# Mobilities of the periphery: Informality, access and social exclusion in the urban fringe in Colombia

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## ARTICLE INFO

## ABSTRACT

The relationship between transport, poverty and social exclusion has increasingly held an important place in both research and policy agendas, particularly in industrialised countries. While this has helped consolidate an emerging body of theory concerned with the social consequences of mobility, our understanding of these dynamics in the context of high vulnerability and poverty in the Global South is still relatively undeveloped. Through the case of Soacha, a municipality adjacent to Colombia's capital, Bogotá, this paper explores travel strategies in a context of scarce provision of transport which, when combined with acute conditions of low-income and segregation, limit vulnerable populations' access to the city. The travel practices, perceptions and priorities of low-income populations in deprived areas of the Global South are analysed, using a framework of transport-related social exclusion, to critically examine the elements that play a role in gaining access to the city. The emergence of adaptable methods, relations and transactions between demand and supply that allows deprived populations to reduce their risk of becoming socially excluded show potential for conceptual and practical development in addressing and analysing transport-related social exclusion.

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## 1. Introduction

Awareness of the social implications of mobility has fostered a growing number of works exploring links between transport, poverty, wellbeing and sustainability in the research agendas of human geography, transport studies and urban sociology (Hine, 2009, Jones and Lucas, 2012). This paper is aligned with international research exploring links between transport and social exclusion in low-income neighbourhoods and areas, where high deprivation and vulnerability have resulted in the disconnection of certain social groups from the opportunities of modern society (Hine, 2009). In this research, we explore the travel strategies of low-income populations in informal settlements in Soacha, a municipality at the periphery of Colombia's capital city — Bogotá. In the context of this research, travel strategies are understood as the combination of physical, economic and social resources for accessing different opportunities for raising income, education, social interactions and leisure. Soacha, as with other cases analysed from the social exclusion perspective, presents acute conditions of low-income and segregation that limit vulnerable populations' access to the city.

Specifically, we examine how different mechanisms to secure various types of mobility emerge in contexts of severe transport disadvantage, where poor infrastructure and service provision accentuates social and economic dislocation. Emphasis is placed on the role of community-led informal transport initiatives— exploring their role as means to overcome social exclusion and reflecting on the conceptual and practical implications for transport provision in segregated communities.

## 2. Peripheries, transport-related social exclusion and informality

Large cities in Latin America have experienced accelerated urban growth, particularly during the 1960s and 1970s, with tendencies to employment concentration and spatial segregation of low-income and unskilled in-migrants (Cohen, 2004). The uncontrolled and unplanned growth of, in many cases, ad-hoc metropolitan areas, led to serious problems of social exclusion, degradation and lack of basic infrastructure in emerging settlements of low-cost housing (Gilbert, 1997). Such dynamics restricted accessibility from peripheral, and often informal, settlements affecting disproportionately under-privileged groups.

Lack of adequate connectivity imposes high financial loads on poor households, especially in areas where integrated transport systems are not available, increasing transfer costs to reach the core city (Cervero, 1998, 2000). These conditions challenge institutionally weak

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governments with limited fiscal resources to provide formal transport services that meet the requirements of poor neighbourhoods (Oviedo Hernandez and Davila, 2013). In most cases the demand in these areas is not fully covered by the formal system, opening gaps for the operation of small-scale informal operators and leading to a complex interplay of formal and informal transport alternatives in the definition of travel choices (Cervero and Golub, 2007). However, informal mechanisms have limited effect in giving poor families access to opportunities within large cities and generally entail higher externalities than the formal supply (Avellaneda, 2008; Cebollada and Avellaneda, 2008; Cervero, 2013).

A relevant perspective identified in the literature in relation to the interactions between land use patterns, the transport system and individual characteristics and circumstances is transport disadvantage (Currie and Delbosc, 2010). Transport disadvantage is a multi-dimensional construct which mainly focuses on the effects of lack of transport and other external factors on individuals (Murray and Davis, 2001; Hurni, 2007). From this perspective, factors such as choice of residential location, spatial distribution of opportunities and inadequate transport can lead to certain individuals becoming transport disadvantaged, which ultimately can be related to social inequalities and exclusion (Murray and Davis, 2001; Currie and Delbosc, 2010). As argued by Lucas (2012), the combination of poor transport provision and social disadvantage can lead to 'transport poverty', which in turn exacerbates the problems of (in)accessibility to opportunities, services and interactions that increase the risk of becoming socially excluded. While mechanisms of transport exclusion can be secondary to non-transport mechanisms, the former can exacerbate the latter (Hine and Mitchell, 2003).

Access presents itself as the overarching concept governing the interactions between transport and social exclusion. Access becomes an instrument to operationalise travel strategies aimed at reaching essential opportunities. It also helps understanding of the influence of intrinsic and external conditions on different social groups (Urry, 2007). People in poverty often face difficult conditions beyond the economic realm, such as adverse topography, violence, crime and other elements, that hinder movement and accessibility (Brand and Dávila, 2011). In Colombia, the three largest cities concentrate many of their poorest citizens in hilly areas with poor access, mostly disconnected from urban infrastructure and marked by complex social dynamics of violence, crime and segregation (Dávila, 2013). By and large, the majority of location patterns of the urban poor in the Global South lead to a limited capacity for travel and to an increase of social, spatial and economic inequalities (Ferrarazzo and Arauz, 2000; Kaltheier, 2002; Vasconcellos, 2001; Salon and Gulyani, 2010; Bocarejo and Oviedo, 2012).

Lack of sufficient access can shorten the path that leads to social exclusion (Burchardt et al., 1999; Church et al., 2000; Lucas et al., 2001; Social Exclusion Unit, 2003; Grieco, 2006; Currie et al., 2007). Lucas (2011) argues that social exclusion relates to the social consequences of lack of adequate access to transport and thus opportunities; this allows us to differentiate between constraints related to the individual and those related to the supply.

A number of articles have attempted to develop frameworks or categorise the different ways in which transport relates to social exclusion (see for example, Currie and Delbosc, 2010; Wixey et al., 2005; Lucas, 2004; Hine and Mitchell, 2003; and Church et al., 2000). Church et al. (2000) is one of the most widely cited of these. Church et al. (2000) identify seven dimensions in which social exclusion relates to transport. These were selected as the key definitions for the development of the analysis described in Section 3. These dimensions are Physical, Geographical, Economic, Time-based, Fear-based, and Spatial exclusion, and Exclusion from facilities. The first dimension, physical exclusion, refers to conditions where physical barriers inhibit accessibility of services; geographical exclusion relates to poor transport provision and inconvenient locations in relation to centres of opportunities like the urban fringe; economic exclusion takes place when high monetary or temporal costs of travel limit access to facilities or jobs; time-based exclusion is related to demands on time that restrict time availability for travel; fear-based exclusion takes place when worry and fear limit the use of public spaces and transport, particularly by vulnerable groups; space exclusion speaks of security and space management strategies that can deprive people from using transport and public spaces; and exclusion from facilities, refers to distance from facilities in relation to people's homes (Church et al., 2000).

These categories are useful for framing conditions that lead to limited access to opportunities and thus shorten the path to social exclusion of vulnerable populations. While some categories can overlap, particularly under severe circumstances of deprivation, they provide initial criteria to deconstruct how travel strategies respond to conditions of transport and social disadvantage in cases like Soacha. In addition, they allow us to examine the role of non-conventional strategies in gaining access and reducing the risk of becoming socially excluded. In this context, informal transport, with analogous networks serving different types of demand to formal systems, can be considered as an active part of the relationship between lack of assets and poor transport provision. In this regard, informal transport may be a potential mechanism for overcoming some of the barriers to accessing opportunities faced by low-income populations.

## 3. Overview of the case study

Soacha is a municipality on the periphery of Bogotá, Colombia. As Bogotá has grown, Soacha has shifted rapidly from industrial centre to a primarily residential area with comparatively lower prices for land and housing than Bogotá. Internal migration to large cities in the past three decades, exacerbated by conflict and violence in rural Colombia and saturation of land for low-cost housing in the outskirts of Bogotá, have made Soacha an attractive destination for informal housing and land invasion due to its strategic location. By 2011, Soacha housed 466,938 inhabitants of which nearly 70,000 live in informal settlements and 82% had in-migrated from rural areas (United Nations Development Programme –UNDP-, 2013). The speed of urbanisation, much of it disorganised and uncontrolled, together with the low political development of the municipality, have constrained provision of public services and urban facilities (CCB, 2005; Government of Soacha., 2011; United Nations Development Programme –UNDP-, 2013).

