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Transport systems and their impact con gender equity

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Abstract

This paper summarizes recent research on unequal access to transport systems. It focuses on how gender and socioeconomic inequalities may be aggravated by differences in transport accessibility. The investigation evaluated three hypothesis; first, transport accessibility is different between men and women with similar socioeconomic background; second due to these differences, women have less transport accessibility to jobs; and third, that these differences are stronger in lower income socioeconomic areas. Four zones in Bogotá were studied in more detail. The data used consisted of Bogota's 2005 mobility survey, and two stated and revealed preference surveys developed by the University of the Andes to study socioeconomic and gender accessibility. This data helped establish differences in daily practices of men and women from different socioeconomic strata, as well as the access characteristics to different transport systems. The data was also used to estimate the real accessibility of the four zones, and this was gender disaggregated. In conclusion, it was found that women generally travel less than men and they spend more than men in transport, even though their trips may be shorter. This did result in lower transport accessibility to job locations. Also, it was found that gender differences were stronger in lower socioeconomic areas. With these results, the investigation states the differences and several possible policies that could be considered to diminish the inequity.

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1. Introduction

Inequalities generated due to unequal access to transport systems is a subject studied in several high income countries' cities. These studies have shown how differences in access can generate disparities between different social classes, however these differences have not been studied in the same way for gender inequities. In general, accessibility and transport planning have not been sensitive to subjects such as gender, age, disability and ethnicity (Preston & Rajé, 2007).

Considering the above, this research will carry out an accessibility analysis for the city of Bogota, Colombia, specifically around gender inequities. It will compare the accessibility to employment given certain transport impediments in four areas of the city. For each area, the analysis will compare men and women. The areas chosen provide a varied sample in terms of average population income and location, given that some are closer to the Central Business District- CBD than others.

Previous research has confirmed that higher income populations in the city of Bogota have greater accessibility to employment sites because they have a lower average travel time and lower percentage of income spent on transport (Oviedo, 2010). In this sense, this research expects to observe this disparity among the different areas selected. It also expects to find gender differences regarding access to employment sites. It is expected that men will have greater access to job locations than women because the proportion of income spent in transport is less than that of women. Finally, it is estimated that this difference will be higher in lower income populations, and lower in higher income populations.

To evaluate these hypotheses, this paper will begin by briefly presenting the concept of accessibility, followed by some theory on gender inequalities in transport. It will then present the context of Bogota, Colombia, and the accessibility methodology implemented to carry out the analysis. Finally, it will present the data results, analysis and research conclusions.

2. Accessibility and gender inequalities

2.1. Accessibility

Accessibility has become an important concept in mobility plans and evaluation of transport projects. In many cases this has required a change from the emphasis on mobility to a focus on accessibility (Curtis, 2008). Nevertheless, there are several definitions of this concept some of which are summarized below:

- Accessibility constitutes the potential opportunities for interaction (Hansen, 1959)
- Accessibility is the ease of reaching any area of activity using a specific transport system (Dalvi, 1976)
- Accessibility can be seen as the overall benefits provided by a given transport system (Ben-Akiva & Lerman, 1979)

For this investigation, accessibility is taken as the “ease of reaching a desired destination given a number of opportunities and impedances associated to the transport supply used to travel between the Origin-Destination pair” (Bocarejo & Oviedo, 2009). Though the impediments can comprise a variety of variables, the two most influential are: travel time and fare/cost. The later, will be taken as the percentage of individual income spent in transport as it better reflects income inequalities (Bocarejo & Oviedo, 2009).

This research will consider the “real” accessibility defined as the accessibility presented by the population studied with the current costs/income relationship and travel times given the present transport supply, and individuals' socioeconomic characteristics. This accessibility reflects the “effort” different populations must make in order to access employment and other activities (Bocarejo & Oviedo, 2009).

To measure and compare accessibilities, Bocarejo and Oviedo (2009) propose an accessibility index which compares the estimated job locations accessed with the working population in each zone analyzed. In mathematical terms, the estimated job locations accessed are estimated following equations based on Hansen's accessibility index:

Hansen's index is expressed in the following equation where the accessibility of a zone i is A_i and it's given by:

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