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# Access to the Brazilian City – from the perspectives of low-income residents in Recife

Maria Leonor Maia[a], , Karen Lucas[b], Geraldo Marinho[a], Enilson Santos[c], Jessica Helena de Lima[a]

a. Universidade Federal de Pernambuco, Brazil
b. Institute for Transport Studies, University of Leeds, UK
c. Universidade Federal do Rio Grande do Norte, Brazil

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## RESEARCH HIGHLIGHTS

- The mix of land uses is fundamental to service basic daily activities needs of low income residents.
- The micro-level interventions are more important than major transport schemes.
- Transport infrastructure and services improvements are insufficient to reduce inequalities.

## ABSTRACT

This paper describes a study of the transport and accessibility needs of residents living in low-income communities in the City of Recife in Brazil. It discusses the theoretical background underpinning the academic and policy rationale for such a study. We outline the qualitative methodological approach, which was adopted to engage in meaningful knowledge exchanges with what are often considered by policymakers to be the 'hard-to-reach' citizens of Brazil's favelas. In the exploration of our study results, we describe the complex relationship between the mobilities and livelihoods of the research participants. A key question the paper seeks to examine is how far the restricted mobility and activity patterns of citizens in these low-income communities influences or interacts with their quality of life outcomes in terms of their wealth, health and wellbeing? A second question is whether transport planning and policy can have a role to play in enhancing their future life chances? Currently, transport planners and policymakers in Brazil know very little about the specific accessibility and mobility needs of people living in Brazilian low-income communities. Our aim is to shed some light on the issue of their mobility needs in the context of a wider set of policy discussions about how to protect the livelihoods and wellbeing of low-income populations within rapidly emerging urban economies.

*Keywords: transport, accessibility, low income, Brazil, urban planning*

## 1. INTRODUCTION

This paper aims to explore the complex relationship between the mobility and accessibility needs of citizens living in low-income communities and their economic and social wellbeing. The research we discuss took place in two different parts of the City of Recife in Brazil in 2012. The main issues the paper explores is how different low-income travellers in these two different geographical locations within the same city make their decisions about where and where to travel, and how well the transport system currently works to support their livelihoods and wellbeing.

Contrary to the volume of studies about slums upgrading programmes for low income communities in Brazilian cities (see for example, Rolnik,1999; Marinho, 2007; Maia,1995), there have been very few studies about their transport needs. Until recently these communities have been largely inward looking and self-serving in terms of the everyday activity patterns of their populations. Therefore, the Brazilian academic and policy literature is incipient in this respect.

Previous studies, such as those developed by Rivera (2011), Fiori and Brandão (2010) and Duarte and Magalhães (2009), have focused on the introduction of major transport infrastructure facilities such as cable cars, escalators and elevator in slums areas in Rio de Janeiro and the benefits they bring to the community. However, the issue of transport provision in slums upgrading programmes generally refers to the paving of roads and improvements to stairways as the most important measures for improving connectivity. Most of these studies focus on issues of mobility *per se* and none of them consider how people in low-income communities gain access to socio-economic opportunities within the cities in which they live or how transport facilities can be an enabler of, or barrier to, this access.

Koch et al. (2013) developed an important more detailed study. It describes people's travel and activity patterns in three slums in the City of Rio de Janeiro and explores specifically how transport investments can help to support slum-upgrading programmes in these communities. A mobility index, vehicular ownership, non-motorized transport, trip times and motives, and perceptions of road safety were analysed based on a survey of 2,000 residents. The authors conclude that:

(i) *"Investments in transport are a central component of slum-upgrading programmes, yet the base of knowledge about transport use in Rio's favelas is woefully inadequate and the impacts of previous efforts to improve transport remain little understood or analysed" (ibid: 56), and*

(ii) *"upgrading projects have profound impact on how residents get around their community and how they access the formal city. Any definition of transport should include vehicle ownership, modal split, and non-motorized transport (ibid: 57)".*

The authors affirm that it takes time and detailed explorations to understand the specific travel constraints and the unique accessibility needs of low-income communities, which have been disconnected for so long from formal political, economic and social processes within Brazilian cities. Their perspective has partly helped to support the rationale for our own study, which adopts a detailed qualitative methodology.

Our study also echoes the shift away from solely mobility-focused policies towards accessibility and social welfare perspectives that have been charted in the contemporary transport policy literature outside of Brazil. For example, in the UK, it is achieved through the accessibility planning function as part of local transport plans (Department for Transport, 2006). In The Netherlands, all new transport projects must now prove their contribution to improved accessibility against new accessibility indicators (Ministry of Infrastructure and Environment, 2011). Australian States also now have transport policies, which directly aim to improve the accessibility of low-income populations (Lucas and Curry, 2011). These policies have been widely adopted in recognition that, whilst mobility is an important contributor to the social inclusion of low-income population, it is access activities rather than access to transport itself that is the key factor.

There is less evidence of this conceptual shift within transport planning in developing context. In Latin America, most of the experience is concentrated in Colombia (e.g. Cahill Delmelle and Casas, 2012; Jaramillo et al, 2012). In Chile, some research has been undertaken to assess the role of public transport in the social disadvantage of individuals (Ureta, 2008) and for the development of indicators of social exclusion at the transit zone level (Jara, 2009). In Asia and Africa, some studies which focused on understanding the mobility needs and access to transport in slums areas revealed, for instance, that residential location, employment location, time and cost of travel influence the travel behaviours of the poor; non-motorized trips are made more frequently for the residents of the centrally located settlement; the use of public transport is low and most trips are made on foot (Baker et al, 2005).

In Brazil, the recognition of the interface between transport provision, the accessibility of activities, goods and services and social disadvantage is largely absent from both academic and policy formulations. However, it is increasingly being recognised that without such a shift in policy focus, urban transport provision will be inefficient from both the point of view network design and the delivery of public transport services (Santos and Aragão, 2000). Until now the overwhelming tendency of transport and city planners in Brazilian cities has been to merely reproduce patterns of organization and operation of a transport network without taking into consideration their prevailing segregated and increasingly sprawled nature. The abundance of community and informal transport serving the low-income communities of many Brazilian cities can to attest to the inadequacy of Brazil's urban public transport networks. One example is the proliferation of *mototaxis*, vans and community minibus services, which are highly valued by urban poor communities but, in general, remain unregulated by the public sector and considered as informal/illegal transport (Maia e OrricoFillho, 2007).

