UNIVERSITY COLLEGE LONDON
FACULTY OF THE BUILT ENVIRONMENT
BARTLETT SCHOOL OF PLANNING

CHILDREN'S INDEPENDENT MOBILITY

A child-oriented perspective on walking, playing and socialising in Aguablanca District. Cali, Colombia

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Being a dissertation submitted to the faculty of The Built Environment as part of the requirements for the award of the MSc Transport and City Planning at University College London: I, declare that this dissertation is entirely my own work and that ideas, data and images, as well as direct quotations, drawn from elsewhere are identified and referenced.

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22nd September 2020

Word count: 10252
Appendices: 4418

ACKNOWLEDGEMENTS

I am deeply grateful to my supervisor, Dr. Daniel Oviedo Hernandez, who provided supportive and constructive guidance throughout this process. His observations and teachings inspired me to think critically and greatly improved my experience in both the dissertation and programme.

This study was made possible with the help of Despacio and Vivo Mi Calle project. Thank you to Natalia Lleras, project coordinator, for her support in providing valuable information on the project's background, methodology, and questionnaires. I would like to recognise the insightful conversations I had with child and mobility advocates. Thank you to Martha Giraldo from Fundapeatón, Alina Gómez and Diana Rodríguez from Fundación Casa de la Infancia, who shared their time, work and practical lessons.

Lastly, I am grateful to my family and friends for their love and encouragement. To Dafna, Margarita, Renata for their helpful advice and motivation throughout this whole academic year at UCL. Lastly, to my friend Felipe, whose perceptive observations and proofreading helped convey my ideas more clearly.

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ACRONYMS

CIM	Children's independent mobility
IM	Independent mobility
BE	Built environment

ABSTRACT

Informed by broad social assumptions, transport planning has traditionally obliged to the travel needs of the average (Vasconcellos, 2001; Levy, 2013b). In this process, children's imaginaries and aspirations have been overlooked and dominated by an adult world were mobility is regarded as going from A to B efficiently. Challenging this view, this research considers children's mobility as a practice that involves walking, playing and socialising, and the means by which children 'perceive, feel and act in the world' (Lester and Russell, 2010). Thus, it recognises that children's everyday *pedestrian* practices matter, and that broader independence significantly contributes to their well-being and participation in urban life.

Given the lack of attention to children's independent mobility and play in the global south, this study analyses their impressions in a low-income neighbourhood in Cali, Colombia. Through a socio-ecological framework that incorporates the concepts of attachment and affordance, the study explores independent licence, walking perceptions and experiences, community ties and sociability. Findings suggest that in this context, independence is at constant negotiation between children, parents and household dynamics. In this sense, while children have high levels of independence for essential journeys, their freedom to roam, play and socialise is more restricted. Both road safety and the changing circumstances in the social environment, in terms of high levels crime and violence are crucial determinants in their participation in the neighbourhood. Policies should promote greater freedom and playability through strategies that facilitate rich social and physical affordances, and focus community engagement and appropriation of the street.

Key words: *Children's independent mobility; Play; Socialising; Colombia*

1. INTRODUCTION

"An interview with a 10-year-old living in a new urban development (…)
Interviewer: Okay, and what did you play...?
Simon 1: We played walking... just walking around"
(Horton et al., 2014)

UNICEF's Child-Friendly Cities Initiative has set the stage for a increasing global concern on the role of urban environments and its institutional structures in supporting the Convention on the Rights of the Child (UNICEF, 2004). In an urbanizing world, cities are the places where children grow up and where they meet their needs and aspirations. Thus, shaping the urban environment with their perspective in mind is vital for their development, wellbeing and access to opportunities (Gleeson and Sipe, 2006; UNICEF, 2018). In recognition of the neighbourhood's role in children's lives, since the 1970's geographers and psychologists have studied their perceptions and experiences in their surrounding environment and its effect on their cognitive and mental development (Malone and Rudner, 2011). Over the last two decades there has been a dominant interest from the medicine, social sciences, and city planning fields regarding the correlation of the built environment (BE) and urban mobility on children's health (Sipe, Buchanan and Dodson, 2006). Research has predominantly focused on how neighbourhoods can promote active travel and physical fitness to battle growing child obesity and sedentarism (Villanueva *et al.*, 2014). Most of studies, largely from the global north, have found children's active travel (AT) has decreased over the years, as walking and cycling modes are gradually replaced by the car (Mitra and Manaugh, 2020).

Recent studies have focused on the influence of the urban environment in obesity amongst children. Others have focused on their impressions and experiences in their neighbourhoods (Sipe, Buchanan and Dodson, 2006), acknowledging the importance of children's independent mobility (CIM) in in their wellbeing and social participation. The following discussion explores children, their mobility, and relationship to their neighbourhoods, transcending the current focus on active travel and its 'utility' as physical activity and health, instead it focuses in a more integral approach as of mobility as social practice (Horton *et al.*, 2014). First, the term *children* references those aged 5-16 years, embracing Matthews and Limb (1999)'s social understanding of children as a diverse social group with intersecting experiences based on age, gender, ethnicity, capabilities, health and social context. Second, *children's independent mobility* is regarded as a reciprocal process between traveling, playing and socialising, beyond conventional connotations of travel as moving from point A to B freely. In this sense, mobility is understood from children's own everyday *pedestrian* practices and *walking* experiences. Finally, *play* refers to children's 'time and space for their own needs and desires' (Lester and Russell, 2010) which evolves as they get older, from traditional games to 'hanging out' or exploring. Given children in the global south, and low-income contexts, often walk as their only alternative to access opportunities, to explore and participate in urban life, the promotion of walkable neighbourhoods and positive CIM experiences have added urgency in such context. This discussion aims to contribute to the planning and development of child-friendly walkable neighbourhoods.

Research aim

This dissertation aims to explore the role of CIM in promoting children's wellbeing and social participation in their neighbourhoods while walking, playing and socialising. The discussion seeks to understand *the qualities of the neighbourhood environment that shape IM and promote play and development, from children's own perceptions and points of view.* Building upon the research gaps on CIM in the global south, this question is explored through children's walking experiences in a low-income neighbourhood in Cali, Colombia.

Supporting research questions:

- To what extent is it possible for children to exercise their independence in their everyday walking journeys? (O'brien *et al.*, 2000)

- What are the similarities/differences in walking, playing and socialising perceptions between children from different ages and genders?
- How do parental concerns impact CIM?
- How can the concepts of affordance, attachment, wayfinding and prospect-refuge inform urban planning policies and therefore, support CIM?

Objectives

- To Identify neighbourhood environment qualities that influence CIM in the literature.
- To propose a theoretical framework to understand CIM from children's perspective.
- To analyse the neighbourhood environment and children's independent walking experiences in a low-income neighbourhood in Cali, Colombia based on the framework.
- To propose policy suggestions to improve and promote CIM in Cali, Colombia.

The following discussion is structured in eight chapters. Chapter two (2) presents a critical overview of existing literature on CIM, the relation between children's walking perceptions and the neighbourhood environment. Chapter (3) presents the conceptual framework that will guide the study. Chapter four (4) outlines the methodology and introduces the child-friendly initiative Vivo Mi Calle, which provides the secondary data for the analysis. Chapter five (5) presents the context of Cali, Colombia and the analysis of CIM and the social and built environment qualities in a low-income neighbourhood in the city. Finally, chapter six (6) presents the key findings of the questionnaire analysis. Chapter seven (7) discusses key findings, policy recommendations to improve CIM in the city and research limitations. Finally, chapter eight (8) concludes with a brief summary and future research considerations.

2. LITERATURE REVIEW

2.1. Children and mobility

Guided by the 'paradigm of the rational man' who mainly travels to fulfil their economic needs (Avineri, 2012) transport policies and land uses have mostly favoured the travel patterns of the average: working-age, able-bodied, middle-class, male adults (Vasconcellos, 2001; Levy, 2013b). As children grow up in this hegemonic world dominated by adulthood, their needs and experiences are influenced by adult values and gaze. The result: various ways of socio-spatial marginalization on streets, public space, and playgrounds (Johansson *et al.*, 2020). Such urban ideals and visions have failed to acknowledge, as Matthews and Limb (1999, p.66) suggest, that 'children have different needs, aspirations and behaviour from adults', which shape their participation in everyday urban life. The authors, cited by Waygood *et al.* (2020, p.7) offer 6 main differences between children and adults, crucial to advance policy and practice:

> *"(1) Their rhythms of time, space and activities are different; (2) their use of land and facilities is different; (3) [their independent mobility] is restricted by money, physical capabilities, caretaking conventions, etc.; (4) the threats they face are different (e.g., collision point, air quality); (5) even in the same environment, their interpretations and perceptions are different; and (6) children's inability to influence decision-makers" (ibid, p.7).*

Reductionist transport policies and the absence of children's perspective in urban planning invite us to rethink children's mobility from an angle that amplifies the importance of transport as merely the ability to move and public space as a means for action (Horton et

al., 2014). This view is supported by Levy (2013a, p.23) who proposes reframing transport planning as 'the freedom and right of all citizens to move in public space with safety and security – and without censure and social control' placing value on the social role of public space in mobility. From the perspective of children, Levy's *'to move'* should be regarded as a social activity (Waygood, 2020), which is at times about access to opportunities, being with friends and peers, sensing and exploring the neighbourhood, and others about being by themselves while exercising their independence. In this sense, mobility extends beyond getting from A to B and becomes a journey that involves travel, play and socializing (Johansson *et al.*, 2020) where 'the trip is half the fun' (Waygood, 2020). This reframing of has a lot to do with CIM, described by Lopes *et al.* (2018, p.2) as:

> *"Independent mobility of children or youth in the urban setting can be defined as permission for children to move without adult supervision in their neighbourhood and city (Hillman et al., 1990; Tranter, 1994) so that they can explore and learn about the environment at their own rhythm (Björklid and Nordstrom, 2004), toward a progressive and wider freedom of action [play, socialize] and movement [access]* (Tonucci, 2005)"

2.2. Children's independent mobility as social practice

In 1990, the construct of CIM was introduced by Hillman et al. in as "the freedom of children to travel around in their neighbourhood or city without adult supervision" (Hillman et al, 1990 cited by Marzi and Reimers, 2018, p.15). This definition has been reimagined through the years by diverse authors and fields of study, according to research objectives. While some authors have highlighted the notion of independence as a means development (Waygood, 2020), others have focused on its correlation to increased active travel (Sipe, Buchanan and Dodson, 2006; Villanueva et al., 2012).

IM has a decisive role in children's physical, social, cognitive and psychological well-being and development (Waygood et al., 2017). Alongside improved health due to physical activity, greater freedom to walk and play provides children the opportunity to be social and interact with their peers and neighbours more frequently, contributing to their sense of belonging and development of social skills and personal identity (Smith et al., 2019). Furthermore, the possibility to explore and observe the world at their own pace contributes to their spatial awareness, increasing their confidence and self-esteem (Villanueva et al., 2012; Waygood

et al., 2017). Low levels of independence may cause negative effects, not only for children but their caretakers, as it diminishes their free time exacerbating their workload, especially in the case of mothers, who are typically in charge of parenting and household responsibilities (Kyttä, 2004).

Despite its documented benefits, a majority of studies, most from global north, have found that much like AT, CIM levels have decreased over the years due to increasing chauffeuring and significant independent restrictions (Villanueva et al., 2014). Given the lack of studies of CIM in developing cities, findings and assumptions do not necessarily apply to these contexts. An excellent example of such differences is illustrated by recent physical activity reports, which reveal that merely 20 to 45% of children and adolescents in the countries like UK, Canada and Germany use active modes to travel in their neighbourhoods. In contrast, in global south countries like Colombia, Mexico and India up to 79% of children walk or cycle to school and other activities (Aubert et al., 2018; González et al., 2019).

