

Bridging the accessibility gap to healthcare

**The role of urban transport for low-income communities in São Paulo,
Brazil**

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The candidate confirms that the work submitted is his own, except where work which has formed part of jointly-authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

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Abstract

Accessibility, generally understood as the ease to get to activity places, is recognised as an essential component of access to healthcare and a requirement for service utilisation. Accessibility gaps may underpin the burden often born by socially disadvantaged groups who make less use of health services, experience higher levels of disease and have shorter lives.

This thesis contributes to clarifying the role of transport as an enabler of access to healthcare services in particular by those who suffer from health inequalities. Drawing on theories of human needs and perspectives of transport disadvantage and social exclusion, I construe accessibility as “the easiness for people to reach key services, opportunities and activities able to contribute to the satisfaction of their needs”. Under this conceptualisation, accessibility is integrally related to the attractiveness of potential destinations in terms of their qualities, and not just to their geographical locations.

Guided by this conceptual framework, the qualitative approach was designed to get an in-depth understanding of how people living in low-income neighbourhoods in the city of São Paulo (Brazil) gain access to healthcare services. Fifteen focus group conversations, involving 114 residents of twelve distinct neighbourhoods, uncovered a range of accessibility barriers as well as strategies adopted to overcome them.

Participants’ difficulties in gaining access to healthcare lay beyond issues such as location and distance. A variety of inter-related, multidimensional factors, including the waiting time for appointments and the quality of consultations, shapes the accessibility to healthcare in São Paulo. Even under severe financial and time constraints, residents of low-income neighbourhoods travel longer to obtain access to facilities perceived as adequate to respond to their health needs.

The research has important policy implications. Tackling health inequalities requires planners to design integrated transport and health policies, taking into consideration the adequacy and quality of transport and healthcare services.

Table of Contents

Acknowledgements	iii
Abstract	v
Table of Contents	vi
List of Tables	xii
List of Figures	xiii
Chapter 1 Introduction	1
1.1 Background	1
1.2 Research focus	4
1.3 Research aims	4
1.4 Research questions.....	6
1.4.1 Research question 1	6
1.4.2 Research question 2	6
1.4.3 Research question 3	7
1.5 Justification for the research.....	7
1.5.1 Topic of the study.....	8
1.5.2 Theoretical innovations	9
1.5.3 Methodological innovations	9
1.6 Thesis outline	10
Chapter 2 Theoretical pillars	13
2.1 Introduction.....	13
2.2 Transport disadvantage.....	13
2.3 Transport-related social exclusion.....	15
2.4 Transport needs	17
2.4.1 Needs in transport.....	19
2.4.2 Human needs theories	21
2.5 Summary	23
Chapter 3 Accessibility	25
3.1 Introduction.....	25
3.2 Diverse conceptualisations.....	26
3.2.1 Background.....	26
3.2.2 Linkages to social equity	26
3.2.3 Comparison of definitions.....	28
3.3 Accessibility barriers.....	29
3.3.1 Distance and travel time.....	29
3.3.2 Multidimensional transport barriers	31

3.3.2.1	Transport availability.....	33
3.3.2.2	Transport affordability.....	34
3.3.2.3	Transport reliability.....	34
3.3.2.4	Personal security.....	35
3.3.2.5	Walking environment.....	36
3.3.3	Quality of opportunities.....	37
3.4	Distance decay in the accessibility to healthcare.....	40
3.5	Summary.....	41

Chapter 4 The hybrid conceptual framework for accessibility analysis .. 43

4.1	Introduction.....	43
4.2	What the social exclusion approach misses.....	43
4.2.1	Time-based accessibility approach.....	44
4.2.2	Service quality.....	46
4.3	Building the conceptual framework.....	47
4.3.1	Combining theoretical stances.....	47
4.3.2	Conceptualising accessibility.....	49
4.3.3	Adopting a multi-level perspective.....	52
4.4	Summary.....	54

Chapter 5 Methodology 57

5.1	Introduction.....	57
5.2	Qualitative research.....	57
5.3	Research design.....	59
5.4	Focus groups.....	60
5.4.1	Rationale.....	60
5.4.2	Groups size.....	61
5.4.3	Number of groups.....	62
5.4.4	Design and sampling.....	63
5.4.5	Moderation.....	66
5.4.6	Instruments.....	66
5.4.7	Recruitment.....	67
5.4.8	Data analysis.....	68
5.4.9	Validity testing.....	71
5.4.10	Reflexivity.....	71
5.4.11	Follow-up interviews.....	72
5.4.12	Ethical issues.....	73
5.5	Summary.....	73

Chapter 6 The case study São Paulo	75
6.1 Introduction.....	75
6.2 Residential segregation.....	75
6.3 The transport system.....	78
6.3.1 Transport policy setting.....	81
6.3.2 Metropolitan rail.....	82
6.3.3 Underground.....	83
6.3.4 Monorail.....	83
6.3.5 Bus.....	86
6.3.6 Ride-hailing and taxis.....	86
6.3.7 Private motorised transport.....	87
6.3.8 Bicycle.....	87
6.3.9 Walking.....	88
6.4 Travel behaviour to healthcare.....	89
6.4.1 Travel purpose.....	90
6.4.2 Transport mode.....	91
6.4.3 Trip duration.....	93
6.4.4 Gender.....	94
6.4.5 Age.....	96
6.4.6 Other trip characteristics.....	97
6.5 Health inequalities.....	98
6.5.1 Healthcare utilisation.....	98
6.5.2 Health outcomes.....	99
6.6 The Brazilian healthcare system.....	100
6.6.1 Organisation.....	100
6.6.2 Current issues.....	102
6.7 Summary.....	105
Chapter 7 Focus group findings.....	107
7.1 Introduction.....	107
7.2 Accessibility barriers.....	108
7.2.1 Proximity and remoteness.....	110
7.2.2 Walking safety.....	111
7.2.3 Public transport services.....	113
7.2.3.1 Availability.....	113
7.2.3.2 Affordability.....	115
7.2.3.3 Comfort.....	117

7.2.3.4	Reliability	121
7.2.4	Personal security	123
7.2.4.1	Assaults.....	123
7.2.4.2	Female harassment.....	125
7.2.5	Quality of healthcare services	126
7.2.5.1	Waiting time for an appointment.....	127
7.2.5.2	Waiting time on the day	127
7.2.5.3	Quality of consultation	128
7.3	Relationships between barriers	130
7.3.1	Trade-off distance against care quality (Remoteness – Deficient healthcare)	130
7.3.2	Shortage of doctors (Personal insecurity – Healthcare availability)	132
7.3.3	No ride-hailing (Personal insecurity – Public transport unavailability)	133
7.4	Impacts on accessibility.....	134
7.4.1	Walking instead of riding buses	135
7.4.2	Riding buses instead of rail	135
7.4.3	Travelling escorted.....	136
7.4.4	Undertaking longer journeys	137
7.4.5	Not taking activities up	137
7.5	Strategies and impacts on healthcare uptake	138
7.5.1	Short-term strategies.....	141
7.5.1.1	Overcoming entry barriers in local facilities	141
7.5.1.2	Travelling back home without receiving healthcare	142
7.5.1.3	Seeking care in other facilities.....	144
7.5.2	Long-term strategies	145
7.5.2.1	Self-medicating at home.....	145
7.5.2.2	Travelling farther.....	146
7.5.2.3	Buying private healthcare	147
7.6	Personal stories from the interviews.....	149
7.6.1	Profile 1: Maria José	149
7.6.2	Profile 2: Beatriz.....	150
7.7	Summary.....	151
Chapter 8 Discussion	155
8.1	Introduction	155
8.2	Key findings.....	155

8.2.1	Multiple accessibility barriers.....	155
8.2.2	Overcrowding as the main transport issue	156
8.2.3	Healthcare quality and the meaning of proximity.....	157
8.2.4	The necessity of better public transport	158
8.2.5	Consequences of inadequacies	159
8.2.6	The meaning of travel time.....	159
8.3	Critical reflections on the conceptual framework	160
8.3.1	Multi-sectorial barriers.....	160
8.3.2	Barrier-outcome relationships	161
8.3.3	Micro-level barriers.....	162
8.3.4	Macro-level barriers	163
8.3.5	Theoretical consistency.....	164
8.3.6	Comparisons to theoretical approaches.....	164
8.3.6.1	Transport justice	164
8.3.6.2	Capabilities approach	167
8.4	Critical reflections on the methodological approach	168
8.4.1	Strengths.....	168
8.4.1.1	Uncovered meso-level barriers.....	168
8.4.1.2	Recruitment and gatekeeper involvement	169
8.4.1.3	Bridging the communicative gap.....	169
8.4.1.4	Validity and additional instruments	170
8.4.1.5	Findings generalizability	171
8.4.2	Limitations.....	172
8.4.2.1	Gender intersectionality and location.....	172
8.4.2.2	Low involvement of specific demographic segments...174	
8.4.2.3	Underexplored public transport issues	174
8.4.2.4	The need of additional interviews	175
8.4.2.5	Reliance on a single gatekeeper	175
8.4.2.6	Researcher's positionality.....	176
8.4.2.7	Underexplored variability across individuals.....	177
8.4.2.8	Restricted validation	177
8.4.2.9	Little contradictory evidence	178
8.4.2.10	Unaddressed issues	178
8.5	Summary.....	179
Chapter 9 Conclusions.....		181
9.1	Introduction.....	181

9.2	Addressing the research questions	181
9.2.1	Research question 1	181
9.2.2	Research question 2	182
9.2.3	Research question 3	183
9.3	Implications for policy and practice.....	183
9.3.1	Institutional coordination for integrated planning	189
9.3.2	Quality improvement of the local healthcare	189
9.3.3	Flexibilisation of the primary healthcare delivery	190
9.3.4	Delivery of adequate public transport.....	192
9.3.5	Enhancing walking conditions	194
9.4	Future research	194
9.4.1	Capturing accessibility barriers on the ground	194
9.4.2	Improved data on transport and health	195
9.4.3	Developing realistic accessibility measures	196
9.5	Summary.....	197
	References	199
	Appendix A Conceptualisations of accessibility	230
	Appendix B Quantitative studies on healthcare accessibility	232
	Appendix C Topic guide used in the focus groups	235
	Appendix D Participants' questionnaire	239
	Appendix E Cognitive map	240
	Appendix F Participant information letter	241
	Appendix G Participant consent form.....	243
	Appendix H Summary of evidence on accessibility impacts from focus groups and interviews	244
	Appendix I Overview on the healthcare system organisation in São Paulo.....	251
	Appendix J Video-documentary "On the way to the doctor".....	253

List of Tables

Table 5.1: Focus group double-layered segmentation design.....	65
Table 5.2: Focus group profiles and neighbourhood characteristics ...	68
Table 5.3: Thematic analysis stages	70
Table 7.1: First- and second-level themes of healthcare accessibility	152
Table 9.1 Policy recommendations to improve healthcare accessibility	185

List of Figures

Figure 1.1: Study aims and research questions	5
Figure 1.2: Simplified representation of the conceptual framework	9
Figure 4.1: The three theoretical tenets of the conceptual framework	48
Figure 4.2: Key aspects of the needs-based conceptualisation of accessibility	50
Figure 4.3: Substantive dimensions of accessibility incorporated in the conceptual framework.....	52
Figure 4.4: The hybrid conceptual framework	53
Figure 5.1 Case study area	64
Figure 6.1: Rail transport networks in the Metropolitan Region of São Paulo.....	79
Figure 6.2: The monorail line 15 and other rail transport lines in São Paulo.....	80
Figure 6.3: Implementation stages of the monorail line 15	85
Figure 6.4: Share of trips by purpose in São Paulo (2017).....	90
Figure 6.5: Share of trips to healthcare in São Paulo, by income quintile (2007 and 2017).....	91
Figure 6.6: Modal split of trips to healthcare in São Paulo (2017).....	92
Figure 6.7: Modal split of trips to healthcare in São Paulo, by income quintile (2017).....	93
Figure 6.8: Average duration of trips to healthcare by public transport in São Paulo, by income quintile (2017).....	94
Figure 6.9: Share of trips by women in São Paulo, by trip purpose (2017)	95
Figure 6.10: Share of trips to healthcare made by women in São Paulo, by income quintile (2017).....	95
Figure 6.11: Share of trips to healthcare among all trips in São Paulo, by age group (2017).....	96
Figure 6.12: Share of trips to healthcare in São Paulo, by age group and income quintile (2017)	97
Figure 6.13: Share of mothers who attended at least seven antenatal care sessions in São Paulo, by district (2014)	99
Figure 6.14: Average age at death in São Paulo, by district (2017).....	100
Figure 6.15: Healthcare service utilised by type, by income quintile (2013)	104
Figure 7.1: Occurrence of the main themes and subthemes, by focus group conversation	109
Figure 7.2: Main relationships between themes	130
Figure 7.3: Themes, subthemes and accessibility strategies.....	135

Figure 7.4: Incidence of themes, by focus group conversation	140
Figure 7.5: Causal relationships between accessibility barriers and activity strategies	141

Chapter 1 Introduction

1.1 Background

Access to healthcare is considered a citizen's right in most countries. People with an adequate level of access to healthcare services are thought to uptake healthcare more frequently and regularly and have improved health outcomes (World Health Organization, 2008). Nevertheless, many people are prevented from receiving the healthcare needed for long and healthy lives. Currently, it is estimated that at least half of the global population cannot benefit from essential healthcare services (World Health Organization and International Bank for Reconstruction and Development, 2017). Broadening the coverage of primary healthcare is one of the Sustainable Development Goals' components put forward by the United Nations, to which several countries are committed (United Nations, 2015).

Significant inequalities in access and uptake of healthcare opportunities underpin systematic disparities of health status among population groups according to their socioeconomic positioning (Whitehead and Dahlgren, 1991; Evans et al., 2001; Wilkinson and Marmot, 2003; Marmot and Wilkinson, 2006; Marmot, 2016). In comparison to other groups, poor people have more access to healthcare, make less use of health services and have poorer health. In less developed countries, only 17% of people belonging to the less wealthy households have access to the most basic maternal and child health services, whilst 74% of the richest have full access to this care (World Health Organization and International Bank for Reconstruction and Development, 2017).

Evidence of the links between health and socio-environmental inequalities has been initially gathered in the context of high-income countries. In Great Britain, the effects of poverty on health were given prominence with the publication of the 1980 Black Report, which demonstrated a gradient of mortality across social classes for a wide range of specific causes of death (Donaldson et al., 2009). Following this report, the 2010 Whitehead Report found out that civil servants at the bottom of the occupational ladder in Great Britain were four times more likely to die at a specific period of life in comparison to those at the top of the ladder (Graham, 2010). Such studies suggested that, rather than inducing changes in individual choices and behaviours, populations' health could be improved by policies that address structural, multi-sectorial factors, known as the social determinants of health (Wilkinson and Pickett, 2010; Marmot et al., 2010; Douglas, 2016; Marmot et al., 2020).

Inequalities in healthcare access, utilisation and outcomes have been increasingly reported in low- and middle-income countries. In Brazil, a country well-known for its wide and historically rooted socioeconomic disparities, concerns about health inequalities motivated the national government to be the first one worldwide to set up a national commission on the social determinants of health, in 2006 (Barreto, 2017). The commission's final report highlighted that poor people in the country are more prone to face illness and interrupt their routine of undertaking everyday activities (Ministério da Saúde, 2008). The prevalence of non-communicable diseases is almost twice as high among Brazilians with up to three years of education in comparison to those with more than eight years (Ministério da Saúde, 2008). In this country, the need for regular access to health services tends to increase in the near future due to an undergoing epidemiological transition (World Health Organization, 2013).

It is also known that fine-grained health inequalities within cities can be more profound than those observed among regions of a country (Fotso, 2006; Ompad et al., 2007). Differences in health status are particularly evident in comparisons between poor and affluent neighbourhoods of cities in the Global South (Lilford et al., 2017). In Nairobi (Kenya), the mortality rate of children living in slums is up to three times higher than the city average (Davis, 2007). Men born in the slums in Rio de Janeiro have a life expectancy almost 13 years lower than those in the wealthiest parts of the city (Szwarcwald et al., 2011).

Although there is a consistent body of evidence indicating that social inequalities underpin health inequalities, less consensus has been achieved on the *causal pathways* underlying these disparities in the urban context (Douglas, 2016). Intra-urban variations of health outcomes have been associated with a range of environmental factors and neighbourhood characteristics including walkability, housing conditions, access to water and sanitation systems, and also access to healthcare services (World Health Organization and United Nations Human Settlements Programme, 2010). Enhancing access to affordable and good-quality health services is regarded as a necessary step to improve people's health (DAC Network on Poverty Reduction, 2003).

However, far less attention has been given to *accessibility to healthcare* as a causal mechanism linking urban mobility to health outcomes. Research on the links between transport and health has mainly discussed three types of mediatory factors leading to mortality and morbidity: exposure to vehicle crashes; environmental exposures (air pollution and noise); and reduced opportunities of physical activity (Khreis et al., 2016; Nieuwenhuijsen and Khreis, 2019).

There are, however, indications that transport, as an enabler of people's access to healthcare sites, does play a role in promoting the population's health. Studies conducted in the Global North have found out that people miss medical appointments, engage too late with healthcare services, may not be hospitalised when needed or are prevented from collecting medication due to transport inadequacies (Social Exclusion Unit, 2003; Lucas, 2006; Mackett and Thoreau, 2015). For instance, in England, 3% of people do not seek medical care or miss medical appointments because of issues related to transport (Social Exclusion Unit, 2003). Around 20% of the surveyed people found it difficult to travel to a hospital, and this share rises to 31% among those without access to a car (Social Exclusion Unit, 2003). In Brazil, where people are also entitled to free healthcare, 14% of the population does not seek care because facilities are perceived as too distant or hard to reach (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013).

In urban and metropolitan areas, it remains unclear how transport, by enhancing geographical access to healthcare facilities, can contribute to a reduction in health inequalities (Lucas, 2004b; Lucas, 2006; Marmot and Wilkinson, 2006). In the context of overlapping social, spatial and health inequalities of a Brazilian city, this research is devoted to investigating specifically accessibility to healthcare, which is regarded as one crucial component of access to healthcare (Joseph and Phillips, 1984; Cromley and McLafferty, 2012). However, this investigation demands conceptual clarification on the "slippery" notion of accessibility (Gould cited by Ingram, 1971, p.101).

Broadly, accessibility to healthcare has been approached from three distinct perspectives. One stream of research, prevalent in transport geography, has regarded accessibility as a measure of the effort of physically reaching healthcare services based on "objective" indicators, such as time or distance (Cromley and McLafferty, 2012). Another stream has adopted the social exclusion lenses to explore accessibility from the perspective of socially disadvantaged groups. Although not necessarily focused on healthcare services, these studies have highlighted the complexity and variety of issues that deteriorate population's spatial access to a range of essential opportunities. Finally, there is an extensive literature in health sciences addressing, conceptually and empirically, travel distance and cost within the broader context of health policy. Focused on the organisation of healthcare systems, this group of studies has given relatively less attention to transport issues.

The thesis will address in more detail the core differences among these strands of literature. As it will be argued, such perspectives on accessibility do not take properly into account transport and spatial deterrents of accessibility along with

and in relation to social circumstances and healthcare factors, which are known to influence access. Also, the majority of these studies have been conducted in the Global North, which is likely to be different from the Global South in numerous respects.

1.2 Research focus

This thesis is set out to investigate the range of inter-related and multidimensional factors that shape the accessibility of the poor to healthcare in the city of São Paulo (Brazil). The focus of this research is to examine how people living in poor neighbourhoods of this city gain access to healthcare services. In this investigation, I seek to unveil mechanisms through which transport hinders or enhances access to healthcare by people living in poverty. In doing this, this study attempts to illuminate the role of accessibility as a pathway between socioeconomic status and health, bringing new evidence on how transport can contribute to reducing health inequalities.

1.3 Research aims

The overarching aims of this research study are threefold. The *substantive aim* is to investigate the inhibiting factors related to transport that prevent residents of low-income neighbourhoods in the city of São Paulo from gaining access to healthcare services. The research also intends both to investigate how people overcome these barriers and to identify the tangible impacts of these barriers on access to healthcare facilities. The *theoretical aim* is to develop and test a hybrid conceptual framework based on transport disadvantage, transport-related social exclusion and human needs theories. This analytical tool seeks to map the critical barriers of healthcare accessibility in relation to health needs satisfaction. The *methodological aim* is to design a qualitative investigation based on the use of focus groups and apply it with local citizens living in low-income neighbourhoods in the city to obtain in-depth insights into their lived experiences of how they gain (or fail to gain) physical access to healthcare services.

Figure 1.1 displays a diagram linking the research aims and questions, described in detail in the next section.

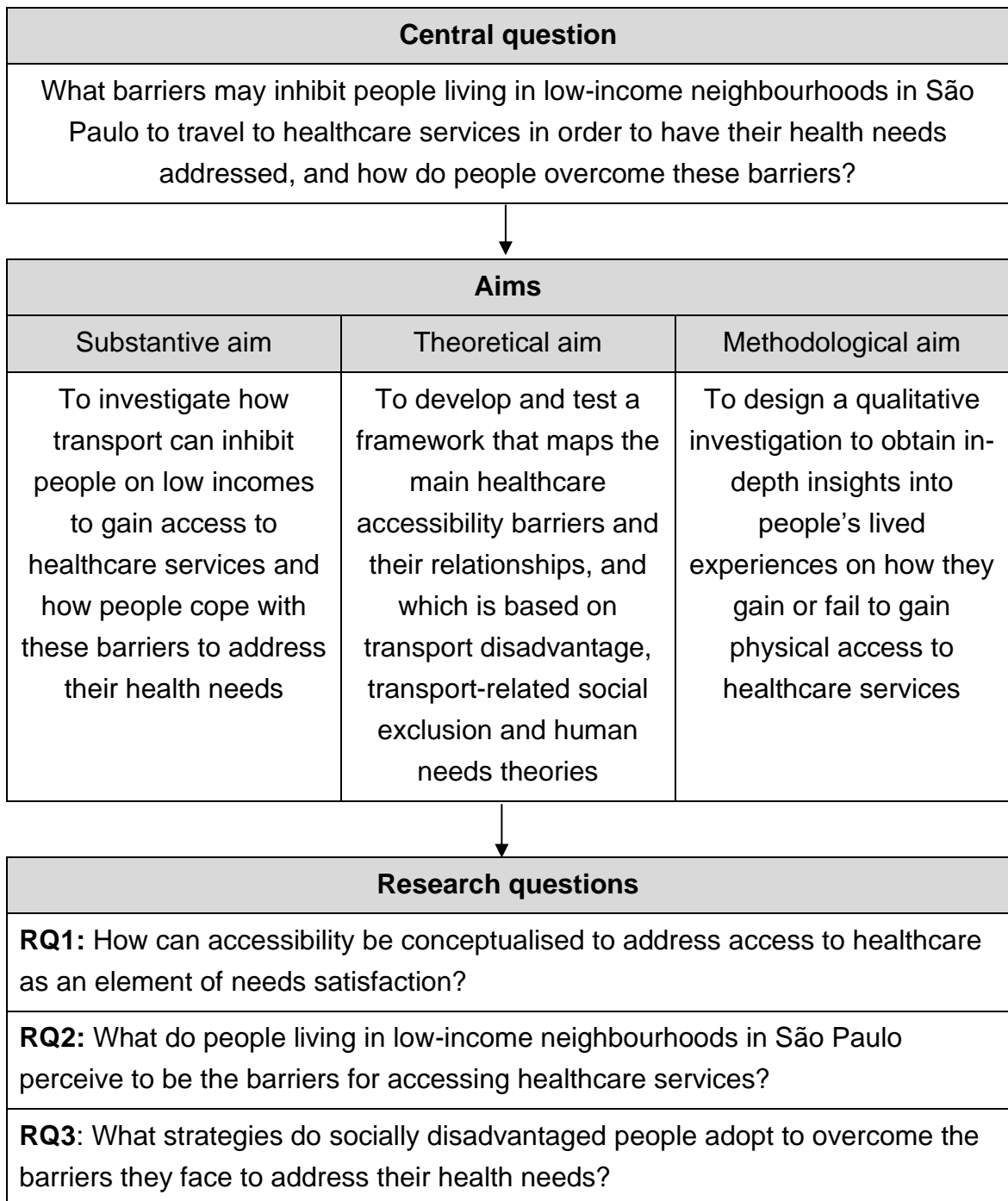


Figure 1.1: Study aims and research questions

1.4 Research questions

The investigation is driven by the following three main research questions.

1.4.1 Research question 1

How can accessibility be conceptualised to address access to healthcare as an element of needs satisfaction?

The disciplines of health policy and transport are in general convergent in suggesting a causal link between low access to healthcare, low levels of service utilisation and, as a consequence of those, poor individual health outcomes. However, the complex construct of accessibility has been assessed from different perspectives. While geographical approaches to accessibility tend to overemphasise the role of the spatial components of access, most notably travel time to facilities, studies grounded in the health policy discipline usually examine proximity and the use of transport in the wider context of access to healthcare.

This unresolved tension between spatial and multidimensional approaches to healthcare accessibility leads to the more fundamental question of how accessibility can be framed to support an approach from a needs satisfaction perspective, which could be instrumental for tackling health disparities. This research question will be addressed through a comprehensive literature review, which leads to the development of a novel conceptual framework that combines transport disadvantage, transport-related social exclusion and human needs theories.

1.4.2 Research question 2

What do people living in low-income neighbourhoods in São Paulo perceive to be the barriers for accessing healthcare services?

People may be deterred from accessing opportunities due to several reasons. Research on transport-related social exclusion undertaken in the last 20 years has identified the deterrents of accessibility to distinct activities based on empirical evidence mostly stemming from high-income countries. However, little is known about the specific barriers to accessibility of outpatient health services and their impacts for low-income people living in other contexts, such as a Brazilian city. Long travel distances and high transport costs might be relevant accessibility deterrents in Brazilian urban areas.

In São Paulo, concerns about the affordability of public transport have in some moments over the last decades gained considerable momentum in the local policy debate (Zarattini, 2003; Singer, 2017). Given the socio-spatial

segregation patterns that have driven the urban growth in most Brazilian cities, the literature documents that low-income people have to travel longer to reach key destinations such as job opportunities and some public services. Also, activity spaces of the poor may be strongly limited by their inability to afford transport costs. Considering the little amount of evidence on the barriers of healthcare accessibility in Brazilian cities, this explorative study adopts a qualitative, people-centred approach to identify the main determinants of healthcare accessibility within the broader topic of access to health.

1.4.3 Research question 3

What strategies do socially disadvantaged people adopt to overcome the barriers they face to address their health needs?
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The study also aims to investigate how people deal concretely with the identified accessibility barriers by identifying the short-term coping strategies and long-term mobility strategies adopted by them. One strategy mentioned in some studies consists of bypassing close facilities because of issues around quality of care (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015). Research also mentions that several people may miss scheduled medical appointments due to transport problems (Social Exclusion Unit, 2003; Wixey et al., 2005; Silver et al., 2012). This suggests that a possible short-term strategy consists of travelling back home without receiving the needed care.

Assessing such strategies requires the collection of empirical evidence on the tangible consequences of accessibility problems regarding realised mobility. In other words, the investigation should go beyond abstract conjectures on the possible impacts on potential spaces of activities. It is worth noting that the research question adds an explanatory character to the study as the identification of such strategies evinces the role of accessibility deficits as causal mechanisms for the non-utilisation of health services and eventually the endurance of health inequalities. The approach to answering this research question is also conversational and consists of listening to people on how they have managed to overcome accessibility barriers to have their health needs met.

1.5 Justification for the research

This section justifies the focus of the research project with regard to its contribution to the knowledge fields to which it aims to add.

1.5.1 Topic of the study

Within the academic literature connecting transport to health, most studies focus on the negative impacts of motorised transport on human health and the positive role of active travel (walking and cycling) for tackling sedentary lifestyles. While much research has focused on the deleterious effects of transport-related air pollution and noise on human health, very few studies have investigated the mediatory role played by transport systems and infrastructures in the relationship between accessibility and health outcomes (Booth et al., 2000; Khreis et al., 2016; Nieuwenhuijsen and Khreis, 2019).

The assumption that better transport can reduce health inequalities through the closure of accessibility gaps affecting socially disadvantaged groups (Lucas, 2004c; Lucas, 2006; Lucas et al., 2009) has remained unverified. In the transport discipline, accessibility studies have mainly focused on employment (cf. Grengs, 2015), including those related to the geographical context of São Paulo (e.g. Boisjoly et al., 2017; Pritchard et al., 2019; Slovic et al., 2019; Boisjoly et al., 2020), also because access to jobs is eventually thought to be the best surrogate for social inclusion (El-Geneidy et al., 2016). Within accessibility studies, relatively few authors have examined healthcare opportunities.

Among the studies addressing accessibility to healthcare, most evidence on the significance of travel distance on healthcare access and utilisation stems from studies conducted at large geographical scales, in rural areas characterised by geographical isolation or in less developed countries lacking the most basic transport infrastructure (Wong et al., 1987; Lavy et al., 1996; Brabyn and Skelly, 2002; Hjortsberg, 2003; Tanser et al., 2006; Al-Taiar et al., 2010; Idei and Kato, 2019). Much less clear is the role of transport inadequacies and differentials of accessibility in urban areas, which nevertheless may be characterised by remarkable health disparities despite higher levels of service coverage and transport provision in comparison to remote regions.

Few studies have investigated the mechanisms through which healthcare accessibility gaps underpin the underutilisation of healthcare services, feeding health inequalities to the disadvantage of the most deprived population groups, whose health vulnerabilities remain largely underexplored (Lilford et al., 2017). Transport poverty and accessibility deficits remain overlooked issues also in the literature on health inequities and the social determinants of health (Evans et al., 2001; Wilkinson and Marmot, 2003; Marmot and Wilkinson, 2006; Graham, 2010; Smith et al., 2016).

1.5.2 Theoretical innovations

This research project presents a new *conceptual framework* set out to clarify the linkages between accessibility and social outcomes grounded on a notion of accessibility supportive to the understanding of its role for healthcare service utilisation and satisfaction of health needs. The proposed *conceptualisation of accessibility* helps to reconnect accessibility analysis with the narratives on transport-related social exclusion depicting the complexities of the interlinkages between social and transport disadvantage.

This hybrid framework results from a unique combination of the core notions of transport disadvantage, transport-related social exclusion and human needs. By highlighting the role of accessibility and transport for social inclusion and well-being, the framework aligns accessibility analysis to social justice perspectives and overcomes inconsistencies identified in existing approaches to healthcare accessibility. Figure 1.2 displays a simplified version of the framework.

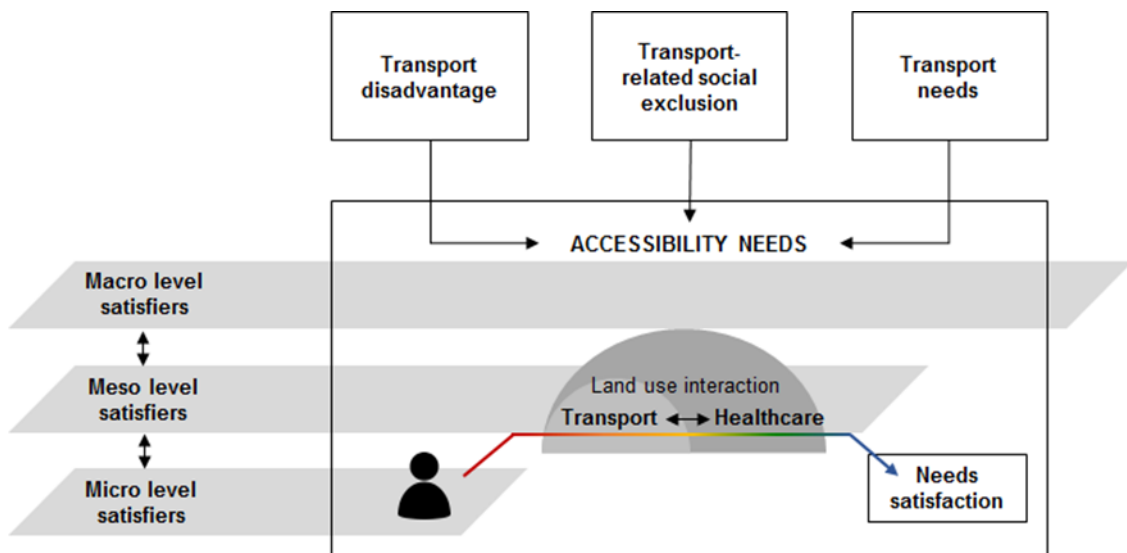


Figure 1.2: Simplified representation of the conceptual framework

1.5.3 Methodological innovations

The study is also original with regard to its *research design*. Within transport studies, accessibility analysis has become nearly synonymous of geographical information system (GIS)-based approaches, which usually aim to determine the importance of spatial friction factors such as time or distance in access to healthcare quantitatively, separately from other aspects. However, as some commentators have observed (Gutiérrez, 2009; Hawthorne and Kwan, 2012), cartographies generated by this geographical approach may provide a partial, reductionist and even erroneous assessment of the most significant barriers faced by real people who access healthcare services. Such approaches may

have failed to reflect a series of relevant factors that may hinder people's participation in health activities.

Taking advantage of its qualitative nature, this PhD study aims to uncover the complex and multi-layered manner in which geographical distance interacts with other factors that affect healthcare accessibility for socially disadvantaged people. Differently from past qualitative studies on healthcare accessibility which employed individual interviews (Gutiérrez, 2009; Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013), this study relied on focus groups as the main data collection technique to unveil the shared knowledge of communities, capture social context issues and assess accessibility barriers at a collectivistic, neighbourhood level.

This research builds upon previous applications of focus group studies on transport-related social exclusion (Lucas et al., 2001; Wixey et al., 2005; Rivas Perez, 2013; Maia et al., 2016) introducing refinements with respect to three key aspects. Firstly, the topic guide and the subsequent data analysis were based on a conceptual framework supportive of a broad understanding of transport issues in relation to healthcare issues. Secondly, a precedent GIS-based spatial analysis was employed to identify potential areas of interest for this study, i.e. low-income neighbourhoods at different distance levels from a planned monorail line. Thirdly, focus groups discussions were complemented by three supportive instruments, specifically designed to explore more in-depth participants' contributions and feed further discussions. These instruments included a questionnaire, an interactive exercise in which participants gave school marks for their experience with different transport modes, and a cognitive mapping exercise.

Involving over 100 participants in 15 distinct sessions, the scope of this data collection effort aimed at capturing views of people living in a relatively large and complex urban setting, and this also stands out from similar focus group exercises. Lastly, different from similar work, the focus group findings were subjected to an additional form of validation, which consisted of individual video-recorded interviews with a subset of the participants.

1.6 Thesis outline

This thesis comprises nine chapters, including the present **Chapter 1**, which provides the rationale and details the study objectives and scope. The remainder of the thesis is organised as follows.

The two next chapters present the core literature pertaining to the study topic. **Chapter 2** explores the three theoretical stances that sustain the conceptual

framework developed in this study. These stances are transport disadvantage, transport-related social exclusion and human needs theories. More attention is dedicated to the concept of needs, which has not been tightly integrated into the narratives on transport equity and accessibility analysis to date.

Chapter 3 reviews the concept of accessibility, which underlies the three main theoretical stances analysed. Various definitions are compared with respect to aspects deemed as central to approaches focused on the social value of transport and mobility. The chapter also critically points to the limitations of the common understanding of accessibility in transport geography, which emphasises and deepens the separation between spatial and a-spatial aspects.

Based on the notions examined in the two previous chapters, **Chapter 4** outlines the conceptual framework, which guides the empirical analysis of this study. This framework represents in itself a novel contribution since the juxtaposition of transport disadvantage and social exclusion perspectives with human needs theories grounds a novel conceptualisation of accessibility.

Chapter 5 presents the methodological approach, including the selection of the research design. The chapter provides substantive and theoretical arguments to justify the research strategy. It specifies how the data collection techniques were applied in this study. It presents in detail how the focus groups were designed and administered. The procedures adopted to ensure the ethical conduct of the research are briefly described.

Chapter 6 describes the main characteristics of the city of São Paulo that qualifies it as a “key case” (Thomas, 2016) for an investigation on healthcare accessibility by socially disadvantaged people. The chapter revolves around four main issues. Firstly, it discusses how urban poverty and socio-spatial residential segregation have shaped the city development. Secondly, the chapter provides an account of the transport systems available in the city. Thirdly, it maps and examines patterns of intra-urban health inequalities with respect to healthcare service utilisation and population-level outcomes. Finally, the chapter illuminates some aspects of travel behaviour to healthcare, based on a descriptive statistical analysis of a recently released household survey. The chapter also provides background information on the organisation of the local healthcare system.

Chapter 7 presents the results of the thematic analysis to which empirical data collected in the focus group conversations were subjected. Findings are presented at three analytical levels. First, the most significant themes and subthemes, which reflect the barriers to healthcare accessibility, are described. Next, the central relationships between these barriers are addressed. Finally,

the outcomes of these barriers in terms of impacts on accessibility and healthcare uptake are presented. To illustrate how the barriers operate concretely for real people and in relation to health utilisation, personal stories from two participants round up this chapter.

Chapter 8 provides an overall interpretation of the accessibility barriers and their significance. It critically reflects on how the theories incorporated in the conceptual framework and the methodological approach have impacted on the findings.

Chapter 9 reflects on the central aims of the thesis and provides answers to research questions. Grounded in the findings and arguments developed throughout the thesis, the chapter also draws policy recommendations and indicates directions for future research, situating the contributions of this study in wider professional and scholarly conversations.

Chapter 2 Theoretical pillars

2.1 Introduction

This chapter aims to provide an account of the three theoretical tenets of the conceptual framework of this study. The framework combines *transport disadvantage* and *transport-related social exclusion* approaches with *human needs theories*.

The main rationale for exploring these perspectives is that they can contribute to clarifying the role of transport and accessibility within the relationship between social and health disadvantage. While all these perspectives embrace social justice stances, they emphasise distinct aspects of transport and their social consequences. A combination between them can potentially underpin a useful alternative approach to analyse the processes of social, transport and health inequalities, which are often overlapping and mutually reinforcing. It should also be noted that the combination of these perspectives was not sought in previous studies.

The outline of this chapter is straightforward as each subsection is devoted to exploring each theoretical perspective in turn. It also reflects the overlaps between these constructs since the academic literature discusses transport disadvantage and social exclusion in a combined and frequently interchangeable manner. Further, this chapter gives an overview of how the concept of needs has been embraced in these discussions. Given its relatively poor integration in the transport literature to date, it also explores in-depth the meaning of “need” from political-philosophical perspectives.

2.2 Transport disadvantage

The notion of transport disadvantage usually relates to a series of public transport inadequacies. It describes situations in which people are not able to move out freely due to shortages in transport provision or their restricted abilities to use existing transport options (Stopher and Stanley, 2014). Although the term has been already used to define households without private cars, more commonly it refers to gaps in transport availability (Hurni, 2006). In this sense, transport disadvantage embraces problems related to public transport service frequency and punctuality, the difficulties to interchange and use multiple services or modes, the poor availability of information, among other factors influencing passengers' perceptions of transport quality.

Narratives on transport disadvantage connect to the calls for ensuring similar living conditions for citizens residing in different areas, as this may require an adequate provision of roads, walking and cycling infrastructure, bus stops, underground stations and good quality transport services (Santos et al., 2008; Pyrialakou et al., 2016; Caggiani et al., 2017). In particular, this conceptual lens has been employed to assess the fairness of the spatial distribution of transport infrastructure, coverage of public transport services and its connectivity.

The concept has been used now for about 40 years to describe the situation faced by those residing at the urban fringes and other areas typically underserved by public transport in cities of high-income countries, most notably in Australia. An early input in this field was given by Morris (1981), who showed the unevenness of public transport provision in Melbourne. Since then, other studies confirmed that a large share of the population remains underserved by public transport. A more recent study estimated that three-quarters of the population in that city have below-average access to buses, trams and trains (Currie, 2010). Early developed approaches to measuring transport disadvantage in terms of public transport gaps, which included the calculation of simple measures such as the bus vehicle-kilometres per area unit, have been refined to incorporate public transport frequency levels (Currie, 2010).

Although transport disadvantage has been mainly used as an analytical tool to shed light on the disparity of transport provision, research has typically sought to relate these problems with the general socioeconomic conditions of the underserved populations. People living in areas classified as “transit poor” were typically found to be economically worse off and with a reduced ability to reach places of activities (Dodson et al., 2004).

Transport cost represents an important element in the narratives of transport disadvantage. In most stances, people living in areas poorly connected by public transport may be forced to spend a relatively large share of their budgets on mobility services in order to access usual activities. The financial hardship of people highly dependent on private motor vehicles is more acute for low-income social segments having to undertake regular activities, such as low-paid workers. These groups may feel locked in a situation described as “forced car ownership”: despite insufficient income, they own and run a private car. Also, the risks of fuel poverty have gained increased attention in the wake of recent fuel price oscillations (Currie and Delbosc, 2009; Mattioli, 2015; Mattioli et al., 2016; Mattioli, 2017; Mattioli et al., 2017; Curl et al., 2018). In turn, studies also situated in Latin America have drawn attention to the burden that public transport fare means to a significant share of the population (Falavigna and Hernandez, 2016; Verbich and El-Geneidy, 2017; Guzman and Oviedo, 2018).

Undersupply of public transport is found to be a common issue in peripheral areas such as outer urban suburbs, which are also sparsely equipped with places of activities, such as employment and shopping sites. In this regard, concerns with transport disadvantage overlap with locational disadvantage, and both can be summarised as a problem of low *accessibility*. For instance, Delbosc and Currie (2011) relate the notion of transport disadvantage to residential locations in respect to the location of opportunities, the ease for people to access travel modes and the physical and psychological conditions of individuals that may impair them to be mobile. More recent studies have shown the role of local characteristics of the built environment factors such as street design, connectivity, and density on transport disadvantage (Ma et al., 2018). Transport disadvantage has also expressed people's difficulty in getting help from personnel and perceptions of personal insecurity while travelling (Delbosc and Currie, 2011).

2.3 Transport-related social exclusion

As outlined in the previous section, transport disadvantage relates foremost to provision deficits of transport and the degree to which these gaps overlap with dimensions of social disadvantage. Although some studies have attempted to demonstrate that the provision of public transport goes together with well-being, the directions of causality linking transport disadvantage and social disadvantage have remained unclear.

Research developed in nearly the past twenty years has shown that transport disadvantage is not *causally* disconnected from social disadvantage. This research stream, labelled transport-related social exclusion, explored how the lack of access to adequate transport can effectively hinder people from participating in key activities, such as work, education, health and social care, shopping and leisure (Church et al., 2000; Kenyon et al., 2002; Social Exclusion Unit, 2003; Hine, 2003; Stanley and Lucas, 2008; Delbosc and Currie, 2011; Lucas, 2012b; Kamruzzaman et al., 2016). Although exclusion is often caused by issues outside the transport domain, it can be fostered, for instance, by people's inability to afford transport, deficiencies in transport coverage and physical or psychological individual limitations. Transport disadvantage has been regarded as a component and a catalyst of the multidimensional and dynamic process of social exclusion (Lucas, 2012b).

Early studies conducted in the UK drew attention to the situations of several population groups, in particular, non-car owners, who, living in relatively isolated and automobile-dependent environments, had limited possibilities to

undertaking necessary activities (Lucas, 2012a). These studies reflected on the adverse and unfair effects of auto-mobility as a precondition for social participation (Kenyon et al., 2002; Kenyon, 2003). Later research acknowledged that several groups considered socially disadvantaged such as people in income poverty, people with physical disabilities and the elderly are more likely to be disconnected from participation in social opportunities, even those regarded as “essential to their well-being”, such employment and healthcare (Lucas, 2004c, p.43).

From the transport exclusion lenses, *accessibility*, or rather its lack, is the central mediatory mechanism connecting transport disadvantage to social exclusion. Because of reduced accessibility, people may be hindered to participate in social networks and stop taking up essential activities. Research on transport-related social exclusion has found evidence on how accessibility gaps lead to lower utilisation of a variety of services, including healthcare, as mentioned in section 1.1. It is estimated that 3% of the patients in England do not seek medical care or miss medical appointments because of transport problems (Social Exclusion Unit, 2003). This share is 7% among people without access to a car, which suggests that some crucial barriers could be encountered in the public transport sector.

Further supportive evidence on the role of transport as a barrier for people accessing healthcare services in England was found in the multi-case study by Wixey et al. (2005). Across all population segments studied, typically 10% to 20% reported that they missed medical appointments because of the unreliability of public transport modes. In particular parents with children and people with disabilities are prevented from accessing healthcare because of late arrivals and bus service cancellations. Road traffic congestion and overcrowding were also reasons given for people not being able to uptake healthcare.

The acknowledgement of accessibility as the critical causal link relating transport and social disadvantage led to the development of the transport planning approach known as *accessibility planning*. Recommended for adoption by local authorities in the UK in the early 2000s but discontinued a few years later, accessibility planning encompassed an accessibility audit, a resources audit, an action plan and monitoring measures. The first stage involved consultations with local communities to identify local understandings of access needs and the most beneficial policy responses for them as well as the calculation of accessibility indicators to reveal accessibility gaps. Accessibility planning has been described as a “people-centred, location-specific and

evidence-based” approach (Lucas, 2004c, p.47), able to capture and ground policy responses to the actual activity needs of people.

According to Lucas (2011a), the social exclusion approach to transport is characterised by three cornerstones. The first one is the focus on the *social consequences* of the non-participation in key life-enhancing opportunities rather than the availability and organisation of transport systems per se (Lucas, 2011a; Lucas, 2012b). The orientation towards outcomes is one of the distinctive aspects of the transport-related social exclusion approach in relation to alternative manners to analyse social issues in transport, including transport disadvantage. Secondly, although the causes of transport-related social exclusion are usually related to various constituencies, recommendations should be primarily addressed to transport and service agencies in charge of *policy delivery* (Lucas, 2011b; Lucas, 2012b). The third aspect is its emancipatory character and the importance given to the capture of *lived experiences* of affected groups and individuals (Lucas, 2011a).

2.4 Transport needs

The third pillar of the conceptual framework developed in this PhD study is grounded on the notion of needs. Unlike the two other conceptual stances revised in the previous sections of this chapter, human needs theories have been seldom employed in transport and accessibility research. The framework presented in this PhD proposes an uncommon combination of the human needs theories with the transport disadvantage and transport-related social exclusion approaches.

The adoption of human needs theories as a component of the conceptual framework of this PhD study is based on the following rationale. First, it is remarkable that the language of needs permeates the literature on (transport-related) social exclusion. This terminology has been embraced in various discourses on transport disadvantage and social exclusion. This observation provides, at least at a semantic level, an indication about the appropriateness of the notion of needs to understand the centrality of access provided by transport services to improve people’s well-being.

However, despite its various references in the literature related to transport equity, the idea of needs remained vaguely defined and conceptually poorly integrated. It is particularly remarkable that the literature does not clarify what “accessibility needs” mean. With few exceptions – most notably Mattioli (2016), who advances the idea of transport needs to reconcile social justice and environment concerns in transport – the notion of needs remained weakly linked

to the idea that accessibility gaps to key opportunities underlie social disadvantage. Against this background, this research takes up the opportunity to investigate whether theories of human needs could strengthen the conceptual basis to guide accessibility analysis from a social justice perspective.

One could argue that theoretical stances other than the human needs approach would be equally suitable for the purposes of this research. In particular, the capability approach, first elaborated by Amartya Sen and in recent years embraced by several authors concerned about transport equity (see section 2.4.1), might appear as a logical alternative. In fact, the human needs and the capability approaches share many similarities, and both are committed to policy-making in the real world, as the latter derived from the former and Sen himself was a needs theorist (Gasper, 1996; Reader, 2006; Robeyns, 2017).

The distinction between these two schools of thought is marked by theoretical nuances and was, in the past, subjected to several misunderstandings (Alkire, 2002; Reader, 2006). While a comprehensive exposition of such differences lay outside the scope of the present study, it is important to stress that supposed advantages of the capabilities approach, such as the superior theoretical rigour and conceptual adequacy, were convincingly dismissed in philosophical debates (Reader, 2006). On the other hand, while Sen's capabilities approach conceives well-being essentially as a set of substantive freedoms, human needs are thought as "the universal preconditions for the effective participation in any form of social life" (Gough, 2019, p.2). Needs theorists emphasise the universal and objective character of needs in contrast both to subjective preferences as well as to individual abilities to decide on the goals that deserve priority (e.g. Doyal and Gough, 1991; Robeyns, 2017).

This thesis explores the parallelism between transport-related social exclusion with the concept of needs. Conceptually, it embraces the fundamental proposition that individuals can be socially excluded if they cannot physically reach spatially scattered opportunities important for their lives. Arguably, this stance is aligned with the notion of need, and this is clear through its negative proof: "can the needing being continue in being, unharmed, if this need is not met?" (Reader 2006: 340).

Section 2.4.1 reviews how the notion of needs has been understood and applied in studies addressing equity issues in transport. Section 2.4.2 provides an account of the concept as for human needs theorists. Both provide the necessary background to the application of the notion of needs in transport, as intended within the development of the conceptual framework of this study.

2.4.1 Needs in transport

Despite ubiquitous in the social policy context for underlying conceptualisations and guiding real-world measures of poverty, the concept of needs has remained vaguely defined in the transport domain. Although the transport community generally accepts that the *raison d'être* of transport systems is to satisfy needs (e.g. Ortúzar and Willumsen, 2011), the very fundamental idea that transport should meet peoples' necessities of engaging with everyday activities has not been consistently developed.

Even within the literature concerned with social issues in transport, needs have often been mentioned in a generic and elusive manner as “transport needs” (Grieco, 1995; World Bank, 1997; Church et al., 2000; Hine and Grieco, 2003; Wixey et al., 2005; Stanley and Stanley, 2007; Pyrialakou et al., 2016; Maia et al., 2016), “travel needs” (TTR Transport and Travel Research, 2003; Bocarejo and Oviedo, 2012), “mobility needs” (Kenyon et al., 2002; Lucas, Mattioli, et al., 2016), “accessibility needs” (Farrington and Farrington, 2005; Lucas et al., 2009; Lucas, 2011a; Department for Transport, 2015; Lucas, Bates, et al., 2016; Martens, 2017; Pereira, Schwanen, et al., 2017), and “social needs” (Banister, 2002). Also, studies aiming at quantifying transport needs (Jaramillo et al., 2012; Deng et al., 2016) have failed to clarify what transport needs consists of.

Apart from the research branch exploring the specific requirements for the mobility of people with reduced mobility including physically impaired people and the elderly (Rosenbloom and Altshuler, 1977; Scheiner, 2006; Marsden et al., 2007; Dimitriou, 2011; Nordbakke and Schwanen, 2015), the integration of the concept of needs in narratives related to equity in transport remains relatively weak.

One single conceptual study by Martens (2006) advanced the argument that theories of needs could ground a new transport modelling approach, able to tackle social exclusion in a more comprehensive manner. Observing that the calculation of trip generation rates in the first of the four steps of conventional transport demand models generates inherently biased results towards highly mobile groups, this author suggested a needs-based approach to transport modelling. He maintained that interventions in the transport system could be scoped on the basis of transport needs matrices instead of the number of trips forecasted on the ground of the observed travel behaviour, which correlates highly with income and motorisation levels. However, such innovative but incipient ideas were not further developed in the more recent contributions by this author (Martens, 2017).

Overall in the transport field, more common has been the discussion on the meaning of particular transport modalities as authentic needs. Early studies on transport-related social exclusion have engaged in this debate, reflecting on the extent to which mobility and, more specifically, the car should be considered as a necessity. While low levels of mobility could lead to undesirable social outcomes, the understanding of mobility as “a necessary tool” (Kenyon, 2003, p.101) could possibly imply an unbearable financial burden to disadvantaged groups. The provocative question formulated by Lucas et al. (2001, p.36) synthesised that dilemma as follows: “Can public transport get you there or is the car now a basic need?”.

For the authors of that study, motorised private transport should be regarded as a necessity where public transport is not a viable option, as for people living in remote areas, late-night shift workers and women undertaking multi-purpose trips. Wherever public transport is affordable and adequate, people relying on low incomes should avoid the situation of car dependence as encouraging car use may further promote spatial separation of activities, retrofitting the problem. Another study, however, rejected categorically the idea that cars should be considered a need as essential as food, warmth and shelter (Lucas, 2004c, p.47).

The discussion on the potential role of particular transport systems in meeting people’s needs was also situated in the Global South context. Reflecting on low-income population groups in South Africa, Lucas (2011a, p.1332, emphasis in original) advocated that “access to accessible, affordable, safe and reliable public transport needs to be identified as a *basic human right*”. On the other hand, it was also noted that costly infrastructure projects, such as bus rapid transit (BRT) schemes, may not cater to the transport needs of the socially disadvantaged. The sceptical stance towards large transport schemes as a unanimous “necessity” for local low-income people was later restated in an empirical study on the Brazilian context (Maia et al., 2016).

The significance of transport as a need is perhaps more evident in scholarly narratives on “car dependence”, which suggested private car ownership, and associated infrastructures and services (such as roads, parking space, petrol stations, repair services etc.) as basic necessities within hypermobile contemporary societies, in rural areas of rich countries and increasingly in the developing countries (Dargay, 2001; Dargay, 2002).

At least to some extent, the ambivalence that accompanied narratives in the transport field is underlain by the lack of conceptual clarity on the meaning of needs. While some authors framed needs as “feelings of scarcity”

(Kamruzzaman et al., 2016), the idea of needs as expressions of individual preferences belongs to the common sense (e.g. Dimitriou, 2011). Resulting from these misconceptions, the identification of some mobility tools (e.g. private car) as a necessity to tackle transport-related social exclusion is highly contestable, in particular given current global environmental constraints (Mattioli, 2016).

2.4.2 Human needs theories

Although needs can also be conceptualised in psychological (Krapp, 2005) or biological-physiological terms (Maslow, 1998), this study explores the political-philosophical approaches to human needs. In this discipline, populated with concerns on social justice to inform public policies, human needs are associated with the requirement of something pressing and urgent that, if not provided, puts the “needing being” in a state of vulnerability (Reader and Brock, 2004).

Needs theorists generally agree upon the universal, cross-cultural character of fundamental needs. Most theorists also adopt a classification of needs according to the potential threat they represent to someone’s existence. Examples of the terminologies used are non-contingent and contingent needs (Reader and Brock, 2004), instrumental and derivative needs (Gasper, 1996) and absolute and relative needs (Dean, 2010). In the following, I will focus on and provide an account of the needs theories put forward by Doyal and Gough (1991) and Max-Neef (1991).

According to Doyal and Gough (1991), the idea of “needs” refers to a particular category of goals that every human being pursues in order to avoid serious harm that can impair their social participation. In opposition to “wants”, which derive from individual preferences and are bounded in specific cultural settings, needs are culturally and temporally invariable. Gough (2017) listed the central attributes of human needs: they are universal (applicable to all people), objective (their existence is not dependent on personal beliefs), plural (they cannot be summed up in a single unit of account), non-substitutable (they cannot be traded off against each other), satiable, encompass concerns on future generations, and are ethically grounded on claims of justice and equity.

This approach suggests a hierarchical structure of needs. At the top of the hierarchy are physical health and autonomy of agency, identified as the most *basic human needs*. These basic needs constitute “the universalisable preconditions for non-impaired participation in any form of life” (Gough, 2015, p.1197). Every person needs physical health and autonomy to complete a range of practical tasks, purposely and in an informed manner. *Intermediate*

needs contribute to the satisfaction of basic needs. Adequate housing, physical security, primary education and appropriate healthcare are examples of intermediate needs (Doyal and Gough, 1991). Intermediate needs can be identified whenever their moral force derives from the ends they are sought (D. Miller, 2003; Dean, 2010).

In the analogous conceptualisation developed by Max-Neef (1991), basic and intermediate needs are framed in terms of *fundamental human needs* and *satisfiers*, respectively. Fundamental human needs are “the same in all cultures and in all historical periods” (Max-Neef, 1991, p.18) and can be defined within a two-dimensional matrix. The axiological dimension encompasses nine categories: subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom. For each of these dimensions, needs can be expressed through four existential categories: being (persons’ attributes), having (institutions, values, tools), doing (individual and collective actions) and interacting (with spaces and environments). In this structure, context-dependent satisfiers correspond to the attributes, goods, institutions etc. that arise as the central cells in this matrix. For instance, healthcare may be an institutional satisfier of the fundamental need for protection.

