How transport enables (or hinders) access to health
Evidence from low-income communities in São Paulo, Brazil

Thiago Guimarães

th.guimaraes@gmail.com
@thiagoguimaraes

The covid-19 pandemic in the largest Brazilian city

Covid-19 cases and deaths in the City of São Paulo
The covid-19 pandemic in the largest Brazilian city

Spatial pattern of Covid-19 dissemination
Systematic intra-urban disparities of **healthcare utilisation** and **health outcomes** according to their socioeconomic position.
Research background

Accessibility (or spatial access) is an important component of access to healthcare
- the ease [or the individual ability] to get to activity sites
- typically operationalized in terms of travel time or cost

Accessibility to basic healthcare in São Paulo (2SFCA approach)

Main reason Brazilians do not to seek healthcare, by income quintile

Source: National Health Survey 2003 microdata (own analysis)
Findings of previous research

Complex relationships between accessibility and healthcare uptake

- **Mixed results** on the association between distance to healthcare facilities and health outcomes (e.g. Kelly et al. 2016)

- The relationship between low accessibility to health outcomes has been well established in rural or sparsely settled regions with lower levels of provision of public transport and healthcare services (Arcury et al., 2006; Brabyn and Skelly, 2002; Hjortsberg, 2003), or at large geographical scales (Carr-Hill et al., 1996).

- Lacking explanations about the **causal mechanisms** linking ease to travel to healthcare sites and utilisation

- Little is known about how low income people gain access specifically to healthcare facilities, and the role of transport in it (Gutierrez 2009, Hernandez and Rossel 2015)

- Without taking into account **quality of healthcare**, analysts have created unrealistic, “misleading landscapes” of accessibility (Hawthorne and Kwan 2012)

Figure 2 Street network measure of accessibility of an African American man

(Hawthorne and Kwan, 2012)
Research objectives

1. Which are the **key barriers** faced by residents of low-income areas in São Paulo when accessing healthcare services?

2. How do poor people **overcome** these barriers in order to satisfy their health needs?
The Brazilian healthcare system

Hybrid healthcare system, with two subsystems operating in parallel

- **Public healthcare system SUS**
  universal, cost-free and unconditional access to healthcare
  Underfunding and low quality
    - Brazil: 37% of hospitals of “unacceptable” or “very unacceptable” quality (La Forgia and Couttolenc, 2008)
    - São Paulo state: Half of the hospitals do not accomplish with minimum requirements (Gragnolati et al., 2013)

- **Private healthcare system**
  By law, supplementary to the public system; in practice, overlapping
  Insurance plans (R$ 80 – R$ 10,000 per month) (Santos, 2018)
  Proliferation of low-cost clinics in the largest Brazilian cities
Methods

Focus groups
• Aim: understand accessibility based on citizens’ lived experiences and views
• 15 focus groups with 114 participants in 12 neighbourhoods over 7 districts
• Recruiting: pro-housing social movement ensured income criterion
• Sampling: Women deliberately oversampled

Individual interviews
• Aim: to elucidate the impacts of accessibility deficits
• Face-to-face, semi-structured, focused approach
Focus group participants, by census tract income quintile

1 (low) 51
2 28
3 18
4 4
5 (high) 0
Total 101

Focus group participants, by residential location relative to monorail stations

less than 1 km 52
over 1 km 51
Total 103

Focus group participants, by gender

male 18%
female 82%

Focus group participants, by age group

Under 20 2%
20-29 14%
30-39 40%
40-49 18%
50-59 20%
60 and over 7%

Monorail line 15: Ipiranga – Hospital Cidade Tiradentes

Length 26.6 (13.0) km
Stations 18 (10)
Estimated demand 550,000 (340,000) pass/day
Maximum capacity 40,000 passengers / hour
Minimum headway 1.5 min
Maximum operating speed 80 km/h
Cost BRL 6.4 bn (~GBP 1.22 bn)

Case study area

- São Paulo municipality
- Study area
- Monthly income per capita (BRL) (quintiles)
  - 509 or less
  - 509 - 691
  - 691 - 1,000
  - 1,000 - 2,004
  - 2,004 or more
- Focus group participants’ residences

Transport

- Metropolitan train
- Underground line 2
- Underground line 3
- Monorail line 15
  - In operation (Aug 2017)
  - Planned
- Buffer (1 km) around stations

Data source: Municipality of São Paulo (GeoSampa) and IBGE Census 2010
Projection: SIRGAS 2000 / UTM zone 23S
Accessibility to healthcare: 5 key barriers

- Availability
- Affordability
- Comfort
- Reliability
- Proximity and remoteness
- Waiting time for consultation
- Waiting time on the day
- Quality of healthcare services
- Quality of consultation
- Walking safety
- Personal security
- Assaults
- Female harassment
# Accessibility to healthcare: 5 key barriers

<table>
<thead>
<tr>
<th>Code System</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main themes</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- Proximity and remoteness</td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>15</td>
</tr>
<tr>
<td>- Walking safety</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>14</td>
</tr>
<tr>
<td><strong>Public transport services</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- Availability</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>7</td>
</tr>
<tr>
<td>- Affordability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Reliability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Personal security</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- Assaults</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>13</td>
</tr>
<tr>
<td>- Female harassment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quality of healthcare services</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- Waiting time for an appointment</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>14</td>
</tr>
<tr>
<td>- Waiting time on the day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Quality of consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SUM</strong></td>
<td>10</td>
<td>7</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>140</td>
</tr>
</tbody>
</table>
Barrier 1: Proximity/Remoteness

- People appreciate living in neighbourhoods “close to everything”, i.e. equipped with healthcare facilities.
- Closeness framed in terms of travel distance or time needed to get to the services.
- The absolute lack of local opportunities was a restricted problem.
- In general, it is “easier” to get to basic healthcare units than to hospitals.

