



World Conference on Transport Research - WCTR 2016 Shanghai. 10-15 July 2016

Income vs. travel time: Why do the poorest and the richest travel fastest in northeastern Brazil?

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Abstract

The latest Census survey driven by the Brazilian Institute of Geography and Statistics (IBGE) shows that the income groups having the smallest commuting time in the city of Recife are those with the lowest and the highest incomes. This paper tries to find reasons behind that behavior for the groups with lowest income by using data from focus groups interviews in low-income areas of the city. Census data is from 2010, the interviews were held in the end of 2011. Results show that the poorest people in Recife cannot afford to use public transportation, restricting their activities to places that can be reached by foot or, in some cases, riding bicycles. Even though those people are not isolated in far suburbs, as it happens in many cities from many countries, the lack of access to public transport can also drive to isolation by creating restraints for participation in social-economic activities and, in this paper specifically, to work opportunities. Public transportation is usually seen as accessible to all: in economic theory it is even considered an example of inferior good; however, in this city, it may be a luxury item to a considerable part of the population.

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Peer-review under responsibility of WORLD CONFERENCE ON TRANSPORT RESEARCH SOCIETY.

Keywords: social exclusion; income; commuting time; work; accessibility

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1. Introduction

This paper aims to prospect the elaborate relationship between mobility and accessibility of citizens from different income ranges and land use. The research uses *Micro-interlocutor Analysis* technique to cross-analyze data prospected in two previous researches developed in a large state capital in the poorer Northeastern region of Brazil. The main point this paper examines is how important are land use and income characteristics to determine accessibility.

Accessibility is influenced by income inequality; living in certain areas and being able to use certain types of transportation may assure the ability to undertake the important activities of life, i.e., education, jobs, health services and leisure. Because transport is primarily a derived demand, restrictions to mobility may contribute to social exclusion and may negatively impact psychological and social well-being.

However, the way income influences commuting time varies from place to place. Part of the literature affirms that people with higher incomes will have shorter commuting times, since, for valuing more their time, they prefer to live closer to their jobs and pay for faster modes of travel. On the other hand, it is also argued that wealthier people would have longer commuting times, since their demand for better life quality and more spacious houses can more easily be reached far away from downtown and from their workplaces (Dargay and Omereen, 2005). It is, however, usually assumed to be a linear effect: either it increases travel time or it decreases travel time.

It is also a question of land use and job location. In some countries, most of the cities have their CBDs in the kernel of the municipal area, where the wealthiest households are also located, whereas the suburbs have the social function of low-income dormitories. Such organization is common in European cities (Bruecker et al, 1999) and Australia (Dodson & Sipe, 2006; Burke & Hayward, 2001). In other geographical locations, mainly in the US, cities are generally quite dispersed and most jobs and richest housing areas are located in the rich suburbs while the old downtown is home for the poor (Alonso, 1964; Muth, 1969; Mills, 1967). However, many emerging countries, including Brazil, are known for their illegal land occupation at the so-called slums, or *favelas* – which, in Brazil's specific case, are located very close to the richest areas of the city. Because of this complex reality that is not only geographical, but also social and cultural, present in most developing countries, theories on social behavior that work well in developed countries, when applied to emerging countries do not always show the same expected result (Andrade and Maia, 2009; Rujopakarn, 2003).

The issue here concerned is that Lima and Mota (2012) found that commuting time in the Metropolitan Region of Recife does not vary monotonically with income. In fact, the pattern shows that the lowest and the highest income strata spend less time commuting. Acknowledging this peculiar behavior, this paper uses *Micro-interlocutor Analysis* to investigate qualitative data from two low-income communities in the city of Recife regarding their commuting travel patterns, in order to prospect the reasons of the non-monotonic behavior.

Understanding why such scenario prevails is important: in most cities, inequality in transportation may mean that the poor will have longer commuting times. If this is not happening in Recife, it is important to investigate the possible reasons. Does the good location of the *favelas* enable the low-income stratum to have equal access? Do they have better access to services and increased mobility?

This work is divided into eight sections. Section 2 introduces social exclusion and accessibility issues in a broader view and the specificities of Brazilian cities. Section 3 addresses income and commuting time, explaining the peculiarities found in the city of Recife. Section 4 depicts Recife and the city's metropolitan area in its socioeconomic characteristics. Section 5 explains the methodology adopted by the authors. Section 7 displays the findings achieved analyzing the focus groups answers. Finally, Section 8 conducts the conclusions.

2. Land use and commuting

Robust evidence confirms that land use and travel demand are strongly related (Kitamura et al. 1997). Residential density has been established to be associated with public transport service levels, household size and household income (Alonso 1964; Muth 1969). It has also been conjectured that, besides the intensity, the mixture of land uses is also associated with travel demand, as sized regarding trip frequency by mode and travel distance (Levinson & Wynn 1963; Pushkarev & Zupan 1977; Goodwin 1975; Cervero 1989).

There are several studies linking land use to accessibility. Howard/Stein-Hudson Associates (1993) state that higher-density developments decrease vehicle use and increase transit use. Handy (1993) found that elevated local and regional accessibility levels were associated with shorter trips but not with fewer trips. Ewing et al. (1994) verified

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