Recent attention to developing contexts offers valuable insights into children and their mobility experiences. In their review in Asia and Africa, Malone and Rudner (2011) find in the global south, CIM mostly determined by children's varying roles and responsibilities like attending school, work and doing chores within their household and communities. In this sense, the authors emphasise:

> *'the relationship and negotiation around independence and mobilities within these contexts becomes less about competence and capacity (…), and more about the production and reproduction of mobilities and immobilities that traverse specific settings and spaces for a wider variety of purposes and functions' (ibid, p.246).*

Furthermore, the authors point out, there are considerable similarities between the mobility patterns, independence, urban perceptions, neighbourhood characteristics, and access to public transport among young people from certain socioeconomic status or backgrounds within and across cities/countries (Malone and Rudner, 2017). Thus, a low-income family might possess high levels of CIM due to unavailability of motorised vehicles or low CIM because of personal safety and crime concerns (ibid). Therefore, it is crucial to consider this comprehensive perspective of CIM and wellbeing, as an element of analysis in the global

south, where child-oriented spaces and policies are less common and play and mobility overlap with chores, education and work (Lester and Russell, 2010).

2.3. A socio-ecological perspective

A considerable body of research has approached CIM through diverse indicators: (1) Home/ territorial *range*, (2) independent *time* outside, (3) independent journey to *destinations* and (4) parental *licence* (Marzi and Reimers, 2018). Studies have been limited to examine the neighbourhood variables that influence CIM, such as the BE through a variety of methodologies (Panter, Jones and van Sluijs, 2008; Sharmin and Kamruzzaman, 2017). Most accounts, however, have failed to address that children's everyday mobilities are complex and multi-layered, full of trade-offs and constant negotiations. In response, recent efforts propose a comprehensive socio-ecological perspective, which explores CIM within the political, social, environmental and household background (Mitra and Manaugh, 2020). This framework considers the mediating influences between the child, the parent/guardian and the household, the neighbourhood environment and the external context (culture, policies, geography) in CIM (Mitra, 2013; Badland *et al.*, 2016). The following is a brief description of key findings found in the literature related to each dimension.

The child. Children's role in their own mobility has notably been attached to their parents perceptions and licence. According to Kyttä (2004), it should not be assumed they obediently comply their family's licence restrictions; on the contrary, they develop clever moderating abilities to gain more freedom and inhabit public space. Moreover, their safety concerns can be greater or unlike those of adults, expressing fear of bullying, darkness, animals (Marzi and Reimers, 2018). Predominantly, studies suggest that children's age, gender, physical and cognitive development are crucial in determining their outlook of the neighbourhood (Shaw *et al.*, 2015). As children grow up, they gain and exercise more independence (Mitra and Manaugh, 2020), whereas 6-year olds spatial range is their home street, 12-year olds can usually walk within their neighbourhoods (UNICEF, 2018). Similarly, boys have usually increased licence and range than girls, who may be bound to conflicting expectations within the household and perceived more vulnerable to crime and violence (Hallman *et al.*, 2015).

The caretaker. Parents and guardians' decision making process regarding CIM is mainly influenced by their perceptions of traffic and personal safety, their household

dynamics/obligations and in some cases, their gender (Pont *et al.*, 2009; Villanueva *et al.*, 2014). Overall, the literature suggests closer community ties, sense of place and child-friendly street networks are crucial in caretaker's decision to grant independent licence.

The household. Household socioeconomics determine access to mode of transport, home location and employment. These circumstances impact household's activity pattern and participation across space and over time (Mitra, 2013) and determining independent licence through compromises and negotiations between family members (Levy, 2013a). When comparing CIM levels within different socioeconomic conditions, Malone and Rudner (2011) found that in low income communities, while some families limited children's access to public space and parks due to 'stranger danger', others granted greater independent licence to play outside, due to reduced living conditions. This indicates household dynamics influence and are influenced by children's social needs and level of independence.

The neighbourhood environment. The home, the school, the street, the block are the spatial scales where children grow up, where their mobility, play and socialising unfolds, where they first experience their independence (Lopes *et al.*, 2018). While their spatial range might expand as they grow, the neighbourhood is the heart of CIM studies and focus of child-friendly cities (Johansson, Sternudd and Kärrholm, 2016). Neighbourhoods are the expression of both its social and physical qualities (Cele, 2005) which shape children's interactions and perceptions as the walk, play and meet.

The social environment. Negative perceptions and experiences of personal safety, in relation to 'stranger danger', sexual assault, bullying, violence and crime can reduce independent licence and actual mobility (Villanueva *et al.*, 2014). Authors in the global south have also highlighted fears relating to anti-social behaviour, gang violence and drug use (Weeb Jamme, Bahl and Banerjee, 2018). Thus, greater freedom to roam and explore is linked to liveable neighbourhoods with strong and cohesive communities that support children meeting and playing with peers and neighbours in safe and nurturing environments.

Built environment. Much like sustainable travel (Ewing and Cervero, 2010), BE variables impact children's experiences and perceptions while walking independently, although in a different manner. A study by Sharmin and Kamruzzaman (2017) found that while density and land-use diversity are crucial for supporting sustainable mobility in adults, they imply busy and hectic urban environments, which can be detrimental to children's perceptions of

social safety and sense of community. However, Waygood (2020, p.68) points out 'public social locations such as commercial establishments or other convivial places where [children] can find social interactions' are positive for CIM'. Therefore, in the case of children, positive diversity is related to meaningful uses that offer exciting opportunities for social activities and interactions (Kyttä *et al.*, 2018), such as residential uses, commercial spaces, parks, recreational facilities. Furthermore, studies outline the critical role of proximity to destinations and traffic safety, influenced by low intersection density, traffic volumes and street connectivity. Figure 1 illustrates the socio-ecological components and the BE factors that impact CIM according to the literature.

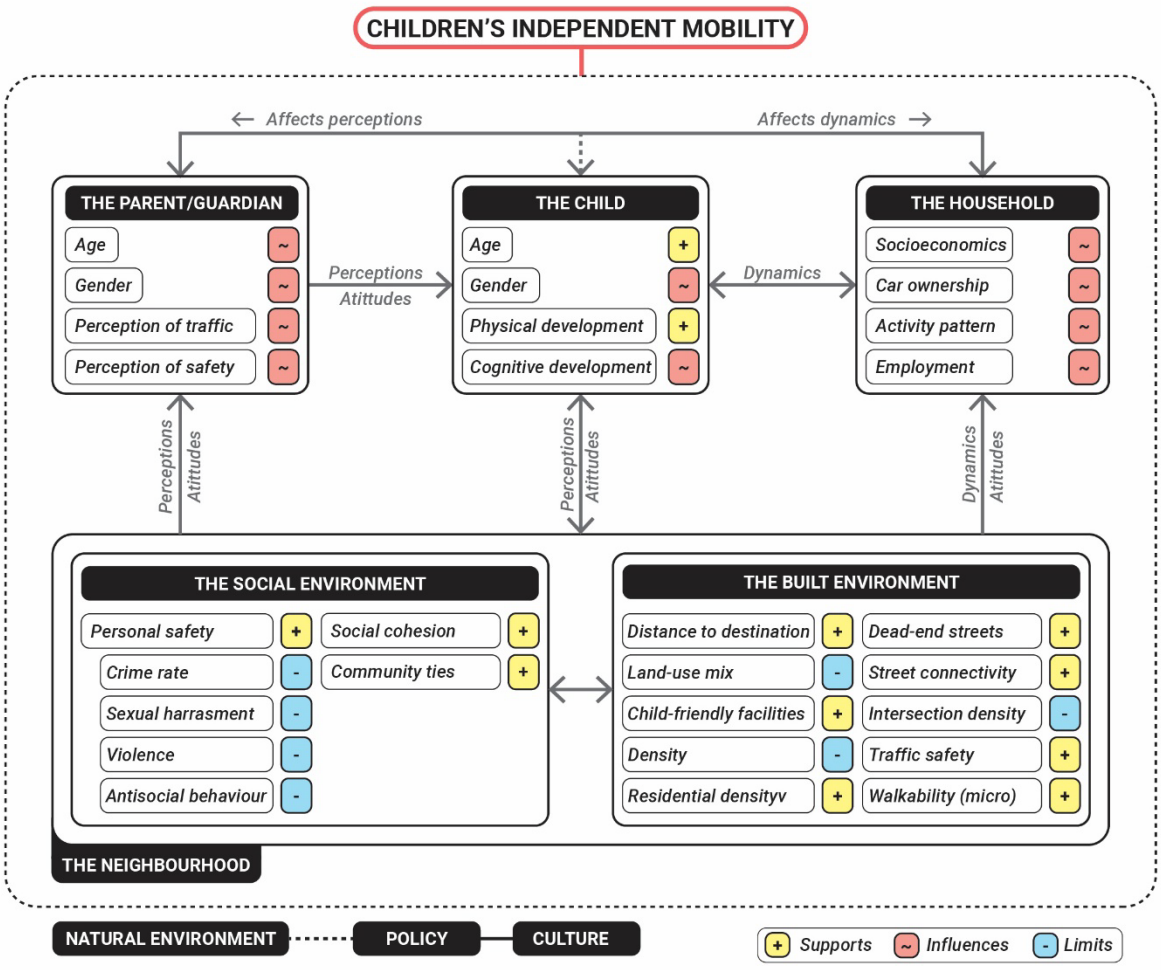


Figure 1. *Socio-ecological model and correlations to CIM. (By author based on Panter et al., 2010; Badland et al., 2016; Sharmin and Kamruzzaman, 2017; Marzi and Reimers, 2018; Mitra and Manaugh, 2020)*

2.4. What about play? Insights from environmental psychology

While the socio-ecological model offers a comprehensive perspective of CIM, it can overlook children's own voices and its imaginative and playful aspect of it. To capture these crucial elements, Johansson *et al*. (2020) proposes two children's environmental psychology concepts: *attachment and affordance* which serve as lenses to examine the neighbourhood's potential to promote CIM and play, from a child-oriented perspective.

Attachment is the emotional bond that children develop with their surroundings which contributes to a sense of place and belonging. According to Chawla (1992 cited by Chatterjee) "children are attached to a place when they show happiness at being in it and regret or distress at leaving it, and when they value it not only for the satisfaction of physical needs but for its intrinsic qualities" (p. 64). Attachment is therefore the foundation of CIM and shaped by both the social and physical neighbourhood environment. A child might feel attach to their neighbours and friends as well as urban features like beautiful nature, colourful streets, parks, playgrounds or local shops, where everyday life occurs (Johansson, Sternudd and Kärrholm, 2016).

Affordance. CIM has been linked to Gibson's theory of affordance which suggests that people perceive the social, physical and emotional environment in terms of the positive or negative functions, opportunities and restrictions it offers (Clark and Uzzell, 2002). As such, a child perceives a positive affordance when a meaningful physical, social or emotional attribute or cue in the neighbourhood offers a possibility to act in a certain way according to their personal attributes (Kyttä, 2003). On one hand, physical neighbourhood qualities can afford walking, running, skipping, playing sports, swinging, hanging, climbing, exploring nature and beyond. On the other, social qualities can afford meeting with friends, being in peace and quiet, feeling secure, making new friends, relaxing, being loud, retreating (Heft, 1988; Kyttä, 2004). In this way, in neighbourhoods with a lack of child-friendly facilities, a small court or street become the centre of multiple activities and interactions, children's favourite places, places of ownership regardless of age or gender.

This literature review has proposed that CIM should be understood beyond just movement/access, but an activity that involves walking, playing, socialising. This expanded perspective implies that, since children's walking practice matters, their voices and perceptions should take a prominent role in urban planning, practice and research. To

capture children's independent walking experiences from diverse geographical contexts, particularly from the global south, studies have to acknowledge that there is more than just one 'universal child'. Recognising the importance of the child, the caretaker, the neighbourhood and the cultural context as well as their voices through attachment and affordance can unlock a path towards the promotion of CIM and a true understanding of child-friendliness.

