Walkability and the Right to the City: A snapshot critique of pedestrian space in Maputo, Mozambique

ABSTRACT

On the premise of transport inequality, urban mobility and the production of pedestrian space, this research explores pedestrians (im)mobility in Maputo, Mozambique's capital city, as a means of unravelling deeper-rooted issues of societal inequality. Borrowing from the Right to the City (RTTC), walking is repositioned as a potential 'equalising mode', reflecting on the social, physical and individual drivers of inequalities for walking in the city. Such analysis responds to existing gaps in a literature about walking that has little to offer about its links with social and economic inequalities in the global South. The paper builds on 22 semi-structured interviews and a journey audit exercise to discover that whilst the unfavourable pedestrian infrastructure makes walking difficult, the social stigmas of this space have a greater impact on people's perceptions of walkability. As such, low-income identities are more likely to walk, frequently in parts of the city where walking infrastructure is minimal (if at all), and may therefore find it more difficult to exercise their RTTC than their high-income counterparts. To challenge the status quo, this study concludes that more 'hubs' of opportunity must be created to make walking more equitable in addition to improving the most urgent infrastructural shortages.

Keywords: RTTC, Walking, Walkability, Access, Pedestrian Space, Social Perceptions, Inequality

JEL Codes: R42, R58, R14, R11, R41

1. Introduction

In the light of global climate pressures, rapid urbanisation and widening income inequalities, cities around the world have the responsibility to develop inclusively and sustainably. Examples from Europe point at viable transitions from car-oriented trajectories to people-centred development as public transport, bicycles and walking are favoured in city planning policies (Pucher and Dijkstra, 2003; Jones, 2016). Such transitions have been suggested by recent research as possible in cities of the global south at a comparatively earlier stage in private motorisation uptake and a modal share marked by use of public and non-motorised transport (T-SUM, 2020). In African cities, governments are tasked with the challenge of addressing such redefinition of urban development trajectories towards sustainable urban mobility while addressing pressing challenges at all scales, such as extreme poverty, unequal access to material infrastructures and essential opportunities, limited resources for public investment, and corruption. In this context, it comes as no surprise that even the most prosperous cities on the continent, including Cape Town, Johannesburg and Accra, are still overwhelmingly car-centric.

Studies and experience from walkable cities have shown that improved walkability correlates with narrowed income disparities, better air quality and improved road safety (e.g. Adkins et al., 2012). Barcelona's 'superblocks' are one example of a more pedestrian-friendly urban environment, benefitting from reduced death rates from road accidents and improved air quality (Bausells, 2016). As a mode available to all able-bodied citizens of all income groups, walking is potentially the most equitable means of transport (Forsyth and Southworth, 2008). Walkability, the extent to which the built environment encourages walking trips both as a principal mode of travel and for leisure, entails the reconfiguration of the urban form to the spatial requirements of a person, thus establishing equitable walking distances for all members of society (Said et al., 2014). This essentially remedies the spatial mismatch of opportunities endemic in cities of the global south by promoting mixed land-use and polycentrism. Alas, in much of the global South walking is associated with poverty, and many citizens aspire to own a car (Porter, 2002).

This research challenges this misconception, drawing from conceptual development and empirical evidence not often explored in African cities. Building on the premises of transport equity, urban mobility and the production of pedestrian space, this study aims to explore pedestrians' (im)mobility as a way of unravelling deeper-rooted issues of inequity in developing cities. Borrowing Lefebvre's concept of the *Right to the City* (RTTC) – that citizens have rights to the resources of the city as well the collective right to change it (Harvey, 2008) – this study investigates the influence of transport infrastructure on pedestrian behaviours and how different members of society access daily opportunities and experience the city. Our analyses are structured under an analytical framework that considers, individual, physical and social determinants of walking as an exercise of the RTTC, reflecting on the structural drivers of walking inequalities across income groups. Set in Maputo, the capital of Mozambique, the study seeks to understand the need to improve pedestrian space in the city, and to consider the bargaining power of different groups of citizens in shaping the urban form. By taking this perspective of the RTTC – adding to it the potential of walking – the study also makes a methodological contribution to the existing literature as discussed in section 3.

Mozambique is one of the world's poorest countries, with extensive social and economic disparities manifest in a Human Development Index ranked 180th out of 188 countries, and 70% of the population living below the poverty line (World Bank, 2017). These inequalities exist microcosmically in Maputo, where spatial segregation was used to keep the Portuguese and 'native' Africans apart during colonialism (Newitt, 1997), with the Europeans creating their own '*Cidade de Cimento'* (Cement City), and the Mozambicans living in the peripheries known previously as the '*Cidade de Caniço'* (Cane City) as references to the construction materials of buildings in each part of the city. These spatial distinctions persist, with the minority affluent population inhabiting the Cement City, whilst low-income groups are confined to rudimentary housing in what are now referred to as the '*Bairros'*. In order to access jobs, schools and healthcare, the vast majority of *Maputenses* must embark on long, strenuous and unsafe daily commutes made predominantly on a combination of semi-formal "*chapa"* minibuses, unregulated and ad hoc pickup trucks (commonly known as "*My Loves*"), and walking. Under these circumstances, anyone who can afford one opts to buy a car. Maputo thus provides a useful case study for exploring perceptions of walkability and how these affect the ability of all members of society to exercise their RTTC.

The paper will critically examine how the intersections of income, race and gender influence walking behaviours and experiences of the Right to the City and the influence of the walking environment on walking attitudes. The analysis presented in the paper build on a qualitative dataset composed of 22 semi-structured interviews and a journey audit exercise. The paper interrogates the links between walking and social and economic inequalities in an under-researched urban context in the global South. Our analysis allows dissecting details about the role of (un)favourable pedestrian infrastructure for walking practices of different socioeconomic groups, social stigmas and people's perceptions of walkability. The paper provides empirical evidence on the contradictions of a walking environment that least accommodates low-income residents' needs, despite them being more likely to walk than their higher-income counterparts. By examining practices, perceptions and attitudes, this research develops a context-sensitive reflection about the role of walking in the exercise of the RTTC. This research contributes to debates around walkability in African and Global South cities, highlighting specific learnings for Maputo. While the paper does not aim to generalise its findings, it brings to the fore a snapshot critique of structural issues around walking practices and environments with the potential to inform broader debates about walking and the RTTC. It also provides insight into the perceptions and social norms that shape the city's pedestrian space, which are likely to manifest in similar contexts.

2. Transport Planning and the Right to the City in global south cities: Where does walking fit in?

2.1 Transport Planning in the global south

Scholars commenting on transport planning in the global south have concerned themselves with the dramatically changing urban conditions – increasing population numbers and densities, widening income disparities and rapid motorisation rates. Developing cities face the task of catering for the increased productivity of the urban economy whilst also providing transport options to the under-privileged who depend on cheap travel to expand their

opportunities. A context of limited national budgets, weak institutional support and professional capacities, ineffective traffic management and enforcement, politics of self-interest and corruption, lack of maintenance, and misused and mixed old and new transport technologies, makes devising adequate transport solutions even more challenging (Dimitriou, 1990; Gakenheimer and Dimitriou, 2011; Jauregui-Fung et al., 2019; Watson, 2009).

This difficult context produces a deficit of public transport services, which is met only by the private car (for those who can afford it) and informal means of transport (Cervero and Golub, 2007). Thereafter, a process of physically-entrenching high car-use occurs – making space for cars and designing the urban form for the spatial requirements of the car – in turn reducing the provision of space (and public spending) for non-automobile modes, including pedestrians (Barter, 2004). Thus, in much of the global South, transport planning remains synonymous with road construction (Porter, 2002). Alternatively, it is a tool for creating a 'globally competitive city': international pressures, such as for global games, can lead to spending a national budget on a single mega infrastructure project for the benefit of one event, whilst ignoring the daily mobility needs of the population (see, for example, Black and Westhuizen, 2004).

These mobility inequalities are visible in many cities. Barter, for one, writes of the shift from non-motorised vehicles to the domination of motorbikes and private cars in various Asian cities (2000). This creates "a traumatic and dangerous imbalance between new higher levels of mobility, especially private mobility, and many aspects of the pre-existing urban fabric and transport infrastructure" (ibid, 37). Similarly, Gakenheimer and Dimitriou report that in many developing cities, "numerous transport modes [are] in simultaneous use in public ways – from bicycles and animal traction to high-speed motor cars – each accusing the others of impedance" (2011, 4). Under these conditions, road safety is a recurring issue of debate, especially for the most vulnerable road users (for example Siddiqui et al., 2014; Salon and Gulyani, 2010). In a context where this group represents the majority, this is an ineffective and socially unsustainable solution to widespread mobility.

Approaches to transport planning have entrenched inequity in cities of the global South. Such conditions highlight the need to understand the economic, social and political environments in which transport takes place and interventions are made, especially in the context of extreme 'winners' and 'losers' (Porter, 2007; Gakenheimer, 1999; Levinson, 2002; Lucas & Porter, 2016).

2.2 The Right to The City

In its rawest form, Henri Lefebvre's (1968) concept of the Right to the City (RTTC) advocates for citizens to have equal rights to resources and opportunities within their city, in addition to the collective right to change the city (Harvey, 2008). Lefevre claims that space is a social construct explicitly produced by a triad of qualities: (i) the physical practices and pathways that exist, (ii) professional knowledge of the space (the work of formal institutions, planners and bureaucrats), and (iii) the lived experiences of negotiating with space (Butler, 2009). As a product of society, space naturally inherits the inequalities experienced within other realms, dictating who inhibits it, what is done there and how the space appears (both physically and perceptively) (ibid). This Marxist notion served as a collective bargaining tool, focusing on the communal experience and creation of the city as a radical challenge to the capitalist form of

citizenship (Purcell, 2003).