Historically, the development of the city of Bogotá has involved conurbation processes, with surrounding smaller towns eventually coming to be, administratively, politically and otherwise, part of the city. However, this trend of constant expansion and 'catching up' with the demographic, social and economic dynamics has led to urban expansion beyond the administrative limits of the city, a weak regional vision and a decentralised structure of governance.

On the northern hills of Soacha rise a set of informal neighbourhoods known locally as *Altos de Cazucá*, the main case study for this research. These neighbourhoods are separated from Bogotá by a virtual boundary comprising the political and administrative division between the city and the municipality of Soacha. The peripheral condition of Altos de Cazucá in relation to Bogotá and Soacha has led to situations of vulnerability in Altos de Cazucá, such as lack of access to safe drinking water, health services, high risk of landslides and uncertainty in housing tenancy. Fig. 1 shows the location of Soacha, and the area of Altos de Cazucá, in relation to the city-region.

In Soacha, most recent migrants are not employed by the local economy, giving rise to subsistence and informal markets (CCB, 2005). Unemployment rate in the municipality was 45% in 2005, with a limited portion of the economically active population employed in industrial activities (23%), and about 32% occupied in informal employment (DANE population census, 2005). Although data on unemployment in the municipality was obtained from the most recent national census, it is likely to underestimate sub-employment and informal work. More recent exploratory and qualitative data obtained by the local government does not suggest a positive evolution of employment
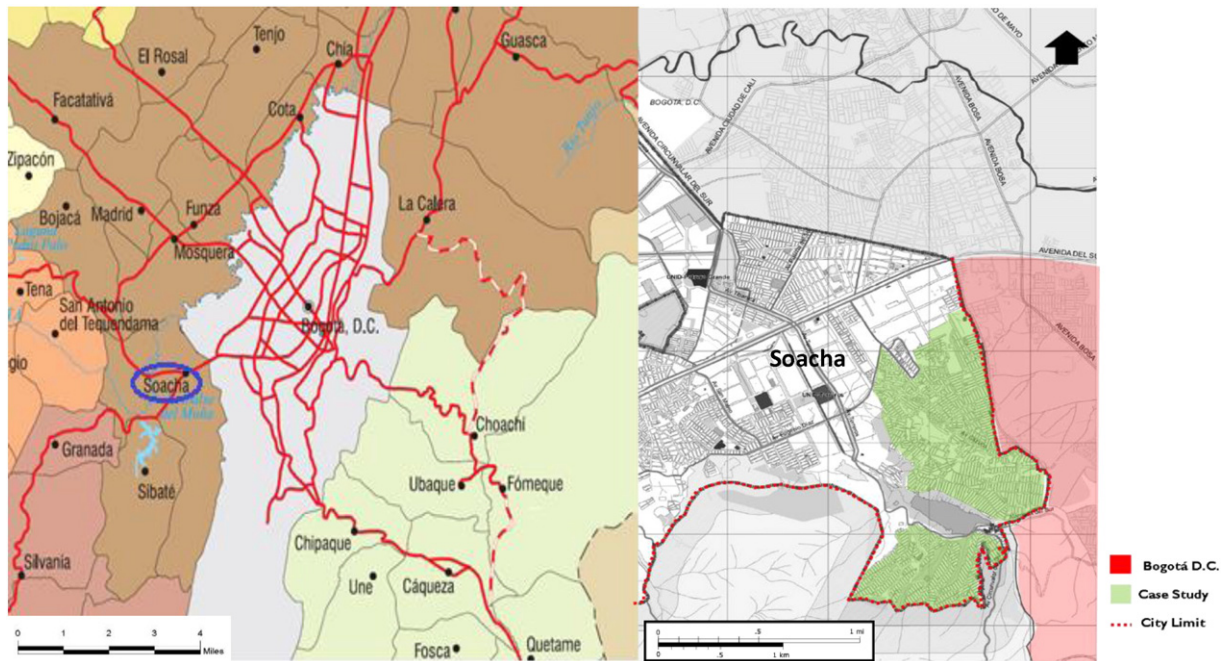
**Fig. 1.** Bogota City–region and case study location. Source: Government of Cundinamarca (2007).

(Government of Soacha, 2011). These circumstances help explain the high levels of informal land development and rise of low-income informal housing in the periphery of Soacha. The layout of the most consolidated settlements in Altos de Cazucá responds to the topography of the area, especially in those areas urbanised by unauthorised developers. However, most of the neighbourhoods show a disorganised, spontaneous and dense occupation, as a result of processes of land invasion. This has led to an irregular landscape that shifts rapidly from shanty towns to isolated housing units that cling to the mountain with increasing difficulty. These are increasingly more difficult to access as they get closer to the mountain top. Fig. 2 shows the surface layout of the area, highlighting the limits between Bogotá and Soacha, and

includes an illustration of some recent developments in the area of Altos de Cazucá.

Inadequate planning and disordered public land use have resulted in insufficient and poor quality streets, a lack of green areas and parks, and a general lag between population growth and urbanisation and supply of utilities (CCB, 2005). Only 32% of households in Soacha have access to a water supply, 55% to a sewage system and 57% to a landline phone. Those that do have access to utilities may not necessarily have secure access. For example, in 2005 only 13.7% of households had access to water throughout the week (CCB, 2005).

Like other essential urban services, road infrastructure in the municipality is precarious at best. There are no direct connections between



**Fig. 2.** Altos de Cazucá: administrative border and physical layout. Source: Acevedo et al., 2013.

different neighbourhoods, creating severance problems between settlements located in the north and south. Most local roads are not continuous and there are only four access points to the main artery connecting to Bogotá, resulting in high congestion and long walking times (Government of Soacha., 2011). Furthermore, existing roads are narrow and irregular, and pedestrian corridors and sidewalks are largely absent, limiting both motorised and non-motorised mobility, particularly in neighbourhoods of Altos de Cazucá. Most local roads have poor design and have considerable restrictions for circulation of heavy vehicles, which limits considerably possible areas of operation for public transport. Field research identified only three corridors that could be served by public transport (either formal or informal) based on road widths, slopes and conditions for circulation (Oviedo Hernandez, 2014).

The municipality of Soacha has 120 routes of public transport on its official records according to data gathered and reviewed by Transmilenio S.A. (2010) for the operational design of the extension of Bogotá's BRT to Soacha. Of these routes, 98 legal routes operate between Soacha to Bogotá, supplying the commuting demand that depends from Bogotá, and 22 local routes that operate inside the municipality, providing local connectivity services throughout Soacha. Field explorations and interviews with service providers and local community leaders identified 4 formal companies serving Altos de Cazucá and 6 informal organisations (Oviedo Hernandez, 2014). Fig. 3 shows the public transport routes that these organisations provide. The service provided is of poor quality, with older vehicles (76% of the existing fleet is over 11 years) and generally poor conditions for road safety and comfort. However, both lack road infrastructure and its poor quality (where it exists)

make it very difficult even for smaller vehicles to provide regular, frequent services away from the main routes. The irregular informal services, albeit at low-frequency, however, operate at considerably lower fare rates compared to formal public transport.

The particular geographies and morphology of Soacha, added to a palpable dependency on Bogotá though an also clear administrative separation had made this research gravitate toward Altos de Cazucá. The relation of periphery to both Soacha and Bogotá, poverty and social disadvantage, as well as limited access to infrastructure and formal transport services make Altos the Cazucá a worthy place to study in terms of transport-related social exclusion and travel strategies.