This evidence suggests that interactive research with urban poor populations in order to understand more about how transport policy and planning can help to enable their social inclusion from their own perspectives within the rapidly changing urban contexts of Brazilian cities that they face. Our paper is aimed at providing some initial insights in this

respect. It first sets the wider context of the study based on a review of the relevant academic and policy literatures. Second, it presents an overview of the Brazilian and Recife in order for the reader to be able to understand the background social context for the study. The third section describes the methodological approach that was adopted, including a description of the two case study areas. In section four, we discuss the headline findings from the study based upon our qualitative analyses of the self-reported accessibility and mobility needs our study participants. Finally, we offer a discussion of the implications of our findings for future sustainable urban planning and transport policy in the City of Recife, as well as identifying the wider relevance of our findings for other similar rapidly developing urban conurbations.

## 2. AN OVERVIEW OF THE BRAZILIAN AND RECIFE CONTEXT

The transport geography literature suggests that people's ability to reach any given destination is intrinsically affected by numerous factors. People living in certain geographical areas may have better access than others to employment, health care, education and social networks, for instance. Furthermore, the lack of opportunity to travel by certain modes of transport, such as the automobile, can have a significant effect on the ability of individuals to reach different destinations within the city (Lucas, 2004; Handy, 2005). As such, it is important as a first step to offer an overview of the wider geographical, social and political context for our research.

### 2.1 The Brazilian context

According to the Census 2010, 84% of the 190,732,694 of the Brazilian population live in urban areas (Brasil, 2010). This figure was less than 50% in the 1970´s. From that decade onwards the rapid urbanization process which was undertaken in the country was characterized by unequal distribution of the goods and burdens with low-income people often living on inappropriate urban land, in areas of risk and/or located on the outskirts of the cities with limited access to facilities and services, including the provision of schools, health care centres and public transport (ibid). According to IBGE, most of the households in low-income settlements are concentrated in 20 Metropolitan Regions, especially in São Paulo, in Rio de Janeiro, in Belém, in Salvador and in Recife (ibid).

These settlements are characterized by the illegal and informal occupation of public or private land, high-density settlements with inadequate basic infrastructures. A mixture of land uses common within these areas - small shops, groceries, pharmacies, bakeries, private and public primary schools, health units, churches, etc. Their geographical location in relation to the CBDs may vary from city to city. For instance, in Recife, where the fieldwork was undertaken, they are fully extended throughout the city scattered across all neighbourhoods; in São Paulo they are concentrated in the periphery (Lacerda et al, 2007; Somekh, 2011). As such, differences in housing location may not only make a huge difference to people´s accessibility and mobility needs, but can also affect their travel horizons and perceptions of the activities they can reach within the city.

### 2.2 The Recife context

Recife is the capital of the State of Pernambuco in the Northeast of Brazil with 1.5 million inhabitants. It is the main city of a metropolitan region that is composed of 14 municipalities reaching a total of 3.7 million people[i] - the fifth largest metropolitan region

in the country. Historically, this region has been characterized as a place of social inequity and massive poverty, of huge socioeconomic contrast among its population. In 2007, GDP per capita in Pernambuco was about US$ 4,000, representing just half of the average Brazilian rate[ii]. In the last few years, however, Pernambuco has become one of the fastest growing and most affluent states in Brazil and will experience further development over the next 10 years. This will provide new opportunities for employment and property and land use development besides investments in infrastructure and services.

Nevertheless, the rapidly expanding economy and its positive effects are not evenly distributed across the population or followed by policies that are necessary to alleviate social disadvantage and, as a consequence, there remains a significant proportion of citizens living in poverty and in poor environment. The 2010's Census revealed that the average monthly per capita income in the Metropolitan Region of Recife was about 290 US$, occupying 23th position among the metropolitan areas in Brazil. Of greater concern, is the evident social inequality when analysing the average monthly income throughout the neighbourhoods in Recife: the lowest figure is US$ 92 in a low-income settlement, whereas the highest is US$1,800 in one of the cities richest neighbourhood. Although education indicators are improving overall, the number of people who have not completed the primary school is still high. These social gaps can also be easily seen in land use and occupation, which does not follow the centre-periphery pattern.

Land use and spatial zoning are also highly relevant to understanding the mobility patterns of the urban poor in Recife. In the mid 1980´s, Special Zones of Social Interests (named ZEIS) were created, which recognised the legal right to land of previously illegal low-income settlements. The municipality has defined rules for improving urbanization standards, providing infrastructure and the legal tenure of these settlements including investments on housing and infrastructure (e.g. sewage, drainage, pavement, water supply) are provided via federal, state and local programmes (Maia, 1995). Nevertheless, low standards of living conditions persisted in some of these settlements, indicating either that the investments were not sufficient to change the environment conditions or that the policy design and monitoring were not able to deal with the urban and social dynamics in these areas. The areas for our study Coque and Alto Santa Terezinha, are identified as two such ZEIS areas.

### 2.3 The transport context

Brazil in general, including the City of Recife, is also rapidly motorising nation. According to Pereira and Schwanen (2013), in 2009, the average commute time in Recife metropolitan area was larger than the observed in New York, Sydney, Paris or Madrid. The average number of vehicles per capita increased more than 35% in Recife between 2000 and 2010. Nevertheless, the motorisation rate in Recife is considered low, even by Brazilian standards (15,3 per 100 people). Historical trends of average commute time in Recife have shown a deterioration of transport conditions between 1992 and 2009, with rising commute times mostly among middle and higher income groups.

Alongside this rapid motorisation of the rich and middle classes, family expenditures travel in Brazil has more than trebled over the last 20 years. In the 1970s, the transport costs of a family earning between 1 to 3 minimum wage were roughly 5.8% of household

expenditure; this figure increased to 12,5% during the 1980s and more than 15% in the 1990s (Brazil, 2004). The high cost of public transport fares is considered to contribute greatly to people's transport poverty, currently excluding about 37 million people from using it. This number can be significantly higher when taking account of the number of disable and elderly people who cannot get any kind of access because of the lack of facilities and universally designed vehicles, which would allow them to use the available public transport services.