In light of today's deep and widespread urban wealth disparities, UNESCO presented a reformist version of the RTTC, as "a collection of Rights *in* the City" (2011, 2). Still rooted in socialist ideologies aimed at challenging the inequalities produced by neo-liberalism, the 'neo-RTTC' advocates the provision of equal rights (such as the right to vote and the right to non-exploitative jobs, as well as claimed rights such as the right to transport), to ensure better access to, and use of, the city. This understanding of the RTTC concerns itself with an individual's ability to exercise their right to resources and opportunities in the city, improve their social positionality and raise their living standards.

This paper considers the Marxist and Reformist approaches together – understanding that individual rights in the city can lead to improved livelihoods and social capital, bringing collective benefits in the form of equal distribution of wealth, better-qualified professionals and improved public services (Mayer, 2009). Based on this, and in agreement with Harvey, the RTTC is "one of the most precious yet most neglected of our human rights" (2008, 23).

Under this premise, efficient and fair transport services and infrastructure can facilitate both individual and collective RTTC. This has heightened importance in the global South, where the "formation of [distinct] 'micro-estates'" is evident (Balbo, 1993: 25). Balbo refers to the rudimentary informal settlements of the low-income city dweller in contrast to the lavish gated communities of the rich, a phenomenon well-documented (Manderscheid, 2016; Oviedo Hernandez & Dávila, 2016; Zérah, 2008). This spatial mismatch forces the poorest groups to travel the furthest distances, often in precarious conditions. Clearly, questions of the RTTC are central to this.

Existing research has addressed this transport disadvantage through the lens of social exclusion, motility, (the lack of) accessibility and other frameworks (see Lucas, 2011; Kaufmann et al., 2004; Kaufmann et al., 2013; Van Wee et al., 2001, respectively). These are considerable contributions that reveal an underlying theme, that individuals experience transport 'options' differently.

Explicitly, certain intersections of identities – noticeably those departing from the 'white-male' norm – place transport users in difficult social positions, which then shape the "choices" they can make and how they experience travelling. The impact of race on journey quality has been explored by Woolf and Joubert (2013), amongst others, in the post-apartheid South African context. Similarly, the gender inequalities of transport experiences have received attention from academics such as Fernando (1998) and Porter (2002). Most of these studies have concluded that women are at a disadvantage when travelling in terms of their safety and autonomy in the existing patriarchal transport system. Recognising that transport decision-making does not occur in a 'social vacuum', gender has been further explored in intersection with other identities, including race and class. Salon and Gulyani find that "most people living in the slums of Nairobi do not have travel 'choices'—they cannot afford motorised transport, so they walk; [but] women and children are disproportionately affected" (2010, 655). Such research has revealed that physical access is an insufficient measure for understanding people's ability to use public transport, as socioeconomic factors contribute.

To this effect, Levy reframes the notion of travel choice, explaining that "social identities of

transport 'users' are deeply embedded in social relations and urban practices, the latter ranging from the everyday lives of people to urban policies and planning" (2013, 47). Borrowing the RTTC framework, she conveys Lefebvre's ideas of the social construction of space as her premise for re-evaluating transport appraisal and planning processes. In her words, "participation in decision-making about transport is a demand in the form of [angry] collective protest against transport planning decisions already taken" (ibid, 58) as opposed to the bottom-up/partnership that should exist. In today's capitalist world, 'expert-led' interventions impose decisions on less-powerful voices, often leading to exploitation or displacement of such groups. Balbo explains that "the 'illegality' of spontaneous settlements [slums] automatically limits the political representativeness of the residents and their contractual power, affecting the democratic dimension of the political process" (1993, 32), and, therefore, diminishing their collective RTTC.

Understanding the spatial behaviour of heterogeneous populations and the urban development processes that they shape, and in turn, that shape them, transport infrastructure is posited as a plausible space for exploring the RTTC. More precisely, pedestrian space is ideal for this exploration, as it is free and accessible to most. However, perhaps unexpectedly, such an exploration has not yet been made.

2.3 The Role of Walking

Walking, as a mode of travel, has traditionally been overlooked in transport planning by practitioners and scholars alike, only gaining recognition recently. Thus, the phrase *'walking as a mode of transport'* only gathered 17 results on Web of Science from 1987-97 and 43 results in the next decade, growing to 890 results from 2007-20 with 390 new studies published in the last three years (Web of Knowledge [online], 2020). More specifically to this study, the phrase *'walking, social equity, developing city'* yielded 19 papers, all written in the past decade. Whilst these include studies from an array of disciplines, growing interest accompanies the view of walking as a "foundation for the sustainable city" in the light of today's global environmental climate (Forsyth and Southworth, 2008: 1). Much of this literature is focused on urban design, place making and the quality of pedestrian space, framing walking as a solution to environmental issues and public health concerns (see, for example, Adkins et al., 2012). Others, like Siddiqui et al. (2014) and Johnston (2008), focus on the need for improved pedestrian safety, especially for vulnerable groups in deprived areas. Few studies have paid attention on the role of perceptions of walkability in pedestrian's spatial engagements (Hodgson, 2012), particularly in low-income neighbourhoods. A relevant example of research with this focus include the work of Battista and Manaugh (2018), which uses interviews with residents in a neighbourhood in transition in Montreal, Canada, to propose an analytical framework supporting non-engineering interventions to improve walkable opportunities. Another study in the same context builds on a large dataset from the 2003 household travel survey to validate the influence of different social positions and household socioeconomic and mobility characteristics on walking practices and the sensitivity of individuals to the built environment (Manaugh and El-Geneidy, 2011). In a similar vein, Forsyth et al. (2009) examined differences in perceptions of importance of the environment in walking and physical activity in the context of the Twin Cities in Minnesota, using a variety of information sources and quantitative methods. However, this research has been overwhelmingly based in the global North.

In the global South, the collection of literature on walking and walkability is much less robust. Often, walking is explored in a rural context with several scholars focusing on gender inequalities (for example, Porter, 2002; Fernando, 1998). In cities, it is explored through the lens of rapid motorisation and rising (but accumulated) wealth, as an 'expiring' mode for those who can afford otherwise. In this light, research from developing cities has found that "reliance on walking can have negative effects on the welfare on families", who tend to be low-income (Bostock, 2001: 11). Other studies in such contexts focus on the dangers of walking, such as Naci et al.'s (2009) study on the distributional effects of road traffic deaths in low-income countries, revealing that 45% of fatalities are among pedestrians, usually the poor residing in urban peripheries. Behrens (2005) asserts that for poorer households, especially the youngest and eldest members, the only available mode of travel is walking. As such, walking is often documented in a negative light. More recent literature has explored walkability in a new light. By aligning with the recent paradigm shifts and distributional concerns, various studies, particularly in Latin America, have proposed new methods and empirical evidence for expanding on the role of walking as driver or response to social and spatial inequalities (Arellana et al., 2020; Herrmann-Lunecke et al., 2020; Jauregui-Fung et al., 2019).

Available scholarship in low-income countries, particularly in African have emphasised the need to strengthen conditions for non-motorised transport as a precondition to secure the heath benefits associated with walking. Research in the region points at integrating walking into urban transport planning in African cities as an urgent need (Behrens, 2005; Mitullah, Vanderschuren, & Khayesi, 2017; Oyeyemi et al., 2017; Oyeyemi et al., 2019). A large share of available research have reflected on the links between walking and safety, as well as making meaningful connections between walking and context-specific elements of the built environment (Oyeyemi et al., 2017) and both formal and informal open spaces (Anciaes, Nascimento, & Silva, 2017). Of particular interest is a series of studies in Nigeria, Cameroon, Ghana, Kenya, Mozambique, South Africa, and Uganda that examined the links between walking, physical activity and perceived built environment characteristics (Oyeyemi et al., 2012, 2013, 2016, 2017, 2019).

On the one hand, these studies unearthed the relevance of personal safety from both crime and traffic. Oyeyemi et al. (2012, 2013) provided empirical evidence of the links between personal and traffic safety and moderate and vigorous physical activity in Nigeria. On the other hand, aspects such as green space, proximity of destinations and access to amenities and places have been proven to have a direct influence on walking (Oyeyemi et al., 2013; 2016; 2017; 2019). Finally, research suggests land-use mix, and pedestrian infrastructure and recreational space availability can influence the likelihood of walking, particularly for people dealing with mental health issues (Vancampfort et al., 2019).

As a relevant precedent of research in African contexts, Anciaes, Nascimento, & Si's (2017) study considers differentials in walkability between neighbourhoods with different income and urbanisation levels. By measuring accessibility to different opportunities and urban amenities and variables such as designated pedestrian space and its proportion, collision risk, crime, slopes, and risk from flooding and landslides, this research explores walkability from a perspective of inequality. Reflecting the particularities of cities in the region, Anciaes et al. (2017) include public squares, gardens and informal open spaces as part of the pedestrian space. Such a research also gives relevance to subjective perceptions the relative effect that

comparison with the conditions faced in other parts of the city have on walking (Anciaes et al., 2017). The authors conclude that variation of walking accessibility and quality by income and urbanisation level at the neighbourhood level have an influence on communities' exposure to environmental risk and personal security issues.