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

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)
Barrier 2: Walking safety

- Pedestrians feel **highly vulnerable** to traffic-related injury and casualties
- Poor design and maintenance of the **walking environment**: sidewalks, access ramps, crossing markings, traffic signalling inappropriate or missing also in areas with high pedestrian flows
- Obstructions: waste disposal, parked cars, personal belongings, street vendors
- Interaction with endangering **drivers’ behaviour**

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)

We’re trapped in a kind of dilemma: if you deviate [from a bad sidewalk], a car may run you over. But if you walk on the sidewalk, you may fall. (male, 37 years old, FG 11)
Barrier 3: Public transport services

- **Availability:** Few lines serving destinations of interest (e.g. straight lines to underground stations), low service frequency at off-peak times, cancellations in the weekends, vehicles physically inaccessible for people with disabilities.

- **Affordability:** Concerns about the worthiness of using public transport in relation to discomfort or impossibility to complete the trip without spending more.

- **Comfort:** Overcrowding in all stages of the trip (in transport hubs, at platforms, inside vehicles, when embarking or disembarking), especially in rail. Misbehaviour, no preferential seat.

- **Reliability:** Inability to board onto crowded vehicles, panes affect the underground, rainy days and congestion.

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)

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

You get the packed bus, there’s no place to sit. There are times when you take a foot out of the floor, and you cannot put it down again. (female, 35 years old, FG 7)

Sometimes three, four buses pass and we cannot get in… so full they are. (Female, 51 years old, FG 10)
Barrier 4: Personal security

- **Assaults**: Assaults in the streets, at bus stops, inside buses (risk of crime not confined to specific areas); reluctance to go to healthcare facilities located in unfamiliar areas
- **Female harassment**: Women fear to be **physically abused** in public transport (especially in trains and underground)

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)

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)
Barrier 5: Quality of healthcare services

- **Waiting time for consultation**: The disproportionate long waits (reported in months) between scheduling and getting consultations, in particular with specialist doctors and for some procedures but also in primary forms of healthcare.

- **Waiting time on the day**: Hours queuing inside facilities before being attended and receiving care.

- **Quality of consultation**: Rushed consultations, inattentive and disinterested staff, poor provider-patient communication, ineffective treatments.

Quotes:

- "I scheduled it [an appointment with a paediatrician] eight months ago and they [the children] only now will pass with the doctor. (FG 1)"

- "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)"
Accessibility to healthcare: 5 key barriers

Availability
Affordability
Comfort
Reliability
Public transport services

Proximity and remoteness
Waiting time for consultation
Waiting time on the day
Quality of healthcare services
Quality of consultation

Walking safety

Personal security
Assaults
Female harassment
Accessibility to healthcare: Relationships between barriers

- **Distance-quality**: people regard proximity as a positive attribute only in relation to opportunities able to deliver services with satisfactory quality; some shortcomings make services be perceived of no value

- **No ride-hailing**: app-based transport services are unavailable because drivers do not accept trips originated in neighbourhoods perceived as dangerous

- **Shortage of doctors**: Insecurity as an underlying cause of chronic understaffing
**Issues**

**Long-term strategy**

- Lack of medical staff
- Travel to other, usually more distant facilities (eventually travel to several other facilities seeking healthcare)
- Lack of material or equipment
- Long on-site waiting time to be attended
- Incorrect treatment

**Short-term strategy**

- Lack of medical staff
- Travel to other, usually more distant facilities (eventually travel to several other facilities seeking healthcare)
- Lack of material or equipment
- Long on-site waiting time to be attended
- Incorrect treatment

**Transport-related barriers**

- Public transport availability
- Public transport reliability
- Absent doctor, broken equipment
- Waiting time for an appointment
- Waiting time on the day
- Quality of consultation
- Other reasons (e.g. specialists, better follow-up)

**Healthcare-related barriers**

- Self-medicate at home
- Travel farther
- Buy private healthcare

**Long-term strategies**

- Travel to other, usually more distant facilities (Change of bus line itinerary)
- Lack of medical staff
- Specialities
- Long on-site waiting time to be attended
- Low quality of the consultations
- Incorrect treatment
Key findings

- Travel time and distance are not the sole nor the most important healthcare accessibility barriers.

- People assess jointly transport and health service attributes when assessing the ease to get to healthcare sites.

- People often accept to travel in inferior conditions when expecting to use health services of superior quality.

- Accessibility barriers and their interactions lead to negative outcomes in terms of the satisfaction of health needs.
Policy recommendations

1. Institutional cross-sectorial coordination for integrated transport, urban and service planning
   → improve transport provision to healthcare services of good quality and in undersupplied areas

2. Quality improvement of the local healthcare
   → enhance quality of underperforming healthcare facilities, reducing disparities (public/private and territorial)

3. Flexibilisation of the primary healthcare delivery
   → implement a “patient choice” policy (supress the rigidity of the current territorial approach of primary healthcare provision)

4. Delivery of adequate public transport
   → provide physically accessible, affordable, comfortable, reliable and safe transport to healthcare sites
   → increase capacity of existing transport links
   → provide direct transport to good quality healthcare services

5. Enhanced walking conditions
   → improve walking conditions especially at the immediate surroundings of hospitals and healthcare centres
Check out what people in São Paulo say about accessing healthcare sites watching the video documentary *On the way to the doctor*

[bit.ly/tothedocto][1]

---

Thank you!