## 3. RESEARCH METHODOLOGY

The aim of our study was to gain in-depth understandings of the relationship between the mobility behaviours of people living in low-income locations within the city and their opportunities engage in everyday activities, such as work, education, healthcare, shopping, etc. We also want to explore their perceptions of the local transport system and how this affects their livelihoods and abilities to access opportunities in the wider area. Focus groups were the main technique we used to collect information from the research participants. This was because it allowed us to engage with a wide variety of different social groups living in the same local area within non-threatening social settings outside of their homes. We felt that this might be most appropriate because they could be approached via trusted gatekeepers within the community, who could vouch for the integrity of the researchers and help to guarantee the participation of local people. We recognize there are some issues of self-selection bias with such an approach but as we aim for in-depth personal perspectives, rather than representative opinions, we were willing to accept this.

Focus groups also allowed us to openly discuss the participants' ideas and perceptions without any preconceived ideas about what was important to them. According to Krueger e Casey (2009:2) "a focus group study is a carefully planned series of discussions designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment". We deemed this to be the most appropriate approach given both the focus of our interest, which was in the detailed experiences of our participants and also the challenges and expense of conducting a traditional survey with this target audience (i.e. issues of illiteracy, mistrust, scrutiny shyness, recruitment, retention and other challenges).

### 3.1 The case study areas

We chose to focus on two different case study areas and to hold four focus groups with different sectors of the community in each area. We chose two different geographical locations for our study on the basis that they represented quite diverse mobility and accessibility landscapes within the city (see figure 1):

1. Coque- a low-land area, centrally located within the city and very close to both the busy downtown area (2km) and the beach on the south of Recife (2,2km).It has 12,629 inhabitants (14.35 inhabitants per hectare due to large empty and also wetlands in the neighbourhood);
2. Santa Terezinha - Alto Santa Terezinha (AST) is on the North hills, 7 km away from the CBD, in the periphery. Its population is 7,700 inhabitants and its urban density

ishigher than Coque, with 246 inhabitants per hectare, the fifth highest of all the districts of Recife. When considering only the urbanized area occupied by the poor this figure is 513 inhabitants per hectare (Brasil 2010). The houses are perched on the sides of the hill and in areas with steep topography.

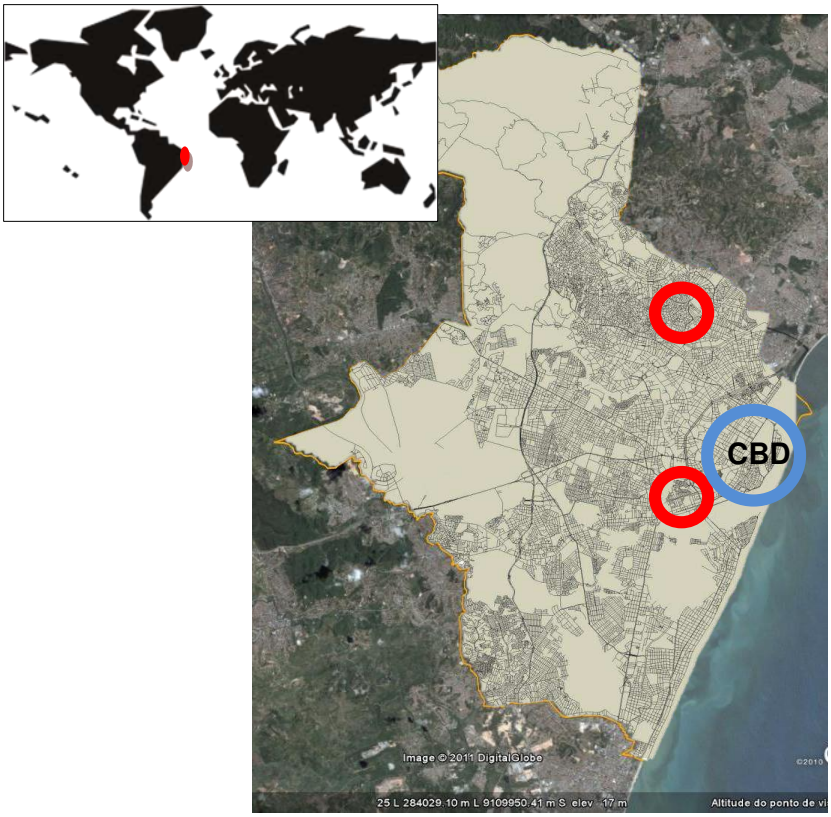



**Figure 1: Recife: location of Coque and Alto Santa Terezinha**

The income of the population varies slightly between Coque and Alto Santa Terezinha. While in Coque the montly nominal income was R$705,00 (U$352,00) in Alto Santa Terezinha this figure was R$921,00 (U$461,00) (Prefeitura da Cidade do Recife, 2012). As can be seen in table 1, these income are considered low as is the level of education. The distribution of the basic health and education services units in both areas suggests an extensive network that offers plentiful access to these facilities within relatively easy walking distance. These units were mapped on GIS. However, the populations' main complaint is related to the poor quality of the service offered and, therefore, the need to travel further to access better quality provision.

### 3.2 A mobilities and livelihoods conceptual framing

The conceptual framing for our focus group exercises is based upon Rodrigue et al. (2009) who postulate that transport should be seen as a multidimensional activity, which as well as having important political, economic and environmental consequences, also has a major influence on key social processes such as everyday activity participation and social inclusion. Levels of territorial accessibility are seen as central to this relationship (Gutiérrez et al., 2010). A critical analysis of accessibility to key societal opportunities within a given society must then be used to measure the extent to which public transport services contribute to the social integration of its citizens (Silva et al., 2004).

Based upon our the understanding taken from these conceptual framings of mobility, accessibility and social inclusion and considering the wider urban and socioeconomic context of Recife we devised four high-level questions for further exploration around which the focus group discussions and exercise took place:

1. Do people living in low-income communities perceive they experience a transport, mobility or accessibility problem (s)? If so, what?
2. What factors/activities account for people's decision to make a trip or not make a trip within and outside their local communities?
3. How far is public transport part of the problem and/or solution? What are the different attitudes and perceptions of different population groups in relation to this?
4. Is there a relationship between non-participation in key activities and levels of (im)mobility? At what point of social insertion does transport become an important factor in promoting improved quality of life?

