

## Understanding cycling in Quito through the lens of social practice theory

**José Antonio Vivanco Viladot**

The Bartlett School of Planning, University College of London. UK

E-mail: jose.viladot.15@ucl.ac.uk

**Abstract.** *In Quito, the relatively recent development of infrastructure and programs to promote cycling has become central in the discussion for sustainable mobility. Moreover, considering that the scheme 'Ciclopaseo' has been an important dominical event for many families over a decade if compared with the low rates of cycling in the modal share, questions surge about the effectiveness of all these measures. This paper investigates the appropriateness of cycling in a city with geographical, morphological, social, and cultural challenges for practitioners. The use of Social Practice Theory provides a theoretical framework to understand holistically the daily mobility of two groups: a representative sample composed by University students, gives a specific target for policy making; while a parallel sample puts into perspective the validity of the results. SSPS and ArcGIS are used for the analysis of primary data collected with Google Forms. Overall, the analysis of each one of the elements of practice explains a dimension of the self-reinforcing barriers to cycle. It is revealed that the construction of meanings in daily travel, especially cycling, is based on instrumental factors such as travel time and distance, but non-instrumental factors related to safeness and security weigh heavily in travel behaviour, creating psychological barriers to cycling. It is concluded that reshaping the meanings of cycling is necessary by the construction of a culture of 'road user behaviour', the creation of physic-temporal-symbolic spaces to build cycling skills, and later transform the transport system, road infrastructure, streetscape, and the social rhythms of Quito into cycle-friendly spaces.*

*Keywords: Quito, Ecuador, Social Practice Theory, transport behavior, cycling*

### Introduction

As many other rapidly urbanized cities in Latin America, Quito was shaped by a capitalist modernity explosion between the 1960's and 80's, resulting in an extense, fragmented, hypercentralised, and polarized medium-size capital in the middle of the Andean Range (Carrion and Erazo, 2012). Here, where a neoliberal agenda addressed transport and the urban form, the pronounced topography or the erratic weather seem the smallest difficulties for commuting by alternative modes than car. The aim of this paper is to illustrate the main limitations and opportunities of cycling

in Quito, bringing to the discussion if it is a realistic mode of transport. As in previous studies of cycling (Spotswood et al., 2015; Aldred and Jungnickel, 2014), Social Practice Theory (SPT) conceptualization of practices in elements by Shove et al. (2012) provides a framework to understand the complexity of cycling, mobility and public space.

### Cycling in Quito

Quito is a city with a stark legacy of past car-oriented plans that encouraged informal growth and suburbanization, sprawling the city

and segregating society (Carrion and Erazo, 2012). As Dimitriou (2011) highlights, these space-time geographies of marginalisation are partly originated from the lack of integration between land use and transport planning. Thus, mobility and the urban form were captured in a self-reinforcing system of automobile dependence and exclusion conceptualized by Urry (2004) as the system of 'Automobility'. The first formal plan was implemented in Quito by 1945, the 'Odriozola Plan' was designed under the guidelines of modernity that fitted with the objectives of the wealthiest classes. It polarised the city symbolically and physically, where the poor occupied 'the south' and the rich 'the north' (Carrion and Erazo, 2012). Furthermore, the adaptation of the city to the car systematically segregated the sectors of population which could not afford such mean of transport. This not only limited their right to move and access to public spaces, services and opportunities, but reinforced the unequal distribution of road-space for other modes of transport (Gordón, 2012).

Before the first 'ciclopaseo' organized in 2003, Quito lacked physical, temporal or symbolic spaces for cycling. Thus, ensuing Bogota's 'Ciclovía', Quito established the dominical closure of roads to be occupied by pedestrians and cyclists, this initiative was named 'Ciclopaseo' (Mogollón and Albornoz, 2016). As a matter of context, Quito stretches approximately forty kilometres from north to south and, as above mentioned, its society is meaningfully divided between the North and the South. However, this weekly event connects and provides a place of encounter between this two poles (Figure 1) when roads are transformed into the biggest recreational space, where varied citizens and multiple activities meet. Roads became the public space to collectively experience the city and meet 'the other' (Borja and Muxí, 2003), consequently, the Ciclopaseo opened a window to claim the right to the city and free mobility for many citizens as not was done before.