3. CONCEPTUAL FRAMEWORK

The following conceptual framework aims to acknowledge the aforementioned central ideas, adopting a socio-ecological model at its core. According to Badland et al. (2016) this model incorporates multiple aspects in a non-linear relational system of loops and flows. In this sense, it is flexible enough to include the particular aspects of a community or a given context and integrate further findings, dimensions and concepts. While several studies have implemented this approach, most have focused on linear connections, overlooking the interdependencies between them. On the individual level, there has been considerable emphasis on parents and how their decision-making influences CIM. As a consequence, children's impressions have held a secondary role, which fails to accurately inform child-friendly policies and prevent children from having '… active, emotional and imaginative engagements in and with their environments' (Ross 2007, p. 389 cited by Badland et al., 2016). This discussion aims to place children at the heart of CIM studies. To do so, it acknowledges the all-encompassing nature of the child, the caretaker, and the household as well as the social and physical neighbourhood environment in the promotion of CIM. Building upon the previous literature findings and inspired by Weeb Jamme, Bahl and Banerjee (2018), the model incorporates Johansson et al. (2020)'s environmental psychology concepts of affordance and attachment as mediators and translators of children's experiences of mobility and play (Figure 2).

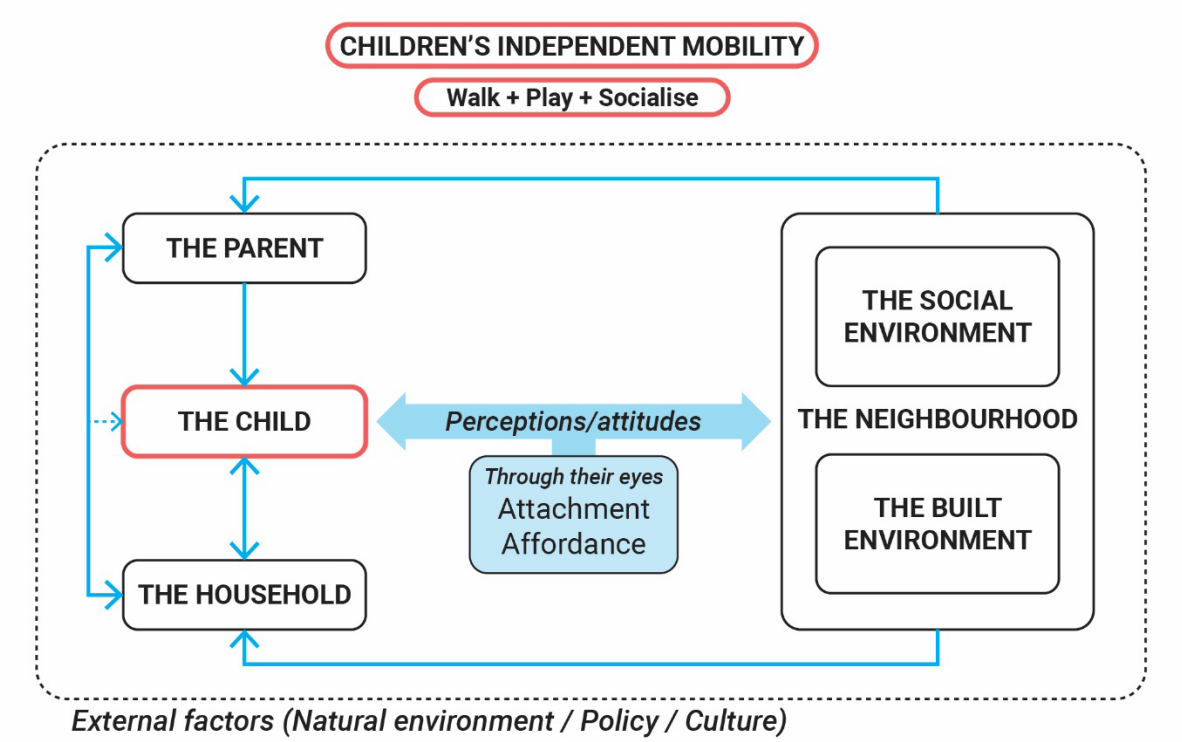


Figure 2. *A conceptual framework to CIM. (By the author inspired by Kyttä, 2004; Badland et al., 2016; Weeb Jamme, Bahl and Banerjee, 2018; Johansson et al., 2020; Mitra and Manaugh, 2020)*

4. METHODOLOGY

The following study examines 'Vivo Mi Calle' project in Cali Colombia, through a mixed-method approach following the research objectives and conceptual framework. The analysis primarily centres on a secondary study of children and parents/guardians questionnaires associated to active travel and physical health. While a number of questions related to CIM, this study makes use of additional secondary data to provide a spatial descriptive analysis of the neighbourhood environment through images and geographical map analysis using ArcGIS pro. Further sources included municipal documents (DAP, 2019; Observatorio de Seguridad, 2019), open source municipal planning data (GIS) (IDESC, 2020), Cali's 2015 mobility survey (UT SDG and CNC, 2015) as well as Google Street View.

4.1. Project: Vivo Mi Calle

'Vivo Mi Calle' is a child-friendly initiative in the Aguablanca District of Cali, Colombia, led by the NGO Despacio in partnership with the WRI Ross Centre for Sustainable Cities, the support of the Mayor's office and funding by the Botnar Healthy Cities for Adolescents Program. Its main goal is to 'reduce health risks and increase adolescents physical activity in Cali's low-income areas through Safe Active Routes' (ISUH, 2019), with vision of improving the well-being of the younger generation through safer, equitable and sustainable mobility.

4.2. Participants, data collection & questionnaires

The project engaged a total 285 children aged 9 to 16 (M_{age} = 12.13; SD = 2.11; girls = 145 - 51.2%) and 144 of their caretakers (M_{age} = 38.71; SD = 9.43; women = 125 - 86.8%) (appendix 5), who attend two local public schools in the Aguablanca district. Seven children and their caretakers were excluded from the sample as they were outside the established age groups.

In November 2019 and March 2020, children from each school answered the 'Perception, Health and Travel Survey'. With a focus on physical activity and leisure time, the questionnaire aimed to discover children's leisure and physical activity patterns, their perceptions and experiences in daily journeys, their sleeping patterns and general outlook on active travel in the neighbourhood. Through a series of single-answer multiple choice questions, 5-point Likert scale matrix statements and a few open-ended questions, the survey presented pertinent subjects related to CIM. Relevant questions included their journeys in the neighbourhood in terms of length, mode of travel, escorting, frequency and, whether they were allowed to travel without an adult when going to organized activities, to visit friends and to play outside. The questionnaires were translated from Spanish for the present study by the author and reinterpreted according to relevant CIM themes found in the literature. In this way, questions considered unrelated to the research objectives were left out of the analysis, appendix 1, 2 and 3 presents the survey questions.

Parents and guardians, which included aunts, grandmothers, and older siblings, completed two separate surveys. The first comprised similar themes, such as trip information on school journeys and walking perceptions. It also gathered relevant information on household socioeconomics such as income, SES level, number of people and children in the family, as well as questions regarding neighbourhood and community cohesion. This survey presented similar Likert scale matrix statements to those of children, which allowed for comparisons between both. The second survey presented detailed sociodemographic information on every household member, such as age, gender, level of education, employment, main modes of transport and available vehicles in the home (appendix 4).

4.3. Research variables and data analysis

Following the research framework, the questionnaire was interpreted through four main themes of discussion: *Licence to walk and play, walking perceptions, walking experiences, neighbourhood and community*. Both children and caretakers' responses were studied using *descriptive statistical analysis* performed with Excel and Tableau Desktop software. The latter was also employed in the visualisation of the data.

The categorical variables for children were: Age ("9-12 years old" and "13-16 years old"), gender (girls and boys), mode (walking) and independence (accompanied by parents/other adults and independent, by themselves/friends/younger siblings), for parents, gender.

Independent *t*-tests were conducted in Excel, comparing the mean values between categorical values. Variable comparisons with distinct mean values and *p-values ≤ 0.05* were considered to be relevant and of statistical significance, and therefore illustrated in the graphs.

Licence was operationalised as *actual independent mobility* referring to the number of children that travelled independently, *perceived licence* as children's perceptions of freedom and *actual licence* as caretakers independent travel allowance (Kyttä, 2004). *The neighbourhood area* was defined by a circular buffer of 800 m, 1Km and 1.2Km around the public schools. These were defined as the *territorial ranges* for young adolescents between the ages of 10, 12 and 14 respectively, by Villanueva et al. (2013); Lopes et al. (2018) and UNICEF (2018).

Given the lack of information on children's play and sociability in the surveys, the study of affordance and attachment was not possible. Common methodologies used in the literature include the study of meaningful/favourite places through participatory mapping and SoftGIS (Kyttä *et al.*, 2018; Lopes *et al.*, 2018), 'visual, verbal, and written recording methods' (Weeb Jamme, Bahl and Banerjee, 2018), and interviews (Kyttä, 2004). In turn, this study employed unconventional methods. Questions regarding children's time outdoors and participation in physical sports were assumed to be associated with play and socialising, as proposed by (Page *et al.*, 2010). Additional clues were given by parents who were asked about the places children frequent after school. Furthermore, land-use analysis, content analysis of the project's Facebook page (Vivo Mi Calle, 2020) and google street view, helped to spatially describe child-friendly facilities and children's possible favourite places.

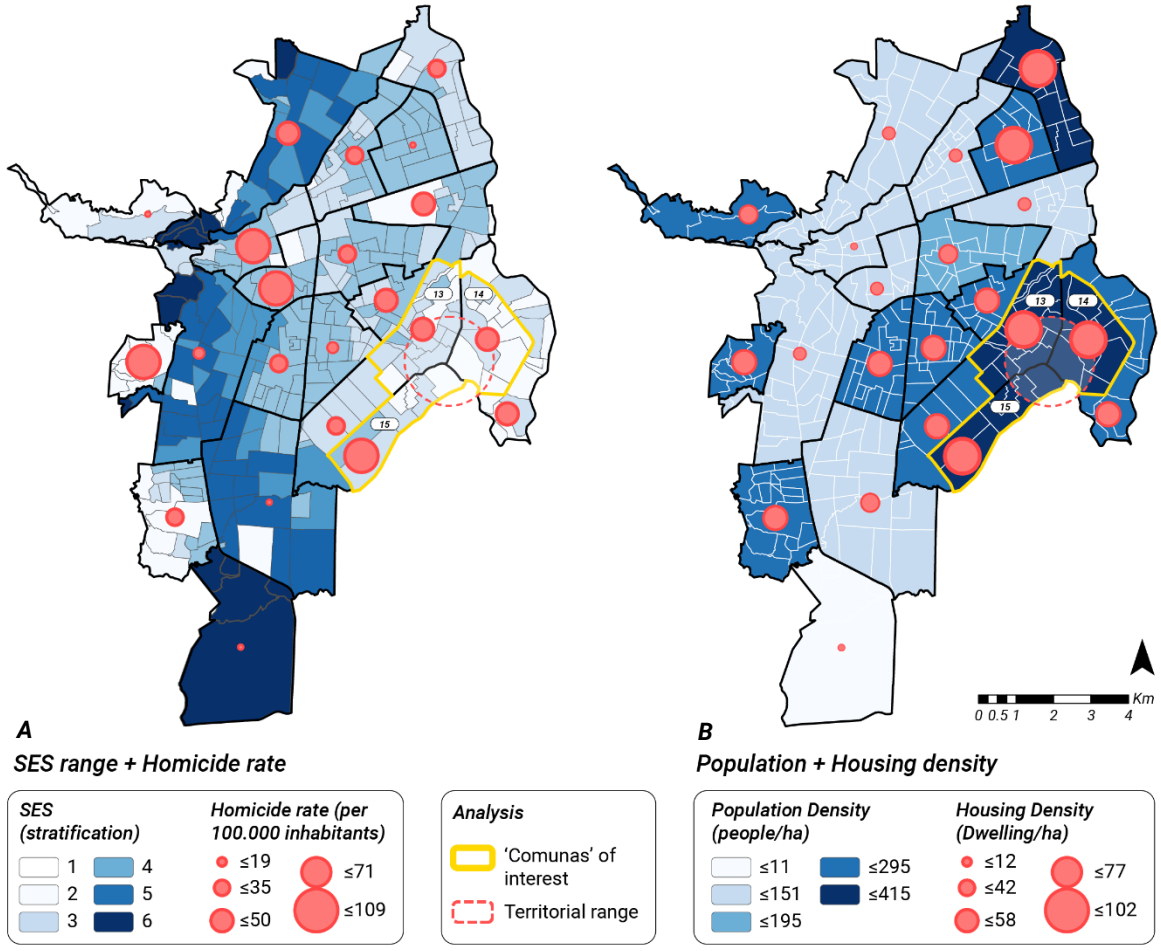
4.4. Statement of ethics

This research does not pose any ethical risks. The study is based on anonymised secondary data, collected by the NGO Despacio following Universidad de Los Andes' ethical guidelines, with consent from all participants and their parents/guardians. The data is not in the public domain, as such Despacio granted access to it for the purpose of the current study. Since the information concerns young people, further steps were taken to protect the respondents privacy. While the project is publicly recognised, the research does not mention any particular school, road, landmark by proper names. Furthermore, it does not illustrate specific walking routes or sensible responses which could place participants in danger.