2.4 Conceptual Framework

Against the backdrop of the concept of the RTTC, this study aims to reframe walking as an enabler of socio-spatial relations by bringing value to pedestrian space. Our analyses are three-fold, considering individual, physical and social determinants of walking as an exercise of the RTTC, reflecting on the structural drivers of walking inequalities across income groups.

Figure 1 visualises the conceptual framework for this study. As shown, the individual, physical, and social elements have their own unique (although related) determinants that impact how walking is experienced. We frame these as bridges and/ or barriers to walking.

At the micro-level, we explore the individual's experience, particularly with regards to how different intersections of identity navigate pedestrian space. This includes race, income levels, age and gender, how these translate to walking journey purposes, access to other modes of travel, and access to wider opportunities.

The physical attributes of the walking environment are addressed at the meso-level of our analysis, where we explore where investment and maintenance efforts are made and how this leads to variances in pedestrian space quality.

Finally, at the macro-level, the social perceptions framing the individual and the physical are explored. As explained by Hoehner et al., perceptions of the built environment differ from its physical attributes (2005). Their findings showed that in certain cases "perceptions may be more important than objective measures", as areas or routes perceived as unsafe or unpleasant, for instance, may be disregarded as an option entirely (ibid, 115). These perceptions are not only self-governing; collectively they also shape the stigmas and opinions of who walks and who does not more generally in society. Simultaneously, they inform decisions made on policies and projects, circling back to the social and physical creation of the public space.

We argue that decision-making currently operates within the realm of the meso- and macro-levels, focusing predominantly on the physical and social elements of pedestrian space, rather than understanding the characteristics, experiences and needs of the individual. Understanding drivers of accessibility to opportunities other than work and education and their social consequences has implications for policy and planning targeting sustainable urban development. This is reflected in international debates, which increasingly focus on how to enable equitable, inclusive and sustainable accessibility through transport policies at all levels. The transport sector has historically been one of the largest areas in national and local investment globally, and it is critically important that infrastructure investment supports city development objectives (Dimitriou, 2011).

The Sustainable Development Goals (SDGs) agreed upon by the United Nations (Schwan, 2019) state as part of the targets of Goal 11 (sustainable cities and communities) that

transport plays an essential role in achieving sustainable development (UNDP, 2016). Such targets highlight the role of transport in bridging disparities across social groups and socioeconomic conditions. Moreover, the New Urban Agenda highlights the promotion of equitable access, with emphasis on low-income and peripheral urban populations to sustainable transport that enables participation in both social and economic activities.

An urban environment that necessitates physical movement as a precondition for benefitting from most opportunities can limit people's access to goods and services and their ability to travel to activities that are relevant for full participation in society (Golub & Martens, 2014; Jones & Lucas, 2012; Pereira, Schwanen, & Banister, 2017). These conditions are often reinforced by poverty and a low quality of public transport services, especially in peripheral neighbourhoods with low access to private motorised vehicle use. Cities in the Global South tend to be more spatially and socially segregated than those in wealthy nations, partly as a consequence of land-use patterns developed through a succession of narrowly conceived urban plans that strictly segregate land uses using social and functional criteria.

The final link relates walking to the concept of the RTTC as a tool for social transformation. Through this, the study seeks to understand the potential for improved walking conditions, in terms of safety, quality of environment and overall experience, in increasing an individual's social capital and improving their livelihood – and collectively, in considering the bargaining power of different groups of citizens in shaping the urban form. Ultimately, this offers the opportunity to challenge the status quo and address an alternative future scenario where investment in public space and transport in the global south is redirected to improving walking networks.

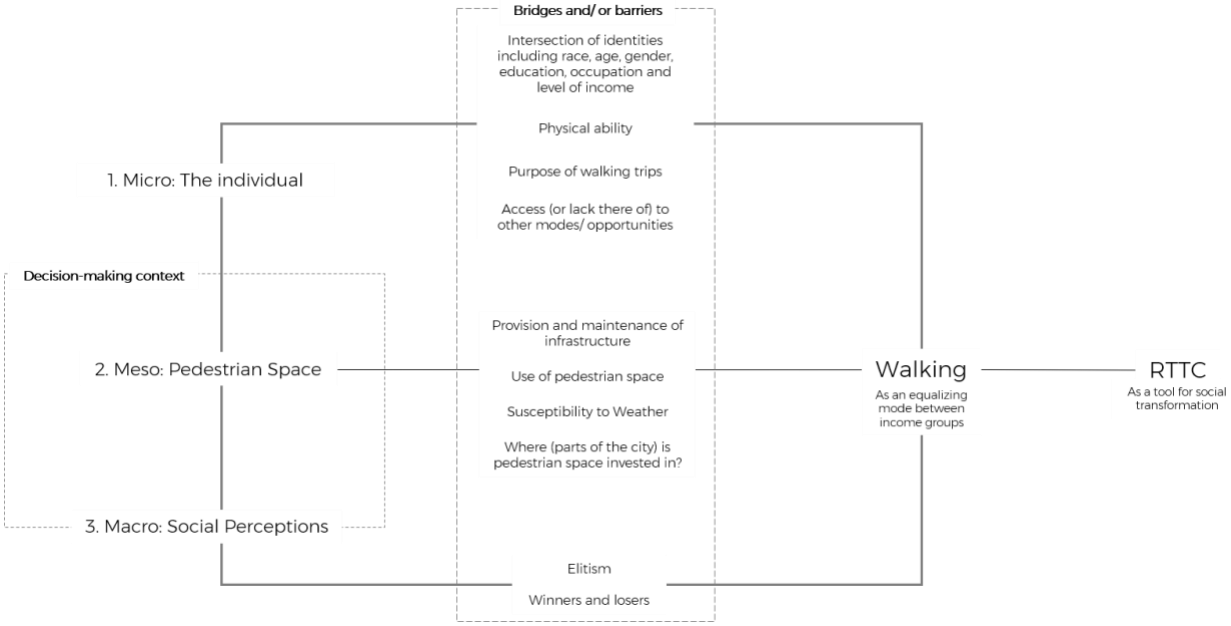

Figure 1. Conceptual Framework

3. Context: Maputo

Since independence in 1975, Mozambique has been governed by the *Frente de Libertação de Moçambique* (FRELIMO), initially as a centralised one-party state but now a multi-party

democracy (Hanlon and Smart, 2008). Their ideology was initially rooted in socialism but, following a destabilisation war and pressures from the Bretton Woods organisations, now follows a neo-liberal free-market economy. Although a low-income country, Mozambique has experienced strong economic growth at the start of the millennium, with economic growth averaging 7.5% per annum. However, following the 2015 commodity price shock and 2016 hidden debt crisis, further hindered by the devastating impact of tropical cyclones Idai and Kenneth in 2019, Real Gross Domestic Product growth is estimated as 2% in 2020 (pre- Covid-19 estimate) – the lowest growth recorded since 2000 when the country was affected by catastrophic flooding (World Bank, 2014). Economic growth is predicted to recover towards 4.3% by 2021 (ibid). Nonetheless, urbanisation is occurring at an unprecedented rate: from 8.7% in 1975 to 37.6% in 2009, and expected to reach 50% by 2025 (Allen and Jossias, 2011).

Figure 2. Contextual Map of Maputo and Mozambique.
Source: Own elaboration - Google Maps Basemap, 2020

Maputo, the country's capital and largest city, has 1.2 million inhabitants and contributes 30% of the Gross Domestic Product (World Bank, 2020). Following independence there was an influx to the city, spurring the growth of informal settlements around the colonial core and perpetuating the dualism between the *Cidade de Cimento* and the *Bairros.* Employment opportunities are concentrated in the cement centre, in the medium-density mixed land-use neighbourhoods where the more affluent live. In contrast, 75% of Maputenses live in the *bairros*, mainly residential areas with some small-scale family businesses (CMCM, 2011).

Thus, Maputo has a mono-centric urban form, with the low-income majority of citizens dependent on para-transit *('chapas')* and very infrequent state-run buses to reach the cement city for work and other activities (USAID, 2006). In order to access jobs, schools and healthcare, the vast majority of *Maputenses* must embark on long, strenuous and unsafe daily commutes made on a combination *chapa*, '*My Loves*', and walking. Under these circumstances, anyone who can afford one opts to buy a car. Maputo thus provides a useful case study for exploring perceptions of walkability and how these affect the ability of all members of society to exercise their RTTC.

The Municipal Council (*Conselho Municipal da Cidade de Maputo* - CMCM), is responsible for improving citizens' living standards, promoting investments and creating jobs (Club of Mozambique, 2017). Through the council, the government sets licensing rules for *chapas*, determines fares to avoid price hiking, plans routes and assigns a route to each licensed vehicle (ibid). Apart from this government involvement, Maputo's transport provision is largely private and semi-formal or informal.

The city has a permanent transport crisis, aggravated by recent currency depreciation increasing the cost of vehicle parts. Despite increased operating costs, the government has not increased fares, leading to fewer *chapas* on the roads (Club of Mozambique, 2017) and huge, time-consuming queues at rush hours.

Whilst transport investments continue to prioritise road building over other options (CMCM, 2011), the network of paved roads in the *bairros* remains insufficient and congestion is increasing. Pedestrians are granted minimal street space, having to weave through rubbish piles, parked cars and street vendors, and negotiate uneven or unpaved pavements (i.e. sidewalks) and hostile traffic. Whilst there is rhetoric about the importance of pedestrians in Maputo's Urban Structure Plan (CMCM, 2008), in practice, they are given little attention. Furthermore, there is a lack of education on driver behaviour and understanding of pedestrian rights, compounded by the lack of adequate infrastructure for walking and design of pedestrian crossings.