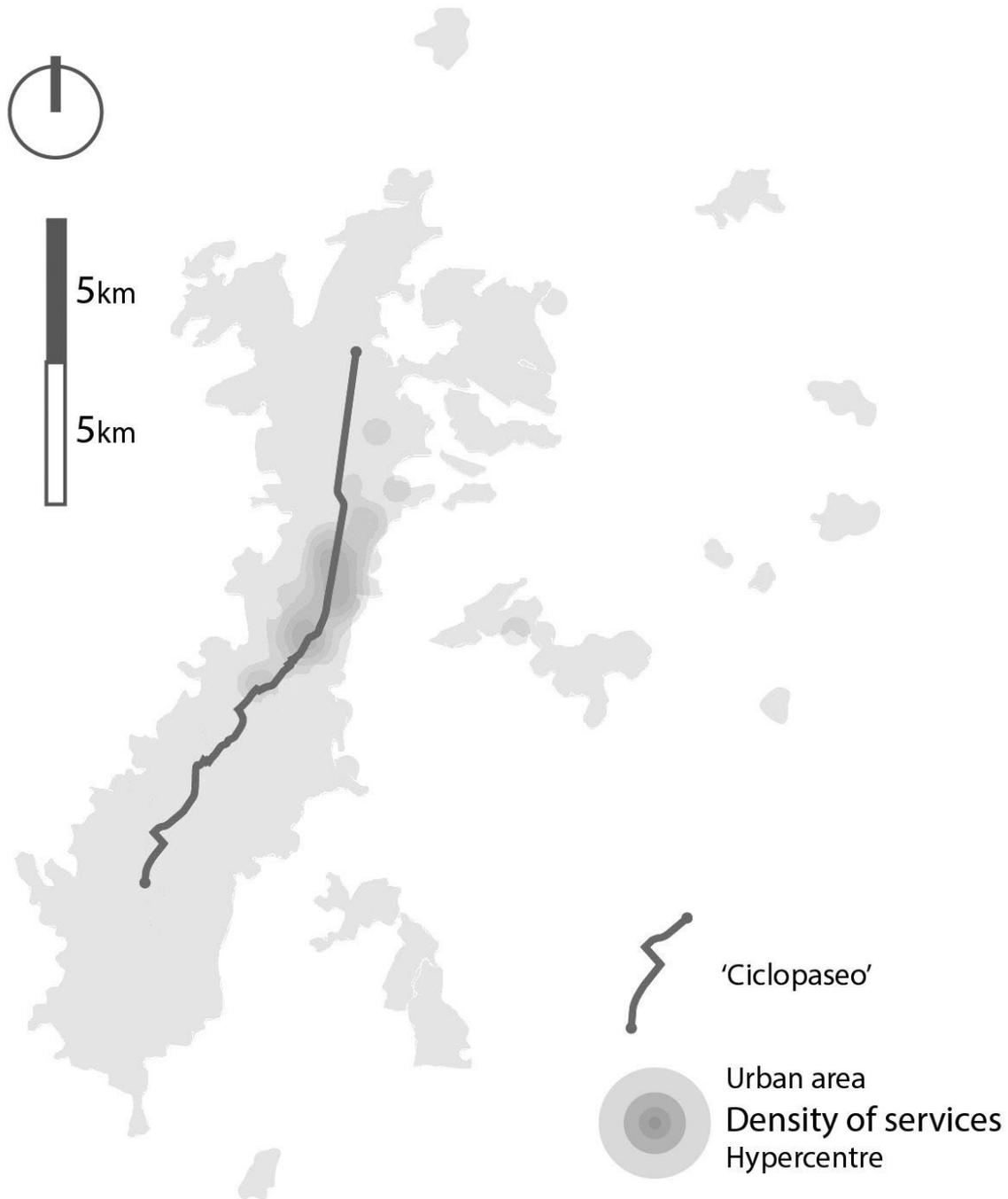
However, is hard to claim that cycling is becoming a popular practice in Quito after almost 15 years of 'Ciclopaseo', which was implemented to popularise the bicycle as a mode of transport. Today it is still not

considerably used for this mean (Pinto et al., 2015). According to the 2011 mobility survey, the bicycle only represented the 0.3% of the modal share. In contrast, it is revealed that car use will grow further. Instrumental reasons of access and convenience could explain the 'auto-motives', but various non-instrumental reasons shape travel behaviour as well (Schwanen and Lucas, 2011), as car use could be strongly related to affective and symbolic motives of globalisation and status (Steg, 2005; Sheller and Urry, 2000). Moreover, the disproportionate levels of car-infrastructure investment and the inefficiency of the public transport system, seem enough to consider the uprising 23% of the trips made using private vehicles (MDMQ, 2014) as a signal of the forthcoming car dependent city (Dimitriou, 2011). This type of urban environments neglect alternative modes of transport and exclude from the urban life those who do not own a car (Adams, 2001; Urry, 2004).

In this car-dominated society, alternative modes like cycling seem to have all the odds against to be considered as a convenient transport option, therefore the number of utilitarian cyclists remains low despite the recent development of programs and infrastructure to promote non-motorized transport. Even though the popularity of the 'Ciclopaseo' proved that citizens are capable to use the bicycle and find advantages as avoiding traffic, the car is preferred for daily travel as it has become more affordable and provides more accesibility (MDMQ, 2014). However, as Puga (2016) argues, the transport limitations in Quito are not just a matter of access, but a problem of free mobility, highlighting that the barriers to cycle among women, which can be extended to anyone, are not situated in the quality of infrastructure, which is essential, nor in the 'social acceptance' of cycling, but in the urban images generated by a men dominated society; which could be used as an analogy of a car dominated society that imposes meanings to the urban mobility (Aldred and Jungnickel, 2014).As a result, understanding why the use of the bicycle for daily transport is not popular, requires a different understanding of choices.