5. CONTEXT

5.1. The city: Cali, Colombia

Cali is the third largest city in Colombia and the capital of Valle del Cauca department, located in the southwest of the country with an average temperature of 25.4 °C. With a population of 2.22 million the city is composed of 22 'comunas' (districts) classified by a six socio-economic strata (SES) based on housing characteristics and access to public services (water, electricity and sewage). Associated to household income, SES one corresponds to the poorest and six to the most affluent households (Cantillo-García, Guzman and Arellana, 2019). In this way, 47.1% of households in the city belong to the lowest income levels (1, 2) whereas 10.3% to the highest ones (5, 6) (DANE, 2019). The spatial distribution of SES across the territory illustrates marked socioeconomic inequalities and a strong divide between the western more wealthier neighbourhoods and the eastern more disadvantaged ones (Map 1a). In these disadvantaged districts, segregation and social inequity coincide with rapid informal growth, high homicide rates as well as housing and population density (Map 1b). These conditions have consequences to the quality of life, as the neighbourhoods experience low housing quality, lack of recreational spaces and public transportation provision which impacts the quality of life and access to opportunities. In terms of transportation, as seen on table 1, these low-income neighbourhoods greatly rely on walking (37.5%), official and informal public transport (32.1%) and motorcycles (17.9%) (UT SDG and CNC, 2015). While Cali is a city that predominantly walks, its children are the ones who do so the most. Considering children from all socioeconomic levels, 62% walk to school, to social and commercial activities and meet with friends, almost double the rate for the whole city (UT SDG and CNC, 2015).



Map 1. *Socioeconomics, density and crime. Based on (DAP, 2019; IDESC, 2020)*

	Walking	Cycling	PT	Moto	Car	Taxi	School bus	Other PT
Cali	32.3%	5.4%	16.7%	17.9%	13.4%	5.5%	1,5%	10.5%
SES 1 & 2	37.5%	5.5%	14.5%	18.5%	4.75%	0.8%	0,8%	17.65%
Children (5-14yrs)	62%	3%	6%	9%	7%	3%	7%	3%

Table 1. *Cali's modal share (PT: public transport, other: taxis and informal providers) (UT SDG and CNC, 2015)*

5.2. The neighbourhood: The Aguablanca District

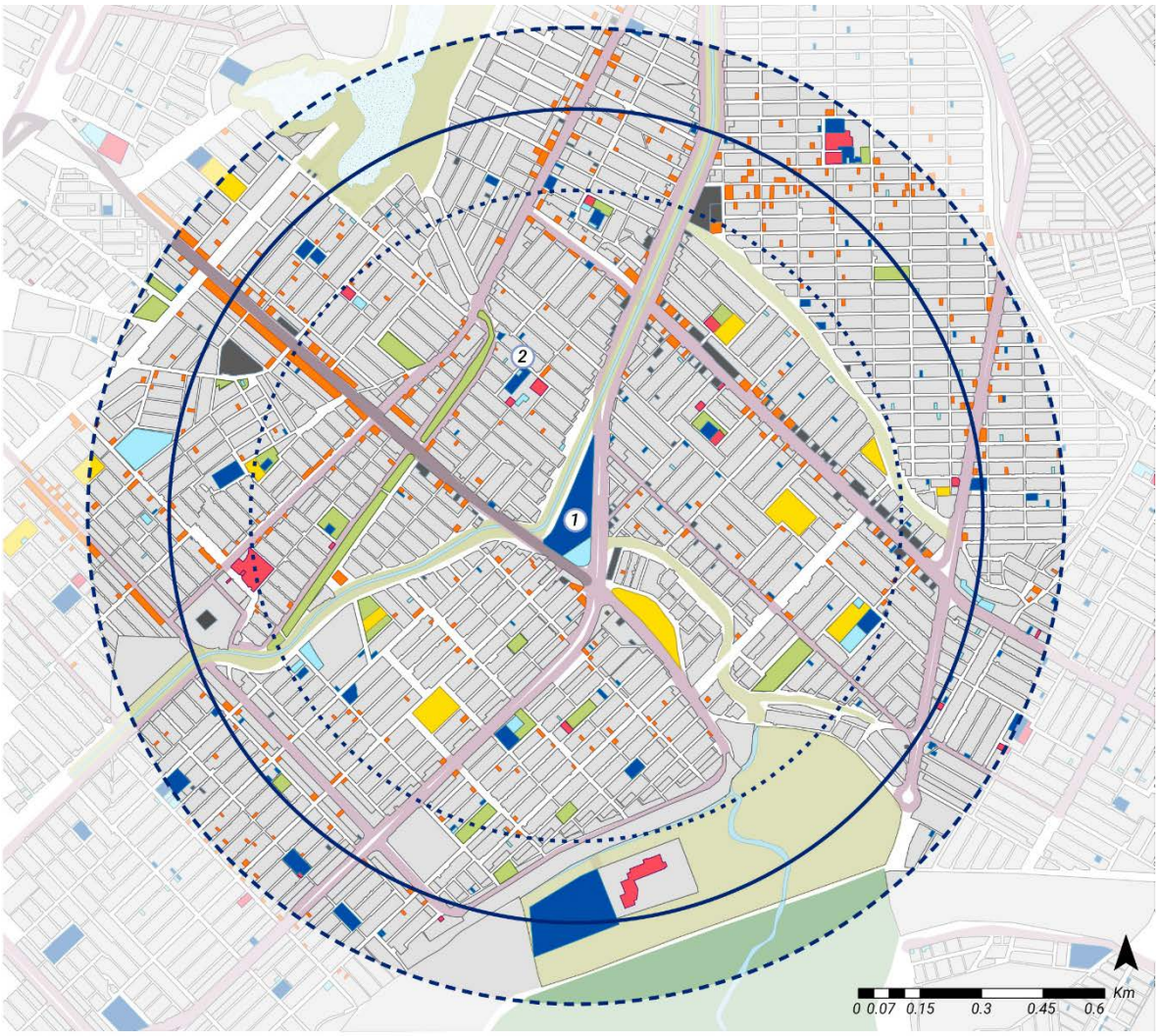
The Aguablanca District is composed by 7 communes and 39 neighbourhoods, of which communes 13, 14 and 15, and its 15 neighbourhoods are of interest to the study. Around 530.000 people live in the area on previous agricultural land on the lower banks of the Cauca

River, thus susceptible to flooding (DAP, 2017). The former informal settlements following a regular grid pattern, are composed of predominantly small single to two storey houses belonging to SES 1 and 2 (87%). The district is served by a line of BRT and a good network of integrated bus routes and informal transport providers. With regard to demographics, Afro-Colombian ethnic minorities make up 38% of the district compared to the 17,7% for the entire city (Observatorio de Seguridad, 2019). Many (60% women) arrive to the area from neighbouring towns and rural areas as victims of forced displacement due to the country's internal conflict (Jaramillo, Lizárraga and Luis, 2012; Torre Paz *et al.*, 2015). The study area (communes 13, 14 and 15) has over 379 local public schools and 196 small preschools inside residences, with over 68.000 students from the district (DAP, 2019).

Built and social environment. As the literature suggests land use diversity, distance to destination, street connectivity and overall flexible spaces with rich affordances are crucial elements to support CIM. In the case of study area, as seen on map 2 child friendly land uses such as schools, parks, sport facilities, neighbourhood shops and cultural centres are at walking distance within the established children's territorial range. However, these activity spaces are mediated by other non-friendly uses like industrial buildings, auto shops, hardware stores, storage facilities as well as forgotten creeks and open fields. While the latter occupy less than 1% of the neighbourhood area (Alcaldía de Santiago de Cali, 2020), when clustered together they create barriers in terms of personal safety and presence of strangers, limiting independent licence, particularly after dark. As seen on image 1, many of the child-friendly facilities lack maintenance, trees that provide shade, public furniture, and overall engaging public spaces and streets. Furthermore, most playgrounds and sports courts are fenced and closed during certain hours of the day, which limits children's positive perception of social and physical affordances in the neighbourhood.

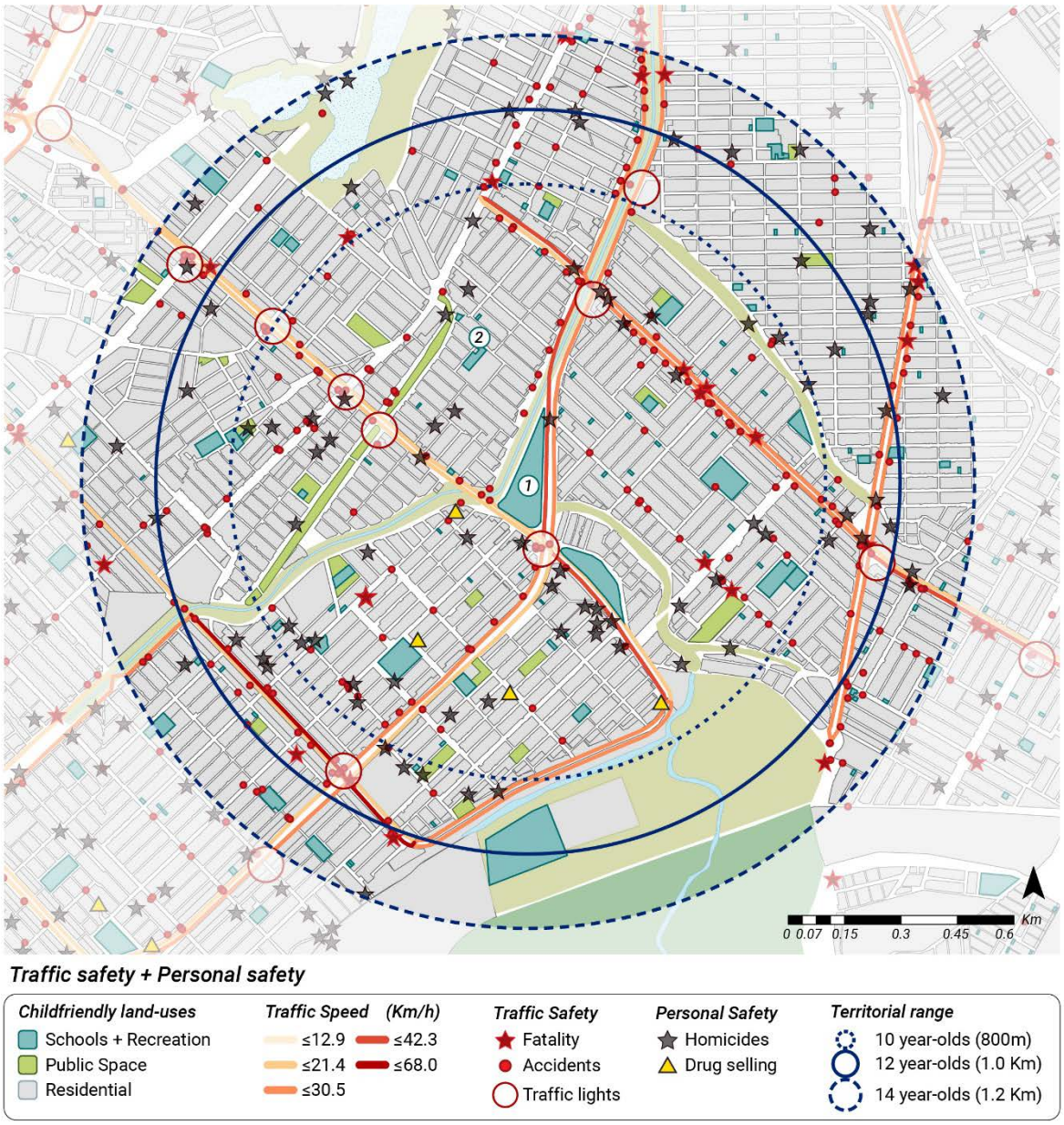
The neighbourhoods where the schools are located are considered some of the most dangerous in the city. Map 3 illustrates the official information on both traffic related accidents and fatalities involving pedestrians, as well as homicides and drug trade (DAP, 2019; Observatorio de Seguridad, 2019; IDESC, 2020). While unrelated, both themes create perceived limits for caretakers and children in terms of licence. Regarding the former, the highest number of accidents and fatalities occur in the major 6-lane roads as controlled intersections are wide apart. From the age of 12, children's walking speed is 5 km/h (UNICEF, 2018) when compared to the area's 30 to 70 km/h speed ranges, the danger of

crossing main streets becomes apparent. In this way, they divide neighbourhoods, creating barriers for children to access school safely and reducing their activity spaces to the immediate blocks around their homes (image 2). A positive element in the urban pattern are the internal neighbourhood streets, which follow regular grids and are usually one-way, narrow and low speed, acting as shared spaces where play and community engagement can take place (image 1). Still, when traffic safety is not an issue, personal safety is. Homicides and drug trafficking occur in both major roads and neighbourhood streets, at times near child-friendly land uses like courts corners and parks.



