2017 Tinker Field Research Grant Final Report

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Title: Exploring the impact on public transportation reforms on low-income residents in Colombia

On the 7th of July, 2017, one of my trips started at Universidad Javeriana, located in Chapinero, a central neighborhood of Bogotá, and where I was meeting with a professor in the sociology department to talk about her research on transportation sociology. To access to the core of Ciudad Bolivar, one of the most impoverished areas in the Bogotá and my final destination of the day, I embarked on a prolonged multimodal trip. I walked for 15 minutes to the nearest TransMilenio's station where I wait for about another 15 minutes to take a trunk bus route to the Portal Tunal. The ride on the first bus added to my trip another 35 minutes. From Portal Tunal I transferred to a free feeder bus that will take me closer to my final destination. From the feeder bus stop, I had to walk up the steep hills of Ciudad Bolivar for about 20 minutes to reach the construction site of the Juan Pablo II cable car station – one of the four to be served by this new transportation mode called TransMicable.

What I have just described is the commute of several low-income Bogotanos, who live in the central neighborhoods of Ciudad Bolivar's locality. The commute of those living in areas higher in the hill take even more time and include not only formal transportation modes but also uber-like jitneys or motorcycle taxis that connect these peripheral zones with the city's bus rapid transit (BRT) – TransMilenio. Only this last 'leg' of the trip could take approximately 60 minutes due to morning peak hour congestion. TransMicable is supposed to cut travel times of people who can access the system. The implementation of TransMicable in July 2018 will be accompanied by feeder bus services restructuring and more strict enforcement of laws that prohibit the operation of informal transportation services to avoid competition with the new transportation services.

TransMicable is one of the several aerial cable cars that are being built in Latin America with the objective of providing better access to economic opportunities of hard-to-access low-income neighborhoods in hilly areas. These projects were inspired in the Metrocable, the first aerial cable car line used for urban travel in impoverished areas, inaugurated in 2007 in Medellin, which draw the attention of the international community and became a symbol of pride of the city. Cities like La Paz, Bolivia, Cali, Colombia, Rio de Janeiro in Brazil have implemented aerial cable car lines since then, and there are plans to add more line in at least other 50 cities around the Global South. Similarly, hundreds of cities are implementing bus rapid transit corridors to replace pre-existing loosely regulated and privately provided bus routes, following Bogota's successful BRT – TransMilenio. Bogota's BRT has been gradually implanted during the past two decades to replace pre-existing loosely regulated privately operated transit bus based system, perceived by as inferior and is typically associated with congestion, pollution, and poor safety records.

Several studies suggest that despite the environmental and health benefits that BRT provides (see for instance Ernst, 2005 and Hidalgo et al. 2013), the poor still rely primarily on pre-existing transport services (Cervero and Golub, 2007; Jiron, 2013). From my preliminary field work, this is also true in hard-to-access, where aerial cable cars have been implemented. And, evidence about why these options remain relevant, especially for the poor is scarce (Santana et al. 2016). Additionally, there is little empirical evidence of whether or not recently implemented public transport reforms have contributed to reducing social exclusion and how this can be measured by looking at changes in their travel patterns (Combs, 2017). To contribute to the academic literature on transport planning, I expect to examine the outcome of public transportation reform in at least one city in Colombia. Some of the questions that motivate my research are: How have public transportation reforms in affected the poor (e.g., BRT and

aerial cable car implementation)? What is the role of loosely regulated privately-provided shared-ride travel modes -such as motorcycle taxis, shared taxis, non-motorized rickshaws, and loosely-regulated bus routes- in dealing with equity issues and how these transportation services interact with the newly implemented transportation systems governments have put in place in different cities in Latin America?

Answering these questions requires a mixed methods approach. I will analyze available household travel surveys conducted before and after the implementation of the different public transportation services, supplemented by primary data I will collect though households and intercept surveys in various neighborhoods of interest. I will use a combination of cross-sectional descriptive analysis with econometric methods for causal inference to understand how each available transportation mode is linked to changes in travel behavior and explore how these changes can be associated with social exclusion. Also, I will conduct, translate, code and analyze open-ended qualitative semi-structured interviews with households living in peripheral low-income neighborhoods to understand the possible mechanisms in which different transportation options, and more importantly transportation restructuring in Latin America, can impact the poor. The latter component of my research will help me under which mechanism travel relates to social inclusion and well-being.

