

### Going work-related high mobile in Santiago, a question of conciliation? Investigating long-duration commute through hybrid choice modelling

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#### SUMMARY

Today, mobility constitutes a foundation of society, yet its indispensable nature does not ensure fairness of access, competencies or appropriation for the population. The aim of this thesis is to describe and characterise work-related high mobility practices, and long-duration commuting in particular, in the context of a large metropolitan area. This, in turn, serves the broader objective of evaluating various socioeconomic and preference characteristics to being highly mobile for work-related reasons. To this end, and by exploiting the extensive database available, reflections on stated and revealed preferences, short-term and long-term decisions as well as observed variables and attitudes will be used to develop a coherent model for understanding and forecasting human behaviour towards work-related high mobility.

#### DEFINITIONS & CONTEXT

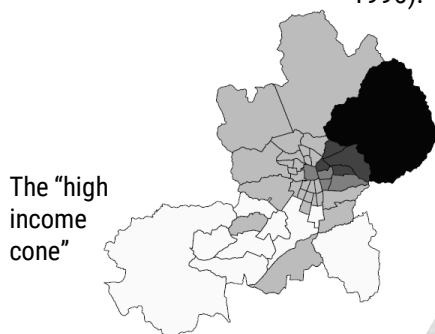
**Mobility = Travel + Motility**  
(Kaufmann, 2008)

**Travel** – Including both physical displacement and social transforms reveals the importance of one's change in condition as a result of mobility, essentially in terms of the evolution and discovering of social habits.

**Motility** – Ability to perform spontaneous reactions, involving *access* (the conditions that enable using a transport offer), *skills* (the necessary conditions for using a particular mode) and *adoption* (actually using a particular mode for one's chosen activity).

**High mobility** is, in essence, mobility stretched to its extreme. As such, it is intrinsically linked to the improvement of transport offer and the ensuing notion of distance distortion.

**Long-duration commuting** is therefore defined as trips to work of over 60 minutes, based on the categories defined by (Bericat, 1995).



**Santiago** was shown to be a very good example of the **global fragmentation model** (Scholz, 2002), reflecting how globalisation transforms space into fragments of richness within a sea of poorer marginal quarters. The notion of inequalities is therefore crucial as, even when desired, reducing high mobility is not always possible depending on individuals' resources, local attachment and labour market conditions (Viry et al., 2015).

#### MODEL & FINDINGS

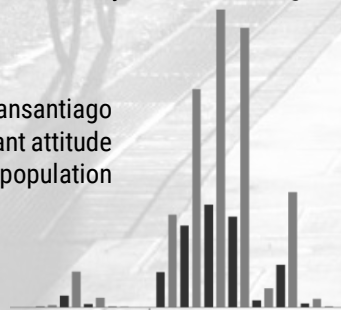
A **hybrid choice model** was specified, wherein a latent variable reflecting the **reluctant attitude** towards using the Transantiago public transport system was joined to a binary logit model. The variables of significance were found to be mainly socioeconomic and, among these, 3 were of greatest importance. They additionally support the statement made by (Viry et al., 2015) that changes in high mobility behaviour depend on personal context and professional projects.

- 1) Employment type
- 2) Income
- 3) Mode choice

The first is decidedly intertwined with the second, but also sector of employment. In fact, the minor role played by accessibility of jobs revealed the positive impacts of working in the business sector and having either very low or very high income on choosing to be LDC.

In terms of mode choice, a negative image of the Transantiago was indeed behind long-duration car commuting, but, to the opposite, a positive image was not responsible for long-duration commuting with public transport. Still, LDC expressed less dislike towards the Transantiago, illustrating the importance of choosing the mode that satisfies their sentiment. Finally, mode choice should be considered with foresight, as perceptions can lead to such unexpected contributions towards LDC as **positive utility of travel**, observed in the case of cycling and likely linked to travel-subjective well being.

Transantiago  
reluctant attitude  
in the population



#### CONCLUSIONS & PERSPECTIVES

Both observed in the population and estimated by the model, the proportion of almost **25%** of LDC in the population is non-negligible, and therefore important to address in further investigations, if only for the purpose of developing suitable policies that may be pertinent and directed at the correct audience. In addition, the study seems to reflect that transport attitudes are, to some extent, influenced by residential location. In particular, the results agree with the concept of **residential self-selection** as a means of reaching travel preferences.

The main **limitations** in this study can be articulated around two notions. Further investigation seems necessary to characterise the **choice of residential location** in terms of its conditionality to situations of work-related high mobility, or *vice versa*. This could be done by improving the accessibility indicator developed or by calling on other model structures, such as the nested logit model.

There are also pending **methodological considerations**, with respect to potential endogeneity issues. In this sense, the limited effect of the latent variable observed suggests that there may be additional unobserved factors at play. A joint (rather than sequential) estimation could also be performed on a more powerful machine to deal with potential serial correlation.

Finally, the study appears to suggest that the concept of residential self-selection observed may expand to employment, in the form of a **job self-selection** with respect to travel behaviour, as suggested by (vanWee, 2009).

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