Map 2. *Child-friendly land-uses and children's territorial range. By author based on (IDESC, 2020)*

Image 1. *Residential and recreation spaces. Based on (Google Street View, 2020)*



Map 3. *Traffic and personal safety. Based on (IDESC, 2016, 2020; Observatorio de Seguridad, 2019)*

Image 2. *Street network enclosing the neighbourhoods. Based on (Google Street View, 2020)*

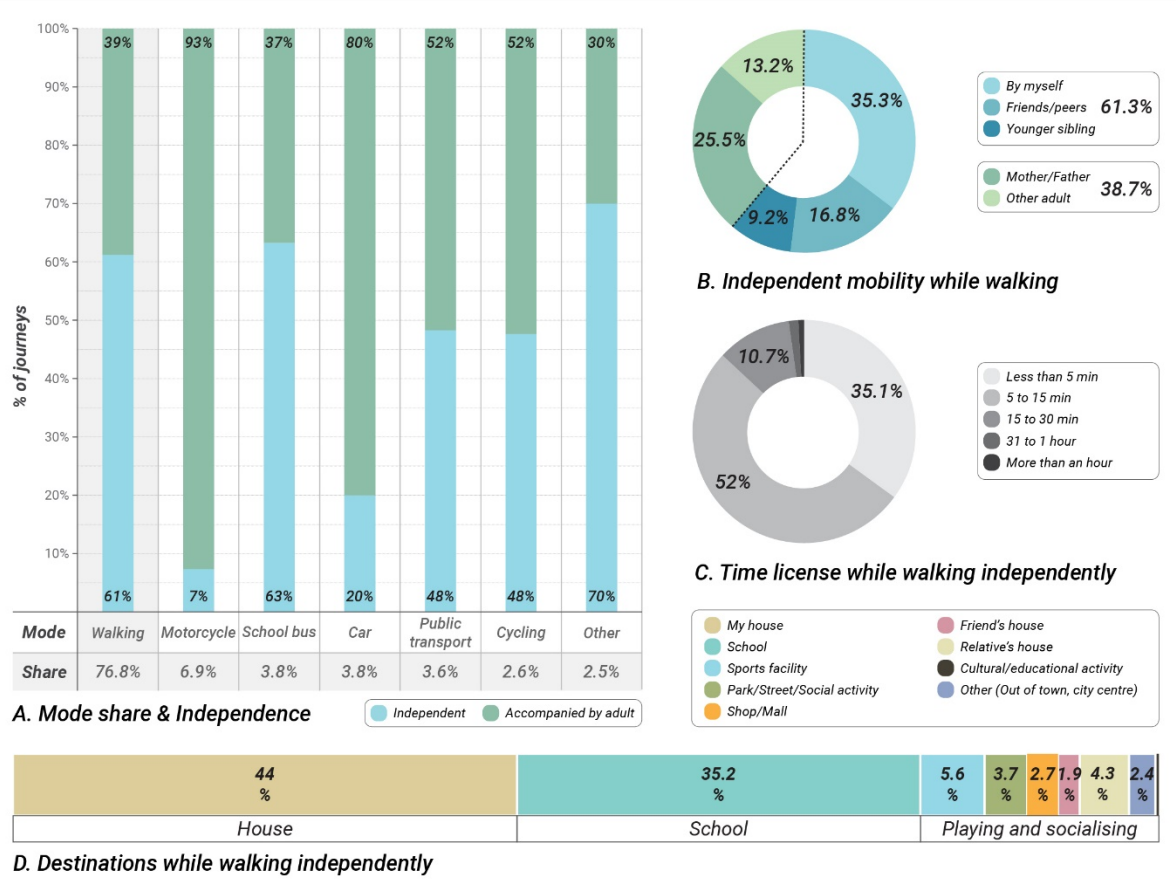
6. FINDINGS

6.1. Children's independent mobility. Getting by every day.

Children that participated in the survey reportedly walked as their main mode of transport (76.8%), which is higher than the city average for children (62%) (graph 1a). These levels increased in trips to and from school, where over 80% of participants walked. Walking trips were typically short, less than 5 min to 15 min (graph 1b) indicating local trips within the neighbourhood and territorial ranges proposed by the literature. Only small number of children (n=38, 13.6%) lived outside these ranges delimited in the maps, which corresponds to journeys longer than 15 min some up to an hour.

Counting all modes, children were independent 55.5% of the times. As seen on graph 1A, walking is one of the most independent modes of transport for children, following the school bus and informal transport and taxis. Around 3 out of 5 children walked by themselves or accompanied by friends and younger siblings, while 2 out of 5 were escorted by their parents and other adults, usually relatives like grandmothers, aunts and older siblings. Consistent with the literature, younger children (9-12yrs) where 7 times more likely to be accompanied than those aged 13-16 (p <0.01). The reported level of independence did not have an effect on the number of trips, even among various ages and genders. This implies there is no correlation between walking independently and being more or less mobile, as most children accompanied or not, travelled around 2.8 per day. Most independent trips involved going to and from school (63.2%), while a limited number (36.8%) to other activities and destinations

associated with child-friendly land uses like courts, parks or corner shops. A proportion of frequented destinations is seen on graph 1D.

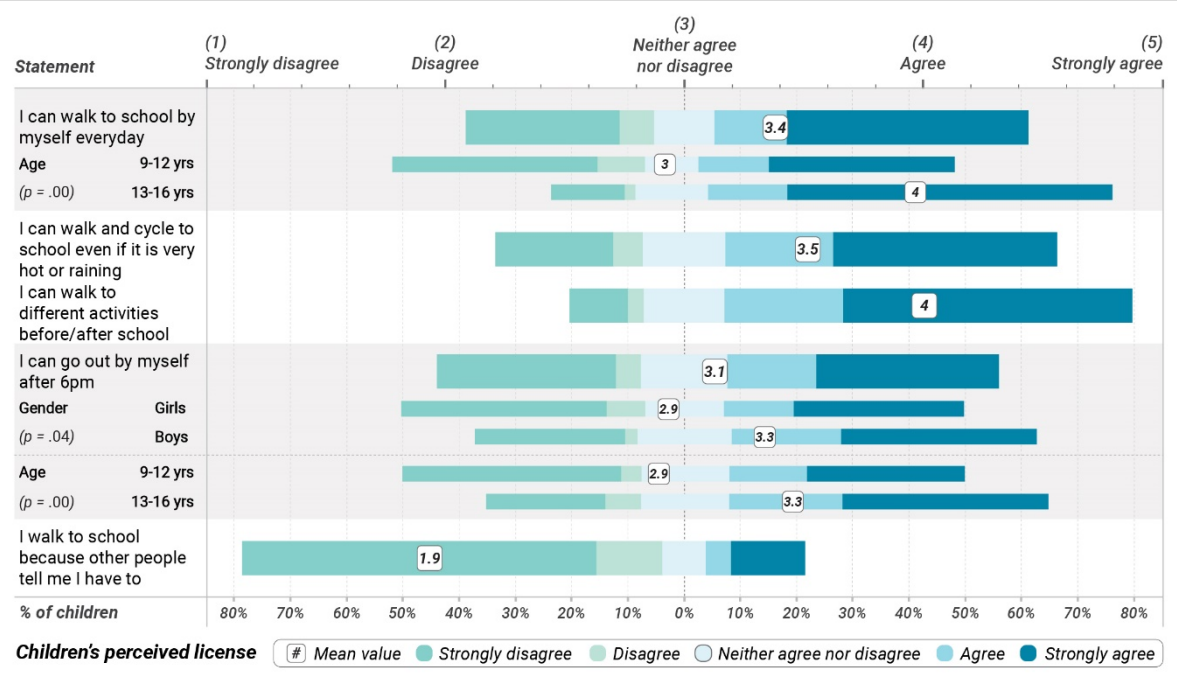


Graph 1. *Trip information and independence*

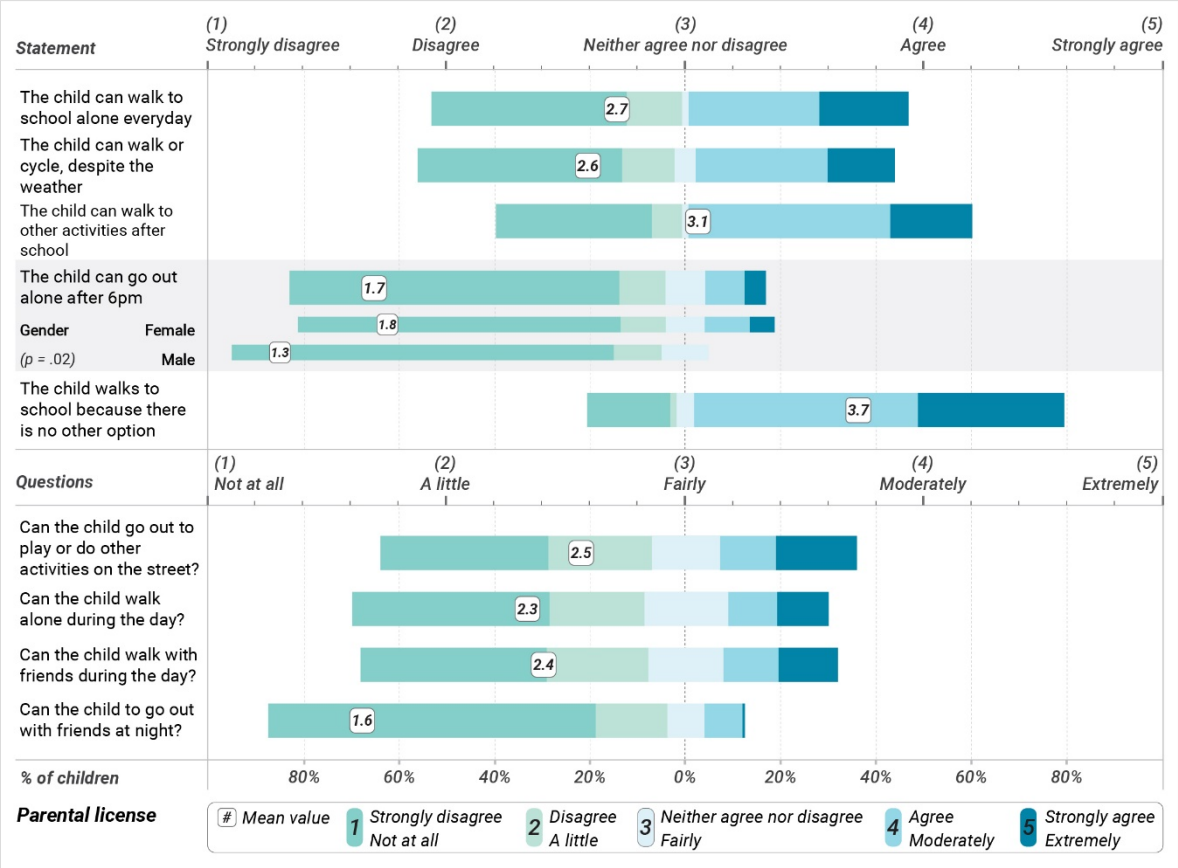
The following graphs illustrate the survey responses to *Likert* scale statements in four themes: independent licence, walking perceptions, experiences, neighbourhood and community ties, from children who regularly walked to school (n=200) and their guardians. Neutral and neutral adjacent responses are located in the middle 0% axis, in an attempt to better illustrate response ranges improving readability and facilitating comparisons. Answer ranges where given a number from 1 to 5, which allowed for mean averages to be taken into account, finding possible relations between gender, age and accompaniment. Neutral percentages were divided into two when adding answer negative or positive ranges.