Social Practice Theory (SPT)

SPT is a form of cultural theory where



**Figure 1. ('El Ciclopaseo')**

both, the object of analysis and the place for social change are the practices 'carried' by its performer, rather than focus on the individuals, interactions, structures or systems (Reckwitz 2002). To put the theory in perspective, when contrasting SPT with individualistic psychology-based models of behaviour like Azjen's Theory of Planned Behaviour,

Schwartz's Norm-Activation Model or Triandis' Interpersonal Behaviour Theory, SPT recentres the subject of focus from the individual's intentions (of the cyclist) towards the social and collective organization of practices (like cycling or driving) (Spotswood et al., 2015).

Commonly in SPT, practices are analysed

as an array of embodied elements. A helpful conceptualization is presented by Shove et al. (2012), where practices are interwoven sets of materials (objects, infrastructure), meanings (images, symbols), and competences (skills, capabilities). Practices 'evolve' when the 'connections between elements are made, sustained, or broken' (p.14). Moreover, Shove et al. (2009) and Pantzar and Shove (2010) invite us to consider 'time' as another element of practice since 'time-space is central to the organization of social life' (Schatzki, 2009, p.35).

## Methods

A combination of qualitative and quantitative data was collected to build a database according to the elements of practice using structured surveys with a combination of Likert-type scale and open-ended questions. The survey was distributed among two samples. A students group (N1=110, n1=43) composed evenly by people from public and private universities, which was selected as a target for policy making; and a parallel group of non-students (N2=323, n2=81) to strengthen the statistic approach (Figure 2). The analysis was carried out using cartography, descriptive statistics and correlations with ArcGIS and SPSS softwares, respectively. Spatial patterns were identified by mapping the survey answers with GIS in order to identify links between the perceptions about cycling and the origin and destination of daily trips. The distance between the respondents' home and destination was estimated using Google Maps.

## Findings

### Materials

Overall, the 45.5% of the students (Ss) and 48.2% for the parallel sample (Ps) own a bicycle, suggesting that, as the first important 'material' consideration, the low rate of cycling in the modal share is not a matter of bicycle accessibility. In the students' sample, just the 11.4% of students (Ps: 16.8%) have certain

access to bikeways, towards a 22.7% with partial access (Ps: 24.1%) and the 63.6% (Ps: 56.7%) which find difficult to use a bikeway in their travel route. In both samples, when asking if bikeways are convenient for daily travel, the spatial patterns of accessibility are similar but the quantity of positive answers is lower. Thus, the accessibility to a bikeway does not guarantee its use if the connection towards the destination is deficient. In sum, the 38.6% of the population of both samples do not have access to bikeways and when scoring its convenience, more than 50% (Ss:50%, Ps:55.4%) of population remark that the bikeways are not convenient for their travel route. Particularly, people living in the south, far north, sloped areas and eastern valleys are isolated from the actual cycle infrastructure (Figure 3). Related to cycle parking, on average the 45% of both samples have parking in their usual destination, but the 72.7% of the students, and the 53% of the parallel sample consider that occasionally is possible to find safe cycle parking in other destinations. Such insufficiency in the material elements of the practice contribute to low rates of cycling as the survey confirms that bikeways (Ss: 56.8%, Ps: 57.8%) and safe cycle parking (Ss: 56.8%, Ps: 59%) are considered very necessary to encourage cycling as a commuting option. In terms of technology, the type of bicycle is important for around the 43% of population (Ss: 31.8%, Ps: 54.4%).

### Meanings

The results in both samples confirm that safeness (Ss:59%, Ps:66.2%) and security (Ss:68.2%, Ps:54.2%) are remarkable limitations for cycling, which were categorized by the respondents as difficult to very difficult factors for bicycle commuting. In terms of personal wellbeing, cycling is highly accepted as a healthy practice (Ss:66.7%, Ps:54.3%) and the most popular adjectives to describe cycling were economic (Ss:64.3%, Ps:49.4%), ecologic (Ss:54.8%, Ps:54.3%) and nice (Ss:47.6%, Ps:43.2%). In contrast, anybody characterizes it as safe. This highlights that fear prevails over the perceived benefits for health as around the 55% (Ss:45.2%, Ps:65.4%) of the surveyed