### 3.3 The focus group compositions

Four focus groups were conducted in each area between October and November 2011: one with housewives with childcare responsibilities, one with employed women, one with unemployed men and one with students between the ages of 14-15 years. In Coque, this later group was with females and in AST with males. From 8 to 12 people participated in each focal group. In total 73 people participated in the group discussions: 41 from Coque and 32 from AST.

Each group was conducted with a trained facilitator, an assistant facilitator and a note taker. In addition, all the group discussions were audio-recorded and then transcribed for the purposes of analysis. The aim was to gain an insight into the role of transport in the context of their everyday livelihood activities as they move around their immediate neighbourhoods and connect with the wider city or metropolitan areas. To achieve this, participants first were asked to describe their local community in terms of the good thing and the bad things about it, to talk about the nature their personal and household responsibilities and the spatial and temporal dimensions of their daily activities. Some general questions were also asked about how easy it is to undertake activities within the local area and when it is necessary to travel further to do things, as well as about the different modes of transport that were available to people.

The idea of the focus group exercises was to encourage people to interactively discuss their opinions and perceptions between each other and with the facilitators. In this way,a focus group discussion can be seen as a type of conversation to reach mutual understandings, which can be either conflicting or consensual in their outcome. For example, one person in the group might perceive the neighbourhood to be safe, while another person might find it to be unsafe. The aim of the conversation is to openly explore these differences in perceptions. There is no attempt to come to a minority or majority view or to necessarily reconcile differences in opinion, only to record that they exist. Neither is any attempt made to count-up or score the number of responses to an issue or concern that is raised. If one person appears to be dominating the conversation or a single issue, the facilitator will attempt to draw in the opinions of others in order to gain a balanced view. It is made clear that no one viewpoint is preferred over another and neither are there any right or wrong responses.

### 3.4 Cognitive mapping exercise

Once these background issues are established, the facilitators moved on to ask a more specific set of questions about people's mobility practises and experiences. These transport-related issues were discussed using a novel collective cognitive mapping exercise, whereby each participant was invited to describe their travel patterns, pointing out destination for the facilitator to map their movements schematically (e.g. where do they go, for what reason, how often they travel to that destination and using what mode of transport?). This approach was adopted because we anticipated that many of the participants would be unfamiliar with more formal map reading and might find it difficult to describe their activities in relation to these. We also felt that it was better not to impose our own parameters of distance and place on the participants, but rather to let these evolve from their own perceptions.

Each map schema contained three basic geographical scales: 'the neighbourhood' referring to the most immediate area near the household; 'the district' as a combination of surrounding neighbourhoods; and 'the city/metropolitan region' referring to places beyond the district. Figure 5 demonstrates the basic model and offers a worked example drawn by one of the groups. The maps were filled with different colour pens used to identify each participant and the three circles represent their travel horizons, from the immediate neighbourhood to a regional scale. The maps were then used to facilitate conversations about recent journeys that the participants had made to different locations, the perceived accessibility of different destinations and the adequacy of the transport system in terms of being able to reach them, including issues such as the cost of fares, personal safety whilst travelling and service schedules and routing. We also discussed with them where it was not possible to get to and where they would not want to go in terms of distances and locations. Later the information was transferred into a GIS and network analysis was used to gain more detailed and nuanced understandings of the travel patterns of each group member in relation to land uses and public transport options.

The cognitive mapping approach was found to be extremely useful because it helped to overcome differences in perceptions between the researchers who were largely unfamiliar with the local area and the research participants. It also helped to stimulate discussion about the availability of different activities within and outside their local areas. Most of the people who were involved in the groups were not used to talking about their experiences to strangers or even between themselves in this way and so the mapping exercises served to break down barriers of communication and helped to keep the discussions focused and relevant to the topic under discussion. It also helped people to take turns in the discussion and not to talk over each other. In this way, it was possible to explain that people's mobility perceptions are their own and may not necessarily coincide with someone else in the same room or neighbourhood.