It is worth noting that needs theorists often qualify the things that presumably can satisfy human needs. For instance, Doyal and Gough (1991) referred to *appropriate* healthcare, *adequate protective* housing, and *significant primary* relationships as some intermediate needs. Needs satisfaction depends on the capability of systems to deliver services at a minimum quality level.

Both human needs theories share several commonalities. First, both approaches hold a universal understanding of need, combined with a cultural-historic specific stance on satisfiers. Second, these needs theories are grounded in an epistemology distinct from welfare economics and utilitarianism, the theoretical branches that underlie mainstream techniques widely employed in transport planning. By explaining the difference between needs and wants, which is a frequently raised conceptual issue in this field, Doyal and Gough (1991) drew a clear line between the two approaches. Third, regarding justice stances, they assume implicitly a sufficientarian perspective of distributing some goods and services that sustain all human lives at a minimum decent level. Lastly, these theories are supportive of democratic and empowering processes which encourage people’s involvement in processes for identifying suitable manners to satisfy their basic needs.

Nevertheless, these theoretical approaches also entail differences, in particular, related to the conceptualisation of satisfiers. Doyal and Gough (1991) advocate

that, although intermediate needs reflect socioeconomic and cultural circumstances, satisfiers may share universal characteristics. In this respect, healthcare systems can be viewed as a nearby universal satisfier of health needs in most contemporary societies. In a later contribution which draws on frameworks of human needs and provisioning systems, Gough (2019) made a case for universal basic services, defined as the range of essential activities that enable every person to participate in society. Such services address the needs for health, education, housing and transport, among others. Differently, Max-Neef (1991, pp. 24–25) emphasised the cultural-historical context of the satisfiers, defining them as “social practices, values, attitude, actions, forms of organisation, political models and environmental characteristics available in a society”.

A second distinction relates to the manner how needs are connected to each other. Doyal and Gough (1991) argued that needs are arranged in a hierarchical structure. Within it, health and autonomy are deemed as first-order goals to be achieved through second-order goals expressed by intermediate needs. Differently, Max-Neef holds that needs are interconnected in a non-linear and systemic manner, without a hierarchy among them, except for the need for subsistence, which deserves priority over all others.

Thirdly, while Doyal and Gough (1991) assume a strictly positive (although not necessarily linear) relationship between the provision of satisfiers and the satisfaction of basic needs, in Max-Neef’s account satisfiers can have a positive or a negative impact on needs satisfaction. Different types of satisfiers do exist depending on whether they satisfy one or different types of needs, reduce the prospects of satisfying some needs, mislead people into believing their need is satisfied or even annihilate the satisfaction of a particular need. Simultaneities, complementarities and trade-offs characterise the processes of needs satisfaction, in which there is no one-to-one correspondence between needs and satisfiers (Max-Neef, 1991).

2.5 Summary

This chapter reviewed the notions of transport disadvantage, transport-related social exclusion, and human needs. While the first two are conceptually well established in academic narratives related to social equity in transport, applications of human needs theories in this field of inquiry are extremely rare and the construct of “transport need” has remained underdeveloped.

To a certain extent, these notions overlap and are closely related. Transport disadvantage refers primarily to the burden upon people who cannot rely on

specific transport options. These lenses have been used to uncover situations in particular where public transport is undersupplied. Transport disadvantage is regarded as a component of transport-related social exclusion. From this theoretical perspective, inadequate transport erodes people's access to sites of activities that could enhance their lives, locking some groups in a situation of social disadvantage. The central mechanism that relates transport disadvantage to social disadvantage is accessibility. Similarly to the social exclusion approach to transport, human needs theories also relate to social participation. However, such theories bring into focus the high-order outcomes of participation, i.e. the whole set of resources necessary for people not being harmed.

Relationships between these theoretical instances will be further explored in Chapter 4 for the construction of the conceptual framework of the study. Before moving to these explorations, it is necessary to illuminate the already mentioned concept of accessibility. This is the central aim of Chapter 3.

Chapter 3 Accessibility

3.1 Introduction

This thesis seeks to explore the role of transport as an enabler of access to healthcare services and investigate the accessibility barriers experienced by socially disadvantaged groups in the particular context of a Brazilian city. Accessibility, generally understood as the ease for people to get to places, constitutes the substantive core subject of the present investigation.

This chapter explores the concept of accessibility. Interrogating this notion opens the opportunity to look at the problem of access to healthcare from the perspective of transport organisation but also takes into consideration (health) service provision and the land-use setting. A further justification for dedicating attention to this notion is that, as reviewed in Chapter 2, accessibility underlies the narratives of transport disadvantage and, more particularly, social exclusion in transport.

This chapter aims to respond to the following review questions: What conceptualisations have been employed to accessibility, and how do they relate to equity perspectives? Which are the substantive components of accessibility? Which accessibility barriers faced by people considered socially disadvantaged have been identified in the literature?

Section 3.2 presents an overview of definitions of accessibility, showing how they differ with regard to three relevant conceptual aspects for a social analysis of transport. It also briefly presents the connection between the concept and narratives on social equity.

Section 3.3 proposes a classification of accessibility approaches according to the substantive constituents that represent the barriers experienced by people seeking access to opportunities. Three approaches are presented and the correspondent barriers are discussed in some detail.

Adding to the arguments developed previously, Section 3.4 discusses the apparent ambiguity of the so-called “distance decay” effect. It critically interrogates possible interrelationships between spatial and a-spatial aspects of accessibility to healthcare services.

3.2 Diverse conceptualisations

3.2.1 Background

Accessibility has gained increased attention in the transport profession and several commentators have pledged that the main focus of transport planning should shift from mobility to accessibility (Handy, 2002; Cervero, 2005; Preston and Rajé, 2007; Banister, 2008; Martens, 2017; Merlin et al., 2018). An important motivation to bring accessibility into focus is to avoid to look at transport systems “in isolation, ignoring the larger context” where activities take place (Handy and Niemeier, 1997, p.1175).

In transport studies, accessibility denotes the ease of reaching activity places of activities such as work, education and healthcare. Unlike usual performance measures in the transport domain, accessibility encompasses at least a transport component reflecting the difficulty to travel (impedance), and a land-use element which captures the attractiveness derived from the benefits of being at an activity site (Handy and Niemeier, 1997; Geurs and Ritsema van Eck, 2001; Geurs and Van Wee, 2004; Vandenbulcke et al., 2009).

It has now been 60 years since Hansen (1959) introduced the concept of accessibility in the transport domain as “the *potential* of opportunities of interaction” (emphasis in original) to express the degree of separation between activities and people’s possibility to reach destinations of interest. His classic paper borrows the idea of gravity from physics: the closer people live from the opportunities and the larger their size, the higher the potential for interaction.

Another well-known study defines accessibility as “the extent to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by means of a (combination of) transport mode(s)” (Geurs and Van Wee, 2004, p.124). According to these authors, accessibility entails four components, and the interrelationships between them: the transport system, the land-use system, the individual component and the time component.

3.2.2 Linkages to social equity

The last two decades witnessed a proliferation of studies linking accessibility to essential activities (such as employment, education and public services) to social justice perspectives (Martens and Lucas, 2018). Multilateral organisations and civil society organisations have also started to recommend local governments enhancing accessibility in low-income areas of developing countries in order to address better the needs of poor people (World Bank, 2002; Venter et al., 2019).

Improving accessibility has been regarded as a means to promote social equity (Wachs and Kumagai, 1973; Kenyon, 2003; Farrington and Farrington, 2005; Farrington, 2007), and there is a burgeoning body of research examining equity in terms of a fair distribution of accessibility (Lucas, Van Wee, et al., 2016; El-Geneidy et al., 2016; Guzman et al., 2017; Pereira, Banister, et al., 2017; Guzman and Oviedo, 2018; Pereira, 2018; Curl, 2018; Deboosere and El-Geneidy, 2018; Cui et al., 2019; Wang et al., 2020). As accessibility reflects people's opportunities to participate in activities and interact with spaces and groups, accessibility analyses have become pivotal for studies assessing the role of transport as a driver for participation in activities and social inclusion (Farrington and Farrington, 2005; Lucas, 2006; Preston and Rajé, 2007; Van Wee and Geurs, 2011; Hernandez, 2018).

Accessibility deficits have been regarded as an adequate expression of social disadvantage and sometimes as a direct indicator of social exclusion (Casas, 2007), while some researchers have claimed that accessibility assessments consist of a centrepiece of "a social agenda for transport planning" (Hine and Mitchell, 2001, p.321). Accessibility is regarded as the most relevant direct positive impact of transport for urban dwellers in low-income countries (Vasconcellos, 2000).

To better incorporate accessibility in narratives of social exclusion, Lucas, Wee, et al. (2016) reinterpreted Geurs and van Wee (2004)'s framework. The authors presented the accessibility dimensions in a hierarchical manner, placing the individual and the land-use components in front of the transport and the temporal ones. This hierarchy should reflect the primacy of the question "what do people need" over "where are locations of activity needs", "how to get there" and "when to go there" (Lucas, Van Wee, et al., 2016, p.478).

One of the most significant contributions relating accessibility to social equity concerns is authored by Martens (2017). Organising arguments developed in earlier works (Martens and Hurvitz, 2011; Martens, 2011; Martens, 2012; Martens and Bastiaanssen, 2014; Martens et al., 2014), this author pursued the aim to set out an approach for transport planning based on principles of justice. Drawing upon an extensive exploration of philosophies of justice by Michael Walzer, John Rawls, and Ronald Dworkin, Martens made a compelling case for considering accessibility as the most important transport-related resource to be equitably distributed in society. He also claimed that transport planning should determine sufficiency thresholds of accessibility for all individuals. His approach to design fair transport systems is outlined in ten rules, which should be implemented at an appropriate geographical scale through a combination of a technical top-down and a participatory bottom-up processes.

3.2.3 Comparison of definitions

A range of definitions of accessibility can be found in the transport literature, and this section reviews some of these conceptualisations. The manner one conceptualises accessibility is a relevant issue since different definitions may justify the use of distinct measures and underpin different possibilities for activity participation. In order to provide a more systematic overview, definitions of accessibility were classified according to three inherent aspects labelled as *perspective*, *agency* and *scope*. Appendix A provides an overview of the revised conceptualisations.

The first aspect (perspective) refers to the long-standing dichotomy between place- and people-based approaches to accessibility (Miller, 2005), which has also been reflected in some studies on transport and social exclusion (Church et al., 2000; Hine and Grieco, 2003; H.J. Miller, 2003), indicating the relevance of this issue in the social analysis of transport. Perspective relates to the standpoint from which accessibility is conceived and analytically approached. Accessibility may be regarded as an attribute of places or individuals. While place-based accessibility approaches represent areal levels of access, people-based approaches are more suitable to capture individual space-time constraints. Although there have been some empirical attempts to accommodate individual-level data in the spatially more aggregate accessibility approaches, this dichotomy largely remains. The review shows that the majority of definitions adopt a people-centred perspective.

The second aspect (agency) refers to the prevalence of systemic or individual factors that contribute to making opportunities accessible, mirroring a longstanding debate in the social sciences. Several definitions of accessibility express the extent to which an individual can get to activity places. Some examples are: “people’s ability to reach desired goods, services and activities” (Litman, 2019); the ability to overcome the spatial “barrier between origin and desired destination” (Martens, 2012); “the ease of reaching desired destinations given a number of available opportunities and intrinsic impedance to the resources used to travel from the origin to the destination” (Bocarejo and Oviedo, 2012, p.143). Some definitions emphasise agents’ discretionary power with regard to mobility and activity participation, as for Casas (2007, p.464), who stated that “[a]ccessibility is a measure of the freedom an individual has to participate in activities in the environment.” Other authors emphasise, on the other hand, the role of systemic components over the individual level of freedom as in the definition proposed by Neutens (2015, p.15): “the degree to which transport systems enable people to reach desired activity locations”. Concerning the agency aspect, the review provides a mixed picture.

The third aspect (scope) relates to the delimitation of the types of opportunities to be reached within a given conceptualisation of accessibility. With this respect, most definitions do not restrict the type of opportunities or vaguely refer to “desirable” activities. Other few definitions deliberately focus on a subset of opportunities regarded as “necessary” for people. Studies adopting the social exclusion approach to transport (as reviewed in section 2.3) tend to focus on activities considered essential to people’s participation in society.

3.3 Accessibility barriers

While the three aspects addressed in the previous section provide an overarching conceptual framing to accessibility, approaches also vary with respect to the specification of the set of substantive issues that may deter people from travelling to places of interest.

With this regard, approaches to accessibility found in the transport literature can be grouped into three clusters. The first cluster of studies typically operationalises travel impedance from a unidimensional spatial perspective, usually in terms of travel distance or time and frequently within a GIS environment. Such quantitative studies represent the mainstream of accessibility analysis within transport studies.

The second group of accessibility studies captures a variety of barriers related to transport. Such contributions draw attention to a series of transport-related issues that may constrain the accessibility. Qualitative studies adopting a social exclusion approach to transport typically fall in this category, as they highlight the multiplicity of accessibility barriers faced by socially disadvantaged groups.

Less common in the transport research field, the third cluster of accessibility studies addresses the trade-offs between the transport inconveniences addressed in the first cluster and aspects of the services at the destination places. The following subsections describe each approach in detail.

3.3.1 Distance and travel time

Spatial proximity is a prominent dimension of accessibility. The most common approach adopted by quantitative researchers consists of using an objective measure of the effort of overcoming the spatial barrier to get to activity places. A number of representations of accessibility are grounded in representations of physical distance, although time-based assessments of accessibility have become more frequent recently.

The unidimensional approach to accessibility emphasises the ease to get to activity places in terms of overcoming the spatial friction represented by time or

distance. In the case of studies on healthcare accessibility, the exclusive focus on these factors has been often justified on a presumable dichotomy between spatial and a-spatial aspects of access, outlined in some conceptual studies on access to healthcare (Joseph and Phillips, 1984; Khan, 1992).

Time or distance variables can be processed on GIS environments using a range of measures, such as cumulative opportunities, gravity models and float catchment area approaches. Cromley and McLafferty (2012) and Neutens (2015) review the most common measures, although the most appropriate manner to represent landscapes of healthcare accessibility has been still debated among academics. While some authors pointed to the high sensitivity of the levels of spatial access and possible disparate policy implications depending on the measures adopted (LaMondia et al., 2010; Dewulf et al., 2013), Apparicio et al. (2017) identified a very high level of correlation between most of them.

In healthcare applications, time- and distance-based approaches to accessibility may generate similar results (Apparicio et al., 2008), although it is argued that travel times may represent more realistically people's effort in moving on real-world networks to get to providers (Cromley and McLafferty, 2012). A number of studies on healthcare accessibility have represented the effort of travelling to activity places by means of distance or time (Fosu, 1989; Brabyn and Skelly, 2002; Luo and Wang, 2003; Buchmueller et al., 2006; Tanser et al., 2006; Hare and Barcus, 2007; Luo and Qi, 2009; Paez et al., 2010; Delmelle and Casas, 2012; Bissonnette et al., 2012; Langford et al., 2012; Mao and Nekorchuk, 2013; Dewulf et al., 2013; Grengs, 2015; Apparicio et al., 2017; Pereira, 2018; Ghorbanzadeh et al., 2020). Appendix B provides an overview of some of these studies.

From the theoretical lenses of the current study, the relevant rationale for adopting a travel time- or distance-based approach to accessibility is that the spatial impedance of time or distance can represent a significant barrier of access to socially disadvantaged groups. The multinational study by Narayan et al. (2000) on the constituents of poverty, which involved over 20,000 participants from 23 low-income countries, found that distance to healthcare facilities discourage and exclude poor people, especially those living in rural areas, from accessing basic services. Distance constrains the set of healthcare services that could be reached to the individuals, and people may choose local facilities over distant services, even if these are of higher quality (Hernandez and Rossel, 2015). Usually, socially disadvantaged groups express a strong preference to have healthcare facilities locally available and be less dependent on long trips outside their neighbourhoods (Lucas et al., 2001). The typical

situations and conditions of healthcare seekers, such as the difficulties of moving with young children or as a pregnant woman in public transport, also explain people's preference to receive care at the nearest facilities (Hernandez and Rossel, 2015).

Health and urban planners have extensively employed distance-based approaches to uncover disparities of access between areas. Such methods have also assisted policy-makers in several cities and regions to guide policies towards a balanced spatial allocation of healthcare resources (Gulliford and Morgan, 2003; Cromley and McLafferty, 2012).

Studies employing distance- or time-based measures have identified significant inequalities in the distribution of accessibility to some forms of healthcare across groups of different socio-economic positions. In general, while in Latin American cities, groups in lower socio-economic positions have been found to be disadvantaged regarding healthcare accessibility in comparison to well-off groups (Delmelle and Casas, 2012; Pereira, 2018), studies in cities of high-income countries have pointed to the opposite pattern (Macintyre et al., 2008; Grengs, 2015).

3.3.2 Multidimensional transport barriers

Some scholars have emphasised the plurality of accessibility issues beyond physical proximity. Time- and distance-based measures can be regarded as limited representations of accessibility from two scholarly standpoints.

One critical stream has evolved around the idea of "perceived accessibility" (Cheng and Chen, 2015; Lättman et al., 2016; Lättman et al., 2018; Curl, 2018; Van der Vlugt et al., 2019). The main objection addressed by this emerging body of research is that "objective" factors, such as the journey times, are not able to capture the lived experiences, motivations, interests and contextual factors that affect people's travel experiences to opportunities. Personal perceptions of accessibility may be built upon "mental maps", which underpin decisions on route, travel mode, time of day and destinations (Van Wee, 2016). Recent studies in this field have shown that objective measures of travel time or distance do not necessarily match perceived accessibility, grounded on travellers' knowledge and travel horizons (Lättman et al., 2016; Curl, 2018).

The second stream, more relevant for the purposes of the present study, relates to the social exclusion approach to transport (see section 2.3). Rather than highlighting the boundaries between the objectivity and subjectivity of travel experiences, this body of research has focused on the variety of transport-related inadequacies that restricts opportunities to activity participation by socially vulnerable groups. Emphasis is given to the set of obstacles faced by

the socially disadvantaged, which is much more comprehensive than those considered in mainstream accessibility approaches. All of them together and in relation to each other, these factors can undermine the social participation of vulnerable groups.

For instance, the framework of transport-related social exclusion put forward by Church et al. (2000) arranged barriers to accessibility of socially disadvantaged groups in seven categories: physical, geographical, facilities-related, economic, time-based, fear-based, and space exclusion. The typology of barriers proposed by these authors embraces other impediments, such as those faced by people with physical or cognitive impairments to use transport, the geographical isolation combined with reduced transport availability in some areas, and the perceptions of insecurity affecting in particular women's confidence in using transport. Recent studies investigating transport-related social exclusion in Latin American cities have built on this framework (Casas and Delmelle, 2014; Oviedo Hernandez and Titheridge, 2016). Church's framework has been reviewed and extended to take into account the specific circumstances of low- and middle-income countries (Benevenuto and Caulfield, 2019).

Likewise, the Social Exclusion Unit (2003) identified five types of transport-related barriers that people may face to get to essential services: the availability of and physical accessibility of transport; safety and security while travelling; the cost of transport; limited travel horizons; and the location of services. An important finding highlighted by this report is that, above distance to facilities and transport cost, public transport inadequacies are perceived as the most crucial problem among those who experience difficulties in getting to basic services in the UK. Empirical studies engaged with socially disadvantaged groups both in rich countries (Lucas et al., 2001; Wixey et al., 2005; Di Ciommo and Lucas, 2014) as well as in low-income countries (Lucas, 2011a; Maia et al., 2016) brought additional evidence on the multidimensional nature of accessibility barriers, although these may vary across geographical settings and social segments.

For instance, the early study by Lucas et al. (2001) showed that several public transport deficiencies affect the accessibility by disadvantaged groups in different area types in England. Such shortcomings include the lack of physical accessibility in vehicles and stations for people with physical disabilities and parents with children, language barriers for migrants, security concerns, and the fare costs. Similarly, the comprehensive study by Wixey et al. (2005) found that personal security issues and the cost of travelling by public transport were serious threats for activity participation by most of the eight distinct groups considered socially disadvantaged in two case study areas in England. For poor

people living in low- and middle-income countries such as South Africa (Lucas, 2011a) and Brazil (Maia et al., 2016), the three most significant barriers are travel costs, insecurity and inadequate walking environments.

The following subsections aim to characterise the five main accessibility barriers found in the social exclusion literature, which are not addressed by the spatial approach to accessibility reviewed in section 3.3.1. These barriers are transport availability, affordability, reliability, personal security, and walking environment.

3.3.2.1 Transport availability

Lack of transport options serving the residential areas of the socially disadvantaged is at the core of the notion of transport disadvantage. Lucas et al. (2001), Wixey et al. (2005) and Gutiérrez (2009) found that people living in deprived communities may not have at their disposal public transport connecting straight to desired destinations. Limited provision of public transport in geographically inconvenient residential locations is deemed as an accessibility barrier in some Latin American cities (Gutiérrez, 2009; Oviedo Hernandez and Titheridge, 2016), but not necessarily in others (Maia et al., 2016). The importance of public transport availability is also expressed as disapproval of the removal of existing services (Wixey et al., 2005).

Undersupply of public transport has deleterious effects on the accessibility to healthcare. There is a substantial body of evidence linking the reduced availability of public transport to low utilisation of health services, and poor health outcomes (Jones et al., 2016; Idei and Kato, 2019). However, most of this evidence comes from studies situated in geographically remote areas of low-income countries. In the urban context, the problem seems to be more related to the low frequency of services and the lack of direct lines to health centres rather than the complete absence of public transport. People living in the peripheries of Buenos Aires, for instance, have to use at least two buses to get to the closest hospital (Gutiérrez, 2009).

Public transport may be physically inaccessible and therefore unavailable for mobility-impaired people. The lack of accessible buses and trained personnel might make people with disabilities feel invisible (Lucas et al., 2001). Difficulties faced by people with disabilities overlap to a large extent with problems experienced by older people and parents carrying heavy objects or escorting children, for instance.

In the rural and peri-urban context of high-income countries, the inadequate provision of public transport goes hand in hand with perceptions of car dependence. In England, socially disadvantaged may consider themselves highly dependent on the private car (Lucas et al., 2001; Wixey et al., 2005).

Studies in the United States found a positive association between access to a vehicle and healthcare service utilisation (Syed et al., 2013).

3.3.2.2 Transport affordability

The adverse effects of high costs of transport on activity participation has been largely discussed in the literature on transport disadvantage and social exclusion (Church et al., 2000; Lucas et al., 2001; Social Exclusion Unit, 2003; Wixey et al., 2005; Rivas Perez, 2013) and addressed by several other studies (Armstrong-Wright and Thiriez, 1987; Venter and Behrens, 2005; Carruthers et al., 2005; Serebrisky et al., 2009; Fan and Huang, 2011).

Lucas et al. (2001) found that the high cost of public transport fares was a significant issue in England, making many people express their inclination towards buying a car, generally considered a cost-efficient option. Such findings were consistent with the study by Wixey et al. (2005), who reported that people experiencing social disadvantage regarded urban public transport as too expensive, especially in relation to the distances covered. In another study in England, Rivas Perez (2013) found that the cost of travelling and, in particular, unaffordability of public transport were significant travel barriers.

Overall in Brazil, expenditures with transport represent about a quarter of the cost of receiving health services in a hospital (Dominguez Gonzalez et al., 2020). Differently from England, in the city of Recife (Brazil) transport cost was not perceived as a central issue, although poor people living in remoter and less accessible neighbourhoods at the top of a hill valued the availability of a free-cost public transport option for accessing their daily activities (Maia et al., 2016). Gutiérrez (2009) reported that poor pregnant women in Buenos Aires used to make trips by bus instead of train trips or walk because of the high transport costs. To save money, these women feel frequently forced to return to their residences walking instead of riding buses after receiving healthcare.

In the literature on access to health, transport costs have been acknowledged as a possible barrier to service utilisation (Penchansky and Thomas, 1981; Gulliford and Morgan, 2003; Exworthy and Peckham, 2006; Cromley and McLafferty, 2012). The qualitative study by Narayan et al. (2000) also found evidence that the inability to pay for transport services deters low-income groups from receiving medical care.

3.3.2.3 Transport reliability

Reliability is regarded as an essential aspect of public transport, especially from the perspective women and parents with children, who are more inclined to undertake multi-purpose trips (Social Exclusion Unit, 2003). Public transport

unreliability constitutes the main transport obstacle to get timely access to healthcare. One-third of the low-income patients in New York who missed or had to reschedule medical appointments mentioned that the main reason for the non-uptake of healthcare was the unreliability of the local bus services (Silver et al., 2012). Also in England, unreliability was pointed in a qualitative study as the leading cause of people missing appointments with general practitioners and in hospitals (Wixey et al., 2005).

3.3.2.4 Personal security

Fear of crime has been identified as an accessibility barrier in different contexts, such as in England (Lucas et al., 2001; Wixey et al., 2005), South Africa (Lucas, 2011a) and Brazil (Maia et al., 2016).

Both studies conducted in England found that people felt insecure in public transport especially in the evening, making some people not travel as much as they would like (Lucas et al., 2001; Wixey et al., 2005). Train stations, taxi and bus stops were perceived as hubs for criminal activities in the South Africa context (Lucas, 2011a).

For pedestrians, concerns about personal security were frequently associated with specific places, such as unlit alleys in Recife (Maia et al., 2016), underpasses and areas where gangs are used to “hang-out” in London (Wixey et al., 2005). Participants of these studies expressed the fear of being mugged, raped, and of suffering racial attacks (Wixey et al., 2005).

Overall, women, people from minority ethnical backgrounds, young and older people feel more threatened. In the South Africa context, parents fear that the children can be attacked on their way to school (Lucas, 2011a). In the English town of Keighley, young people make few trips unaccompanied until they reach the age of majority (Wixey et al., 2005).

In Recife, in Brazil, socially disadvantaged groups do not feel unsafe in the places where they live. However, stigmas of violence influence their activity spaces indirectly, making job opportunities in other areas, taxis and medical emergency services virtually unavailable to the residents of low-income areas (Maia et al., 2016).

In addition to the risk of robberies and assaults, women may fear unwanted physical and verbal harassment. Although female harassment also happens in rich countries (FIA Foundation, 2016), such incidents are reported to be more frequent in Latin American cities (Corporación Andina de Fomento and FIA Foundation, 2018; GIZ, 2018; Pereyra et al., 2018), including in Brazil (Cadaval, 2004; ITDP Brazil, 2018; Dominguez Gonzalez et al., 2020). Overcrowded

vehicles provide the perpetrators with the right opportunity for inappropriate sexual behaviours (World Bank, 2002; Ceccato and Paz, 2017).

In Latin American cities such as Buenos Aires and Santiago, women fear suffering harassment in particular when travelling by bus (Corporación Andina de Fomento and FIA Foundation, 2018). The fear of sexual assault in transport can have far-reaching consequences for female travellers, who may reschedule their trips, travel in groups, take more expensive modes of transport, change their destinations, or give up travelling altogether (Kash, 2019).

3.3.2.5 Walking environment

The poor conditions of pavements have been a serious concern expressed by distinct socially disadvantaged groups in England (Wixey et al., 2005). Accessibility in particular by older people (see also Marsden et al., 2007; Mackett, 2014), people with disabilities and people with pushchairs can be significantly impaired by obstacles such as steep and narrow walkways, poorly lit and maintained pavements as well as the absence of adequate crossings next to places of interest, especially in complex junctions and on roads with high traffic volumes. Street works and semi-parked cars on pavements have been addressed as impediments, obliging some people to walk on car lanes (Wixey et al., 2005).

Although the nature of the issues impoverishing the walking experience in high-income countries is very similar to the ones in low- and middle-income countries, conditions for pedestrians are generally worse and more dangerous in the latter, where over 90% of the road traffic deaths occur (World Health Organization, 2018). As one author states, in developing countries, “walking is a challenge” (Vasconcellos, 2001, p.113). Pedestrians have mounting safety concerns due to the higher likelihood of suffering injuries in road traffic (Vasconcellos, 2001). In low- and middle-income countries, low road safety is also a consequence of pedestrians’ lack of knowledge on traffic legislation, the pervasive corruption of police officers who may oversee vehicle safety standards and the inadequacy of road geometries (Nantulya and Muli-Musiime, 2001; Martines et al., 2018). Several analysts highlight the sharp inequalities associated with the poor walking conditions since poor people are at higher risk of dying or suffering severe traffic-related injuries than the non-poor (Laflamme and Diderichsen, 2000; Nantulya and Muli-Musiime, 2001; Gwilliam, 2003; Aeron-Thomas et al., 2004).

In low-income neighbourhoods of Latin American cities, the walking environment may be characterised by obstacles such as steep and narrow walkways, and unlit and poorly maintained pavements with irregular surfaces,

which may become unpassable after raining (Gutiérrez, 2009; Maia et al., 2016). In the Brazilian city of Recife, stalls put up by informal retailers on pavements and lacking pedestrian crossings are additional obstacles for pedestrians (Maia et al., 2016). In Buenos Aires, the unevenness of the pavements in low-income neighbourhoods undermine the walkability of pregnant women and the mobility of parents with pushchairs (Gutiérrez, 2009).

3.3.3 Quality of opportunities

At the beginning of this chapter (section 3.2.1), accessibility was presented as a notion that entails the difficulty to reach opportunities in activity places (impedance) as well as the attractiveness of these opportunities. The two approaches discussed in sections 3.3.1 and 3.3.2 have focused on the role of transport aspects as deterrents of mobility. While the unidimensional approach focuses on “objective” measures of time or distance, the multidimensional approach accommodates several other transport-related barriers that may matter for people. Both approaches, however, dedicate less, if any, attention to the factors that underpin opportunities’ attractiveness, and to the interactions between such aspects and transport. This section presents the third cluster of accessibility studies, which explores the qualities of opportunities. Because of the difficulties and perhaps the inappropriateness of exploring this topic in a generic manner, the discussion is focused on accessibility to healthcare.

When seeking opportunities, travellers may ponder the advantages and disadvantages of alternative locations. Differences in healthcare service quality do affect people’s decisions on where they travel to. Patients may take into consideration several providers’ aspects, such as the capacity of services and cultural appropriateness, which may be assessed according to previous experiences (Cromley and McLafferty, 2012).

Although some studies adopting the social exclusion approach to transport have captured people’s concerns about the poor quality of healthcare such as the celerity in the delivering services (Lucas et al., 2001; Maia et al., 2016), research developed in the last ten years has explored manners to integrate healthcare quality in accessibility analyses (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015). Employing qualitative or mixed-method approaches, such studies contributed to show the importance of considering differentials in service quality for the determination of activity spaces from the perspective of socially disadvantaged populations.

Two characteristics of healthcare quality stand out in such accessibility studies: the possibility of receiving a timely care and of being treated by a “good doctor” – an umbrella expression that denotes trusted medical professionals able to

listen carefully to patients' concerns in non-rushed consultations (Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015). However, research in this area is still incipient, and there is no systematic overview of the healthcare factors that inhibit spatial access to healthcare.

Waiting times prolong patients' suffering, reduce the benefits received from healthcare and have been identified as the most important concern of English patients, for instance (Gulliford and Morgan, 2003). Low quality of healthcare has been reported as the primary issue of access to healthcare by poor people in several low-income countries (Narayan et al., 2000; Banerjee and Duflo, 2012). Worldwide, the quality of patient-professional interactions is regarded as an essential aspect of healthcare users' satisfaction (Almeida et al., 2015).

Generally, a crucial insight is that the perceived differences in the quality of opportunities may outweigh difficulties with transport, resulting in different accessibility landscapes. Valuing healthcare quality more than the quality of transport, people may be inclined to travel longer to receive perceived good care (Hernandez and Rossel, 2015). These insights are not necessarily new. Previous research has shown, for instance, that the long waiting times to mark a consultation in local clinics motivates patients in rich countries to seek more distant care (Asanin and Wilson, 2008). However, the incorporation of such evidence in accessibility studies that capture perspectives of socially disadvantaged people is an emerging field.

Hawthorne and Kwan (2013) found that the accessibility to healthcare by the lower-income residents of Columbus (United States) is negatively affected by a poor patient-provider relationship, remarkably by doctors' lacking listening and technical skills. Other issues captured in their study were the waiting times spent to get treatment and on the appointment day. Based on this evidence, these researchers created a GIS-based accessibility measure accommodating spatial distance with perceived healthcare quality. The indicator created aimed to reflect realistically the circumstances that influence people's willingness to overcome longer distances to receive good-quality care (Hawthorne and Kwan, 2012). However, the component of healthcare quality in the accessibility indicator encompasses several issues, and the employed aggregation procedure for the calculation of the indicator is not clearly documented in the paper. Hence, the study does not contribute to disentangle the role of each service-related aspect as an inhibiting factor of healthcare accessibility.

In the Latin American context, the study by Hernandez and Rossel (2015) highlighted the intrinsic relationship between healthcare service characteristics and the spatial-temporal constraints that affect access to the antenatal care of

pregnant women and the new-born health check-ups in Montevideo (Uruguay). These authors observed that, in assessing the ease to get to healthcare, people ponder the total time needed to engage with these services, which includes travel and waiting times at the facilities before being attended by a physician. In this city, the total time spent by women engaged in prenatal care and new-born check-ups reached up to three hours. The authors also postulate that people of low socioeconomic status who dismiss travelling to facilities recognised as faster and better do not have “full access” to healthcare (Hernandez and Rossel, 2015, p.29). As for the participants of this study, an essential component of healthcare quality are the “good doctors”, i.e. the trusted professionals who devote sufficient time to provide adequate and comprehensive care.

When healthcare service deficiencies are very severe, people may not have their health needs satisfied. Gutiérrez (2010) coined the expression “unsatisfied mobility” to refer to the situations in which people travel to an activity place without satisfying the need that motivated that trip, relatively common in Buenos Aires. Her approach draws attention to the patients that have to undertake multiple trips to resolve a single health issue. For instance, to complete the recommended five control consultations and clinical investigations during a low-risk pregnancy, pregnant teenagers residing in poor urban outskirts of the metropolitan region of Buenos Aires (Argentina) have to navigate the public health system through a chain of 22 concatenated trips (Gutiérrez, 2009). These experiences evince the complexities related to healthcare access and utilisation, which may not be captured by the mainstream “cartographic approach”, criticised by the author (Gutiérrez, 2009; Gutiérrez, 2010).

Some quantitative researchers have attempted to incorporate quality dimensions in their accessibility analyses, even in an unsophisticated manner. Grengs (2015) and Delmelle and Casas (2012) distinguished healthcare facilities by their size as an indication of service availability. In these studies, service attractiveness was modelled in proportion to the number of active employees or hospital beds, respectively. To reflect more realistically the appropriateness of healthcare services in a Canadian city with a multicultural background, Bissonnette et al. (2012) accounted for the language spoken by the providers. These quantitative approaches are, however, largely experimental and have not been adopted by planners and policy-makers in recurrent accessibility measurement procedures.

3.4 Distance decay in the accessibility to healthcare

The previous section presented three distinct perspectives on accessibility barriers and examined in some detail each of these barriers. This section critically discusses the separation of spatial and non-spatial aspects of accessibility through a brief examination of the geographic notion of *distance decay*.

Distance decay expresses the relationship between accessibility and activity utilisation. Activity participation is believed to follow a pattern that reflects that the intensity of interaction with opportunities decreases with increasing distance or travel time. It is generally assumed that people who can easily reach health services tend to use them more than people who live further away from them (Gulliford and Morgan, 2003; Cromley and McLafferty, 2012). Typically, the distance-decay effect is modelled mathematically by impedance functions that represent people's willingness to travel to reach the activity places.

However, the frictional effect of time or distance on health service utilisation is more nuanced than commonly assumed. The extent to which time and distance influence people's access to healthcare depends on numerous factors, such as specific land-use settings, the medical episode experienced, the personal circumstances of those seeking care and their socio-demographic characteristics, as well as the nature of the services themselves (Higgs, 2009).

For example, the distance decay effect is more pronounced in low-density environments such as rural areas than in the urban context (Brabyn and Skelly, 2002; Hjortsberg, 2003; Peters et al., 2008). The deterrent impact of distance on utilisation differs between primary, specialist care and emergency services (Higgs, 2009). Distance has a weaker effect on access to facilities for acute emergency procedures or serious injuries (Cromley and McLafferty, 2012). Vulnerable social groups such as seniors tend to travel shorter distances to healthcare and are more sensitive to the adverse effects of hospital closures (Buchmueller et al., 2006). Having a driver's license is strongly associated with a higher frequency of visits to practitioners and facilities for regular check-ups and chronic care in the United States (Arcury et al., 2006).

In the United Kingdom, the vast majority of people would travel further than to local facilities favouring those with a better reputation, quicker treatment or specialised services (Exworthy and Peckham, 2006). Patients' illness condition and severity along with individual characteristics such as age, gender and socio-economic status are related to people's willingness to seek healthcare in more distant places (Exworthy and Peckham, 2006). Likewise, social networks, such as family, and work connections also attract patients to more distant

facilities (Exworthy and Peckham, 2006). In this country, it is estimated that nearly half of the patients are not registered in the nearest general practitioner (Gulliford and Morgan, 2003).

This body of evidence suggests that factors other than spatial proximity may play a role in shaping people's accessibility to healthcare and that spatial and non-spatial aspects of accessibility are, to a large extent, interwoven. Hence, the ease to get to places of healthcare could be explained by multiple and interrelated factors. A realistic approach to healthcare accessibility designed to reflect the challenges faced by real people seeking healthcare should jointly address the spatial factors of impedance usually addressed in quantitative accessibility studies with the non-spatial issues that also influences people's decisions on where to travel.

3.5 Summary

Accessibility relates transport to land-use and is a concept that has attracted increasing attention in transport planning. The notion has gained importance in studies on transport and social equity since it draws attention to people's abilities to reach places that can provide opportunities for better lives.

Different definitions of accessibility were found in the transport literature. The diversity of conceptualisations was demonstrated through the comparison of some definitions based on an analysis focused on the fundamental aspects of perspective, agency and scope.

This chapter also showed that approaches to accessibility differ regarding the substantive issues that characterise the travellers' effort to reach activity sites. For these analytical purposes, accessibility approaches were clustered into three groups.

The dominant approach consists in selecting a single "objective", summarising factor of the effort of reaching activities, most notably travel time or distance. The second approach, typically qualitative, explores the variety of aspects to which socially disadvantaged groups are sensitive. The third, less developed approach has addressed the spatial friction of travelling alongside healthcare aspects, such as the ability to receive a timely appointment and the quality of the patient-provider relationship.

The last section of the chapter summarised the evidence on the distance-decay effect in the field of healthcare accessibility. The different spatial patterns of utilisation suggest that healthcare accessibility may involve other factors rather than solely the closeness between patients' residence and service provision

locations. This evidence was interpreted as not supportive of the adoption of the unidimensional approach to accessibility analysis in the healthcare domain.

These conceptual explorations on accessibility and the diverse possibilities to understand barriers are central to the development of the conceptual framework, which is outlined in the next chapter.

Chapter 4 The hybrid conceptual framework for accessibility analysis

4.1 Introduction

Chapter 2 explored the theoretical perspectives of transport disadvantage, social exclusion and human needs. Chapter 3 discussed the complexities involved in the conceptualisation and operationalisation of accessibility. The present chapter connects the narratives developed in these two previous chapters to develop the conceptual framework that will guide this PhD study.

The chapter starts with a critical review on how accessibility has been approached by the social exclusion perspective. As mentioned in Chapter 2, the social exclusion lenses advanced the understanding of the relationship between transport and social disadvantage through accessibility. I argue that studies adopting the transport-related social exclusion narrative may have been unable to fully seize the exclusionary effects induced by accessibility gaps, and this relates, at least partially, to the manner accessibility has been conceived.

Next, I explain how the three different theoretical lenses are combined to build the framework. This analytical instrument encompasses a new conceptualisation of accessibility.

4.2 What the social exclusion approach misses

As discussed in Chapter 2, the social exclusion approach to transport represented an essential contribution to the field of social analysis in transport. It broadened the scope of transport disadvantage perspectives by bringing evidence on the causal connection between shortages in transport provision and lack of activity participation. By firmly establishing this relationship, this body of research contributed to displacing the analytical and policy focus from inadequacies of transport services and infrastructure provision as problems on their own right to the connection between transport and high-level social issues, namely the denied prospects for inclusion and well-being of disadvantaged groups. The approach has been systematically conveyed the convincing message that good transport connects people to places where they need to travel.

However, the social exclusion lenses did not innovate the manner by which the ease to access key services by socially disadvantaged people is quantitatively measured. Instead, this approach has contributed to consolidate and

disseminate time-based measures of accessibility, which dismiss several barriers deemed as relevant for the socially disadvantaged.

The typical approach to accessibility within transport-related social exclusion studies has disregarded the meaning of qualities of opportunities for the people who seek them. A single study made explicit reference to the “level and quality of local facilities” as a component of accessibility from the social exclusion lenses (Lucas, 2004c), but this aspect has received negligible attention overall in this transport research stream.

In summary, the modality of accessibility analysis that has become prevailing among studies following the social exclusion lenses has primarily relied on the two critical premises:

- 1) The effort of travelling can be comprised of a single geographical measure of spatial friction, such as travel time or distance.
- 2) Distinct activity places embody equivalent opportunities for social participation and, regardless of the spatial impedance of travelling, are equally attractive from the traveller’s perspective.

This section revisits these premises in turn and argues why an accessibility approach based on them is inconsistent with the narratives on transport-related social exclusion.

4.2.1 Time-based accessibility approach

Time-based accessibility mappings have been at the core of the methodological approach to address transport-related social exclusion (Preston and Rajé, 2007). The experience with accessibility planning as implemented by local authorities in the UK (and which eventually inspired similar approaches elsewhere) consisted in locating areas underserved by public transport solely with respect to journey time or cost (Marsden et al., 2007).

The use of such time-based indicators has been eventually regarded with scepticism. Some commentators have argued that this approach to accessibility is not useful to express what individuals can access in relation to their capabilities and needs (Titheridge et al., 2010). The “quite mechanistic” manner to assess accessibility deficits (Marsden et al., 2007, p.2) is also problematic from the conceptual lenses of transport-related social exclusion because it contradicts the multi-dimensional character of the linkages between transport disadvantage and social outcomes (see sections 2.3 and 3.3.2).

Accessibility studies from the social exclusion lenses significantly diverted from the forms of accessibility analysis originally envisaged. For instance, the framework of accessibility planning outlined in the SEU report (Social Exclusion

Unit, 2003) aimed at identifying the activity and accessibility needs of citizens within participatory processes involving socially disadvantaged groups (Lucas, 2012a). Despite not being too prescriptive, and eventually being criticised for its relative vagueness (Grieco, 2003), accessibility planning was conceived as a circular process beginning with consultations with local communities to identify local understandings of access needs and the most beneficial policy responses for them (Social Exclusion Unit, 2003). This accessibility audit should provide the context and inform the subsequent analytical steps to enhance the capability of policy responses respond accurately to the actual activity needs of people (Lucas, 2004c). Within this process, accessibility calculations should take into consideration multiple barriers, namely journey time, cost, safety and reliability (Social Exclusion Unit, 2003).

Current practice, however, mostly consists of assessing social exclusion quantitatively utilising time-based measures. Such analytical efforts have typically attempted to identify associations between the area-level social deprivation and the degree of geographical separation between residential areas and opportunities as evidence of transport-related social exclusion (e.g. Lucas, Van Wee, et al., 2016).

There is a tension between this approach to accessibility and the social exclusion perspective to transport. The focus on time or distance as a surrogate of the burden of the socially disadvantaged is inconsistent with the multidimensional character of accessibility barriers that affect the socially disadvantaged. For example, Cass *et al.* (2005) highlighted potential problems of accessibility studies in addressing social exclusion due to a limited understanding of the concept of “access” and the disregard of the role of social networks in the time-space organisation of travellers.

Several studies lack robust evidence showing that the considered variables in their accessibility models capture the essence of the exclusionary mechanisms responsible for social disadvantage. These studies may disregard barriers that constitute genuine impediments for the accessibility and cannot be considered empowering or aligned with the lived experiences of the socially disadvantaged (Lucas, 2011a). The assumption that trip length or duration is the more prominent barrier of transport in the axis of inclusion and exclusion contradicts the rich and complex manner exclusion has been conceptually framed and has, in most real-world cases, not been confronted against the empirical evidence grounded in the perspectives of the affected populations.

To summarise, the social exclusion approach has not ensured consistency between its theoretical underpinnings, which focuses on the social outcomes of

transport disadvantage, and some analytical instruments that have been increasingly employed to assess disadvantage within exclusion narratives. The first premise – that the effort of travelling for people experiencing disadvantages can be comprised of a single geographical measure of spatial friction – is inconsistent with other research findings documented by the scholars who adopted the transport-related social exclusion approach.

4.2.2 Service quality

A second characteristic of the accessibility analyses undertaken within most studies adopting the social exclusion approach is related to the lack of differentiation of the opportunities for social participation. In empirical studies following the approach, opportunities have been mostly treated equally regarding their quality and actual capabilities to promote social inclusion.

The research conducted by Maia et al. (2016) illustrates exemplarily this issue, which it is, nevertheless, clearly not restricted to this study. In almost all conversations moderated by the researchers in two slums in Recife (Brazil), access to healthcare emerged as a matter of grave concern. Despite the impoverished pedestrian environments and inadequacies of the local public transport, geographical access was a less important issue than problems of the healthcare services. In the view of the study participants, the core problem was the poor healthcare quality, which involved understaffing, care provided by non-qualified personnel and the difficulties to get an appointment, which made some people seek treatment in more distant places. In summary, the study found robust evidence on the deficits of the local public healthcare system used by the locals.

This evidence, however, was dismissed in the accessibility analysis. Noting that “most usually the problem was not one of accessibility” (Maia et al., 2016, p.138), the authors came to following conclusion:

“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.” (Maia et al., 2016, p.138)

This statement makes evident the compartmentalised view on accessibility that can be supported by studies approaching transport-related social exclusion, which may not capture the inherently interactive and relational character of accessibility (see Chapter 3). Due to chronic deficiencies of the local facilities, patients need to travel longer to access healthcare services perceived as of higher quality. However, seeing transport barriers in disconnection from service barriers, the study ends up in a paradoxical situation. It did not draw any policy recommendation to enhance accessibility to healthcare despite the evidence

that some socially disadvantaged people may be prevented from accessing essential services in a timely and affordable manner. This ambiguous stance towards social inclusion is linked to the second premise – the view that all opportunities are equally attractive.

I contend that transport policy can and should be supportive of social inclusion also in the situations in which the main barriers to accessibility are located outside the transport sector. A stronger cross-sectoral policy integration contributory to catering the accessibility needs of socially disadvantaged populations, as the case of the low-income slum dwellers in Recife, requires acknowledging the role of transport within a system of needs satisfaction. The next section presents a conceptual framework in which this principle is further developed.

4.3 Building the conceptual framework

The conceptual framework built in this study aims to overcome the shortcomings and paradoxes of transport analyses guided by social inclusion principles, as exposed in the previous section. To develop a consistent body of understanding of accessibility, the proposed conceptual framework combines transport disadvantage (Dodson et al., 2004; Currie, 2010; Delbosc and Currie, 2011) and transport-related social exclusion perspectives (Church et al., 2000; Social Exclusion Unit, 2003; Kenyon et al., 2003; Lucas, 2012b) with theories of human needs (Doyal and Gough, 1991; Max-Neef, 1991; Gough, 2015; Gough, 2017). These constructs are underpinned by the notion of *accessibility*, which relates to the nexus between transport and an activity that can respond to a human need within a particular land-use system.

4.3.1 Combining theoretical stances

The framework aims to substantiate a conceptualisation of accessibility from the perspective of socially disadvantaged groups, which is grounded in three theoretical stances, as shown in Figure 4.1. As reviewed in Chapter 2, transport disadvantage describes situations in which people are not able to move out freely due to shortages in transport provision or their restricted abilities to use available transport options. Transport-related social exclusion identifies accessibility, or rather its lack, as the critical mechanism of people having limited possibilities of taking up life-enhancing activities, who are thus hindered from participating in social opportunities and social networks.

The frame of social exclusion extends the transport disadvantage lenses towards the social consequences of transport provision failures. This extension is graphically represented by the first arrow in Figure 4.1. The integration of

human needs theories in the framework represents an additional extension of the transport disadvantage lenses (the second arrow in Figure 4.1), and this constitutes a novelty.

The rationale for incorporating human needs theories, which represents a second expansion of the conceptual framework, is that, by providing access to key destinations and opportunities, transport should contribute to meeting fundamental human needs. Epistemologically, the concept of needs underlies understandings of poverty and social exclusion and the transport-related counterparts of these concepts. For instance, poverty usually refers to the gap between the amount of financial resources at disposal of an individual and the amount needed to overcome deprivation. Similarly, social exclusion relates to the not fulfilled gap of access to employment, healthcare, housing, education, and other opportunities to be able to participate in society. This explains why transport scholars frequently refer to transport needs, mobility needs and similar expressions, as depicted in section 2.4.1. Thus, a conceptual framework that includes theories of human needs can provide an adequate bedrock for transport analysis with focus on social justice.

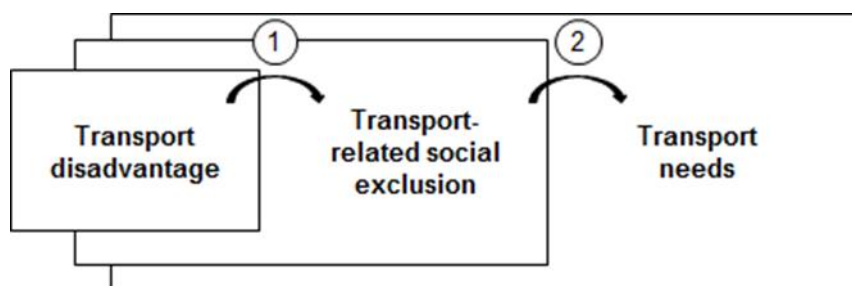


Figure 4.1: The three theoretical tenets of the conceptual framework

To apply human needs theories to transport and overcome the shortcomings of the social exclusion approach, it is necessary to acknowledge transport services and services related to essential activities, such as healthcare, as needs satisfiers. However, these transport and activity-related services occupy distinct positions in the chain of needs satisfaction, whereby satisfiers related to the land-use component have prominence over the transport-related satisfiers (Doyal and Gough, 1991; see also Mattioli, 2016). The understanding that the transport domain comprises low-level satisfiers of high-level needs ensures consistency with the generally adopted axiom that, in most instances and for most trip purposes, travelling is not an end in itself but rather a means to satisfy a need.

I illustrate this argument providing the example of healthcare, which is the focus of this PhD. Having a healthy life, which includes being free of physical and

mental illness, is a *basic human need*, common to all people. The satisfaction of this basic need requires people to utilise and engage with some resources. For example, someone who feels ill has the imperative for improving their health condition (basic need) receiving appropriate healthcare. Most societies organise the delivery of healthcare within systems that can be viewed as a “package of needs satisfiers” to address the basic need of health (Gough, 2019). In this case, the *service-related satisfier* consists of healthcare systems, which comprise several types of facilities (such as primary health centres, clinics and hospitals) that provide a range of services such as prevention campaigns, vaccinations, medical consultations, laboratory procedures and surgeries.

Another requirement for the satisfaction of a large share of health needs is related to the use of services and infrastructures that make possible to people in need access physically providers. These are *transport satisfiers*. Transport resources can be generally understood as second-order satisfiers: they represent means to get to the resources that can be utilised to satisfy a human need.

A certain level of generality is intrinsic to the framework as configurations of healthcare and transport satisfiers are context-dependent. This means that the particular forms in which transport and healthcare systems are arranged and operate as needs satisfiers depend on cultural and spatial circumstances in which social practices are circumscribed.

In this framework, transport disadvantage relates to situations in which the transport satisfiers are not in place. Transport-related social exclusion addresses the relationship between the transport satisfiers to the service satisfiers. The three key constructs – transport disadvantage, social exclusion and transport needs – are underpinned by accessibility, and this concept will be explored in detail in the next section.

4.3.2 Conceptualising accessibility

Since in contemporary societies every person has the need to reach a set of out-of-home activities, engage with them and benefit from such opportunities to be socially included, one can elaborate the notion of *accessibility needs* as the set of necessary accessibilities for participation in social life. In this study, accessibility needs are regarded as a container concept that embraces the diverse satisfiers related to transport and the provision of relevant services within a given land-use setting. It relates to the nexus between transport and an activity that can respond to a human need within a particular land-use system.

Conceptualising accessibility needs evokes the necessity of establishing an appropriate definition of accessibility. Drawing upon previous research that

emphasises the role of accessibility for social inclusion, I define accessibility as *the easiness for people to reach key services, opportunities and activities able to contribute to the satisfaction of their needs*. This is a new definition of accessibility that encapsulates simultaneously four key aspects to guide the analysis of transport in connection to social issues, as shown in Figure 4.2.

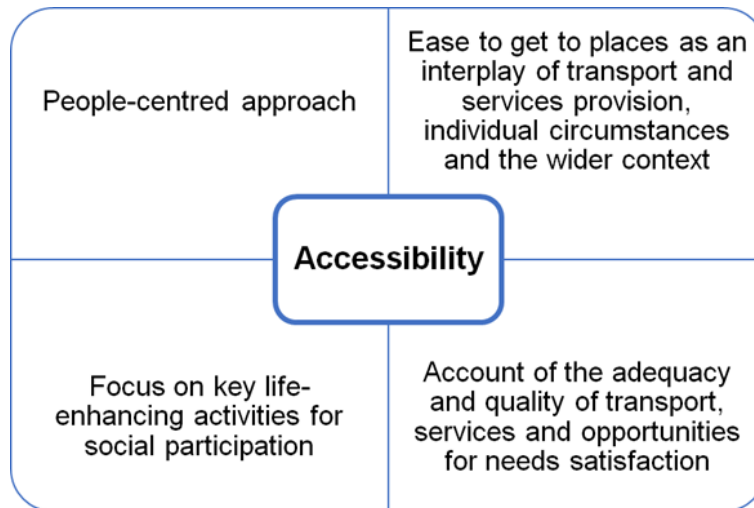


Figure 4.2: Key aspects of the needs-based conceptualisation of accessibility

Firstly, this conceptualisation calls for a *people-centred approach*. It means that places should be regarded as more or less accessible, primarily from peoples' perspectives (Farrington, 2007). A needs-based accessibility analysis should reflect the perspective of people who need to get to places instead of undertaking a purely locational analysis that may ignore the inherent social dimension of spatial relations. The proposed conceptualisation acknowledges that space and society maintain an intrinsic dialectic relationship (Soja, 2010) and revokes geographical approaches that frame space as a separate dimension from social issues, such as some of the reviewed in Chapter 3. In particular, in studies concerned with equity issues in transport, the perspectives of those considered socially disadvantaged should be central and taken into account properly in accessibility assessments.

Secondly, by emphasising the *easiness to get to activity places*, the suggested conceptualisation accommodates structural factors such as the organisation of transport system, land-use settings and other wider contextual determinants alongside individual resources and circumstances that affect accessibility. Instead of highlighting personal abilities (Farrington and Farrington, 2005; Martens, 2017; Litman, 2019), the approach locates the main accessibility issues within "systems of provision". Thereby, the approach avoids seeking solely at the individual level factors that can erode accessibility, eventually

addressing to their conditions the culpability for their lack of mobility and associated adverse social outcomes. However, steering the focus from the individual ability to systemic factors does not mean neglecting the freedom of agency or favouring a paternalistic stance towards accessibility. Instead, it reflects that, in most stances experienced by socially disadvantaged populations, overcoming the difficulties to get to places in order to satisfy their needs is not a matter of personal choice or formal agency autonomy. Focusing on the easiness to reach places instead of people's abilities aligns the approach to social exclusion theories, which also emphasise structural over individual constraints to participation (Kenyon et al., 2002).

Thirdly, the proposed definition intentionally focuses on *necessary activities* for social participation in contrast to "wished", "desired", or "desirable" ones, to use some expressions commonly found in the literature. Rather than a lexical nuance, the focus on necessary opportunities aligns the accessibility approach with the needs-based theoretical standpoint, which establishes a clear conceptual boundary between needs and preferences (Doyal and Gough, 1991; Gough, 2015; Gough, 2017). Arguably, this distinction is particularly relevant for exploring social inequalities in relation to accessibility deficits as it contributes to focusing on key life-enhancing opportunities such as health, education, employment and social networks. This focus is already adopted by the social exclusion approach to transport (Social Exclusion Unit, 2003; Lucas, 2012b; Jones and Lucas, 2012) and is aligned with the calls for "universal basic services" (Gough, 2019).