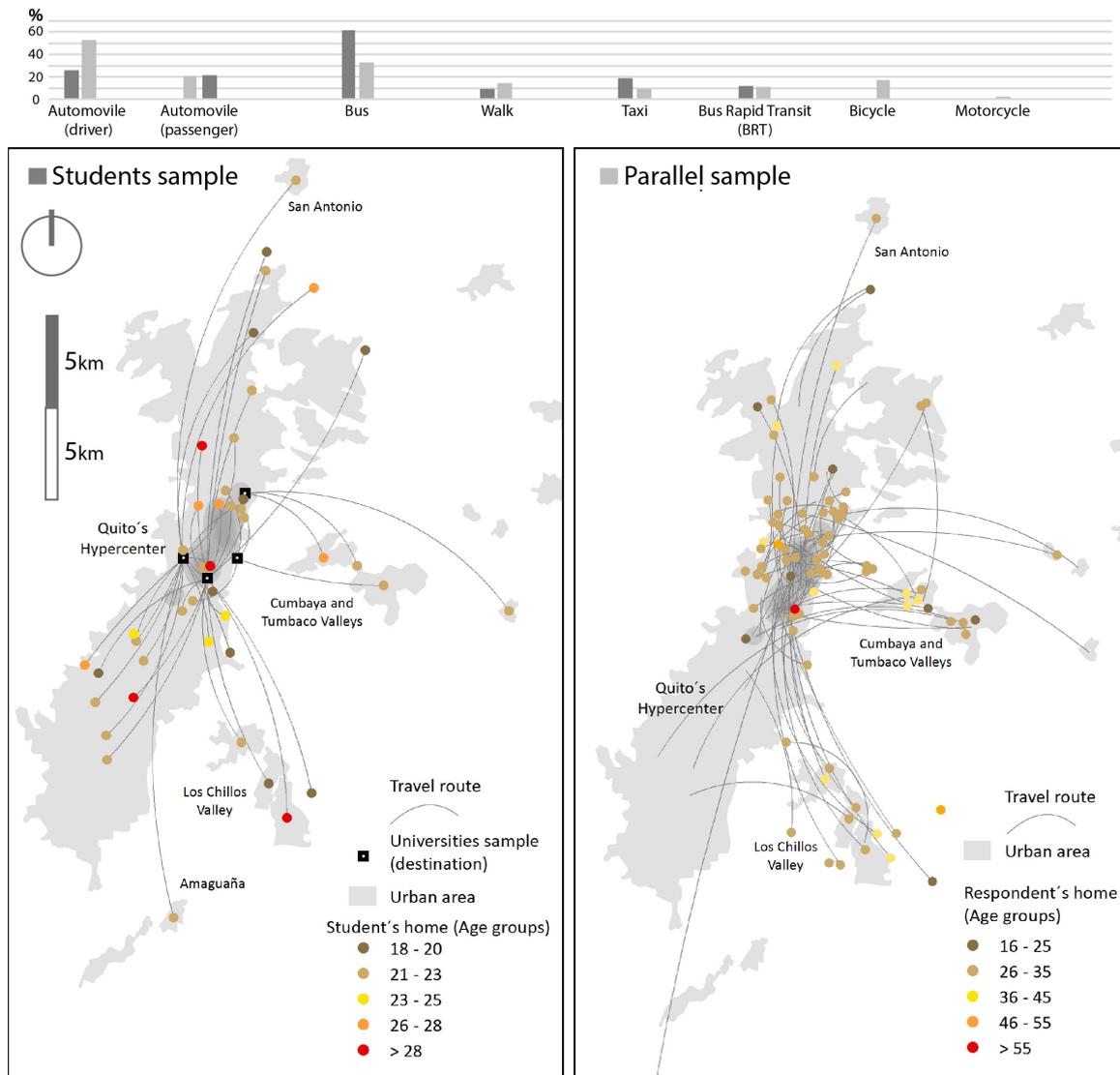


Figure 2. (Samples and the modal share)

feel unsafe and in risk when commuting by bicycle. An overview of the characterizations of cycling is presented in Figure 4.

Furthermore, car drivers tend to have a negative perception of cycling ( $p < 0.05$ ,  $r = 0.184$ ) and people who own a bicycle a positive one ( $p < 0.05$ ,  $r = 0.228$ ). Students are more positive when qualifying cycling as a mode of transport, something that may be considered when promoting its use in educational programs. Considering the modal share (Figure 2), the differences between the students and the parallel sample are representative in the use of public transport (Ss:61.9%, Ps:33.3%), and the automobile (drivers) (Ss:26.2%, Ps:53%), reaffirming

the idea that the car is a symbol of better economic situation. The car is a good desirable to acquire when the population earns money or gains economic independence (competence). Another important meaning for cycling is commitment. After infrastructure and transport integration, commitment (and fitness) was rated in third place as necessary to very necessary (Ss:72.8%, Ps:78.3%). This supports the idea that cycling is not only limited by the external factors (as infrastructure) but by the user's attitude -sustained by the "cause" of cycling itself- towards the challenges of using a bike in an urban environment. In fact, sustainable practices are a matter of commitment, where world views and the idea of modernity play an