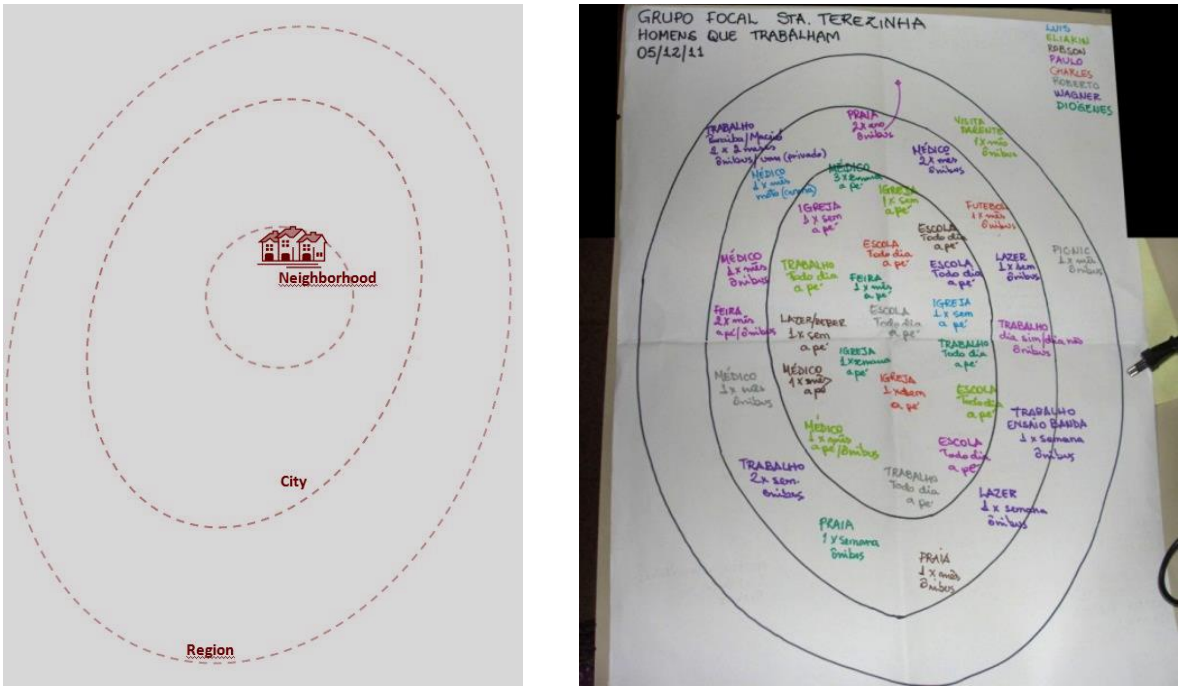



**Figure 2: Schematic mapping of trips within focus groups**

### 3.5 Data analysis

At the analytical stages of the research, researchers considered both the perceptions brought up from the discussions and the trips information collected from the mapping exercises. All the focus groups were first transcribed from their native Portuguese and then translated into English for the purposes of accessibility to the data by international study team. The cut-and-sort technique was applied to the transcriptions using EXCEL to organize the classification system of major topics. This was used to identify five travel purposes (work, school, health care, shopping, leisure/social activities) and four key issues or concerns (location/accessibility, environment/safety, transport/mobility and income/finance). The data collected in the mapping exercise (activity patterns, frequency of trips, and modes of transport) were also processed into EXCEL and into GIS so that so that they could be plotted against key activity destinations and travel routes inside and outside the case study areas.

The process of qualitative analysis is by its nature subjective and so it is important to ensure that the results that are reported beyond this basic sifting and coding exercise can be validated and replicated by others. In this case the method that was applied was in the form of triangulation between the three lead researchers, whereby each researcher independently coded all of focus group transcripts and categorised the data in a two-way matrix of the topics raised and the group raising it (see table 1). The views of the different researchers were validated against each other in a number of meetings and the evidence for journey patterns was also triangulated with the GIS mapping exercises. This was to ensure that only the actual information that was provided to us by the participants was included, rather than any assumed interpretations adopted by the researchers.

## 4. DISCUSSION OF KEY FINDINGS FROM THE STUDY

Table 1 presents a summary overview of all the issues that were raised by the eight different focus groups separated according to the type of group and by case study area.

**Table 1: Summary of the main issues raised by focus group in each area**

| **Coque** | |
|---|---|
| ***Group*** | ***Main issues raised*** |
| **Housewives** | • Health is a big concern of this group. They frequently attend clinics with their children. Getting an appointment and the poor quality of service are the main problems.<br>• Schools are local and access is seen as easy. They want more training courses and further education opportunities.<br>• Some have part time job. All of them perceived that living in a area with a stigma of violence and crime in the city is a barrier when applying for a job.<br>• Most shop at the local market in the neighbourhood or district.<br>• The church and the beach are important leisure destination.<br>• The lack of leisure for young people is mentioned, specially for teenage boys.<br>• Most of activities they access is in the local area. They like the area because it is close to everything.<br>• Walking is their major form of transport for most of trips and destinations. They are willing to pay fares for public transport if its cost is low. Save money on fares was a major issue. Some of them are on social benefit. Older people have a problem of over reliance on walking. Mention was made about the lack of community transport.<br>• Ambulances and taxis do not enter de areas because of fear of crime. |
| **Employed women** | • Similar issues raised as in housewives group in connection with quality and availability of health services.<br>• Schools are local and access is seen as easy.<br>• The majority of work is in other people´s home as cleaners, maids, carers either in the neighbourhood or in the district. Some need to take a bus to access job. They feel they lose out on jobs opportunities because they live in an area which has a stigma of violence.<br>• Daily shopping for food was not mentioned. Shopping in the city centre was mentioned as an occasional activity.<br>• Their leisure is around the area. To go to church and to bars were the main social activities mentioned.<br>• For them Coque is an area with good access to everywhere – local services and the wider metropolitan area. They mentioned they can get everywhere by walking and by bicycle. Buses are for work and longer distance leisure trips. They recognised the importance of metropolitan system of transport, which has an integrated terminal located in the area, and its integrated fare to travel to the metropolitan region .<br>• Fares affordability is an issue for wider job access. Visiting relatives outside the city is seen as unaffordable.<br>• Taxis and ambulance do not get into the area because of its stigma of violence. |
| **Unemployed men** | • The same problem is mentioned about the quality of the health service.<br>• To access to school was not mentioned by this group.<br>• They work for the informal market at the local or the district level. They access the activity by walking of by bicycle.<br>• For shopping, most go to the local market in the adjacent neighbourhood. They walk or go by bicycle.<br>• Leisure trips are not frequent. They usually go to church and to the bar with friends.<br>• They recognised that the public transport service get you everywhere and it has improved with the integrated system. There is no van or mototaxi service running in the area. Longer trips are made by bus and shorter trips by walking or bicycle.<br>• For them, everything is available locally. The area is good and near everywhere.<br>• The stigma of violence and problems with emergency services coming into the area as a consequence of this was also raised by this group. |
| **Female students** | • As in the other groups, the problem related with the quality of health service was mentioned.<br>• Most students attend schools in the neighbourhood.<br>• None of them mentioned working and the shopping is not a key activity for them.<br>• They do not use public transport. They do not have student ID card that allows them to pay ½ fare on public transport. They have bicycles but usually walk to school. |