## 4. Methodology

The research uses qualitative content analysis to examine transport-related social exclusion in Soacha, adopting a deductive approach that builds on Church et al.'s (2000) dimensions for social exclusion. In transport research, the use of qualitative information in the examination of transport policy, disadvantage and exclusion-related issues has been relatively common, particularly in the European context, since the early 2000s (Hamilton and Jenkins, 2000; Hine and Mitchell, 2003; Johnson and Herath, 2004; Currie et al., 2007; Priya and Uteng, 2009; Delbosc and Currie, 2011, among others). However, use of content analysis has been largely restricted to examining the rhetoric or urban transport policy and public participation in transport planning, building on media and policy documents (Bickerstaff et al., 2002; Ryley and Gjersoe, 2006; Lowry, 2010; Vigar et al., 2011; Hodgson, 2012). Despite
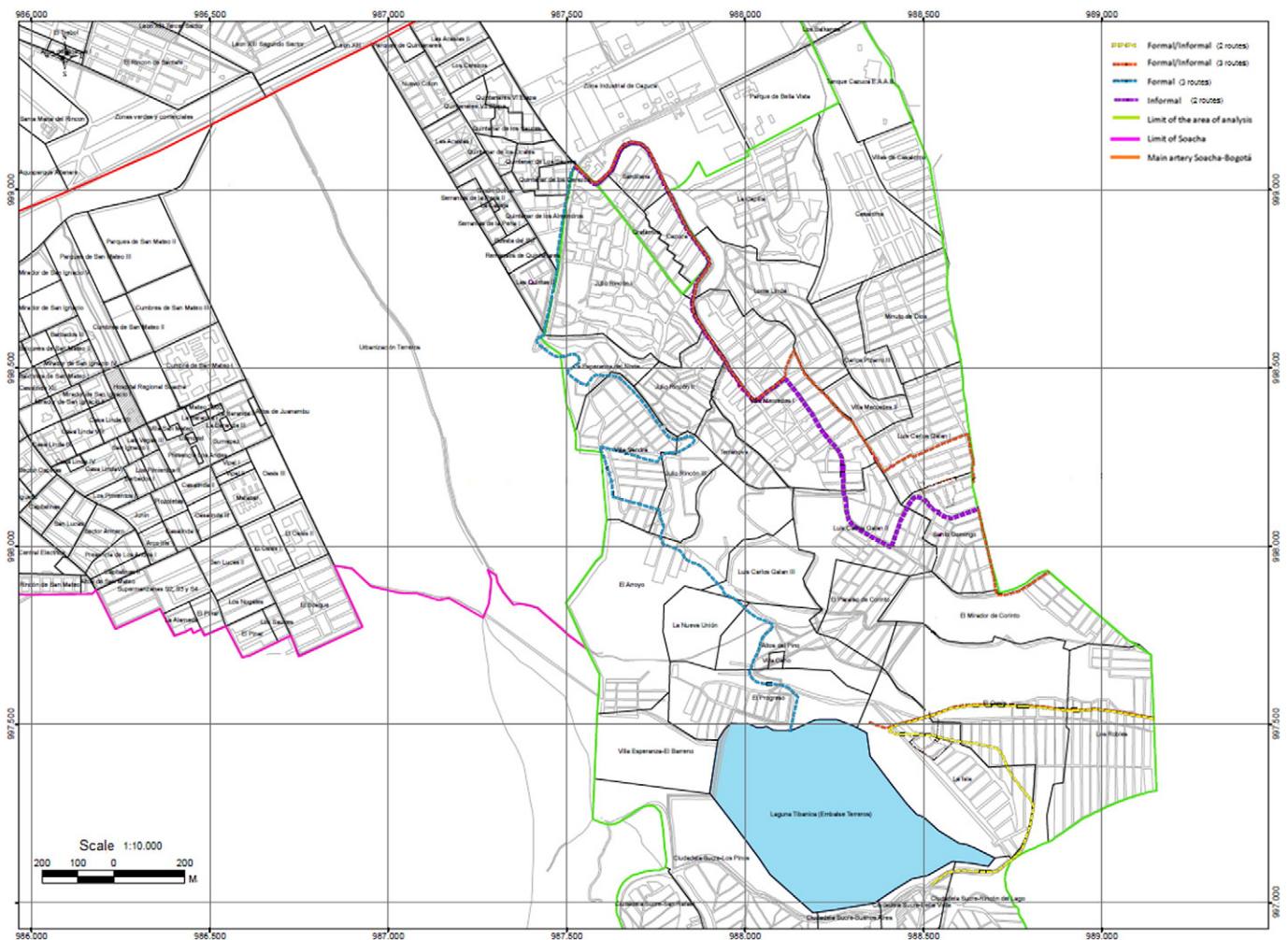


**Fig. 3.** Altos de Cazucá: spatial structure and type of local transport services. Source: own elaboration based on data from Soacha's land-use plan and field data.
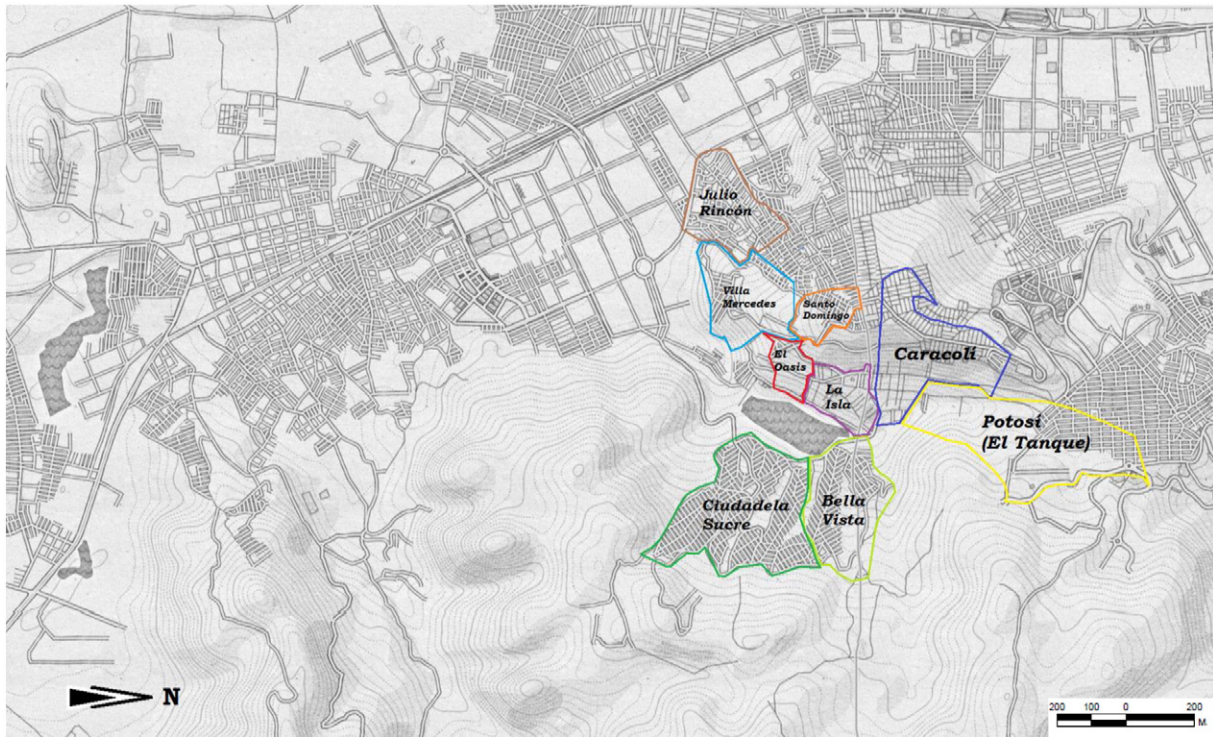
**Fig. 4.** Altos de Cazucá: selected neighbourhoods.

these advances, little research of this nature has been carried out in the Colombian context, although, a recent study applies content analysis to examine dimensions of social exclusion in entries of blog posts referring to aspects of a Bus Rapid Transit system currently in operation in the city of Cali, Colombia (Casas and Delmelle, 2014).

Primary data was gathered through semi-structured interviews with individuals playing different roles in travel practices in Altos de Cazucá. The interviews were conducted between February and August 2012, mostly during weekends in order to ensure data was captured from individuals working and studying outside the area. We sought a diversity of actors with different occupation types, travel conditions, physical capabilities,[1] life-stages, and power within the local communities. The neighbourhoods shown in Fig. 4 were selected for study based on the following criteria: i) distance to the main highway in Soacha and border with Bogotá, ii) topography, iii) level of formalisation/consolidation, and iv) socioeconomic stratification/income.