4. Methodology

Studies on walkability have often attempted to quantify it (Marshall et al., 2009; Baran et al., 2008; Schneider, 2019). This research adopts a qualitative approach derived from a collection of conversations and discussions undertaken in Maputo in June and July 2017. The research presents the reader with a deep dive into the individual attitudes and experiences of walking in the city, providing a snapshot examination of how specific people navigate pedestrian space. The paper builds on a small, albeit diverse sample to examine the details of the human environments, individual experiences, social processes and perspectives underpinning walking and the environments in which it occurs. Qualitative research has been proven most appropriate when dealing with complex interactions between human behaviour and social phenomena with high subjective and emotional dimensions (see, for example, Pope et al., 2000; Cresswell and Clark, 2007; Hay, 2010; Herrmann-Lunecke et al., 2020).

4.1 Research Design and Data

The research builds on a set of twenty interviews with an equal number of men and women from two contrasting income groups. As there are no exact figures on Mozambique's wealth disparities (Mutch, 2013), identifying 'high' and 'low' income groups has proved difficult. A proxy comprised of residence area, number of household members per bedroom, number of cars per household member, occupation, level of education and predominant mode of transport was therefore used to distinguish income groups. These accumulated indicators provided a robust proxy, considering that poverty is multidimensional (Alkire & Foster, 2011). While these groups do not intend to represent either richest or the poorest of Maputenses fully, they illustrate the significant economic disparity across the urban society in the local

context. Furthermore, by examining contrasting groups of different social, economic and transport-advantage circumstances, it is possible to interrogate how such social and economic differences can have a meaningful influence on the perceptions of individuals in different social positions of their walkability.

Group 1 represented Maputo's wealthier citizens, characterised by living in the Cement City or other affluent area, having at least tertiary education, and typically with a high ratio of cars per driver in the household. Given that the city's poorest members are the homeless (with little or no social capital resulting in little or no voluntary mobility), group 2 was chosen to represent 'the working class', 'wealthy' enough to move between the Cement City and the *bairros.* In contrast to group 1, group 2's participants were characterised by living in the *bairros*, with low-paid work and dependent mainly on walking and semi-formal minibuses. Given the relatively low life expectancy of 55 years in Mozambique – 57 for women and 54 for men (World Bank, 2017) – the most economically-active society members are relatively young compared to Europe (especially in low-income groups). Therefore, the participants' age-range was 21-41, allowing for various responses, although not all had reached their peak earning capacity.

Two Journey Audit Exercises were also conducted to assess the physical state of the walking environment, as well as two interviews with industry 'experts', which brought insight into how the city is managed. Additionally, observational data, in the form of photographs and field notes, were collected throughout the study.

There is a lack of publicly available data from Mozambican sources and the research therefore draws from policy reports and development agency recommendations from International Organisations operating in the country.

4.2 Sampling and Data Collection Methods

The research adopted various sampling methods to reach people from distinct income groups. Using a combination of digital and social networks (see Kosinki et al., 2015, the interviewers contacted various potential participants selected using convenient sampling techniques given context-specific limitations linked with the research's nature. On the one hand, mistrust and lack of interest from higher-income participants are common obstacles for qualitative research. Perceptions of personal security and exposure can limit willingness to participate. For Group 1, social media were used to contact a broad pool of potential interviewees who were then shortlisted according to their availability. The sampling technique emphasised maximising the diversity of interviewees' characteristics, limiting the risks of sampling too many 'cherry picked' participants. While the sampling method for Group 1 may limit the sample's overall representativeness of wealthier groups in Maputo, by securing a rich mix of gender, age, occupations and other relevant characteristics, the data informs analyses of the links between intersecting social positions and walking practices and perceptions.

The research adopted snowballing to identify and recruit participants belonging to Group 2, given added difficulties to approach residents of the *bairros*. Snowballing is useful in accessing 'hidden communities', although it is dependent on the rapport achieved with the participant (Noy, 2008). The use of snowballing enables each interviewee to become the referrer of the next. As such, each participant's disposition and attitude during and after the interview will

influence their referral choice and quality. Therefore, reciprocal recognition is essential in approaching participants, acknowledging their social position, expectations of the research and the implications of revealing their information. Reciprocal recognition was essential to empower participants, especially the most vulnerable, to share their attitudes, perceptions and experiences. Such was the case of artisans approached at the craft market (Feima), many of whom initially refused to be interviewed but agreed after the first person participated. The research used snowballing for building trust as each participant is 'brought-in' by a friend or acquaintance. To reduce the risk of enlisting participants who were too similar in Group two, researchers used multiple 'points of entry'. Two known participants were approached, who then served as 'gatekeepers' for different snowballing channels, each providing two or three contacts. Other participants, such as those from the Feima Market, were recruited on an ad hoc basis.

4.2.1 Interviews

Following the sampling methods outlined above, interviews proceeded according to the availability of the participants. These interviews covered a range of topics including socioeconomic information, journey experiences and perceptions of transport. Although the interviews were identical for both groups, their semi-structured approach allowed each interviewee to introduce new, unconsidered topics that took each interview in a different direction. This accords with Pope et al.'s observation that "data analysis often takes place alongside data collection to allow questions to be refined and new avenues of inquiry to develop" (2000, 114). As such, these new topics were incorporated into subsequent interviews to find common themes across participants' experiences. As indicated by Cloke et al. (2004), the language and location of the interview can influence the success of a deep and meaningful conversation. Interviews were therefore conducted in a place and language (or mixture of languages) of the interviewee's choice, in hopes of creating a comfortable environment of equal power relations between the researcher and participant, and thus a fruitful conversation (ibid).

Time of day and day of the week were also important factors when scheduling interviews. For group 1, meeting after working hours, during lunch breaks or at weekends, was most suitable. Contrastingly, group 2 participants preferred to meet whilst 'at work', when they were already scheduled to be within the Cement City. Consequently, the occupations of group 2 participants were less varied than group 1. The fundamental difference here between groups is autonomy and access to reliable transport, which inherently illustrate the variation in experiences of differently composed intersecting identities. Those living further from the Cement City, mostly representing group 2, depended on informal or semi-formal transport for travel to work, sometimes taking several hours with numerous interchanges. Hence, scheduling interviews had a secondary function of revealing the unbalanced spatial distribution of economic opportunities and the poorly serviced transport links to them.

As mentioned, two additional interviews were conducted with 'specialists' who gave first-hand accounts of working with the municipality and other actors, bringing valuable perspective of the complexities of managing street space in Maputo. The first operates walking tours and was especially helpful for planning the journey audit exercise. The other lectures at the Faculty of Architecture at Eduardo Mondlane University, and provides technical

assistance for planning and implementing urban development projects. This participant also provided maps and urban plans, normally inaccessible to the public.

Table 1 provides a summary of the interview participants, including the details of their living and mobility conditions.

Table 1. Participant Summary

Group	*Age*	*Gender*	*Level of education completed*	*Occupation*	*Number of cars in house/ household members (of driving age)*	*Number of bedrooms in house/ number of household members*	*House ownership status*	*Ethnicity*
1	23	F	Tertiary	Trainee Lawyer	2/4	4/ 8	Own	Black
	21	F	Currently in Tertiary	Student/Art Teacher	1/3	3/ 2	Rent	Mixed
	23	M	Tertiary	Marketing Agent	1/2	2/ 3	Rent	Mixed
	31	M	Tertiary	Sustainability Consultant	2/2	3/ 3	Own	Mixed
	28	F	Tertiary	Development Consultant	2/2	3/ 3	Own	Black
	29	F	Tertiary	Development Consultant	2/2	5/ 3	Own	White
	27	M	Tertiary	Engineer	3/3	5/ 3	Own	Mixed
	24	F	Tertiary	Digital Contact Manager	3/3	3/ 3	Rent	Mixed
	34	M	Tertiary	Entrepreneur	2/2	3/ 2	Rent	Black
	34	M	Tertiary	Assistant Teacher	0	3/ 2	Rent	Black
2	32	F	Currently in Tertiary	Receptionist/ Student	0	1/ 3	Rent	Black
	38	M	Primary	Artisan	0	1/ 6	Own	Black
	35	M	Secondary	Artisan	0	3/ 8	Own	Black
	32	F	Currently in Tertiary	Artisan	0	2/ 7	Own	Black
	31	M	Primary	Artisan	0	2/ 6	Own	Black
	25	F	Secondary	Maid	0	2/ 5	Own	Black
	35	M	Tertiary	IT Technician	0	3/unknown	Own	Black

	41	F	Secondary	Self-employed Hairdresser	0	3/ 4	Own	Black
	25	M	Secondary	Receptionist	0	3/ 4	Own	Black
	31	F	Secondary	Receptionist	0	2/ 3	Own	Black

512

513 *4.2.2 Journey audit exercise*

514 The journey audit exercise was devised to i) assess the state of pedestrian infrastructure in
515 the city and *bairros*; ii) create an opportunity to speak to and observe people whilst they
516 engaged in and negotiated the pedestrian space; and iii) provide a basis for a focus group
517 discussion on the experience. This method was adopted and modified from the work of Adkins
518 et al. (2012, 503) who developed a "systematic inventory of physical characteristics for each
519 street segment in the study area". The exercise took place in two neighbourhoods, Polana
520 Cimento in the Cement City and Polana Caniço in the *Bairros,* on the 1st of July 2017 (Figure
521 3). 16 people participated in the exercise (nine from group 1 jointly with seven from group 2),
522 which took place along two predetermined routes lasting approximately one hour. The first
523 route was divided into five courses, each representing a different type of street/walking
524 experience (Figure 4). Between each course there was a checkpoint, where participants
525 commented on and rated the built environment in the preceding experience. The second
526 route was audited in its entirety, as it was less familiar to the researcher. The activity
527 culminated in a focus group discussion with the participants, on the two audit experiences,
528 leading to a wider conversation on walkability and the need for change in pedestrian space in
529 Maputo in general.