Lastly, the most distinctive aspect of the advocated conceptualisation is that it explicitly considers the *quality of transport services and activity opportunities* in terms of their contribution to needs satisfaction. The transport-related social exclusion approach focuses on the social outcomes of activity participation mediated by the opportunities of accessing key services and opportunities (Lucas, 2011b; Lucas, 2012b). The proposed conceptualisation implies a refinement of this approach. It establishes that the meaning of accessibility for those seeking to satisfy basic needs is intrinsically related to the benefits derived from people's engagement with meaningful activities that may contribute to improving wellbeing and social inclusion. Therefore, accessibility requires the joint assessment of transport and service-related satisfiers with regard to their potential contribution to enhancing people's well-being. This frame conciliates transport-related social exclusion with social policy narratives addressing inadequacies and essential services lack of quality. It also accommodates appropriately the understanding that "opportunities with zero value" should not increase accessibility (Bhat et al., 2000).

In substantive terms, the conceptual framework put forward in this thesis expands the previous understanding of accessibility with two respects, as shown schematically in Figure 4.3.

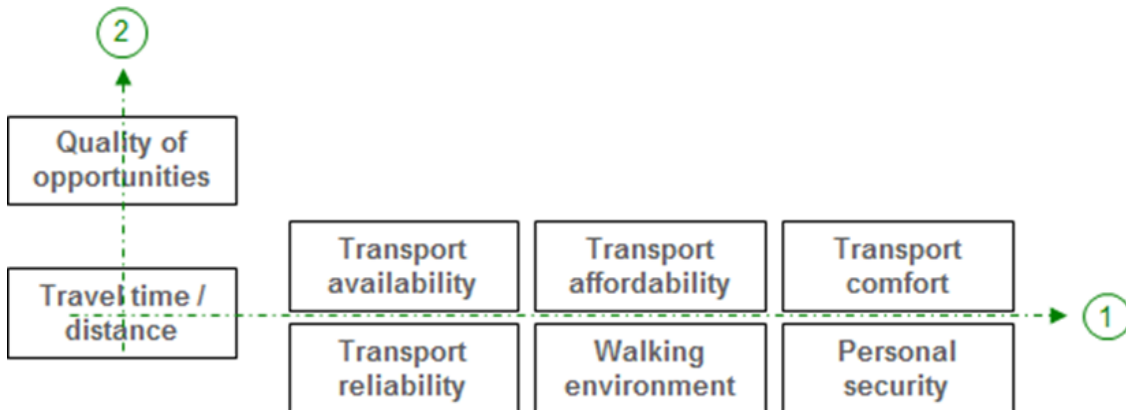


Figure 4.3: Substantive dimensions of accessibility incorporated in the conceptual framework

Firstly, with regard to features of the transport system, the framework follows the social exclusion approach to transport (Church et al., 2000; Social Exclusion Unit, 2003) and the evidence gathered in a number of empirical studies (e.g. Lucas et al., 2001; Wixey et al., 2005; Maia et al., 2016), which address aspects such as affordability, comfort, safety and security in transport. All these factors can influence access by socially disadvantaged groups to key activities. This corresponds to a first expansion of the unidimensional spatial approach to accessibility towards a multidimensional understanding, as indicated by the first arrow in Figure 4.3.

The second movement aims to connect transport with the land-use domain. The proposed framework acknowledges the relatedness between the geographical dimension of accessibility and characteristics intrinsic to healthcare services, most notably the quality of care provided in facilities. In this latter respect, the framework is aligned with the contributions by Hawthorne and Kwan (2012; 2013) and Gutiérrez (2009). This expansion establishes a close connection between the transport and land-use dimensions of accessibility, as indicated by the second arrow in Figure 4.3.

4.3.3 Adopting a multi-level perspective

Represented diagrammatically in Figure 4.4, the framework helps to uncover the complex mediatory role of accessibility with regard to health and wider social outcomes.

The three-level framework represents the perspective of a person seeking to pursue an activity (e.g. healthcare in outpatient facilities, which is a common

form of satisfying health needs in most contemporary societies). The *macro-level* encompasses issues related to the broad institutional, cultural, economic and political context that determines how the systems of provision are shaped and operate in a particular context. These factors include the local availability of health-enhancing opportunities and facilities (e.g. green areas, groceries of healthy food), housing and essential services (such as sanitation and garbage collection), socio-cultural norms, citizens' rights and the main political and funding mechanisms that sustain welfare systems.

This level can address systemic issues that can impact indirectly on the functioning of transport and local services. An example is given by the neoliberal policy approach that underpinned market-oriented reforms of healthcare systems in many countries. By emphasising efficiency over equity goals, such reforms have supposedly reduced access to healthcare services by socially disadvantaged groups (Homedes and Ugalde, 2005; World Health Organization, 2010).

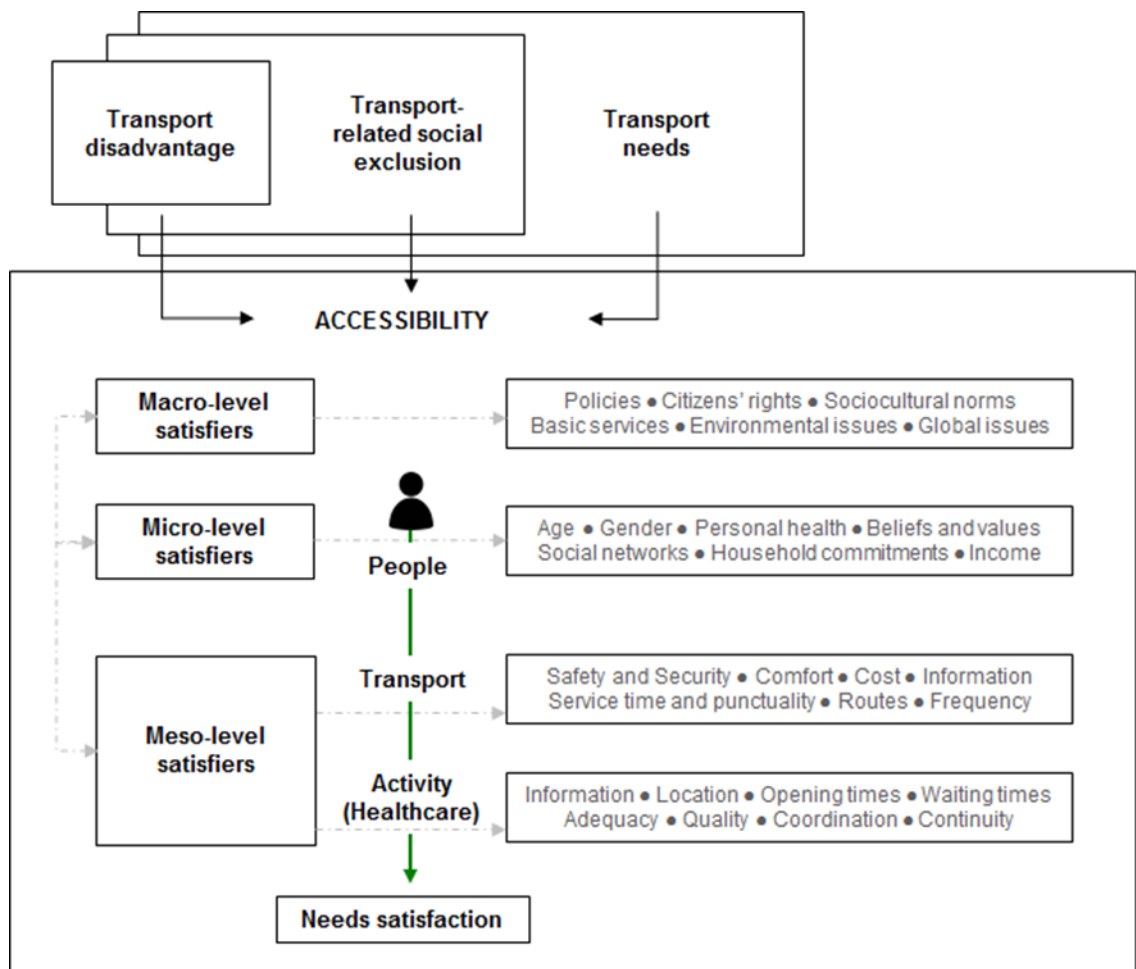


Figure 4.4: The hybrid conceptual framework

At the *micro-level*, personal accessibility is bounded by individual and household-related circumstances, including factors such as age, gender, income, social networks, daily activities, care responsibilities, health conditions, personal beliefs, attitudes and values that may influence both the ability to use transport modes as well as to access opportunities, impacting on the time-space organisation (Geurs and Van Wee, 2004). Accessibility barriers that arise from the interaction between individual capabilities and the transport system have received emphasis in studies focused on people with disabilities and older people (Marsden et al., 2007; Mackett, 2014; Mackett, 2017).

The conceptual model is focused on the *meso-level*, i.e. on how satisfiers located within the transport and in the healthcare provisioning systems may (or may not) contribute to people reach, engage with and benefit from basic services, which are pivotal for people's well-being enhancement. While satisfiers related to transport encompass walking infrastructures and transport services, including times, frequency and routes of public transport, fare and out-of-pocket costs, safety aspects among others, healthcare satisfiers relate to health services attributes including opening hours, the presence of health providers, appointment mechanisms, service coordination and continuity. The focus on the meso-level satisfiers is also aligned with the social exclusion perspective in transport, which emphasises the importance of addressing recommendations for policy-makers (see section 2.3).

4.4 Summary

This chapter argued that current practices of assessing accessibility through time or distance may be conceptually disconnected from the narratives on social exclusion. Relying solely on objective measures of spatial deterrents, such studies have typically dismissed the multidimensional nature of social exclusionary processes related to transport. Another recurrent shortcoming is the disregard of the quality of the opportunities focused in these accessibility assessments. Although it is widely accepted that accessibility refers to the interaction between transport and land-use, the latter component often appears in an oversimplified manner.

In order to overcome this gap, this study organised three theoretical perspectives – transport disadvantage, transport-related social exclusion and human needs – in a single conceptual framework, which also entails a new definition of accessibility. Each component and level of this framework was presented and explained.

Within this framework, transport plays a subsidiary role in the attainment of higher goals. From a social inclusion and needs-centred perspective, accessibility should be valued not for allowing people to physically reach some places of activities but rather adequate services, responsive to their needs.

Chapter 5 Methodology

5.1 Introduction

This study aims to increase the evidence on how people living in poor neighbourhoods obtain (or fail to obtain) access to outpatient healthcare facilities. The conceptual framework depicted in Chapter 4 suggests that, for the sake of needs satisfaction and from a socially inclusive perspective, gaining access to opportunities requires that a set of transport and land-use-related needs satisfiers are in place.

The empirical part of this PhD research is designed to apply the framework and identify the role of transport within access to healthcare in a concrete social and geographical context. However, it is important to stress that, while the conceptual framework is intended to be applied to the empirical study, the PhD does not intend to use the empirical study to further refine the conceptual framework.

This chapter describes the methodology of the empirical part of the study. Section 5.2 justifies the qualitative approach taken by this research. Section 5.3 exposes the rationale for the selection of the case study as the favoured research design. Section 5.4 details the application of the primary data collection instrument employed in the study.

5.2 Qualitative research

Unlike most studies approaching accessibility by quantitative methods, notably GIS-based modelling techniques, this PhD adopts a qualitative approach. Qualitative research relates to a tradition of knowledge production with a focus on “observing, describing, interpreting, and analysing the way that people experience, act on, or think about themselves and the world around them” (Bazeley, 2013, p.4).

The option for a qualitative approach fits the primary study aim of unveiling the main aspects of healthcare accessibility by exploring its meaning and consequences for real people. More specifically, the study investigates what makes it easy or difficult for people in a defined geographical context to get to the places where they receive healthcare and to locate the particular role of transport within this dynamic process. It also aims to identify the strategies adopted to overcome barriers they face when attempting to access healthcare services, and the long-term impacts in terms of mobility and uptake of healthcare.

Three main reasons justify the qualitative approach. Firstly, one major feature of qualitative research is its focus on *meanings* (Patton, 2015). Gaining an in-depth understanding of healthcare accessibility and the adverse consequences of accessibility gaps for real people requires engaging directly with the subjects to explore their views and experiences. In order to assess the easiness to get to key activities such as healthcare from a people-centred perspective, it is crucial to understand the meanings of accessibility (or the lack of it) ascribed by people, in particular by those who have low accessibility and may suffer the adverse consequences of it. Qualitative research stands out for being intrinsically subject-focused and open for capturing complex meaning structures through the direct interaction between researcher and subjects (Patton, 2015; Robson and McCartan, 2016).

Secondly and related to the previous issue, qualitative research offers an unparalleled opportunity to approach a research problem in its wholeness and without obstructions posed by theories and methods (Mayring, 2008). Although qualitative approaches are not necessarily inductive, they provide the necessary theoretical and methodological *openness* to answer research questions (Mayring, 2008). In this vein, the qualitative approach offers the opportunity to understand the role of accessibility according to people's perceptions and experiences rather than to predetermined understandings established within academic or technical circles, which eventually ignore the realities of those in poverty.

As exposed in Chapter 3, most quantitative studies on accessibility within the transport disciplinary field have framed the problem of accessibility exclusively in its spatial dimension in terms of travel length and duration. A potential shortcoming related to these studies is that they might not capture adequately the perspectives of people needing to access healthcare and the issues as experienced by them.

Thirdly, a key feature of qualitative research rests on the acknowledgement of the embeddedness of research problem in a particular *context*. While quantitative approaches comprise the risk of being distant from the cases, qualitative research is fundamentally case-oriented (Mayring, 2008; Bazeley, 2013). Since accessibility relates to the interaction between transport and the land-use setting (see section 3.2), it is crucial to take the context into proper account. Also, needs theories postulate the importance of examining the context to which satisfiers are contingent (see section 2.4.2).

Unlike quantitative approaches, qualitative research does not seek to control for contextual issues, but instead explicitly incorporates the social, cultural, political

and spatial dimensions of the phenomena under examination. This study takes advantage of this feature to understand accessibility in the multidimensional context of urban poverty and socio-spatial segregation and in relation to concrete configurations of the transport and the healthcare provision systems. The approach is also sensitive to broader societal, political and economic issues (e.g. health policies, cultural norms) as well as circumstances of the individuals (e.g. household circumstances, individual health conditions).

5.3 Research design

This project devotes attention to healthcare accessibility in poor neighbourhoods in São Paulo. As the research design, the project employs *case study*, which opens an unparalleled opportunity to examine in detail a real-life phenomenon from which the context cannot be clearly delimited (Yin, 2014; Thomas, 2016). Because of the breadth of issues that the concept of accessibility entails, the collection and analysis of empirical evidence benefit from deeper contextual considerations which an immersive research approach enables. Furthermore, the design is especially suitable for addressing exploratory and explanatory research questions such as those sought in this PhD (Yin, 2014; Thomas, 2016). It should also be noted that most studies on healthcare accessibility reviewed in section 3.3.3 employed this design.

Based on the typology proposed by Thomas (2016), low-income neighbourhoods of São Paulo can be regarded as a “key case”. Peripheral neighbourhoods of the city of São Paulo are deemed as a particularly revealing example of urban poverty, health inequalities, transport disadvantage and spatial segregation, and the manner how each of these aspects takes shape in São Paulo is described with some detail in Chapter 6. Together, such factors are thought to make up a unique set of contextual conditions to examine healthcare accessibility and the impacts of accessibility gaps, as intended in this research.

The second reason for this case selection relates to the researcher’s familiarity with the broader social and cultural setting in which the case is located. In particular, knowledge of the local language was regarded as a valuable asset to perform qualitative data collection and analysis, which is primarily focused on exploring meanings. However, due to the enormous local economic disparities in combination with socio-spatial segregation, it would be exaggerated to claim that the researcher has an intimate knowledge of the social practices and the living circumstances of people residing in the communities investigated.

An additional argument for the choice of São Paulo as the case selected for this study relates to its urbanity. Presumably, an investigation of the meanings of healthcare accessibility can be more refined in an urban context than in settings where the rarity or even the absolute absence of services results in obvious problems of access.

5.4 Focus groups

Within the case study frame, I employed focus groups as the primary data collection method to explore the meaning of healthcare accessibility on the ground of peoples' experiences. The objective is to gain an in-depth understanding of the concrete barriers low-income groups face when getting to healthcare facilities and how they overcome these barriers at the neighbourhood level. Further, it also aimed to explore participants' views and expectations on how transport policy may contribute to lessen, remove, perpetuate or aggravate the barriers in the access to healthcare.

In August and October 2017, 15 focus groups were undertaken in 12 distinct neighbourhoods in the East Zone of the city of São Paulo. While the reasons for the selection of this area for the case study will be exposed in the next chapter, this section describes in detail how this data collection instrument was designed and administered.

5.4.1 Rationale

Focus groups consist of a form of moderated interviews with a small number of participants that allows for the exploration of complex issues grounded in participants' direct experiences in the broader socio-spatial context in which they live (Morgan, 1999). Because this technique allows for the communication not only between the moderator and the participants but also among participants themselves, data generated through the social interaction within a focus group are thought to be deeper and richer than from one-to-one interviews (Morgan, 1999; Rabiee, 2004).

Three distinguishing features make focus groups attractive for the purposes of this study. Firstly, focus groups enable to reveal collective opinions and attitudes and unveil shared knowledge embedded in cultural values and group norms (Robinson, 1999; Krueger and Casey, 2015). This is an important feature given that this research seeks to explore healthcare accessibility at a collectivistic level rather than delve into the very particular issues affecting individual accessibility. The possibility of taking appropriate consideration of the social context is recognised as the key advantage of this method in contrast to the monologues generated in individual interviews or the sometimes artificial

situations created by the employment of standardised questionnaires in surveys (Flick, 2014).

Secondly, focus groups are regarded as an adequate tool to gather the plurality and variety of views, opinions and perspectives among participants sharing common characteristics (Kitzinger, 1995; Krueger and Casey, 2015). To a certain extent, focus groups support capturing the collective positioning, which is not necessarily consensual, on a given set of issues. The technique is especially useful to obtain the views of marginalised groups in society (Patton, 2015), and suitable for engaging with people of low socio-educational background (Kitzinger, 1995) since participation in the discussions does not require technical skills (Bloor et al., 2001). In the case of this research, the aim is to gain an in-depth understanding of the range of accessibility barriers that residents of low-income neighbourhoods face and the diverse consequences these barriers might have for them when getting to healthcare facilities.

Furthermore and very importantly, as a technique that fosters reaching a collective understanding on communitarian issues, focus groups are fully aligned with the theoretical perspectives embraced by this study, such as human needs and the social exclusion approach to transport (see Chapter 2). Gough (2015, 2017) stated that the identification of needs satisfiers requires conciliating experts' knowledge with the practical knowledge of people whose basic needs are under consideration. This is because the identification of human needs as legitimate goals is contingent to a public reasoning and a shared understanding of what do avoid harm (Doyal and Gough, 1991). Max-Neef (1991) holds a more radical stance to this respect. Advocating that citizens are the only legitimate stakeholders to define strategies to meet their own needs, this author conceived participatory workshops in which moderated discussions should occur. His "human-scale development" approach has been applied for different purposes in Latin American countries (Guillen-Royo, 2016).

Lastly, Lucas (2011a) argued that the social exclusion approach to transport should be "methodologically inclusive". In this respect, researchers' direct engagement with socially disadvantaged groups consists of one of the three cornerstones of the approach (Lucas, 2011a, p.1323, emphasis in original):

"The research aims to "give a voice" to the lived experiences of affected groups and individuals with the aim of articulating their concerns about the transport system to planners, policy-makers and other decision-makers."

5.4.2 Groups size

Although many authors agree that the type and the number of questions, as well as the duration of the discussion sessions, influence the number of

participants per group, the specialised literature on focus groups provides disparate and partially conflicting advice on the optimal group size (Morgan, 1997; Robinson, 1999; Mayring, 2008; Dawson, 2009; Krueger and Casey, 2010; Bryman, 2012; Krueger and Casey, 2015; Patton, 2015). As general advice, groups should be “large enough to gain a variety of perspectives and small enough not to become disordered or fragmented” (Rabiee, 2004, p.656). In addition, it is generally accepted that smaller groups are more adequate for the discussion of sensitive, controversial and complex topics, besides being easier to moderate.

In this PhD study, I targeted eight participants per group, taking into account two factors. One factor was the width and relatively high complexity of the themes examined. Following the conceptual framework, the focus group discussions should be able to capture several aspects related to transport and services locations and their qualities that matter for healthcare accessibility. As these topics can be numerous, and participants may have different opinions and experiences on each of these, this was an argument for preferably smaller groups, giving each participant enough opportunity to participate.

The second requirement was the need to cover a possibly vast range of subjective experiences with distinct transport modes, healthcare facilities, in relation to different needs and circumstances. This plurality could only arise through the involvement of many participants in each group. Decisive for the balance between these two requirements was the positive experience with a pilot study, which demonstrated that eight participants per group provided a good potential for exploring a range of views on the discussed topics and was manageable to moderate.

5.4.3 Number of groups

The determination of the total number of focus group sections depends on the anticipated variability of responses, according to the nature of the topics discussed. The extent of the focus groups exercise is often guided by the idea of “theoretical saturation” as in the grounded theory, which means that new groups should be run until participants’ contributions become repetitive (Krueger and Casey, 2015). Because of the complexity involved in managing and analysing data from many groups, some authors advise running three to five groups, also noting that new groups are unlikely to provide meaningful additional insights (Morgan, 1997; Morgan and Scannell, 1999; Krueger and Casey, 2015).

From its outset, this study should involve eight focus group sessions. This number of groups would allow a comparison of perceptions of accessibility

across gender and neighbourhood types concerning their location relative to public transport trunk lines. However, issues that arose during fieldwork led to an increased scope of data collection.

During the fieldwork, the researcher realised that some accessibility barriers that have been hypothesised and reflected in the literature, such as transport affordability issues, were not fully explored in the initial conversations. Also, some relationships between barriers and outcomes remained underexplained. The opportunity to increase the total number of groups was given by the very positive feedback received from participants in the initial conversations and the collaborative attitude of the gatekeeper. The option of increasing the number of focus groups was preferred over applying instruments to prompt participants' responses, what could bias them according to the researcher's preconceived understandings of accessibility. Ultimately, 15 focus groups were conducted in this research study.

5.4.4 Design and sampling

As familiarity with local transport and healthcare facilities was regarded as a requirement to sustain interesting, context-embedded conversations on accessibility to healthcare, the focus groups targeted participants residing at least one year in neighbourhoods of São Paulo's East Zone. As shown in Figure 5.1, the predefined territory comprised seven districts that should be directly served by the monorail line 15, which was under implementation when this study was undertaken (see section 6.3.4): Vila Prudente, São Lucas, Sapopemba, São Mateus, São Rafael, Iguatemi and Cidade Tiradentes.

Within this corridor, potential areas of interest for participants' recruitment were defined as the ones that satisfied two criteria: below-average income and proximity to the monorail line 15. These neighbourhoods were identified by means of a GIS-based spatial query that processed socioeconomic data from the 2010 national census and public transport network data (see Figure 5.1).

The financial criterion was central to this research, which aims to gain an understanding of accessibility issues by socially disadvantaged people, who live in low-income neighbourhoods, as formulated in two research questions. The study aimed to involve residents of neighbourhoods with prevailing below-average incomes. Figure 5.1 displays corridor along the monorail line, which comprises seven city districts. In this corridor, census tracts are classified according to quintiles of average monthly income per capita.

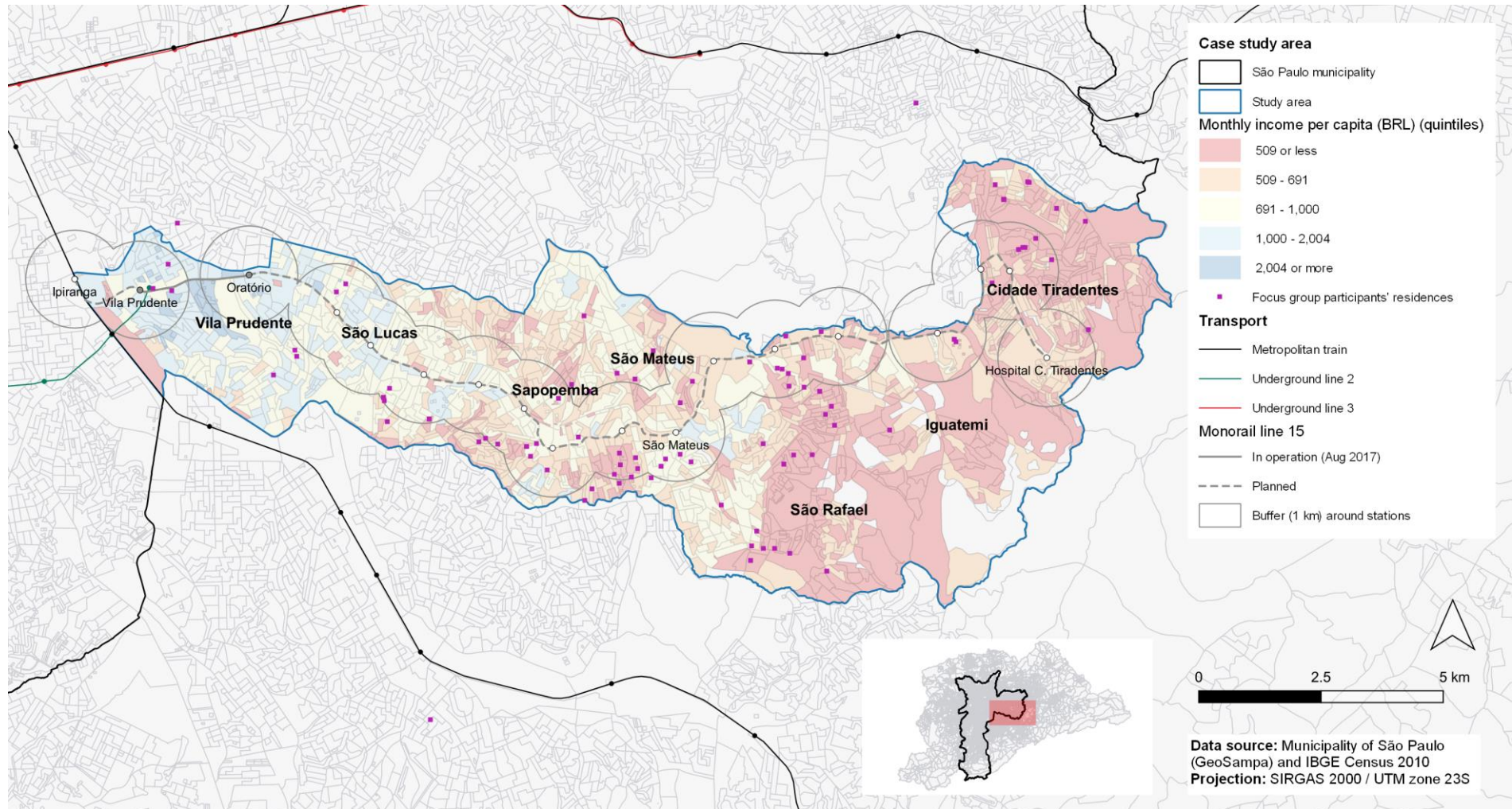


Figure 5.1 Case study area

Another factor taken into account in the study design was the proximity of participants' residences to the future stations of the monorail line 15. At the time of the fieldwork, this line operated just between two stations and did not serve the targeted communities. It was assumed that people living close to the monorail would more likely be well informed about the characteristics of this transport project and be in a good position to assess its potential value in relation to healthcare accessibility. On the other hand, it is also known that São Paulo dwellers may walk relatively long distances to access the limited rail-based transport network (see section 6.3), and transport interventions such as the monorail might be especially important for enhancing the accessibility of those who do not live in the immediate surroundings of its future stations. To embrace the variety of distances to the monorail, the study sampled neighbourhoods located within 1 km drawn from the closest station of the planned monorail line 15 and also locations outside this buffer (see Figure 5.1).

In order to gather experiences and views of people who regularly use healthcare services, female participants were deliberately oversampled. According to the 2017 origin-destination survey, nearly two-thirds of the trips to healthcare are undertaken by women, this share being higher than for any other trip purpose (CMSP - Companhia do Metropolitano de São Paulo, 2019a) (see section 0). As the prevailing sociocultural norm in the context studied assigns to female individuals healthcare responsibilities over family members, women are thought to be more knowledgeable about health needs, including issues about access to healthcare, of other household members, as their children, for instance. Lastly, the involvement of a higher share of women reflected their preponderance in the social movement from which participants were recruited (see section 5.4.7).

The study adopted a double-layered design (Krueger and Casey, 2015), whereby groups were differentiated along the dimensions of geographic location and gender composition. Table 5.1 illustrates the segmentation design and the actual number of conversations in each group.

Table 5.1: Focus group double-layered segmentation design

		Proximity to the closest planned monorail station	
		Up to 1 km	Over 1 km
Gender composition	Female only	3 groups (4, 5, 7)	3 groups (1, 12, 14)
	Mixed	5 groups (3, 8, 9, 13, 15)	4 groups (2, 6, 10, 11)

Overall, 93 focus group participants were women (81.6%) and 21, men (18.4%). Out of 103 participants whose residential locations could be georeferenced (90.3% of the sample), nearly the half (52) lived within 1 kilometre of the future monorail stations and the other half (51) in more distant places. The majority of the participants resided in neighbourhoods which can be considered poor according to the monthly nominal income per capita: 51 participants lived in census tracts belonging to the lowest income quintile, and 28 to the second lowest quintile.

5.4.5 Moderation

Moderation is considered as a crucial factor for successful focus groups. Since the moderator has the single most substantial influence in the group dynamic, he must create a favourable environment for participants sharing their ideas and perspectives (Robson and McCartan, 2016).

Although I was familiar with interview techniques because of my professional background, I lacked specific training on focus groups moderation. Knowledge of this technique was gained through readings of the specialised literature, conversations with experienced qualitative researchers, as well as participation and observation of focus group sessions.

5.4.6 Instruments

The lightly moderated group discussions revolved around a *topic guide* (Appendix C) complemented by following data collection instruments: (i) a paper-based *questionnaire* to capture sociodemographic data, such as age, residence place and private vehicle availability (Appendix D); (ii) an interactive *marking exercise* on participants' experiences with different transport modes; and (iii) a *cognitive mapping* exercise similar to those employed in previous related studies (e.g. Maia et al., 2016; Rivas Perez, 2013) (Appendix E).

The topic guide was based upon the literatures reviewed and the conceptual framework (see Chapter 4). The guide focused on accessibility and mobility experiences to healthcare facilities and explored issues related both to the use of different transport modes to get to healthcare facilities and the difficulties associated to the health system affecting participants' mobility. Questions were phrased in a conversational manner to avoid the technical and academic jargons of the transport and public health disciplines.

The general questioning route allowed the participants to explore issues in an increasing level of depth, following the approach by Krueger (1998b). Warm-up questions aimed at encouraging participants to disclose the usually performed activities and the household circumstances, deemed as important micro-level

issues. The second block intended to capture participants' travelling experiences with each transport mode used and sought to reveal transport-related barriers that may be common to several activities. In the marking exercise, participants were asked to summarise their experiences with each mode using school grades. One question aimed to collect examples of under-participation in activities due to transport problems.

The following block addressed participants' engagement with healthcare services. Initial questions addressed healthy habits and the self-perception of health status to introduce participants to this topic. Next, the guide aimed at collecting the range of specific healthcare facilities frequented by the participants. The discussion on the ease or difficulty to get to these different places should benefit from the previously discussed transport barriers. This part of the conversation was supported by the cognitive mapping exercise. In this exercise, participants were asked to express the degree of ease to get to each healthcare facility that they have been using by placing stickers in a schematic map with concentric circles representing different levels of difficulty. Participants were also asked about the quality of healthcare in their neighbourhoods and whether they use services in other neighbourhoods. These questions were designed to capture people's perception of the attractiveness of the services used. The last question block was intended to encourage participants to discuss policy solutions that would enhance their access to health. In this context, the potential role of the monorail was explicitly addressed.

5.4.7 Recruitment

A grassroots pro-housing social movement in São Paulo acted as a gatekeeper to facilitate the identification of suitable participants for the study and convenient venues for the conversations. The Movimento dos Trabalhadores Sem Terra Leste I (Landless Workers' Movement) initiated in the 1980s campaigning and organising actions to counteract the lack of housing public policies and promote the right of housing, as established in the national constitution.

The movement is composed predominantly of women (79%), non-white (69%) members, according to an internal survey carried out in 2015 to which the researcher got access. Almost half of the members (48%) completed high school, but 27% did not complete the primary school, some of them being illiterate. The social movement also adopts an income-based entry criterion, which was aligned with the purposes of this study. Its members must not have a monthly household's gross income higher than 5 minimum wages (equivalent approximately to GBP 220 at the time of the data collection), and this corresponds to socioeconomic strata C, D and E according to the official

classification, even though living standards and purchasing power of families living with up to 5 minimum wages are relatively low in the context of the city of São Paulo.

The target of eight participants per group (see section 5.4.2) was achieved in nine out of 15 conversations. In two cases, the discussion involved nine people, and in four groups the number of participants ranged between five and seven. The attrition rate was very low: across all groups, only three people had to leave conversations before the end.

Table 5.2 provides an overview of the sociodemographic composition of each focus group regarding gender and age in addition to characteristics of the city districts where the conversations took place.

Table 5.2: Focus group profiles and neighbourhood characteristics

				Participants profile				Neighbourhood profile			
				Gender composition		Age range		Average income	Distance from focus group venue (km)		
FG	District	Nr. Part.	Duration (min)	Fem	Male	min	max	(R\$, 2010)	City centre	Under-ground or train	Planned monorail
1	C. Tiradentes	8	104	8	0	20	42	392.65	24.6	3.1	1.7
2	Iguatemi	8	110	6	2	22	64	461.62	19.7	6.7	1.4
3	Sapopemba	8	138	4	4	28	44	321.24	16.5	4.7	0.5
4	C. Tiradentes	9	108	9	0	29	44	415.92	23.1	3.8	0.3
5	São Mateus	8	110	8	0	25	58	1,098.07	17.8	5.6	0.5
6	C. Tiradentes	8	118	6	2	18	52	566.82	23.0	2.9	1.5
7	Iguatemi	8	109	8	0	30	50	459.80	19.0	6.7	0.6
8	Iguatemi	7	95	4	3	19	65	459.80	19.0	6.7	0.6
9	Sapopemba	6	88	4	2	35	60	321.24	16.5	4.7	0.5
10	São Lucas	8	104	6	2	50	68	675.31	12.9	2.5	1.2
11	Vila Prudente	8	95	6	2	32	56	798.94	9.1	1.7	1.7
12	São Rafael	5	100	5	0	24	47	648.54	18.6	3.4	2.2
13	Sapopemba	6	111	5	1	29	54	880.42	14.7	4.2	0.5
14	São Rafael	9	123	9	0	29	59	497.64	20.0	3.8	3.0
15	São Mateus	8	122	5	3	29	52	1,098.07	17.8	5.6	0.5

5.4.8 Data analysis

Thematic analysis followed the six-step approach by Braun and Clarke (2006). This is deemed as a relatively straightforward and flexible approach to identify, analyse and report patterns in the stories embedded in participants' narratives. Another advantage is that the approach is not tied to a particular theoretical or epistemological stance.

The researcher was familiarised with the data by moderating all conversations, leading debriefing sessions with assistants, cross-checking transcribed data against the audio records to ensure accurate documentation, and translating the transcripts. All these initial stages were accompanied by note-taking, documenting interesting aspects of the conversations. Next, an initial coding scheme was developed using different, mostly descriptive coding types, such as structural, magnitude and values codes (Saldaña, 2013). Subsequent coding cycles, involving other types of codes (e.g. evaluation and causation codes), were used to classify and synthesise knowledge. The resulting coding dictionary comprised a large number of codes and sub-codes organised hierarchically in three levels, as it combined deductive and inductive approaches in order to retain information that can be relevant for the next analytical step (Bazeley, 2013). Themes were identified primarily at the explicit level in an iterative process of collating, merging and rearranging codes, and using a range of visualisation techniques, such as code matrixes and thematic maps. Table 5.3 summarises the activities performed in each of the six stages of the analytical approach.

Table 5.3: Thematic analysis stages

Phase	Analysis phase	Description	Output	Tasks undertaken during this research project
1	Familiarising with data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas	An initial list of ideas about what is in the data and what is interesting about them	<ul style="list-style-type: none"> - Collect data (moderate focus groups) and debrief sessions with assistants - Transcribe reviews against audio-recorded data - Translate conversation transcripts and read entire data set before coding
2	Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code	A long list of the different codes identified across the data set	<ul style="list-style-type: none"> - Develop an initial hybrid code scheme (at this stage, most of the codes are structural, magnitude and values codes (Saldaña, 2013))
3	Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme	A set of candidate themes to be refined (themes listed here may be not sufficiently supported by evidence, or may be merged)	<ul style="list-style-type: none"> - Perform additional coding cycles to include more refined code types (e.g. evaluation, causation codes) to classify, prioritise and synthesise data (Saldaña, 2013) - Identify potential themes (powerful cross-issues underlying barriers/strategies in transport and health): education (lack of education of healthcare and transport users as source of conflicts, abandoned open spaces etc.) and security
4	Reviewing themes	Checking themes in relation to the coded extracts and in relation the entire data set, generating a thematic map	A thematic map of the data (a good idea of the different themes, how they fit together, and the overall story they tell about the data)	<ul style="list-style-type: none"> - Create a map associating themes with codes - Generate the thematic map as a result of a collation exercise, combining inductive (frequency of codes and strength of arguments brought in the discussions) with deductive approaches (hypotheses tested, theoretical frameworks of accessibility) - Explore relationships between themes - Explore themes in relation to outcomes
5	Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme	A set of fully worked-out themes	<ul style="list-style-type: none"> - Define the specifics of each theme in relation to the transport modes, social groups, and temporal dimension (e.g. female harassment and assaults as different themes)
6	Producing the report	Selection of vivid, compelling extract examples; the final analysis of selected extracts; relating back of the analysis to the research question and literature	A concise, coherent, logical, non-repetitive, and interesting account of the story the data tell within and across themes (beyond data description)	<ul style="list-style-type: none"> - Review coded segments against codes and their match into the themes during report writing

5.4.9 Validity testing

To reduce the likelihood of misinterpreting what participants said, techniques of “respondent validation” or “member checks” were employed. In several moments throughout the conversations, the moderator rephrased what participants said and formulated summaries after a topic has been discussed, asking the respondents for confirmation. Such verification techniques were even more crucial given the limited ability of most participants to accurately express the issues on transport and healthcare under discussion and their unfamiliarity with the technical jargon used in transport planning. This often led to the use of improper or imprecise expressions and the articulation of complex syntax structures, making data interpretation and analysis more challenging.

Another technique used to enhance validity was the constant search for discrepant evidence. The Brazilian cultural trait of conflict avoidance can potentially reduce the plurality of views and opinions in group conversations. As focus groups do not target consensus-building, participants were often encouraged to express their thoughts freely and recalled that they do not have to agree with what others have said.

At the end of the conversations, participants were asked how easy or difficult was to participate in the discussion, whether they understood well the questions and exercises, and about their level of confidence in providing the answers. Debriefing sessions between moderator and assistant enhanced the trustworthiness of analysis from an early stage. Categories and themes were discussed in a number of meetings with the research supervisors, and subjected to several revisions, as advised by Braun and Clarke (2006).

5.4.10 Reflexivity

Discussion on the validity of this qualitative research leads to considerations about reflexivity. Mainly due to the context of substantial economic inequalities combined with socio-spatial segregation (see Chapter 6), the circumstances of a white, male and middle-class researcher are arguably much different from those of the majority of the participants. This reflected in a visible disparity between the formal level of language used by the moderator vis-à-vis the more informal ways of expression by the participants, which caused misunderstandings during the conversations and represented an additional difficulty in the data analysis.

While linguistic differences relate to different educational background, the gender issue was perhaps the most important one. The presence of a male moderator could not be exempted from an overarching background of structural

discrimination and illegitimate domination in the relationship among genders. This may have inhibited some participants to talk more openly about their concerns about sexual attacks, for instance. Likewise, due to different socioeconomic positions, some participants may have felt unconfident to talk openly about the hardship of bearing transport costs. Low attention dedicated to this topic may also relate a weakness of the research design as the topic guide did not include questions exploring the entry barriers to use transport systems.

5.4.11 Follow-up interviews

The analysis of the focus groups conversations generated different layers of understanding on healthcare accessibility, and these will be exposed in Chapter 7. While the main barriers to access healthcare and their interrelationships were well captured in the focus group discussions, the adverse consequences of low healthcare accessibility in terms of the impacts on individuals were not have been developed in their full extent.

Individual interviews with six focus group participants were undertaken in April 2019 to elucidate the impacts of accessibility deficits according to their experiences. Interviewees were selected following a purposive sampling approach. They were selected out of the subset of focus groups participants who had reported during the focus group conversations the adverse impacts they suffered from some healthcare accessibility gaps and who gave consent to be eventually contacted by the researcher in the future to provide additional information related to the research project (see section 5.4.12). As these episodic interviews had mainly a confirmatory purpose, they followed a face-to-face, semi-structured and focused approach (Flick, 2014), which allowed the participants to describe in detail the short-term and long-term strategies they followed to overcome issues related to the local provision of transport and healthcare.

Interview questions were tailored for each interviewee according to their previous contributions. Each interview lasted around 40 minutes and was video-recorded (Appendix J). Analysis of interviewees' narratives contributed to generate a richer understanding of relationships between themes previously identified in the focus groups.

Recording of the interviews in the audio-visual format was regarded as a form to enhance the credibility of the qualitative approach. It documents that some of the research findings were not subjected to the researcher's personal values and theoretical inclinations.

5.4.12 Ethical issues

Before each focus groups session started, participants were provided with written and verbal information on the goals of the research project, and the particular objectives of the focus groups alongside with contact details of the researchers involved (Appendix F). Participants were also requested to sign a consent form whose terms included the permission for audio-recording the conversations and the right to opt-out from the discussions without suffering any adverse consequence (Appendix G). Participants were ensured about data privacy, anonymity and data protection, and committed themselves not to disclose what was discussed outside the conversation situation. Such measures were intended to address the two dominant ethical concerns related to focus groups: access to recorded materials by people not related to the project and the possible misuse of personal information shared in the groups (Morgan, 1997).

No financial incentives were offered to attract potential participants. As the focus groups took place in venues next to the participants' residences, such as community centres and churches, distances were kept low, and no travel expenses were covered. During the discussions, refreshments and food were offered at no cost for participants. In the specialised literature, this practice has been acknowledged as a way to improve the conversation and communication flow within the group (Morgan and Scannell, 1999). Ethical review and approval for this research were obtained from the Faculty Research Ethics Committee in September 2016 (AREA 15-162).

5.5 Summary

This chapter described the methodological strategy adopted in this research. I argued that the qualitative approach provides adequate bedrock to gain an in-depth understanding of healthcare accessibility based on the views and subjective experiences of socially disadvantaged people. Engaging in a qualitative study allows illuminating accessibility deficits in the context investigated and using the data collected as a primary source of understanding.

The case study is used as the research design to understand how people living in low-income communities in São Paulo can have their health needs not satisfied due to accessibility deficits. Further, the study employs focus groups as the primary data collection instrument to adequately capture the collective nature of the critical issues undermining accessibility to healthcare (i.e. problems in the transport and healthcare provision) and to focus on the collective level. This chapter reviewed the essential characteristics of focus

groups and provided the rationale for design choices. Very importantly, the employment of focus groups was justified on the grounds of the theoretical approach followed by the study. The chapter also addressed considerations regarding the procedures that ensured ethical conduct in the research process.

Chapter 6 The case study São Paulo

6.1 Introduction

This study aims to investigate accessibility to healthcare by residents of poor neighbourhoods in the East Zone of São Paulo. This chapter exposes the reasons why residents of these neighbourhoods consist of a unique and particularly interesting subject for the research purposes.

To justify the selection of São Paulo as a case study in this research, I organise the discussion in this chapter around three factors related to healthcare accessibility: residential segregation, health inequalities and transport disadvantage.

Section 6.2 describes the process of socio-spatial segregation deeply intertwined with the urbanisation of the city. Section 6.3 presents the existing transport systems in São Paulo. Section 6.4 characterises the trips to healthcare activity in the city. It also shows distinct travel patterns by social segments. Section 6.5 reports health inequalities in the city with regard to the unequal landscapes of service utilisation and health outcomes. Section 6.6 provides contextual information on the dual Brazilian healthcare system organisation.

6.2 Residential segregation

With an estimated population of approximately 11.8 million inhabitants (Seade, 2019), the city of São Paulo is the core of the fourth-largest urban agglomeration of the world (United Nations, 2019). The city has a pivotal role in coordinating production processes and the information flows within the Brazilian, the Latin-American and the global economy (Santos, 2009).

São Paulo underwent rapid demographic growth in the second half of the past century following an extraordinary industrial expansion as massive flows of migrants from different regions of the country attracted by new economic opportunities. In recent decades, the industrial sector shrank, and the services sector expanded. Although the rhythm of population growth slowed down in the past decades, the core city continues to grow.

A central characteristic of the urbanisation occurred in São Paulo is the strong *residential segregation*. In Brazilian cities, residential segregation relates to the spatial pattern resulted from the rapid urban growth and the nearly uncontrolled sprawl. This process generated a spatial pattern known as the *centre-periphery model*: while well-off groups tend to settle central, well-equipped areas,

residences of the socially disadvantaged are mostly located in distant and precarious neighbourhoods (Marques, 2004a). Even though alternative forms of segregation (such as gated communities where elite groups choose to live to avoid unwanted social contact with other groups) have more recently emerged (Caldeira, 2000), the centre-periphery model still provides a reliable overarching description of the socio-territorial segregation pattern in the city, as empirically verified by some studies (Marques, 2004b). Despite overall improvements in socioeconomic and infrastructure conditions observed in favelas and illegal settlements in the last decades, deep inequalities between precarious settlements and the rest of the city persist (Marques and Saraiva, 2017).

The residential segregation in São Paulo is intimately related to the uneven distribution of amenities and services within the city and the accessibility deficits experienced by low-income communities in São Paulo. Both segregation and the lack of access to opportunities are results of public policies (including but not restricted to transport policies) which impose to the dwellers of peripheral areas the need for travelling long distances to everyday activities and have lower access to essential public facilities (Marques, 2004a; Vasconcellos, 2014). Since the rapid urban development of São Paulo was not accompanied by an equivalent expansion pace of the rail-based transport infrastructure, those living in the most distant areas have become dependent on bus services to undertake their everyday activities. Their activity spaces became highly dependent on bus routes and frequencies. The horizontal expansion of the city was coined by the irregular forms of land occupation concatenated with the provision of bus services (Maricato, 1996).

Social groups on low incomes and with low educational levels tend to live in the city's outskirts and other municipalities of the metropolitan region (Marques, 2004b). Without financial means to acquire houses in the formal market, a large share of the population, often organised in social movements (such as the one involved as the gatekeeper in the empirical part of the current study), has built their shelter using own resources within a process known as "auto-construction" (Maricato, 2013). Such housing is typically built in illegally occupied plots located in areas lacking infrastructure and essential services or with access to services of low quality (Marques, 2004a; Marques et al., 2018). It is estimated that over one-fifth of São Paulo's population live in favelas (Maricato, 2013), and this share was even higher thirty years ago (Maricato, 1996).

Apart of the magnitude of precarious housing, a notorious particularity of São Paulo is the extent to which urban segregation has been sponsored by the state and its consequences. Local governments have successively failed to implement adequate housing policies to accommodate massive migration flows

(Maricato, 2013) and steer urban growth towards appropriate areas. The state has also induced land valuation selectively through regulation, taxation, urban policies and concentrating public investments, including in urban infrastructure, in some areas of the city (Rolnik, 1997; Torres, 2004). In the transport field, the development of the underground network is regarded as an example of a substantial public investment made for the privilege of high-income classes (Villaça and Zioni, 2010).

Housing policies implemented by the municipality in the 1970s and 1980s reinforced segregation by building large-scale housing units for socially excluded segments located in the urban fringes (Rolnik, 2001). Not rarely, such housing projects are located in inappropriate areas for urban development, as steep hillsides and erodible river banks (Maricato, 2013). Several social housing programmes executed by the municipal administration over the past 30 years took place in the East Zone of the city, exacerbating segregation. In the early 1990s, 39% of the housing units targeting families with low purchasing power in São Paulo were built in the East Zone (Marques et al., 2018). Only in the district Cidade Tiradentes, one of the neighbourhoods addressed in this PhD study, the municipality constructed 30,000 housing units to accommodate 160,000 inhabitants (Rolnik, 2001). Cidade Tiradentes hosts the largest social housing complex in Latin America.

Although this section focused on patterns of similarity and dissimilarity of social groups with regards to residential locations, it is worth noting that segregation in São Paulo can be observed from several other perspectives. Neighbourhoods in the Southeastern part of the city concentrate a high proportion of offices, seats of multinational companies, shopping centres, leisure sites and highly specialised service firms (Villaça, 2011; Nigriello and Oliveira, 2013).

Overlapping several layers of segregation to analyse São Paulo, Villaça (2011, p.52) portrays the East Zone as the “region of the losers” since the area with a high concentration of residents living in poverty is underserved by mass public transport and has virtually no industries, nor retail or service subcentres.

Analysing the linkages between the spatial distribution of activities and transport provision, Nigriello and Oliveira (2013) showed that job densities correlate inversely with generalised travel costs by public transport modes. Most of the neighbourhoods focused in this PhD study, such as Sapopemba, São Rafael and Cidade Tiradentes, could be described as “dormitory suburbs”, as they have recently registered a significant population growth and low job growth (Nigriello and Oliveira, 2013).

6.3 The transport system

This section provides a brief account of the transport services and infrastructures available in the city of São Paulo. São Paulo's public transport network comprises the metropolitan rail, underground, monorail, and buses. Rail transport has a limited extension in comparison to cities of comparable size (e.g. London, New York, Mexico City) and has grown at an average pace of no more than 2 kilometres per year (Souza, 2015).

Figure 6.1 shows the existing rail and road transport networks in the Metropolitan Region of São Paulo. Consisting of seven metropolitan train lines, five underground lines and the monorail line 15, the rail network along with bus services operated as Bus Rapid Transit (BRT) represents the backbone of the high-capacity public transport in the region. The extension of the rail transport in the region contrasts sharply with the road network since the former covers just a small share of the urban territory of the metropolitan area.

Figure 6.2 is centred on the monorail line 15, a key transport infrastructure directly related to the design of this study. The map also shows the spatial distribution of the population in the city classified by household income quintiles. The dominant pattern – high incomes in central areas and poverty in the urban peripheries – evinces the strong social segregation in the city (see section 6.2). With the exception of some stretches of the metropolitan train system, the existing rail-based transport links are highly concentrated and generally more accessible to dwellers of wealthier neighbourhoods. The monorail line 15 stands out in the current landscape of rail transport provision since, differently from most underground lines, it shall serve impoverished districts in the East Zone, improving residents' connectivity to other rail services and centrally located opportunities.

Buses are the most ubiquitous and used public transport mode in the city. Before providing more details on each transport system (whereby some more attention is given to the monorail, due to its role for this study design), the next section characterises the context where transport policies take place.

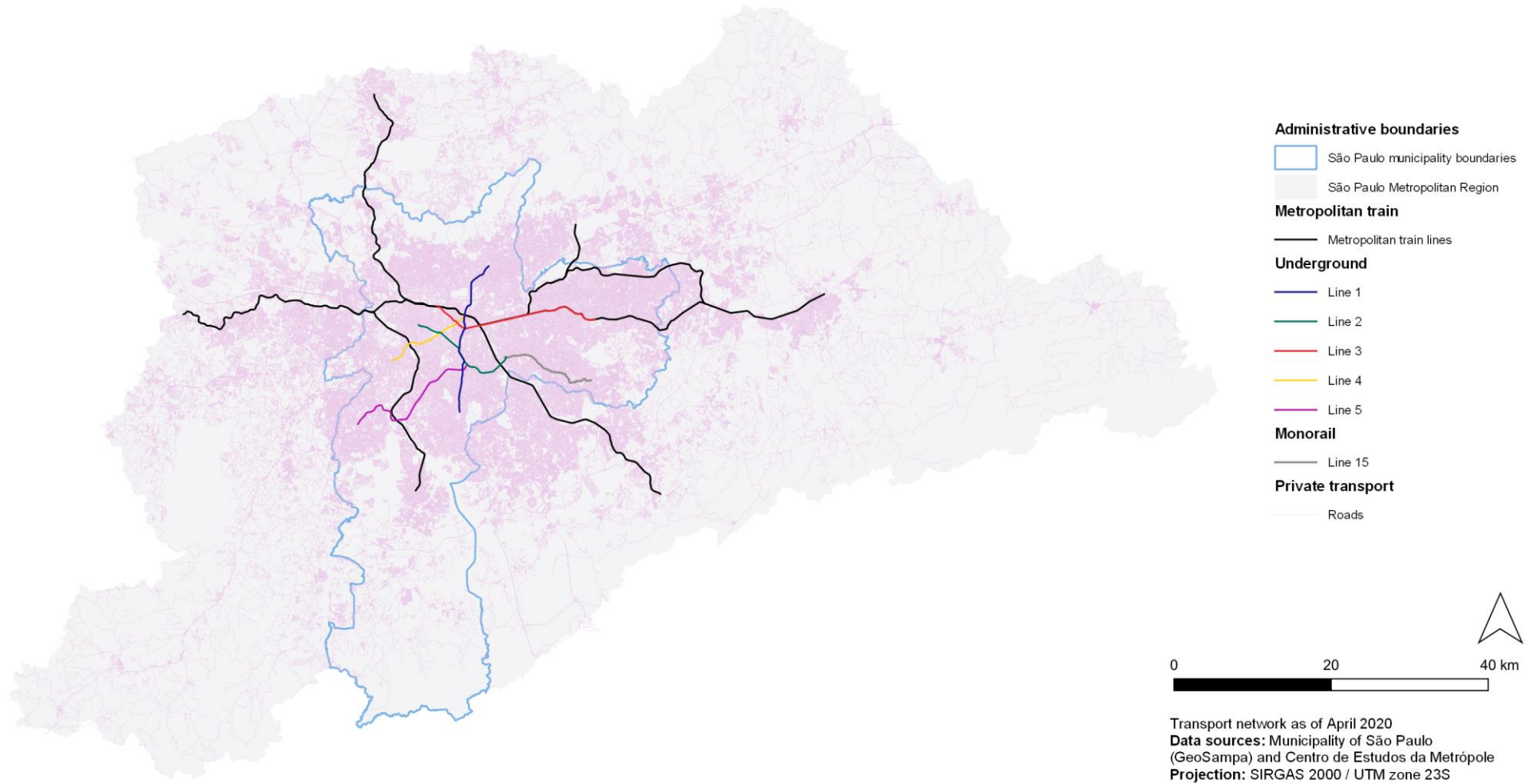


Figure 6.1: Rail transport networks in the Metropolitan Region of São Paulo

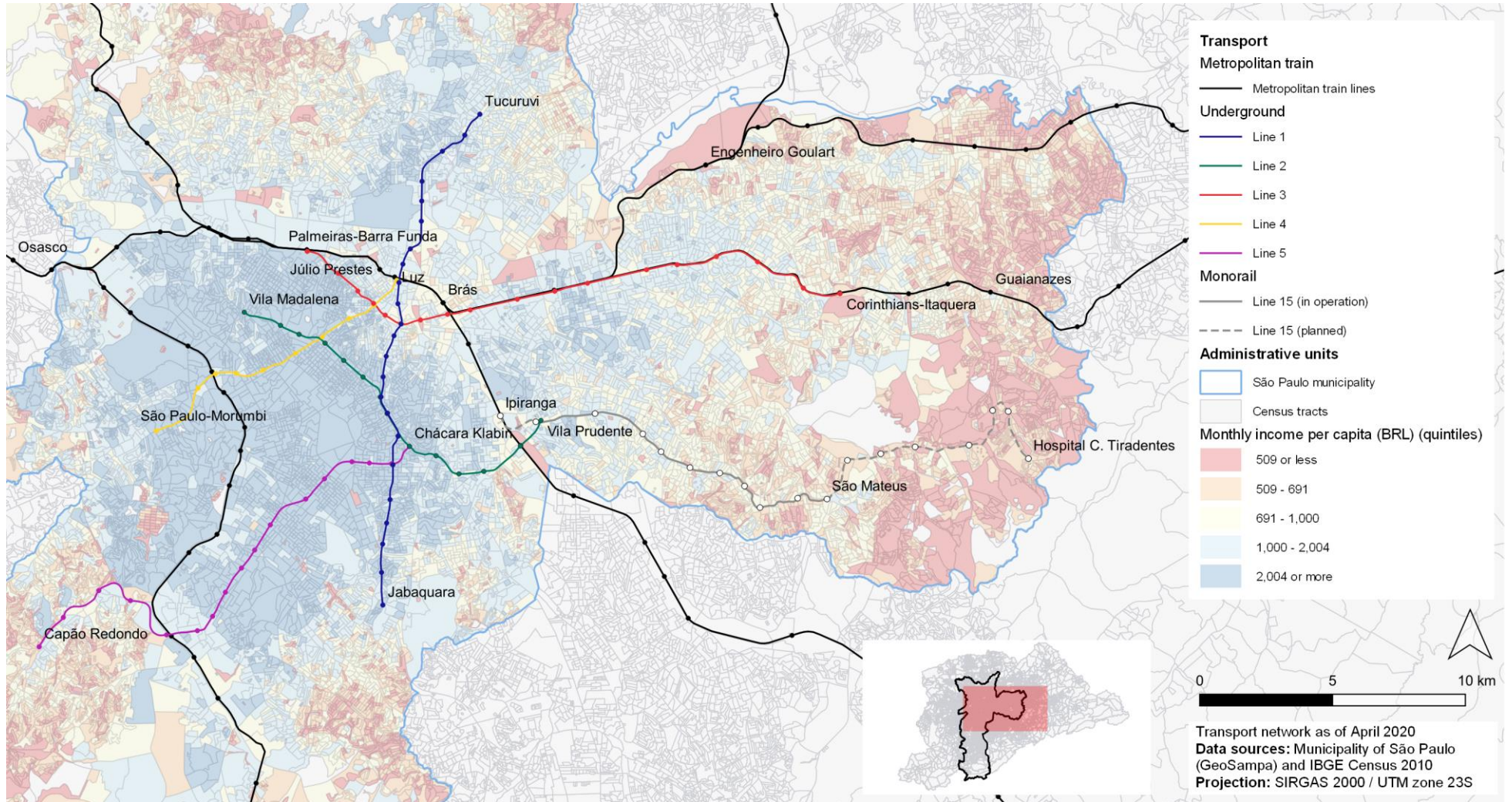


Figure 6.2: The monorail line 15 and other rail transport lines in São Paulo

6.3.1 Transport policy setting

The normative framework at the national level advanced substantially with the City Statute of 2001 (federal law 10.257) and the National Mobility Policy Law (federal law 12.587) of 2012. Settled on the notion of sustainable mobility, the latter established the principles, guidelines and objectives for the development of local mobility plans by all cities with over 20 thousand inhabitants. Under this normative framework, local mobility plans should give priority to public transport and enhance conditions for active travel, taking into account the potential complementarity between transport modes, the integration between land-use and transport policy and equity principles.