A sampling frame was defined where interviewees were divided into categories based on their role in the household, gender, age and main activity. The intended sample sought variability particularly in relation to age groups, gender and occupation that allowed us to reflect on different vulnerabilities that may influence definition of travel strategies. As shown in Table 1, although the sample included individuals of all the desired groups, we had difficulties recruiting people with physical disabilities and elderly. Within each of the neighbourhoods sampled we held a pre-fieldwork meeting with local leaders which helped identify specific households and individuals who might have been of interest to us. A combination of random and convenience sampling was used for recruiting interviewees. The study set out to collect between 8 and 10 interviews per neighbourhood. The final sample comprises 67 individual interviews distributed proportionally across neighbourhoods of the area of Altos de Cazucá in Soacha as shown in Fig. 4.

The interview guide aimed to elicit information on the characteristics of respondents, their income levels, travel and activity patterns

and perceptions of connectivity, the state of supply, informality and access as shown in Table 2. Each interview lasted between 45 min and 1.5 h. Audio recordings were made for most of the interviews and were transcribed. Written notes were taken during the interview for all interviews. In some cases, particularly when audio recordings could not be made, the interview notes were supplemented with additional notes made immediately following the end of the interview.

The data obtained from the interviews was analysed using qualitative content analysis under a framework based on the dimensions of transport-related social exclusion identified from the literature as discussed in section two. Qualitative content analysis was chosen because it allows the researcher to examine language intensely, whilst classifying large quantities of text data in an efficient number of categories that reflect similar meanings (Weber, 1990). Such categories can represent either explicit or inferred communication as long as the information in each contributes with knowledge and understanding of the research issue (Downe-Wamboldt, 1992, p. 314).

Qualitative content analysis also allows researchers to reach a systematic description of the meaning behind qualitative information and can be either inductive or deductive (Schreier, 2012). The deductive approach starts with existing theoretical formulations that drive the different aspects of analysis; this is the approach selected for this analysis. The initial coding system conventionally begins by identifying key concepts or variables and then determining operational definitions from theory (Potter and Levine-Donnerstein, 1999). As per convention, we used from Church et al.'s (2000) dimensions for social exclusion as the starting concept for the data examination. The transcripts (or notes where transcripts were not available) were broken down using sentences as the basic unit of analysis. Each unit (sentence) was assigned a tag according to the dominant dimension that applied to it. A second iteration then identified sub-themes related to each of the dimensions. Successive iterations identified every more precise (narrow) sub-themes. Fig. 5 shows the final iteration of the coding system, which allowed us to identify the most relevant sub-themes for the analysis. The iterations were stopped when redundant categories were found in most of the initial dimensions. Excluding the seven dimensions, this

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[1] These included people with disabilities and elderly residents that had to be identified with help from local leaders and other respondents.

**Table 1**
Characteristics of the sample.

| Sample characteristics | | n = 67 |
|---|---|---|
| Neighbourhood | Santo Domingo | 10 |
| | Caracolí | 6 |
| | El Oasis | 6 |
| | El Tanque | 7 |
| | Julio Rincón | 6 |
| | La Isla | 7 |
| | Bella Vista | 9 |
| | Ciudadela Sucre | 10 |
| | Villa Mercedes | 6 |
| Gender | F | 46% |
| | M | 54% |
| | F | |
| | 16–25 | 12% |
| | 26–35 | 10% |
| | 36–45 | 9% |
| | 46–54 | 9% |
| | 55+ | 6% |
| Age group | M | |
| | 16–25 | 19% |
| | 26–35 | 9% |
| | 36–45 | 10% |
| | 46–54 | 7% |
| | 55+ | 7% |
| Place of birth | Bogotá | 28% |
| | Soacha | 13% |
| | Other municipality | 58% |
| Relationship with head of the household | Head | 64% |
| | Partner | 12% |
| | Descendant | 19% |
| | Other relationship | 4% |
| Level of education | None | 6% |
| | Primary | 24% |
| | Secondary | 51% |
| | Technical | 13% |
| | Undergraduate | 4% |
| | Postgraduate | 1% |
| Main activity | Unemployed/retiree | 9% |
| | Work | 57% |
| | Study | 13% |
| | Home-maker | 21% |

**Table 2**
Areas covered by the interviews and main topics.

| Area | Main topics |
|---|---|
| Spatialities | Location in relation to centres of employment |
| | Relevant places in the municipality and in the city of Bogotá |
| | Satisfaction with location |
| | Perceived advantages and disadvantages of location |
| | Interpretation of own accessibility to self-identified opportunities throughout the region |
| Household characteristics | Composition of the household |
| | Distribution of roles and responsibilities |
| | Income and its distribution |
| | Type of opportunities/facilities that are relevant for the household |
| | Social and family relations |
| | Distribution of time on daily and occasional activities |
| | Socioeconomic characteristics of household members |
| | Migration history of the household |
| Built environment | Type of housing and tenancy |
| | Urban amenities |
| | Quality of the (built and natural) environment in the neighbourhood |
| | Characteristics of the streets |
| | Conditions for local access |
| Social dynamics | Availability of social aid |
| | Power relations in the neighbourhood and the municipality |
| | Identifiable groups and organisations with presence in the neighbourhood |
| | Perceptions of community life and cohesion |
| | Perception of social position in the region |
| | Relationships with the state and other households |
| Transport and mobility | Travel practices to reach self-identified opportunities and destinations |
| | Perception of relevance of transport in daily life |
| | Relevance of transport in household dynamics |
| | Identified obstacles for mobility |
| | Perception of transport supply |
| | Perception of regional accessibility |
| | Individual and community strategies for securing access and mobility |

Source: own elaboration.

final coding system allowed us to identify 76 sub-themes that were relevant for understanding the relationship between transport and social exclusion in Soacha.

## 5. Travel strategies and social exclusion — a qualitative analysis

This section discusses the results from the qualitative contact analysis, grouped by the top level themes – the seven dimensions of travel-related social exclusion identified by Church et al. (2000).

### 5.1. Geographical exclusion — 'this is a superb location'

The evidence points toward strong issues of geographical exclusion. Based on the structure of the city-region, the transport network, and the location of Altos de Cazucá within Soacha, the neighbourhoods studied appears to be in an inconvenient location in relation to centres of employment. However, overall, the interviewees seem to perceive their location as convenient, even privileged. While there was a widespread acceptance that transport provision is limited and of poor quality, interviewees believed that, in comparison with other areas of low-cost housing in the region, Altos de Cazucá provides them with sufficient access at very low housing costs.

The power relations and roles of different types of interviewees within their own homes and neighbourhoods, however, greatly influences perceptions of the geographical, economic and physical (referring here to the topography and urban layout) advantages and disadvantages of the neighbourhoods. These roles and relations of power determine to a great extent what travel strategies people choose to overcome barriers associated with social exclusion. For example, young adults not at work are more prone to travel by foot and access leisure and regular social interactions in their neighbourhoods or in Soacha. In the words of a young interviewee, 'I have only been in Bogotá a couple of times, it sounds like a very far place. When I go out is to the school and to hang with my friends, and all happens in the neighbourhood' (Man, 16). This suggests that although geographical constrains are imposed by the external environment its impact on exclusion also depend on the characteristics of the individual, and of the individual within social groups or units. The extent to which geographical exclusion presents, or is perceived as, a barrier is influenced by the trade-offs that occur within households, and other social units, that depend on multiple and complex relations.

Discussions about being able to get to work every day and maintaining a secure source of income for the household, as well as little mention of non-work related activities by a large share of interviewees showed that there is a primacy of working in defining the lives and mobilities of people in marginal settlements. Sixty percent of interviewees identify working as their main occupation, including young adults within compulsory schooling age (5–15) and some elderly, which in turn demands most of their daily time (adding up travel time to work) during weekdays. The geographical distribution of activities identified in Fig. 6 shows that despite living in Soacha, many people in the area depend on Bogotá for work and study. This is consistent with official statistics and suggests issues with local accessibility and a lack of availability of opportunities in Soacha.