530
531 Figure 3. Journey Audit Exercise Study Locations. Approximate Scale.

Source: Source: Own elaboration - Google Maps Basemap, 2020

Participants representing the high-income group were sampled similarly as for those interviewed, whilst a 'gatekeeper' living in the chosen *Bairro* brought low-income participants to the exercise. This resulted in a group of young males, thus showing the limitations of snowballing.

During this exercise, the researcher took on a *participant-as-observer* position, "form[ing] relationships, and participat[ing] in activities [with] no secret of an intention to observe events" (Waddington, 2004: 114). This allowed the researcher to instruct participants and have an overview of the exercise, and to take part in auditing the experience of walking in the neighbourhoods.

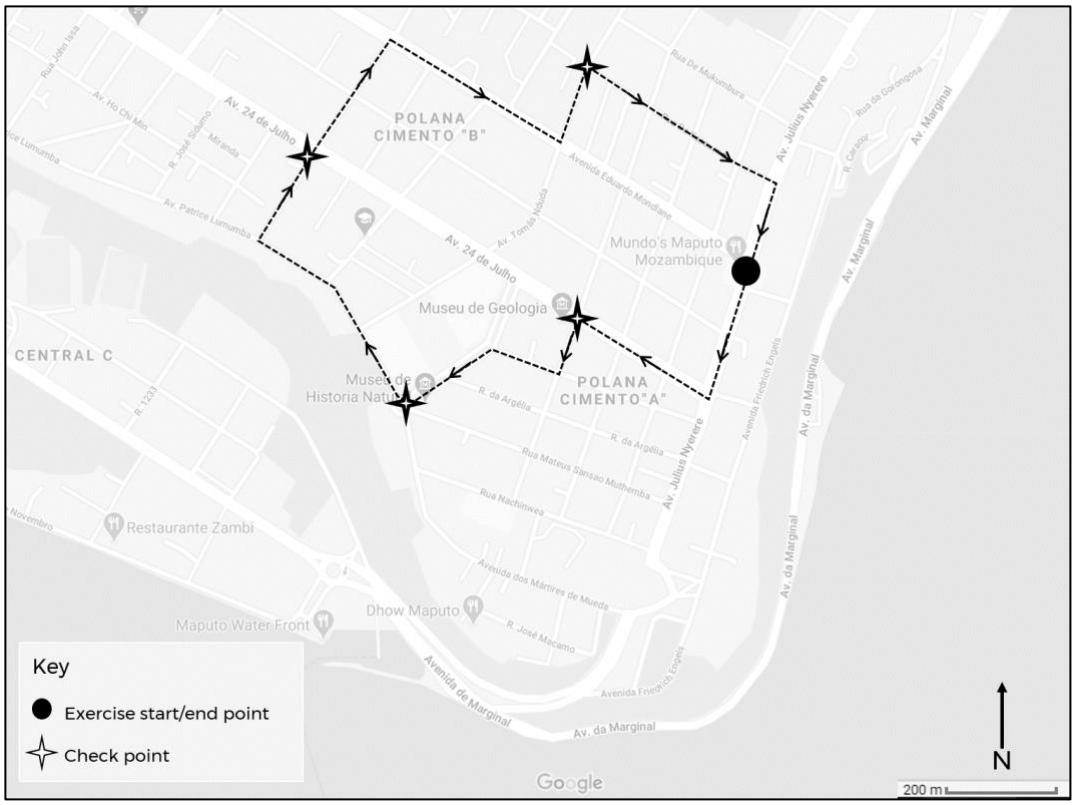

Figure 4. Polana Cimento (Cement City) Journey Audit Exercise Map. Approximate Scale.
Source: Source: Own elaboration - Google Maps Basemap, 2020

4.2.3 Observational data

The observations were made in June and July 2017 and recorded as field-notes, pictures and videos of street life in Maputo. These included accounts of street space designated to pedestrians, the quality/state of these spaces (pavements) and the interaction between pedestrians and motorised vehicles at junctions. In this, the researcher took a *complete observer* role, aiming to witness the city from 'afar' (Waddington, 2004: 114). This was useful in providing another dimension of data, from an outsider perspective.

4.3 Data Analysis

Interviews and focus group discussions were conducted in both English and Portuguese, as required by the participants, and were recorded and annotated for data processing. Audio and initial text data was complemented by transcripts and translations of key comments that were used as an input to qualitative content analysis (Gaber & Gaber, 2019). The analysis involved inductive and deductive coding to identify and organise key themes linked with the framework presented in Figure 1. The analysis involved comparisons within and across groups. Participants were initially compared against their opposing income group, and then comparisons extended within each of these to analyse intersections of other identities (i.e. age, gender, ethnicity).

Two levels of coding were developed as part of the research, following key themes – such as the right to the city– and specific practices associated with aspects of access, barriers and enables. Examples of the latter include comments related to access to mobility options for work and social trips, and proportions of income spent on transport-related expenses. Coded text data was systematised into a spreadsheet to ease cross-reference between participants, and also served to highlight shared and contrasting experiences, perceptions and challenges integral to the study. Systematic analysis of coded data enabled the researchers to synthesise themes in two broader areas: the qualities pertaining to self: *intersecting identities*, and wider factors of the *walking environment*, forming the basis of the findings and analysis in Sections 5 and 6.

5. Findings

This section summarises the findings from qualitative data categorised under common themes and areas of analysis described at the end of the previous section. A general characterisation of walking behaviours and motivations was conducted, serving as background for the qualitative insights derived from the analysis. Acknowledging the limitations of traditional emphasis on income-generating and mandatory activities as reflection of travel patterns (Levinson, 2002; Levy, 2013), the research incorporates leisure and other non-mandatory trips to the assessment. To understand walking habits across the two groups, participants were inquired about the main purpose of their walking trips and their preferred mode for non-time pressured leisure trips of one to two kilometres (or 15-30 minutes). For group 1, short social trips (up to 10 minutes) were the most common reason for walking (70%), while all group 2 participants walked a minimum of an hour a day as part of their daily commute. Such aggregated differences suggest a different role of walking as a means of urban mobility for people in different social positions in Maputo.

Furthermore, walking was the first ‘choice’ for short distance leisure trips for only 40% of all participants (30% from group 1 and 50% from group 2). However, a further 30% of group 2 participants cited public transport as their primary mode, which would involve walking to access motorised transport. From an accessibility perspective (Van Wee, 2016), individual identities and transport practices are heavily influenced by the distribution of land-use, opportunities and urban structures, and infrastructure availability. Such interaction is reflected in Figure 5, which shows participants' locations for each analysis group. The more peripheral locations of participants in Group 2 give additional insights into the behaviour described in the previous paragraph. Moreover, short-distance leisure trips are more frequent in wealthier participants from *cidade de* cemento, suggesting higher availability of local

opportunities. This sets one of the entry points for the structured analysis presented in the rest of section 5. While walking is an accessible alternative for all participants, it is undertaken disproportionally by lower-income individuals, both in length and frequency. The following sub-sections discuss the different themes and sub-themes identified in the content analysis, summarising the main findings drawn from processing the primary data.

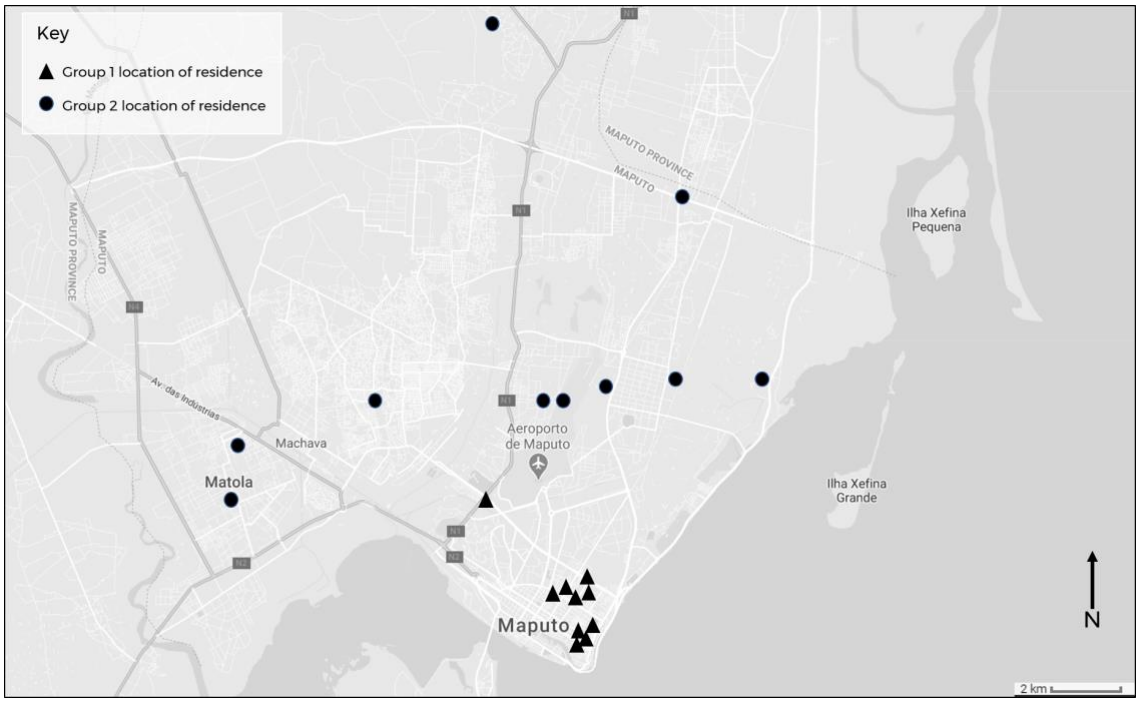

Figure 5. Indicative location of residence of interview participants. Approximate Scale.
Source: Own elaboration - Google Maps Basemap, 2020