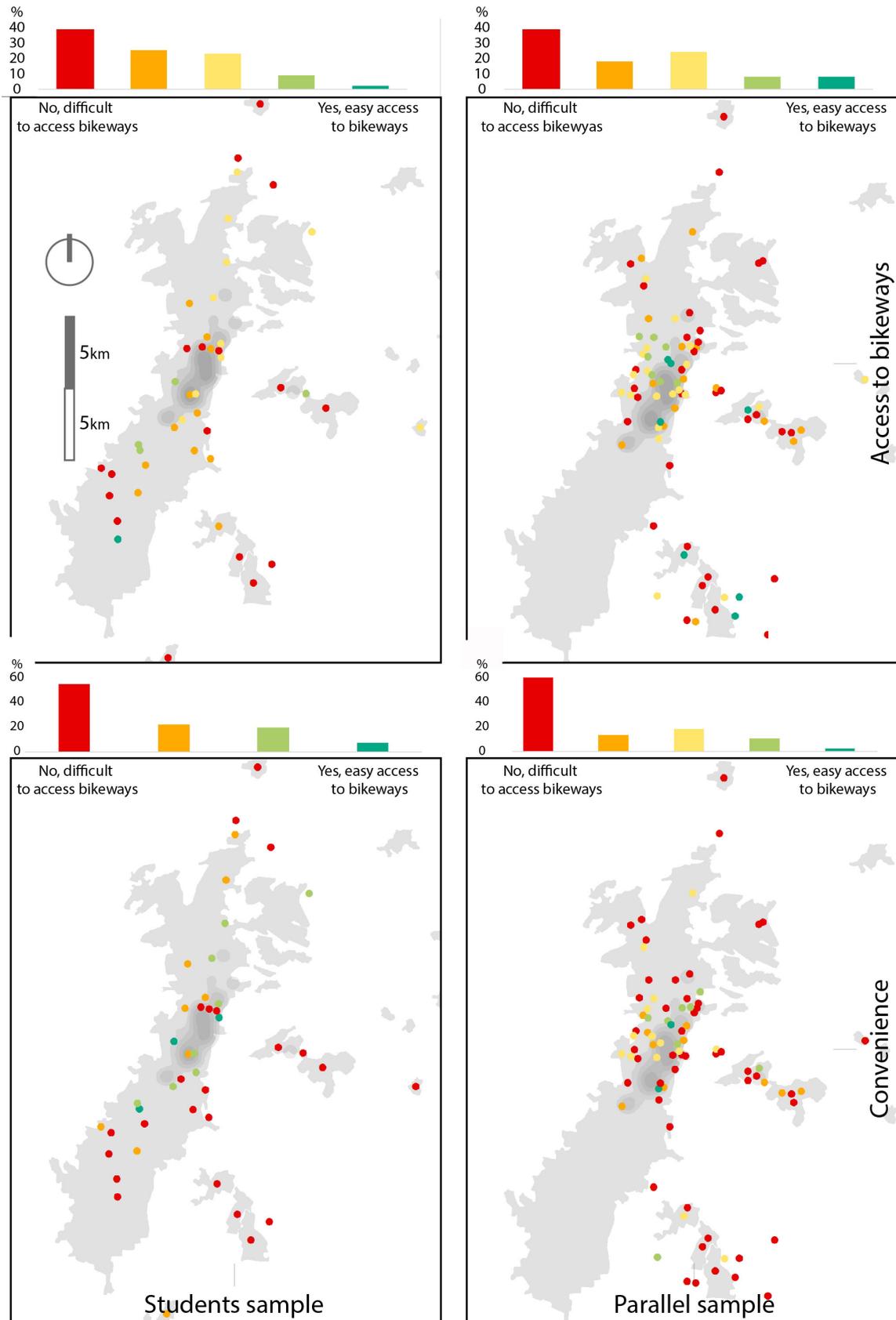


Figure 3. (Acesibility and convenience of bikeways)

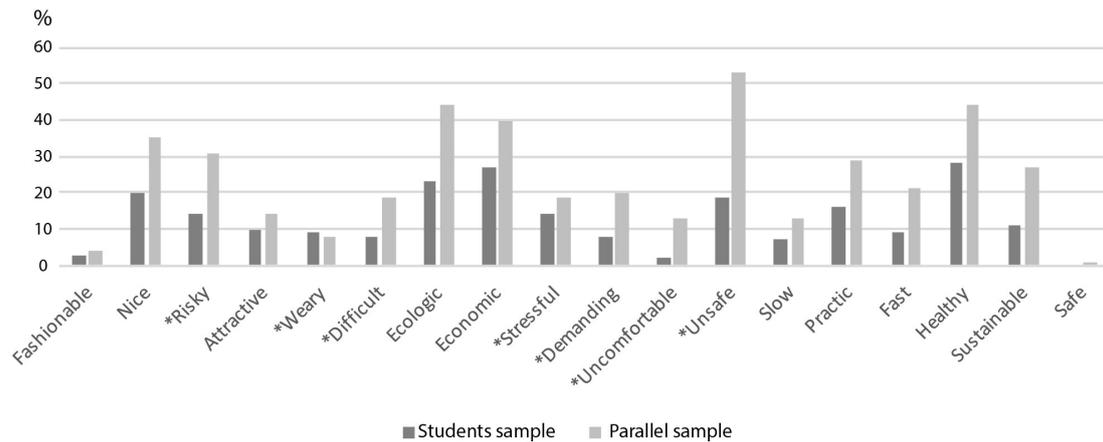


Figure 4. (Perceptions of cycling compared)

important role in travel behavior.