As part of the early research process of my research, I decided to visit the three most important cities in Colombia - Bogotá, Cali, and Medellin- which have embarked on an ambitious plan to replace their loosely regulated and privately provided public transportation system more than a decade ago. Among the objectives of this first exploratory pre-dissertation work are: becoming familiar their recently implemented transportation reforms, experiencing how the poor travel, identifying hubs of informal transportation, observing how these services interact with other transportation modes, making connections with scholars and planners; and gaining access to data – particularly household travel surveys before and after the implementation of each project.

Five weeks of preliminary field work in the outskirts of Bogotá, Medellin, and Cali were probably enough to gain a broad picture of how hard is to travel from and to these marginalized areas and the risk they have to take to access to transportation. Low-income residents endure in long and expensive journeys to access to economic and social opportunities and leisure activities – all this despite the 'improvements' in the public transportation infrastructure and services. What surprised me the most was to see very old jitneys and private automobiles the peripheries of all Bogotá, Medellin, and Cali offering public transportation services. These vehicles were old, seemed poorly maintained, operated generally at capacity and on the same roads with modern feeder buses. In the case of Medellin and Cali, these jitneys apparently compete with aerial cable car lines. In Cali, jitneys, called in Spanish 'carritos', are recognized by the city government as a public transportation service, and there is a plan to integrate them with the BRT and the MIOCable.

Another important lesson of my field trip was that data is not as available and complete as I thought. In the case of Cali, transportation planners working at the city's Bus Rapid Transit agency – MIO – expressed their willingness to cooperate, but also insisted in their inability to provide data that contribute to understanding travel behavior before the BRT was implemented in 2010. The city conducted a few household travel surveys in 2005 only with the objective of planning bicycle infrastructure. This study does not capture informal transportation services and does a poor job in representing the travel behavior of public transit users. The most recent survey, conducted in 2015, does capture all the transportation modes available in the city and represents an opportunity to establish the baseline of the Cali's aerial cable car, but the analysis will be limited to only one small geographical area. I was also able to obtain also the initial plans of the MIOCable, current ridership figures, and other details of the project. The general manager of MIOCable also shared with me his perception of what can be done to improve the service, including integration with jitneys services. Similarly, in Medellin, the household travel survey conducted after the BRT was launched does not capture a relevant group of its users because the sampling

did not include non-formalized neighborhoods, particularly those covered by the BRT feeder services. Data on the 2000 household travel survey, conducted before the first aerial cable car started operations, was not available in the metropolitan planning organization, yet the person in charge of the transportation division contacted me with engineers who probably have access to the data from the Metro de Medellin company.

In Bogotá, the manager of the TransMicable project shared with me all the plans of the project and expressed his willingness to collaborate with my research. I was able to collect all the city's household travel surveys, which represent a significant opportunity to study the impact of the different trunk corridors and their respective feeder routes on travel of low-income residents and how those changes, if any, have helped to reduce inequality. Three researchers in Bogotá, including the sociology professor I mentioned at the beginning of this report, shared their experiences working on the peripheries of Bogota, shared their preliminary findings, thesis they have advised, and contacts that will be useful for my research. One professor at Universidad de Los Andes expressed his interest in collaborating with my research. Two scholars in Cali, one from the Universidad del Valle, and other from Universidad ICESI, shared their work on social exclusion and transportation in the city, as well as offered their help with data collection.

The people I was able to meet during my trip shared with me valuable data, their perception on the different public transportation reforms and advised me on the difficulties of visiting and conducting research in some peripheral areas where these projects were or will be implemented. Planners from the three cities shared the household travel surveys available and explained their weaknesses in either capturing users of some transportation modes, or meeting the statistical quality I might need for my research. Thanks to this trip to Colombia I have a better picture of what cases have the highest potential to be studied and have access to the data relevant to my research that is available in each city. The next step is to conduct statistical analyses to assess the quality of the household travel surveys provided and discuss with my advisor the pros and cons of each case. All this would not be possible without the Tinker Field Research Grant provided by the Center for Latin American Studies.

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