5.1 Intersecting Identities

As detailed in Table 1, the participants interviewed held a range of intersecting identities of race, gender, age, occupation, and level of education and income. This sub-section unpacks some of the links between different social identities and walking practices, attitudes and experiences, reflecting on the commonalities and differences within and across groups of analysis. These findings provide relevant insights for the analysis of the walking environment and its influence on walking's role in exercising the RTTC. The findings in this section examine both the micro and macro scales of the framework presented in Figure 1.

5.1.1 Race

Given Mozambique's history, the lower-income group was, unsurprisingly, invariably black. Race tends to govern the interactions between participants and other actors in the walking space, including those responsible for maintaining safety and those exercising power and control, either through authority or fear. Race also explains some perceptions and attitudes towards walking closely linked with other social identities such as income and education.

Of the 20 respondents, only two (mixed-race from group 1) mentioned that their ethnicity was a disadvantage when walking, feeling that they were perceived as wealthier and therefore targeted for theft. Another participant felt that being black was advantageous in terms of

police harassment[1]. He was more likely to be asked to show identification documents when walking with his white friends than when alone. He held a strong feeling towards the incorrect policing of public space and referred to Mozambique as a "quasi-free society". Another interviewee, a black 35-year-old male in group 2, also shared encounters of police harassment - in his case, accusations of being a robber on the cement city's outskirts. This sense of being controlled resonated with many participants.

The only white participant in the Journey Audit Exercise found that, whilst he stood out in the *bairro*, he did not feel at risk while in the group, although he might if he were on his own.

Overall, 20% of interviewees acknowledged race (either their own, or someone else's) as a factor influencing a person's perception of walkability.

5.1.2 Gender

Gender has a considerable influence on the experience and perceptions of walking across both groups of analysis. Gender is associated with vulnerability and systematic disadvantage, often imposed by other actors in the public space. Linked with a significant determinant of accessibility, gender identities intersect with the temporal dimension of access, reducing women's temporal window for walking and the strategies they resort to when doing so.

Congruent to other research on gender and transport, 80% of the women interviewed felt at risk of theft or sexual harassment when walking alone. One low-income woman said: "…it's much worse for a woman. If you're a man, they'll only go for you if you're flashy, but any woman is a target". The two women who did not feel at risk suggest this was because they rarely walk alone, especially at night. All 10 women interviewed know when and where they should and should not walk, each having their own 'tactics'. For example:

> "[…] when I'm walking alone I try to make myself look bigger, I change my walk to look more confident so that people don't try anything. I definitely watch what I wear. I don't wear anything short at night if I'm going to walk. I don't wear anything that will restrain me from fighting, if necessary. […] And I always walk around with my keys between my knuckles in case I have to stab someone"
>
> (Female, 21)

Gender intersects with other social identities such as race and income, imposing constraints and social conventions that can influence when, where and for what purpose to walk. This mixed-race participant noted race as an issue when walking and is the only high-income female who walks as her predominant transport mode. The other participant with this intersection of race, gender and income (mixed race, female, high-income), who walks only for short social trips and for exercise (in a group), also expressed concerns for safety when walking.

All six women on the Journey Audit Exercise felt that they should dress in a certain way when walking both in the cement city and the *bairros*.

[1]. Police in Mozambique are poorly paid and hence known to be corrupt.

None of the men felt that their gender was disadvantageous, although one said: “thieves do not discriminate – they attack men just as much as women”. Nonetheless, gender and income were perceived as influencing a person’s perception of walkability, with the intersection of race, further affecting some.

5.1.3 Education, income, and Occupation

Interviewees' education level and occupation show that group 1 was more-highly educated than group 2 and that participants of group 1 held more-professional occupations. Levels of education, often correlated with income, has an effect on perceptions and attitudes towards walking. Findings suggest that the higher the level of comparative advantage of the participants, the stronger the resistance to walk driven by social, safety and comfort motivations. 70% of group 1 interviewees felt that it was inappropriate for them to walk to work, fear for their safety (and that of laptops, etc.), inconvenience (longer travel time and arriving tired), or how others would perceive them. One high-income interviewee explained:

> “I think it’s […] a social class thing. […] Walking on the streets shouldn’t be a bad thing, but it has negative connotations because if you’re walking on the streets it means you don’t have a car and you’re walking between meetings and so you arrived all sweaty – it’s shallow, but we subconsciously think like that.”
>
> (Female, 28)

Another participant from group 1 adds:

> “Once I decided to meet a client on foot (10 minute walk) and my friend was driving past me and stopped to give me a lift. He said ‘it doesn’t look good’, and that’s when I learned that you can’t arrive at a meeting on foot. You can’t arrive with dust and sand on your shoes”.
>
> (Male, 27)

In contrast, the theme of hopelessness prevails in group 2,

> “The family I was born in means that all I have is walking, so I walk because I have to”.
>
> (Male, 38)

Symbols of status surround the idea of walking, demonstrating that income (and thus, social class) highly influences perceptions of walkability. One respondent also explained that travelling by car is a sign that you are making money. A group 2 participant asserts:

> “Here people walk because they lack other options – they lack money, they lack public transport. Once you can afford a car, you buy it”.
>
> (Male, 34)

Interviewees were asked whether, using only walking, they could reach all their economic, social and health needs. All responded ‘no’. All four artisans admitted that they were frequently indebted by transport costs, having to borrow from friends or default on market rent in order to get home. This is linked with the spatial manifestation of conditions of social

and transport disadvantage, which imposes added burdens on those in a less convenient position to navigate the city exclusively by walking.

Notably, no participant from group 2 owned a car or had access to a car in their household, but all 10 of them said that they aspired to own a car, as a "necessity and not a luxury". A widow from group 2 who is the sole bread-winner of a household of four explained:

> "A car does not have to used every day – that's too expensive. [It's essential for] emergencies, otherwise you'll be dying of malaria at a bus stop."
>
> (Female, 41)

This reveals the fundamental problem of spatial mismatch, where the most deprived live furthest from the main centres of employment and social and educational facilities.

In contrast, six of the 10 participants in group 1 own a car, two can borrow a parent's car, one relies solely on taxis, and one has chosen not to have a car. 70% of this group felt owning a car to be a necessity as public transport is unsafe, crowded and poorly managed. Four revealed that they do not enjoy driving in the congested and undisciplined traffic of Maputo but feel that there are no alternatives. The four participants who choose not to drive every day attribute this to the associated stress. However only two use walking as their main transport mode: one is saving to buy a car, but the other says that would be unnecessary as "Maputo is mostly flat and not a dangerous city". However, another participant explained:

> "It's not about distance, being in a car provides shelter… If you look around the city you'll notice many traffic lights have been hit, so it's clearly not safe to walk on the pavement" (male, 34).

Agreeing, a group 2 participant declares:

> "You can be killed walking on the pavement – it's the same thing as being on the road"
>
> (Female, 25)

Thus, she feels safer walking in her *bairro* where pedestrians and cars both share a sandy track, rather than in the city where cars reach greater speeds.

5.2 The Walking Environment

Findings in the Journey Audit Exercises showcased just how different the cement city's walking environments are from those of the *bairros*, and highlight the overall limited pedestrian space investment throughout the city. This section expands on the meso dimension of the framework proposed in Figure 1, pointing at the interactions between the built environment and the configuration of individual and social behaviours, perceptions and attitudes about walking. To unpack the walking environment's features implies a deeper analysis of objective and perceived walkability across the spaces used for examination in Maputo. Figure 6 below illustrates the environments presented in order of themes: a. Infrastructure; b. the Contested use of pavements; and c. the Ambiance and suitability to weather. The walking environment features are dynamic and give rise to different subjective perceptions and attitudes, shifting

across time and the urban space. Half the interviewees experience this dualism daily on their home to work journey, encountering various impedances along the way. Drawing on these individual recollections and the auditing exercises, the following factors were recognised as shaping the walking environment.