### Competences

Although the rates of bicycle ownership suggest that an important group of people 'is competent' to ride a bicycle, only the 17% of the parallel sample travel daily by bike (Ss: 0%). The lack of cyclist commuters can be explained by the lack of physical fitness. As above mentioned, fitness (Ss:65.9%, Ps:75.9%) (and compromise) was rated as necessary to very necessary after availability of bikeways and parking. Physical fitness is required to cycle in Quito as most commuters should travel long distances and in some cases, cross steep terrain. Figure 5 shows the distance traveled by the respondents (5.A) represented in the origin of the travel route (home) and its distribution in the topographic landscape (5.B). After safeness and security, distance is the third aspect considered as a limitation (difficult to very difficult) for cycling (Ss:56.9%, Ps:44.6%), followed by topography (Ss:56.9%, Ps:44.6%). Most of the respondents which consider that distance is not an issue live in the hypercentre or near it. It was found that as distance increases, the use of bicycle decreases ( $p=0.01$ ,  $r=-0.257$ ). Although, is worth to highlight that people living in the southeast valleys and some in the hypercentre does not consider distance as a limitation. This supports the fact that the perception of distance as a limitation is a matter of skills, as not all feel capable of cycling long travel distances. The same analysis can be extended to the people

living in the sloped areas which consider that topography is a limitation.

### Time

Results corroborate that the hypercentre is the main destination, and respondents who live further from it tend to spend more time traveling. A positive correlation was found between the perception that the availability of time is necessary for cycling with the necessity of a flexible schedule ( $p>0.01$ ,  $r=0.444$ ), which was considered an important limitation ( $p>0.01$ ,  $r=0.248$ ). Moreover, a positive correlation was found between the perception of distance as a limitation and the necessity of time ( $p>0.01$ ,  $r=0.283$ ). Differences were found between the 2 samples. The 22.7% of students and the 7.2% of the parallel sample consider that their actual schedule makes cycling impossible; but both agree that a flexible schedule is necessary to very necessary (Ss:44.6%, Ps:54.5%). Compared with the schedule, both samples differ as well in their perception about the availability of time as a necessary aspect to choose the bike as transport (Ss:31.8%, Ps:68.7%). It appears that for students, schedule is the main limitation and for the working population the time availability. This is understood by the fact that students have more irregular timetables than the population that usually have the standard working schedule. In some cases, perceptions about time seem to be independent of the travel distance and travel time, as people living in the north and the southeast valley consider that schedule is not a limitation (Figure 6). Here