Residents of the area show marked geographical separations between home and work. However, nearly 30% of people working in the sample carry out economic activities within the area of Altos de Cazucá.
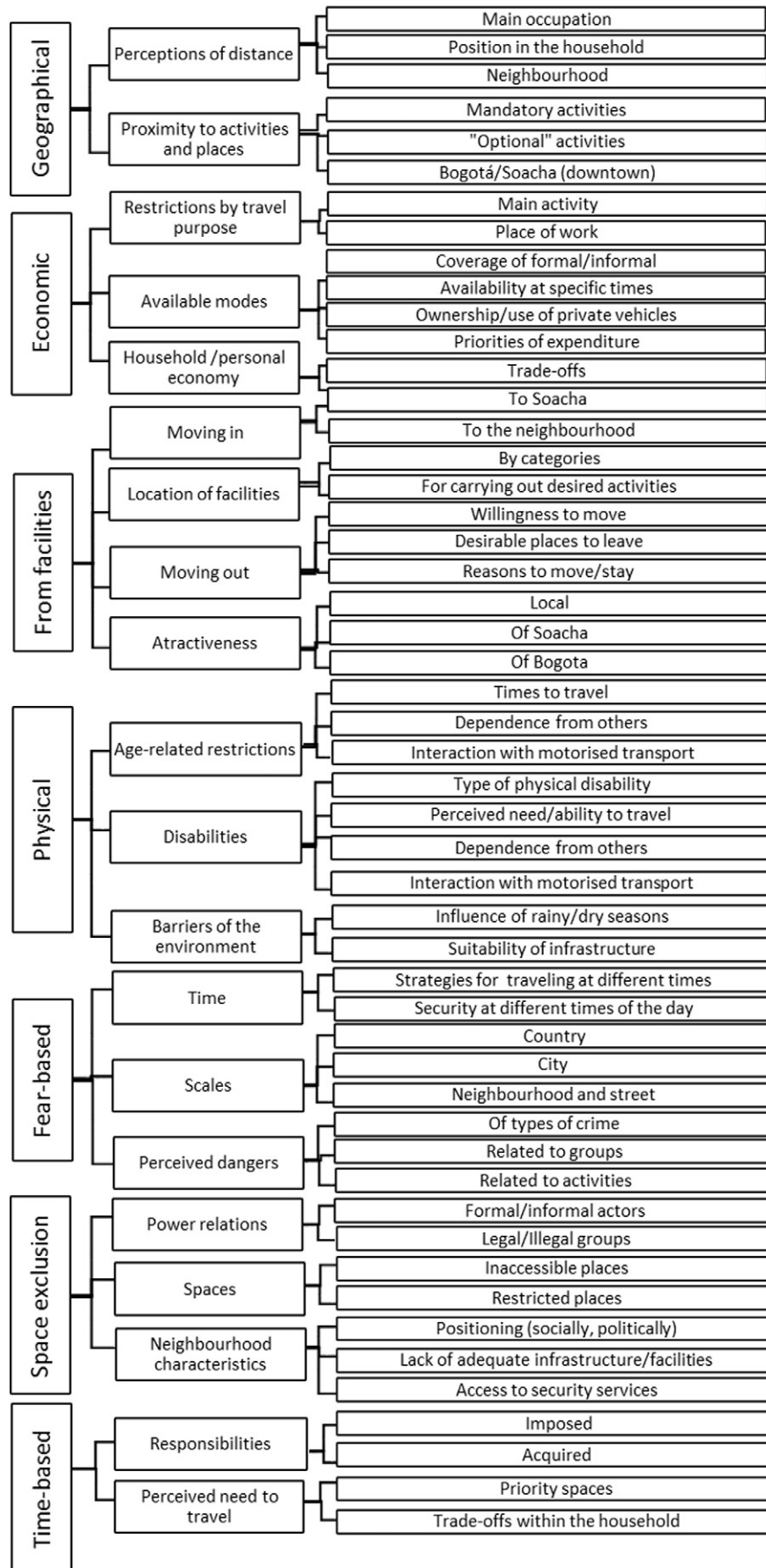
| Geographical | Perceptions of distance | Main occupation |
| | | Position in the household |
| | | Neighbourhood |
| | Proximity to activities and places | Mandatory activities |
| | | "Optional" activities |
| | | Bogotá/Soacha (downtown) |
| Economic | Restrictions by travel purpose | Main activity |
| | | Place of work |
| | Available modes | Coverage of formal/informal |
| | | Availability at specific times |
| | | Ownership/use of private vehicles |
| | Household /personal economy | Priorities of expenditure |
| | | Trade-offs |
| From facilities | Moving in | To Soacha |
| | | To the neighbourhood |
| | Location of facilities | By categories |
| | | For carrying out desired activities |
| | Moving out | Willingness to move |
| | | Desirable places to leave |
| | | Reasons to move/stay |
| | Atractiveness | Local |
| | | Of Soacha |
| | | Of Bogota |
| Physical | Age-related restrictions | Times to travel |
| | | Dependence from others |
| | | Interaction with motorised transport |
| | Disabilities | Type of physical disability |
| | | Perceived need/ability to travel |
| | | Dependence from others |
| | | Interaction with motorised transport |
| | Barriers of the environment | Influence of rainy/dry seasons |
| | | Suitability of infrastructure |
| Fear-based | Time | Strategies for traveling at different times |
| | | Security at different times of the day |
| | Scales | Country |
| | | City |
| | | Neighbourhood and street |
| | Perceived dangers | Of types of crime |
| | | Related to groups |
| | | Related to activities |
| Space exclusion | Power relations | Formal/informal actors |
| | | Legal/Illegal groups |
| | Spaces | Inaccessible places |
| | | Restricted places |
| | Neighbourhood characteristics | Positioning (socially, politically) |
| | | Lack of adequate infrastructure/facilities |
| | | Access to security services |
| Time-based | Responsibilities | Imposed |
| | | Acquired |
| | Perceived need to travel | Priority spaces |
| | | Trade-offs within the household |

**Fig. 5.** Main sub-themes identified in the coding system for qualitative content analysis of the interviews.
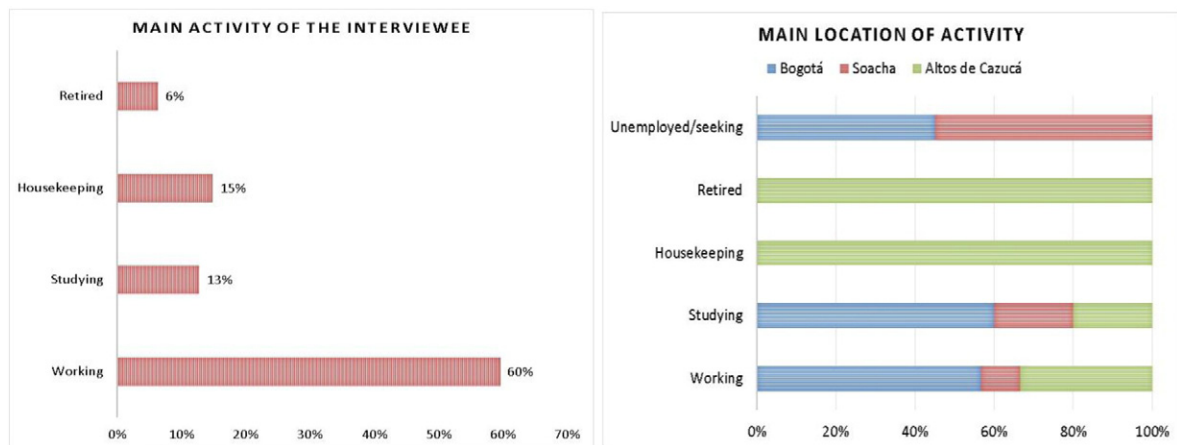
**Fig. 6.** Altos de Cazucá: main activity of the interviewees and location of activity.