Nevertheless, the sustainable principles incorporated by this federal law have been hardly translated into concrete measures in local mobility plans. São Paulo's current mobility plan, for instance, reproduces the generic rhetoric of prioritisation of bus corridors and cycle lanes, but lacks concrete and consistent measures to enhance the mobility conditions of pedestrians, cyclists and public transport users (Municipality of São Paulo, 2015). As remarked by some urbanists, urban (and transport) planning in Brazilian cities is usually disconnected from urban (and transport) policy (e.g. Villaça, 1999). In general, it is highly uncertain whether measures included in transport plans will be effectively implemented in the time horizon considered and contribute to the policy goals.

Concerning equity, the transport policy debate has been historically centred around the fairness of the fare system. Currently, around one-third of the public transport operating costs is covered by governmental subsidies, and two-thirds are directly born by the users through fares. After an unsuccessful attempt to introduce a free-fare system in the early 1990s (Singer, 2017), urban transport was made more affordable for low-income segments through the fare integration policy implemented in the early 2000s. The "single ticket" (Bilhete Único) allowed users of different public transport modes to pay a single price for up to four bus trips within a three-hour period irrespective to the distance travelled. This electronic ticketing system was responsible for reverting the continuous drop in the public transport ridership and enhancing access of low-income dwellers to urban opportunities (Zarattini, 2003; Souza, 2004).

However, while improvements in the urban public transport provision and organisation have been insufficient and discontinuous, investments for the automobile circulation have received political priority over decades, favouring groups of higher social status systematically (Rolnik and Klintowitz, 2011). In the past decades, as other Brazilian cities, urban and transport policies adopted

in São Paulo adapted the city for the efficient use of automobiles. As in other cities, local policies in São Paulo generally continue to ease the mobility of those with access to cars through investments heavily biased towards road building and maintenance. In this city, pro-car policies have been symbiotically associated with the consolidation of the middle-class (Vasconcellos, 1997).

A remarkable and perhaps particular characteristic of the transport policy in São Paulo is the extent to which well-off segments have been able to mobilise themselves and influence policies against popular demands for public and active transport. As a result of such lobbies, several projects to implement bus rapid transport corridors, build monorail lines, expand the underground network and create exclusive cycling lanes and paths were modified or even discarded in the past years (Cimino, 2010; Valle, 2012; Entini, 2013).

Lastly, planning, management and operation of public transport in São Paulo involves a relatively complex network of institutional stakeholders. Although the federal constitution defines the provision and regulation of public transport as a municipal duty, responsibilities are in practice shared among different governmental levels. The regional government is responsible for the rail-based systems while the municipality manages the municipal bus services. The lack of coordination between public stakeholders within São Paulo Metropolitan Region has often underlain the overlapping of public transport routes and competition for passengers, eventually jeopardizing the financial feasibility of services (ANTP, 1997).

6.3.2 Metropolitan rail

The public company CPTM operates the metropolitan rail services on 273 km of lines (see Figure 6.1). This network has historically evolved on the grounds of the railways built in the middle of the 19th century to transport primary goods to the seaport and therefore was not initially planned for passenger transport. Some lines are still used for goods transport and have crossings at the ground level, which limit its operational performance (Isoda, 2013). The rail network consists of six lines, five of them connecting urban edges or other cities of the metropolitan areas to the centre of São Paulo. Most of these lines are characterised by remarkable pendular commuting flows.

In the last decades, the state government implemented several initiatives to improve the service level and counter the very poor image it had among its users. Until of the 1980s, the metropolitan train operated with precariously maintained carriages, which in some instances ran with open doors. Acts of vandalism targeting trains and stations were common (Affonso, 1987). Improvements have included the purchase of new vehicles and the

modernisation of electrical and information systems, which would allow the operation of the metropolitan trains at supposedly superior “underground standards” (Isoda, 2013). The more recent additions to the metropolitan rail network were the extension of line 9 towards the south of the city and the opening of line 13, which connects the city centre to the surroundings of the international airport.

6.3.3 Underground

The underground network comprises five lines and sums up 88 km (see Figure 6.1). The underground started to be built in 1968, and the first stretch of its first line was completed in 1974. Three lines are operated by the state-owned Metro company. Two of them were conceded to private operators in the past decade. Similar to the metropolitan trains, most underground lines have a radial geometry. However, differently from the metropolitan trains, the underground operates on an exclusive right-of-way, allowing this system to attain higher average speeds and operate with lower headways (nearly 2 minutes). The current underground network is circumscribed in a compact area: to date, all 75 underground stations are located within the territory of the municipality of São Paulo and are particularly concentrated in the richer Southwestern part of the city (Nigriello, 1999; Isoda, 2013). An 1.5 km long extension of the Line 4 to the West shall be concluded until December 2020.

6.3.4 Monorail

Driverless vehicles travelling on aerial guideways located 15 metres above the ground appeared in a surprising manner in São Paulo since the transport mode “monorail” was not mentioned in any official plan until the announcement of the political decision by the state government in 2009 (Spinelli and Izidoro, 2009). The introduction of this mode has been justified by its cost-effectiveness: São Paulo’s monorail system should attend a passengers volume comparable to the underground while requiring a significantly lower financial investment and less time for its construction (Meca, 2013). Further advantages mentioned by its supporters are the low environmental impacts in terms of noise, air pollution and visual impact.

Nevertheless, not only the actual costs and the construction timeline were exceeded, but also the monorail has not operated so far as a high-capacity transport mode. Typically, in the cities where this transport system operates, a monorail line carries 15,000 to 35,000 passengers per hour and direction. São Paulo’s ambition was to introduce a monorail system with the largest capacity in the world (Sarmiento, 2012). However, to carry 48,000 passengers per hour and direction, the monorail line should run with a headway of 90 seconds

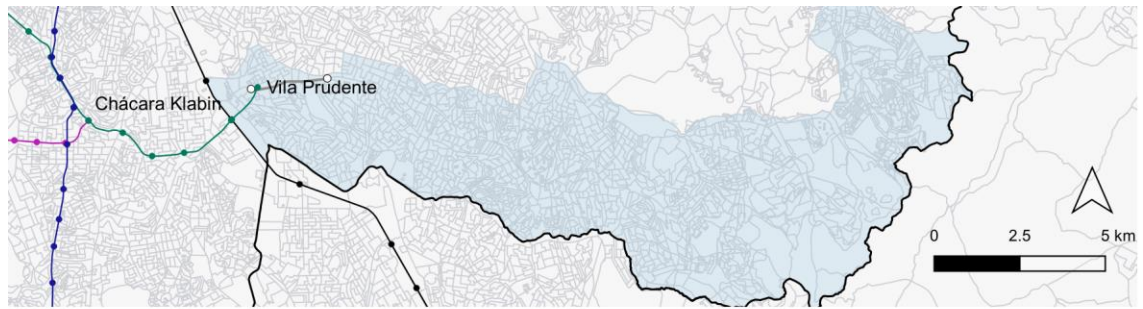
(Sarmiento, 2012; Garcia, 2014). In reality, the average time between two compositions of the only line currently in operation has been 223 seconds – nearly twice as high as the underground (CMSP - Companhia do Metropolitano de São Paulo, 2020).

São Paulo's monorail projects have raised controversies since their announcement. The technical community raised doubts in particular over the monorail capability to meet the expected passenger demand (Spinelli and Credendio, 2009; Mazzo, 2020) and its adverse impacts on the urban landscape (Spinelli, 2011; Geraque, 2012).

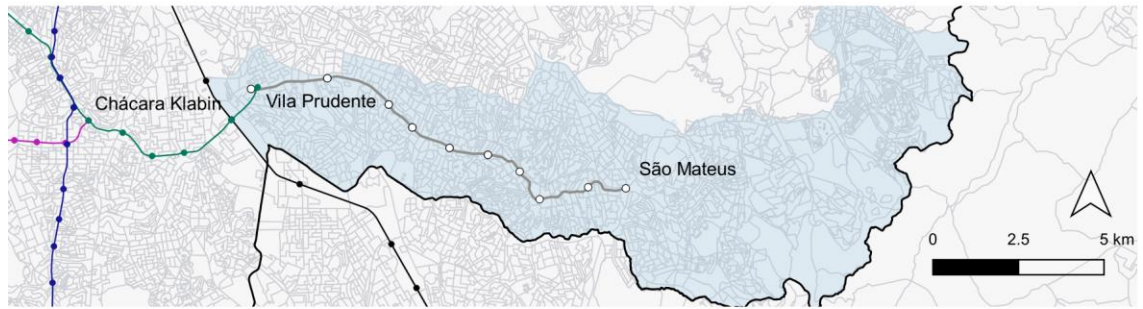
All monorail lines mentioned in the most recently issued plan of public transport expansion (São Paulo, 2013) were modified, and the initial intention of building a network comprising 60 kilometres of monorail lines has been abandoned. While Line 17 (with eight stations and 7.7 km) is currently under construction in Southern districts enhancing the connectivity to the national airport, a bus rapid transit stretch shall replace the monorail Line 18, connecting São Paulo to neighbour municipalities (Lobel, 2019). Currently, just one monorail line is in operation: Line 15 (CMSP - Companhia do Metropolitano de São Paulo, 2020).

Figure 6.3 shows different implementation stages of the monorail line 15. From August 2014 to April 2018, the line ran just between two stations (Vila Prudente and Oratório) and operated for many months in limited times of the day. This was the monorail stretch in operation during the fieldwork period of this PhD study (see Figure 6.3 (a)). In 2018 and 2019, the line gained eight stations and was prolonged until São Mateus, where passengers can interchange to an inter-municipal BRT system (see Figure 6.3 (b)). With this extension, the travel time from São Mateus to the city centre nearly halved from 74 minutes to 40 minutes (CMSP - Companhia do Metropolitano de São Paulo, 2019c).

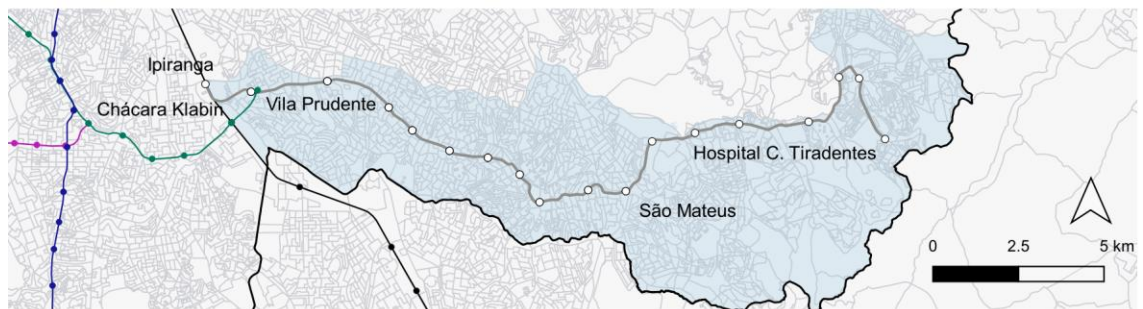
As of April 2020, Line 15 comprises ten stations and 12.7 km. To complete this monorail line, with all its 18 stations, two prolongments are required. While a 1.8 km long stretch towards West ensures connectivity of the monorail with the metropolitan rail line at Ipiranga, a 12.5 km long extension towards East provides to dwellers of the city peripheries with access to the monorail (see Figure 6.3 (c)). However, the completion of this monorail project is uncertain. In 2015, the state government suspended its extension, alleging fiscal problems (Monteiro and Rodrigues, 2015). More recently, authorities restated the intention to build the entire line by December 2022 (Gonçalves, 2019).



(a) The first stretch (Vila Prudente - Oratório) started operation in August 2014



(b) The line was extended towards East and comprised 12.7 km in December 2019



(c) When complete, the 27 km long line will begin at Ipiranga and end at Cidade Tiradentes

Data sources: Municipality of São Paulo (GeoSampa) and IBGE Census 2010
Projection: SIRGAS 2000 / UTM zone 23S



Figure 6.3: Implementation stages of the monorail line 15

A new wave of heavy criticisms towards the high-capacity monorails in São Paulo was released after a series of serious incidents, including the shock between two compositions. In 2020, the operation of Line 15 was halted for several months due to a technical problem in the tires, which revealed inadequacies in the construction project of this transport system to carry the high demand of passengers (Amâncio, 2020a; Gomes, 2020).

6.3.5 Bus

The most important public transport modality in the city of São Paulo has been the bus since the discontinuation of tram services in the middle of the last century. Currently, the municipal bus system encompasses nearly 13,000 vehicles distributed in 1,400 lines, which serve virtually all neighbourhoods (SPTrans, 2019). The local transport agency estimates that 96% of the population lives within a 300 metres radius from one of more than 20 thousand stops (SPTrans, 2019). Historically, the expansion of the bus network is associated with the growth of the urban peripheries, settled by the migrant population (Nigriello and Oliveira, 2013).

However, since a relatively little share of buses receives priority in the roads, the bus system has a low operational performance. Although the municipal buses run over 4,500 kilometres of roads, only a small share of the services enjoy a dedicated right-of-way and can travel unimpeded by road congestion. There are 512 km of dedicated bus lanes (“faixas exclusivas”) and 129 km of lanes that belong to the local BRT system known as “bus corridors” (“corredores de ônibus”), which started to be implemented in São Paulo in the 1970s (IDEC - Instituto Brasileiro de Defesa do Consumidor, 2018; SPTrans, 2020). While buses running as BRTs may reach up to 40 km/h, buses sharing the road space with the private vehicles travel at 16 km/h – an average speed that remained unaltered in the last ten years (Miranda et al., 2017; Amâncio, 2020b). However, despite the name, taxis have been allowed since 2016 to travel on “exclusive lanes” and “bus corridors” in São Paulo.

One of the more recent improvements of the bus network was the deployment of bus lines that operate late at night or at the dawn. There have been also consecutive – though not continuous – efforts in the past two decades to rearrange bus provision following a feed-trunk logic composed by three hierarchically organised subsystems (Souza, 2004; Hidalgo, 2009). The bus network envisaged by the transport agency encompasses a structural subsystem of larger vehicles connecting neighbourhoods and these to the central area of the city on the main road axis is complemented by regional and local subsystems which provide transport options for shorter trips inside each subcentre (Souza, 2004; Hidalgo, 2009; Zioni, 2014).

6.3.6 Ride-hailing and taxis

Ride-hailing services started operation in São Paulo in 2014, even before its regulation. The controversies and the interest conflicts with taxi drivers did not end in 2016, when a decree issued by the local government set a comprehensive range of requirements for the drivers (e.g. the obligation to

attend a training programme), the vehicles used (e.g. maximum age), and the service (e.g. the obligation to display the route in real-time). There are more ride-hailing cars in circulation in São Paulo than conventional taxis (Anon, 2017). Uber, the first transportation network company to operate in the city, claims that São Paulo is the city with the highest number of rides in the world (Lewer, 2018).

6.3.7 Private motorised transport

The role of private motorised transport in São Paulo is notorious from different angles. It is estimated that the fleet of motorised vehicles in the municipality comprises nearly 3.3 million cars and 500 thousand motorbikes (Cetesb - Companhia Ambiental do Estado de São Paulo, 2019). Vasconcellos (1997) holds that the modernization of the city underwent hand in hand with massive investments in the road system, which systematically favoured the use of private motorised transport modes. An important benchmark in the historical process that has favoured private transport at the expense of public modes is the Avenues Plan presented by the former mayor Prestes Maia in 1924, which prevailed over an integrated transport plan (Rolnik, 2001). Maia's plan proposed a set of radial roads to open up the urban fabric to the private car and strengthen the mononuclear character of the city, which could grow towards its peripheries indefinitely (Rolnik, 2001; Anelli, 2011; Rolnik and Klintowitz, 2011).

The excessive use of individual transport in urban trips has been at the root of the serious problem of air pollution by carbon monoxide, nitrogen oxides, ozone, and coarse particulate matter (Pérez-Martínez et al., 2015). Another problem associated with the extensive use of private cars is road congestion, which is the most visible issue of the local "mobility crisis" (Rolnik and Klintowitz, 2011). It is estimated that drivers spend from 30% to 40% more time in São Paulo due to gridlocks (Vasconcellos, 1997; Vasconcellos, 2005). To cope with the chronic traffic congestion, the local government put in place in 1996 a vehicle restriction scheme, through which a share of the private and commercial vehicle fleet is prohibited to travel, based on the last digit of the vehicles' number plates.

In the last two decades, the number of motorcycles has sharply increased in São Paulo. To bypass the chaotic traffic, the local economic elite has increasingly relied on air transport. São Paulo possesses the largest helicopter fleet in the world (Mendonça, 2016; Aguiar, 2019).

6.3.8 Bicycle

The transport infrastructure for non-motorised modes is far less developed and have received far less attention by the local transport policy than the motorised

modes (Municipality of São Paulo, 2015). While cars can use nearly 20,000 km of roads, São Paulo has in total 504 km of dedicated infrastructure for bicycles, consisting of 474 km of bicycle lanes and nearly 30 km of cycle routes (CET - Companhia de Engenharia de Tráfego, 2020). Cycling policies gained some momentum during a single government legislature (2013-2016), when 400 km of cycling lanes were added to the pre-existent network. This consisted essentially of a few leisure routes located inside green areas (Rosin, 2018).

The expansion of the bicycle infrastructure in the city, making São Paulo the city with the largest permanent cycling infrastructure in Latin America, has contributed to increasing the share of women and low-income individuals cycling in the city (Benedini et al., 2019). Despite this progress, many routes are disconnected, and cycling in non-dedicated roads is generally perceived as dangerous.

Alongside the expansion of cycling infrastructure, private companies made available for the public use thousands of shared bicycles (Benedini et al., 2019) and, from 2018 onwards, electric scooters in the more central areas of the city. However, alleging low profitability, two major private suppliers of shared scooters discontinued the services in the city in January 2020.

6.3.9 Walking

The inexistence of adequate infrastructure for walking poses severe difficulties for pedestrians' mobility. In several instances, the sidewalks are not wide enough to accommodate the pedestrian flows, reflecting that the urban space has been essentially planned for the automobile circulation. A recent study found out that 41% of the sidewalks of the city are narrower than 1.90 metres, which is the minimum length defined by law (Lobel and Mariani, 2019).

However, this figure does not take into account physical impediments such as garbage bins, trees and irregularities in the pavement, such as holes and elevations, which reduce the available space for people's movement and are common issues in the city. In some streets, there is no paved pavement at all.

With few exceptions and differently from the road space for motorised traffic, under the responsibility of the municipality, real estate owners are responsible for the maintenance of the sidewalks adjacent to their plots. However, authorities have been unable to enforce existing laws to ensure adequate walking conditions in the city. According to the current city's mobility plan, 98% of the sidewalks of the city are deemed in a poor state (Municipality of São Paulo, 2015). The municipality launched an emergency plan to improve 1.6 million square metres of sidewalks by the end of 2020 (Municipality of São Paulo, 2019b).

6.4 Travel behaviour to healthcare

This section aims to characterise travel behaviour to healthcare in the city of São Paulo. I perform descriptive statistical analysis segmenting the results by socioeconomic characteristics such as age and gender, all well-known factors influencing travel behaviour. As the study is specifically concerned with healthcare accessibility by poor dwellers in São Paulo, the section dedicates more attention to the differences in travel behaviour across income groups.

The analysis is mainly drawn from the microdata from the Origin-Destination travel surveys of 2017 (hereafter OD 2017), eventually complemented by its precedent edition, which assessed travel patterns in 2007. OD 2017 is a representative survey that collected information on the characteristics of trips pursued by individuals from 32,000 households on a typical weekday in all 39 municipalities of the Metropolitan Region of São Paulo. The survey also collected sociodemographic information of the travellers, such as gender, age, income and education level of the surveyed travellers. The study has an error margin lower than 6%, and its confidence level is 92% (CMSP - Companhia do Metropolitano de São Paulo, 2019b).

OD 2017 consists of the most accurate and updated dataset on travel behaviour in São Paulo. Following the survey design, trips to healthcare are defined as those with any health-related purpose, including visits to doctors, dentists, and hospitalised people.

However, some remarks should be made before presenting the results of the secondary data analysis undertaken in this section. Firstly, because of the relatively small number of trips to healthcare, the specific travel behaviour patterns by residents of the neighbourhoods focused in this PhD study could not be reliably reported. Figures presented in this section refer to the entire city of São Paulo. Secondly, differently from job and education opportunities, the survey did not capture the location, the type of services, the provider (public or private) and other characteristics of healthcare facilities visited, neither the patients' conditions which are recognised as confounding factors of travel behaviour to healthcare (as discussed in section 3.4). As a consequence of such limitations of the survey design, travel behaviour patterns to healthcare are reported homogeneously across distinct patients' circumstances and types of services that characterise the Brazilian healthcare system (see section 6.6).

With regard to the socioeconomic segmentation, survey respondents were classified in five equally sized categories according to the reported monthly household incomes, whereby the first income quintile corresponds to the poorest households and the fifth quintile to the wealthiest ones.

6.4.1 Travel purpose

Considering the overall number of daily trips undertaken by the city dwellers, the share of trips to healthcare is relatively small. As shown in Figure 6.4, 4.4% of all trips in the city of São Paulo are made for health purposes, such as visiting a doctor, a dentist or going to a hospital. Trips to healthcare have a comparable magnitude to trips to shopping (4.8%) and leisure (4.5%) and are significantly less frequent than trips to workplaces (44.8%) or education (32.2%).

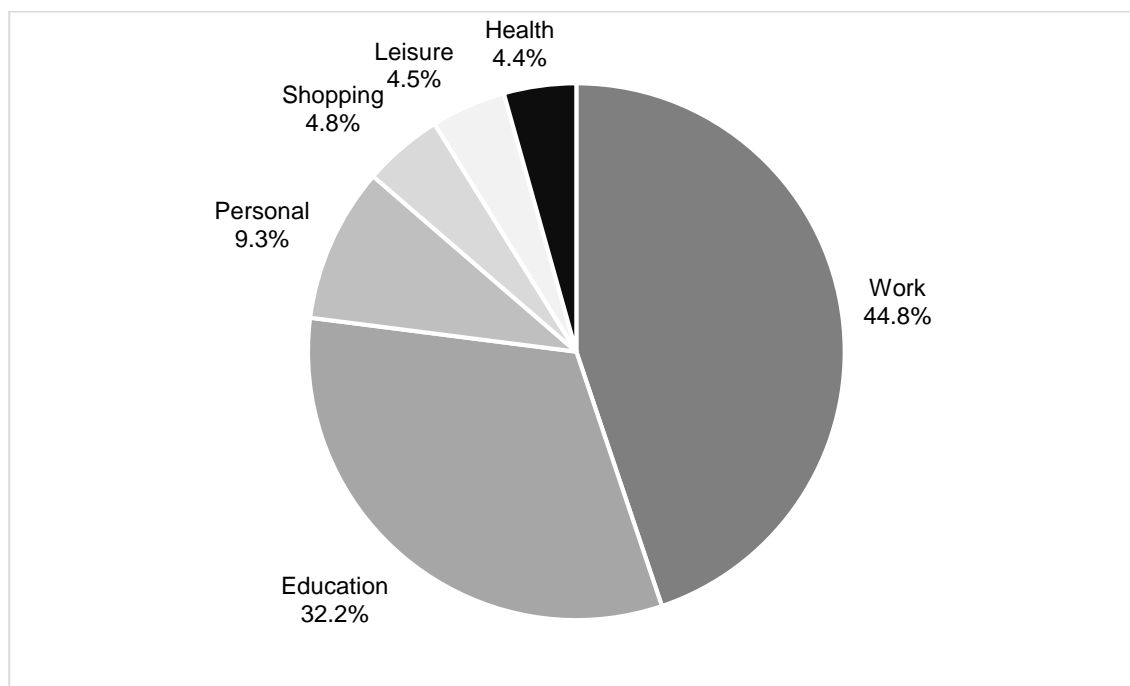


Figure 6.4: Share of trips by purpose in São Paulo (2017)

However, the trip frequency to healthcare varies across income classes. As illustrated in Figure 6.5, the very poor travel slightly more often to healthcare than the people belonging to the other income classes. In 2017, 6.1% of all trips by individuals in the lowest income quintile were made for health purposes. Among the other four income groups, the proportion of trips to healthcare ranged from 3.6% to 4.5%. The slightly higher percentage of trips to healthcare among the most deprived group in comparison to the other income groups was also detected ten years before, what suggests that these shares remained relatively constant over this ten-year period. In 2007, the trip share to healthcare also reached its highest value (5.4%) amongst the very poor and was around 4% for the other four income groups.

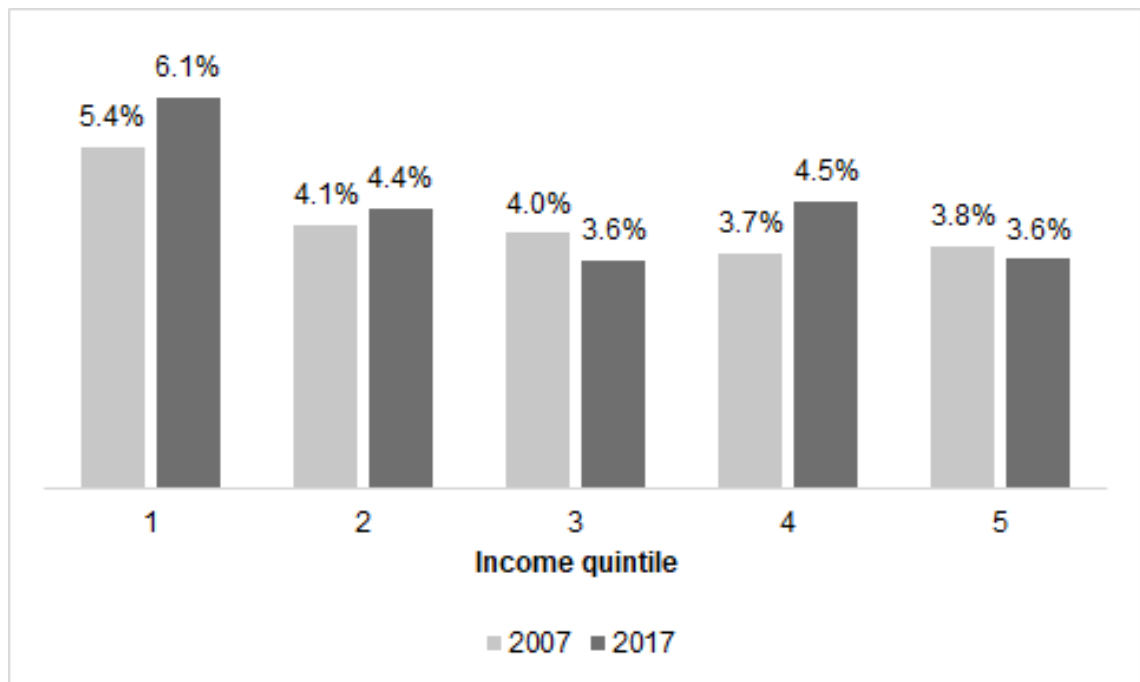


Figure 6.5: Share of trips to healthcare in São Paulo, by income quintile (2007 and 2017)

6.4.2 Transport mode

Public transport is essential for São Paulo's residents to gain access to healthcare services. As illustrated by Figure 6.6, over half of all trips to healthcare (50.7%) are made primarily by a public transport mode (underground, train or bus). Within public transport, the bus is the most common mode used by people to reach healthcare sites. Overall, almost one third (32.3%) of such trips are made by bus. Further 37.6% of the trips are made by motorised individual transport modes. The share of the trips by car or motorcycle drivers (15.6%) is nearly the same as the share of those who reach healthcare sites as passengers (15.4%). Conventional taxis and ride-hailing services respond to 6.6% of the trips to healthcare. Lastly, active transport has a share of 11.6% in the total number of trips to healthcare in the city. Almost the totality of these trips are made on foot (11.5%), as bicycle plays a minor role (0.1%) in such displacements in São Paulo.

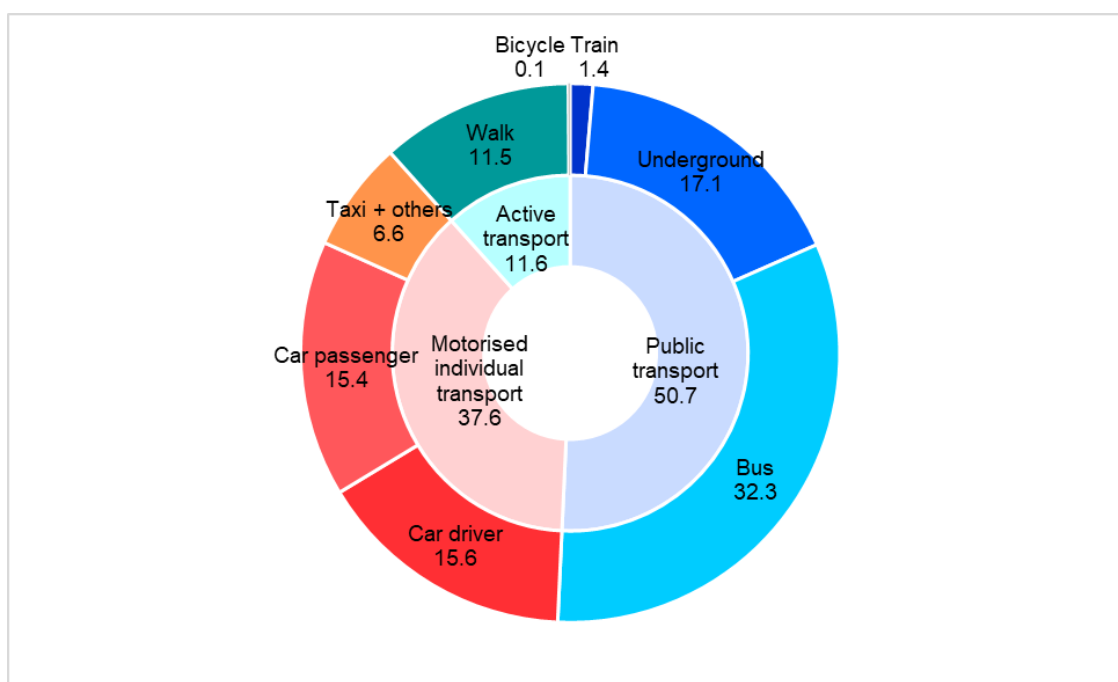


Figure 6.6: Modal split of trips to healthcare in São Paulo (2017)

However, there are substantial differences among income groups concerning the main modes used to access healthcare. Figure 6.7 shows that the modal share for trips to healthcare follows a graded pattern: the higher the economic position, the higher is the proportion of car trips and the lower is the share of those who walk to the healthcare sites.

The travel behaviour pattern to the healthcare of those in the lowest income quintile is as follows. 38.7% of the trips to healthcare made by the poorest people are by bus, and 15.6% use rail transport. 21.3% walk to healthcare sites and a similar share (20.6%) reach facilities by car (driving or taking a lift). This modal split pattern is similar to the observed among individuals who belong to the second income quintile, apart from the sharp reduction of the walking trips observed in the latter category.

Much different is the modal split observed among the wealthiest travellers, who mostly use a car (as a driver or a passenger) to reach healthcare sites. Among those who belong to the highest income quintile, nearly one-third (32.5%) drives a car, and 21.9% take a lift. Buses are used only by 13.5% - this is the only income group which use rail transport (17.4%) more often than buses to access healthcare sites. 9.2% of the trips are made by conventional or app-based taxi services. Only 5.5% of the people on the highest incomes walk to healthcare.

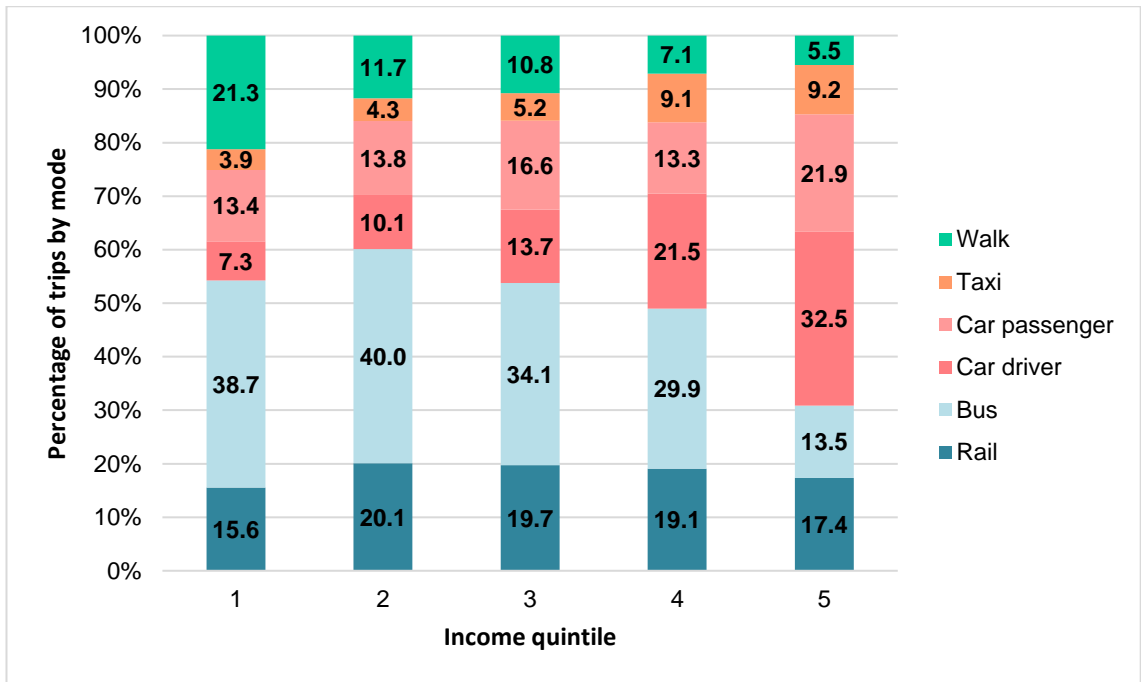


Figure 6.7: Modal split of trips to healthcare in São Paulo, by income quintile (2017)

In general, income is inversely associated with the number of trips to healthcare by public transport. Low-income groups rely heavily on public transport to reach health services. However, the highest share of public transport ridership is observed in the second income quintile. In this income category, three out of five trips to healthcare are made by public transport (60.1%). In the two lowest income quintiles, the share of people riding buses to access health is three times higher than in the top quintile. While the rail share does not substantially differ across the income groups (ranging between 15.6% and 20.1%), the share of trips by buses is nearly three times higher amongst the poorest quintile in comparison to the richest one.

Although people on low incomes rely more on buses for any travel purpose, the bus share in the modal split is particularly high for trips motivated by healthcare. Compared to other everyday activities, trips to healthcare are made more by bus and less on foot.

6.4.3 Trip duration

After job-seeking, trips to healthcare are the longest ones in São Paulo. As reported in the OD 2017 survey, people spend on average 40 minutes to get to healthcare sites. As for most of the other purposes, low-income groups are disadvantaged in relation to the amount of time invested in displacements to healthcare sites. On average, high-income groups spend 15 minutes less than low-income groups with trips to healthcare. While the wealthiest group need 46

minutes to complete their healthcare trips using public transport, the two less well-off segments report travelling for 63 minutes.

Figure 6.8 shows that trips to healthcare made by the poor are not only longer but also less predictable. While the median travel time is 60 minutes among the three lowest income groups, the two more affluent groups reported spending 45 and 50 minutes in these trips, respectively. The figure also indicates that trip duration values are more dispersed among people in the low-income segments than high-income ones. The interquartile range (displayed by the lower and upper rectangle edges of each box) of the lowest income quintile (55 minutes) is almost twice as broad as the range of the highest income quintile (30 minutes).

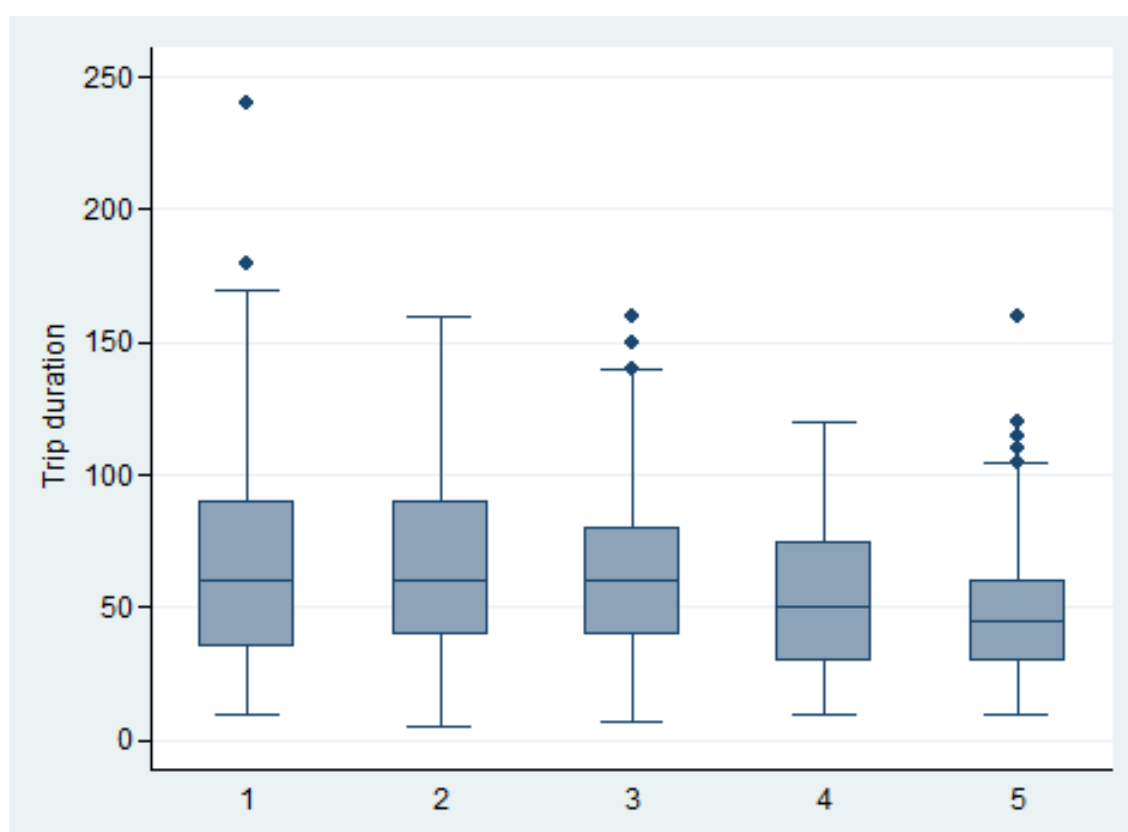


Figure 6.8: Average duration of trips to healthcare by public transport in São Paulo, by income quintile (2017)

6.4.4 Gender

In São Paulo, travelling to healthcare is a heavily biased mobility practice according to gender. Nearly two-thirds (65%) of all trips made to healthcare are made by women. Trip frequencies to no other purpose show such imbalance towards women (see Figure 6.10).

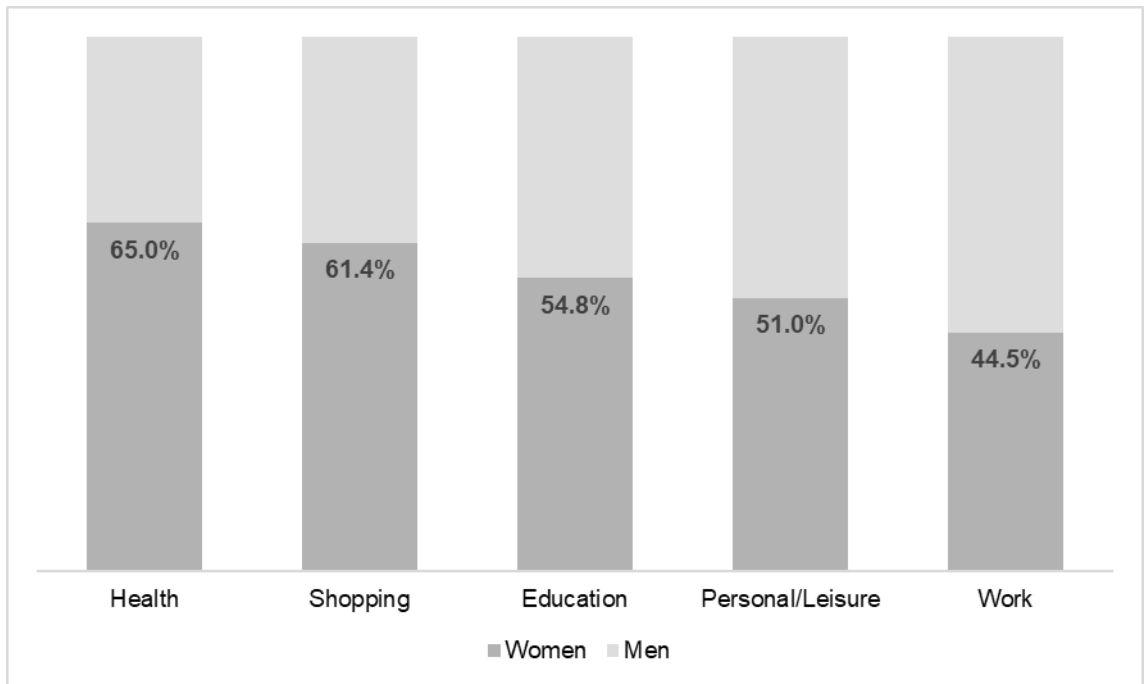


Figure 6.9: Share of trips by women in São Paulo, by trip purpose (2017)

As shown by Figure 6.10, the proportion of trips undertaken by female travellers is slightly higher among low-income groups, reaching almost 70% in this cohort, while this proportion lays just above 60% for the groups with higher incomes.

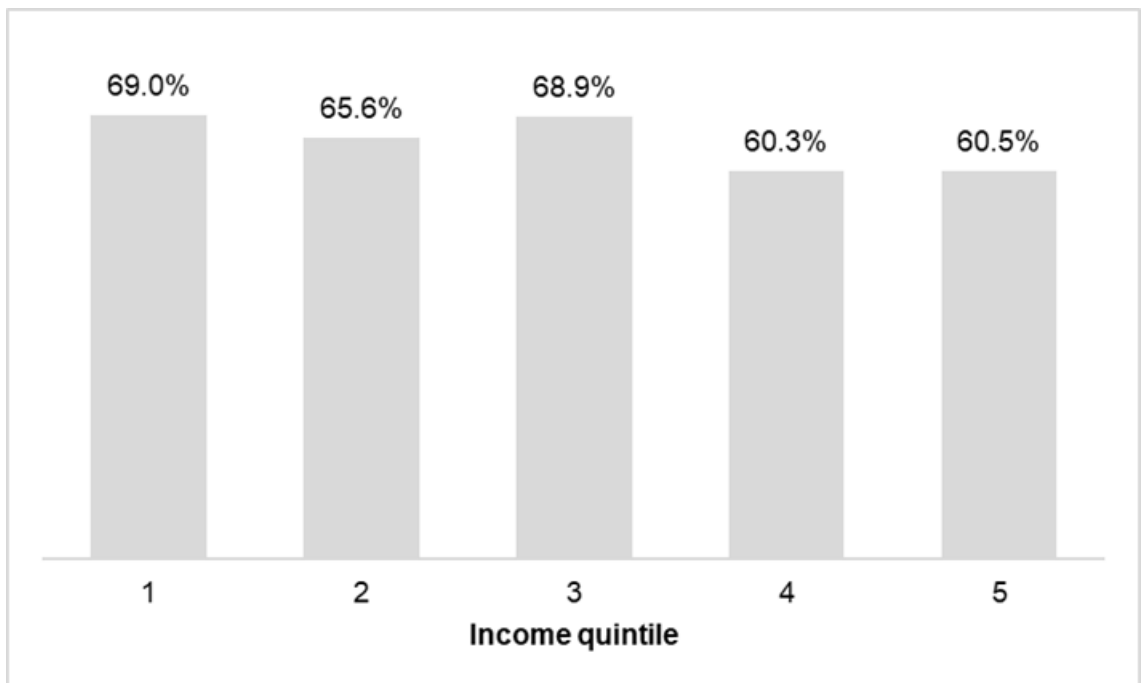


Figure 6.10: Share of trips to healthcare made by women in São Paulo, by income quintile (2017)

6.4.5 Age

Another aspect that deserves attention is the relationship between the frequency of trips to healthcare and age. Trips to healthcare tend to become much more frequent as one gets older. While trips to healthcare respond to circa 2% of the trips made by adults aged 20 to 40 years old, this share is almost 4% for those in the forties, 6% in the fifties and above 15% for people aged 60 or more (Figure 6.11).

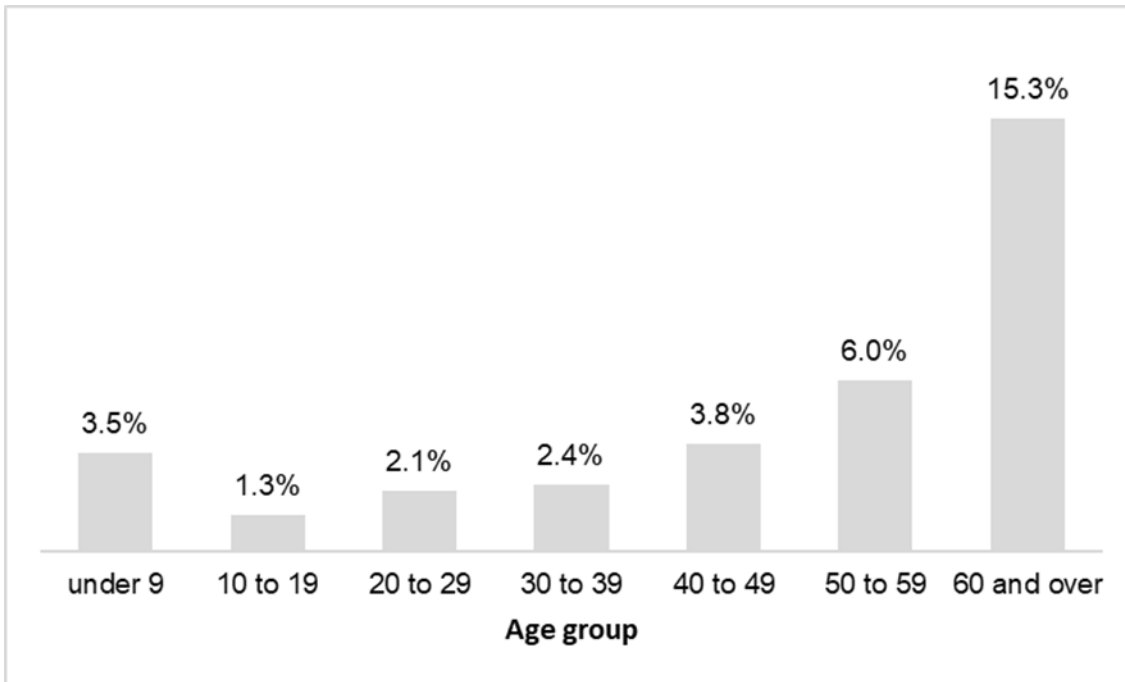


Figure 6.11: Share of trips to healthcare among all trips in São Paulo, by age group (2017)

However, the frequency variability of healthcare trips within each age group can be very high in respect to income. The more profound differences are observed in later age, as shown in Figure 6.12. Every fifth trip of low-income individuals aged 60 or more has a healthcare service as its destination, while this share lays just over 10% among the wealthiest people of the same age group. In general, the frequency of trips to healthcare among those aged 40 or more is twice as high for those in the lowest income quintile in comparison to the highest income quintile.

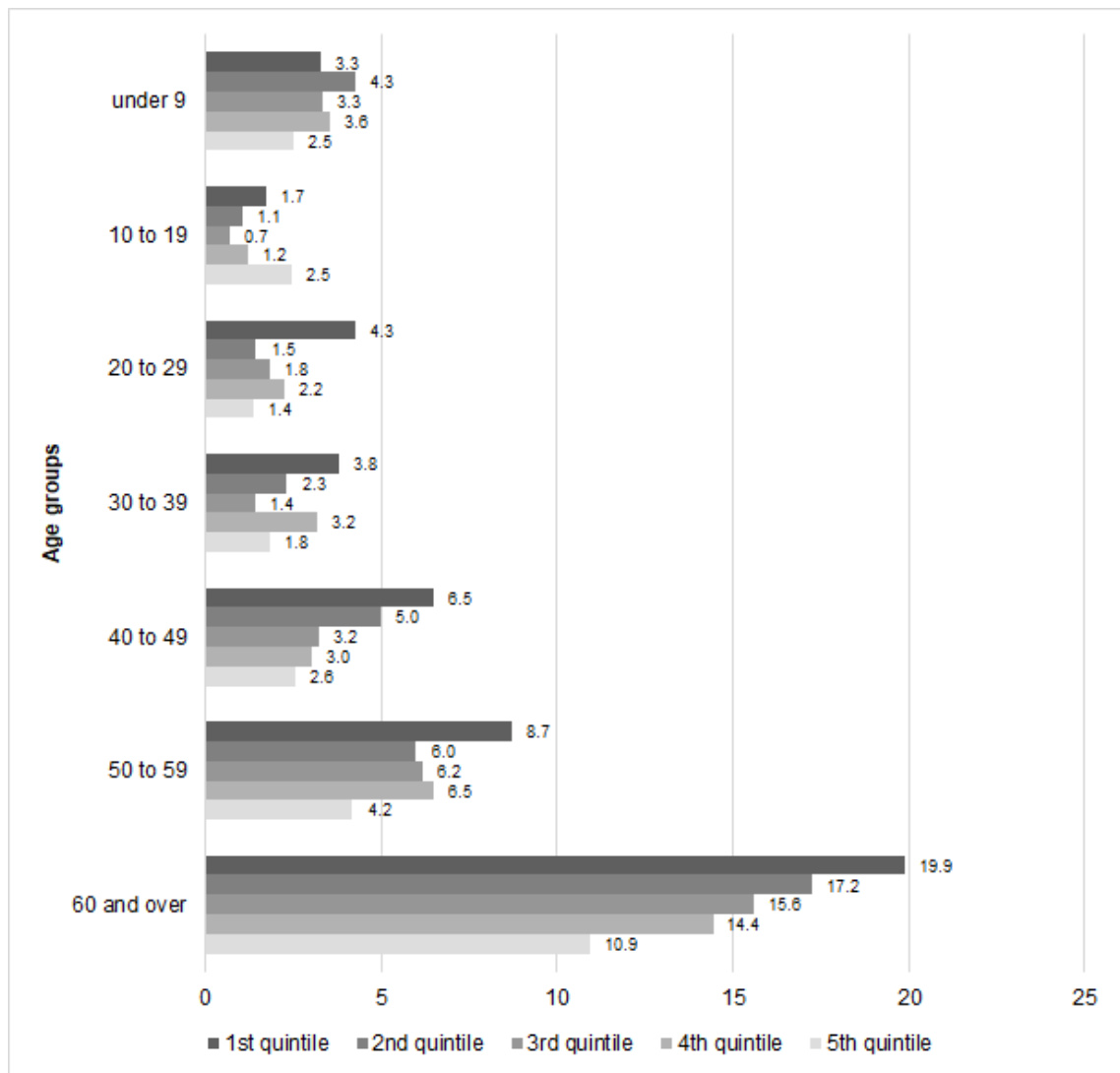


Figure 6.12: Share of trips to healthcare in São Paulo, by age group and income quintile (2017)

6.4.6 Other trip characteristics

The vast majority (91.3%) of trips to healthcare depart from residence places, and this share stands out even in comparison to work (86.2%) or education (90.8%). The share of people travelling from home is slightly higher among the poor (93.5%) than among the rich (86.9%). Conversely, the higher the household income, the higher is the share of trips to healthcare departing from workplaces.

Another distinguishing feature of trips to healthcare is the relatively high share of people who travel to healthcare sites to escort others. Approximately one in four (24.8%) trips to healthcare is made by someone in this function.

6.5 Health inequalities

Although São Paulo has not often been mentioned in the international literature as an exemplary case of health inequities, the city is characterised by considerable differences in healthcare provision, utilisation, and health outcomes. The supply of public health services is regarded as highly concentrated in the central districts where more affluent and better-educated people live (Coelho and Silva, 2007). In the city, hospitals have been historically concentrated in some, most centrally located areas, although public primary healthcare services are geographically better distributed.

The remainder of this section provides some indications of health-related inequalities in the city with respect to healthcare utilisation and outcomes. The analysis draws upon quantitative data produced by the City's Department of Health at the spatial resolution of city districts.

6.5.1 Healthcare utilisation

In São Paulo, disparities in the frequency of healthcare service utilisation relate to socioeconomic status. Coelho and Silva (2007) found that the number of appointments in socially deprived areas is significantly lower than in wealthier ones (1.50 versus 2.12). These authors observed similar inequalities for hospital admissions.

To illustrate disparities in healthcare utilisation across different areas of the city, I analyse data on attendance of prenatal care in São Paulo (Municipality of São Paulo (Department of Health), 2017). Prenatal care encompasses preventive actions and exams that can improve the health of the mother and the newborn (Leal et al., 2018). Figure 6.13 shows the percentage of pregnant mothers who attended at least the seven recommended prenatal medical visits, aggregated by districts of the city of São Paulo in 2014.

While, in some districts, over 90% of the future mothers utilised such services, in others, nearly 40% of pregnant women did not attend the minimum recommended number of consultations. As shown in the map, attendance rates tend to be lower in South, East as well as in the very central districts. The proportion of mothers who had at least seven antenatal care sessions correlates negatively with the poverty rates at the city district level (Pearson's correlation: -0.57), what indicates that residents of deprived areas tend to utilise less healthcare than those living in more affluent areas.

