ambulances which are more expensive. Consequently, this lack of affordability for private ambulances is more onerous for females due to their lower income as described in section 4.2.1.

"First, there is no time for access to, turbulence, and I do not even have the public ambulance number, we only have the private number, which is very expensive, and I have never seen anyone being taken from a public ambulance."

(Chamanculo – male)

Moreover, the participants have also described the difficulty of accessing activities during the late evening hours, such as cinemas and theatres. This poor accessibility is due to a lack

of transport during the late evening hours, and alternative transport tends to be unaffordable. However, as described in section 4.2.1, this issue is exacerbated for women due to their lower income. Additionally, participants have also described that this lack of transport options when returning from activities during the evening may result in them walking back long distances. Subsequently, women greater vulnerability potentially means that they are more impacted.

“A little example one of these days I sinned my daughter and my wife and we went to the theatre and theatre here in Mozambique at least in the Maputo City starts from 18h and ends after 20h. Then we went to the theatre and then we went to a cafeteria and eat a hamburger and when we finished that it was around 22h and chapa’s no longer circulated and the only solution we had was to get txopela and the txopela we found around 300mts. We have said this value and it is so high that the next time I leave home for the theatre or cinema it may be with a borrowed friend's car or if it is on a shorter time. The cinemas in Mozambique even for children always go at night and the prices are always very high, you go to the Lusomundo cinema only come back between 20h or 20:30 and the chapa’s no longer reach the shopping area and if they arrive they charge values It is very loud and it is one of the things that do the times that will not join this service, cinemas, theatre, shows. Go to the square of independency for a show or wait for the day to dawn. When we went to the UMODJA show we had to walk back, from the square of independence until here we got here around 4am on foot.”

(Chamanculo – male)

“yes, we never go to the movies because ... it is not because it is far and near but sometimes it is not easy to go home because there is a lack of transportation and they no longer arrive here in the neighbourhood, they may end up downtown or here end point then we have to go back then from there to here and very far”

(Chamanculo – male)

5. Conclusion and Further Recommendation

5.1. Conclusion

In conclusion, qualitative analysis from the focus groups demonstrates that women experience a higher degree of transport and social disadvantage. As such, women were found to be suffering from transport poverty to a greater extent. This study has shown significant inaccessibility issues directly arising from transport poverty for women living in Maputo, Mozambique.

A significant difference in the main activities of men and women is evident from the individual questionnaires. Men have a diverse set of main activities compared to females. In contrast, women's main activity tends to be informal trade and a disproportionately higher unemployment level than men. Additionally, men also have a diverse set of mode choices whilst women have limited transport mode. The individual questionnaire also demonstrates that the average frequency of travel outside the neighbourhood is greater for men. On the other hand, women's mobility is locally bound with fewer trips outside of their neighbourhood.

A possible explanation for these discrepancies in the individual questionnaires could be that poor public transport services impacts women's mobility. Poor public transport service constrains the mobility of women travelling with children, women travelling with a load, women with larger body sizes and pregnant women. Moreover, the high cost of fares coupled with women's low income is another possible explanation for women's limited transport mode and frequency of travel outside their neighbourhood.

The findings from the focus groups show an apparent disparity in the location of the main activity for men and women. Whilst women's main activity all happens within their neighbourhood, men travel to a broader set of destinations for their primary activity. It can be concluded that these discrepancies are attributed to women being compounded by time poverty and fear of crime. Additionally, due to social disadvantages such as low income and time poverty, women tend to not participate in non – income-generating activities (i.e. cinemas, theatres and exhibitions). Moreover, there is a significant gender difference in the temporal dimension of travel. Men travel

at different times of the day; in contrast, women tend to not travel at night due to fear of crime.

On the other hand, gender-neutral sources of transport disadvantage were identified, for example, exposure to transport externality. Contrary to previous research, walkability was gender neutral but clear causation cannot be established and needs to be investigated deeper.

Overall, women were found to be transport and socially disadvantaged and therefore experiencing transport poverty. According to Lucas (2012) framework, this leads to accessibility poverty. The most prominent accessibility issues for women concerned inaccessibility to decision making, goods and services. However, it should be noted that socio-economic and cultural factors were not considered in this study as the focus was only placed on one neighbourhood. Thereby, clear causation in gender difference cannot be established.

5.2. Further Recommendation

This study analysed three different neighbourhoods in the city of Maputo. However, the focus was on the neighbourhood of Chamanculo as two focus group workshops categorised into male and female were conducted in this neighbourhood. Therefore, sampling characteristics of this neighbourhood enabled gender differences in transport poverty to be investigated. For future research, a greater number of neighbourhoods categorised into male and female should be analysed. Researchers can then establish if the findings are due to gender and not socio-economic and cultural factors of the neighbourhood. Hence clear causation of gender difference and transport poverty can be determined.

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7. Appendices

7.1. Appendix A: Questionnaire Topic Guide

Individual questionnaire:

1.	Name of your neighbourhood:
2.	Sex:
3.	Age or age group:
4.	How long have you/your family lived in this neighbourhood for?
5.	What is/are your main activity(ies)?
6.	Where do your activities take place?
7.	How many days per week do you leave your neighbourhood?
8.	How do you usually travel to your main activity(ies)? (select the mode(s) of transport you usually use and rank them according to frequency e.g. 1°, 2°, 3°, ...) Walk Minibus Large bus Private car Shared car Bicycle Others...
9.	At what time do you usually leave home to get to your main activity (ies)?
10.	At what time do you usually arrive at your main activity(ies)?

7.2. Appendix B: Focus Group Topic Guide

Group discussion:

1. What is the main reason for living in this location? (E.g. renting/buying is cheap, close to relatives/family, space....)
2. What can you find in your neighbourhood? (goods, services...)
 1. Are there services/opportunities that you cannot access (e.g. healthcare...)
3. Do you use internet for online banking and other services?
4. Do you get goods delivered to your house?
5. What are the difficulties/obstacles that you encounter when you travel to your main activity/activities?
6. Do you or other members of their household find yourselves immobile at times?
7. How could these be improved?
8. What do you think about the transport and infrastructure in your city? Who should provide this? What should the role of government be? Who else should play a role?
9. In the future where you like to live in your city?
10. In the future where would you like your activities to be?
11. In the future how would you like to move?
 1. Would you like to have a private car? Why?
 2. If you had the option between using your private car but being stuck in a traffic jam or using good quality public transport without traffic jam, what would you choose?
12. What do you think about the following options:

Compact city	<ul style="list-style-type: none"> • Do you prefer a home with a land in the suburbs? • Do you prefer to stay where you are? • Do you prefer an affordable flat closer to the city centre
Bus lanes	<ul style="list-style-type: none"> • Do you think that dedicated bus lanes would help?
Inter-modal ticketing	<ul style="list-style-type: none"> • Do you think that using one ticket for every trip would help?
Urban cycling sharing	<ul style="list-style-type: none"> • Would you consider cycling?
Motorbike (electric)	<ul style="list-style-type: none"> • Would you consider motorbikes?
On-demand 5* minibuses	<ul style="list-style-type: none"> • Would you take a 5* on-demand minibus for a higher price?
Rickshaws (electric)	<ul style="list-style-type: none"> • What do you think about rickshaws
On-demand shared taxis	<ul style="list-style-type: none"> • Would you use on-demand shared taxis? For a higher price?
Car-sharing	<ul style="list-style-type: none"> • Would you consider using the car of a neighbour? Of sharing your car with neighbours?