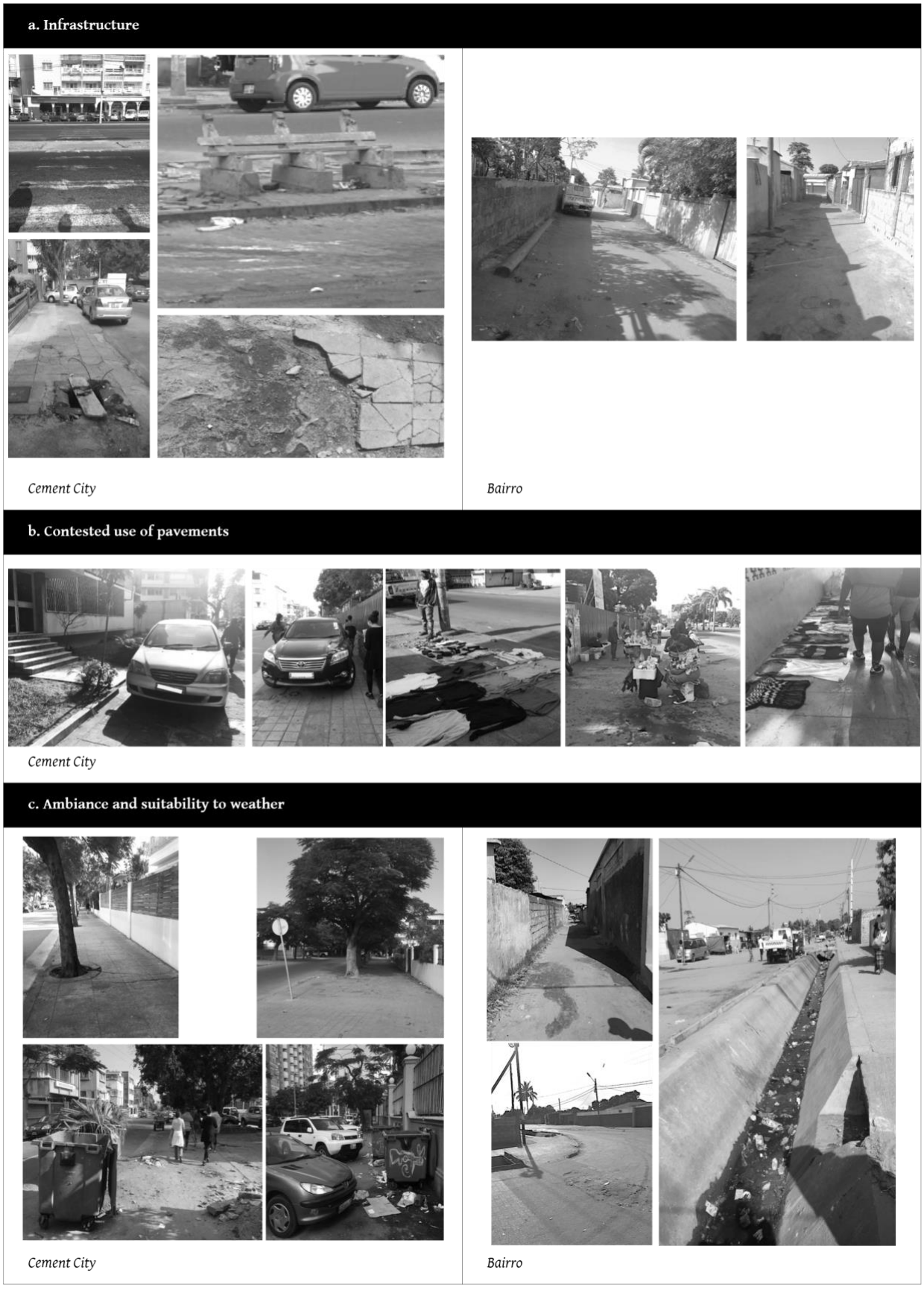

Figure 6. Journey Audit Exercise Photos.
Source: Massingue (2017)

5.2.1 infrastructure

While the CMCM is officially responsible for providing pavements and pedestrian infrastructure, this falls on the citizens in both the cement city and the *bairros*. This results in uneven footways, as each householder paves their frontage to no specification. Worse, pavements are rarely maintained and unevenness increases, exposing patches of sand with different levels of erosion.

Most residential roads in the *bairros* are not paved, although neighbours sometimes come together to do so. There is no differentiation between pedestrian and vehicular space, but as car ownership is low, this is not seen to affect pedestrian safety. However, poor illumination a cited obstacle, particularly in the *bairros,* where five out of ten interviewees confirmed that their home street has no lighting. One other explained that she has lighting only because a neighbour has installed a floodlight. Thus, only 40% of group 2 has publicly-provided illumination, in all cases because they live on a main road.

In terms of maintenance, there is evidence of inadequate and unclear crossing facilities seen in the cement city. Broken benches are also a common sight. Only one participant out of 20 mentioned the need for these, emphasising that benches and public toilets would improve his walkability by providing resting places and reducing unpleasant smells. This well-travelled group 1 participant asserted:

> "People in power have lost touch with walking so much that they don't even know that the walking environment needs improving, and the people who actually walk don't know that they deserve better".

All group 2 participants expressed feelings of frustration and hopelessness regarding pedestrian space management, conceding "this is how it is here, you get used to it". When asked what they thought they could do to improve their city, one explained:

> "Selfishness and elitism have overtaken the country up to the highest level, so you just have to focus on yourself. In this [context] no one even thinks of public space. This place has become very individualistic"
>
> (Male, 34)

Voicing similar thoughts, a man trying to sell his art at Feima declared: "We, the poor, have little power".

5.2.2 Contested use of Pavements

All 20 interviewees listed multiple uses of pavements as a hindrance to walking, with parked cars the most frequently-mentioned issue. The interviewees from households with at least one car (8) revealed that there was an average of one car per household member of driving age. There is a serious lack of parking provision, and growing demand. Thus, both driving and non-driving interviewees prioritised space for parking above improving the state of the pavements. Infrastructure shortfalls combined with contestation of pavement space make walking on the roadway the preferred or even the only option in many places. This creates tension between pedestrians and drivers, where drivers are perceived as entitled, aggressive

and arrogant, and pedestrians are characterised as erratic and irresponsible. While these representations may be exaggerated, the walking environment is undoubtedly perceived as dangerous.

Informal sellers were also identified as obstructing pedestrian space. Whilst most participants supported Municipal efforts to expel vendors from pavements, one mother-of-three living in the *bairros* enjoys the convenience of grocery shopping on her way home without having to detour into shops and markets.

A new father in group 1 explained that previously he hardly noticed uneven and congested pavements when walking. Faced with the challenge of navigating Maputo streets with a pushchair, he mostly walks on the road, facing oncoming traffic.

5.2.3 Ambiance

Walking for exercise (in specific sea-facing streets) was popular among group 1 (50%), but two complained of poor air quality, probably attributable to the proliferation of elderly cars with cursory maintenance and inspection. No group 2 participants thought pollution was an issue, perhaps demonstrating a lack of knowledge.

For those who walk recreationally, the pedestrian environment's best features in the Cement City are the trees lining the pavements. Noticeably, these are less prominent in the *bairros*.

All nine high-income participants in the Journey Audit Exercise enjoyed walking in the *bairro* and did not feel threatened, declaredly because local residents accompanied them. However, none was willing to return on their own, citing safety concerns. In contrast, 50% of group 2 preferred walking in the *bairros*, as there is a sense of community and vigilantism:

> "In the city people will watch you getting robbed in broad daylight because they are too scared to say anything, but in the *bairros*, thugs wouldn't dare. People will chase a thief - even for a complete stranger."
>
> (Male, 38)

Waste and litter are prominent on Maputo streets[2]. In addition to foul smells (sewage, urine and rotting waste) and visual degradation, interviewees complained of vagrants who sort through waste for food. One artisan shared his thoughts on poor waste management, explaining that large waste heaps attract more homeless and mentally-ill people who can be dangerous. Another participant voiced his health-and-safety concerns for pedestrians in the *bairros*, where commonly there are open storm drains (in practice sewers) along the roadsides; with poor illumination, people can easily fall in, with drastic consequences (figure 6).

Whilst everyone identified rubbish as an obstacle, one man in group 2 voiced that everyone had become used to it - "our city is dirty, that's how it is." This resonates with the previously-mentioned sense of helplessness, complacency with the current situation and lack of

[2]. As explained by Allen and Jossias (2011), "the CMCM provides waste containers on the side of streets in which households should deposit their waste. […] Collection is often deficient, with waste accumulating in open piles over several days."

conviction for changing it.

5.2.4 Weather

> "Mozambicans are not scared of cars; they're only scared of the rain."
> (Mozambican Proverb)

Rain occurs throughout the year in Maputo and in summer is often torrential. Group 2 participants identified rain as a major deterrence to walking, often precluding participants from making a journey. Even after rain has stopped, the cement city's inefficient drainage system means that pot-holed streets and footways may take days to dry. In the *bairros*, unpaved streets often become saturated and flooded. For group 2 participants, getting wet has serious consequences, including arriving at work inappropriately dressed and being sent home without pay and, more seriously, falling sick and possibly losing their job. For the two high-income participants who mentioned rain, it was merely an inconvenience. In the absence of rain, sandy dust is present throughout the city, especially in the *bairros*, causing discomfort and dirtying clothes and shoes, as all participants noted.

Four high-income participants avoided walking completely in summer due to the heat. Conversely, no lower-income participants mentioned restricting walking in the heat, even though the *bairro* streets provide little shade.

6. Discussion

Findings in section 5 unpack contrasting experiences at the micro, meso and macro levels, interrogating the individual experiences from an intersectional perspective. At each level, the analysis of both groups from perspectives of race, income, age, and gender reflects different bridges and barriers that either enable or hinder walking's role in the exercises of the RTTC by participants. This is reflected first by the different walking patterns and experiences presented by each group of analysis. Whilst race appears to have little influence, gender did impact the perceptions of walkability. Women across social class organised their walking habits, where possible, around the time of day and locations they perceived to be safest in line with the literature on gender and social exclusion (Akyelken, 2013; Grudgings et al., 2018; Herrmann-Lunecke et al., 2020; Oviedo & Titheridge, 2016). Granted more autonomy due to access to more travel options, high-income women are more able to avoid unsafe situations. Similarly, high-income men walked when they felt it was safe to do so, also with the comfort of other options.