| | |
|---|---|
| | • Some of their families are on social benefit.<br>• As the other groups, they considered the area well located in relation to activities. It is easy to move around the area.<br>• The issue of the poor quality of the local environment is most noted by this group. They mentioned drugs, pollution, garbage in the streets and the lack of paved areas. |
| **ALTO SANTA TEREZINHA** | |
| **Housewives** | • They walk to the local clinics but need to get a bus to the hospital.<br>• Ambulances come to the area but they cannot access some hillside houses<br>• Most of them take their children to school by walking.<br>• Only one person works as a cleaner.<br>• They shop locally. To go to the shopping centres is just an unattainable dream.<br>• They usually go to church and sometimes to the beach.<br>• Mostly they walk to reach activities. At the same time that a lot of stalls block the pavements, and therefore they are forced to walk on the street, they keep the street plenty of people providing the sense of security. The steps to t he top of the hill are not well maintained and the pavements are also not in good condition.<br>• Some of them use the community van to come home located in the hill side, especially with shopping bags. Public transport is good to get to the city centre. They complained about the bus drivers' bad behaviour, especially to elderly.<br>• The area is perceived as better than it used to be because some of the hillside slopes have been reinforced so decreasing the chance of landslides.<br>• The area was generally perceived as quite safe. |
| **Employed women** | • They complaint about the quality of the health care service. To more specialised health service they have to take a bus.<br>• They take children to school on foot.<br>• Most of them work in the community<br>• Shopping is done frequently in the local market. They walk to there and return home using the van service.<br>• Most of them go with their family, by bus, once a month, to somewhere outside the area (e.g city centre, shopping mall, beach)<br>• Some of them considered the public transport fare as expensive.<br>• Getting the community van was described as a great achievement from their own lobby efforts. They often get mototaxis to travel in the district. They complained about the bus drivers´ behaviour. |
| **Unemployed men** | • They complained about the quality of the health service.<br>• 3 people attend school themselves for continuing education classes in the local area.<br>• Most of them work in the informal market, work outside the area and need to travel by bus.<br>• Once a month they go to the market by foot and return by taxi.<br>• They go to the church frequently.<br>• They rely on buses mostly to access activities outside the neighbourhood. Fares are expensive in comparison to wages. One of them said they lost an interview because they could not afford the bus fare to get there.<br>• They consider the area a good place to live but there is difficulty to get transport and services into the high slope areas. |
| **Male students** | • Health service is not a big issue for this group.<br>• They go to the local school and they walk to there.<br>• They help their mothers and grandmothers on longer shopping trips. They go by bys and return taxi.<br>• They walk everywhere around the neighbourhood. They often take the mototaxi whose fare is similar to the bus except for longer trips which are more expensive. The increase in fares mean they have to walk. They have student ID card to travel on the bus paying ½ fare. The bus fare (RS 2,00) is described as expensive.<br>• They mentioned the issue of the pavements being full of stalls, which prevents walking. People who live down the hill have better accessibility to the bus and other services. |

As can be seen from table 1, many of the same issues were raised by across all the different groups and for both the areas. For example, access to healthcare appears to be a concern of almost all the groups except for the young male students in AST. It was also clear here that most usually the problem was not one of accessibility, in that people could easily reach a health clinic by walking, but more that the clinics in the two areas

are under-staffed or staffed by non-qualified personnel. While this is clearly a problem for health policy, it is not something that can be deemed to be within the jurisdiction of transport or city planners.

A second common issue raised by most groups across the two areas was that they are very attached to the place where they live and do not want to be forced away from living there. In this context, any inconvenience of living there tends to be underplayed, so that participants in both areas described their areas as generally good places to live but with some minor problems such as high crime and, especially in the case of AST, poor accessibility.

As had been envisaged when selecting the two case study areas, one of the main differences between them would relate to their different proximities to the city centre and their levels of access to transport services. The majority of participants in all the groups were not car owners, nor did they have a driver's licence. Few of them have parents and friends who do have a vehicle. So their low incomes make them dependent of the provision of public transport to travel beyond their community boundaries and to get the opportunity to participate in what the wider city offer to its citizens.

In Coque, the participants generally described the area as well served by public transport but most said that they didn't really need to use it because they could undertake most of their daily activities on foot, which also didn't cost them any money. In AST more of the participants seemed to be reliant on both formal and informal public transport services, especially for their shopping and employment trips. However, the difference between the two areas in these respects was not as marked as we had originally anticipated. This was partly because in both areas, most participants only undertook activities within their local areas and the vast majority of these were on foot.

### 4.1 New insights arising from the focus group discussions

Discussion of the specific trip making patterns of participants in the two areas is expanded upon in section 4.2 in relation to the mapping exercises. In the next section of the paper, we have attempted to draw out some of the more unexpected issues that emerged from the focus groups discussions that have possibly been less referred to within the current literatures on transport and social disadvantage and that are perhaps more directly relevant to the Brazilian context.

<u>The stigma of violence</u>

One particular concern, especially in Coque, was about the stigma of violence associated with the area. The participants themselves did not feel that it was a particularly unsafe place to live except in some specific places and times, such as unlit back alleys at night, However, a common sentiment was expressed that outsiders perceived the area as not only unsafe to enter but also risky to employ the people living there. One woman told us from her own personal experiences but with the agreement of others in the same and other groups:

> "If you want to apply for a job, it is better not to give your address as Coque because you are not going to be called" (employed woman in Coque)

> "People have prejudice against Coque because of the violence and crime. Nobody goes into Coque after midnight except its residents" (housewife in Coque)

This perception of stigma not only has a consequence for people's mobilities but also for their livelihoods because neither emergency services, taxis nor mototaxis will enter the area, especially at night. As such, if there is a medical emergency people have to walk to the high street in order to try to get a lift to the hospital. In some cases, they walk long distances to get the medical attention they need. One young woman told us a harrowing story about her experiences of going into labour with her child and having to walk first to one hospital and then to another across town in search of medical attention. People in different groups in Coque referred to this same problem of lack of transport services due to the fear of violence:

> "The SAMU ambulance doesn´t get into the area late in the night. And the problem is not that of difficultly to access the place, it is fear of violence" (unemployed man in Coque)

> " When we get sick and need a taxi we have to wait a lot because the taxi driver doesn´t want to get into the area" (housewife in Coque)

> " If there is a blackout at night you have to wait until morning to get it repaired because Celpe (electricity company) will not get into the area" (unemployed man in Coque)

This is not to suggest that the problem of violence is not real within Coque, as confirmed by the mothers in both the housewives and employed women's groups who talked about their concerns for their sons joining gangs and becoming involved in crime.

"There should be more activities for the younger so that they could have something to do before or after the school. The more educational/professional training activity they get involved the less chance to be recruited to gangs they are" (housewife in Coque)

<u>Living at the top</u>

In AST the problem was less of the stigma of crime and violence, although some participants in the women's groups did mention this. There is a more practical problem of gaining physical access into the 'alto' area at the top of the hill, partly due to the unstable and informal structure of the streets in this part of the settlement, which is more informal in its structure and layout.

Given its remoter location from the city centre, people in AST clearly have to rely more on public transport to access destinations such as work, hospitals, the CBD and secondary centres than in Coque. However, it is important to note that in AST some households can only be accessed by poorly maintained and often very steep stairways. The municipality provides a van service, which is free of charge and makes routes connecting the top and bottom of the hillside and also acts as a feeder to the mainstream transport system. The service is highly valued by the population not only because it provides a free transport service but rather because it provides access into areas that are restricted to regular buses due to extremely narrow roads and steep ground slopes.