Prenatal care (2014)

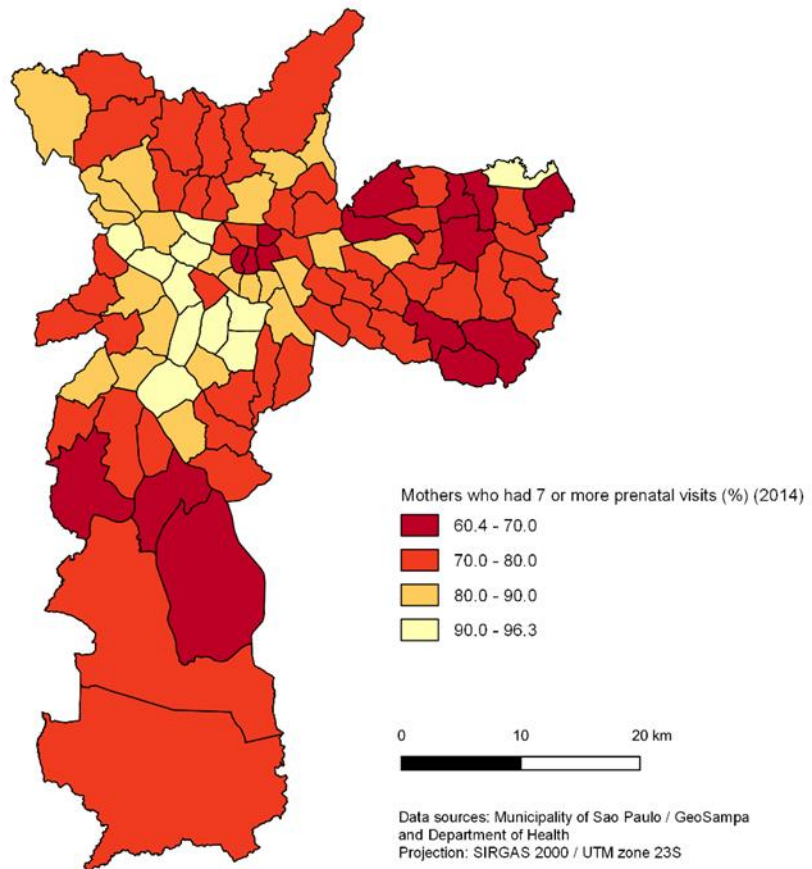


Figure 6.13: Share of mothers who attended at least seven antenatal care sessions in São Paulo, by district (2014)

6.5.2 Health outcomes

A summary indicator of population health widely adopted in the literature on health inequalities is the life expectancy at birth. In São Paulo, a similar health status indicator, available at the district level, consists of the average age of death. In 2017, this indicator ranged from 58.5 in Cidade Tiradentes to 81.6 years in Jardim Paulista. Although this gap was even more significant in the past (29.1 years in 2006), the magnitude of this disparity (23.1 years) still stands out.

Perhaps more surprising than its range is the pattern of its geographical distribution. As shown in Figure 6.14, residents of seven neighbouring districts located in the Southwestern part of the city live, on average, more than 80 years. This region with superior outcomes is circumscribed by several districts where people live on average above 70 but less than 80 years. Such

neighbourhoods compose a continuous area with the exception of four administrative units in the city centre. The average age of death in the peripheral districts of the South, North and East Zones lays below 70 years and does not reach 60 years in four districts. Given the centre-periphery pattern of residential segregation, this map also indicates that, overall, poverty and social disadvantage correlate with shorter lives in São Paulo.

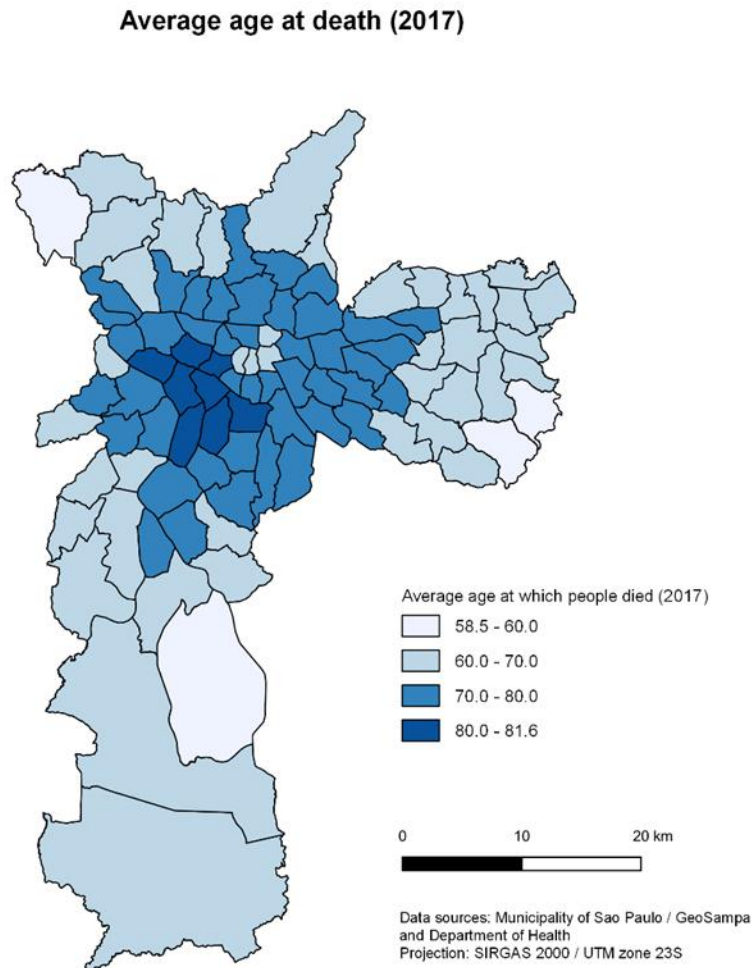


Figure 6.14: Average age at death in São Paulo, by district (2017)

6.6 The Brazilian healthcare system

6.6.1 Organisation

This section outlines the organisation of the Brazilian healthcare system, whose duality is at the basis of inequalities of access to healthcare (Menicucci, 2007). Brazil has consolidated a hybrid healthcare system that accommodates a public, universal and cost-free system alongside a private system comprising numerous insurance plans providers and facilities. The public and the private systems operate in parallel, even though the interface between these two

segments is characterised by constant conflicts and contradictions (Victora et al., 2011).

The backbone of the Brazilian healthcare system is the public Unified Health System SUS (Sistema Único de Saúde). SUS was passed into constitutional law in 1988, at a time when half of the population in the country was excluded from any health system (Santos, 2018). Principles of equal, universal and unconditional access to health have guided the structuration of the Brazilian public healthcare system (Paim et al., 2011). In these respects, SUS is comparable to the public systems implemented in other countries such as the United Kingdom, Canada and Sweden (Anon, 2019).

While the precedent system focused on curative medicine and was accessible essentially to those in the formal job market, SUS was designed to provide care to communities in proportion to their needs and without regard to their income levels (Coelho and Silva, 2007). In the three decades following the implementation of SUS, the number of outpatient healthcare facilities increased substantially (Gragnolati et al., 2013). SUS has been regarded as a successful policy that contributed to expanding citizen's rights in the context of the country's re-democratisation (Massuda et al., 2018).

As in several other countries, the Brazilian public healthcare system is organised hierarchically in three tiers of complexity. Primary healthcare aims to provide universal and comprehensive essential services and coordinates referrals to more complex levels of the system. It also organises health promotion actions and public health campaigns (e.g. vaccinations). Common issues of those who seek primary healthcare in Brazil are hypertension, dyslipidaemia, arthritis, arthrosis or rheumatism, diabetes and depression (Ascef et al., 2017).

A community-based approach to primary healthcare provision, known as the Family Health Strategy, has been stepwise implemented in Brazilian cities. This approach leads to a rearrangement of the primary healthcare organisation as it relies extensively on community health agents, who regularly visit the households situated within a catchment area to provide first-contact care irrespective of demand (Macinko and Harris, 2015).

Secondary care encompasses medium-complexity procedures and specialised care, usually upon referral by a primary care facility. Examples are medical specialities (e.g. endocrinology, cardiology), specialist diagnostic procedures (e.g. endoscopy) and rehabilitation services. Tertiary care includes highly sophisticated and expensive procedures, typically provided in hospitals.

In the Southeast region of the country, where São Paulo is located, SUS is responsible for over 80% of all vaccinations and basic infirmity procedures, two-thirds of the hospital and emergency treatments and the majority of the medical appointments (Silva et al., 2011).

Financed by the three spheres of government, SUS defines policies, which are implemented in a decentralised manner by states and municipalities. As a result, the landscape of public healthcare services can vary across cities and regions. Appendix I provides a brief description of different types of outpatient services available within the public healthcare system in the city of São Paulo.

6.6.2 Current issues

Chronic underfunding and understaffing have been identified as the underlying causes of the most serious deficiencies of the Brazilian public healthcare system. Scholars agree that the lack of human, physical and financial resources are at the root of the undermined capabilities of SUS in delivering universal, comprehensive and timely care (Menicucci, 2007; Paim et al., 2011; Victora et al., 2011).

Users regard the lack of clinicians as the main deficiency of the public healthcare system (Campos et al., 2014). There is high staff turnover in some SUS services, and the system faces difficulty to attract skilled doctors to the more distant and deprived areas (Victora et al., 2011). A survey showed that two-thirds of the Brazilian patients do not have access to a regular doctor, what poses a severe problem for the delivery of continuous and coordinated care (Macinko et al., 2016).

A further issue, especially faced by low-income users, is the lack of celerity in healthcare delivery. On average, Brazilians spend one hour waiting at medical facilities to get treatment. The poorest users of the public healthcare system usually wait twice as long (mean: 86 minutes, median: 60 minutes) than the richest patients (mean: 46 minutes, median: 30 minutes) (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013).

The long time needed for scheduling appointments is a serious problem, in particular for those needing to receive some forms of specialist care (Spedo et al., 2010). In the public healthcare system of the city of São Paulo, patients have waited on average over one month between scheduling and receiving primary care and nearly three months for receiving specialist care (Municipality of São Paulo, 2019a). However, although figures vary significantly across city districts, what reveals a further healthcare-related inequality. Long queues to access healthcare may also reflect referral problems at the primary-secondary

interface, which have been acknowledged as a severe problem in the Brazilian healthcare system (Victora et al., 2011).

Users perceive that the private health system delivers more timely care than the public one. According to a survey, residents of São Paulo wait four months longer for a consultation with a doctor or to mark an exam in the public system in comparison to the private one (Ibope, 2018). For more complex procedures, patients without private insurance have to wait nine months longer (Ibope, 2018).

The private sector is by law supplementary to the public system, but in practice offers, to a large extent, the same healthcare services as the public sector (Menicucci, 2007; Paim et al., 2011). Private insurance plans owners have, thus, multiple forms to access the same services. 25% to 30% of the Brazilian population owns a private healthcare insurance plan, whose monthly cost might range widely from R\$ 80 to R\$ 10,000 (from GBP 19 to GBP 2,370) (Santos, 2018). Unsurprisingly, adherence to private health insurance plans is positively associated with household income (Paim et al., 2011), with most of its users stemming from the upper and middle classes (Santos, 2018).

In general, people with private health plans or insurance policies report having better access to preventive services and higher healthcare utilisation rates than those without such plans or policies (Paim et al., 2011). Despite entitled, users of private healthcare seldom use public healthcare services with the exception to gain cost-free access to expensive medicines, immunizations, and emergency services (Santos, 2018). The private sector has undergone a rapid expansion and currently produces two-thirds of the hospitalizations and over 90% of SUS diagnostic and therapeutic services (Santos, 2018). More recently, chains of low-cost clinics proliferated in the largest Brazilian cities, targeting patients from the low- and middle-income segments (Pinho, 2018).

Individual socioeconomic circumstances are strongly related to the patterns of service utilisation within the dual healthcare system described in section 6.6.1. As shown in Figure 6.15, while approximately 85% of the individuals belonging to the lowest income quintile in the country seek care in public facilities, almost three-quarters of the richest segment are used to going to a private service when needing healthcare (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013).

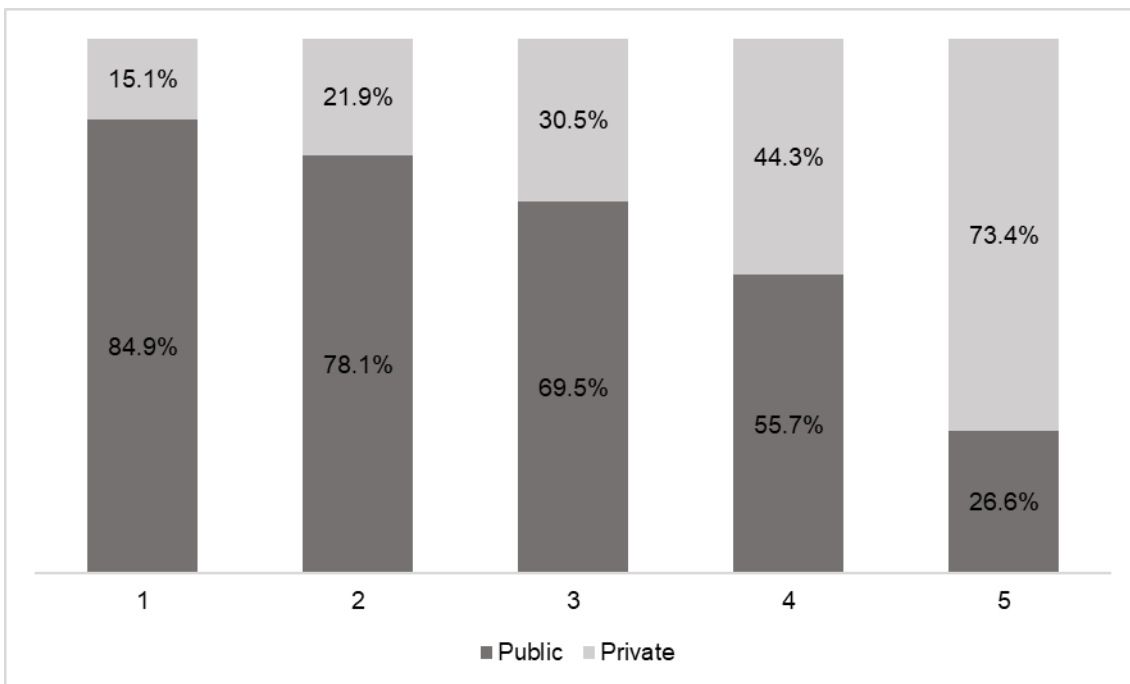


Figure 6.15: Healthcare service utilised by type, by income quintile (2013)

Because of the relatively low public expenditure levels to finance a universal healthcare system, patients are burdened with high out-of-pocket costs at the point of its delivery, causing the Brazilian system to be perceived as unfair by international comparison with other national systems (World Health Organization, 2000; Massuda et al., 2018).

Wide discrepancies in service quality exist in the Brazilian healthcare system. Although the public system has tended to perform well in complex procedures (e.g. surgeries and transplantations), quality of frequently utilised services such as maternal and childcare may be inferior (Victora et al., 2011). A survey commissioned by the Department of Health in 2005 found out that 37% of the hospitals financed by the SUS offered care of “unacceptable” or “very unacceptable” quality (La Forgia and Couttolenc, 2008).

Another study showed that almost half of the public and private hospitals in the state of São Paulo did not accomplish with the minimum operational requirements (Gragnotati et al., 2013). Common problems in the Brazilian system include errors or delays in diagnosis, staff failure in following recommended procedures, in selecting the appropriate treatment, in dosing and administering medicinal products, among others. Nevertheless, the adoption of quality management programs is still limited (Gragnotati et al., 2013). The main bottlenecks of the public system in the city of São Paulo lies in the second tier of care (Spedo et al., 2010).

Transport and difficulties with spatial access consist of further barriers to healthcare utilisation. According to a representative survey conducted in 2013,

every fifth individual belonging to the two lowest income quintiles did not seek medical care mainly because of difficulties with transport or the perception that healthcare facilities are hard to reach (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013). In the case of prenatal care, access barriers are perceived as the more important factors leading to non-utilisation. In particular, less educated, non-white, and young people tend to mention problems with access as the main reasons for not enrolling for prenatal care (Viellas et al., 2014).

Although overall levels of *healthcare utilisation* in Brazil have been increasing recently as a result of the expansion of community-based schemes and other developments in the public healthcare system, several health-related inequalities persist (Silva et al., 2011; Macinko and Lima-Costa, 2012; Mullachery et al., 2016). Barriers to utilisation are related to low income, low educational attainment, lack of formal employment, as well as to gender and ethnicity (Macinko and Lima-Costa, 2012; Boccolini and de Souza Junior, 2016). For instance, less educated receive less prenatal care than the more educated cohort. Women in low socioeconomic status are more likely to report difficulties with transport in comparison to other common reasons, such as personal problems and unawareness of the pregnancy (Viellas et al., 2014).

In Brazil, indigenous populations and black people are among the social groups with poorer *health outcome* indicators (Victora et al., 2011). Visiting a doctor or a dentist are still activities more common among the highest income group (Mullachery et al., 2016). The share of people who never consulted a dentist is 23.4% among the poorest in comparison to 5.6% among the richest (Paim et al., 2011). People who have private health insurance use significantly more healthcare than people who do not. There are some indications that delays in the decision to seek care due to negative previous experience and inability to miss work may be part of the explanation of these disparities (Paim et al., 2011). These authors suggest that these inequalities can broaden as the public healthcare system is currently under pressure and the absence of stable financing sources posits severe limits for de-facto universalisation of healthcare.

6.7 Summary

This chapter provided relevant information that underpins the rationale of the selection of neighbourhoods of São Paulo as an exemplifying case for the examination of accessibility deficits. In this Latin American megacity, socio-spatial segregation was largely induced by the state. Housing and transport policies contributed to creating a spatial pattern which concentrates low-income groups in the city outskirts, distant to the city centre. The literature reports that

these residential areas usually lack adequate access to essential public services, including high capacity transport. The underground network is highly concentrated in central and richer areas.

In general, low-income groups tend to be more dependent on public transport and need more time to access several opportunities, such as healthcare. Poor people rely more on public transport modes, in particular on buses to reach healthcare facilities. Also, their trips to healthcare are usually longer than of the more affluent groups, lasting over one hour on average.

This chapter also showed data on considerable health inequalities within the city. Healthcare services, such as antenatal care provided to pregnant women, are less utilised by people living in low-income neighbourhoods. There are also enormous disparities in health outcomes in the city: the difference in the average number of lived years surpasses twenty years.

Chapter 7 Focus group findings

7.1 Introduction

The focus groups sought to gain a comprehensive and in-depth understanding of the meaning of accessibility to healthcare grounded on the experiences and perspectives of people living in low-income neighbourhoods in different locations close to the monorail project in São Paulo.

The main findings that arose from the thematic analysis are presented in five sections. Section 7.2 presents and discusses the main themes which emerged from the conversations. These themes capture the most significant barriers to healthcare accessibility from the viewpoint of the study's participants and provide an elementary layer of understanding of the substantive issues underlying healthcare accessibility.

Section 7.3 explores the links and dynamics between some of the main themes as, in several instances, the themes appear concomitantly with and connected to others. Such patterned thematic connections provide a deeper level of understanding of dynamic processes that might undermine people's access to healthcare.

Next, section 7.4 presents the overall impacts of the reported issues on accessibility. Participants discussed several strategies to deal with transport-related barriers, which impact on their access to opportunities.

The final analytical stage, whose results are presented in section 7.5, encompasses the exploration of outcomes specifically related to the uptake of healthcare options.

Finally, to give a more detailed account of how accessibility barriers impact on healthcare utilisation, section 7.6 entails the personal stories shared by two selected study participants. Such narratives contribute to generating a contextualised understanding and illustrate the significance of accessibility barriers to individuals.

Throughout this chapter, wherever appropriate, vignettes of individual participants' experiences or the dynamics of their conversations are reproduced as an additional demonstration of the significance of the evidence collected in this study. Such verbatim quotes provide a realistic account of the experiences of people living in the investigated low-income communities.

7.2 Accessibility barriers

The main barriers related to healthcare accessibility for residents of low-income neighbourhoods in São Paulo can be arranged around five major themes, namely: *proximity and remoteness; walking safety; public transport services; personal security; and quality of healthcare services*. These barriers have been intensively discussed in all or almost all groups. Some issues are further specified in subthemes, providing a more detailed account of the issues faced by people when seeking healthcare services.

Figure 7.1 depicts the frequency of occurrence of themes and subthemes in the group conversations, giving an initial indication of the relevance of these issues for the participants. Spatial proximity or remoteness to destinations, public transport availability and comfort, and issues related to the healthcare service delivery were addressed in all conversations. Other issues such as public transport affordability, although less ubiquitous, were also discussed in a considerable number of conversations. This figure also shows that most groups covered a variety of topics, suggesting the richness of these conversations.

In this section, themes and subthemes are presented in a logic sequence, which does not necessarily reflect their relative importance as accessibility barriers. It starts with proximity and remoteness, as these geographical relationships are very commonly associated with accessibility and widely reflected in the literature reviewed in Chapter 3, and evolves towards less trivial and eventually more complex themes.

Code System	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	SUM
▼ Main themes																0
> Proximity and remoteness	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	15
> Walking safety	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	14
▼ Public transport services																0
> Availability	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	15
> Affordability	■		■	■			■	■						■	■	7
> Comfort	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	15
> Reliability	■	■	■	■	■	■	■	■		■	■	■	■	■	■	14
▼ Personal security																0
> Assaults	■	■	■		■	■	■	■	■	■		■	■	■	■	13
> Female harassment	■		■		■	■	■	■	■				■	■	■	10
▼ Quality of healthcare services																0
> Waiting time for an appointment	■	■	■	■	■	■	■		■	■	■	■	■	■	■	14
> Waiting time on the day	■		■	■	■		■	■	■		■	■		■	■	11
> Quality of consultation			■	■	■	■	■	■	■	■		■	■	■	■	12
Σ SUM	10	7	11	9	10	9	11	10	9	7	7	9	9	11	11	140

Figure 7.1: Occurrence of the main themes and subthemes, by focus group conversation

7.2.1 Proximity and remoteness

Perhaps unsurprisingly, the conversations captured distance to the services and opportunities as a central aspect of accessibility. People typically framed the difficulties to get to healthcare and other activity sites in the continuum between remoteness and proximity. Most people associated the easiness to get to healthcare sites with the provision of local services. References to geographical proximity were given at the early stages of all focus group conversations.

Similar to other places (Lucas et al., 2001; Wixey et al., 2005), people in São Paulo prized living in well-equipped places, “close to everything”. Local services positively valued included a range of public facilities such as parks, squares, schools, nurseries and also healthcare sites. Although participants also hold positive attitudes towards proximity to healthcare facilities, living close to these sites was not regarded as a “priority issue”, as suggested by Narayan et al. (2000).

Some participants mentioned the closeness to local services and facilities as the main reason for not willing to move out from their neighbourhoods. Conversely, some people perceived the absence of colleges, playgrounds for children and hospitals as shortcomings of their neighbourhoods. Generally, there was a shared perception that the residential neighbourhoods where they live were adequately equipped with the most basic services and amenities.

I really, really like São Mateus because I live near a pharmacy, a market, a hospital, so I do not have much trouble getting to these places when I need them. (Female, 42 years old, FG 16)

Since most neighbourhoods are equipped with health centres, people generally found uncomplicated to overcome the distance to the primary forms of healthcare. These were described as available “down here”, “at the next door”, or “close to home”. More demanding was to gain spatial access to some specialised services and hospitals, which tend to be geographically concentrated in the central areas of the city. In light of the healthcare system organisation, the need to travel longer to reach higher-tier services is not a surprising finding. However, the degree of concentration of some services in the city of São Paulo may make people travel long distances.

A widespread indication of proximity was people's perceived ability to reach these places *walking*, i.e. not depending on motorised modes, rather than a rigid threshold of time or distance. The manner in which participants framed such perceptions of proximity made clear that walking is a common and preferable form of mobility for most people. Mixed references of the distance

and the time needed to overcome the distance were used to express proximity and remoteness.

Urban environmental characteristics at a very fine-grained resolution seemed to affect perceptions of proximity. Residents of the same neighbourhood may be more or less inclined to walk and perceive opportunities as close, depending on whether they live in the middle of a large-scale social housing complex or an area with more mixed land-uses, for instance.

In my neighbourhood, I do not walk much... I would have to walk too much to go to the supermarket, to the church. Because there are only houses, nothing else... There are not many places to go to. Every time I go somewhere I ride the bus. (Female, 35 years old, FG 1)

The easiness to reach healthcare places located close was also dependent on people's general health status, severity and urgency of the particular health issues. Such perceptions were found consistent with the literature (Exworthy and Peckham, 2006; Cromley and McLafferty, 2012). For those feeling ill or escorting someone in pain, the distance was felt like a strong impediment, as experienced by a young participant:

To me, it [the emergency clinic São Mateus] was not so easily accessible because I feel it [the journey] like an eternity. I would have liked to arrive there sooner than later. I was feeling bad on the bus. So, it was very far for me. (Female, 19 years old, FG 8)

7.2.2 Walking safety

Low walking safety, understood as the vulnerability to accidental injury (World Bank, 2002), was a nearly ubiquitous concern in the focus groups, referred in all but one discussion. Participants' views on this topic were mostly convergent in the sense they usually confirmed and expanded previous contributions, building a cohesive collective narrative. Also, discussions on safety typically involved several interactions among the participants, who in this manner signalled a high interest in the topic.

People's everyday walking experiences can be described as precarious. Participants felt continuously exposed to the risk of suffering injuries as the consequence of falling over on inappropriate sidewalks and being hit by a motorised vehicle when walking on the road.

Sidewalks here are terrible. We have to walk on the road because the sidewalks have several ditches. Those who have difficulty with any impairment or with a baby always walk on the road and run the risk of being run over. So, it is quite complicated. (Female, 35 years old, FG 12)

As in several other places (Wixey et al., 2005; Gutiérrez, 2009; Maia et al., 2016), the main issues in São Paulo's low-income neighbourhoods relate to the poor design and poor maintenance of the walking environment, such as the lack of appropriate walking infrastructure on the streets, the reduced width of pavements with uneven surfaces and physical obstructions (e.g. cars parked, informal retailers' stalls) that make pavements practically unusable.

Significant inadequacies in the walking infrastructure were at the root of concerns about pedestrian safety. In thirteen groups, sidewalks were reported as uneven, poorly maintained or completely missing. In some cases, the severity of the deficiencies in the walking environment casts doubt about the existence of sidewalks in the communities where participants live, as illustrated by the following excerpt.

It's just a sacrifice to walk on the sidewalk because the sidewalks have such steps... They are not sidewalks. (Female, 40 years old, FG 7)

Access ramps, crossing markings and appropriate traffic signalling are absent from most road intersections. Such deficiencies were also reported in areas with high pedestrian flows, e.g. next to schools. In signalled intersections, the green phase of traffic lights may be insufficient for people to cross roads safely (Duim et al., 2017).

Where sidewalks exist, pedestrians' movement may be obstructed by objects placed by dwellers, retailers, and public companies – a situation also observed in rich countries (Wixey et al., 2005). In seven conversations, participants reported unusable sidewalks due to garbage, construction waste disposal, illegally parked and abandoned vehicles, residents' personal belongings, and street vendors. In several instances, pedestrians have no option but walk on the road.

We have to walk in the middle of the road and risk ourselves because there is no space on the sidewalks. (FG 16)

While the single most frequent concern was related to the poor state of the sidewalks, perceptions of unsafety usually arose from the interaction of two types of adverse factors: the lack or inadequate infrastructure and the endangering drivers' behaviour. Residents of these neighbourhoods expressed apprehension regarding the risk of being run over. They need to be always alert since they feel unsafe due to motorised vehicle drivers who ignore speed limits and disregard driving obligations such as stopping at traffic lights and pedestrian crossings. The threat represented by drivers is also felt when people adhere to traffic rules applicable to pedestrians (e.g. crossing streets during the green phase of the traffic sign or when walking on sidewalks). Not only drivers

of private cars or motorcycles but also buses and police cars during incursive actions were said to endanger pedestrians' lives.

Nobody respects us. We have to cross [the street] there to go to Parque Boa Esperança [a neighbourhood]. There is a traffic light at the gas station. It may be red [for the cars], and pedestrians may have preferential crossing. But people [drivers] run over, they take you over their car... (Female, 37 years old, FG 5)

Deficiencies of the walking environment in combination with aggressive driver behaviours were perceived to constrain in particular the mobility of children (or adults with children), older people and people with physical disabilities.

The unfriendly walking environments and the risks run by pedestrians in cities of low- and middle-income countries is well-documented (Vasconcellos, 2001; World Bank, 2002; Jirón, 2011). Perhaps the distinguishing aspect of the extreme pedestrians' vulnerability in the Brazilian case investigated is that it results from the lack of appropriate and comprehensive walking infrastructure in relation to the adverse road traffic environment marked by drivers' illegal and reckless behaviour. This double burden, which jeopardises the walkability of those who make their trips entirely on foot as well as public transport users, was appropriately summarised as a "dilemma", as expressed by this participant:

We're trapped in a kind of dilemma: if you deviate [from an obstacle in the sidewalk], a car can run you over. But if you walk on the sidewalk, you may fall. (Male, 37 years old, FG 11)

7.2.3 Public transport services

Focus group participants acknowledged the crucial importance of public transport to reach places outside their neighbourhoods. Most people rely on the underground, the train and, in particular, the bus to travel to work, education, shopping, personal visits, healthcare and other activities. However, these transport modes are deemed inadequate in numerous respects.

As shown in this section, people living in low-income communities seem to be locked in a situation in which they have to use public transport services that do not operate adequately. Public transport was regarded as a necessary bad. Underpinned by strong sentiments of dissatisfaction, public transport inadequacies were scrutinised along four main subthemes: availability, affordability, comfort and reliability.

7.2.3.1 Availability

The regular and continuous provision of services (Vuchic, 2005) was viewed as a necessary condition for activity participation. Some participants captured immediately the role of the availability of public transport for accessing activity places located outside their neighbourhoods:

If you have access to public transport, automatically you have access to health, work, leisure... (Female, 24 years old, FG 12)

Although buses run in all low-income residential neighbourhoods investigated, people felt that, in some stances, public transport was unavailable. People raised frequent concerns about the restricted number of lines serving different destinations.

There is just one [bus] line up here that brings us to the avenue, and there we have to take another one. (Female, 29 years old, FG 14)

In particular, participants wished to have at their disposal additional public transport services providing access to train and underground stations. They expressed positive views towards bus lines that provide a *straight connection to underground stations* as rail transport was regarded as an efficient means to get to opportunities located, for instance, in the more central areas. Overall in the conversations, lines serving direct routes were described as “practical”, “useful” and “fast”. The convenience of such direct transport links was acknowledged against the need for using multiple services to reach some healthcare services, as commented by this mother:

I have to escort Pedro [son with disabilities] in his therapies three times a week. Each time I take four buses. Why don't they [transport authority] listen to people who use buses and introduce a direct line? (Female, 44 years old, FG 4)

The removal of some bus lines and the segmentation of others in the context of a comprehensive reorganisation of bus routes led by the local transport authority raised substantial concerns during the focus group conversations. Implemented with the stated goal to enhance operational efficiency, the re-routing of municipal buses following the trunk feeder logic (Vuchic, 2005) has forced people to use multiple services to access the usual destinations instead of the direct ones they were used to utilise. However, the absence of public transport lines connecting directly residential neighbourhoods to the main centralities and activity sites has been captured as a concern in several places (Lucas et al., 2001; Wixey et al., 2005; Gutiérrez, 2009). In São Paulo, the need for changing between vehicles was also perceived as an obstacle because of the experienced difficulties in boarding the forthcoming services and the higher chances of travelling in uncomfortable conditions.

In addition, several participants criticised the low service regularity of some bus services. Numerous complaints were made about the long waiting times at the stops.

It [the bus line Metro Itaquera – Alto Paulistano] takes too long to pass in the morning. There in Itaquera, you stay on the queue for

ages. And when the buses arrive, they stay 15 to 20 minutes there... (Female, 27 years old, FG 2)

For example, this 4314 [bus line 4314-10 Terminal Parque D. Pedro II - Inácio Monteiro] takes too long to pass... There's no shortage, there's the line. But the buses are few and slow, do you understand? (Female, 21 years old, FG 6)

Participants perceived the reduced availability of public transport at off-peak times and, especially, in the weekends, when some bus lines have their frequency decreased or do not operate altogether. In the case of the metropolitan trains, the service frequency may be reduced for maintenance works that usually take place at the weekends.

On Saturdays and Sundays, you have to wait for one hour for the minibuses to get to work, to do anything. (Female, 29 years old, FG 4)

In addition, participants noted that the most regular bus services attending their neighbourhoods are unable to accommodate people with disabilities and are also difficult for the elderly to use. Participants said that most vehicles operating in the neighbourhoods were *physically inaccessible* as they were not equipped with chair lifts or ramps and did not have low floor entry. There is also a lack of staff to support users who demand assistance to get on or off the vehicles, and other passengers may not demonstrate understanding or consideration for those with special needs.

7.2.3.2 Affordability

Affordability generally relates to the compatibility between users' incomes and the financial cost of using transport services. However, participants of the present study voiced relatively little concern about the level of public transport fares in relation to their incomes and the inability to pay for transport services.

The fare level¹ was rarely mentioned as a barrier that prevents them from using transport. Only one participant said that the high out-of-pocket costs had already restricted her family's participation in cultural activities.

Usually, the most interesting events are all there close to [Avenue] Paulista, which is far away for people who live here in the outskirts, you know? It is bad. Sometimes we do not have conditions to pay for everyone... When we have the opportunity, we have a good time... Otherwise, we remain at home. (Female, 39 years old, FG 7)

Rather, concerns about transport costs were mostly framed in relation to the discomfort represented by the overcrowding in public transport vehicles (see

¹ At the time of the conversations, the public transport fare was R\$ 3.80, equivalent to approximately GBP 0.90 in August 2017.

section 7.2.3.3) and the reduction of the scope of benefits to which some user groups are entitled (such as students) within the integrated public transport system (see section 6.3.1). This focus was different from the one captured by similar studies (Lucas et al., 2001; Wixey et al., 2005).

Affordability often emerged as a topic in the context of very long trips to certain activities in other parts of the city. In some instances, because of long queues or unexpected road congestion, passengers may not be able to complete their trips within the time window in which multiple public transport services may be used without additional charges. Dissatisfaction was thus linked to the felt uncertainty about the ability to reach their destinations paying a single fare. Participants' views reflect concerns on the long queues to board on other services, which may make them lose the opportunity of benefiting from the integration policy.

If the bus delays and the two hours expire, people have to take money out of the pocket to pay. It is not fair what they are doing. (Female, 39 years old, FG 7)

We do have [fare] integration, but sometimes the time is not enough, because it is so time-consuming in the terminal... (Female, 29 years old, FG 4)

The topic was also discussed in the context of changes in the scope of the benefits of the fare system (Verbich and El-Geneidy, 2017). Previously, registered students were allowed to make up to twenty trips per day, paying a monthly fee, which enabled most of them to travel to places other than education sites. The centre-right local government restricted the benefit to two trips per day. The municipality also made it more difficult for students to be entitled to free school transport, and such policies impacted directly on some participants' budgets:

I have three nephews who study up there near the police battalion. There was a free bus run by the municipality. Now they claimed that my sister lives nearby... All right, she lives close by, you can walk, but the child cannot. What was free is now being paid. Two hundred and a little [Brazilian reais] per month... (Male, 33 years old, FG 3)

More than the absolute fare level, focus group participants seemed to be concerned about the low value-for-money of using buses in the city. In different groups, people criticised the high cost of transport in relation to the uncomfortable conditions typically experienced in these services.

It's not worth spending R\$ 3.80 because you take the crowded bus, there's no place to sit. (Female, 40 years old, FG 7)

You pay R\$ 3.80 to go packed like sardines and [the mayor] still wants to increase the fares? (Female, unknown age, FG 1)

Such responses show that participants make joint considerations of the out-of-pocket expenses and the transport quality when deciding how to get to activity sites. Reflections about the worthiness of public transport in these lines may motivate people, in certain conditions, to walk instead of using buses, even in the cases where the latter seems to be more appropriate.

My son leaves [home] at 4 am to work. He says that it does not pay off taking the bus because it is too busy. He goes on foot and then takes the underground in Itaquera to go to Barra Funda [25 km distant neighbourhood]. (Female, 46 years old, FG 7)

7.2.3.3 Comfort

The technical literature defines public transport comfort as the “absence of mental and physical strain and presence of pleasant experiences” (Vuchic, 2005, p.531). Current understanding of transport comfort encompasses a broad range of elements such as the appearance of stations, the aesthetics of the vehicle interior, cleanness, noise levels, opportunities of relaxation during the ride, among many others. In the context of this case study, however, comfort relates primarily to a very fundamental issue, namely: *the opportunity of travelling in non-overcrowded conditions*.

The imbalance between supplied capacity and demand in local transport services is a well-known issue in São Paulo. Reports by local operators have documented that at peak times the number of passengers per square meter in public transport systems lay far beyond thresholds considered acceptable in the technical literature. Already in 2011, São Paulo’s underground was regarded as the most crowded in the world. At that time, the red line 3 (which connects the East Zone to the city centre and was the most cited in the focus groups) used to carry nearly 11 passengers per square metre at peak times (Dantas, 2011), more than the double of the upper threshold internationally accepted for passengers’ comfort (Vuchic, 2005). In the same year, all but one train lines operated above that threshold (Machado, 2010). Nowadays, three out of the ten busiest public transport lines in the world run in São Paulo (Mena, 2019). In 2015, the municipality estimated that every sixth bus line ran in overcrowded conditions, and most of them were operated by independent cooperatives (Monteiro and Souza, 2015).

In all 15 conversations, people voiced concerns about overcrowding. The dominance of this topic across the groups and participants’ vivid, lurid descriptions of their painful, harrowing and sometimes traumatic experiences with public transport in São Paulo suggest that overcrowding is the most significant cause of dissatisfaction with public transport.

Discomfort in public transport was reported at different stages of the trips. It begins when passengers enter transport hubs, which at peak times were typically described as a “mess” as a result of the enormous number of people. This issue seems to affect in particular underground and train stations. Discomfort in stations can be felt in walkways, escalators, lifts, corridors, and platforms. While the wait in overcrowded platforms can generate discomfort, boarding was deemed as the most critical moment. Passengers regard each other as a competitor for the limited seats and available space inside the vehicles, and this is often a reason for conflicts. In barely organised queues, people are pushed into the carriages.

When the underground arrives [at the station], you do not board, you are thrown. If you want to board, you do. If you do not want to board, you board' anyway. (Female, 56 years old, FG 14)

Passengers' suffering continues inside vehicles, where people reported “travelling squeezed, tightened every day” (FG 2) or “really, literally kneaded” (FG 11). A common metaphor mentioned in the focus groups to depict experiences during peak hours in public transport was feeling like “sardines in a can”.

I used to take the train here in Itaquera, I would go with this arm up here, I could not lower it, because... I had no way to fit the arms down. (Female, 48 years old, FG 2)

You get the packed bus, there's no place to sit. Sometimes you take a foot out of the floor and cannot put it down again. (Female, 35 years old, FG 7)

However, in participants' narratives, the burden of travelling in overcrowded services relates not only to the lack of physical space but also (and for some people mainly) the inattentive and disrespectful behaviour of other passengers, as commented by these participants:

Users have no education. Sometimes they come in [enter public transport] and stand in the middle of the pathway. Then you ask “excuse me”, and they don't let you pass. You have to push them to pass because some don't move at any cost. The problem is not the bus anymore, but the user. People here are very rude. (Female, 52 years old, FG 15)

They [other passengers] don't respect you. You may be pregnant, you may be old... They simply don't care. (Female, 44 years old, FG 3)

Often, passengers' misbehaviour in overcrowded vehicles gives rise to disagreements, verbal arguments and eventually the outbreak of episodes of physical violence. Some focus group participants witnessed or have been themselves involved in “fights” during their trips in public transport:

But the problem is when I come back home when it [the underground] is very packed, and there is a lot of fighting... People fight for everything. There are men who do not respect women, people who do not respect seat priorities, people pushing others when embarking. And when it's time to get off [the train] after the door opens and you want to pass, the person does not give way, it ends up generating an argument ... (Female, 29 years old, FG 15)

[To use public transport] is terrible. Every day I fight inside the train. (Female, unknown age, FG 1)

People are very impolite. People push you. I have seen many fights in the underground. (Female, 35 years old, FG 12)

People expressed particular concerns about the safety and well-being of children, pregnant women, the elderly, and people with disabilities, who may not be given the possibility to take a seat.

Oh my god! I stay with my daughter there holding it [the handrail] not to fall down, and people are pushing, nobody let us seat... (Female, 52 years old, FG 6)

Rather than punctual or sporadic, the discomfort due to overcrowding was usually reported to affect the whole trip inside a public transport vehicle. Participants reported having to travel by bus standing during the whole journey.

It's too long, crowded. Travelling from here to Belém [15 km distant underground station] standing... You die. (Female, 54 years old, FG 9)

When reflecting on overcrowding, participants mentioned that their travel experiences are deteriorated on hot days in vehicles lacking proper ventilation.

Sometimes it is very hot, there is no air conditioning or anything, you with a child on your lap... this is very difficult. (Female, 30 years old, FG 2)

Although overcrowding is experienced in all public transport modes, some participants told that the negative experience in the underground might be partially mitigated by the travel speed proportionated by this mode. Many acknowledged speed as a positive attribute of the underground because it alleviates the perceived discomfort, as illustrated by the following testimonies:

I think the underground, even overcrowded, ends up causing less distress than the bus because of the time it takes from one station to another... So, even if you're in that overcrowding, you know it's fast, and it will be a bit less suffering. (Male, 31 years old, FG 13)

Apart from these problems, it [the metro] is fast. (...) So, it is rapid suffering. (Female, 29 years old, FG 15)

Lastly, discomfort is perceived at the moment of disembarking from public transport vehicles. In the metropolitan rail system, people are pushed and leave the coaches unintentionally.

When the train stops at Brás and at Praça da Sé [two underground stations along the Red Line], if you do not hold back, you are thrown out, you go the other side... (Female, 29 years old, FG 15)

You get in when you do not want to get in, and you get out when you do not want to get out. (Female, 47 years old, FG 12)

Expressing deep concerns about this issue, participants in two groups suggested that operators should introduce mechanisms to limit the maximum number of passengers inside the public transport vehicles and facilities.

I get the underground every day in the morning... It's difficult, it's very tight, it suffocates... At a certain point, there is no space for more people and still more people want to get into the wagons. So, I think there should be an oversight to avoid this. (Female, 18 years old, FG 6)

Concerns about discomfort also underpinned people's aversion to transferring between multiple public transport services. Changing between services was perceived to be linked to higher chances of facing discomfort in the following services. Participants' strong opposition to the strict feeder-trunk bus network implemented by the local transport authority (see section 6.3.5) was related to the possibility of facing higher levels of discomfort. This line of argument can be followed by the narrative of a participant, mother of two children and used to extending her sleeping time during her bus trip to work in the city centre.

We used to take the line Parque Dom Pedro. It was comfortable because you could get the bus here, take a seat and sleep, waking up there at the Parque Dom Pedro [27 km distant]. We cannot do this today anymore. We get here a filled bus, may sleep 20 minutes till Itaquera. The buses [departing] there are all crowded, apart from the waiting time. If you wait for a [bus with a free] seat to sleep, you will arrive late at the service or you will have to wake up one hour earlier so that you can sleep half an hour on the bus, which does not pay off. (Female, 31 years old, FG 6)

From the several defining aspects of comfort discussed in the transport literature (Vuchic, 2005), the most significant ones in the context of São Paulo seem to be: the ease of boarding and alighting; the availability of free seats, including for the groups who should receive preferential treatment by law; and the freedom of standing passengers to move. Temperature and ventilation have also been mentioned as additional circumstances that affect negatively the riding comfort.

This evidence is consistent with opinion polls, which show that the chief complaint among transport users in São Paulo is overcrowding. Nearly three-quarters (72,5%) of train users acknowledge it as a severe problem (CPTM - Companhia Paulista de Trens Metropolitanos, 2018) and for around one-quarter

(23%) of bus passengers overcrowding is the single most pressing issue (Ibope, 2017).

The focus group findings on the issue of discomfort also corroborate to Silva (2016), who collated narratives gathered from individual interviews with commuters using public transport in São Paulo. Not only the issues reported, such as the discomfort caused by the warmth, the struggle to get a free seat and the feeling of being squeezed overlap, but in several cases even the wording employed by participants in both studies coincide. The study by Silva (2016) also makes it clear that overcrowding is the central public transport problem, interlinked with concerns on unsafety (e.g. the fear of falling in the gap between trains and platforms), insecurity (e.g. being involved in arguments with other passengers) and poor health (e.g. developing back pain due to the inadequate travel conditions).

7.2.3.4 Reliability

Reliability of public transport refers to the uncertainty and variability in travel time (Chang, 2010) and can be measured as “the percentage of vehicle arrivals within a certain interval after the scheduled time” (Vuchic, 2005, p.529).

Although no participant has discussed reliability using this technical terminology, users mistrusted the regularity of public transport.

Unreliable transport is a problem faced by bus riders, in particular. Some participants commented that buses running in São Paulo do not adhere to a schedule.

They do not have a fixed schedule... Today it leaves at 17:20, tomorrow at 17:40... Whoever schedules these buses, they have no respect for the worker. (Female, 38 years old, FG 13)

Even when buses do follow a scheduled time plan, people might not trust them to gain timely access to certain activity places. As, in most cases, buses share the lanes with the rest of the motorised transport, they are vulnerable to delays caused by road congestion. As stressed by some participants, one can predict neither the arrival time of buses at stops nor the time when they reach the destinations.

People also perceived that public transport becomes less reliable in the occurrence of certain weather events. Rains hinder quite often the operation of buses as well as rail-based modes.

When it rains, the trains stop, right? They stop at the peak time in the morning, and then they travel slow... (Male, 37 years old, FG 15)

In the case of rail transport, reliability is also eroded by operational disruptions caused by technical panes, which have become significantly more frequent in

recent times (Lobel and Amâncio, 2017) alongside the increase of the demand for these services.

The underground breaks down, and you stay there at a station for hours. (Female, 31 years old, FG 5)

In the underground, these problems are happening... It often stops, the door remains open, the train stays there, you stand there and keep waiting... These days I kept waiting around... 10 minutes. (Female, 22 years old, FG 2)

Unreliability emerged most frequently as a theme in connection to overcrowding. Participants shared the uncertainty about their ability in embarking in public transport due to the vehicles overloading. Even when the underground and some bus services are frequent, passengers may be impeded to board in overcrowded vehicles.

Sometimes three, four buses pass and we cannot get in... so full they are. (Female, 51 years old, FG 10)

With this lot of people who live here, I wait during the week sometimes half an hour inside the terminal to take the bus. (Female, 29 years old, FG 4)

At 4 am buses arrive every five minutes, one bus comes after another, [but] they are all full. (Female, 40 years old, FG 7)

While in some cases people may have the option to travel in extremely overcrowded vehicles or wait longer for less busy services, in the case of buses, drivers may skip stopping at intermediate stops, providing to the passengers no other option than waiting longer at the stops.

These days I went to the stop, five [buses serving the line] Parque Dom Pedro passed, and I stayed there... Because they were all packed. They were passing by straight. (Female, 19 years old, FG 8)

However, passengers do not experience this issue only at intermediate stops. Stories shared in the groups also addressed the uncertainty of boarding onto public transport vehicles at bus terminals and train stations, where services initiate.

The underground [terminal] station Itaquera is the worst, you'll wait about 15 minutes, you'll arrive at that mess. (Male, 35 years old, FG 3)

On weekdays, I sometimes wait half an hour inside the terminal to take the bus. (Female, 29 years old, FG 4)

Interestingly, most participants articulated the penalty inflicted by overcrowding as the number of missed vehicles rather than the additional waiting time in minutes.

I already counted six, seven, eight trains [until boarding] (Female, 33 years old, FG 2)

I already had to wait for 15 trains to take the underground... It was on the 18th of February this year. (Female, 35 years old, FG 12)

Unreliability was also mentioned as an argument against the bus system reorganisation undertaken by the local transport authority.

Before, there was the minibus line straight from sector G to Penha. They took it out and put the circular buses. We have now to leave sector G, get off at the terminal to get another bus to Penha underground station. You have to join another queue. So, they take out a bus that helps you and make a complication that is inferior to you. (Female, 29 years old, FG 4)

7.2.4 Personal security

Crime and violence have a particular meaning in São Paulo, where the figures of violent crimes such as homicides underpinned references to a “civil war” some decades ago (Souza, 2008). The focus group conversations brought evidence that insecurity is still a widespread and current concern in low-income neighbourhoods in São Paulo.

Although the transport literature usually addresses safety and security jointly as both relate to the risk of injuries (Vasconcellos, 2001; World Bank, 2002; Social Exclusion Unit, 2003), in São Paulo public security issues were singled out, constituting a separate theme. Fear of crime was also found as a critical accessibility issue in studies on transport-related social exclusion conducted in England (Wixey et al., 2005), South Africa (Lucas, 2011a) and elsewhere in Brazil (Maia et al., 2016).

In São Paulo, public insecurity can significantly deteriorate the quality of travel experiences, although the type of crime feared seemed to depend on the transport mode used. While concerns of being assaulted prevailed among pedestrians, sexual harassment was addressed explicitly in the context of the use of public transport modes.

7.2.4.1 Assaults

In 13 conversations, participants reported the fear of being assaulted when travelling by public transport and in public spaces. Several participants shared stories in which they, their children or acquaintances suffered assaults in a variety of ordinary everyday situations, and several of these reports were recent. Victims were, for instance, students on their usual way to school, commuters waiting for a bus at the stop close to their residences or families going to a service in the church.

My son studies in [public school República da] Nicarágua... and a group halted him... He was not wearing the school uniform, they took away his blouse and the mobile phone. I do not allow my children to

leave home with a phone or with new clothes anymore because they will take them all away. (Female, 44 years old, FG 9)

Such narratives suggest that, unlike previous studies, the risk of crime is not confined to specific areas, which could be potentially avoided (Lucas et al., 2001; Wixey et al., 2005; Maia et al., 2016). Rather, in common with the South African context investigated by Lucas (2011a), perceptions of insecurity are geographically overspread, encompassing larger areas, eventually whole neighbourhoods, including transport hubs such as bus terminals, underground stations and inside vehicles.

Fear of crime affects people's perception of the ease to get to healthcare sites. Some participants expressed discomfort and even reluctance to get to facilities located in unfamiliar areas regarded as dangerous. Concerns on personal security might undermine participants' ease to access the most basic level of healthcare, as shown in the following statements.

Sometimes you do not know the place, it gets difficult to get... To me it is difficult... (Female, 57 years old, FG 14)

To get to that BHC there I have to walk through the favela. I do not find it very easy. I do not have the habit, I do not feel safe. (Female, 38 years old, FG 13)

Participants were split with regard to the time of the day in which they feel more vulnerable to these crimes. As in many other parts of the world, some people feel to be more at risk in the dark hours of the day and when few people are in the streets. Some pedestrians linked the fear of assaults to the characteristics of the walking environment. In one neighbourhood, people explicitly mentioned they preferred to take a longer route rather than walking on a poorly maintained path "full of bush" (P504).

Other participants, however, contended that there is "no right time to be assaulted" (P1203). The assertive formulation of a participant captured well the unconditional sentiment prevalent in that group: "We walk with fear" (P707). Many participants have been victimised several times, what strengthens the sensation of generalised and constant fear across different times of the day, places, circumstances and transport modes.

I've been assaulted four times. I walk like that, scared. I'm afraid of my own shadow even. (Female, 29 years old, FG 15)

In one year, I was assaulted three times. Once close to home, it was at 19:30 coming back from work. About six months ago, going to work at 5:30 in the morning, on the same street. (Female, 33 years old, FG 13)

Concerns about assaults were also common among public transport users, who may be victimised at different stages of their trips (Oliveira et al., 2019).

Participants mentioned being assaulted inside the coaches, when dropping off the vehicles, and while waiting at bus stops. The manner people framed this issue implies that assaults are part of the “normality” of commuters and transport professionals.

In the morning at the bus stop, you see people being assaulted with the sun shining. (Female, 35 years old, FG 12)

My father and my husband are bus drivers. They are always assaulted. (Female, 28 years old, FG 3)

7.2.4.2 Female harassment

For women, the fear of assaults coexists with grave concerns about gender-related forms of violence. Harassment can be manifested verbally, visually or physically (FIA Foundation, 2016) and relates to various forms of abuse including groping, molestation, staring, stalking, stealing, catcalling and rape (ITF, 2018).

The findings of this study are supportive of the evidence that female harassment is a topical and extremely concerning issue for women’s mobility in São Paulo. In this city, according to a survey, 43% of the women have experienced harassment inside public transport and 10% in taxis or app-based mobility services (Ibope, 2019). The same poll identified that public transport vehicles are the places where women perceive as the most dangerous for suffering gendered violence. Just a few days after the data collection of this research project started, operators of the main public transport systems in São Paulo launched an orchestrated campaign to encourage victims reporting abuse cases (CMSP - Companhia do Metropolitano de São Paulo, 2017).

Women of different ages reported having suffered sexual assaults during usual trips in overcrowded vehicles in the weekdays, e.g. while commuting. Sentiments of panic, agony, powerlessness, mistrust, despair, revolting and, above all, fear characterise female participants’ narratives about the threat or concrete experiences of suffering sexual violence in public transport.

Female harassment emerged as a singular theme in this study because this type of violence targets a well-defined group of travellers (i.e. women), under very particular circumstances (e.g. overcrowded trains) and, differently from assaults, is likely to have more profound and lasting consequences for the victims’ accessibility. Nevertheless, female harassment has been seldom addressed in accessibility studies as a separate issue from other forms of crime. Although the association between gender and sentiments of fear in public transport and public spaces is generally acknowledged, studies on

transport and social exclusion have typically addressed crime as a monolithic issue (Church et al., 2000; Social Exclusion Unit, 2003).

Some participants reported very recent cases of physical harassment suffered in public transport, providing additional evidence on the topicality of this issue. One participant (FG 5) said that a friend suffered a sexual attack inside the metro in the same week of the focus group conversation. One 40-year old participant (FG 5) shared with the group that her mother was victimised two years before. Another participant (FG 16) witnessed a girl around 12 years old being groped inside a bus not a long time ago.

As reported by the participants, female harassment happens in the usual commuting trips in the morning and afternoon peak hours. Overcrowded vehicles provide the perpetrators with the favourable circumstances for inappropriate sexual behaviours. Victimised participants think that, in public transport, offenders feel free to have sexual contacts without consent and do not fear any retaliation.

Women suffer a lot because some guys take advantage of the situation. They don't care and put their hands on us... (Female, 28 years old, FG 3)

Different from the evidence found in Buenos Aires and Santiago, where women reported to suffer harassment more often in buses than in trains (Corporación Andina de Fomento and FIA Foundation, 2018), participants' narratives suggest that in São Paulo harassment is a particularly severe problem in the underground and trains. Ceccato and Paz (2017) found that 12% of all reported crimes in the São Paulo underground system from 2010 to 2015 constituted cases of female harassment. These authors also reported that the majority of such incidents occurred in the peak times of weekdays when occupancy rates in the coaches are higher, and this is also aligned with the PhD findings.

Considering the high sensitivity of the topic, participants' reports on harassment were surprisingly numerous. Female participants of nine focus groups voiced concerns about sexual harassment in public transport. Participants talked exclusively about episodes of physical harassment, leaving out other types of gendered violence such as visual and verbal aggressions, suggesting that these are naturalised in the Brazilian context (Corporación Andina de Fomento and FIA Foundation, 2018; GIZ, 2018; Pereyra et al., 2018).

7.2.5 Quality of healthcare services

Unavoidably, the focus group conversations on accessibility to healthcare captured people's concerns on the quality of healthcare services. The three more concerning issues around healthcare quality were the waiting time until

the medical appointment, the waiting time in the healthcare facilities and the quality of the care received from health professionals.

7.2.5.1 Waiting time for an appointment

One significant difficulty experienced by participants in accessing healthcare relates to the disproportionate long waiting time to get an appointment, which severely limits the availability of these services to people in need of healthcare. Participants of all but one focus groups reported they are subjected to long waits between scheduling and having consultations in public facilities, including those supposed to be the patients' first contact point with the health system.