6.2. Walking freedoms. On perceived and actual licence to walk

Children broadly have positive perceptions on their walking freedoms, as seen by the mean values and response distribution in graph 2. A majority of children reported the highest walking licence when going to school and diverse activities before/after school, 61.2% and 79.6% of participants respectively. Walking alone to school and going out after dark reported the most considerable variations between ages, genders and accompaniment. As expected, escorted children reported lesser licence in both statements than those who walked independently ($p<0.001$). Likewise, older children believe to have greater independence than younger ones. 78.4% and 64.7% of those aged 13-16 agreed to both instances respectively, compared to 50.3% and 49.7% of children aged 9-12. In the case of boys and girls, there were no significant differences in perceived licence when walking to school, however, girls described greater restrictions to going out after dark. As expected, boys and children above 13 have the highest perceived licence to go out after dark. While children enjoy an overall freedom to walk, it is typically assumed that children from low-income neighbourhoods walk because they have no other choices. While this still might be accurate, in the study case, children did not see walking as an imposition, which might have positive repercussions on their journeys and relation to their neighbourhood.



Graph 2. *Children's perceived independent licence*



Graph 3. *Parental independent licence*

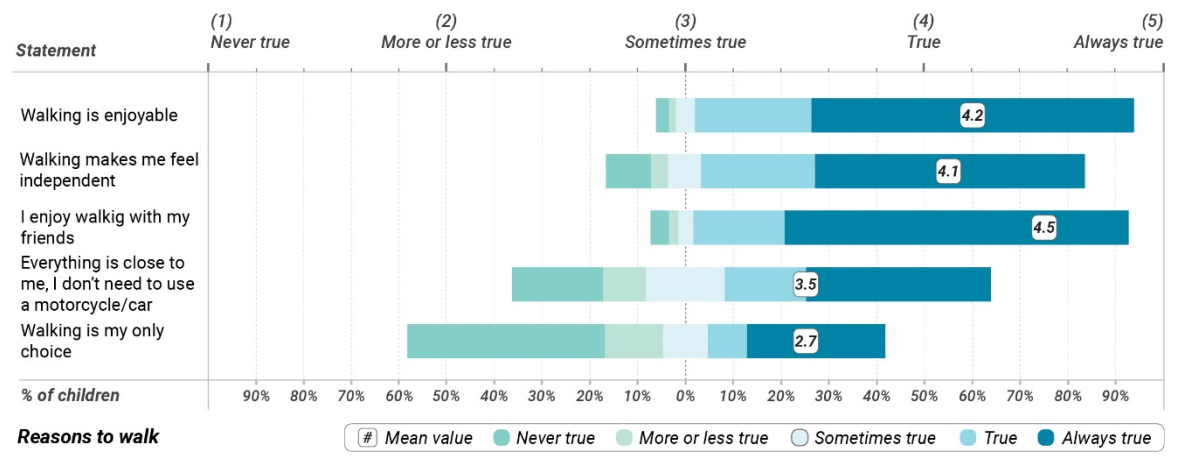
Regarding parental licence, the questionnaire included two separate sections, which expanded on the freedom and restriction as seen on graph 3. Overall, parents have a more restricted view of independent licence, granting fewer independent rights than those reported by children. Only 47% of children whose guardians were surveyed are allowed to go to school by themselves. In an international review on licence, Shaw *et al.*(2015) found 65% of parents grant this permission around the world, which might indicate that parents in this community are particularly fearful of the neighbourhood environment and the risks for unaccompanied children. There were no significant differences in the way female and male guardians responded, as most of them disagreed with the first set of licence statements.

The most withheld independent freedom was going out alone after dark, granted by just 12.8% of parents, which coincides with findings in the literature. Surprisingly, this was the only statement were gender differences were significant, 90% of male guardians overwhelmingly disagreed with this freedom, as opposed to 77% of female participants. Further insights related to walking, playing and socialising indicate that children autonomy

are predominantly restricted. Activities such as playing on the street are fairly to extremely allowed for just 30% of children. Given the lack of child-friendly public space, limitations on the street leaves few options for children to experience urban life and be outdoors in their own terms. Overall, there was an association between higher restrictions and accompanied children and accompanying guardians, who expressed greater constrains to IM and play. Altogether, children believe to have higher agency than indicated by their guardians.

6.3. Children's walking perceptions.

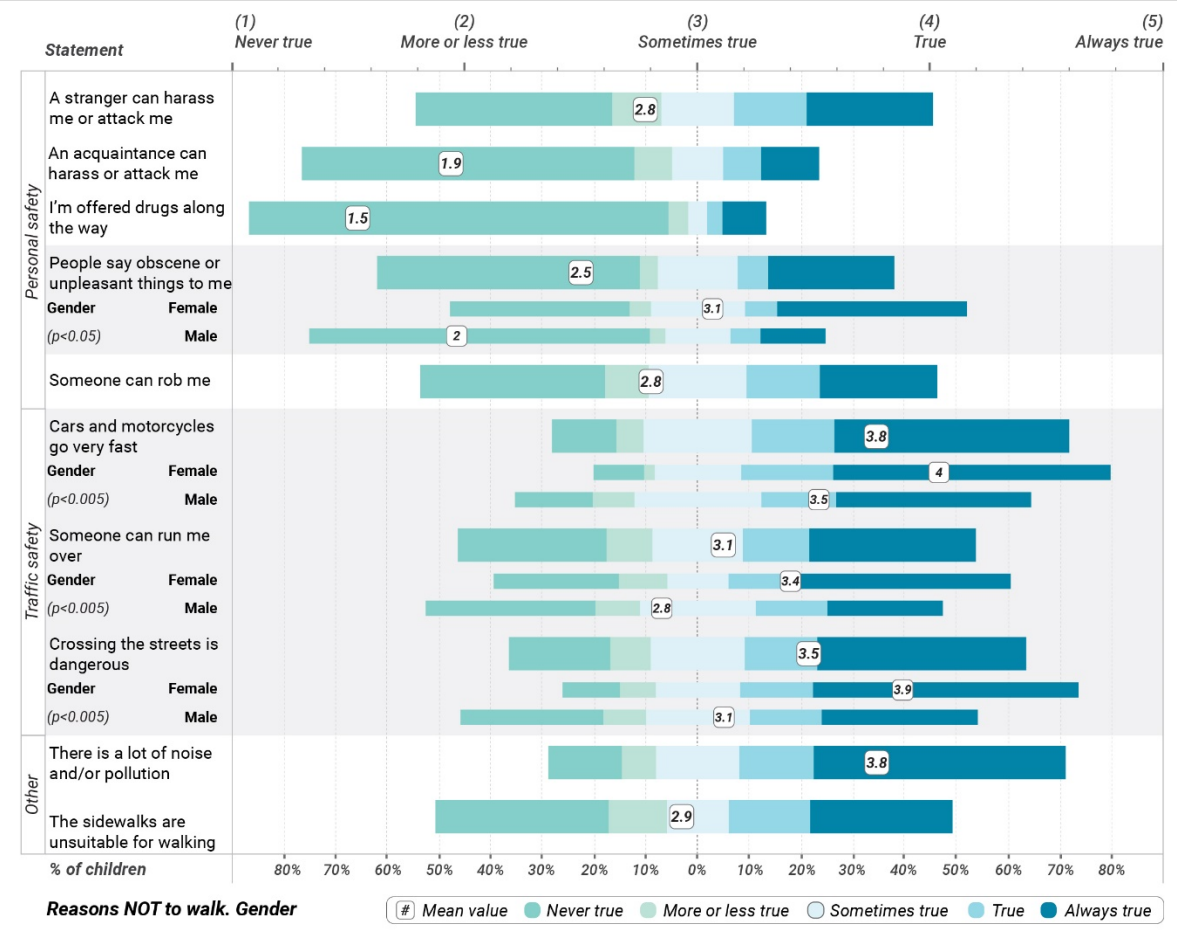
Most children, no matter the age and gender, have a favourable view of walking, as an enjoyable activity that makes them feel independent (graph 4). Walking as a social activity is also visible, 92.6% of participants enjoy traveling with their friends, supporting Waygood (2020) assertion that it allows for social interaction, which children look for. Although to some, walking is their only choice, there does not seem to be negative connotations attached to it. While boys and girls no matter the age agree with the positive reasons to walk, gender does have a significant role in the negative motives (p<0.005).



Graph 4. *Children's views on reasons to walk*

In the case against walking, as suggested by the literature, personal and traffic safety have meaningful impacts on their outlook. Regarding the former, map 3 showed a severe reality on crime and drug use levels in the area. Children's responses show this reality does not seem to affect their neighbourhood perceptions as much as it was assumed. While up to 46% of children are fearful of strangers or being robbed, 23.5% are afraid of their neighbours and 11.3% of being offered drugs along the way. While boys and girls, no matter the age, have similar opinions on the previous concerns, fears regarding street harassment

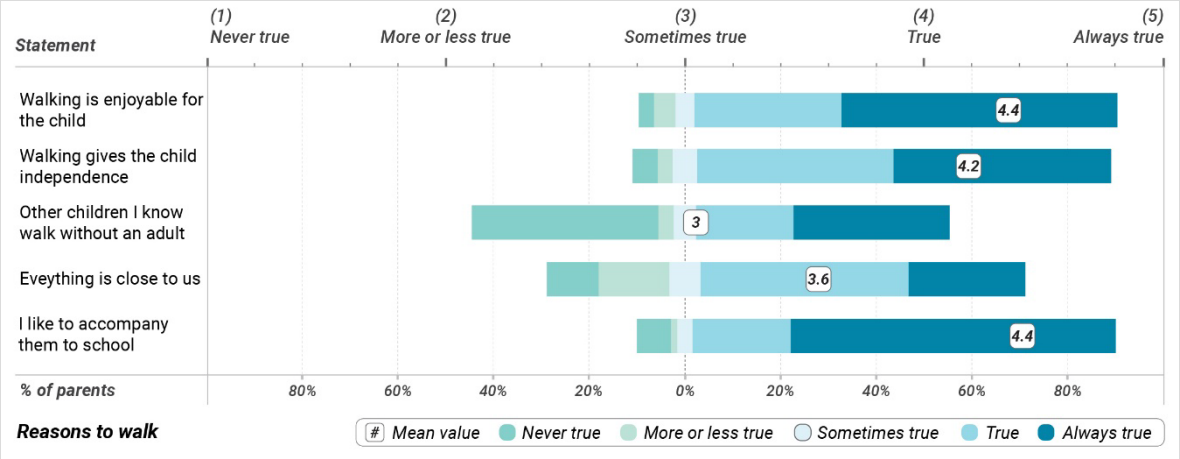
associated with obscene and unpleasant comments were ever more widespread among girls (p<0.005), especially those aged 13-16 (p<0.005). In relation to road safety, map 3 offered a view into the traffic environment around the neighbourhood. Children's perceptions inclined towards negative views on traffic speed and pedestrian crossings, with girls being more frightened than boys (p<0.005). 63.4% of children believed crossing the street was dangerous, in the case of girls, 73.7% thought so as opposed to 54.2% of boys. Statements regarding BE were limited, which does not allow to elaborate definitively on their experiences about child-friendly land-uses. In general terms, 65% of children believe their neighbourhood is noisy and polluted to some extent, and 49.4% agree that sidewalks could be improved. Finally, children's perception of proximity to destinations is generally positive, as 63.7% state most facilities are within walking distance to their homes.