Identified cases of local employment respond to local demand for goods and services and make greater mention to non-work related travel than people working outside the neighbourhood. When deconstructing the perception of Altos de Cazucá as a convenient location there is a marked difference between people that work and people that don't, which links to distribution of responsibilities and definitions of roles within households. Generally the head of the household is the most mobile member of the family. Local leaders, seem to be an exception in terms of mobility outside of the area, although they do not stay at home very often either. Household providers, both women and men, agree that there is a set of available transport alternatives for reaching both Bogotá and other areas of Soacha, and that it is relatively simple to find a way to reach their places of employment.

It was expected to find very different perspectives related to the geographical position of the different neighbourhoods as some of them are either closer to the border with Bogotá or to the main highway of Soacha, which from an external perspective suggests different conditions for mobility. However, general perceptions on location made no significant difference between neighbourhoods nor there was an explicit preference for any neighbourhood in Altos de Cazucá if people had the chance to live in a different location. Interviewees willing to change housing location pointed at neighbourhoods adjacent to the highway or across the border as desirable places. In particular, people that do not work and have more sporadic patterns of displacement believe that they would have better access if re-located closer to the centre of Soacha or in Bogotá, although they conduct mainly local trips. One of the central questions in the interview was if people perceived that there were areas of the city-region that were too far or difficult to access from their homes. From a geographical perspective, people did not feel that there were particular areas that they could not reach because of the distance. However, it was widely stressed that reaching northern areas of Bogotá and other municipalities is overall too costly. In other words, 'if it is about arriving, you will arrive. How much it costs you is a different question' (Man, 32).

### 5.2. Economic exclusion — 'transport takes too long, but we cannot stop working'

Interviewees make trade-offs within their households for maximising what can be achieved with limited income, but transport expenditure becomes unavoidable because work is unavoidable. Although household priorities are focused on reducing travel expenditure as much as possible, priority is given to maintaining any available source of income. In this context, informal transport services become a potential instrument to access the city and thus limit exclusion of people with lower incomes.

Among those that work outside of the neighbourhoods, men are mostly involved in construction activities, private security, or work in large-scale farmers markets, while women work primarily in house cleaning services and other domestic work. In both cases, there is a high incidence of informal work, without fixed contract durations and with variable schedules and remuneration. Construction and domestic work alike require employees to constantly shift locations for daily work, which represents a challenge for mobility due to lack of a sufficiently integrated public transport system with fare integration. For example, *Corabastos*, the largest farmers market in Bogotá, located in the south-west of the city, is not served by Bogotá's BRT,[2] Transmilenio, and has a limited supply of public transport directly from Soacha.

Dominant forms of mobility in the area are walking and public transport, both formal and informal. Given steep gradients and the poor condition of local roads, the bicycle is not an attractive mode of transport and walking becomes a burden that needs to be faced whenever there is not enough money for local transport. Three cases in the sample had access to a motorcycle, which according to their perception was the fastest and cheapest mode of transport from the area. Average travel times reported on this mode were between 30 and 45 min and mean cost was 0.7 USD per day. In 7 of the 9 areas studied, informal transport alternatives prevail locally in the selection of transport modes. Moreover, despite conditions of centralization of opportunities in the region, most workers interviewed travel shorter times in comparison with people of similar socioeconomic conditions within Bogotá when including informal alternatives in their travel strategies.

There is a marked willingness to sacrifice time in order to reduce transport expenditure, particularly from people working outside Soacha. Time is an issue and it is acknowledged that trips, even locally, involve long travel times. However, as pictured by interviewees from all neighbourhoods, 'transport takes too long, but we cannot stop working' (Man, 48); 'is what we knew we would have to accept when we decided to move here' (Woman, 53); and 'is better than not being able to go anywhere' (Man, 24). The average travel time to work, depending on the combination of alternatives, can oscillate between 40 and 130 min, having longer times in 'inner' neighbourhoods like Caracolí, La Isla and Potosí, which are farther from both the border with Bogotá and the highway in Soacha. People in neighbourhoods with no direct public transport routes preferred to walk to bus stops with direct services to their destinations instead of seeking to take the informal services. These neighbourhoods (Arborizadora Alta and Jerusalén) are in closer proximity to Bogotá and thus have better access to bus stops, which was perceived as an advantage and marked some distance in the attitude of residents toward informal alternatives.

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[2]  Bus Rapid Transit.

People in this peripheral settlement are economically constrained and that in turn may lead to economic exclusion. In 73% of the cases analysed only one member of the household was at work. Furthermore, the average household income within the sample was estimated at between 300 and 400 USD per month, very close to the legal minimum wage in the country. Trade-offs within the households limit considerably the 'bag of resources' available for purposes other than work, leaving non-working members of the household like women and the elderly particularly vulnerable to immobility. In this regard, interviewees acknowledge that aside from formal public transport, there is a set of informal alternatives managed by people from the community and operated mostly by neighbours from within the area. Users of informal transport are familiar with operators of informal transport, opening spaces for informal transactions between demand and supply that can assuage some of the financial burdens of travelling.

Different types of informality in transport were identified from the interviews. There is informal supply composed of small pickup trucks, cycle-taxis[3] and old cars used as shared cabs, all dubbed locally as *carritos*.[4] In addition, 'informal' rules and transactions allow people to increase their benefit from existing public transport or at least reduce its cost. These, according to interviews from both users and providers of informal transport include fare negotiation, special schedules, differentiated fare schemes and additional services. A detailed analysis of organisational and operational characteristics of informal supply merits a dedicated piece of research. However, some elements from informal service schemes become relevant for analysing travel strategies as the informal supply is organised within the neighbourhoods. Informal transport provides services mostly for local access, providing connections to main bus stops for formal routes in Bogotá and Soacha, including Transmilenio. Some services go specifically to *Corabastos*, not only providing access for local workers but also for residents to buy their groceries in the farmers market at more affordable prices than can be found locally. Moreover, the informal transport has limited direct competition with formal services in the area, sharing only one of the three main routes identified for local mobility with formal transport. These conditions allow people to have more flexibility when interacting with transport providers, and this flexibility often results in highly personalised relations that help them address specific needs otherwise not possible to meet. Resistance to using Transmilenio was commonplace among respondents. This was put down to the greater complexity of the Transmilenio system and the inflexibility of the system. Most complaints about formal transport were about price and quality; the general perception is that the system is not affordable for local residents.

Informal transactions improved the affordability of transport. People bargain the price in both the *carritos* and formal transport, particularly if they are travelling in groups. The practice of negotiating prices was commonplace in areas with and without a *carritos* service. Negotiating prices can lead to a saving of between 30 and 40% of the official fare for each mode. This allows some users to avoid long walking distances and travel times depending on the destination, although respondents acknowledge that negotiations are not always successful, particularly when vehicles are already too busy.

People combine differently their use of motorised modes and walking depending on the purpose and frequency of the trips, maximising speed for obligations like going to work and study; comfort for transporting packages and medical care; and affordability for trips without fixed times for arrival, like local amenities and recreation. Sixty percent of the sample reported using informal transport at least twice per week. In cases of longer distances that potentially involve more than one transfer, usually for trips within Bogotá, users tend to avoid local transport alternatives and walk to the mode that takes them closest to their destination. People combine their limited resources for transport

through these strategies without reducing the number of trips they consider essential. Time, energy, comfort and even security[5] are traded-off for the fare costs '…depending on how you feel your pocket….' (Man, 21); and the existence of alternative ways to access motorised transport when needed becomes an essential asset that '...allows to spend less and helps with the economy without having to risk ourselves or stay all day in the neighbourhood….' (Woman, 35).

### 5.3. Exclusion from facilities — 'there are things in Soacha but we depend on Bogotá'

Access to opportunities other than employment is more straightforwardly constrained by availability of local facilities. However, the analysis of this dimension encompasses all types of activities, particularly social interactions, as these are a fundamental part of the notion of social exclusion. Women not at work are restricted by the composition of the household, and are linked with the mobility and access of children and the elderly that may either require constant care or accompanying. More complex social dynamics beyond the scope of this research play a part in the definition of these roles and positions within the household. However, it is clear that in most cases there is a gender imbalance in terms of the purpose of travel and capacity for doing so. Medical care and household-related tasks are important travel motives that depend directly on availability of local facilities. However, in the neighbourhoods of analysis these are mostly located outside of the area. Seventy-two percent of the households interviewed had children aged between 5 and 18 years of age. Seventy-nine percent of these children were reported to be enrolled in and attending a school either in the local neighbourhood or in Soacha.