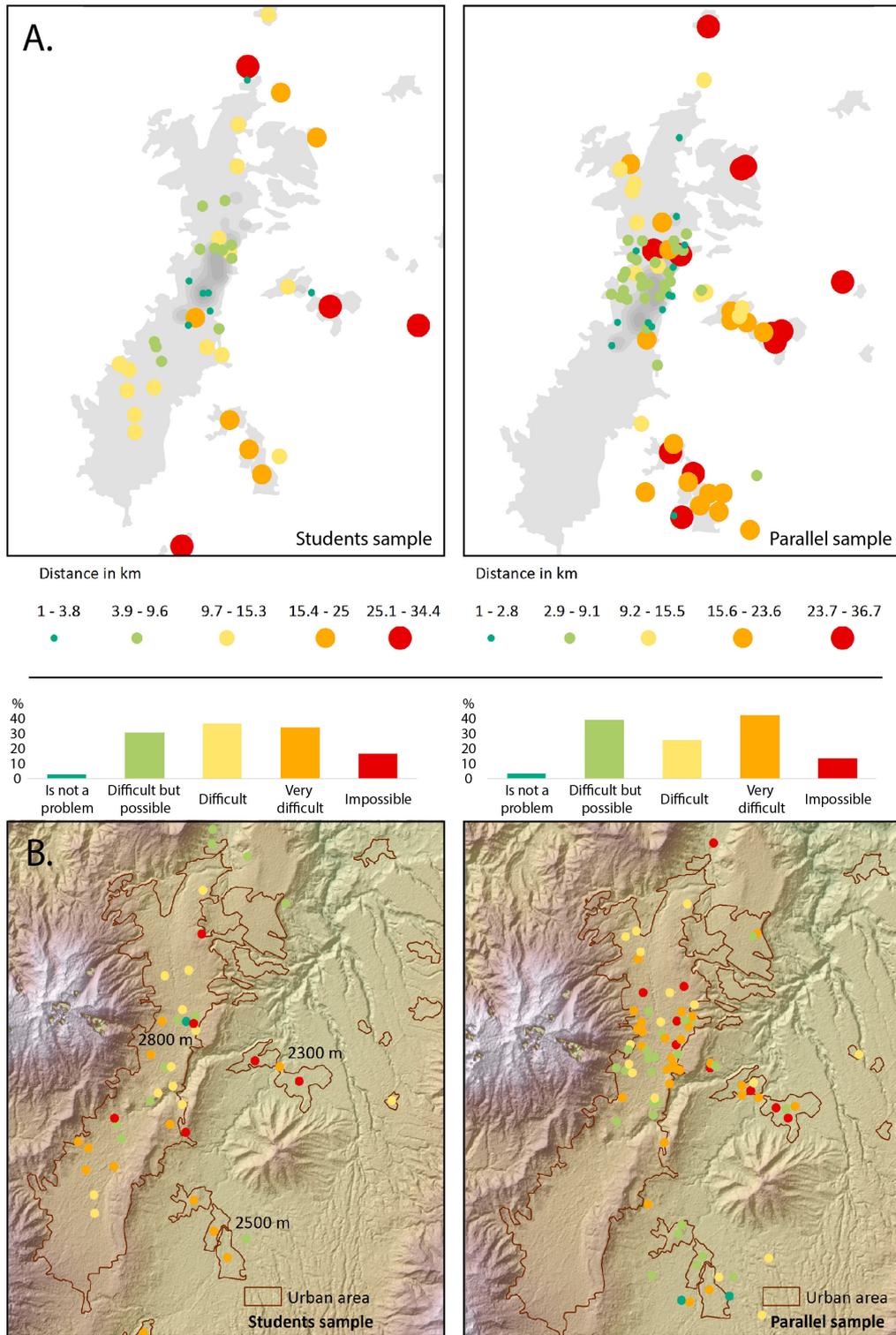
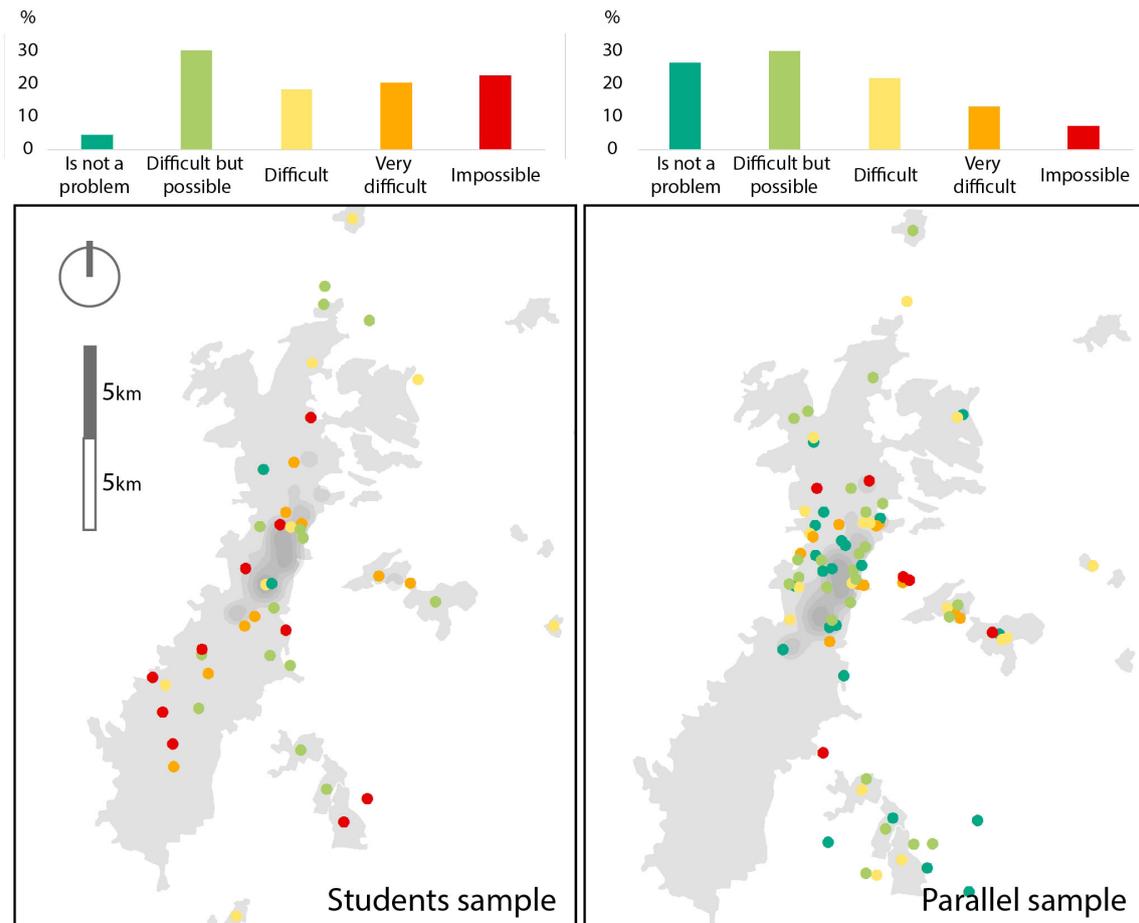


Figure 5. (Distance and topography as limitations for cycling)



**Figure 6. (Schedule as a limitation for cycling)**

is important to highlight that although all the correlations presented in all these results were significant, they were not higher than 0.3, as travel behavior is something that is not only explained by linear correlations but by several factors that are matter of perception.