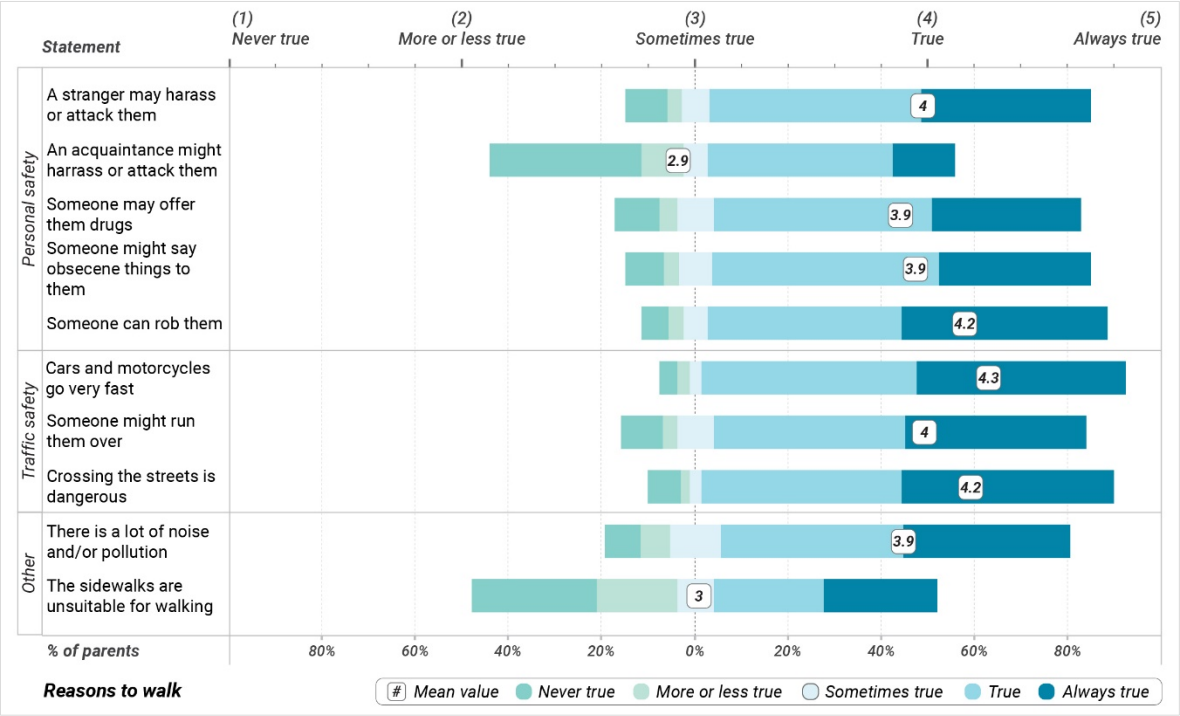
Graph 5. *Children's reasons NOT to walk*

Just like children, parents believe walking is beneficial and pleasant for them (graph 6). They enjoy accompanying them to school, which they may see as a moment to share between

their work schedules and multiple responsibilities. On the negative reasons not to walk, parents and guardians overwhelmingly believe that personal and traffic safety are major worries for children while walking in the neighbourhood, as suggested in the literature (graph 7). In terms of the former, over 80% of caretakers reported the likelihood of personal safety concerns being true was substantial, with the exception of acquaintances. Similarly, over 85% of parents and guardians stated traffic safety concerns were likely to occur in the area.



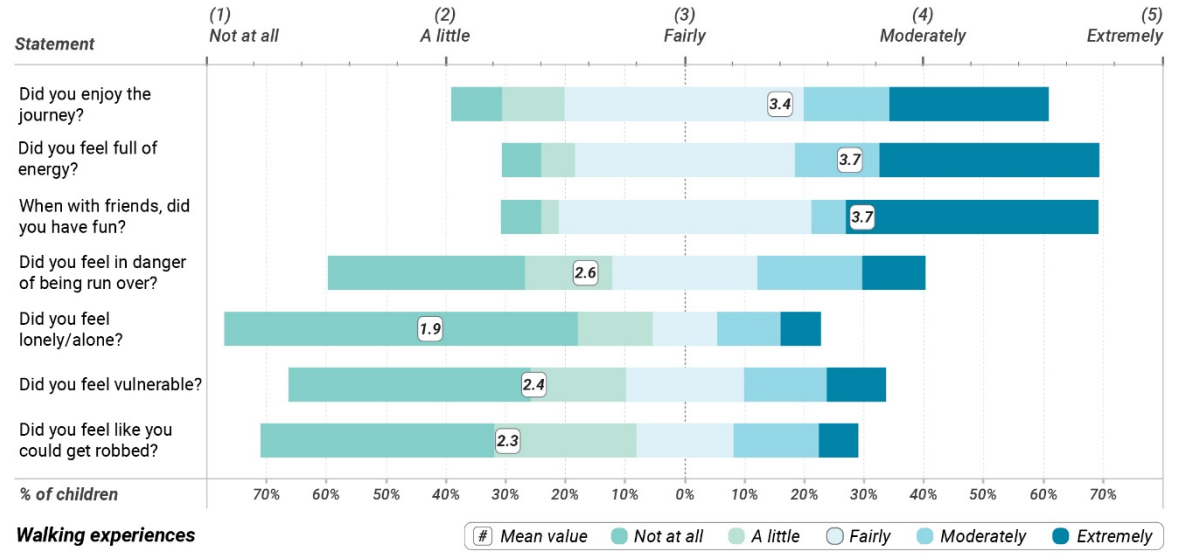
Graph 6. *Caretakers' reasons to walk*



Graph 7. *Caretakers' reasons NOT to walk*

6.4. Children's walking experiences

To ascertain children's walking experiences in the neighbourhood, participants were asked about their journeys to and from school and how they felt during the trips they made the previous day, in regard to their wellbeing and dangers they might have encountered.



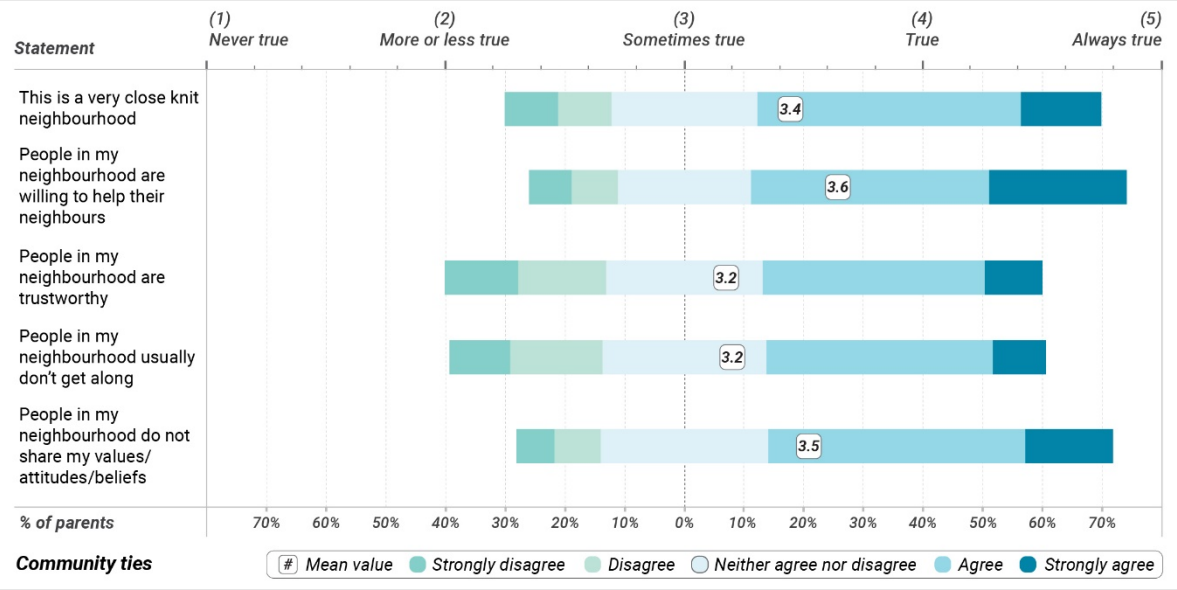
Graph 8. *Children's walking experiences*

Children's journeys to and from school were both pleasant and energetic, and when accompanied by friends the walk was usually fun (graph 8). Only few felt overwhelmingly vulnerable (34.7%) or alone (21.4%), contrarily to their perceptions, children felt less afraid of being run over (57.3%) or robbed (67.2%) (graph 8). When asked about how they felt throughout all journeys, including to school and other activities, most children reportedly had a good/very good experience during 85.2% of the trips, 12.3% a poor journey and merely 2.6% a bad/very bad one. While there were no substantial differences between genders, ages and independence across responses, those who had bad experiences (n=59, girls=59.3%) expanded on the reasons. The most widespread concerns were fear of being robbed or hurt, drug use, street harassment and desolate streets with suspicious people. One girl aged 10 and her mother were both harassed while walking, another pointed out that the school uniform help deterred unwanted attention by strangers.

6.5. Neighbourhood and community

Community ties were ascertained through parental perceptions. With some exceptions (28.0%), parents generally believe their community is close and their neighbours are willing

to support each other in any way (graph 10). This is significant as close-knit communities can help children exercise more comfortably their independence. However, when asked about interpersonal relations and the attitudes and beliefs of their neighbours, the surveyed caretakers overall agree they do not get along of share similar values (66.1%), which contradicts previous responses. In this sense, regarding caretakers views, there are no conclusive arguments to determine how the community might support CIM. While not explicit, an insight into children's views on their neighbours is seen on graph 5, as 71.6% are unafraid an acquaintance might harass or harm them and just 21.4 % felt alone. This might indicate that the neighbourhood has a certain degree of 'ambient companionship' (Waygood, 2020) or natural surveillance which helps children feel safe and comfortable to seek help. In this sense, communal ties might be perceived more positively by children than adults, however, further exploration from their point of view would be beneficial to CIM studies.

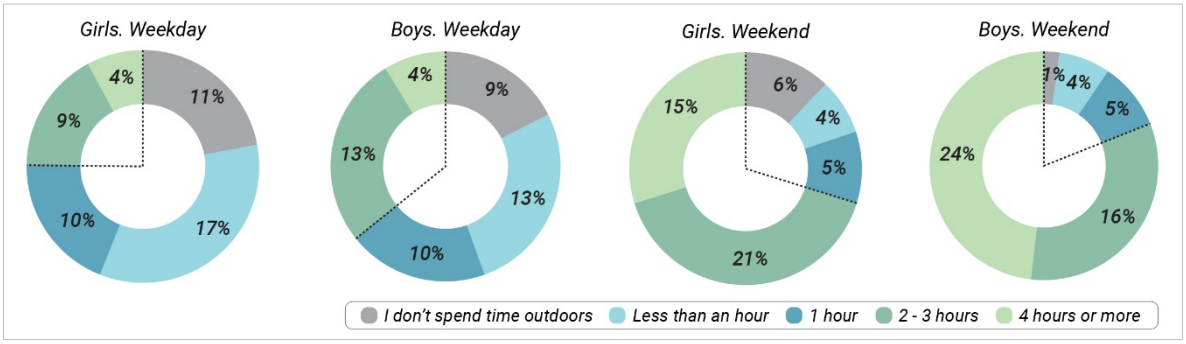


Graph 9. *Caretakers' perceptions of the community*

6.6. On play and socialising

To capture children's leisure and physical time and activities, children (n=278) were asked about the number of hours during the week/weekend they spent outdoors, and the physical activities they practiced regularly. Parents (n=73), about frequent neighbourhood places visited by children after school. These questions were interpreted as opportunities for play and socialising.