> " The taxi driver frequently doesn´t want to get into the top of the hill. There are unpaved streets and poorly maintained steep stairways to access my house" (housewife, AST)

> " One good thing that we have in the community is the van service" (unemployed man, AST)

" The van service offered by the municipality is an achievement of the community" (employed woman, AST)

There was also high reliance on *mototaxis* (motorbike taxis) to take people from the public transport stop at the bottom of the hill up into the steep and less penetrable communities at the top . These are private and non-regulated service and are common in more peripheral areas of the City. The routes and fares are negotiated between the driver and the customer, the service is door to door and it is used as an alternative to the public transport. For some places the fare is similar to that of the bus (US$1).

"An alternative to the bus, when we have to wait a lot, is to take a mototaxi" (male student, AST)

" It is a door to door service and is more frequent than the bus" (unemployed male, AST).

Walking is free (but not easy)

In Coque, residents mostly relied on walking and, in fact, travel distance to some destinations can be shorter and more direct on foot than by bus or metro. However, it was evident from the field visits for our research that the quality of the local pedestrian environment is very poor. Coque is a settlement next to a busy main road with high levels of traffic-related pollution, which acts as a through route for the city centre. There are few footpaths, irregular road surfaces and the dedicated pathways that do exist are often occupied by informal activities. There are also no pedestrian crossings, bus shelters, waiting areas or trees to shade under. As such, the study team anticipated that the quality of the pedestrian environment in the local area would be a key concern for the focus groups participants.

Interestingly, this did not emerged as a problem from the participants' point of view, whereas in AST the participants of all four focus groups recognised that the use of streets, especially the paths, should be transformed to improve pedestrian priority and use. Some statements illustrated this point of view:

"What makes the transit worst is that the paths are occupied by market stalls (known as *fiteiro*)and we have to walk on the street" (employed woman, AST)

"The transit is a problem and it is getting worse, the flow of motorbikes increases and the paths are full of stalls and it is dangerous for us because we have to walk on the street" (housewife, AST)

"It is difficult to move around safely; the paths are full of market stalls" (male student, AST).

This draws attention to an important aspect when attempting to understand the mobility perceptions of low-income communities, in that some quite critical problems may be unreported or deemphasised within their narratives because they are accepted as a part of everyday life. It is almost as if people living in Coque do not see the problem of the busy road because they are so used to living with it that it has become a normalised part of their environment, whereas the poor pedestrian environment is noted by residents because it is a worsening situation. This then poses the question of who should set the standards for mobility and accessibility within these low-income communities and

whether it is enough to accept local people's views on what is needed and should be prioritised in terms of the transport provision for these communities.

### 4.2 Outcomes from the mobility mapping exercises

A total of 411 individual journeys were described to us during the mapping exercises; 205 by participants in Coque and 206 by participants in AST. While we offer some statistical breakdowns of these journeys in the sections below, these described journeys cannot be taken to reliably represent daily travel patterns in the same way that travel diary does. In the exercises, the participants were highlighting and describing individual trips that they make to specific places. There is no way to for us to reliably determine how often these trips were made in any given time period or how representative the trips were of their overall travel. The aim was rather to build up 'rich pictures' of where, when and how people travelled and to provoke them to discuss their experiences of these trips.

With this caveat in mind, when processed in GIS, the information from the mapping exercises confirmed that the participants travel more on foot to reach their destinations: pedestrian trips represent 64% of all described journeys in Coque and 45% in AST. The second most popular trip mode was by bus, representing 22% of journeys in Coque and 43% in AST (see Table 2). The participants in Coque rely more on walking than in AST to reach their destinations. Participants in Coque did not describe any car, bicycle, mototaxi or metro journeys, but this doesn't necessarily mean that they never travel by these modes (as noted above). However, when this information is considered in combination with the focus group discussions in this area, it would seem to confirm that their journeys are predominantly by foot. It can be seen that by comparison, although many of the described journeys in AST were also on foot (45%), there is also more of a reliance on buses, as well as a small number of car, mototaxi and other motorized vehicle trips. This was also confirmed within the focus group discussions in AST, where there were several references to receiving car lifts to work from friends and neighbours and use of the minibus van and mototaxis up and down the hill.

Table 3 shows that people travel much more within their neighbourhoods than elsewhere in both of the areas, accounting for 49% of trips in Coque and 40% in AST.

**Table 2: Coque and AST: Modes of Transport**

| Mode of transport | Coque | Alto St Terezinha |
|---|---|---|
| On foot | 64% | 45% |
| Bicycle | 8% | 0% |
| Car | 0% | 6% |
| Bus | 22% | 43% |
| Metro | 1% | 0% |
| Taxi | 2% | 1% |
| Van | 0% | 1% |
| Motorcycle | 1% | 1% |
| Moto-taxi | 0% | 2% |