The examination of the walking environment's physical attributes and configuration at the meso-level enabled us to question the role of differentiated investment and maintenance efforts in consolidating an urban structure that prevents walking from playing the equalising role suggested in Figure 1. All participants, regardless of social class, identified similar factors influencing their perceptions of walkability, namely safety and security issues, poor and deteriorating infrastructure, an unpleasant environment, and car-centric social expectations and aspirations. These influenced each group differently. For group 1, who have more mobility alternatives, the physical and social obstacles presented in the pedestrian environment come as a mere inconvenience which can easily be avoided – usually by using a private car. That is,

their socioeconomic position affords them a choice of when, where and for how long they walk. In contrast, group 2 participants have less flexibility and will walk regardless of the conditions. Walking is a mandatory part of their journeys, making up the 'first and last mile' that are poorly served by public transport. Here Levy's (2013) contestation of the notion of travel 'choice' is clearly warranted, as 'choice' is revealed as fallacious. Moreover, the (lack of) choice becomes an impedance to exercising their individual RTTC, bringing known negative individual and social consequences.

A critical examination of the findings from our analytical framework's perspective enables us to draw insights at the macro-level, shedding light on the social perceptions framing the individual and the physical drivers of walkability. Our findings point to the collective construction of perceptions about walking and aspirations related to what desirable urban mobility constitutes. We found evidence of stigmas and subjective perceptions that can influence individual and policy decisions shaping the public space. For both groups walking is seen as an inferior mode, with social aspirations diverging sharply from it. Those fortunate enough to have experienced more pedestrian-friendly cities recognise what could be done to improve the pedestrian space in Maputo. However, they are invariably people who do not *need* to walk in Maputo, as members of the most affluent and influential group. Conversely, those who are required to use the pedestrian space are (i) less aware of how the city could be, (ii) oblivious of their entitlements and rights, and (iii) although the majority, hold smaller collective bargaining power than their elite counterparts.

The worse-off group in this study does not represent Maputo's most deprived people, yet demonstrates just how wide the income disparities are. Seemingly, the citizens of Maputo hold unequal rights to change the city, with those most in need of change being inconspicuous. Perhaps the expectations of universal state-provided services inherited from the post-independence socialist era have lingered through the transition to a free market economy, leading to disappointment amongst the many who feel uncared for. The themes of individualism and elitism are apparent and manifested in a mindset of hopelessness, distrust in the government, and complacency about the current state of affairs. According to Baxi, the 'we-ness', or the ability to act collectively, "is not a given, but has to be constructed, forged or fabricated if only because those who wield economic, social and political domination always aspire towards fragmentation of the emergent 'we-ness'" (UNESCO, 2011: 15). Given corruption, questionable political freedom and economic disparities, it is questionable how much the formation of 'we' is desired in Maputo (i) by those who benefit from the socioeconomic division and, perhaps more crucially, (ii) by the people who do not even know they have rights. Given this milieu, it is understandable why the lower income group concerned themselves solely with their individual responsibilities and aspirations as opposed to wider aspects of urban life. Moreover, as much of the urbanisation in Maputo has occurred without state guidance or support, citizens have become used to this dynamic and maintain relatively low expectations regarding their public space.

As society becomes ever more calibrated to the private car, both physically and socially, urban policies too become blind to benefits of walking. The mono-centric organisation of economic and social opportunities and the unreliable and insufficient provision of public transport, together with the dangerous and unpleasant walking environment, make travel for the poor strenuous and unnecessarily time-consuming. At the macro scale, Cervero reports that poorly planned concentrated growth can be counter-productive, leading to "extreme congestion,

worsening air pollution that threatens public health, and an overall decline in the quality of urban living" (2013, 10) – symptoms that Maputo has begun to show.

Whilst outside the scope of this study, this routine overlooking of pedestrian space automatically excludes certain members of society, such as the disabled and the elderly, who would find it especially difficult to navigate Maputo's pedestrian environment. Transport impedances, of both the walking environment and public transport systems, impose costs for other aspects of people's lives, particularly for social relations which are seen as 'dispensable' in relation to survival. With similar findings for township dwellers in South Africa, Lucas advocates that, in order for such costs to be recognised and appreciated as hindering citizens' quality of life, "access to accessible, affordable, safe and reliable public transport needs to be identified as a *basic human right*" (2011, 1332).

In the context of Maputo, this study proposes instead a right to a dignified pedestrian environment, whereby citizens across social strata will be more inclined to value walking. Conversely, by neglecting the pedestrian space, the needs of vulnerable groups in the population are also ignored. On this premise, promoting walking, investing in the pedestrian environment and decentralising places of work, recreational and health opportunities would bring wider social and economic benefits to individuals and communities.

Lefebvre's ideas imply a grassroots social movement in which the RTTC can be used as a tool for social mobility. The biggest challenge for this, therefore, is not the government's minimal involvement in pedestrian space but the social stigma associated with walking, by society as a whole. Since the decision-makers, drivers, aspiring drivers and walkers all share this attitude, it is difficult to see how this social change will start.

7. Conclusions

This study illustrates that, in addition to the quality of infrastructure, social norms and perceptions of walkability heavily influence who walks, when, where and why. Such findings contribute to a growing body of research interrogating the influence social positions, social identities, and socioeconomic characteristics have on perceptual and behavioural determinants of walking (see Battista and Manaugh, 2018; Manaugh and El-Geneidy, 2011; and Forsyth et al., 2009). Our examination of the bridges and barriers presented in Figure 1 suggests that in the context of Maputo, race and gender have minimal influence on walking behaviours and experiences compared with income. Contrasting higher and lower-income walkers provides evidence of the local manifestation of an environment of extreme 'winners' and 'losers' ingrained by transport planning (Levinson, 2002). When social identities are intersected in such an environment, the low-income woman (who in this study was invariably black) emerges as the most disadvantaged due to her additional safety risks. Regarding the RTTC, both men and women from the low-income group showed lower individual and collective rights than their high-income counterparts.

Our research also fits with scholarship pointing at the differentiated effects of the walking environment's physical attributes on perceptions and behaviours (Hoehner et al., 2005). As shown across section 5, attitudes towards walking of most high-income participants were more influenced by the walking environment's state, having a higher bearing on their walking

choices than in low-income participants. In this group, physical and behavioural deterrents to walking such as poor street infrastructure, aggressive driving practices, cluttered pavements and the climate shape mobility preferences, making the private car the commonly preferred alternative for high-income participants. When choice is removed, however, such as for lower-income participants for whom walking is the only option for certain parts of their journey, the influence of negative perceptions of the walking environment (e.g. unpleasant and unsafe pedestrian infrastructure) on behaviour is much lower.

These mobility inequalities have relevant implications on the ability of citizens to exercise their RTTC and have negative implications for the just materialisation of principles and policies stemming from 21st century movements towards sustainable and inclusive cities, such as Habitat III's New Urban Agenda. In this context, walking is posed as a potential 'equalising mode', to level out the vast disparities in urban mobility. However, leveraging walking to increase urban equality requires a recognition of the stigmas and opinions surrounding walking and the power and influence different groups of walkers have to physically and socially transform the walking environment. Like Levy (2013), Lucas (2011) and others (e.g. Jones, 2016), this study therefore calls for a paradigm shift in transport planning, towards more 'person-scale' considerations.

The analysis of findings in light of the framework proposed in this research enables the study to identify potential interventions at the macro, meso and micro scales. Given the differentiated perceptions and conditions under which walking takes place in Maputo's *Cidade de Canico* and *Cidade de Cemento*, to promote walkability and change the associated perceptions is necessary to physically improve the pedestrian space. The most urgent actions are infrastructural improvements, including setting standards for pavements (if not a city-wide re-paving programme led by the CMCM), installing illumination in the *bairros*, improving drainage and sewage across the city, and establishing pedestrian crossings. These must be accompanied by appropriate maintenance.

At the macro scale, decentralised land-use patterns that promote alternative nodes of economic, health and social opportunities can contribute to shorter (and thus more equitable) distances, more conducive to walking. In this way, walking can deliver social equity by reducing the importance of income as a determinant of mobility. Finally, policies aimed at promoting the pedestrian space should be implemented, seeking to increase ownership of public space and highlighting the RTTC to all citizen groups through communication and promotion campaigns. Strengthening civic culture around walking can be complemented by actions that recover the sense of commonality and importance of the walking environment, including better on-street waste management and banning parking on pavements (together with provision of more, appropriately-located, car parks).

This study has shed light on the existing discrepancies in the conditions of the pedestrian space in different areas of Maputo building on a diverse non-representative sample of respondents that nonetheless illustrate marked inequalities in the local context. Limitations to the methodology discussed in section 4 can be addressed by future studies that expand on our methods and framework across more neighbourhoods, at different times of the year, and while assessing a wider pool of participants that extends to the disabled, the young and the elderly. Operationalisation of the framework and structure of this study through quantitative

methods can contribute towards expanding current understandings of walking and influence mainstream debates and decision-making, with potential replication in similar cities. In doing so, such studies will contribute to literature on walkability and access to opportunities, and can aid in making a case for walking as a means of development and equality in cities of the global south.

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