Long waiting lists affect people's access to services at different levels of the healthcare system. Usually, it takes several days for people to mark an appointment with a general practitioner, a complex procedure (e.g. surgery) and, in particular, with a specialist physician (such as a paediatrician or a gynaecologist) or when scheduling laboratory tests.

Several participants reported in a number of months the waiting time to get an appointment with a doctor or schedule a medical procedure. Particularly lengthy was to gain access to specialised doctors (such as gynaecologists and paediatricians) or exams (such as mammography and imaging tests), as illustrated in the following excerpts:

My girl is 18 years old; she wants to go to the gynaecologist. But unless you are pregnant or has a haemorrhage, you do not get an appointment. (Female, 39 years old, FG 7)

P1: I scheduled it [an appointment with a paediatrician] late last year [at least eight months before] and they [the children] only now will pass with the doctor.

P2: You're still lucky. I could not schedule it for this year, just for the next one. (FG 1)

The waits faced by participants were usually higher than the ones indicated by official figures (Municipality of São Paulo, 2019a), which could be already considered alarming depending on the health issues experienced and also in comparison to other countries (Gulliford and Morgan, 2003; Hernandez and Rossel, 2015).

7.2.5.2 Waiting time on the day

Once in the healthcare facilities, people usually have to wait for hours to see primary healthcare staff in ambulatories or receive care in hospitals and emergency departments. In some cases, the long times are perceived as incompatible with patients' health conditions, impacting negatively on their well-

being. Some participants told they had to stay waiting for four hours or longer to receive urgent care. They also reported long queuing in cases in which they had a scheduled appointment.

I went these days to the emergency department. I arrived there at 1:45 pm and was attended at 5:10 pm for the screening. (Female, 40 years old, FG 5)

Last month I went [to the health centre] with my sister [as] she had a migraine attack. She stayed there the whole day without being attended. They went to one side, went to the other. They called the nurses... I stayed at her side from 8 am until 4 pm. (Male, 37 years old, FG 11)

Although some qualitative accessibility studies have captured people's concerns about the celerity of healthcare services (Lucas et al., 2001; Maia et al., 2016), only recently scholars have addressed it as an issue directly affecting accessibility (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013). Nevertheless, in the North American context studied by these authors, the long on-site waiting time was mainly related to the block-scheduling system, which requires patients to be at a facility to get an appointment on the same day. Long waiting times and coordination problems in the healthcare delivery were also identified in Montevideo, where the total time spent by women engaged in prenatal care and new-born check-ups reached up to three hours (Hernandez and Rossel, 2015).

7.2.5.3 Quality of consultation

Healthcare quality is a socially constructed notion and may encompass a range of factors such as the ability to receive individualised care, be treated with respect by staff, and be involved in an open communication flow, among many others (Sofaer and Firminger, 2005). As in other places of the world (Narayan et al., 2000; Banerjee and Duflo, 2012), also in São Paulo poor people are very sensitive to the quality of the medical consultations and, in particular, the quality of the patient-professional interactions. Focus group participants placed a heavy emphasis on the staff abilities to communicate and provide emotional support to patients. In their understanding, the key competencies of medical professionals include the ability to listen to the patients carefully, to express compassion and sympathy, and to deliver individualised and effective care.

Nevertheless, such central competencies for providing good-quality care were missing in most instances. People felt treated in a rush and with disinterest by the medical staff. Consultations were regarded as extremely short, lasting "less than two minutes" (FG 3). In these hurried consultations, physicians do not provide individualised care. Reportedly, doctors neither listen carefully to the

patients nor examine patients' health conditions appropriately. A typical comment was that doctors "barely look" at the patients (FG 12).

Medical care was provided with disinterest or, as participants from different groups formulated, "without love" (FG 6), "with little humanisation" (FG 4). Interactions between patients and medical staff were described as impolite and unfriendly. Participants reproduced short and surly dialogues supposedly held with the medical staff: "That's the prescription", "Take here diclofenac, dipyrone [a common painkiller] and go", or "What do you want? A medicine?".

You are sick, and you go there looking for improvement, a good word, good care. And it sucks, people [health professionals] are very grumpy and attend with a lack of education, an annoying lack of will. (Female, 57 years old, FG 10)

While several people felt disrespected and ignored, some non-white participants also reported they were treated with discrimination (Leal et al., 2005; Macinko et al., 2012).

Sometimes I even think it's a case of racism... Absolutely! I've been through that in [the Hospital] Santa Marcelina. That's why I hate that hospital... He treated me bad and was much more polite with the light-skinned [patient] there. (Female, 56 years old, FG 5)

While some participants related the low quality of care to personality traits of the professionals who attended them, others associated the less individualised care received to the professionals' poor working conditions and some performance-driven aspects of the public healthcare system.

When a professional is valued at what he does, when he has the equipment, he will do it [provide care] carefully, with love... In the public sector, the doctor does not have the equipment, medication... How will he work with love if the state does not give him this structure, right? (Female, 31 years old, FG 6)

Our health system requires that the doctor attends a patient in no more than sixteen minutes. So, it is not the doctor who wants to attend us badly. (Female, 36 years old, FG 6)

Prescribing standard medicines and procedures in rushed consultations, patients may receive inadequate and ineffective treatments, which do not contribute to improving their health conditions. Participants experienced situations in public healthcare services in which doctors do not take any consequent action to investigate the health problems accurately and tackle their causes effectively. Instead, physicians may provide just palliative care. Some patients may miss the necessary examinations, as illustrated by this participant:

My son is two years and seven months old, and he has never had a blood test or faeces test. He never passed with a paediatrician here

in the BHC. He [the doctor] does not ask for blood, urine, faeces, anything... (Female, 30 years old, FG 14)

7.3 Relationships between barriers

Some barriers to healthcare accessibility emerged at the interface of the main themes. This section provides a deeper level of understanding of the accessibility to healthcare by presenting three interlinkages, which were identified at more advanced stages of the thematic analysis and the refinement of the code dictionary.

One crucial relationship relates proximity to quality of healthcare services. Participants' reflections on the ease to get to healthcare provision sites connect very frequently spatial distance with qualitative aspects of healthcare provision. Two other interrelationships involve personal insecurity. Insecurity acts not only as a barrier on its right, directly hindering people's mobility (as discussed in section 7.2.4). Also, the stigma of violence appears as a cross-cutting circumstance which deepens accessibility problems of the socially disadvantaged as it constraints healthcare and transport availability. This section reviews, in turn, each of these interlinkages, displayed in Figure 7.2.

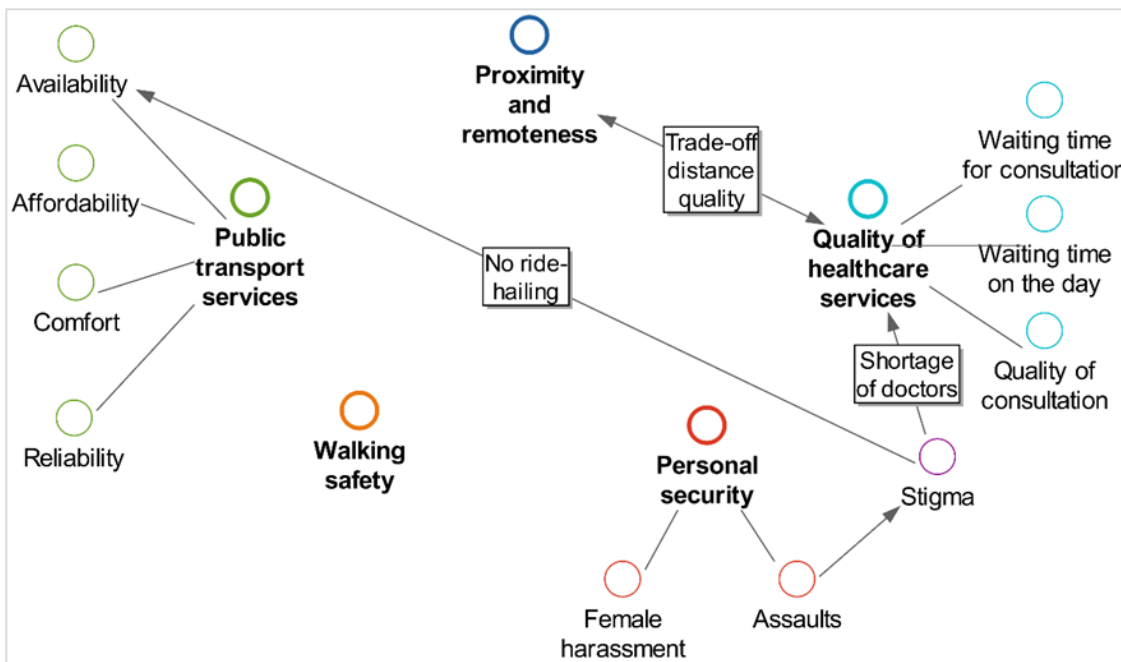


Figure 7.2: Main relationships between themes

7.3.1 Trade-off distance against care quality (Remoteness – Deficient healthcare)

People value proximity to activity sites, including healthcare, in relation to their adequacy, capacity and quality (Hawthorne and Kwan, 2013). As reported in

section 7.2.1, spatial distance to activity places was often the first association to accessibility. People usually appreciate the existence of services and opportunities closely located, at a walking distance to their residence places. However, a more refined analysis demonstrates that people regard proximity as a positive attribute only in relation to opportunities able to deliver services with satisfactory quality.

In some instances, the severity of the quality deficits of local services dramatically undermines people's possibilities of using and benefiting from them. Participants talked about poorly lit and vandalised green areas frequented by drug users; parks and places missing appropriate areas where children can play safely; sport centres with swimming pools permanently out of order; schools and nurseries with long waiting lists for children's enrolment; and healthcare centres lacking medical staff. Following dialogue illustrates how the evidence on the limited capacity of the local facilities was used to refute the argument of an adequate provision level of education:

P1: There are enough schools, enough nurseries [in the neighbourhood].

P2: Yes, there is a lot, but the number of vacancies is quite limited, right? I would like to enrol my son in the nursery these days, and his position [in the waiting list] is 274. There is no vacancy. (FG 1)

Because of these quality issues, some participants expressed their predisposition to travel dozens of kilometres to specific facilities. The most illuminating example of this problem was the Ibirapuera park, a famous green area of the city. Distant several kilometres from the investigated neighbourhoods, this park was associated with positive attributes such as "big, extensive", with fresh and clean air, "with trees", "cool", frequented by "beautiful people", and offering a range of free-cost exciting activities. These characteristics contrasted sharply with those of local squares and parks, frequently viewed as unattractive and dangerous places, improper for children to play. Such green areas were described as "abandoned", frequented by "crazy people" etc.

I like parks very much and here [in the neighbourhood] we do have parks. But they are few, there are no facilities for children, these things... So the park that I think it is cool is the Ibirapuera Park [31 km distant] (Female, unknown age, FG 1)

Shortcomings of services and opportunities located in low-income areas made some of them being of virtually no value as if they were inexistent. The perceived worthlessness of some facilities was reflected in the language employed by the participants.

P1: I think one thing we do not have here is healthcare. I think it is very precarious.

M: Do not you have it or is it precarious?

P1: It's precarious. I think it's very scarce... It's difficult, very difficult for those who depend on public health here...

P2: People should have a BHC but do not have it. We have to travel far to be able to be attended at a centre... (FG 5)

In the case of healthcare, proximity to facilities was valued against the three quality attributes presented in section 7.2.5: waiting time for an appointment, waiting time on the day and quality of consultations. These issues were mentioned as primary motivations for people seeking care in more distant places.

However, while making joint considerations of distance and healthcare service quality, participants ultimately attach more importance to the latter. As for socially disadvantaged communities from other Latin American cities such as Montevideo and Buenos Aires, distance from healthcare providers did not seem to be the main deterrent to healthcare utilisation (Gutiérrez, 2009; Hernandez and Rossel, 2015). Proximity and remoteness were frequently framed in relation to qualitative aspects of healthcare, and several people told they travel long distances to reach providers from whom they expect to receive better care.

Participants tended to agree that the prospects of receiving appropriate healthcare may outweigh the difficulties associated with travelling long distances.

We would rather have a harder time getting there to be taken care well. (Female, 52 years old, FG 10)

"I do not see the problem with distance, the main problem is the service." (Female, 36 years old, FG 6)

Reflections about this trade-off also exposed the precariousness of some healthcare facilities. Some participants meant by better quality the opportunity to travel to a facility where they can simply find some medical professionals providing care.

7.3.2 Shortage of doctors (Personal insecurity – Healthcare availability)

The low quality of local public healthcare services raised widespread concern in the conversations. As an indication of the importance of this topic, all groups reflected about possible causes for the issues explored in section 7.2.5, such as the long queuing times, the rushed consultations and the difficulty to mark a consultation with a specialist doctor. In these discussions, several participants attributed to insecurity one of the underlying causes for the chronic

understaffing and the main shortcomings observed in the healthcare facilities located in their neighbourhoods.

P1: But in Hospital Cidade Tiradentes, there are few doctors for many people, and the doctors do not want to work here because it's too far away.

P2: And because of violence...

P3: I think it's because of violence.

P4: Violence frightens them very much. (FG 1)

On the top of chronic underfunding, which undermines the functioning of the whole healthcare system, the stigmas associated to violence acts as a significant additional barrier for doctors to accept working in facilities located in their neighbourhoods. Insecurity was pointed as a reason for the perceived high turnover of medical professionals in healthcare facilities. Several participants related the shortages in human resources to the physicians' reluctance to work in an environment regarded as insecure.

Doctors do not want to work here in the area because it is Cidade Tiradentes, area of risk, east zone of São Paulo, a lot of crime, people think everybody here is... [unfinished sentence] Those [doctors] who come do not stay for very long. It [Their drop-outs] overloads the remaining doctors... They end up attending sometimes her, sometimes me. (Female, unknown age, FG 1)

However, participants also shared concrete episodes of violence suffered by the medical staff, which are thought to feed their concerns to uptake job opportunities in low-income communities. According to the stories shared in the groups, doctors have had their personal belongings robbed, have been blackmailed and also threatened by patients wishing to receive quicker care. In some cases, doctors were victims of physical aggression.

A lot of doctors have gone away because of the theft of their cars. (Female, 27 years old, FG 2)

He worked here in this hospital, and he was beaten up because of a diagnosis he gave to the guy's daughter. (Female, 20 years old, FG 1)

Understaffing or, as many people phrased, "lack of doctors" was understood in the context of this insecure environment. As a participant summarised: "And to find a replacement? Who wants to come to work in an area with such risks?"

7.3.3 No ride-hailing (Personal insecurity – Public transport unavailability)

Stigmatised by the perceived danger of violence, poor neighbourhoods have a more restricted transport availability. When participants were asked whether they use app-based transport services, a typical answer was "This is another problem because they do not arrive" (FG 13). In seven groups, people

commented that ride-hailing services are unreliable or virtually unavailable because drivers reject trip requests originated in neighbourhoods perceived as dangerous. The reason for the denials was also consensual:

*The driver told me he does not come here because there are thieves.
(Female, 54 years old, FG 9)*

Experiences with such services are relatively incipient, and people may have mixed opinions. In general, however, people acknowledged the rarity of situations when they could take or be left by ride-hailing at their residence places.

M: Does [a ride-hailing company name] enter [the neighbourhood]?

P1: Yes, it does.

P2: Some cars, Rosalia. Not everyone comes here.

M: If I call for a car from here now [on a Sunday around 10:30 am], will it come or not?

P2: They do not come because of the location... (FG 3)

Beyond drivers' reluctance in attending trips originated or ending in areas perceived as dangerous, some providers have consolidated such stigmas in official policies which exclude entire neighbourhoods from the coverage areas of their services (Souza, 2017; Amigo, 2018).

Commonly, if dwellers of stigmatised low-income areas want to use ride-hailing, they have to walk to major roads or local landmarks (e.g. a big supermarket or a public building) and from there order the ride-hailing service. Such habits contradict the essential purpose of ride-hailing, which is the provision of door-to-door mobility.

Participants' sentiments related to the use of this transport option are also mixed. Some people comprehend the drivers' concerns about assaults and acknowledge the lack of security as a serious issue in their neighbourhoods. But they also feel discriminated in comparison to passengers living in other parts of the city, who are customarily attended by these services.

*The taxis [of a ride-hailing provider] do not want to come in here...
Generally, they want to pick up us on the avenue where the
trolleybus pass. But we are people, aren't we? (Female, 54 years old,
FG 9)*

7.4 Impacts on accessibility

The transport-related barriers depicted in section 7.2 affect people's accessibility in numerous respects. People may travel using transport modes other than the usual ones, engage other people in their trips to cope with the

fear of assaults and travel longer to overcome obstacles such as overcrowding. In other instances, people may abandon the activity or undertake it in an alternative location. Figure 7.3 highlights in yellow triangles these responses in connection to the themes discussed.

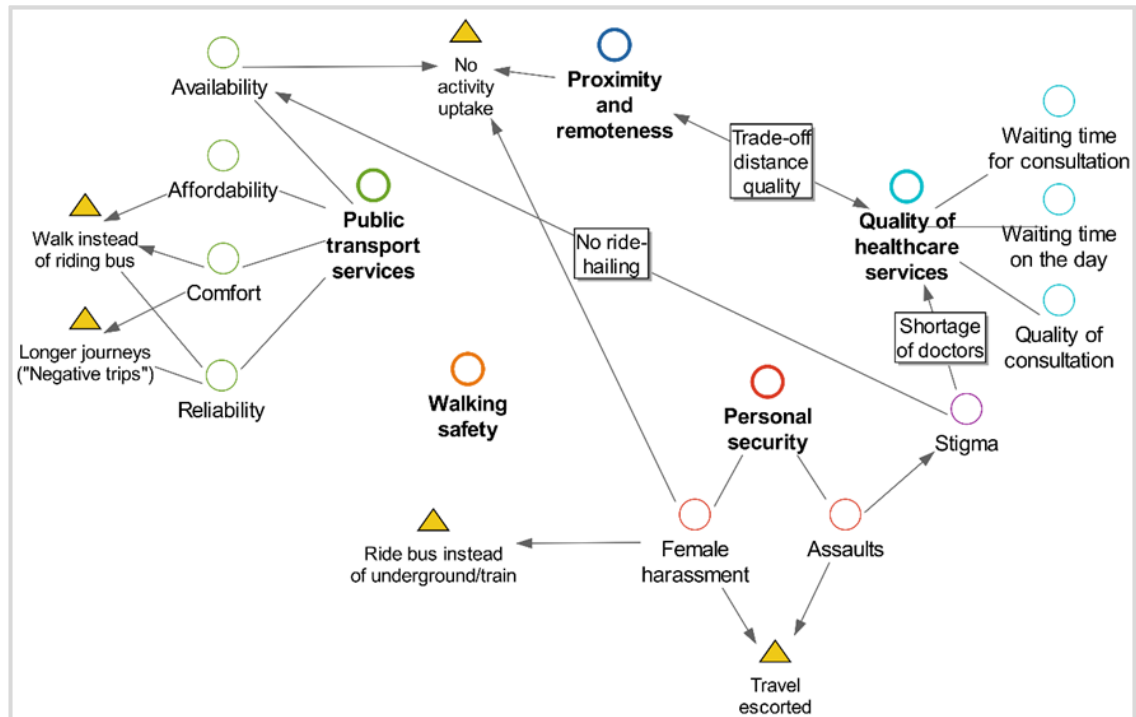


Figure 7.3: Themes, subthemes and accessibility strategies

7.4.1 Walking instead of riding buses

For many people, riding buses is inconvenient and does not pay off. Mainly because of overcrowding and unreliability, some participants reported walking instead of riding buses even for trips whose length inflicts a high physical and time investment.

Sometimes I walk from here to the centre of São Mateus [4 km distant]. I'd rather walk because the time you have to wait for the bus is the same time you get there walking... it's easier for me to walk than to wait for a bus. (Female, 29 years old, FG 14)

To go to work, my son leaves home at 04:00 in the morning. He does not ride buses because they are full, and it does not pay off... (Female, 46 years old, FG 7)

7.4.2 Riding buses instead of rail

The fear evoked by the possible occurrence of gender-related crimes and the traumas caused by such experiences may severely constrain women's accessibility. Out of the several defensive behaviours that women in Latin American cities adopt in the face of this threat (Kash, 2019), the most

commonly reported response was the avoidance of a specific transport mode associated to violence. The risk of harassment deteriorates women's attitudes towards travelling by train and metro dramatically. They use the slower and less efficient buses to avoid rail transport, in which the risk of this type of crime is perceived to be higher. Several participants reported they changed their travel behaviour in direct response to these issues. Avoiding travelling by underground and trains at peak times was the most commonly mentioned coping strategy adopted by female participants.

I try not to use it [the train]... I prefer to take the bus. It takes much longer, but it is not possible for a woman to ride a train or metro at peak times. I've seen it [attempts of sexual harassment] countless times, so I've given up. (Female, 36 years old, FG 6)

7.4.3 Travelling escorted

To cope with the threats to personal insecurity, people adopt several coping strategies. They may avoid spending extended times in public spaces, walking as fast as they can, and also leave at home valuables such as mobile phones. They may also wear low-quality clothing and shoes to attract less attention from thieves.

Most commonly, people avoid travelling alone. People coordinate with other members of their social networks the routes and times to walk or to use public transport. Some parents are used to escorting their children on the way to school until older ages.

I get up every day at 5:30 am to take my little girl to the bus stop because she studies in the centre of Guaianases. She is 16. I escort her because the neighbourhood is dangerous. (Female, 36 years old, FG 6)

My son is attending college and comes back home at 1 am. I have to wait for him there [at the bus stop] because he has already been assaulted when he was getting off the bus. (Female, 30 years old, FG 2).

Similarly, because of the fear of sexual harassment, some women said they travel by metro or train accompanied by their partners.

I only travel by underground with my husband. I'm terrified of the underground, I'm scared of anything packed... I'm scared to death because everything is happening in the underground. (Female, 46 years old, FG 7)

I did not stop using it [the underground], but nowadays I do not get it in peak hours anymore. And, if I get it, my boyfriend will be with me, at my side. (Female, 21 years old, FG 6)

In some conversations, women reported that they managed to organise some of their trips in groups. In one case, a mobile application was used to alert the group members about people considered suspicious in the streets.

When I used to go out to work, I always arranged with other two or three women to go out because it's dangerous, right? Sometimes they [the perpetrators] are even people you know, but depending on the conditions they will not recognise you. (Female, 39 years old, FG 7)

7.4.4 Undertaking longer journeys

One serious problem of public transport in São Paulo is overcrowding, which is associated with physical discomfort and unreliability. Focus group participants mentioned three strategies adopted to cope with these issues. One strategy reported by users of trains and the underground consists of taking less busy services in the direction opposite to the desired one and only then embarking in less uncomfortable conditions in the right direction.

In [the station] Carrão, after 7 am it [the underground] does not come [free] anymore. So, I'd rather go to Itaquera. (Female, 30 years old, FG 14)

In multimodal trips, people may undertake longer journeys by bus to reduce the time spent in the busier rail services.

Trains are the worse. Peak times in the train are horrible... I do not get [the train] here in Itaquera [10 km distant]. In Itaquera it's a chaos, you cannot enter... What do I usually try to do? I get [the bus] from here to Penha [18 km distant], it takes about 45, 50 minutes... I think it is a way easier. (Female, 34 years old, FG 4)

7.4.5 Not taking activities up

People felt hindered from joining various social, cultural and recreational activities because of transport problems. The long waits caused by infrequent public transport in combination with long travel times and the need for interchanges made participants perceive such trips as “stressful”, “unfeasible”, and “impossible”. The main missed activity places are major green areas, leisure facilities and sites where they can meet relatives, as illustrated by the following testimonial:

I haven't seen my mother for three months because I cannot go [there]. You have to go there in the centre of São Paulo to be able to go back and get a minibus that travels on the [highway Presidente] Dutra. Gee, it's a tour, man. (Male, 35 years old, FG 2)

Activity places considered extremely difficult to reach using public transport included the Ibirapuera Park, mentioned spontaneously in eight distinct conversations. There was a sense from many that the reduced transport

availability in the weekend combined with the need to change between several services made it virtually impossible to reach such activity places.

Getting there [to the Ibirapuera Park] is very difficult. Once I went there with my mother by bus. What a journey! Now I think ten thousand times before going there. It is not so far. But the issue of transport makes it difficult. [Female, 24 years old, FG 12]

These problems were reported as more severe in the weekends and holidays as a result of the reduced provision of public transport. In this context, some participants shared with their peers sentiments of social isolation related to immobility.

Sometimes we go to the square, walk around a little and come back, play inside the [social housing] building... On Sundays, I do not leave home because no bus passes here [that could take me] where I go, so I rather stay indoors. (Female, 38 years old, FG 6)

Although residents of poor neighbourhoods miss foremost improved transport for leisure activities, the focus groups also revealed that suboptimal mobility conditions to daily activities make people drop out of training or not take up job opportunities.

In addition, the lack of physically accessible public transport can severely limit the activity spaces of people with restricted mobility, making some places almost impossible to reach by this social group. The mother of a young man with a congenital disorder reported that his son is impeded to work because of the lack of provision of adequate transport:

Let's suppose he was offered a job. He wouldn't have the means to get to work... Three minibuses arrive, but none with lift. Then the fourth one comes, but the lift is not working. Then the fifth comes. When there's a lift, the driver tries, tries [to make it work]... I mean, what if he [her son] worked? (Female, 54 years old, FG 9)

To a large extent, these findings are aligned with those found by Wixey et al. (2005). Cost of transport also impacts on people's participation in activities. Participants of two different groups (FG 7 and FG 8) told that their children stopped attending cultural and leisure activities because of changes in students' transport benefit scheme.

7.5 Strategies and impacts on healthcare uptake

The difficulties represented by the multiple barriers situated both in transport and in healthcare domains exposed in the previous sections have concrete consequences for healthcare utilisation. Such impacts are of particular interest for this study because they provide factual evidence on people's elaborations on accessibility.

To circumvent these barriers and gain access to healthcare, people put in place short- and long-term strategies. This section presents the coping strategies and impacts directly related to the potential or actual uptake of healthcare activities, as discussed by people in the focus groups and the individual follow-up interviews.

Short-term strategies relate to decisions usually made on the same day of the trip to healthcare. Three short-term strategies were identified: patients may attempt to get healthcare in the originally intended facilities, sometimes using non-conventional means; travel back home without receiving medical care; or seek care in more distant facilities.

People's cumulative negative experiences with access to healthcare forge long-term strategies. Such strategies are grounded on recurrent practices over more extended time frames. Three types of long-term strategies were identified: self-medication; trips to more distant places; and purchase of private health insurance. Figure 7.4 displays the frequency in which these short- and long-term strategies were discussed in the groups.

Figure 7.5 shows the accessibility barriers (displayed on the left side), strategies (on the right side) and the links between them (the arrows connecting barriers to strategies, whose thickness relates to the frequency of mentions in the focus group conversations), according to the body of evidence collected in this study. Accessibility barriers to healthcare are related to inadequacies situated both in the *transport* as well as in the *healthcare* system. Figure 7.5 arranges the barriers in two groups, highlighting their belonging to these two policy fields. The strategies are also grouped according to their temporal dimension (short-term and long-term strategies).

The figure shows that public transport unreliability undermines healthcare utilisation in the short-term, as people miss medical appointments and travel back home due to buses stuck in road congestion, the inability to embark in overcrowded vehicles or operational problems in the rail-based transport modes. There is also evidence that people change places where they get medical treatments in response to the cancellation of direct transport services. However, perceptions and experiences with poor quality in local healthcare facilities also motivate people to adopt strategies that impact on their activity space. Avoiding the low-quality consultations and long waiting times, residents of low-income areas do travel to other, usually more distant facilities and purchase private insurance plans. The next section discusses each of these strategies in more detail.

Code System	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	SUM
Activity OUTCOMES																0
Healthcare uptake																0
Short-term strategies																0
> Overcome entry barriers			■	■							■			■	■	5
> Travel back home	■	■	■	■			■		■	■	■	■		■	■	11
> Seek care in other facilities	■	■	■	■		■	■		■			■	■	■	■	11
Long-term strategies																0
> Self-medicate at home		■			■	■						■				4
> Travel farther	■	■	■	■	■	■	■		■	■	■	■	■		■	13
> Buy private healthcare	■	■	■	■	■	■	■	■		■		■	■	■	■	13
Σ SUM	4	5	5	5	3	4	4	1	3	3	3	5	3	4	5	57

Figure 7.4: Incidence of themes, by focus group conversation

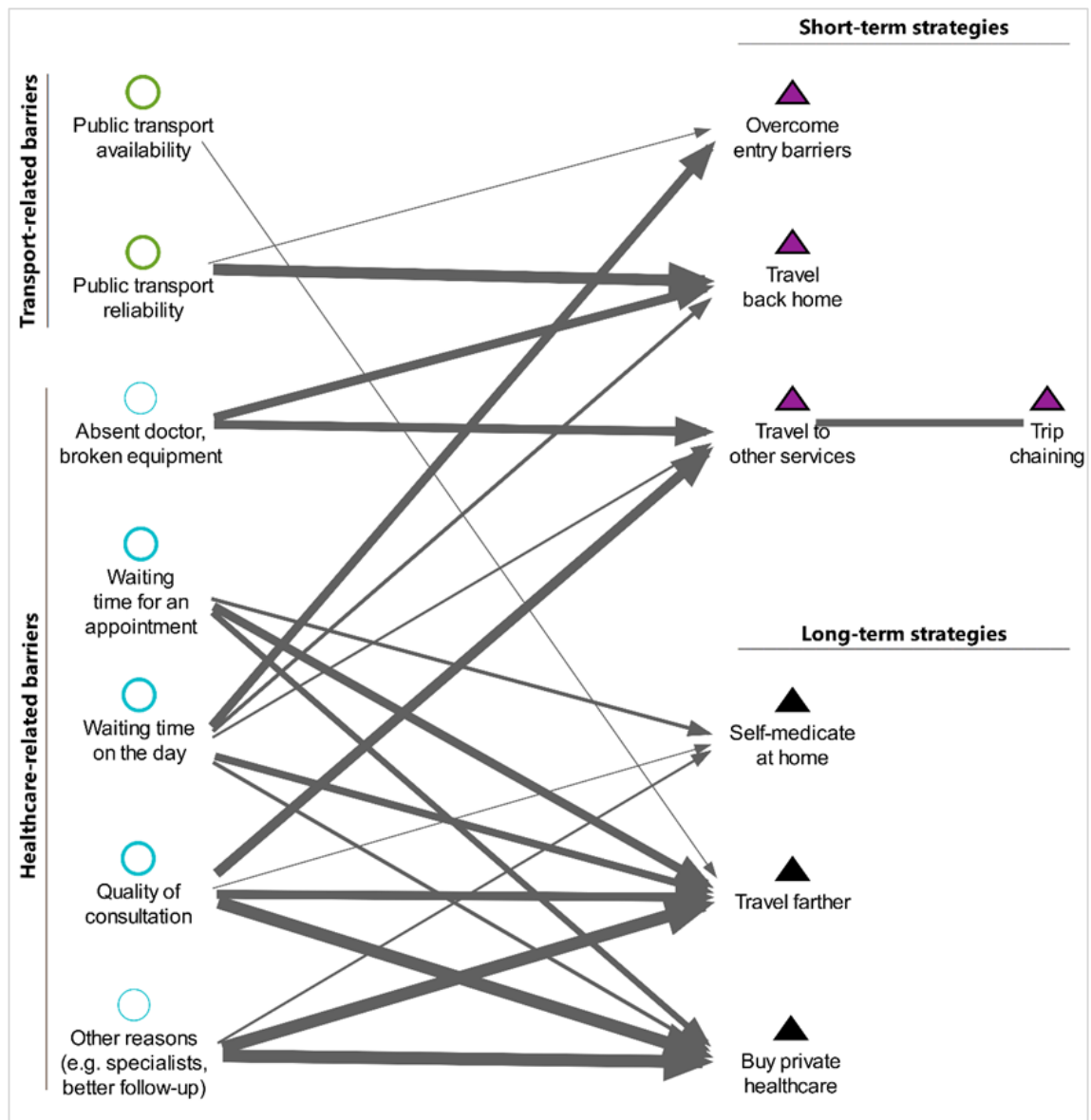


Figure 7.5: Causal relationships between accessibility barriers and activity strategies

7.5.1 Short-term strategies

7.5.1.1 Overcoming entry barriers in local facilities

People may have to wait very long to gain access to healthcare services in local public facilities. In order to enhance their chances to reduce the time spent queuing, patients adopt some strategies.

One strategy mentioned in some conversations consists of arriving at the clinics earlier than the scheduled time, hoping that other patients will not show up for their appointments. Also, when patients are attended on a “first come, first served” basis, participants reported their efforts to arrive earlier to ensure receiving care.

The BHC opens at 7 am, right? When I was pregnant of my son, I used to arrive there at 5 am, join in the queue with the big belly and

wait two hours taking the risk because sometimes you do not know who is going to be attended. (Female, 44 years old, FG 3)

Attempting to reduce the long waiting times in understaffed public facilities, some people may make use of unconventional and ethically questionable means, and such strategies were also registered in the literature (Gutiérrez, 2009; Hawthorne and Kwan, 2013). Two participants told that they had entered hospitals in a police vehicle or an ambulance to receive non-emergency care. Another participant shared the story of his wife, who simulated a worse health condition than the actual one to go quicker through the screening and receive care with priority.

She [my wife] had to make a scene, tell people that she was having a terrible pain to get in... (Male, 37 years old, FG 11)

The perceived need for more urgent forms of care mobilised some people in “fights” against the lingering public healthcare system to be attended by a doctor. They were involved in conflictive situations to persuade the medical and non-medical staff (e.g. receptionists, guards) to get a timely consultation. Participants shared dramatic stories on situations in which they had to abandon the protocols to gain access to healthcare.

The doctor asked me to do mammography. It took very long... Five or seven months. The nodule began to grow. My neighbour died of breast cancer. Another one was treated in Hospital Pérola Byington. I tried to get referred there, but I didn't get an appointment. I created a scandal there. An employee was moved by my story, and I got a consultation. It was not through normal means. (Female, 56 years old, FG 6)

I had to fight with the doctor. I said, “Look how my 86-year-old aunt is looking like”. I had to fight to get her hospitalized. Otherwise, they would have sent her back... She would have died at home. (Female, 57 years old, FG 14)

7.5.1.2 Travelling back home without receiving healthcare

Patients may travel back home without receiving care at healthcare facilities that operate in very precarious conditions. Given reasons were the chronic shortage of doctors, lack of materials needed for medical procedures, and the long time to be attended. In the face of these problems, which reportedly characterise the healthcare services in several neighbourhoods, people felt forced to travel back home without receiving care or seek care in other sites. These outcomes provide evidence that a share of the trips to healthcare do not satisfy the needs they were supposed to, echoing with the idea of “unsatisfied mobility” by Gutiérrez (2010).

Some participants with scheduled appointments were affected by the occasional absence of doctors. They travelled to the healthcare facilities and,

being informed on these sites about doctors' absence (e.g. due to illness), had to leave the facilities without receiving the sought care. More common, however, were situations in which people were unable to engage with the healthcare system because of the lack of doctors caused by the structural problem of understaffing in some services of the public healthcare system. Health professionals may be missing or in an insufficient number to provide adequate care to all patients.

My daughter broke her arm in the nursery. She fell from the slide... We went to the Hospital São Mateus, there was no orthopaedist, and the general clinician said he could not take care of her. I had to travel back home with my daughter with her broken arm and go back to the hospital the next day. (Female, 52 years old, FG 16)

I have already gone back home without having seen the doctor. There were so many people that it would take too long. I ended up coming back home because it was almost 10 pm and I had not passed with the doctor yet. (Female, unknown age, FG 7)

Occasionally, travelling back home without receiving care is not a patient's decision. The reduced number of professionals is the argument sometimes provided by health professionals to justify giving priority to patients who demand urgent attention and denying care to all others.

My daughter was at AMA last month. She stayed there [waiting] the whole day. She could not be attended because she [the receptionist] said that a child died there. They gave priority to the child, the elderly and emergencies. (Female, 53 years old, FG 9)

People may also travel back home after missing medical appointments. Transport unreliability was mentioned as a frequent problem for people seeking healthcare. Participants reported having missed medical appointments due to the unexpectedly long journeys by public transport affected by traffic congestion, rain and technical problems in the case of trips by underground.

I missed these days a consultation for him [the son] because of buses. The clinic was in Cambuci [21 km distant neighbourhood]. So I had to catch a bus, get off in Parque Dom Pedro, and then get another bus. The first one got stuck in disgraceful traffic. I could not get there on time... although I left home earlier. (Female, 30 years old, FG 2)

It was raining, the trains were slow, and [in the hospital] they have a maximum tolerance, five minutes... After that, only rescheduling to pass with the specialist again. (Female, 31 years old, FG 1)

The arrival time of trips by buses was deemed as unpredictable for issues including traffic congestion, overcrowding and low adherence to schedules. In the international literature, the unreliability of public transport is acknowledged as the leading cause of people missing medical appointments in high-income

countries such as England (Social Exclusion Unit, 2003; Wixey et al., 2005) and the United States (Silver, 2007). In Brazil, a country-wide survey showed that 14.1% of people do not seek healthcare because of difficulties with transport or issues related to distance, although this study does not identify the specific transport problems that cause healthcare underutilisation (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013).

7.5.1.3 Seeking care in other facilities

A further short-time response to shortcomings related to the health system is the seek of healthcare in other, usually more distant sites. Patients travel farther to seek care after arriving at facilities where doctors are missing, the waiting queues are perceived as too long or where the treatments received are of poor quality. This study found considerable evidence of people who need healthcare that travel to distant places, which are not obvious from a purely locational perspective. The experience of one mother seeking care for her sick daughter illustrates that travelling to other places can be motivated by the long waiting times at some healthcare sites.

I took my sick daughter with a fever to the [Hospital Cidade] Tiradentes. The doctor said that she was going to see [attend] her in three hours. So, we went to Santo Expedito, in Itaquera, and she was attended faster. (Female, 42 years old, FG 1)

Other reasons to engage in additional trips to seek healthcare relate to the fact that some services lack the essential resources to provide the type of care sought by the patients. Although some people reported experiences with healthcare sites lacking or with broken equipment, there were many mentions to the lack of doctors as the main reason for travelling farther.

Then the mother arrives there with children burning in fever and have to go to another place because there is no doctor. (Female, 24 years old, FG 12)

The AMA is down here... You come to the AMA. Sometimes there is a doctor. But often the doctors are not attending. Then you have to travel further, sometimes to the farthest places, as the UPA Itaquera. (Female, 22 years old FG 2)

People also travel to other sites of care when they are unsatisfied with the quality of care previously received elsewhere. Patients' mistrust against diagnosis or prescriptions is one of the reasons given for travelling to other places, where they expect to receive adequate treatment.

However, travelling to other healthcare facilities is, at no means, a guarantee that the individual health needs will be satisfied, as these facilities may suffer from the same deficiencies as the local ones (e.g. understaffing, long waiting times, inadequate treatment). Because of the uncertainties related to the

availability and quality of care, people may have to travel to several different places in a *complex trip chaining* until they get their health need satisfied. Some narratives collected in this PhD study reflect the challenging, sometimes dramatic situation of people who had to travel to two or three different sites until reaching a site able to offer an effective solution for their health issues.

My daughter was seven months old, and she got an allergy that I do not know until today what caused... I went to the AMA, I went to the BHC, I went to the Hospital Cidade Tiradentes. (Female, 18 years old, FG 6)

Gutiérrez (2009) reported the need for visiting multiple healthcare sites to satisfy a health need because of the complex organisation and referral system of the Argentinian public healthcare system. In Brazil, care-seeking experiences also involve navigating through multiple providers and services (Gragnotati et al., 2013). However, the evidence reported in this section shows that dwellers of low-income neighbourhoods in São Paulo undertake multiple trips because of the underperformance and low quality of essential health services, and not necessarily because of the organisation of the healthcare system as in the Argentinian case.

7.5.2 Long-term strategies

7.5.2.1 Self-medicating at home

Anticipating the chronic deficiencies and mistrusting the effectiveness of the treatments received in health facilities in the localities where they live, people in need of care may even avoid accessing healthcare. Based on previous negative experiences, some people do not travel to outpatient healthcare facilities when they should. They may be very selective and only go to healthcare sites in situations regarded as urgent or indispensable, skipping check-up consultations, regular visits to the doctor and trips to healthcare in the cases of minor issues. In the case of health issues perceived as not threatening, patients may stay at home and seek alternative means of cure. Doing so, people avoid having to wait too long and receiving unsatisfactory healthcare, which may also be eventually ineffective.

Sometimes you are not well, but you think ten thousand times before going to the doctor. Because of just the stress of staying there waiting with pain... So you self-medicate. (Female, 24 years old, FG 12)

P1: I had a terrible sore throat. I took hot water, medicine... I kept telling myself "I will improve, it will get better..."

P2: Then you remember about the receipt of the tea from the time of your grandmother... and makes it. That it is better than to wait there...

P1: Or you go there at "uncle Google". (FG 5)

These findings are broadly supportive to Gutiérrez (2009), who observed that poor pregnant women in the metropolitan area of Buenos Aires might miss some check-up appointments. The focus group narratives are also aligned with Hawthorne and Kwan (2013), who found evidence that low-quality local healthcare provision and time poverty leads to a lower frequency of attendance of medical appointments in Columbus. It is important to note that this aspect of the inaccessibility of healthcare is not a direct expression of a transport problem neither the absence of an activity need, but rather reveals the transient abdication of the fundamental citizen's right to access healthcare because of perceived shortcomings of the healthcare system.

7.5.2.2 Travelling farther

Often, the long time it takes for scheduling consultations in the public system and the perceived poor quality of local health services are the reasons for people going to more distant facilities. Travelling longer distances with the expectation of receiving healthcare of better quality is a phenomenon reflected by some recent studies on healthcare accessibility (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015).

In the present study, participants from thirteen groups reported travelling longer instead of going to local facilities that should provide the same types of service. Dissatisfied with the care quality provided by local facilities, some participants reported travelling over 30 kilometres to get access to healthcare. There were three reasons frequently given for people seeking care in other neighbourhoods: the more efficient delivery of timely care; the availability of specialist doctors and the provision of some diagnostic examinations; and the perceived higher quality of the consultations in distant facilities.

I do not go to these BHCs here. I usually take my children to Penha [15 km distant neighbourhood]... because there is better, the doctors are better... Here we have one doctor for everything. There is one doctor for each speciality. (Female, 22 years old, FG 2)

Several participants commented about the difficulty to get a timely appointment for consultations in particular with specialist doctors and some diagnostic examinations in local facilities. Booking an appointment can take several months. People also have to queue long for receiving urgent care. The disproportionate long waiting time in relation to people's health conditions and concerns is a frequent reason for bypassing local facilities and seeking healthcare in more distant areas.

The motivation for seeking for rapid care applies even in the case of primary care, in which patients are assigned to the facilities based on a proximity criterion (i.e. the municipality defines catchment areas around each provider

based on postcodes). To overcome issues with the primary level of care in the public system, travelling farther implies finding ways to circumvent the allocation rules of the healthcare system, for instance, informing fictive addresses or living temporarily in other places (e.g. at other family members' residence) (Gutiérrez, 2009).

I don't use this BHC here. It's a delay. It is very difficult to get [an appointment]. I am used to going to the health centre in another neighbourhood. (Female, 53 years old, FG 9)

Overcoming long distances was also associated with the need to access specialised care and specific diagnostic exams, which are supplied in a more centralised form (Spedo et al., 2010).

My son needed an orthopaedist, so I had to go with him to [avenue] Brigadeiro Luís Antônio [30 km distant]. (Female, unknown age, FG 1)

Another reason for travelling farther is the possibility to receive care by more attentive medical staff.

When I get back pain, when I can barely move, I go straight there. [They have] clinical staff, someone who gives me attention. Not like here [where] you pass and will be sent [referred] to another place, even in pain. Then I can forget it. (Male, 35 years old, FG 3)

However, travelling to more distant healthcare facilities can be constrained by the provision of local public transport. In the conversations, the importance of public transport links for the feasibility to reach healthcare sites was evinced by the counterfactual. Changes in bus routes, related to the discontinuation of some services, impact on the uptake of healthcare activities, as illustrated below.

I used to get dental treatment in Vila Mariana [27 km distant neighbourhood]. The dentist was good. The ride was a bit time consuming, but the [bus line] Paraíso left me in front of the clinic, it was just one bus. At the time it cost R\$ 2.00, R\$ 1.70, it was worth it. Now I gave up going to a dental treatment... I quit my treatment there, because they took out the bus [line], took it out without informing anyone. (Female, 29 years old, FG 4)

7.5.2.3 Buying private healthcare

Another response to the shortcomings of local providers consists of the acquisition of healthcare plans which entitle adherents to use private services and facilities. As in other parts of the world, health is a matter of great concern by poor people, who make tremendous efforts to get access to the private healthcare system if they perceive these providers as well qualified (Banerjee and Duflo, 2012). People in thirteen groups said they purchased private health insurance plans in consequence of perceived inadequacies in the public sector.

Quality of care was found strongly related to the purchase of private health plans. Low-income patients also believe that private clinics offer better-coordinated forms of healthcare, which demand less navigation through services located in different sites (Gutiérrez, 2009). Participants said that they generally feel better accommodated in private healthcare facilities. In their perceptions, doctors working in private clinics dedicate more time and provide a more comprehensive examination of the personal issues as in public facilities.

But the service is different, they give more attention, they medicate you at the moment, they medicate you right. If you go to the BHC it's totally different, you'll wait four hours for passing with the doctor, and he will just ask "What have you got? Oh, it's a virus! Take this, and that's it. Goodbye."... They do not take exams. They don't do anything... (Female, 29 years old, FG 15)

According to participants, private care also gives people the opportunity to overcome an important shortcoming of public services: to gain timely access to specialised professionals and services. Several participants regarded private healthcare providers more agile than public ones. In general, the waiting for consultations and exams was perceived as shorter than those in public facilities. In many instances, people acquire an insurance plan because of the difficulties of investigating or progressing with the necessary treatment of the health issues affecting them.

All my pregnancies were at risk, and the doctor asked me to do an ultrasound. I had to do it in the private system because I did not get an appointment for ultrasound [in the public system]. When the vacancy [for the exam] came, I was already in the hospital getting her. (Female, 44 years old, FG 3)

A circumstance that seemed to be closely related to the purchase of private care was the presence of children in the household. Having children at home was frequently mentioned as a factor that justified the need for more responsive healthcare and the acquisition of private healthcare insurance plans.

It is also difficult to pass with a paediatrician, we had to pay for a healthcare insurance plan to my daughter because I cannot wait six months from now for an appointment. (Female, 18 years old, FG 6)

In several instances, people bought low-cost health insurance plans, which represent a flourishing market of healthcare products targeted at the low- and middle-income classes in Brazil (Pinho, 2018). However, even in these cases, the purchase of private plans may heavily burden people's budget. Evidence collected in the focus groups are aligned with the finding that people, even living in poverty, may make enormous efforts in the hope to gain access to better healthcare (Banerjee and Duflo, 2012).

Sometimes you stop buying fruit at the street market or better sneakers for your son because you have to give priority to the doctor that costs a bit but has [provides] service. You have at least access to examinations. (Female, 30 years old, FG 7)

7.6 Personal stories from the interviews

This section illustrates some relationships between accessibility barriers and outcomes based on the stories of two women. Both participated in the focus groups and were also interviewed individually, which allowed the researcher to gain a rich understanding of their experiences with healthcare accessibility. The two women live in Cidade Tiradentes. Excerpts of other participants interviewed are included in the video-documentary “On the way to the doctor” included in Appendix J.

7.6.1 Profile 1: Maria José

Maria José is the 46-year-old mother of Pedro, her single son who has Down Syndrome, is hearing and visually impaired. Maria José spends most of her time taking care of his son, and this includes escorting him in several therapies and medical consultations. Born in another Brazilian state, she moved to São Paulo in 1995. In the same year, she started to use the healthcare system in the city.

Every week Maria José and Pedro take two buses to get to the BHC Jardim São Carlos for consultations with a speech therapist and a psychologist. Each way of this trip takes nearly 40 minutes but would last perhaps just 7 minutes by car. Pedro also receives specialised treatments only available outside the neighbourhood. Consultations with a cardiologist take place in Mooca, distant 20 km in a straight line. Every six months, they “cross the city”, as Maria José says, to the Children’s Hospital Darcy Vargas, in Morumbi. Travelling to this hospital with Pedro takes 3 hours. Close to their residence, they board onto a minibus till a bus terminal. A second bus takes them to Guaianases, where they board on a metropolitan train towards the city centre. At the terminal station Luz, they take the underground line 4 and drop at Pinheiros station. Lastly, from the Pinheiros station, they travel 40 minutes by bus to get to the hospital.

Pedro’s particular health conditions make travelling more difficult for him and her mother than for an “average user”. Transferring from the underground to the bus involves the use of several escalators or a lift, as the station’s platform is located 30 metres under a river basin. This task can be very challenging, depending on the time of the day because of the multitude of passengers. As Pedro usually gets appointments scheduled for the early morning, they often have no choice than to travel during the peak hours. In very crowded situations,

Maria José carries Pedro on her arms to protect him from being hurt. Because of his health issues, he usually needs more time to embark or disembark from the bus, but drivers and passengers may not be patient. Eventually, he can have a mood crisis inside a crowded bus, forcing them to disembark and wait for another service. Maria José believes that such painful experiences with transport are the leading cause of Pedro's exhaustion at the weekends.

In urgent cases, as when her son gets breathing difficulty, she takes her son to the Hospital Cidade Tiradentes. However, for these trips, she relies neither on public transport nor the more modern forms of app-based transport, which does not arrive at her address. In such situations, after carrying her son on her arms downstairs in the 5-storey social housing building, she usually stays at the sidewalk and tries to get a lift in any car passing at the street to the hospital.

Their "willingness" to overcome long distances to receive healthcare has not spared them from long waits to get some treatments. At the time of the interview, Pedro was on the queue for ophthalmoscopy (an eye examination) for over two years.

7.6.2 Profile 2: Beatriz

Beatriz has recently moved with her partner and daughter Melissa to a small 2-bedroom flat in the same social housing building where she used to live with her mother and brothers. Like many other women in the neighbourhood, she became pregnant when she was a teenager.

At the age of 7 months, her daughter got ill. Beatriz noticed that Melissa's skin was full of bleeding blisters, which looked like cigarette burns. In despair, she brought her daughter early in the morning to the closest ambulatory (AMA Prestes Maia). Regarding this as a case for non-urgent treatment, the staff at the ambulatory referred the girl to the Hospital Waldomiro de Paula, in Itaquera. Beatriz and Melissa took a bus. It took the whole day for her to get care in this hospital. Only around 6 pm, when a nurse confirmed that the girl had a fever, she could pass with a physician. The doctor examined the girl briefly, diagnosed her with an allergy and prescribed medication against pain, fever and to counter allergy. The consultation lasted for five minutes.

Back at home, the girl slept quite well that night, but the bleeding did not stop. Beatriz wanted to investigate further what Melissa had. In the next morning, she travelled for one hour with her daughter to the Hospital Cidade Tiradentes. Although this hospital is located "not far" from their house, there is no direct bus line, demanding them to take two buses. In the hospital, they waited circa 3 hours to be attended, but they did not do blood tests in children. From there, she took other two buses to get to another hospital, the Hospital Guaianases,

where she waited around three hours to pass with the doctor. Beatriz disliked the care given by the nurses at the hospital who seemed to work with a lack of will. They tried without success to find Melissa's veins for the blood test for 40 minutes. Beatriz remembers how painful it was for her seeing her daughter suffering in those moments. They also had to stay longer in the hospital for taking samples of the urine and stool tests. The results, made available after four hours, revealed a bacterial infection. The doctor prescribed medicines not freely available which cost her 175 Brazilian Reals (approximately GBP 41). Beatriz left the hospital in the dawn.






For Beatriz, it has always been challenging to schedule appointments for her daughter with paediatricians at the BHC. Still, this episode was decisive for her to convince Melissa's father to purchase her a health insurance plan. Beatriz tells that the private system can provide to Melissa more agile care and more regular follow-up consultations than the public system. Beatriz believes that she would also benefit from a private insurance plan. She had been trying to get an appointment with a gynaecologist for three years but cannot get it. The care she received during her pregnancy, considered risky because of her age, was also incomplete. Because there was no free vacancy, she did not perform a morphology ultrasound, a standard procedure at intermediate stages of the pregnancy to check whether the foetus is developing healthily. Throughout the whole pregnancy, she did one ultrasound and two blood tests.

7.7 Summary

Many people immediately associated the ease of getting to healthcare facilities with the possibility of walking to these places, usually implying low travel times and distances. Waiting time for getting an appointment, on-site waiting time and quality of consultations emerged as the critical components of healthcare quality perceived by participants. Regarding their travel experience, people perceive discomfort, in terms of overcrowding, as the core problem of public transport in São Paulo. In addition, public transport may be unavailable, expensive and, in several instances, unreliable.

The in-depth qualitative analysis of the narratives of the focus groups participants arranged accessibility barriers around five main themes, as summarised in Table 7.1.

Table 7.1: First- and second-level themes of healthcare accessibility

Main theme	Subthemes	Issues	Illustrative quote of the problem
 Proximity and remoteness	none	Living in neighbourhoods equipped with or geographically close, in terms of travel distance or time, to healthcare facilities	"One thing we do not have here is healthcare. It is very precarious..." (P503)
 Walking safety	none	Pedestrians' risk of injury (poor walking environment) and casualties (reckless drivers' behaviour)	"My 13-year-old daughter fell on the pavement and broke her foot" (P702)
 Public transport services	Availability	Few lines serving destinations of interest (e.g. underground stations), the low frequency at off-peak times, service cancellations in the weekends, inaccessible vehicles for people with disabilities	"On Sunday I do not leave home because there is no bus to where I go" (P601)
	Affordability	Reduced scope of benefits and concerns of the worthiness of using public transport in relation to discomfort	"It is not worth paying R\$ 3.80..." (P702)
	Comfort	Overcrowding in all stages of the trip as well as in underground and train stations	"It's difficult, it's very tight, it suffocates..." (P605)
	Reliability	Passengers cannot board crowded vehicles, underground subjected to panes, rainy days	"It [the bus] takes too long to pass and, when it arrives, it is crowded and doesn't stop at the stop." (P804)
 Personal security	Assaults	Assaults in the streets, at bus stops, inside buses	"I am afraid of my own shadow even." (P1606)
	Female harassment	Several forms of women's abuse in public transport	"I sat [on a bus seat], and the guy leaned against me." (P1603)
 Quality of healthcare services	Waiting time for an appointment	Long waits (months) between scheduling and getting consultations, in particular with specialist doctors and for some procedures	"It is now two years since I have been waiting for gallstone surgery." (P607)
	Waiting time on the day	Hours queuing inside facilities before being attended and receiving care	"I kept waiting for almost seven hours." (P806)
	Quality of consultation	Rushed consultations, inattentive and disinterested staff, poor provider-patient communication, ineffective treatments	"They do not have a love for what they do." (P603)

As some themes appeared in connection to others, the analysis also evolved to the identification of the main between-theme interrelationships. Personal security was identified as a cross-cutting issue, related both to bottlenecks in the healthcare provision and the unavailability of some forms of transport in the low-income neighbourhoods. In addition, the ease of gaining access to healthcare sites was systematically expressed in manners that combined the geographical reasoning of overcoming distance to places with qualitative aspects of the providers.

These accessibility barriers, framed as themes, subthemes and their interlinkages, have real consequences for individuals' mobility and healthcare uptake. The focus groups brought evidence that people alter their geographical patterns of healthcare utilisation in response to transport and healthcare inadequacies.

Different constellations of accessibility barriers lead to different outcomes related to healthcare utilisation. In general, transport inadequacies were less frequently mentioned as barriers to healthcare accessibility than deficiencies within the healthcare system.

With regard to the actual healthcare utilisation, patients may not necessarily use healthcare services located closest to their place of residence. Even under severe financial and time constraints, residents of low-income neighbourhoods in São Paulo may travel longer to obtain access to facilities perceived as adequate to respond to their health needs or of superior quality.

Overall, the focus groups provided evidence that shortage of health professionals is a severe problem of most facilities frequented by people living in the low-income neighbourhoods investigated, and this impacts their mobility and accessibility to healthcare.