People whose mobility is limited to the local area by social, economic or physical conditions are at higher risk of becoming socially excluded if adequate supply of essential opportunities and interactions are not available locally. Respondents were asked about the locations where they addressed different types of needs (i.e. medical services, visits to family) in order to identify patterns of local accessibility. It was observed that some opportunities are well provided in the area – in particular social networks. The ways in which neighbourhoods were developed reflect clearly the role of social networks in defining mobilities and location decisions. Nearly a third of the sample acknowledged having close relatives and friends in their own or a neighbouring area and that family members played a role in them moving to Altos de Cazucá or vice versa. Religious services, local shops and basic education were locally available for most of the sample. However, certain opportunities have higher presence in Bogotá, including some essential social interactions, such as higher education and large medical facilities. For example, an interviewee that recently suffered a serious injury needed to be treated in Bogotá, requiring to travel between 45 min and one hour every day by a combination of informal and formal public transport. Although those living in the area may be less prone to exclusion from certain facilities, many essential services needed greater investment in transport to be reached by a good portion of the interviewees. Table 3 summarises the geographic availability of different opportunities as identified by respondents.

One of the main issues related to exclusion from facilities is that places for leisure and social interactions are not fully available in the area or within a reasonable distance. This is a two-sided issue according to those that do not travel often out of their vicinity. On the one hand, there is not much to do in the neighbourhoods, which adds up to dynamics of crime and insecurity that prevent people from leaving their homes if they do not feel it necessary. On the other, it makes the area unattractive and reduces inbound travel from other areas of the city.

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[3] Bicycle-based rickshaws.
[4] Spanish for 'little cars'.

[5] It is recognised that informal transport is more prone to road accidents, especially during rain seasons (when their demand is higher), and sometimes it results uncomfortable because some vehicles do not have chairs or these are damaged.

**Table 3**
Geographic availability of facilities according to respondents.

| Type of facility/opportunity | Percentage of respondents* stating location of facilities | | | |
|---|---|---|---|---|
| | Bogotá | Soacha | Altos de Cazucá | Other municipality |
| Medical care | 29.6% | 51.9% | 18.5% | 0.0% |
| Local shop | 13.6% | 39.5% | 46.9% | 0.0% |
| Food store | 46.9% | 33.3% | 18.5% | 1.2% |
| Primary school | 16.0% | 34.6% | 49.4% | 0.0% |
| Secondary school | 24.7% | 35.8% | 39.5% | 0.0% |
| Higher education | 51.9% | 28.4% | 4.9% | 14.8% |
| Police station | 17.3% | 58.0% | 24.7% | 0.0% |
| Church | 3.7% | 28.4% | 65.4% | 2.5% |
| Family/friends | 34.6% | 27.2% | 30.9% | 7.4% |
| Sports/leisure | 19.8% | 67.9% | 8.6% | 3.7% |

\* Include local leaders and residents.

'People do not come here, why would they want to?' (Local leader Villa Mercedes, Age 54). Going to leisure areas or even visiting relatives becomes an excuse for going further from home and to 'see other things and people when we can, because here it is always the same' (Woman, 22). Most people not leaving home during the week did not have relatives in the area, and in these cases family and friends did not visit interviewees at home because of perceptions of insecurity and lack of access. In this regard, despite having a variety of travel mechanisms available for accessing different neighbourhoods, access is limited to a one-way practice restricted by lack of attractiveness and social tensions that influence external perceptions. This increases the social exclusion of those forced to stay in the neighbourhoods as there are not additional interactions with people willing to visit their area of residence.

Women of all ages are more likely to be in a situation where they have to be at home most of the time. Thirteen cases of near-immobile individuals were identified in the sample. Of these, 7 were women that stayed at home most days during the week or that only went out to accompany children to school or for other very sporadic reasons such as medical or family emergencies. Local mobility for acquiring essential daily goods and services was identified as something regular, but respondents did not attach any sense of belonging and inclusion to it. When asked about their interactions with neighbours, it was found that social contacts were very limited and that residents were often unaware of neighbours in the same situation, despite this being an apparently common situation. Lack of attractiveness at the local scale adds up to limited availability of resources for travel and perceptions of inadequate conditions for local mobility that lead many people to become socially excluded despite available mechanisms for travelling out of the area.

### 5.4. Physical exclusion — 'what would we do without the carritos?'

People with physical limitations are practically forced into immobility. Conditions identified in previous dimensions of transport-related social exclusion seem to add together to impose external obstacles on people already individually constrained. This produces different degrees of limited access, or exclusion, that relate not only to physical limitations, but also to intellectual and social conditions that are intrinsic to many residents of Altos de Cazucá.

The sample included 6 respondents over 55 years and a wheelchair user. This particular group of respondents were the most affected by the lack of infrastructure. The poor quality of the infrastructure made it virtually impossible to move about using a wheelchair. However, all citizens of Altos de Cazucá are affected by these conditions to some extent, especially during rain seasons there is a widespread increase of barriers to mobility as most (unpaved) 'roads become swamps that are impossible to cross when it rains' (Woman, 42).

These conditions translate into entire days without leaving home for people with limited capacity to walk on already uneven road surfaces even in dry seasons. Two interviewees said that they do not leave home more than one or two times per month, either because the slope by the house makes it too difficult to walk, or because they cannot leave unless by accompanied by another member of the household, whilst the wheelchair user had not left home more than twice in the past two years. Those over 55 that still travel related that their trips are limited both spatially and temporally, perceiving trips to Bogotá as 'too complex' and 'very long and dangerous'. This limits 3 out of these 4 respondents to travelling only to Soacha and within Altos de Cazucá, during morning times, avoiding evenings and times of high demand. The most common travel purposes were for religious services, groceries and medical care. The elderly interviewed preferred to use the *carritos*, as these 'help when you travel with packages' (Woman, 61), 'are more patient and wait while you get in and out of the vehicle' (Man, 64), and 'are cheaper and sometimes let me ride for less' (Woman, 58). Respondents also acknowledged that the vehicles are old and dangerous, and that it is a risk to ride them. However, they are largely willing to overlook these risks as they perceive it is their only affordable chance to move about. In the words of a local leader of Potosí: 'it is not the best transport, but what would we do without them?'

### 5.5. Fear-based exclusion — 'fear lead us here, but soon after it followed'

Insecurity and crime are common problems in low-income neighbourhoods in developing countries (Colak and Pearce, 2009; Arias and Goldstein, 2010). In Colombia, small-scale drug trade and consumption often takes place within peripheral neighbourhoods where there is easy access to the city's market without the levels of control of police and other institutions observable in formal neighbourhoods (Koonings and Kruijt, 2004; Jones and Rodgers, 2009). These illegal activities are closely linked to local crime, violence, and presence of local gangs and thieves exercising control over some public and private spaces within the neighbourhoods. These issues were identified in Altos de Cazucá from field observations and responses from interviews. In this regard, fear influences greatly how people manage their time and organise their lives. Perceptions of insecurity affect schedules, routes and activities, and can ultimately contribute to social exclusion.

Responses of interviewees suggest that presence of crime and violence is a common issue throughout Altos de Cazucá. However, this dimension of social exclusion influences differently travel dynamics depending on the scale and neighbourhood analysed. On a macro scale, fear influenced location decisions of in-migrants residing in the neighbourhoods. Five cases in the sample are migrants from rural areas who fled their land toward Bogotá because they feared violence associated with the Colombian conflict. However, these same interviewees felt they had traded-off different types of fear, now becoming limited by local crime and thieves in their new neighbourhood. On a city scale, people from other areas associate Altos de Cazucá with crime, violence and poverty, leading to social stigmas and limiting willingness to travel to the area. This adds to the already low attractiveness of the area due to lack of amenities. Nine interviewees said that their family and acquaintances living in other areas of Bogotá and Soacha tended to avoid visiting them at home due to fear to theft and other types of crime.