### Discussion

In brief, when analysing cycling by the elements of practice, it is revealed that each of them explain a dimension of the limitations to use the bicycle for transport, which start with the perception of cycling (attribution of meaning) as dangerous due to the lack of a culture of ‘road user behaviour’, plus the absence of safe bikeways and secure cycle parking (the required materials). Overcoming the fear to cycle (needed skills, competence), is beyond the existence of infrastructure. Besides, using

the bicycle as transport seems to hardly fit in the social rhythms of modern lifestyles.

Cycling is a mode of transport that almost anybody considers ‘safe’, yet a majority describes it as a ‘healthy’ practice. The perceptions of risk associated to cycling are not only reinforced by the absence of infrastructure, but more serious to the current ‘road user behaviour’, characterized by a lack of respect to cyclists in shared spaces with cars. The level of access and convenience of cycling infrastructure is deficient; bikeways and the bicycle hire system are limited to the hypercentre, neglecting a majority of the population who live in the peripheries and suburbs. In this scenario, the integration of the bicycle to the public transport is a possible solution to ‘increase the accesibility’ to the bikeways, and as longer distances pose limitations to cycle, this integration may allow cyclists to cover greater distances. Also, the use

of public transport will result more attractive and accessible (Pucher and Buehler, 2012b).

As Cities with sloped topographies or variable weather conditions like Quito might pose extra challenges to cyclists, the integration of public transport and the bicycle is fundamental in the promotion of both systems. Beyond widespread bikeways along the city, a more effective solution is the strategic construction of local networks around the urban centralities and connect them with public transport. For that, the city will require of socio-technical transitions, transforming public spaces and the transport system to accommodate the bicycle (Ibid.).

However, achieving a socio-technical transition to the bicycle is beyond the provision of essential infrastructure; but its absence emphasizes the biggest barriers to cycle related to the safeness and security problems, the lack of a generalized 'road user behaviour', and the stigmas of who is competent to ride the bicycle. Using some of the concepts in Aldred and Jungnickel (2014), it is necessary to construct a 'cycling culture' that is open to everybody. In this sense, it could be said that the 'Ciclopaseo' effectively seeded the practice of cycling in Quito. It broke the image of the cyclist who is part of an elite with special skills by allowing citizens to discover their cycling competence to cross the city from one end to the other. However, despite this event allowed to reimagine Quito's mobility and public space, it has barely evolved since its origins; limiting the scope of cycling to leisure and sport.

Also, the results exposed that, usually, the time required to commute by bicycle limits many people to chose this alternative. The schedules of modern urban life do not seem to be adequate for the use of the bicycle in daily travel, especially for students and some people who cannot freely organize their time. Additionally, it is a fact that the urban environment is primarily designed for the car, posing extra time requirements for cycling.

## Conclusion

Understanding mobility trough the perspective of SPT exposed a new insight on the limitations

and opportunities of cycling in Quito. Overall, the analysis of each element of practice explains a dimension of the self-reinforcing barriers to cycle, which are based on instrumental factors such as travel time, distance and (the absence of) infrastructure. But non-instrumental factors related to competence, safeness, and security also weigh heavily in travel behaviour, posing psychological barriers to the use of public and non-motorized transport.

The opportunities for an effective socio-technical transition to the bicycle are a combination of schemes, public space development, and the essential integration of the public transport system. Besides the necessary infrastructure, policies should be focused first on the transformation of meanings associated with the public space and non-motorized transport. Both should become symbols of safeness and security despite the privatized car-oriented environment. Moreover, cycling can be a way to sort out the delays and problems caused by traffic.

Distance reductions and decentralisation seem hard to achieve now, but the adequate construction of meanings in cycling is key for an effective modal shift. Rebranding travel-time could be the solution, by changing the perception that time is lost when traveling, to one that time is invested in an agreeable experience and a healthy life style. This could make of cycling an attractive option, and contribute to shape more liveable cities.

Quito needs to redefine its urban time-space for daily cycling. To start, social rhythms could be reprogrammed in work/study places to the temporal requirements of cycling. However, it is a complex solution that requires further analysis. For now, the reader is invited to think in temporal transformations like the coordination of social/familiar/individual schedules that do not impose additional restrictions to cycling, but that provide a specific time-space for daily cycling, like a 'ciclopaseo' during weekdays.

After all, the question standing is if this measures will take the bicycle out of the stigma of being an unreal 'European solution' for transport, and become part of a real transition to sustainable mobility in Quito.

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