Chapter 8 Discussion

8.1 Introduction

The focus group conversations around healthcare accessibility have provided robust evidence on the multiple barriers pertaining to the domains of transport, land-use and service provisions. The main accessibility barriers were framed as five main themes. The collective conversations also showed that these barriers contribute to deteriorating accessibility to healthcare in several manners and different temporal horizons.

This chapter provides an overall interpretation of the findings. Section 8.2 summarises the key findings of the study, drawing attention to the most significant results. Section 8.3 reflects critically on the conceptual framework and possible impacts of its adoption on the findings of this study. Section 8.4 discusses the strengths and limitations of the methodology employed in this research.

8.2 Key findings

8.2.1 Multiple accessibility barriers

Accessibility barriers are multiple. The study revealed that, when attempting to access healthcare, socially disadvantaged population groups in São Paulo experience a range of issues pertaining to the domains of transport and land-use, and at their interfaces.

The identification of a plurality of barriers is itself an important finding. In contrast with most accessibility studies within the transport discipline, which have tended to focus solely on spatial proximity and the ease of physical displacement in terms of travel times, this study showed that people's accessibility to healthcare is also shaped by qualities of transport and healthcare services.

The empirical findings of this study provide additional confirmatory evidence on the various channels through which transport can pose difficulties for the socially disadvantaged to gain access to essential services and opportunities, as reflected by the research body on transport and social exclusion. The five main themes emerged in this research overlap largely but not entirely with the transport-related dimensions outlined in previous frameworks (Church et al., 2000; Social Exclusion Unit, 2003; Lucas, 2004c) and reflected in some studies on accessibility and social exclusion undertaken in other cities and regions (Lucas et al., 2001; Wixey et al., 2005; Lucas, 2011a; Maia et al., 2016). For

instance, this study did not detect “limited travel horizons”, referred as to people’s reluctance to travel long distances or for a long time to undertake life-enhancing activities (Social Exclusion Unit, 2003), and I will turn to this issue later in this section.

It is crucial to note that, although most of the identified accessibility barriers have already been reported in other places and labelled similarly, each of these themes gained a contextualised meaning associated to the circumstances of the urban peripheries of São Paulo. Fear of crime and overcrowding in public transport are examples of accessibility barriers, which carry particular, extreme contours in the case of this Brazilian city.

8.2.2 Overcrowding as the main transport issue

Discomfort, understood as the impossibility of travelling in non-overcrowded conditions, emerged as the most critical and central transport issue for the low-income dwellers. Mentioned in all conversations as a cause of people’s suffering, overcrowding was considered the main public transport problem in São Paulo. Several participants described the recurring situations in which they travel squeezed, highly uncomfortable by underground, trains and buses.

Overcrowding deteriorates entire travel experiences and is perceived at different stages of their trips: at the transport hubs, at the critical moments of embarking and disembarking and during the journey inside the vehicles. Experiences of overcrowding relate to the discomfort of having at disposal extremely reduced physical space and the inattentive, inappropriate behaviours from other passengers, who are also involved in the competition for limited seats and space. In this respect, the problem is not just one of physical discomfort but is also related to social behaviour. This issue raised particular concerns about the well-being of vulnerable groups, such as children, pregnant women, the elderly and people with disabilities, who coincidentally are those who most need to utilise healthcare.

The discomfort was not only regarded as an accessibility barrier in its own right but also as a contextual factor strongly related to the emergence of other barriers. Overcrowding reduces people’s perceived worthiness of travelling by public transport. It rises dissatisfaction with the value of transport fares and, in some cases, makes people substitute public transport rides by walks.

Overcrowding generates favourable conditions for violent crimes, such as assaults and sexual abuses, severely impacting on women’s mobility and accessibility. Overcrowding also leads to unreliability, which is a frequent cause of people missing medical appointments. Because of overcrowding, passengers cannot anticipate when they will be able to embark on a bus or train with some

free capacity. Finally, overcrowding was regarded as a direct consequence of the low availability of public transport. According to participants' reported experiences, public transport is extremely busy, including in off-peak times because of its insufficient supply.

Although previous research identified overcrowding in the urban public transport in Latin America as a severe issue (Vasconcellos, 2001; Tirachini et al., 2017) and the problem has long been acknowledged by the local transport planning community in São Paulo, discomfort has received relatively little attention in accessibility research and studies linking transport to social exclusion (Church et al., 2000; Social Exclusion Unit, 2003).

8.2.3 Healthcare quality and the meaning of proximity

Quality of healthcare is a crucial element of accessibility to healthcare. The focus group conversations brought strong evidence on how people construe accessibility in the interplay between transport and service characteristics, attaching a considerable weight to the latter. As in other Brazilian cities like Recife (Maia et al., 2016), residents of low-income communities in São Paulo are seriously worried about the adequacy and quality of the public healthcare services to which they have access. In elaborations on healthcare accessibility, people do consider aspects of healthcare service as inherent elements of their attractiveness.

In the case study, the attractiveness of healthcare facilities comprised three central aspects: waiting time for appointments, on-site waiting time and quality of the consultations. Participants of this study typically expressed months of wait between scheduling and receiving care in public facilities. This issue was perceived at different levels of the three-tier healthcare system, including the most basic forms of care delivered at primary health centres, which are supposed to act as entry points. A second aspect relates to the disproportionate waiting time on the day of the appointment in some facilities. Finally, the patient-professional interactions can be of shallow quality. Echoing with findings from elsewhere (Narayan et al., 2000; Banerjee and Duflo, 2012), patients in São Paulo are very attentive to the quality of the relationships with health professionals. They felt often treated in a rush, without interest, and sometimes without respect.

Although these issues have been consistently covered in the extensive literature on healthcare access (Penchansky and Thomas, 1981; Gulliford and Morgan, 2003; Levesque et al., 2013), they have been only recently addressed in some new studies on accessibility in the transport literature (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015).

It is in the context of such unequal healthcare provision landscape that the meaning of proximity shall be interpreted. Spatial proximity is indeed the most visible component of accessibility. The study participants immediately associated the ease to get to healthcare facilities with the possibility of walking to these amenities, usually implying low travel times and distances. As elsewhere, people appreciate living close to healthcare sites. Also, in summarising discussions on the perceived ease (or difficulty) to get to the healthcare sites, participants made renewed references to proximity (or remoteness).

However, the importance of spatial distance as an accessibility barrier is relative. In the context investigated, travel distance and time were neither the sole nor the most critical barriers of access to healthcare and utilisation. Symptomatically, no focus group participant emphasised travel time reductions as the key to improve access to healthcare. Overall, negative attitudes to travel longer distances were weighted against people's strong reluctance of receiving healthcare of perceived low-quality.

Especially those seeking non-urgent and sporadic healthcare demonstrated to be tolerant about spending more time travelling or overcome long distances in the expectation to gain access to better healthcare services (Hernandez and Rossel, 2015). The burden represented by the travel time was put in relation to the time needed to receive medical treatment and to the prospects of accessing good care (Hernandez and Rossel, 2015). Rather than hard barriers, travel time and distance were found, to a large extent, negotiable, given the quality disparities between healthcare providers.

8.2.4 The necessity of better public transport

To gain access to some healthcare services, dwellers of the urban peripheries in São Paulo need to travel to farther places. Under the current arrangement of the healthcare system, which centralises the provision of some types of services, and because of the glaring inadequacies of services provided in the neighbourhoods, people cannot obtain full access to healthcare locally.

The necessity of overcoming longer distances implies that people have to rely on some forms of motorised transport. Low-income residents cannot be completely independent of motorised transport, as most of them would likely prefer (Maia et al., 2016). However, despite the fundamental shortcomings of public transport, socially disadvantaged groups in São Paulo do not view auto-mobility as a necessity. Differently from residents of peri-urban areas in rich countries, who could be regarded as car-dependent (Lucas et al., 2001; Wixey et al., 2005), few people rejected categorically public transport as a mobility

option or saw themselves highly reliant on private motorised transport to overcome long distances. Several participants of the study expressed their hope of having better public transport to undertake their everyday activities and travel to healthcare sites.

Although problems with public transport are multiple, as reflected in the specification of the four subthemes (see section 7.2.3), most participants are in unison about the solution: to increase the capacity of transport systems.

8.2.5 Consequences of inadequacies

Inadequacies in transport and service delivery impact on people's opportunities of accessing healthcare. Deficiencies in both public policy sectors may make people travel to healthcare sites without resolving their health issues.

Two main inadequacies related to transport were directly mentioned as causes for not taking up healthcare. Several participants reported having missed medical appointments because of the unreliability of public transport, in particular buses, which is the modality on which most people rely. The conversations also revealed stories of people who had to interrupt medical treatments of perceived reasonable quality because of the cancellation of bus lines.

While transport availability and reliability may affect activity participation, most stories revolved around the impacts of the inadequacies of the healthcare system on healthcare uptake. The long waiting time to receive care and the poor quality of the patient-provider relationships sharply impact on people's activity spaces. To overcome these problems, geographies of attendance of healthcare can be radically altered in terms of distances travelled, time spent on transport, and resources spent with healthcare.

8.2.6 The meaning of travel time

The relatively little importance assigned to travel time by people seeking an essential service can be regarded as a surprising and thought-provoking result against the centrality that this factor has typically received in accessibility studies and the wider transport literature. This section explores further this issue.

Time is usually understood as one of the main expressions of the effort made by people during their displacements. This has been captured, for instance, within transport appraisal as "travel time savings" typically respond for the largest share of the value of new transport schemes for the society. Nearly 80% of the user's benefits related to a transport intervention correspond to the expected time that can be spent on more pleasant activities (Mackie et al.,

2001; Nellthorp, 2018). Similarly, time is a central factor integrated into transport models developed to emulate people's decisions with regard to possible destinations, travel modes and routes (Ortúzar and Willumsen, 2011). As discussed in detail in Chapter 3, travel time has been the most frequently employed variable in quantitative accessibility approaches, representing the effort made by people to reaching the closest or a certain number of amenities.

Different from these prevailing narratives in transport research, the current study found that the discomfort due to overcrowding rather than time was the most central and relevant aspect of the travel experiences by socially disadvantaged groups. Overall in the conversations on healthcare accessibility, participants of this study did not express a high sensitiveness to time. One question that may emerge in light of this finding relates to the possibility of accommodating the results of this PhD study in broader transport narratives, largely centred on time.

Based on the evidence gathered in this study, one could postulate that, in the context analysed, time could be regarded as a container of vulnerabilities related to the exposure to the discomfort mainly caused by overcrowding, and other factors that can potentially compromise their safety and security. This more subtle meaning of time was made evident, for instance, when the positive attitude towards the underground as a fast transport mode was to alleviate the duration of the "suffering" in the slower modes. The main "users' benefit" of that transport link was not the reduction of the opportunity cost of travelling (i.e. the value assigned to the presumably more pleasant activities that one misses during the trip). Instead, travel speed was regarded as a means to overcome inconveniences, such as the "suffering" posed by overcrowded conditions of public transport.

The disparity between the empirical findings and the focus of standard approaches in transport planning does not imply that travel time is irrelevant. However, it could encourage scholars to investigate new forms of addressing conceptually and empirically the inconvenience of travelling beyond objective measures of time, including in the situations where people attempt to reach opportunities considered essential for their well-being.

8.3 Critical reflections on the conceptual framework

8.3.1 Multi-sectorial barriers

In order to advance new insights on accessibility, the PhD study developed and tested a hybrid conceptual framework grounded on the integration of three overlapping and complementary theoretical perspectives. The novelty of this

framework is given by the incorporation of human needs theories, which represents an additional extension of previous framings (e.g. Lucas, 2012b).

Informed by this conceptual framework, the focus group conversations revealed the multiplicity and the complexity of barriers to healthcare accessibility, which have not gained visibility in previous studies. On the one hand, the research revealed a range of critical *transport issues* relevant to socially disadvantaged groups in São Paulo when attempting to access healthcare. Although these issues largely overlap with other studies (e.g. Lucas et al., 2001; Wixey et al., 2005), they operate in a very particular manner in the case studied, even in comparison to other Brazilian cities (e.g. Maia et al., 2016). On the other hand and unlike these studies, the study also illuminated *aspects related to the healthcare system* that affect accessibility, putting the study in dialogue with another research stream (Hawthorne and Kwan, 2012; Hawthorne and Kwan, 2013; Hernandez and Rossel, 2015).

Although the connection between transport and land-use is reflected in all reviewed conceptualisations of accessibility (e.g. Handy and Niemeier, 1997; Geurs and Ritsema van Eck, 2001; Geurs and Van Wee, 2004; Vandenbulcke et al., 2009), transport researchers have typically overemphasised the transport dimension over land-use aspects. Accessibility studies have primarily detailed how transport acts as a barrier and dedicated marginal attention to service aspects (apart of their geographical location). This imbalance has been critically reflected in recent research (e.g. Lucas, Van Wee, et al., 2016).

Following the same argumentation line and positioning accessibility in social exclusion narratives, the framework presented in the current study contributes to reaching a balance between these two dimensions, reflecting more genuinely how transport and land-use aspects interact. Furthermore, the framework contributes to advance the understanding of accessibility gaps as mediating pathways within socioeconomic, transport and health disadvantages.

8.3.2 Barrier-outcome relationships

The framework makes an explicit account of aspects related to transport and service provision supportive to accessibility. Because it embraces the confounding qualities of opportunities in addition to several aspects related to transport, the presented framework can be considered a more detailed and comprehensive analytical tool than the ones presented in previous literature.

However, the framework does not provide an accurate account of the linkages between the aspects considered, and the possible relationships between them in the production of beneficial or detrimental outcomes to people's mobility and accessibility. The conceptual framework could have addressed the

hypothesised relationships between the acknowledged barriers, some of which are widely reflected in the literature (e.g. the linkages between overcrowding and the fear of crime in public transport). The researcher's preference for maintaining an open stance towards the possible hierarchical arrangements of satisfiers, leaving open the contentious theoretical debate between Max-Neef and Gough (see section 2.4.2), does not preclude the effort of modelling these relationships in a tentative manner.

Another shortcoming is that the framework could be more explicit about the pathways by which such barriers relate to adverse outcomes in terms of activity participation (e.g. staying at home, travelling longer, buying a private health plan). Such additions would have facilitated the generation of more specific hypotheses on the causal links between transport and social disadvantage, which could be tested and refined in the subsequent stages of the study.

8.3.3 Micro-level barriers

While participants inevitably addressed the range of issues related to transport and healthcare service provision, barriers situated at the macro- and the micro-levels have generally received less attention. However, patients' specific health needs, their physical and mental abilities, social positions and statuses, and other individual contingencies are especially relevant for shaping accessibility to healthcare.

The focus groups provided indications that such micro-level barriers influence experiences of accessing and utilising healthcare services. In particular, the narratives of some participants gave importance to their social networks, indicating that opportunities to travel to healthcare sites depend on supportive attitudes from relatives, employers, neighbours and also unknown people.

Overall in the study, little consideration was given to the specific role of social networks and other micro-level barriers on healthcare accessibility, and this could be explored in future research. Follow-up interviews allowed participants to address more specifically the circumstances that affect their access to healthcare and partially compensated this shortcoming.

On the other hand, illuminating the role of social position, identities and intersectionalities should not lead to an overemphasis on individual agency and freedom of choice in explorations of accessibility in particular in contexts marked by systemic deficiencies in the systems of provision. By navigating in unequal landscapes of essential services, evidence collected in this study made clear that, in most instances, people do not choose a provider, do not choose to travel longer and may not even choose to use a transport mode as a matter of individual freedom or personal preference.

8.3.4 Macro-level barriers

Regarding the macro-level barriers to accessibility, the framework developed in this study could still be viewed as limited in comparison to developments towards a combined consideration of social and environmental constraints to transport (e.g. Lucas et al., 2001; Lucas, 2004a; Mattioli, 2016; Mullen and Marsden, 2016) or even the broader theoretical narratives of “mobilities” (Urry, 2007) and “mobility justice” (Sheller, 2018).

Perhaps more critical for investigations focused on the interlinkages between transport and social policy fields, the framework might provide a restricted account of the broader context in which service provisions are inserted. In the case of health, the framework does not address a great deal of attention to the structural conditions underlying the organisation and delivery of healthcare, and this could be eventually criticised from the perspective of health disciplines, which customarily address this set of factors.

Such shortcomings do not imply that macro-level barriers were wholly ruled out from the outset. The focus group conversations also mentioned factors related to the overarching political, cultural and social environment. Participants identified issues directly related to the broader social policy domain as the ultimate causes of the situations of deprivation and problems of access to healthcare. For instance, poor education was regarded as the cause of the behaviour of those who obstruct sidewalks with trash, vehicles and other objects, and also located at the root of the disrespectful, reckless attitudes of public transport passengers, who contributed to the perceived discomfort.

The focus groups also encompassed contentious discussions on the role of informality and a presumed “culture of the periphery” to explain some issues usually faced by residents of low-income neighbourhoods. Participants postulated, for instance, that the same public transport users who behave adequately in services attending central, wealthy areas, may be less polite, push and shout at in people in services running in deprived areas. This would justify the general perception of higher discomfort in the underground line 3 in comparison to the other lines. This issue was, to a certain extent, analogous to the debates on “underclass” in North America. Another issue addressed in the context of conversations on female harassment was the subordinate role of women in Brazilian society.

Despite thought-provoking, conversations exploring such macro-level underlying causes of accessibility problems were not followed in detail as they were not the priority focus. This does not necessarily mean they are unimportant for healthcare accessibility or worthless in further explorations.

8.3.5 Theoretical consistency

Since the notion of need permeates narratives on social inclusion and vice-versa (Dean, 2010), one could interrogate the value of such a theoretical-conceptual enterprise. I have argued that combining the social exclusion approach with theories of human needs did not consist of a redundant theoretical exploration. While studies adopting a social exclusion approach have discussed the role of transport-related barriers in respect to activity participation (Social Exclusion Unit, 2003; Lucas, 2012b), the application of human needs theories in transport draws attention to the relatedness between attributes pertaining to the transport and the activity domains for needs satisfaction (Doyal and Gough, 1991; Max-Neef, 1991). Needs theories draw attention to the importance of the provision and proper functioning of essential services (Gough, 2019). The articulation of these theories allows identifying the multi-level and multi-sectorial accessibility barriers from a people-centred perspective.

One could also raise the question of whether the integration of these different theoretical stances is free from epistemological inconsistencies. This legitimate concern was not directly addressed in this research, as this compatibility check would require an in-depth discussion on the underlying assumptions of each theory in the fields of political philosophy and social policy, extrapolating the scope of this study. Nevertheless, some indications that exclusion and needs theories share compatible underpinnings are given by their commonalities. Both stances are context-sensitive, focus on social outcomes, do not overemphasise individual agency and embrace social justice stances without being definite with regard to a particular philosophical tradition in this respect (Dean, 2010).

8.3.6 Comparisons to theoretical approaches

Although the conceptual framework was built to overcome possible limitations of the body of research identified with transport-related social exclusion, it can also be situated in the wider context of transport equity research. This section puts the needs-based conceptual framework proposed in this PhD study in a critical conversation with the transport justice approach presented by Martens (2017), regarded as a valuable contribution to developing a transport planning approach based on social justice principles (Vanoutrive and Cooper, 2019). Next, the main conceptual differences between the presented approach and applications of the capabilities approach in the transport domain are briefly discussed.

8.3.6.1 Transport justice

Martens' approach to transport planning is a significant contribution to the research body on transport equity for the reasons summarized in section 3.2.2. Primarily, it situates accessibility as the core of a novel transport planning

approach firmly anchored in principles of justice discussed in the philosophical literature. However, Martens' approach entails some crucial limitations.

Firstly, as acknowledged by Martens, the transport justice approach is restricted to the Western context. In several occasions, Martens stresses this point, including when backing his central argument that accessibility is the most crucial social benefit related to transport. He writes that "ultimately accessibility best reflects the social meaning of the transport good *in Western societies*" (Martens, 2017, p.53, emphasis added), leaving unexplained which particular contextual factors precludes accessibility from being considered a universal primary transport good.

This is a significant shortcoming of this approach given that socioeconomic, transport-related and other sectoral inequalities typically gain more dramatic contours in Global South cities, which do not necessarily belong to the "West". This stance is not necessarily contradictory but at least misaligned with considerable evidence showing that accessibility is a key transport-related resource in developmental settings (Vasconcellos, 2001; Godard, 2011; Lucas, 2011a; Maia et al., 2016; Venter et al., 2019).

Differently from Martens' approach, the accessibility framework developed in this PhD study does not exclude in its outset any particular socio-cultural or geographical setting. The framework is firmly grounded in human needs theories and the social exclusion approach, which have been increasingly employed to uncover the different layers of social disadvantage in the Global South context.

Secondly, although Martens' approach is centred on the concept of accessibility, he does not provide a consistent definition of it. As discussed in Chapter 3, accessibility can have different meanings, and each of these relates to different measurements and pathways for policy interventions. Throughout his book, Martens holds a flexible stance on accessibility. He oscillates between definitions, sometimes citing Hansen (1959), who understood it as "the potential for opportunities for interaction", but also framing accessibility as "the ability to accomplish a broad range of actions, by linking to places and people that are set apart in space and time" (Martens, 2017, p.52).

In general, the prevailing stance of accessibility in Martens' approach to transport justice could be labelled as "liberal" because of its strong emphasis on the role of the individual abilities and freedom to reach places of interest. As framed by the author, accessibility relates to "a personal resource that bestows a person with the possibility of participation in out-of-home activities" (Martens, 2017, p.132). From this perspective, levels of accessibility vary from person to

person according to the resources available (such as time, money, vehicle ownership, knowledge, among others) and their “preferences” towards different opportunities. Following this approach, individual preferences should inform the set of activities on which transport justice assessment should focus.

Recalling arguments presented in Chapter 3, one critical distinctive conceptual aspect of accessibility relates to the emphasis given to the individual agency. The emphasis given to individual discretionarity in Martens’ approach and individual preferences in engaging with activities is ontologically distinct from a needs-based approach, as explained by Doyal and Gough (1991).

When moving to the operationalisation of accessibility and its application in a case study, Martens’ stance is ambiguous. In some moments, the researcher argues that the assessment of accessibility patterns should “take into account the differences between persons, although the assessment can suffice with addressing the systemic elements of these differences” (Martens, 2017, p.153). He notes that a measure able to “capture the ‘general’ notion of accessibility” would suffice (Martens, 2017, p.153). In other passages, the author expresses strong opposition to any measurement that takes individual considerations into account. He states that a certain level of aggregation will always be necessary, ruling out any approach that takes into account a person’s particular time-space setting (Martens, 2017, p.184).

The case made for more aggregate accessibility metrics contradicts the previously developed argumentation stressing the importance of personal freedom to gain access to opportunities they individually value. Although tensions between conceptualisation and operationalisation are observed in other accessibility studies, such inconsistencies can be regarded as more relevant within research studies in direct dialogue with social equity. In addition, in this particular case, Martens’ ambition of developing a philosophically well-grounded approach loses argumentative strength.

Another crucial aspect is that Martens assumes a strictly positive relationship between time-based accessibility and activity participation. The author himself notes that this proposition is problematic because the relationship between the potential to reach places of interest and actual activity participation lacks robust empirical evidence. Since people’s well-being depends ultimately on their activity participation rather than their ability to overcome spatial separation, there is a potential risk in considering travel times as the sole indicator for measuring social equity in transport, as in fact sustained by this approach. The proposition of providing a minimum level of time-based accessibility to some

opportunities as a guarantee of fairness could also be critically questioned on the grounds of the same argument.

Lastly, the author postulates that real-world agents in society have obligations to each other and would be inclined to agree within a democratic deliberation process upon leveraging the level of accessibility of those in the lower range of the spectrum. In this respect, he follows the belief embraced by the contractualist philosophic tradition represented by John Rawls, one of the main contributory authors of his theoretical framework. Whilst it is clear that Martens' approach is centred on the substantive contents of transport justice and not the process that leads to it, the author suggests neither conceptual cornerstones nor empirical-historical references for guiding the idealised participatory process towards transport justice.

If, in this approach, public participation is centrally relevant to define distributional standards of accessibility across social groups, some critical questions are: How should this process be shaped? How to deal with power imbalances? How to ensure genuine participation of those social segments whose voice has been systematically ignored? How legitimate would be this process if the accessibility poor cannot genuinely take part in this dialogue? However, these questions are left unanswered both in general terms and in relation to the specific case presented in his book.

8.3.6.2 Capabilities approach

The criticism against the individual agency aspect that applies to Martens' contribution is also valid to applications of the capabilities approach in the transport domain. The past few years witnessed an increasing number of transport scholars adopting the approach developed by the Nobel Prize holder Amartya Sen (Sen, 1988; Sen, 2001) and Martha Nussbaum (Nussbaum, 2007; Nussbaum, 2008). While the capabilities approach shares common philosophical roots with the needs-based approach, both stances are significantly different in respect to the issues relevant for the accessibility discussion.

Primarily, the capabilities approach emphasises the value of individual freedom that grants people the opportunities to achieve what they define good for their own and because of the process of choice itself. Authors who adopted this approach have commonly argued that appropriate analysis in transport requires consideration of the freedom to be potentially mobile as a means to reach everyday activities (Beyazit, 2011; Hananel and Berechman, 2016; Mella Lira, 2019). Pereira et al. (2017) elaborated the idea of accessibility as a "combined capability", noting that their approach would lead to an approach extremely

focused on individual abilities. Beyazit (2011) and Mella Lira (2019) acknowledged that the emphasis on individual factors at the expense of a more comprehensive account of the transport, land-use and the social environment might represent an essential limitation of the capabilities approach for informing transport policy.

8.4 Critical reflections on the methodological approach

8.4.1 Strengths

8.4.1.1 Uncovered meso-level barriers

Methodologically, the qualitative research design employed in this study was able to comprehensively capture the main meso-level barriers to accessibility at the neighbourhood level. The focus groups proved to be an appropriate instrument to gain a refined understanding of transport and healthcare service issues, whose interlinkages may hinder socially disadvantaged groups in accessing healthcare facilities. As designed, the conversations also gave vent to accessibility barriers that typically remain hidden from policy agendas, such as female harassment in public transport.

This PhD study involved a relatively large number of groups and participants (114 participants in 15 distinct groups across 12 locations in 7 city districts), which ensured the generation of a comprehensive panorama of the accessibility barriers experienced by low-income groups in the context of São Paulo. To uncover the range of accessibility issues situated both in the transport and healthcare domains and the diverse pathways in which these barriers are connected to outcomes in terms of mobility and healthcare utilisation, the extent and the scope of this data collection exercise were deemed as appropriate. It provided a detailed account of the diversity and complexity of the urban context where the research took place.

The conversational nature and the multiple possibilities of interactions between the moderator and the participants contributed to capturing authentically and in-depth the *meanings* of the barriers faced by participants. The focus groups shed light on a number of issues around the transport and accessibility to healthcare and elucidated the patterned mechanisms and contexts in which socially disadvantaged people are excluded from accessing healthcare. The collective conversations helped to shed light onto essential elements that might have been forgotten or left aside by participants in individual interviews. In several moments participants could express very different opinions and these disagreements fed further in-depth explorations within the collective interactions.

8.4.1.2 Recruitment and gatekeeper involvement

The involvement of gatekeepers in participants' recruitment, which is regarded as a critical stage of the focus groups (Krueger and Casey, 2015), ensured the attendance of people without remarkable differences in status or authority and with a relatively homogeneous socioeconomic background, aligned with the aims of the study. There was no indication that the gatekeepers acted with vested interests (Patton, 2015), e.g. by indicating participants for their convenience or manipulating participants' contributions.

The research design was effective in giving voice to participants considered "hard to reach", which have been under-represented in conventional assessment methods (such as household surveys) and largely marginalised in transport research and planning (Lucas, 2012a). As such, the study was supportive for connecting narratives on accessibility to people's real concerns, learning from their experiences of seeking, accessing and using healthcare. Previous research suggested that representations of healthcare accessibility typically fail to adequately capture the perspectives of the populations of interest, such as low-income healthcare seekers (Handy and Niemeier, 1997; Gutiérrez, 2009; Hawthorne and Kwan, 2012). The qualitative design of this study provided adequate lenses to gain an in-depth understanding of healthcare accessibility while embracing the perspective of some people considered socially disadvantaged.

8.4.1.3 Bridging the communicative gap

The focus groups were empowering in the sense that they allowed participants to express concerns on accessibility to healthcare in their way, using their own vocabulary, which was much different from the technical jargon used by transport professionals and the language usually employed in surveys. Nevertheless, the value of the focus groups laid beyond the capture of the naturally occurring language just for the sake of curiosity.

The application of focus groups contributed to bridging a communicative gap, which underpinned tensions between researchers' and practitioners' understandings of lived experiences of access to healthcare. In order to bridge this gap, it was essential to apply an appropriate technique to capture the words and expressions used by participants embedded in the context of their narratives. The focus groups fulfilled this function. The employment of more standardised research instruments, such as questionnaires or structured interviews, would possibly impose an incomprehensive language to participants. This would undermine the attempt to capture people's views on accessibility with authenticity.

This goal was also supported by the selection of an appropriate analytical approach. In order to identify the most relevant accessibility barriers, this study followed the six-step thematic analysis as described by Braun and Clarke (2006). It provided the necessary flexibility to identify emergent thematic patterns by inductive and deductive means. To uncover more accurately the meanings of the central issues discussed and ascertain reliable interpretations of “in vivo” expressions which eventually underpinned “indigenous categories” (Patton, 2015), data was read both at the latent as well as the semantic level.

The closer examination of participants’ narratives made evident the multiplicity of meanings of crucial issues on accessibility. For instance, one of the main concerns expressed overall in the conversations was that there were “few buses” running in the neighbourhoods. Although a literal interpretation would relate it to the low transport availability or the low frequency of such services, the detailed analysis of participants’ discourses revealed that the expression was mostly used to denote the discomfort by overcrowding, and this was also possibly linked to security concerns.

Likewise, the existence of amenities and the quality of the services delivered in these amenities were framed in a continuum in which inferior service performance was equated to a lack. Often, facilities and infrastructures were described as so inadequate or unsatisfactory as if they were totally missing. The reasoning subjacent to this way of expression underlies one of the most prominent relationships that emerged in this study (see section 7.3.1), and this nuance has significant consequences for the understanding of accessibility, as discussed in section 8.2.3.

8.4.1.4 Validity and additional instruments

The findings obtained in this qualitative study are supported by several techniques employed to enhance validity. Beyond instruments such as member checks, search for discrepant evidence and debriefings (see section 5.4.9), interpretations of narratives on the relationships between accessibility barriers and healthcare activity uptake were validated in a final set of individual interviews with participants.

The use of additional data collection instruments during the conversations supported more in-depth explorations on accessibility issues. The interactive exercise, in which participants were asked to assign school marks to their experiences with distinct transport modes, not only provided a summary of such experiences in a comparative manner but also mainly stimulated further fruitful explorations on the meanings of accessibility against issues previously raised in each discussion. In some conversations, essential aspects were only mentioned

after participants realised inconsistencies between the relative marks attributed to each transport modality. In turn, the cognitive mapping exercise provided confirmatory evidence that in all investigated neighbourhoods spatial access to specialised services is more concerning than to primary healthcare.

The presence of the focus group moderator in places convenient for participants' participation enabled the direct contact of the researcher and assistants to the places where people lived. Notes taken during the fieldwork, including on the conditions of transport available in these places, were another source of evidence used to validate some findings of the focus group conversations. For instance, to reach some focus group venues, the researcher used the same public transport services mentioned later in the conversations. In particular, participants' descriptions of the poor state of sidewalks largely overlapped with the researcher's observations during the fieldwork.

8.4.1.5 Findings generalizability

This research produced an in-depth understanding of the healthcare accessibility in low-income communities of a Brazilian city. The study was designed to capture in a nuanced manner the forms in which people gain access to healthcare in a highly contextualised manner. Because of its qualitative nature, the results of this study are not generalizable in a statistical sense.

Generalizability is a contentious topic among qualitative research scholars. Some authors assert that case study design excels for its uniqueness in generating a rich picture of a single case and conclusions drawn cannot be generalised in a useful way to situations beyond the boundaries of the particular subject analysed (Thomas, 2016). For various other scholars, however, it is plausible that the main findings of qualitative studies provide insights to situations beyond the specific context investigated, even though their value will be necessarily put in relation to the particular circumstances of the social settings of these other contexts (Mayring, 2008; Bazeley, 2013; Flick, 2014; Patton, 2015).

As reflected in the idea of "internal generalization" (Flick, 2014), the main empirical findings of a qualitative research could be valid for communities of individuals beyond the circle of sampled participants. In the case of the present study, it is postulated that the accessibility barriers identified and their linkages to patterns of healthcare uptake could be inferred to people with a similar socioeconomic profile in the neighbourhoods investigated.

The findings are also thought to be potentially transferrable on a case-to-case basis to socio-geographical contexts that share similar macro- and meso-level

characteristics (“external generalization” (Flick, 2014) or “transferability” (Bazeley, 2013; O’Leary, 2014)). These characteristics encompass high incidence of poverty, socio-spatial segregation, weak welfare state policies, patterns of gendered violence, public transport undersupply and healthcare deficiencies. Other large Brazilian and Latin-American cities are thought to be cases for this transferability.

Finally, the conceptual framework is neither substantively restricted to analyses of healthcare accessibility nor geographically limited to São Paulo or Brazilian cities. Rather, it could be applied in several other situations and contexts. Although it was employed in a particular context, it embraces theoretical elaborations that contribute to extend the understanding of accessibility as a means for social inclusion and needs satisfaction. For instance, the framework could be used to understand how socially disadvantaged people access other activities considered essential (e.g. education, employment etc.), since opportunities belonging to these policy sectorial fields may be also subjected to the similar macroeconomic conditions and institutional environments that introduce precariousness and quality disparities between opportunities (i.e. “elite” schools and universities vis-à-vis ordinary ones, precarious and low-paid jobs vis-à-vis formal employment).

The framework embodies a more comprehensive conceptualisation of accessibility in comparison to currently used ones. In this respect, the time-based understanding of accessibility, reflected in most operationalisations of accessibility to date, could be regarded as a particular case within the proposed conceptualisation. From a perspective informed by needs theories, travel time to opportunities could be regarded as the appropriate summary indicator of accessibility if, and only if, it captures the core inconveniences experienced by the travellers and if all spatially dispersed opportunities of a particular type offer services with the same or similar quality.

8.4.2 Limitations

8.4.2.1 Gender intersectionality and location

It is necessary to recognise several limitations inherent to the current study, which may be related to its research design. One drawback of the study was its inability to capture the differences of accessibility concerns for people according to the intersectionalities of gender and relative location with respect to the planned monorail line. The *double-layered design* provided an opportunity to identify singularities and commonalities between the groups distinguished according to these categories. Despite the use of different analytical approaches with this purpose (analysis of code frequencies, generation of

matrices and comparison charts), no evident relationship between themes frequency and group segmentation was found.

This is not to say that gender or geographical-related issues did not come up in the focus group conversations. The emergence of the topic of female harassment as a significant barrier to healthcare accessibility demonstrates that gender issues matter. However, the comparison between the groups across the dimensions used in the study design showed no substantive systematic associations with respect to the incidence of the main themes and subthemes.

For instance, the topic of female harassment was raised both in the female-only as well as in the mixed-gender groups. Conversely, some female-only, as well as some mixed-gender groups, did not address this issue. Also, both group types commented similarly about the severity of this issue, the facilitating circumstances (e.g. overcrowding in public transport) and the possible adverse outcomes in respect to immobility and activity dismissal. In several instances, issues that typically affect a specific demographic segment were addressed as accessibility concerns by participants that not belong to that segment (e.g. concerns of people with disabilities being expressed by non-disabled). As a consequence, the overall findings might convey the idea that the accessibility barriers to healthcare encountered by poor people in São Paulo are relatively homogeneous across these subgroups.

It is important to highlight that the limitation of this study in addressing gender intersectionality is not just related to the lack of evidence on the differential incidence of the accessibility barriers in distinct groups segmented by gender. The study did not explore the distinct meanings of the accessibility barriers from the perspective of gender, given that travelling to healthcare in the context of São Paulo could be ontologically acknowledged as a gender-biased social practice. The full integration of “gender into all dimensions of transport” (De Madariaga, 2013, p.62) would require the employment of gender as an analytical category and a deeper engagement with the burgeoning literature on gender in transport (Uteng, 2008; Porter, 2011; De Madariaga, 2013; Levy, 2013).

On the other hand, the “failure” in identifying issues relevant for specific groups provides an indication that the common issue of income poverty consists of a strong backbone related to the main accessibility issues encountered across the intersectionalities considered in the study design. In other words, concerns on healthcare accessibility by those relying on low incomes are transversal to socio-demographic segments. This PhD study is not unique in this respect. Wixey et al. (2005), who also used a double-layered design in their focus group

study, found similar concerns on accessibility across groups suffering different types of social disadvantage.

8.4.2.2 Low involvement of specific demographic segments

The unusual scope of this qualitative study raises doubts about the research efficiency and the possibility of getting similar results with a lower effort investment in data collection and analysis. The reviewed studies on accessibility and social exclusion have involved from four to eleven focus groups (see section 2.3), while the literature specialised in focus groups recommends typically not more than five groups (see section 5.4.3).

Despite the relatively broad scope of this qualitative data collection exercise (with a sample of 114 people), there was a relatively low involvement of older people (only 6 participants were aged 60 or over), which respond to an increasing share of the population in the city. Future studies could seek to achieve a more balanced gender mix to include more male perspectives, as well as to more explicitly involve persons with disabilities, as this group stood out as facing several barriers (notably unsafe walking and unavailable public transport). Presumably, the diagnosis of the physical accessibility in public transport services, the adequacy of walking infrastructure and the quality of specialised healthcare services could be more comprehensive if it were generated with higher participation of groups who remained underrepresented.

Also, more specific results could also be achieved by segmenting the groups by health issues experienced, as achieved by the studies solely focused on pregnant women and recent mothers in Latin America (Gutiérrez, 2009; Hernandez and Rossel, 2015). With this regard, a particular focus could be given to people with non-communicable diseases, which have an increasing weight in the Brazilian epidemiological landscape. Another attractive option would be segmenting the focus groups by self-perceived health status, which could allow advancing the understanding of the underexplored links between accessibility and health outcomes among socioeconomically disadvantaged. However, the addition of inclusion criteria related to personal health would possibly make recruitment more difficult.

8.4.2.3 Underexplored public transport issues

Focus group participants were perhaps not sufficiently encouraged to voice the typical entry barriers for public transport use, such as the absence of bus lines to the places they need to go and the inability to pay the transport fare. Although the questions focused on transport-related barriers were formulated in an open manner, allowing mentions to these issues, participants' shared experiences related more to the difficulties of using public transport (such as

discomfort) than the impediments that possibly prevent them from utilising the services.

In particular, it should be acknowledged the difficulty to capture the complex, nuanced meaning of public transport availability in the urban context of São Paulo. In particular, the bus network covers a large portion of the urbanised territory and bus stops can be found at a walkable distance from most residential places. This means that availability should not be discussed in terms of the absence of transport, such as in some rural areas (what would make this issue more evident). The issue is more about the existence of physically accessible, regular and reliable transport services connecting residential places to opportunities that could enhance their lives. Capturing public transport availability was a challenging task in the conversations because people may lack knowledge about the existence of such opportunities, making it difficult to identify transport provision gaps.

8.4.2.4 The need of additional interviews

The extensive data collection exercise did not preclude the research from applying a further instrument (individual interviews) to explore more in-depth the linkages between barriers and outcomes, which have remained unexplored in their full extent. Perhaps a more effective utilisation of the focus groups could be reached if the researcher shifted the emphasis of the later conversations from the assessment the variety of accessibility barriers and their meanings towards the exploration of the outcomes linked to these barriers. In other words, after issues started to emerge in repetition, indicating “saturation” (Krueger and Casey, 2015), the conversations could eventually have been conducted with another focus.

For this purpose, a second topic guide with this latter focus could have been adopted, and this strategy was cogitated during fieldwork. Nevertheless, the possibility of a progressive modification of the question schedule from a focus group to another was discarded as it would possibly reduce the scope for the natural emergence of topics that have not been addressed in the initial groups (e.g. transport affordability), and it could hinder the cross-comparison of cases following the double-layered design strategy, as initially intended.

8.4.2.5 Reliance on a single gatekeeper

All focus groups participants were recruited with the help of gatekeepers linked to a single organisation. Even though there was no indication that the gatekeeper acted with vested interests (see section 8.4.1.2), a potential refinement of the recruitment strategy could be ensured by the involvement of more organisations. This could eventually also facilitate the engagement of the

social segments underrepresented in this current study (see section 8.4.2.2). However, this alternative recruitment arrangement would possibly imply additional efforts for gaining trust with additional stakeholders and the need of investing substantially more time for planning and organising the focus group sessions.

8.4.2.6 Researcher's positionality

This accessibility study 'from the ground' requires reflections on the researcher's positionality given the bright contrast between his higher socio-educational background vis-à-vis that of the vast majority of the participants, which made focus group moderation and data interpretation more challenging to some respects.

Sexual assaults in public transport were addressed as a significant accessibility barrier by several female participants. Some of them have reported being themselves victims of such attacks. Retrospectively, however, it is possible that this issue would have gained more weight if participants felt more confident and comfortable to talk about the extent to which it hinders accessing healthcare facilities. Eventually, the topic of female harassment in transport could be explored more in-depth in the absence of a male moderator. Because of the sensitivity of this topic, I myself felt uncomfortable to encourage participants to explore deeper these issues, especially in situations where I was the only man present. Presumably, a number of women commenting on overcrowding and discomfort in particular in the rail-based transport modes actually intended to denote the risk of suffering sexual violence in public transport, but such meaning was not made explicit in the conversations.

Although additional instruments (mapping, travel diaries, questionnaires etc.) could provide more detailed information on participants' mobility, their application could be challenging considering the low educational level (in some cases, illiteracy) of some participants and the time constraints under which the focus groups were carried.

However, the questionnaire handed into the participants could be significantly enhanced with the addition of a few questions. Particularly regrettable is the absence of some questions on the self-perceived health status (Comber et al., 2011) and the frequency of attendance to some health services. Such information could be used to produce more a refined understanding of accessibility also in relation to health outcomes, helping to bridge the knowledge gap linking transport to health inequalities.

8.4.2.7 Underexplored variability across individuals

There are some limitations intrinsic to the application of the focus groups as a data collection instrument in relation to the topic of accessibility. Because the unit of analysis of focus groups are collectives of people and not individuals, the research was inevitably unable to draw detailed attention to the particular personal circumstances of those needing care in respect to their physical abilities to use transport, the urgency they need to receive care and the type of care needed. The study did not investigate in detail the particular forms in which transport and healthcare barriers interact with the “micro-level” circumstances of accessibility (such as personal social networks, individual educational level, among others).

In the narrative instances in which highly individualised aspects gained prominence, the process of collective reflection was hampered as other participants could not interact with the high level of specificity of participants’ shared stories. In such circumstances, the full potential of focus groups as an instrument that fosters collective conversations and generates shared understandings from exchanges between participants remained unavoidably underexplored (Bazeley, 2013).

The sometimes hesitant attitude towards explorations of individual issues also reflected ethical concerns. During the fieldwork, the researcher promptly perceived the sensitiveness of disclosing issues of private or even intimate nature. The conversations aimed to reach a careful balance between exploring issues relevant to accessibility to healthcare and avoiding the inconvenience of extracting information that could make participants feel uncomfortable and ultimately undermine data collection.

8.4.2.8 Restricted validation

Communicative validation (Flick, 2014) could be enhanced with more intense involvement of participants in later stages of data analysis. The follow-up interviews provided the opportunity for some participants to check the accuracy of some of their own contributions in the focus group discussions and to illuminate in more detail individual responses to accessibility barriers.

However, these interviews were not only limited in number (only 6 out of 114 focus group participants were interviewed, what represents 5.3% of the sample) but also, and mainly, in respect to its potential to “validate” the overall findings of the *collective* discussions. Ideally, analysed data should be cross-checked with all original participants, first within each group and then in respect to the overall results without group segmentation, as they are reported in this study.

Another means to enhance internal validity would be by submitting the collected data, notes, memos and other materials for analysis to other researchers and to check the similarities of their findings. This form of “expert checking” was, however, not pursued as it would require a considerable amount of time by other professionals. This could also potentially infringe the ethical protocols initially agreed with the study participants.

8.4.2.9 Little contradictory evidence

Negative or deviant cases that could contradict the analysis were rare. Even after being encouraged to freely express what they think in the focus groups, in several instances, participants agreed with the first opinions expressed. This behaviour can be interpreted in light of the strong cultural trait that condemns open divergences in conversational settings. As it is not always possible to distinguish authentic from conveniently supportive attitudes, one can just assume that the trend towards conformity might have eventually constrained the plurality of opinions, impoverishing the discussion.

As designed, the focus groups were generally limited to assess the value of policy interventions able to respond to the accessibility barriers and overcome the consequences of experienced accessibility gaps. This limitation was particularly perceived with respect to a possible assessment of the planned monorail line, which informed the study design (see section 5.4.4). Since the monorail was not in operation in the neighbourhoods analysed at the time the focus groups were conducted, an assessment of this scheme required participants making inferences in a hypothetical situation, and this exercise proved to be extremely challenging.

8.4.2.10 Unaddressed issues

Several issues were not covered in this study. First, the study addressed solely the accessibility of outpatient facilities that require patients to displace to healthcare sites. This can be deemed as a partial assessment of accessibility to healthcare as it excludes some forms of emergency care (e.g. provided by ambulances) and some forms of primary care (e.g. healthcare provision under the Family Health Strategy).

Some participants were deeply concerned about the unreliability of ambulances. They shared shocking stories about the inability of such services in attending timely people experience life-threatening episodes and the means found to try to save their lives. Deficiencies in the delivery of paramedic services are likely to be a severe problem faced by the residents of low-income neighbourhoods in São Paulo with impacts in the mobility to outpatient facilities. The lack of confidence in ambulances make people in need travel to emergency

departments of a hospital, increasing the demand for services already operating in the limits of their capacity. However, as such emergency services laid outside the scope of the study, such stories were not further explored.

Another issue that remained unaddressed is the community-based approach to primary healthcare provision, which has been stepwise implemented also in the city of São Paulo (see section 6.6). This may reduce patients' need for regular trips to primary healthcare facilities. Accessibility to primary healthcare under this approach, generally appreciated by poor people in the country (Narayan et al., 2000; Gragnolati et al., 2013), was not captured in the current study.

8.5 Summary

The current study evinced how accessibility barriers associated with transport and healthcare provision relate to each other and illuminated how these barriers undermine mobility and healthcare uptake. This chapter discussed the significance of the main findings of the study in particular for research on accessibility and social impacts of transport.

This study showed that people living in low-income neighbourhoods in São Paulo face several accessibility barriers in order to gain access to healthcare facilities. Such barriers relate to transport as well as to the healthcare provision domain. The multiplicity of accessibility barriers, in combination with their multi-sectorally, represents an original aspect of this study, given that most accessibility studies within the transport domain overlooked opportunities attributes. Another contribution of this research is that it revealed causal links between these accessibility barriers and consequences in terms of healthcare uptake. People's narratives created a firm connection between transport and healthcare issues, positioning the meaning of accessibility at the intersection of both sectors.

The study drew attention to the poor conditions in which socially disadvantaged people are transported. The perceived high levels of discomfort due to overcrowding were identified as a crucial transport issue for people who, sometimes feeling unwell, need to reach healthcare services and rely on public transport. Another important finding was the connectedness between proximity and healthcare quality.

In addition, this qualitative study stands out from other research on accessibility for its design. Its large unconventional scope contributed to generating a rich and robust picture of the accessibility barriers. Furthermore, the study is solidly grounded in an explicit conceptual framework which arranged in an original manner three distinct theoretical perspectives. On these grounds, accessibility

was clearly conceptualised, and this was also helpful to elucidate the role of transport to enable people to reach healthcare services. The framework contributes to enhancing the accountability of this qualitative study and subsequent research on accessibility and social exclusion.

The conceptual framework and the original definition of accessibility could be regarded as the more easily transferrable contributions of this research. The concept of needs has permeated the notion of social exclusion and transport but has never been properly integrated into it. The adoption of a needs-based approach makes explicit that transport can play a significant role for the attainment of higher social outcomes, but the essential services also embrace determinants for needs satisfaction and social inclusion, which should not be dismissed in accessibility analyses. The framework can assist professionals in analysing accessibility in other socio-geographical contexts and with respect to other activity types, in particular from the perspective of those considered socially disadvantaged.

Chapter 9 Conclusions

9.1 Introduction

The goal of the research was to gain a deep understanding of accessibility to healthcare concerns among urban low-income groups living in low-income neighbourhoods in São Paulo. Its central aim was to investigate the factors that may inhibit people from travelling to healthcare services, and the coping strategies adopted to overcome these issues in order to have their health needs met.

Based on a hybrid conceptual framework that conceptualises accessibility as an intermediate satisfier of health needs, the study showed that, for socially disadvantaged groups, significant accessibility barriers to healthcare are located at the intersection between the transport- and healthcare provision systems, under the overarching context of a Global South city.

This chapter brings together the arguments developed alongside the conceptual exploration and the empirical findings obtained “on the ground” of the case study to respond the research questions and connect this study to broader theoretical and policy debates.

Section 9.2 provides summarised answers to the three main research questions. Each question is discussed in turn. Section 9.3 discusses implications of the findings for policy by presenting recommendations for policy changes. Section 9.4 suggests lines that could be explored in future academic to advance on the interconnected research agenda on accessibility, social inclusion and access to healthcare.

9.2 Addressing the research questions

9.2.1 Research question 1

How can accessibility be conceptualised to address access to healthcare as an element of needs satisfaction?

Accessibility is a core notion for transport and urban policy as it embraces the interlinkages between transport and land-use systems. Accessibility has also been acknowledged as a mechanism that relates transport to wider social policy agendas. In the academic literatures on transport-related social exclusion and equity, transport can be regarded as a set of resources that enable people to reach essential opportunities for their well-being. Accessibility is a construct that connects transport to social justice narratives.

However, distinct understandings of accessibility permeate the academic and policy literature, and current conceptualisations are not fully aligned with narratives of social inclusion and need satisfaction. At a theoretical level, accessibility conceptualisations vary in respect to three critical aspects of perspective, agency and scope (see section 3.2) and such distinct understandings ground approaches with different substantive foci.

In the case of healthcare, while most quantitative approaches express the difficulty of reaching health services through the spatial deterrence factors of distance or time, other streams of the literature highlighted the relatedness between these factors and healthcare aspects or focused on the multiplicity of transport barriers (see section 3.3). Narratives on social equity and transport are not necessarily concatenated with a consistent definition of accessibility.

Having identified tensions and contradictions at the intersection of accessibility studies and social perspectives of transport, this research puts forward an original definition of accessibility. The definition results from the construction of a hybrid conceptual framework, which juxtaposes human needs theories to social exclusion and transport disadvantage perspectives. The resulting framework allowed to reconceptualise **accessibility** as ***the easiness for people to reach key services, opportunities and activities able to contribute to the satisfaction of their needs.***

This definition embraces four central aspects. Firstly, it is based on a stance that recognises socio-spatial interrelationships and favours a people-centred approach to accessibility. Secondly, it is primarily focused on the identification of structural sectorial provision issues, avoiding an overemphasis on individual choices and formal agency autonomy. Thirdly, aligned with the social exclusion approach to transport, the proposed definition is centred on activities deemed as necessary for social participation. Lastly, this conceptualisation explicitly considers the qualities of transport and opportunities.

The critical distinguishing aspect of the proposed conceptualisation is captured by the fourth enumerated aspect. Both transport as well as opportunities' qualities are regarded as central requirements for needs satisfaction and social inclusion. Framed in this manner, accessibility is reflected as an inherently relational and mutually dependent phenomenon at the intersection between transport and land-use.

9.2.2 Research question 2

What do people living in low-income neighbourhoods in São Paulo perceive to be the barriers for accessing healthcare services?
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Dwellers of low-income neighbourhoods in São Paulo face several types of difficulties to access healthcare services. Such difficulties lay beyond the simple factors of location and distance. Instead, a range of inter-related, multidimensional factors shapes the accessibility of the poor.

Accessibility barriers to healthcare were arranged around **five main themes: proximity and remoteness, walking safety, public transport services, personal security, and quality of healthcare services.**

While proximity was clearly a component of accessibility, its importance was put in relation to the quality of the services, which embraced waiting times and, very importantly, the quality of the patient-provider relationship in the consultations. Participants addressed the poor walking environment in their neighbourhoods, also regarded as a deterrent factor for public transport users. The main problem in public transport was the discomfort associated with overcrowding, which also undermines people's ability to arrive on time at health providers. Finally, personal security involved threats of assaults and female harassment.

9.2.3 Research question 3

What strategies do socially disadvantaged people adopt to overcome the barriers they face to address their health needs?

To navigate in a landscape deeply marked by inadequacies of transport and healthcare, people living in low-income neighbourhoods in São Paulo employed coping strategies. Three **short-term strategies**, usually adopted on the same day of the initial trip, were identified: **overcoming entry barriers in local facilities; travelling back home without care; and seeking care in other facilities.** Over a more extended time window, three **long-term strategies** were also identified: **self-medicating at home; travelling farther; and buying private healthcare.**

Differently from previous research, the study also showed how these strategies relate to different constellations of barriers, indicating possible pathways that undermine the activity space of socially disadvantaged groups in São Paulo.

9.3 Implications for policy and practice

Accessibility has a mediatory role for people achieving higher-order social outcomes. In the course of the present research, it was argued that accessibility should be understood as a means for people to gain access to healthcare services able to satisfy their health needs. The challenges in drawing policy recommendations in this field relate to the mediatory role of accessibility relative to higher-order social outcomes.

On the one hand, it is clear that improvements in healthcare provision should be associated with the transport connectivity of health services since the latter enables patients to gain physical access to the consultations and treatments. On the other hand, transport policy should not be primarily concerned with facilitating physical movement per se (as under conventional mobility-centred planning) nor reducing travel times to reach activity sites (as implied in most accessibility assessments to date). Instead, policies should be aligned with the goal of improving access to activity sites capable of satisfying people's needs. Socially inclusive transport and healthcare policies should target at improving health outcomes of disadvantaged groups and reducing health inequalities.

This section presents five potential pathways for urban policy strategies supportive to accessibility to healthcare as a means of social inclusion. Emphasis is given to the local policy level in which provision of transport and healthcare may be organised. The strategies discussed in this section are grouped around the policy recommendations, as shown in Table 9.1.