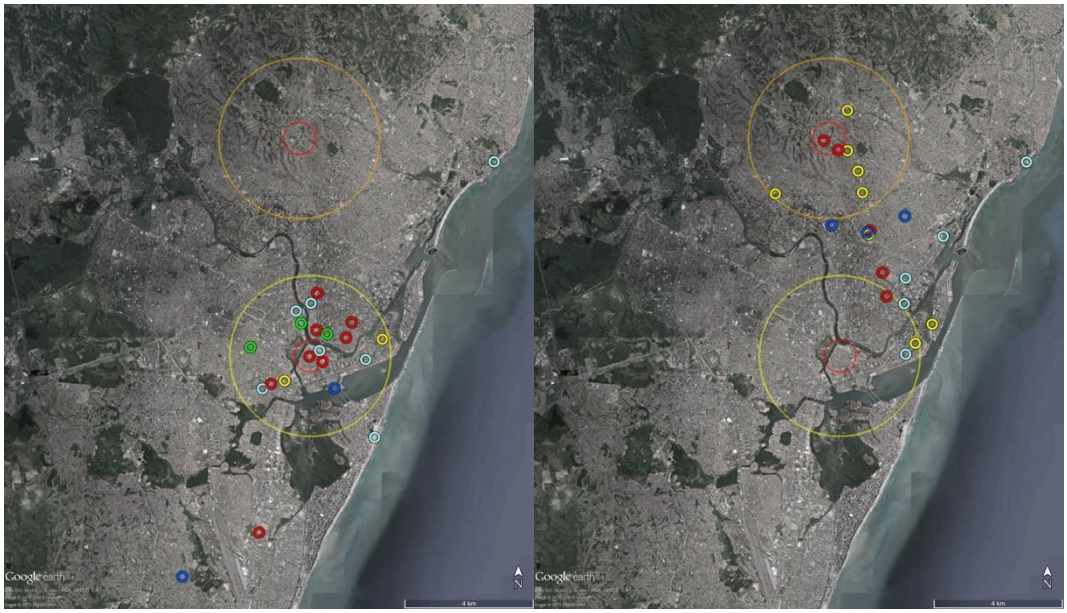
Source: authors, 2011

**Table 3: Coque and AST: Trips by Geographical Scale**

| Geographical Scale | Coque | StTerezinha |
|---|---|---|
| Neighbourhood | 49% | 40% |
| District | 28% | 25% |
| City/Metropolis | 23% | 35% |
| Total | 100% | 100% |

Source: authors, 2011

The GIS generated maps from the cognitive mapping exercise help to illustrate the extent of the territorial areas over which the participants are mobile. It is possible to observe the concentration of trips inside the neighbourhood (see figure 2). In Coque, the average distance for journeys on foot for the shopping purpose among housewives and employed women was 2km, 1.2km for education, 1.5km for healthcare and 4.3km for work. Similar figures were found for shopping, education and work purposes in AST (2km, 1km and 4.3km respectively) and slightly shorter journey distances for healthcare.



Coque Alto Santa Terezinha

**Figure 2: Geographical scale of trips of the focus group with housewifes in Coque and Alto Santa Terezinha**

In Coque, most daily trips were for school (35%), followed by work and shopping (both 22.5%) and leisure/social activities (20%). Weekly, monthly and occasional trips were mainly for leisure/social activities (53.57%, 48.72% and 50% respectively). Less regular quarter weekly trips were predominantly for healthcare (66.67%). Except for work, the daily trips occur mainly in the neighbourhood. While the weekly trips for leisure/social activities are most in the neighbourhood. Only the monthly, and in particular the occasional trips, were undertaken at the city/metropolitan level.

The pattern of trips is roughly the same in AST, with most the daily trips being also mainly for school (46.67%), work (24.44%) and shopping (22.22%) and they mainly occur at the neighbourhood level. More than 50% of weekly and monthly trips are for leisure/social meetings (53.85% and 51.28%).Whereas these weekly trips are mostly at the neighbourhood level, the monthly trips are at the district and city/metropolis level. As in Coque, the trips in the neighbourhood for different purposes and frequencies indicate a mix of land uses in the area.

## 5. CONCLUSIONS

In our study, we set out to explore whether people living in low-income communities of Recife perceive they have transport and/or accessibility problems based upon their own mobilities and livelihoods perspectives. We also sought to identify whether there is relationship between their evident economic and social disadvantage and their current levels of mobility and, therefore, whether improved transport services could contribute to improve quality of life in these areas.

One of the main contributions of the research is to demonstrate that people living on low-incomes within the City of Recife do not experience the same transport opportunities that higher groups do and are often also not interested in connecting with activities outside of their local neighbourhoods. In this way, any major transport improvements that are introduced by city planners are largely deemed to be irrelevant to their daily lives. They generally do not know how to secure better mobility for themselves and their communities and are mostly disengaged from any planning processes within the city.

The results show that from point of view of our participants, who came from different social groups living in two different parts of the city, one of the key assets of living where they do is that they can facilitate most of their daily activities locally and on foot, which is free. This suggests that what constitutes 'appropriate transport policy' in these areas is probably not about providing more big public transport projects. Instead, it is about more about introducing micro-level interventions to reduce the cost of fares, providing more complementary community transport services (e.g. vans day and night) and improving the conditions of their walking environments.

More fundamentally, however, it is about preserving the current mix of local land uses to facilitate adequate and functional local public provision and formal/informal employment opportunities within these areas. If the present level of service available is eroded in these extremely low-income areas as a direct or indirect result of the economic development of the city, these people will no longer be able to service their basic daily activity needs and will be effectively forced out of their communities.

An important focus of public policy in this respect should be on improving the very poor level of service quality and efficiency that is offered in these key centres, so that people do not need to travel further or more often to get a basic and necessary level of care. If, on the other hand, these communities are to be encouraged to stay within the city, the public services that are located within them need to be significantly upgraded so that their overwhelming reliance on participation in local and walkable activities does not deny them the ability to secure a reasonable quality of life now and in the future and not to be excluded by their physical location.

Our research suggests that some fundamental challenges have to be faced especially those relating to the integration of transport policy and land use planning and social welfare policies. These policies need to *explicitly* consider the accessibility needs of the low-income population within Recife's evolving urban structure.Transport infrastructure and service improvements are necessary but will be insufficient on their own to reduce current inequalities or to provide for the future increases in mobility demand that will be necessary to secure the economic insertion of these low-income and currently low-mobility communities. More research is needed to raise the profile of the issue of transport-related social exclusion with policymakers and other key stakeholders, as well as to learn about best practises is also useful, especially in other Latin American cities experiencing similar trends.

One important issue that we found difficult to satisfactorily explore within the focus groups and that, in our view, deserves considerable further research was the extent to which improvements to public transport services in the city can and should take account of the needs of low-income communities who currently say that they will not use them. Analysis of the mapping exercises verified that currently people living in the two case study communities did not travel very much outside of their own local neighbourhoods and mostly go on foot. However, there is a critical issue about whether these trends will be socially sustainable as the economy of Recife continues to expand and increasingly formalise.

Currently, low-income communities such as the two we researched are largely undertaking their livelihood activities outside of the formal economy and as such do not need to maintain their current activity levels. Nevertheless, if they are to be lifted out of their current poverty status, these communities will increasingly need to engage with economic opportunities in the wider geographical sphere of the metropolitan region. At this point, they will inevitably require cheap and cost efficient public transport services, which may not necessarily focus on the current dominant patterns of travel within the city. A key issue is how city planners can provide for the future needs of these currently non-economically active communities within this changing context.

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