On a neighbourhood scale, people in physically less accessible neighbourhoods farther from the border with Bogotá feel that crime, violence, and drug distribution and usage frequently limits their ability to circulate through specific streets and at travel at night times. Lack of street lights and limited movement of vehicles result in people associating most local roads with a higher risk of crime. This leads interviewees to seek wider and better-illuminated roads for their walking routes despite requiring longer travel times. The non-conventional working schedules of many, including very early mornings, late evening and night-shifts create challenges for reaching employment in relation to

security. People leaving in the early mornings organise groups for walking to where they can take the bus or the *carrito*, and those arriving late in the evening tend to wait at the start of local routes for neighbours returning home to travel together. This was identified as common practices La Isla, Villa Mercedes, and Santo Domingo. On the downside, this increases travel costs by imposing additional time and expenditure. Table 4 summarises the most frequent answers in the interviews related to perceptions of insecurity, associated causes, times and related travel choices.

It was also apparent that at less-secure hours the usage of informal services was preferred over regular buses. People felt that informal vehicles were less prone to on-board assaults than regular buses due to familiarity with informal operators and the high occupancy levels of the informal vehicles. They also felt that the higher coverage of informal routes reduces walking distances and thus the risk of on-street theft. The presence of community watch groups in some of the neighbourhoods was felt to improve conditions for local circulation and mobility by reducing fear of local crime and violence.

Community-led initiatives and informal services play important roles in reducing fear-based exclusion. However, the imposition of motorised travel entails an important increase in travel expenditure, which reduces considerably people's willingness to travel at certain times for non-essential purposes. In addition these travel strategies impact negatively on quality of life because travelling in groups requires leaving home at specific hours and waiting in the evenings enlarge aggregated travel time to the neighbourhoods, thus restricting time available for other activities.

### 5.6. Space exclusion — 'they have control…'

Space exclusion is closely related to the dimension of fear, overlapping with some elements identified in the previous section. The presence of criminal activities and groups in the neighbourhoods limit considerably the availability of public spaces for circulation. Governance of transport and public spaces involves local leaders and community organisations as well as criminal groups that represent either a real or perceived threat to mobility of people. Identified routes in Fig. 3 allow connectivity between bus stops of routes serving Bogotá and different neighbourhoods in Altos de Cazucá. These routes are defined by informal providers and local leaders trying to reduce competition with formal services and other informal providers in the area, as well as marking differences in power and influence of different leaders. However, this generates disconnection between neighbourhoods that reduces considerably internal motorised mobility and weakens cohesion between communities.

The presence of local gangs, the dangers of being mistakenly associated with rival groups operating in other neighbourhoods, and even the influence of some local leaders impose a series of invisible boundaries that restrict local mobility. This forces people to avoid moving across neighbourhoods, which involves longer distances and times when accessing medical, retail, and religious services located in specific

neighbourhoods. In addition, local criminal groups also restrict in-neighbourhood mobility through violence and impose tolls to the right to circulate in certain areas. This generates transport-related social exclusion at the micro level. Those living close to restricted public spaces are less likely to leave home unless necessary and more members of the household tend to stay home because of the higher costs and risks. Strategies responding to these obstacles for access require trade-offs involving longer travel times and exposure to crime and violence in order to secure access. However, mobility-related strategies cannot thoroughly overcome these social issues, governance and power relations that restrict urban spaces. In the words of a local leader from Caracolí (46), 'you cannot fix this with transport, but if we had more police and organisation in the government, we could feel safer and freer to walk in the neighbourhood'.

### 5.7. Time-based exclusion — 'I cannot go out'

Time-based exclusion in the area encompasses many aspects addressed in previous analyses. Time restrictions imposed by distance, activities, power relations, crime and other social tensions influence the travel strategies of different groups. Time restrictions related to crime and violence, and limited ability to circulate in public spaces at certain times, increases restrictions of access and the risk of certain groups being socially excluded.

Women of all ages not at work were found to care for their children, do chores at home and stay in the house in order to reduce the risk of burglary. These conditions are often imposed from within the household and restrict their time availability for travelling and conducting activities outside of Altos de Cazucá. Control of activities for women was frequently identified as an issue, leading many women to stay at home most of the day during weekdays and even weekends. Statements like 'I cannot go out, I have to stay with the baby, cook and tend for the house' (Woman, 43), and 'I don't have anything to do in the neighbourhood and when will I go to Bogotá?' (Woman 22), are common among near-immobile women. Female interviewees said that they have many responsibilities to tend to at home, which in combination with the risks of crime and limited schedules for travelling do not allow them to access the city. Their limited experience of travel, further reduces their ability to engage with travel choices in the neighbourhoods and the city as they are not aware of the services, routes and costs involved in travelling to Bogotá and Soacha. This has also implications in relation with available opportunities as they do not consider seeking employment, education or other opportunities.

## 6. Conclusions

The travel strategies of low-income populations in Altos de Cazucá deal with limited travel choices due to institutional and geographical dislocation through trade-offs between costs, time, comfort and security, essential and non-essential journeys. These trade-offs lead people to sacrifice essential resources and time to respond to specific dimensions

**Table 4**
Aggregated perceptions of security by neighbourhood.

| Neighbourhood | Is the neighbourhood secure? (affirmative answers/sample) | Most frequent reason for insecurity in the neighbourhood | Time of the day perceived as most insecure | Most frequent form of travel in insecure hours in the neighbourhood |
|---|---|---|---|---|
| Santo Domingo | 3/10 | Local gangs | Between 6 PM and 5 AM | Walking in groups |
| Caracolí | 1/6 | Street crime | Between 7 PM and 6 AM | Informal |
| Arborizadora Alta | 1/6 | Street crime | Between 6 PM and 6 AM | Regular bus |
| Jerusalén | 4/7 | Street crime | Between 11 PM and 6 AM | Regular bus |
| Julio Rincón | 2/6 | Street crime | Between 9 PM and 6 AM | Informal |
| La Isla | 1/7 | Drug trade and consumption | Between 6 PM and 5 AM | Walking in groups |
| Potosí | 2/10 | Local gangs | Between 8 PM and 5 AM | Informal |
| Ciudadela Sucre | 3/11 | Local gangs | Between 9 PM and 5 AM | Regular bus |
| Villa Mercedes | 0/6 | Drug trade and consumption | Between 6 PM and 6 AM | Walking in groups |

of transport-related social exclusion. In the same vein, social exclusion was found to be neither a static nor a discrete process. It relates to time, power and space, affecting differently people in similar conditions and involving changing levels of exclusion. Mainstream transport agendas recognise women, children, elderly and disabled individuals as vulnerable populations in relation to social exclusion and transport disadvantage. However, these vulnerabilities may affect directly and indirectly the mobility of close members of the households of such individuals, increasing levels of exclusion of entire social units. Further exploration of the implications of these relations and 'transferences' of risks of exclusion to less-vulnerable members of a household in challenging contexts for accessibility merits further exploration.

Interviewees were able to increase their accessibility, comfort and safety by relying on both informal supply and informal transactions for accessing transport and opportunities. Altos de Cazucá illustrates the role that informal transport can play in filling gaps left by inadequate formal transport provision and insufficiency of local facilities, despite the clear risks and costs related to poor quality of vehicles, low levels of service and high risk of road accidents associated with informal services.

Informality allows adaptability to the challenges of terrain and social tensions, and provides complementary services to the more formal provision. These not only mitigate some of the most immediate challenges for accessibility but also increase connectivities related to different spatial needs of the population. Similarly, transport informality allows flexibility in the economic and social aspects of supply. Flexibility of pricing schemes reduces the economic costs of motorised mobility. The highly personalised relationships between service-providers and clients, and schemes of operation and economy rooted in local structures and community life embeds informal supply and transactions into the definition of accessibility. Finally, innovation in the modification of the set of rules for accessing public transport, and tailored responses to preferences and priorities of people in low-income areas through unwritten social norms and codes of behaviour, allow informal transport to fulfil a determinant social function in helping vulnerable users to overcome social exclusion. This suggests a potential area for development of further research concerned with social implications of transport dynamics in relation to poverty, opening room for additional questions in relation to policy targeting poor communities.

## Acknowledgements

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