Table 9.1 Policy recommendations to improve healthcare accessibility

Policy recommendation	Comparisons with the literature	Comparisons with the empirical evidence
<p>1. Institutional coordination for integrated planning: foster and institutionalise cross-sectorial collaboration; improve transport provision to healthcare services with above-average performance and in areas undersupplied by healthcare providers</p>	<p>Chapter 3 presented some basic definitions of accessibility found in the literature. All of them locate accessibility at the interface between transport and land-use. Scholars have underscored the potential of accessibility to frame transport-related phenomena in a broader context. Previous research has mentioned, for instance, the risk of fear-based exclusion due to security issues, which consist of accessibility barriers (see section 3.3.2). However, such problems have attracted relatively little attention among accessibility researchers. Most of the currently employed accessibility metrics oversimplify or ignore aspects related to land-use (e.g. capacity, adequacy and quality of healthcare services) and the circumstances of subjects who potentially seek these opportunities (see section 3.3.1), although these can be crucial to understand the situations of exclusion. In the subset of studies concerned with health accessibility, the interdependencies between transport and healthcare issues and their impacts on the accessibility by socially disadvantaged groups have been documented only in recent studies (see section 3.3). Some of these studies were situated in Latin America, but not in Brazil.</p>	<p>The empirical part of the study provides confirmatory evidence that accessibility barriers are multiple, cross-sectorial and inter-related and, as such, should not be framed just as a matter of spatial proximity nor measured as the effort of physical displacement in terms of travel times. In the context analysed, accessibility barriers include proximity, walking safety, several aspects related to public transport, concerns about personal security as well as the quality of healthcare systems (see section 7.2). The PhD research shed light on the specificities of the accessibility barriers in the case study, contributing to deepening the understanding of the accessibility barriers experienced by residents of low-income communities in São Paulo. For instance, it was emphasised that the issue of personal security consisted of a barrier on its own right, separate from safety issues. In addition, within personal security, female harassment emerged as a separate subtheme. As people face intertwined inadequacies, not only restricted to transport, accessibility might be improved policies in different domains, including health, public security, and urban planning. The claim that synergies across distinct policy fields should be explored is grounded particularly on the evidence that people jointly consider the difficulties in travelling and engaging with healthcare services (see, for instance, sections 7.3 and 8.2.1). Section 7.3.1 depicts the trade-off between distance and care quality as a key relationship, which confirms the findings of studies reported in section 3.3.</p>

<p>2. Quality improvement of the local healthcare: enhance the quality and effectiveness of care provided in underperforming healthcare facilities, aiming at eliminating disparities among providers</p>	<p>The different aspects that determine the quality of opportunities have generally been missing from accessibility assessments in the transport geography discipline (see section 3.3) and also in studies looking at the interlinkages between transport and social exclusion (see section 4.2). Based on the adopted people-centred perspective on accessibility, it is impossible to isolate the potential of reaching physically essential opportunities from the possibility of such opportunities to meet basic needs. Both are conceived as needs satisfiers, even though, conceptually, as discussed in section 2.4.2, the appropriateness of healthcare services occupies a higher position than transport in the chain of needs satisfaction. This approach suggests that issues related to health services are intrinsic to accessibility assessments. As shown in section 3.3, recent accessibility studies have explicitly incorporated low quality of healthcare (in particular, service celerity and availability and quality of their human resources) as accessibility deterrents for socially disadvantaged groups.</p>	<p>In line with previous research, the PhD study confirms that poor healthcare service quality consists of a critical barrier for people to gain access to healthcare. Section 7.2.5 depicts in detail the healthcare-related issues, which limit the accessibility of socially disadvantaged communities in São Paulo. Participants gave paramount importance to the healthcare-related accessibility deterrents, overall regarded as more critical than transport inadequacies. The healthcare issues were framed as (i) the long waits for getting a medical appointment, (ii) the long on-site waiting time and (iii) the perceived poor quality of consultations, including the low-quality relationship between patients and health professionals. Such deficiencies can be so severe that, in extreme cases (e.g. clinics lacking doctors), health facilities are of no practical use. Besides specifying the issues related to healthcare relevant to accessibility, the study also adds to previous knowledge showing how each of these barriers relates to healthcare uptake in different temporal horizons (see section 7.5). The empirical research refines and adds to the understanding of these linkages between physical access, utilisation and health outcomes, and identifies service quality as a priority topic to enhance well-being in the context of profoundly unequal transport and healthcare provision. Against the background illuminated by this research, improving the quality of local public healthcare services is a plausible manner to enhance people's accessibility to healthcare.</p>
<p>3. Flexibilisation of the primary healthcare delivery: replace the rigidity of the current territorial approach of primary healthcare provision, which</p>	<p>As explained in section 6.6, the Brazilian public healthcare system is organised in three tiers of complexity, whereby basic healthcare units represent their entry point. However, patients may bypass local facilities because of the perceived low service quality (see section 3.3). Some countries such as</p>	<p>This PhD study found evidence that patients trade-off distance against healthcare quality since, in several instances, local facilities provide inadequate, ineffective care. Patients may bypass local facilities, even in situations where they are formally obliged to visit them (e.g. in basic healthcare units) (see section</p>

<p>obliges patients to seek care in specific facilities according to their residence places, by a “patient choice” policy</p>	<p>the United Kingdom have studied the flexibilisation of primary healthcare delivery through policies that enlarge patients’ freedom of choice (“patient choice” policies). The design of such policies reflects that a share of the population would prefer to travel longer favouring facilities with a better reputation (see section 3.3.2).</p>	<p>7.5.2.2). It follows from these research findings that a possible policy option to enhance health is to discontinue the current territorial organisation of the primary healthcare delivery and allow patients to seek healthcare at provision sites with superior performance. It should be highlighted that flexibilisation of the primary healthcare delivery may be a particularly meaningful recommendation in the context analysed due to the severity of the healthcare deficiencies, as reported by the study participants (e.g. lack of medical staff, lack of medical material or equipment, among other issues, as detailed in section 7.2.5).</p>
<p>4. Delivery of adequate public transport: provide physically accessible, affordable, comfortable, reliable and safe transport to travel to healthcare sites; increase the capacity of existing transport links; provide direct transport to good quality healthcare services</p>	<p>Besides disproportionate travel time and distance to opportunities, which are widely acknowledged as accessibility barriers, the literature on transport-related social exclusion reviewed in section 3.3.2 mentions other inadequacies of public transport as accessibility impediments, such as public transport unavailability; transport unaffordability; unreliability; and personal insecurity. However, with the exception of reliability, there is little evidence connecting these issues specifically to healthcare uptake in the urban contexts.</p>	<p>Given the centralised provision of some types of healthcare in combination with the prevailing urban segregation and the territorial dimension of the city (see Chapter 6), public transport provision is a critical factor for the healthcare accessibility by individuals on low incomes in São Paulo. However, as documented in section 7.2.3, public transport in the city is characterised by several shortcomings, framed as four subthemes: availability, affordability, comfort, and reliability. The present study refined the understanding of public transport issues in relation to accessibility by referring to problems not previously mentioned, exploring their specific meanings, examining their interrelationships and revealing their impact on healthcare uptake in the context of São Paulo. Overcrowding was identified as the most critical and central transport issue, related to other barriers (see section 8.2.2). The low reliability of public transport services and the inexistence of direct services to some destinations were explicitly mentioned as barriers that contribute to hindering the accessibility and uptake of healthcare (section 7.5, see also Appendix H). Against this background, transport policy should aim to improve physical accessibility, affordability, comfort levels, reliability and safety of public</p>

		<p>transport modalities. One key strategy consists in increasing substantially the carrying capacity of existing services, which would also contribute to keeping headways low and improve reliability. Bus lines could also be reorganised to reduce the need of interchange between services by those needing to reach healthcare services.</p>
<p>5. Enhancing walking conditions: improve the conditions of walking facilities and pedestrian crossings especially at the immediate surroundings of hospitals and healthcare centres</p>	<p>The academic and policy literature has given considerable attention to the deplorable condition of walking environment in developing countries, where the risk of injuries and fatalities is high (see section 3.3.2.5). Although walking safety has been captured as a concern by low-income communities in studies on transport and social exclusion, there is a lack of evidence to establish the relationship between the quality of the walking environment to healthcare underutilisation.</p>	<p>Walking was regarded as a problematic activity by most of the study participants, who described how the precariousness of the walking infrastructure interrelates with the dangerous road traffic environment (see section 7.2.2). The conditions of the walking environment are reportedly similar to those observed in other low-income countries (see section 3.3.2.5). Although no participant mentioned being directly hindered from accessing a healthcare facility due to poor pavements or the risk of suffering a traffic-related injury (see section 7.5), the poor conditions faced by pedestrians in São Paulo were regarded as important issues, including in the context of their access to public transport. The secondary data analysis showed the high frequency of walking trips to healthcare amongst the very poor (see section 6.4). Given the current organisation of the public healthcare system (described in section 6.6), enhancing walking conditions consists of a key policy strategy to enhance the accessibility to local facilities, (supposed to be easily reachable on foot) as well as to facilities providing more complex forms of care (which may involve the use of public transport).</p>

9.3.1 Institutional coordination for integrated planning

Although adequate transport provision is a fundamental requirement for people to access necessary opportunities for their lives, the role of transport shall not be overestimated in the design of socially inclusive policies. The potential of transport alone to improve health outcomes is limited as the transport domain encompasses just a subset of the “satisfiers” needed to improve populations’ health. Policies exclusively focused on transport services and infrastructures and disconnected from the broader land-use, service provision, and social contexts are likely to fail to close accessibility gaps experienced by socially disadvantaged groups.

The formulation of horizontally coordinated policies is indispensable. Approaches to enhance accessibility should be drawn across policy sectors taking advantage of synergies and complementarities between these fields. Reflecting the multi-sectoral character of the concept of accessibility, professional communities involved in transport, urban, health and other social policies should collaborate to foster a shared vision for enhancing the population’s health. For instance, in some settings, public transport investments could be concentrated in areas served by fewer healthcare sites in order to improve physical access of local populations to services with above-average performance. Cross-sectoral coordination may also be the key to develop appropriate and effective interventions to tackle complex security issues related to mobility.

While it is clear that good policies can be produced by the collaboration between distinct government departments, bringing policy stakeholders around the same table may be, in practice, one of the biggest challenges. It requires overcoming crystallised institutional barriers and bridging different mindsets and approaches. Efforts should be made to institutionalise cross-governmental cooperation able to produce long-term outcomes.

Best-practices of such coordinated policy efforts seem to be rare in the Brazilian context. In this country, transport planning is still primarily guided by positivistic thinking, which may be very different from the predominant paradigms amongst social and health professionals. At the subnational level, the creation of local or metropolitan agencies could be an attractive option to institutionalise cross-departmental collaboration.

9.3.2 Quality improvement of the local healthcare

The poor quality of healthcare services consists of a very critical issue and a central impediment to the healthcare accessibility in São Paulo. Healthcare

deficiencies were framed as the long waits for getting a medical appointment, the disproportionate on-site waiting time and the perceived poor quality of consultations, which includes the lack of doctors (see section 7.2.5). In extreme cases, facilities lack professionals, equipment and medicines, being unable to cater population's health needs. Furthermore, as shown in section 7.5, such issues in the health sector make people travel to other healthcare sites, self-medicate at home, give up receiving care in the public system. Experiencing these issues, study participants sounded very eager to have better healthcare services in their neighbourhoods.

Tackling deficiencies of healthcare facilities might enable such sites to deliver the services adequately. Efforts to improve the quality of local healthcare facilities corresponds to increasing the attractiveness of opportunities which, in terms of spatial distance, might be easily accessible. Enhancing the quality of some local healthcare providers may make people considerate using services are currently poor-performing or dysfunctional due to severe deficiencies. Such initiatives could prevent dwellers of the urban peripheries of making long trips, often under suboptimal conditions.

Healthcare quality can be enhanced in several manners. Most of the issues mentioned by the study participants are likely related to understaffing and chronic underfunding, acknowledged by the specialised literature as one of the main problems undermining the capability of the Brazilian public healthcare system to ensure adequate access to health for the population (Paim et al., 2011).

While it is outside the scope of this research to formulate strategies and measures to resolve issues within the healthcare sector (which may also involve complex organisational issues (e.g. Gulliford and Morgan, 2003)), evidence collected in the current study is supportive to area-based interventions aimed to increase the coverage of good-quality services responsive to the health needs of local communities. Such policies should not focus on the supply of health-promoting amenities per se, but rather on the spatial distribution of resources supportive to the quality and effectiveness of the care provided in the facilities.

9.3.3 Flexibilisation of the primary healthcare delivery

The recommendation delineated in the previous section may take time to impact on the healthcare system, mitigating historical and structural quality disparities between facilities. In addition, populations may need time to perceive and incorporate improvements introduced in healthcare services in their activity spaces. While a more balanced landscape of healthcare quality should be a

long-term goal, other strategies and measures could improve accessibility in the short-term.

In this respect, one option could be the provision of primary healthcare in a more flexible form. As mentioned in section 6.6, the current territorial approach adopted by the Brazilian public healthcare system obliges patients to seek care in predefined facilities based on their places of residence. However, in several instances, facilities located in more distant and socially disadvantaged areas may be understaffed and operate in suboptimal conditions (Victora et al., 2011). Such inadequacies also undermine primary healthcare services, which are supposed to be the first contact point with the system (see section 7.5.2.2).

To overcome these issues in the short-run, introducing some flexibility in the manner access to certain services is arranged is a policy option. In the context of grave disparities between services, the rigidity of the healthcare organisation can be regarded as an unfair policy as it forces people to seek care in low-performance facilities. In practice, as mentioned in section 7.5, in order to have their health needs met, people already attempt to circumvent such obligation and seek care at other places, eventually far from their place of residence.

Introducing flexibility to the territorial approach entails several benefits. Firstly, it enlarges people's freedom to seek providers at sites where they expect to receive better care. From a legal perspective, this policy could support the recognition of the constitutional right to healthcare to which every Brazilian citizen is entitled. Furthermore, also women and other social groups usually involved in complex trip chains could benefit from the rearrangement. The fact that the vast majority of the trips to healthcare in São Paulo originate at places of residence (see section 6.4) does not necessarily mean that home-based trips are the most convenient for those travelling to healthcare. This travel behaviour may partially reflect the strict territorial logic that underpins primary healthcare coverage, which may not be optimal for the organisation of daily activities by some individuals.

In this sense, "patient choice" policies, such as those considered in England (Exworthy and Peckham, 2006), could serve as an example of an alternative organisation the provision of healthcare, although the context for the introduction of such policies is clearly different to the European one in many respects. A service delivery reform could also take better into account people's values and cultural backgrounds and promote better integration and coordination across services.

9.3.4 Delivery of adequate public transport

Public transport is an essential component of an integrated cross-sectorial policy strategy to enhance the accessibility to healthcare. Under the current arrangement of healthcare provision and given the deep residential segregation, people living in deprived areas in São Paulo rely on some forms of motorised transport for reaching healthcare services. The centrality of public transport for people on low incomes seeking healthcare was captured in travel surveys (see section 6.4) and confirmed by the empirical findings of this study, even though daily experiences with buses, underground and trains are marked by several and grave inadequacies.

People need physically accessible, affordable, comfortable, reliable and safe transport to travel to healthcare sites and other places of everyday activities. A well-succeeded strategy to improve the quality of public transport should address all these aspects.

However, perhaps the most important policy insight grounded on the conceptual perspective and supported by the empirical findings of this study is that public transport can be supportive of social inclusion also in situations in which the main accessibility barriers are located outside the transport realm, as in the case of São Paulo. Describing how transport and healthcare issues interact to produce adverse outcomes (see section 7.5), study participants voiced the subsidiary but important role of transport within a system of needs satisfaction. Such views are supportive of the design of policies which acknowledge explicitly linkages between transport with other fields and which aim primarily at satisfying the needs of socially disadvantaged populations. In the context of São Paulo, two suitable initiatives are the increase of the transport supply and the reorganisation of public transport networks.

Among the several inadequacies of the public transport in São Paulo, overcrowding was regarded as the most critical factor that deteriorates the quality of journeys by public transport modes (see sections 7.2.3 and 8.2.2). From the evidence presented in the current study, strategies implemented in the field of public transport should, first of all, aim at increasing the carrying capacity of existing services. Investments in expanding the operational fleets or their carrying capacities can generate several benefits besides the most obvious one, which is relieving the high occupation rates and the physical discomfort of travelling by public transport modes. Increasing the public transport supply is also a convenient means to enhance the system reliability, acknowledged as a cause for people not uptaking medical appointments. Very importantly, reducing overcrowding may also enhance accessibility of women, who have a central

role for the care of other household members and are responsible for the majority of trips to healthcare.

A second transport policy goal involves the re-design of public transport networks with the goal of facilitating people's access to services. In order to be more socially inclusive, transport schemes should explicitly aim to increase the accessibility to key services and opportunities able to effectively satisfy the needs of disadvantaged populations, rather than simply reduce the journey time to the city centre. Enhancing transport connectivity to the closest, local health facilities alone may not necessarily improve people's health and well-being, if these facilities operate under precarious conditions, such as with inadequate staffing resources or with ineffective appointment systems.

In large urban areas, a share of trips by public transport modes typically involves interchange. In the case of São Paulo, such interchanges are related not only to widely acknowledged inconveniences of additional time and cost (e.g. bus-to-rail interchanges are charged) but also and mainly to discomfort and unreliability. As evinced by this PhD study, such penalties undermine people's accessibility to healthcare substantially. A rearrangement of transport networks should aim at reducing the need for interchange by those seeking, in particular, the more specialised healthcare services.

Strategies aiming at the introduction of more "rationality" to the public transport system, as currently pursued by some policies, do not necessarily improve people's accessibility. For instance, recent efforts led by São Paulo's transport authority towards the reorganisation of the bus network have been guided by the application of a stricter trunk-and-feeder logic. This strategy has usually consisted of splitting long lines into shorter ones. It has resulted in the cancellation of services that provided a direct link from residential areas located in the urban peripheries to metro stations and other relevant centralities. Such rearrangements of the bus services have obliged passengers who undertake long trips to interchange at bus terminals or rail stations to complete trips, which were previously feasible using fewer services.

Although public transport provision can certainly be better arranged in São Paulo, imposing additional interchanges for people who live in distant neighbourhoods seeking healthcare services in central areas does not improve their accessibility. The unfairness of the reorganisation is better understood in light of overcrowding, which makes it difficult for most people to change between transport modes and services. Users may be subjected to long queues and travel in less comfortable conditions in the following services. Such situations are also linked to transport unreliability since passengers may not

know when they are able to board on a vehicle with some free capacity. In the particular case of accessibility of healthcare services, increased discomfort and unreliability should be seen as critical issues and tackled by socially inclusive transport policies.

9.3.5 Enhancing walking conditions

Expanding safe infrastructure for pedestrians is a crucial component of an approach focused on supporting people's accessibility to health services. The study confirmed that most residents are currently able to reach local, usually primary healthcare facilities walking. However, such local trips to healthcare as well as distant trips, which combine both walking and other transport modes, can be troublesome. More space and protection should be provided to pedestrians in the low-income peripheries of developing cities, even if it comes at the expense of private vehicle users.

Accessibility from places of residence to these sites can be enhanced through a series of neighbourhood and street design elements, as well as infrastructure improvements. One important set of recommendations relate to improving walking facilities and pedestrian crossings. Initiatives should encompass building walkways with the appropriate width and regular pavement, equipping crossings with traffic lights wherever adequate, and adjusting cycles of traffic signals considering the slower speeds of children and the elderly.

The recommendation is to adopt a stepwise approach to enhance walking conditions in the city. Within this process, priority should be given to improvements in the immediate surroundings of key destinations such as hospitals and healthcare centres, which are used by most people. In the long-term, these measures should be expanded and cover the entire urban area.

9.4 Future research

Several limitations of this study delineated in Chapter 8 could be potentially addressed in future studies. This section is focused on topics considered central to be investigated in order to advance knowledge on the potential contribution of transport and accessibility to enhanced health outcomes and the reduction of health inequalities.

9.4.1 Capturing accessibility barriers on the ground

This PhD thesis was set out to explore accessibility barriers to healthcare in some neighbourhoods in the east zone of São Paulo. Such barriers are socially, historically and geographically related to the case study. Although potential barriers to accessibility are well established in the academic literature,

additional research is needed to identify which barriers are relevant to which specific social segments and in which circumstances.

The development of qualitative, in-depth studies in other cities and regions of low- and middle-income countries would be necessary for following purposes: to enlarge the evidence base on the accessibility issues faced by the urban poor; to test concepts and theories on accessibility and transport-related social exclusion, which have mainly been developed in the Global North; and, very practically, to gain a better understanding on appropriate transport policies to be pursued in the Global South.

9.4.2 Improved data on transport and health

Better data is necessary for deepening the understanding of the relationships between accessibility barriers and health inequalities. To date, datasets that comprehensively capture mobility and health issues are scarce. Where information on these issues is available, integration between datasets may be methodologically problematic.

For instance, in the Brazilian case, detailed information on health status and lifestyles were last captured by a nationwide household-based survey conducted in 2013 (IBGE - Instituto Brasileiro de Geografia e Estatística, 2013). Another survey, performed every ten years, assesses the transport behaviour, including transport mode used, time of the day and trip purpose of a representative sample of the population living in the metropolitan region of São Paulo (CMSP - Companhia do Metropolitano de São Paulo, 2019a). However, unlike commuting trips, for which attributes such as the exact location of the destinations, occupational and employment types are assessed, trips to healthcare are described in less detail. This survey does not capture information on the type of service sought (public or private, primary, secondary or tertiary level), and this constitutes an important shortcoming. Data availability of the performance of healthcare services is also limited. For São Paulo, information on average waiting times for consultations and on the consultation days for public facilities have been made available yearly at district level (Municipality of São Paulo, 2019a). Reasons for people missing appointments have not been assessed. There is a notable lack of reliable information on the performance of local private healthcare services. The integration of these different datasets, using distinct sampling strategies and related to different geographical contexts, is challenging because it would involve a series of assumptions that may weaken the findings.

As a follow-up of the current study, which clarified the main barriers and some links to potential outcomes in terms of healthcare uptake, future research could

contribute to design a representative survey to assess quantitatively the relationships between transport usage, health access and health utilisation at the individual level.

9.4.3 Developing realistic accessibility measures

Against the findings of this PhD thesis, the most promising field for future enquiry relates to the development of more refined accessibility metrics able to capture realistically the interdependence between transport, social and service-related aspects. In these respects, the conceptual framework and the body of qualitative evidence gathered in the present study can be used as a departing point to enhance measures of healthcare accessibility.

To date, accessibility measuring is largely locked in a deep positivistic mindset which looks at transport aspects separately from qualities of the destinations and ignores wider contextual issues in which people's needs are inscribed. Despising issues such as perceptions of insecurity and overcrowding in public transport as "soft" factors and dismissing healthcare service attributes in contexts where quality disparities exist, accessibility studies may overplay the role of time and spatial distance and ignore other factors relevant for the people and the contexts investigated. Occasionally, such studies might lead to a mechanistic cause-effect understanding of the relationships between spatial friction and well-being.

A substantial share of the recent research directed towards the refinement of accessibility measures has contributed to the generation of fine-grained representations of the effort of travelling with improved spatial and temporal resolutions. Progress in this field include the enhanced sensitiveness to congestion levels at different times of the day, more exact representations of public transport timetables, to cite a few. Although welcome, such developments are clearly insufficient to produce accurate representations of accessibility from the perspective of people who seek healthcare.

Future research should explore possibilities to develop theoretically sound accessibility measures, which integrate key qualitative aspects of travelling and services (i.e. health services) and travel impedance as a compound construct. However, special attention should be addressed to the joint consideration of the multiple transport barriers. The incorporation of several issues into a single "generalised cost" might represent in a distorted manner people's needs of transport and services (Doyal and Gough, 1991).

A new generation of mixed-method accessibility measures would represent an important contribution to bridge the research gap between, on the one hand, the sophisticated narratives describing the complexities of the relations between

transport and social inequalities and, on the other hand, simplistic measures of accessibility that may overlook issues that really matter to people who most suffer from these inequalities. Incipient research in this respect was carried, for instance, by Hawthorne and Kwan (2012).

9.5 Summary

This research was set up to explore the inhibiting factors for healthcare uptake by people living in deprived areas in São Paulo, and shed light on potential causal pathways between transport and healthcare inadequacies and health service utilisation.

This study disputed the concept of accessibility and generated a more complex and comprehensive understanding of accessibility to healthcare grounded on people's lived experiences. Low-income people in São Paulo feel vulnerable due to several, often overlapping barriers related to transport. The effort of travelling comprises concerns on walking safety, different inadequacies related to the bus, underground and train services, and the fear of crimes felt by both pedestrians and public transport users. Narratives collected in this study suggest that overcrowding is the most important and central issue for public transport users in São Paulo.

The study also found considerable evidence on how people negotiate access to healthcare at the intersection between spatial proximity and opportunities quality. Despite several constraints, residents of poor and distant urban peripheries are highly sensitive to service adequacy and quality. They may make considerable efforts to get to sites where they can obtain what they need for improving their well-being. Within accessibility landscapes, the effort of travelling longer can be compensated by expectations of receiving timely and healthcare provided by professionals able to listen to the patients and deliver effective treatment. Conversely, patients dismiss and bypass facilities which provide unsatisfactory care or where they had bad experiences. Such evidence sustained a central argument in this thesis, which could be framed in a straightforward manner: people may get what they need depending on the places to where they travel.

The PhD study not only showed that proximity and quality of healthcare services are factors jointly considered when people frame accessibility but also brought evidence on the prevalence of the latter in this trade-off relationship. Perceived inadequacies of local healthcare providers are the main causes for people not take up healthcare when they should, travel to more distant places, and purchase private insurance plans.

By highlighting the plurality of transport barriers and the importance of aspects of healthcare services beyond their spatial distribution on accessibility, the research also contributes to improving the conceptual understanding of accessibility. The joint consideration of characteristics related to transport and healthcare services stresses the relational character of accessibility at the intersection between transport and land-use. The evidence examined suggests that interpretations gained by compartmentalised approaches to accessibility may not capture adequately the complex dynamics between socio-spatial and transport disadvantage and may dismiss important issues faced by people in negotiating access to essential services.

The omission of service-related aspects from accessibility has profound implications for studies concerned with the social outcomes of transport. Assuming the existence of landscapes of opportunities with similar quality, physical access to any existing provider has been equated to activity participation and, ultimately, social inclusion. In practice, however, this assumption seldom holds. Especially in contexts characterised by weak, incomplete or dismantled welfare systems, where deregulation and austerity policies have undermined the appropriate provision of essential services able to guarantee a minimum level of well-being for the majority of the population, service adequacy and quality may vary substantially across facilities and areas. Currently, the capability of distinct facilities in addressing people's needs adequately and supporting social inclusion differs spatially in several contexts, including in many high-income countries.

From a social inclusion and needs-centred perspective, accessibility approaches should assess how and the extent to which people are enabled to access adequate services and activities, and take benefit from social opportunities. Most of the GIS-based based accessibility measures commonly used in transport studies communicate not more than the effort in time or distance that people need to reach some places of activity. Framing accessibility as a sole matter of spatial proximity between patients' residences and service provision locations, such studies may be helpful to unveil the differences in travel times across different social groups and geographical areas. However, they may not adequately grasp accessibility as a relational concept bridging transport to land-use. Neither may this approach capture the core of the hardships experienced by real people in their journeys to activity sites nor communicate the role of transport can have for social inclusion within the chain of needs satisfaction.

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Appendix A Conceptualisations of accessibility

Study	Accessibility definition	Defining aspects of accessibility		
		Perspective (people-centred vs. place/system-centred)	Agency (ease vs. individual ability to get to places)	Scope (certain vs. all types of opportunities)
Morris et al. (1979, p.91)	“the ease with which activities may be reached from a given location using a particular transportation system”	People-centred	Ease to get to places	All opportunities
Handy and Niemeier (1997, p.1175)	“the potential for interaction, both social and economic, the possibility of getting from home to a multitude of destinations offering a spectrum of opportunities for work and play”	People-centred (as accessibility should be validated against peoples’ actual behaviour)	Ease to get to places	All opportunities
Social Exclusion Unit (2003, p.1)	the ability of people to “get to key services at reasonable cost, in reasonable time and with reasonable ease”	People-centred	Individual ability to get to places	Key services (work, learning, accessing healthcare, food shopping and other local activities)
Geurs and van Wee (2004, p.124); Geurs and Ritsema van Eck (2001, p.36)	“the extent to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by means of a (combination of) transport mode(s)”	System-centred	Both (explicit consideration to individual needs)	All opportunities
Farrington and Farrington (2005, p.2)	“the ability of people to reach and engage in opportunities and activities”	People-centred	Individual ability to get to places	All opportunities
Casas (2007, p.464)	“a measure of the freedom an individual has to participate in activities in the environment”	People-centred	Individual ability to get to places	All opportunities

Study	Accessibility definition	Defining aspects of accessibility		
Martens (2012)	"a location is accessible (or inaccessible) for a certain set of people or from a certain set of other locations"	Place-centred	Not specified	All opportunities
Martens (2012)	the ability to overcome the spatial "barrier between origin and desired destination"	People-centred	Individual ability to get to places	Desired opportunities
Bocarejo S. and Oviedo H. (2012, p.143).	"the ease of reaching desired destinations given a number of available opportunities and intrinsic impedance to the resources used to travel from the origin to the destination"	People-centred	Ease to get to places	Desired opportunities
Delmelle and Casas (2012, p.37)	"the ease of traveling from an origin to a specified destination via a given mode or set of modes of transport"	People-centred	Ease to get to places	All opportunities
Jones and Lucas (2012, p.6)	"the degree to which people can reach goods and services that society considers are necessary for them to live their daily lives"	People-centred	Ease to get to places	Necessary opportunities
Neutens (2015, p.15)	"the degree to which transport systems enable people to reach desired activity locations"	System-centred	Not specified	Desired opportunities
Litman (2017, p.6)	"people's ability to reach desired goods, services and activities"	People-centred	Individual ability to get to places	Desired opportunities

Appendix B Quantitative studies on healthcare accessibility

Study	Study aim	Health service types (attributes)	Measure type	Spatial friction factors	Transport modes	Travel impedance functional form or threshold	Social segmentation criteria	Case study area	Spatial resolution	Association between social deprivation and accessibility
Pereira (2018)	Transport policy assessment	Primary care facilities and hospitals (counts of facilities)	Cumulative opportunity	Travel time	Public transport and walking	30 minutes	Income	Rio de Janeiro (Brazil)	Hexagonal grids (500m)	Planned investments deepen the hospital accessibility gap between poor and rich
Apparicio et al. (2017)	Measure comparison	12 types of services (counts of facilities)	14 different measures, including cumulative opportunity, gravity model and 2SFCA	Distance and travel time	Walking, car, public transport	Varying parameters	None	Montreal area (Canada)	Census tract	-
Grengs (2015)	Status quo assessment	Hospitals (number of employees)	Gravity model	Travel time	Car and public transport	Exponential (parameter estimated from car trips)	Income, poverty status, race, ethnicity, transport mode	Detroit metropolitan region (United States)	Traffic analysis zone (TAZ)	Vulnerable social groups have an advantage in hospital accessibility over more privileged groups

Study	Study aim	Health service types (attributes)	Measure type	Spatial friction factors	Transport modes	Travel impedance functional form or threshold	Social segmentation criteria	Case study area	Spatial resolution	Association between social deprivation and accessibility
Mao and Nekorchuk (2013)	Measure development	Hospitals	Two-step floating catchment area (2SFCA)	Travel time	Car and public transport	30 minutes	Vehicle ownership	Florida (United States)	Census tracts	-
Dewulf et al. (2013)	Measure comparison	Primary healthcare (counts of facilities)	4 measures (PPR, closest facility, cumulative opportunity, FCA)	Distance	Not specified	Several	None	Belgium	Physician zone, municipality and census tract	-
Bissonnette et al. (2012)	Measure development	3 types of primary healthcare (counts of facilities segmented by language spoken)	Three-step floating catchment area (3SFCA)	Distance	Not specified	A 3 km area surrounding services and neighbourhoods	Mother language	Mississauga (Canada)	Neighbourhood	Accessibility to physicians with matching language was higher among French speakers than for Tagalog speakers
Delmelle and Casas (2012)	Transport policy assessment	Hospitals and health clinics (number of hospital beds)	Gravity model	Travel time	Public transport (including trips on foot to stops)	Exponential	Socioeconomic strata	Cali (Colombia)	Neighbourhoods	Positive association between socio-economic position and hospital accessibility

Study	Study aim	Health service types (attributes)	Measure type	Spatial friction factors	Transport modes	Travel impedance functional form or threshold	Social segmentation criteria	Case study area	Spatial resolution	Association between social deprivation and accessibility
Paez et al. (2010)	Measure development	Offices of doctors and dentists (counts of facilities)	Cumulative opportunity with flexible bandwidths	Distance	Not specified	Flexible bandwidths	Age (seniors and non-seniors) and vehicle ownership	Montreal Island (Canada)	1 km ² grid cells	Seniors have lower accessibility than more mainstream segments of the population
Luo and Wang (2003)	Measure development	Primary healthcare (counts of facilities)	2SFCA	Travel time	Car	Fixed threshold (30 minutes)	None	Chicago region (USA)	ZIP code areas for physicians and census tracts for patients	-
Brabyn and Skelly (2002)	Status quo assessment	Hospitals (counts of facilities)	Closest facility	Travel time and distance	Car	-	None	New Zealand	Census tracts	-

Appendix C Topic guide used in the focus groups

	Topic	Question	Objective
0		PREPARATION	
	Self-introduction	What is your name? For how long you have been living in this neighbourhood?	Check whether all participants know the neighbourhood, use local services and facilities, and are familiarised with the local urban environment.
1		INTRODUCTION	
1.1	Daily activities	What do you do in the weekdays and in the weekends?	<p>Easy question that demand descriptive answers as part of participants' individual self-introduction.</p> <p>Disclose individual and household-related conditions that influence daily mobility (e.g. partner, children, work etc.).</p> <p>Write down transport modes mentioned in this question to be explored later in session 2.</p>
1.2	Most like and most dislike	What do you most like and what do you most dislike in this neighbourhood?	<p>Elucidate general living conditions in the neighbourhood directly related to characteristics of the built environment</p> <p>Disclose participants' values.</p>
2		TRANSPORT	
2.1.1	On foot	<p>To which places do you go on foot?</p> <p>When walk to a place, how long does this trip take?</p>	Assess whether people walk too long distances, what could indicate inadequacies of public transport provision, for instance.
2.1.2		<p>How is to walk on foot in the neighbourhood? Is it easy or difficult to walk on foot?</p> <p>Are there any circumstances in which you avoid walking?</p>	Assess the issues faced when people walk

2.2.1	Public transport	Does someone use buses / underground / trains to move around? (if not, go to subsection 2.3) To which places do you use by public transport?	
2.2.2		How is to use buses / underground / trains?	Assess the issues faced when people use PT
2.3.1	Car	Does someone use cars or motorcycles? Or take a lift? (if not, go to subsection 2.4)	
2.3.2		How is to drive car in the neighbourhood?	Assess the issues faced when people drive car
2.4.1	Bicycle	Does someone use bicycle? (if not, go to subsection 2.5)	
2.4.2		How is to ride a bike here?	Assess the issues faced when people ride a bike
2.5.1	Ride-hailing	Does someone use ride-hailing? (if not, go to subsection 2.6)	
2.5.2		How are these services?	Assess the issues faced when people use ride-hailing services
2.6	Transport modes	Imagine you are a school teacher and have to mark your experience in using each transport mode using grades from 0 (very bad) to 10 (very good). Which grade would you give to walking? And buses? (<u>refer to transport modes mentioned in the discussion</u>). Remember you do not have to agree with others' opinions. [MARKING EXERCISE: Moderator writes marks on stickers and show them to the whole group]	Support a summary of the discussion and a comparison of experiences across different transport modes
3		SUPPRESSED TRIPS	
3.3	Critical lack of access	Are there any places to which you would like or even need to go but are	Assess suppressed trips while exploring further the meaning of

		so difficult to reach that you do not visit? Which places are these? Why would it be important for you to reach them?	accessibility (i.e. issues that make trips easy or difficult)
4		HEALTHCARE	
4.1	Healthy life	What do you do to take care of your health and of your family's health? Do you have a healthy or an unhealthy life?	Explore lifestyles and practices that provide a wider context to access to healthcare
4.2	Healthcare facilities	Where have you gone to take care of your health? Which healthcare services have you been using? [Moderator writes on stickers the name of the mentioned facilities and display them to the group]	Identify the specific healthcare services facilities utilised by participants
4.3	Accessibility to healthcare	Now I want you to think whether it is easy or difficult to go to the places you have just mentioned – based on all the issues we discussed before. [COGNITIVE MAPPING EXERCISE: Moderator hands in to participants paper sheets and stickers. Each sticker represents one facility mentioned and is placed in one of the four fields which represent difficulty levels to access amenities.]	Reveal perceived accessibility to healthcare facilities * Moderator explores some convergent / divergent results (e.g. why do some participants say it is easy to go to certain facility while others say it is difficult?)
5		HEALTHCARE SERVICES	
5.1	Quality of service	How are the healthcare services in the neighbourhood?	Assess whether quality of healthcare can act as a barrier for having access to health and in the choice of destinations.
5.2	Other neighbourhoods	Do you use healthcare services in other neighbourhoods?	Check whether people feel forced to go to other places seeking healthcare (e.g. trading off the easiness to get to the places by perceived better care)

6		POSSIBLE SOLUTIONS	
6.1	Improving access	Is there something that could be done to enhance your access to health?	Broad question intended to capture issues in the health and transport service provision realms
6.2	Transport improvements	<p>If you were in charge of urban transport, what would be the first thing you would change to improve your access to health?</p> <p>Can you imagine that the monorail line 15 can improve your access to health? How?</p>	<p>Assess expectations of improved transport and their benefits the access to healthcare</p> <p>Assess the specific potential role of the monorail line 15 in improving healthcare access</p>
7		CLOSING	
7.1	Last comment	We are approaching the end of our talk. Would anyone like to add something to our discussion?	
7.2	Validity question	Was it easy to take part in this conversation? Were the questions easy or hard to understand?	Assess participants' confidence in answering questions
7.3	Questionnaire		

Appendix D Participants' questionnaire

Questionnaire

Accessibility needs to healthcare in São Paulo

Full name	
Age	_____ years completed
Address	
Postcode	
How long have you been living in this address? _____ years	
How many people do live in this address, including you? _____ people	
Which of the following vehicles does your household have?	
Car	<input type="checkbox"/> Yes <input type="checkbox"/> No
Motorcycle	<input type="checkbox"/> Yes <input type="checkbox"/> No
Bicycle	<input type="checkbox"/> Yes <input type="checkbox"/> No

Appendix E Cognitive map



Appendix F Participant information letter

Participant information letter

Transport needs and access to healthcare services in São Paulo

You are being invited to take part voluntarily in a research project on urban mobility in São Paulo. Before you decide on your participation, it is important for you to understand why the research is being done and what it will involve. **Please take time to read the following information carefully.**

Who is doing the study?

The study is conducted by PhD research student Thiago Guimarães Rodrigues under the supervision of Prof Karen Lucas and Dr Paul Timms, two researchers with a broad international experience in transport policy. This study is part of the PhD research “An appraisal approach focused on transport-related distributional impacts from a bottom-up assessment of mobility and accessibility needs: Case study of the monorail line 15 in São Paulo, Brazil” carried out at the University of Leeds, England, supported by the Brazilian National Council for Scientific and Technological Development (CNPq) through the program “Science without Borders” (Process number 201554/2015-1). The project began in November 2015 and is expected to finish in October 2018.

What is the study about?

We want to find out how people in selected neighbourhoods of São Paulo get access to healthcare and the role of public transport in providing access to opportunities. We also would like to investigate under which conditions specific transport schemes could enhance populations’ access to healthcare services.

With this research project, we hope to contribute to the development of a transport planning approach that can take better into account people’s fundamental needs. In the future, the results of this research can help to improve the way in which transport projects are assessed and designed.

Why is your participation important?

Your participation in the research project is essential. Your perceptions and experiences with mobility will help to understand more deeply the problems people in this neighbourhood face in accessing healthcare facilities and which changes in the organisation of transport systems could best support people’s access to healthcare in São Paulo. You will enrich a discussion that can make transportation planning more responsive to people's transport needs.

What would you need to do?

It works as follows: You are invited to join a conversation (“focus group”) in a small group of around six to eight persons. The discussion will be on topics related to the monorail project, urban mobility, and your habits and experiences with mobility in São Paulo.

We will be talking about the following issues:

- the activities you undertake using different transport modes
- the difficulties of gaining access to healthcare facilities
- the specific transport and mobility problems in your neighbourhood
- the advantages and disadvantages of using public transport for reaching services and opportunities

To facilitate the discussion, I will sometimes suggest some questions. No preparation is needed. Feel free to share your reflections, talk about your experiences and give your opinions. It is important that each one has their views respected.

The conversation shall last around 2 hours. If you agree to participate, I will make every attempt to organise a date, time and a location which is convenient for you and the other participants.

Which are the benefits of participating in this study?

By taking part in this project, you will not only help me with the study. You will also be making yourself aware of a series of issues you might have not thought before – for instance, related to the current mobility conditions and practices in your neighbourhood. Furthermore, you will be giving an important contribution to the way in which transport projects may be planned. This is because the results of this project will be not only published as an academic work but will also be communicated to planners and policymakers to which I have been keeping contact throughout the research process.

There are no known risks explicitly associated with participation in this research.

Do you have to participate in the study?

The decision of taking part in the project is entirely voluntary. If you do decide to take part, you will be given this information sheet to keep and be asked later to sign a consent form.

If you decide to take part and later change your mind, you are free to withdraw from the project at any time without penalty. You do not have to give a reason for it. However, if you withdraw, it may be impossible to withdraw data collected about yourself after you have participated in the focus group.

Will your contribution be anonymous?

All information provided in the conversation will be anonymised. This means that you will not be identifiable in the transcribed version of our conversation. Your name and your personal details will not be revealed to people outside the project.

Which data will be recorded?

The recording of the conversation will only be kept by the researcher for the purpose of transcription. It will be stored securely in the “Research Data Leeds Repository” of the University of Leeds, and destroyed after the use for this research for up to five years. Other digital data – such as photographs of drawings made during the focus groups sessions – may also be retained in the same way and used exclusively for research purposes.

This study has been reviewed and given a favourable opinion by Research Ethics Committee of the University of Leeds on 23/09/2016 (AREA 15-162).

Contacts

If you have any doubt about the project, feel free to contact the research team by post, email or telephone.

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Appendix G Participant consent form

Consent to take part in the research project Transport needs and access to healthcare services in São Paulo

Please cross “yes” next to each statement if you agree with it. If you disagree, cross “no”.

1	I have read and understood the attached Participant Information Letter dated 03/07/2017, which gives details on the research project.	<input type="checkbox"/> Yes <input type="checkbox"/> No
2	I have had the opportunity to ask the researcher any questions that I had about the project and my involvement in it and understand my role in the research project.	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	I agree to take part in the research project, and my decision to consent is entirely voluntary.	<input type="checkbox"/> Yes <input type="checkbox"/> No
4	I understand that the data gathered in this research project may form the basis of a report and other forms of publication or presentation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
5	I agree that in this research project data may be collected in electronic form (e.g. audio-recording of conversations) to be used only for analysis and research activities such as conference presentations.	<input type="checkbox"/> Yes <input type="checkbox"/> No
6	I understand that I am free to withdraw at any time without giving a reason and without suffering any adverse consequences. However, if I withdraw, it may not be possible to delete the contributions I have already made to the research.	<input type="checkbox"/> Yes <input type="checkbox"/> No
7	I understand that my name and my personal details, such as phone numbers and addresses, will not be revealed to people outside the project without my consent.	<input type="checkbox"/> Yes <input type="checkbox"/> No
8	I understand that neither I nor other people to whom the researcher may refer will be personally identified by the real names nor be identifiable in any other way in outputs from the research.	<input type="checkbox"/> Yes <input type="checkbox"/> No
9	I agree not to disclose the identity of other research participants or link them with contributions or opinions that are published.	<input type="checkbox"/> Yes <input type="checkbox"/> No
10	I understand that all data collected will be stored securely and will be erased after five years.	<input type="checkbox"/> Yes <input type="checkbox"/> No
11	The researcher may contact me to collect further data related to the topic of this research project.	<input type="checkbox"/> Yes <input type="checkbox"/> No
12	I want to be informed via email about the publication of reports, presentations and other outcomes related to this research project.	<input type="checkbox"/> Yes <input type="checkbox"/> No
13	I want to be informed via email about other research projects on urban mobility in São Paulo in which the researcher is involved.	<input type="checkbox"/> Yes <input type="checkbox"/> No
	If you marked at least one of the three options above, please inform your contact address, email and/or phone number	

São Paulo, ____/____/2017

Participant's signature

Participant's name (in capitals)

Researcher's signature

Researcher's name (in capitals)

THIAGO GUIMARÃES RODRIGUES

Appendix H Summary of evidence on accessibility impacts from focus groups and interviews

Outcomes and strategies	Causal factors		Empirical evidence		
	Sector	Reason	Focus groups	Individual interviews	Illustrative excerpt
Short-term					
Arrive earlier at the facility	Healthcare	Long on-site waiting time to be attended	X	X	INT1: <i>I used to arrive at the entrance of the BHC at 5 am for my prenatal consultations. And there were already other people waiting since 4 am. I arrived there a bit later because I feared to be there alone... One never knows...</i>
“Fight” to receive appropriate care	Healthcare	Long on-site waiting time to be attended	X	X	INT5: <i>The doctor asked me to do mammography. It took very long, five or seven months. The nodule began to grow. My neighbour died of breast cancer. Another one was treated in Hospital Pérola Byington. I tried to be referred to there, but I didn't get an appointment. I created a scandal there. An employee was touched by my story, and I got a consultation. It was not through normal means.</i>
Travel back home without medical care (eventually, self-medication)	Healthcare	Lack of medical staff	X	X	INT2: <i>My daughter broke her arm in the nursery. She fell from the slide... We went to the Hospital São Mateus, there was no orthopaedist, and the general clinician said he could not take care of her. I had to travel back home with my daughter with her broken arm and go back to the hospital the next day.</i>

	Healthcare	Medical staff allocated to emergencies / patients needing urgent care	X		P1608: <i>What happened this year down here at the emergency clinic? My wife and I were with my daughter, who was feeling ill. We stayed there. It was packed with people. Look what happened: an ambulance arrived with a guy who got two [gun] shots, was all screwed... They gave preference to him and closed the clinic. So, the ones who were [waiting] there had to go because there was only one doctor to attend every one.</i>
	Healthcare	Lack of material needed for a medical procedure		X	INT3: <i>I have already left my son fasting for hours, and on the day the surgery was cancelled. Why? Lack of material. A surgery, a simple surgery!</i>
	Healthcare	Long on-site waiting time to be attended	X	X	P704: <i>I have already gone back home without having seen the doctor. There were so many people that it took too long. I ended up coming back home because it was almost 10 pm and I had not passed with the doctor yet.</i>
	Healthcare	Medical examinations expired due to the long time to get an appointment with the doctor	X	X	P1305: <i>I had to do a series of expensive examinations through the BHC. And then, when I went to see the doctor, the tests expired... And I had to repeat these examinations.</i>
	Transport	Buses take long to arrive at the stop		X	INT6: <i>My mother had to go there because she has high blood pressure. The bus did not arrive. At that time, there was no transport by apps. We stayed there [at the stop] waiting. When we finally arrived there, another person [patient] was being attended in the vacancy left by my mother.</i>
	Transport	Bus drivers do not pick up passengers waiting at the stop (discrimination against the elderly)		X	INT2: <i>I left my work at lunchtime, the consultation was scheduled for 3 pm, and I could not arrive on time... The buses did not arrive, and my bus did not stop. It travelled around another bus parked at the stop.</i>

	Transport	Bus stuck in road congestion	X	X	P305: <i>Her [the daughter's] paediatrician is here in Tatuapé, near the [metro station] Carrão [14 km distant], and the traffic at the [avenida] Mateo Bei, there at [avenida] Conselheiro Carrão just stopped.</i>
	Transport	Underground or metropolitan trains travel slower and more crowded than usual (e.g. because of a technical breakdown, rain etc.)	X	X	INT4: <i>I had a consultation at 6 pm. I leave the service at 4.20 pm. But even walking fast to take the first metro and travel staying, if it rains, it is over. The metro goes slower; then I arrive at a bus terminal with queues longer than usual, I cannot get into the bus, beyond the traffic congestion, which is worse because of the time. Then I end up missing the consultation. There is no way around.</i>
Rely on alternative transport on the way to/back from healthcare	Transport	Unreliable public transport in urgent cases		X	INT3: <i>He [the son] had several times difficulties to breath in the night. I went downstairs with him and asked for help to any car driver passing. Whoever. "Please give me a lift to the Hospital Cidade Tiradentes. There is no time to call an Uber. There is no time to wait for a bus.</i>
	Healthcare and Transport	Long time spent in the facility + Patient is released from the healthcare unit and has no public transport provided at the time needed		X	INT4: <i>And then, when I arrive at the emergency clinic São Mateus to solve my problem when I am going home, there is no bus running anymore... I relied on a relative to bring me back home.</i>
Travel to other, usually more distant facilities (eventually travel to several other facilities seeking healthcare)	Healthcare	Lack of medical staff	X	X	P202: <i>Because the AMA is down here, I live up there, sometimes you come here in the AMA, sometimes there is a doctor, but often the doctors do not attend, then you have to travel farther, sometimes to the farthest places, as the UPA Itaquera. You get that minibus, that minibus is the hell. Getting there sucks.</i>

	Healthcare	Lack of material or equipment	X	X	INT6: I was 14 years old when my sister Kelly broke her arm. She was playing. We went to the Hospital Waldomiro de Paula, and there was no plaster in the hospital. She was sent to the [Hospital] Geral [de Guaianases] but spent the whole day with a broken arm.
	Healthcare	Long on-site waiting time to be attended	X	X	P104: Because the time you wait here, for example. I took my sick daughter with a fever. The doctor from Tiradentes said that she was going to see her within three hours. We travelled to Santo Expedito, in Itaquera, and she was attended quicker.
	Healthcare	Incorrect treatments	X	X	INT6: She was attended in the Hospital Waldomiro de Paula in Itaquera, it took the whole day... She was bleeding very much. She received care when she started having a fever at 6 pm... The doctor just looked at her, examined ears and heart, and said she had an allergy. He prescribed an anti-allergic drug and a painkiller. But on the next day, she woke up with the same things. The anti-allergic was not producing effect.... So, I went to Hospital Cidade Tiradentes...
Long-term					
Stay at home (suppress medical visits, self-medicate)	Healthcare	Lack of medical staff	X	X	P605: Every woman has to go to the gynaecologist to find out if it is okay [with her health] and to get the medicine... I haven't gone to her until today; it was for my own that I took [medicine] alone, because, otherwise, I would be until today without...
	Healthcare	Low care quality (e.g. rushed consultations)	X	X	P508: I think about the wear and tear of you going to this emergency room, and having bad service... I would rather say 'oh no, I'll improve at home'.
	Healthcare	Long on-site waiting time	X	X	INT4: Several times I was feeling bad, and I preferred staying at home rather than wait at the [healthcare] service because I knew that it would take a long time for them to take care.

	Healthcare	Ineffective treatment		X	INT5: Nowadays, I just go to the doctor if I am obliged. Why should I go there to get prescriptions of dipyron [a painkiller], Buscopan? The treatment is not continued.
Relocate place of treatment	Transport	Change of bus line itinerary	X		P408: I used to get treatment in Vila Mariana [27 km distant neighbourhood], the [bus line] Paraíso left me in front [of the clinic]... It was good. The ride was a bit time consuming, but I was in front of my dentist, it was just a bus. At the time it was R\$ 2.00, R\$ 1.70, it was worth it. Not now, I quit my treatment there, because they took out the bus, took it out without telling anyone.
Travel to other, usually more distant facilities	Healthcare	Lack of medical staff	X		P902: So, I go to Vila Alpina 24 Horas, it takes a lot of time, but they attend. It's not very good, but they attend.
	Healthcare	Specialities	X	X	P202: I usually take my children like this, I do not go to these BHCs here. I'll take them there to Penha [15 km distant neighbourhood]... To schedule an appointment, to schedule a paediatrician, to schedule anything I take him there to Penha because there is better, the doctors are better, and there is not like here that a doctor for everything. There is one doctor for each speciality. So I think it is better there.
	Healthcare	Long on-site waiting time	X	X	P305: I really like going to AMA Sapopemba because there are wonderful paediatricians there. So in a hurry, if the child has a crisis, I go running there. I do not go in the doctor via insurance plan. I go where you have quick care.
	Healthcare	Long time to schedule an appointment	X		P1204: Then you try to schedule [an appointment], and they come back to you after four months. It is quite complicated... I do not utilise too many things from here. I prefer to utilise [services] where I lived, which are faster, or travel to Santo André [another municipality].

	Healthcare	Low quality of the consultations	X		P1008: <i>If you go there, it is because you are sick, you go in search of improvement, a good word, good care. And it sucks, people get very grumpy and attend with a lack of education, an irritating lack of will. And look, within two minutes I can be there, it's close, I hear from home the babies being born there...</i>
	Healthcare	Incorrect treatments		X	INT1: <i>My father is going to have surgery [at a hospital] in Ipiranga. He did all the examinations and will have the surgery there... [In the Hospital Sao Mateus] he got diagnosed with a spinal disc herniation, but he did not have this. My father had prostate cancer.</i>
Buy private healthcare insurance	Healthcare	Specialities	X		P1509: <i>They put a nurse to take care of the child. I did not accept it... I made the "Cartão Cristão" for her.</i> P605: <i>Paediatrician is also difficult, we had to pay for a healthcare insurance plan to my daughter, because paediatrician with six months waiting list, I cannot wait six months for an appointment from now.</i>
	Healthcare	Medical examinations	X		P104: <i>If you have to take mammography... I myself have just done it because my husband has health insurance.</i>
	Healthcare	Long waiting time to schedule an appointment	X	X	P (FG 7): <i>So you know what I ended up doing? I'm now paying Cartão Cristão. So now I'm able to get appointments with the doctors to take examinations. Because through the BHCs I've been in the queue for more than two years to get my heart examined. I'm paying, then I'm at least quieter to know what I have, right? I was apprehensive.</i> P1005: <i>I'm doing everything privately [using a private health insurance plan] because I will not stay one year, two years waiting because I have urgency. If I'm doing this exam is because I want to know how I am, how my health is going.</i>

	Healthcare	Long on-site waiting time	X	X	P305: <i>Look, I do not use too much public [healthcare], because I'm just going to get nervous. My daughter has very strong bronchitis; she may have a respiratory and cardiac arrest and die. So, when she starts to talk that she has pain, you have to rush.</i>
	Healthcare	Low care quality (e.g. rushed consultations)	X	X	P1606: <i>But the service is different, they give [to the patients] more attention, they medicate at the moment, they medicate right. If you go to the BHC, it's totally different: you wait 4 hours to pass [with the doctor], and he looks and asks "What have you got? Oh, it's a virus! Take this, that's it. Goodbye."... They do not take exams, they don't do anything...</i>
	Healthcare	Uncoordinated care	X		P1607: <i>But for me, it pays off to have all his doctor therapies in the same clinic. It makes it much easier to treat him, he improves his clinical condition. Because it is different from when I went there in Vila Prudente, in Itaquera, and I had to be informing the doctors what Vinicius was doing elsewhere. So, I could not always tell them exactly what they wanted to know. And in the Christian Card no. I have the accompaniment of all the doctors [specialists]: neurologist, psychiatrist, psychologist, speech therapist, all there in the same team. They all know Vinicius, their accompaniment made it quite easy.</i>

Appendix I Overview on the healthcare system organisation in São Paulo

Facility type	Original name (in Portuguese)	Care level (complexity tier)	Function Main services	Specialties	Examinations	Scheduling	Opening times
Basic healthcare centre (BHC)	Unidade Básica de Saúde (UBS)	Primary	<ul style="list-style-type: none"> - Entry point in the SUS; provides referrals to specialties - Medical consultations, vaccination, collection of laboratory tests, provision of basic medication - Health promotion campaigns 	General practice, paediatrics, gynaecology, dentistry	Collection for laboratory tests: blood, urine and faeces; prenatal and puerperium; screenings	Pre-scheduled appointment	Monday to Friday from 7am to 7pm
Ambulatory centre	Assistência Médica Ambulatorial (AMA / AMA 24 Horas)	Primary	<ul style="list-style-type: none"> - Medical care for health issues of low and mid complexity in basic specialties, such as fever, allergies, high blood pressure and small injuries 	General practice, paediatrics, gynaecology, general surgery		No prior appointment needed	Monday to Saturday from 7am to 7pm (some facilities open 24 hours per day)
Specialized polyclinic health facility	Hospital Dia da Rede Hora Certa	Primary and secondary	<ul style="list-style-type: none"> - Intermediate care facility that performs clinical, diagnostic, therapeutic and surgical procedures that require the patient to remain in the unit up to 12 hours 			Pre-scheduled appointments through BHCs (referrals)	Monday to Saturday from 7am to 7pm

Facility type	Original name (in Portuguese)	Care level (complexity tier)	Function Main services	Specialties	Examinations	Scheduling	Opening times
Specialized polyclinic health facility	Ambulatório de Especialidades (AMA Especialidades)	Secondary (mid complexity)	- Specialized medical consultations and specialized diagnostic exams	Orthopaedics, vascular surgery, cardiology, endocrinology, neurology, urology and rheumatology	Electrocardiogram, ambulatory blood pressure monitoring (ABPM), doppler echocardiography, vascular doppler, electroencephalogram, ultrasound, X-ray and laboratory tests	Pre-scheduled appointments through BHCs (referrals)	Monday to Saturday from 7am to 7pm
Emergency clinic	Unidade de Pronto Atendimento (UPA)	Secondary (mid complexity)	- Emergency care, such as high blood pressure and fever, fractures, cuts, heart attack, and stroke	Paediatrics	X-ray, electrocardiography, laboratory tests	No prior appointment needed	24 hours per day, 7 days per week
Hospital / Emergency unit	Hospital / Pronto-socorro hospitalar	Tertiary (high complexity)	Provision of more advanced treatment and emergency care at emergency units	Emergency units provide initial care for a broad spectrum of illnesses and injuries, some of which may be life-threatening and require immediate attention	Several types	No prior appointment needed	24 hours per day, 7 days per week

**Appendix J Video-documentary “On the way to the
doctor”**

(see material attached)