19.3% of children do not spend time outside during the week, 30.9% spend less than an hour and 19.6% up to an hour. This means that only 30.2% of children spent the recommended 2+ hours outdoors that is beneficial to their wellbeing (Aubert *et al.*, 2018). However, during the weekend these ranges change significantly. Only 7% do not spend time outdoors, 7.4% less than an hour, and 9.5% up to an hour, while the remaining 76.1% spend more than 2 hours outside (p<0.005). A possible explanation of such differences might be that during the week, employment and household responsibilities prevent caretakers from accompanying children to various outdoor activities. Generally, girls spent less time doing leisure activities and playing sports than boys on both the weekdays and weekends (p<0.04 and p<0.003 respectively) (graph 11). Children's favourite physical activities were football, basketball, skating, dancing, and cycling. Parents (n=73) described children's favourite neighbourhood places for after school activities included the sports court, parks, the library, their relatives and friends nearby houses and their street/block.



Graph 10. *Time outdoors during the week and weekend by gender*

Both the build and social environment played a role in children's limited opportunities to have fun and socialise outdoors. On the one hand, as Peña-Rivera and López-Navarrete (forthcoming) comment, low-income neighbourhoods, generally have few play areas, public space and child-friendly facilities. In the case of Aguablanca, most are in a state of decay due to vandalism and lack of maintenance, attracting drug-dealing and crime, as expressed by children in appendix 7 (Vivo Mi Calle, 2020). On the other hand, the aforementioned parental safety fears determine freedom limitations to be on the street, after dark, with or without friends. These time and place restrictions, as well as caretaking schedules, allow for few opportunities of independent play, supporting Kyttä (2004)'s assertion that in the global south while active mobility is high, spontaneous play is greatly restricted by independent licence as well as the lack of affordance rich urban spaces. Despite these

conditions, as Lester and Russell (2010, p.11) comment “children’s play can appear anywhere and everywhere, involving the use of everyday spaces and the unremarkable and mundane materials [available] (…) play both takes and makes place”. This is seen in image x, as the street and corner store show traces of play, and children’s gathering spaces (appendix 6).

Image 3. *Play streets and courts. By author based on photo 2019 (Google Street View, 2020)*

7. DISCUSSION AND REFLECTIONS

The neighbourhood is at the heart of children's urban life in Aguablanca district. High residential density, proximity to child-friendly destinations, public local schools, household socioeconomics and responsibilities, as well as low private vehicle ownership, meant that children's routine journeys were primarily local and on foot independently. While walking, children attended school, visited friends, the park and the sports courts, mostly by themselves (35.3%), with friends (16.8%) and siblings (9.2%). These trips were largely joyful, helping them experience and explore their freedom and regarded as a social activity enjoyed with friends, despite being the only alternative for some. While children's perceptions and experiences were positive, most involved attending school (63.2%) presenting few opportunities for play and exploration due to time constrains, as a majority were under 5 min (35.1%). In this sense, the apparent independence was in itself marked by restrictions on social and playful urban life. Four aspects may explain these circumstances:

(i) Actual independent mobility, children's perceive licence and parental licence differed from one another. The former was reported by 61.3% of children who travelled to school by themselves, with friends or younger siblings. Children's perceived licence when going to and from school (58.3%) was similar to actual independence, as opposed to 46.8% of caretakers who seemingly allow children to walk to school on their own.

Why are they different? A vast majority of parents and guardians both agree walking is children's only choice and state they like to accompany them to school. This might indicate if they had a choice, caretakers would escort children to their numerous destinations, given their concerns on traffic and personal safety. Furthermore, household's low and fluctuating monthly income levels, employment, number of

children and access to motorized vehicles, might play a role in negotiated yet changing licence restrictions. Therefore, such differences suggest independence is not constant in children's lives, but rather a subject that varies through time according to negotiations between parents, children and the neighbourhood. In August 2020, four Afro-Colombian children aged 14 to 16 were murdered in the district while walking and socialising. Although such instances of violence towards children are less common in the area, this signifies the changing circumstances in the neighbourhood environment which parents have to address when granting greater licence.

(ii) Neighbourhood conditions determine parental and children's perceptions and experiences of both walking and playing. While the BE was inadequate in terms of maintenance, cleanliness, nature and overall engagement, independence was not explicitly determined by these lacking circumstances. In turn, the social environment was the main source of concern, both traffic and personal unsafe conditions created barriers for independent freedom. In the first case, arterial roads divide the neighbourhoods and create a network that encourages speed. These problems were common in most studies no matter the context, as cities commonly follow a motorized-oriented development. Personal safety was the most considerable concern for caretakers, generally more aware of crime levels. While other studies in the global north mentioned 'stranger danger' from the perspective of abduction (Malone and Rudner, 2011), in this particular context strangers were regarded as 'suspicious people' who might be associated with 'pandillas' (gangs), a fear that extended to drugs use, harm and theft.

(iii) In spite of these conditions, as Malone and Rudner (2017. p.14) suggest, 'perceived and actual safety can oscillate, and a neighbourhood can have strong community ties as well as exposure to dangers such as violence, gangs and drug use'. This is the case of Aguablanca district, where over 3 out of 5 of parents believe their community is close, trustworthy and supportive, even though not everyone gets along or shares the same values. These strong local bonds might explain why the majority of children did not feel alone, vulnerable or fearful in their essential walking journeys, in instances where both violence and deficient physical infrastructure portrayed a negative and undesirable environment to take part of. In line with the previous reflection, non-essential trips were more restricted than essential ones like going to school. In this sense, perceived and

actual crime affected independent walking to social activities the most, with the street being off limits for the most part, as indicated by parents.

(iv) In the instances were play and social activities are allowed, the BE does little to support engaging current conditions, more so when crime has taken ownership of some child-friendly facilities, like parks and sports courts and out of fear, the community has seemingly abandoned the street. Nevertheless, children have discovered ways to negotiate the circumstances and appropriate the street when possible.

7.1. Policy and practice implications

When framing children's independent walking from a social practice point of view, policy and decision making should both support *independence* and *play* through multilevel interventions targeting the family, the community, and neighbourhood. In the first case, this study has shown independent licence is mostly determined by the social environment, primarily criminal and violent activity. While these problematics might fall out of the roam of urban and transport planning, interventions should aim at alleviating them and promoting community engagement, sense of place and appropriation. Interventions like Liga Peatonal's *'Caminito de la escuela'* in Mexico D.F. (Corres and González, 2018) engage the community in supporting children's everyday journeys. Through a letter of commitment, a training session and a sticker on the door, neighbours, shop owners and the extended community pledge to support children in instances of bullying, harassment, suspicious people and any situation that might threaten their safety. These types of interventions place the community in favour of children, their wellbeing and independence, while building social networks that promote trust and refuge for children, caretakers, and neighbours.

Given the state of child-friendly infrastructure in Aguablanca district, its narrow residential streets have immense potential to be the meeting place where children and adolescents play or socialise. According to Peña-Rivera and López-Navarrete (forthcoming), while the interest is not to place children in harm's way, reclaiming the streets from crime is crucial to support play and CIM. Considering budget constraints that exist in the global south, particularly in low-income neighbourhoods, initiatives should aim to promote the street as a social space, through traffic calming interventions as well as community events. Considering the BE from children's perspective is essential. Attachment and affordance lenses can provide perceptive insights for practice. Interventions should increase the

number of affordances in existing spaces, like sports courts, playgrounds and the street, infusing them with flexible activities that transforms them into places suited for both girls and boys of all ages. Furthermore, safe walking routes to all child-friendly destinations should be encouraged as Waygood, (2020) suggested 'the trip is half the fun'. An example in the Colombian context is Urban95's *'Crezco con mi barrio'* in Bogota, which made use of colour and tactical urbanism strategies to increase the playability of public space for young children. Further efforts should aim to appreciate pre-adolescents and adolescents needs and desires from their own perspectives, given their changing relation to play and urban life. The studied initiative *'Vivo mi Calle'* similarly intervened a school bridge, creating a safe, flexible and a meaningful place for interaction where spontaneous activities can take place.

From a wider perspective, transport and urban planning should aim to understand children's mobility as an intertwined practice of accessing opportunities, exploration, play and social exchange. This implies that policies and urban projects should take into account children's unique times, rhythms, needs and interests (Matthews and Limb, 1999) and encourage their participation in the planning process (UNICEF, 2018).

7.2. Strengths and limitations

This research is noteworthy as it provides a valuable perspective of CIM that addresses the interaction between accessing destinations, walking, playing and socialising in a neighbourhood in the global south. Some strengths and limitations should be considered. First, this study primarily relied on secondary data from a project with particular research objectives and methodologies. The provided surveys were thorough in terms of the questions they raised, the approach they took, and the extensive information they collected from both children and caretakers perspectives as well as household socioeconomics. However, understandably the questionnaires did not address a number of significant themes that related to the proposed framework, such as the element of play, children's meaningful places and their perspectives on the BE. Future research methodologies that employ surveys, should be complemented with other qualitative approaches to capture the nuances of children's experiences and perceptions from their point of view. Open-ended questions and one-on-one interviews would allow researchers to understand, for instance, fears that go beyond traffic and personal safety, associated to specific places and people.

This analysis does not cover all facets of CIM presented in the literature and proposed framework such as children's points of view through affordance and attachment. Had these ideas on CIM been considered in the current study, it is possible alternative findings might have been identified, like children's favourite places, the physical and social affordances of the neighbourhood and participants' explicit views on independence licence.

In spite of these limitations, this study was able to weave together the survey findings and analyse independence, walking and play through unconventional methodologies, that provide a first step in the discussion of children's independence as a means to explore urban life in low income neighbourhoods. Furthermore, the study proposed a framework that acknowledges mobility and play from a socio-ecological perspective introducing the concepts of affordance and attachment as lenses for the neighbourhood environment through children's point of view. While ambitious in its scope, it acknowledges the complex nature of children's realities in diverse contexts, like the global south, and paving the way for theoretical and methodological approaches that can be taken in future research.

8. CONCLUSION

This study set out to explore the role of CIM in promoting children's wellbeing and social participation in urban life. In the process, it challenged the utilitarian approach of mobility as going from A to B in an efficient manner. Alternatively, it proposed a broader perspective of children's mobility that recognises independent walking as a social practice that enables children to play, meet with friends and develop a sense of place. The conceptual framework incorporates independence, walk and play notions through a socio-ecological model and the concepts of attachment and affordance placing children's voices at the core of discussion.

Regarding the main research question, this study identified that both the built and social environment contribute to CIM, though to varying degrees. In the case of Aguablanca district, the BE limited the number of affordances for play and sociability. However, the social environment was more important for both independent walking and being outdoors. Caretakers and children were concern about traffic safety, and more importantly personal safety related to violence, crime and drug use. Although, the perception of strong community ties helped children not feel as alone or vulnerable during their journeys, the threatening environment limited their opportunities for leisure activities in the streets, parks and courts/playgrounds. 3 out of 5 children in the neighbourhood gained license to walk independently to school and other activities. This level of independence was high compared to similar studies in the global north. Nevertheless, while this independence allowed children to walk to school by themselves, other activities were more restricted, which implies that independent license was tied to essential journeys and needs.

Girls and boys in Aguablanca district had similar levels of actual walking independence. However, age played a decisive role, as younger children had less independence licence

children aged thirteen and older. Finally, children licence perceptions and experiences in the neighbourhood were influenced by age and gender in few of cases, such as going out after dark, walking to school alone, and time outdoors during the week and weekend.

Despite its use of unconventional mixed methods, the discussion contributes to the relatively few studies of children's independent walking in low-income communities in Latin America and the Global South. Similarly to Peña-Rivera and López-Navarrete (forthcoming), this study found for children to walk, play and socialise freely, streets need to be safe from traffic and most importantly violence, to do so, neighbourhoods need to support community engagement and local ties. Given the restrictive budgets in these contexts, policies should focus on promoting independent licence and playability through strategies that incorporate rich social and physical affordances, which take advantage of the narrow residential streets. With the help of the community and children's own voices, this may create social and playful networks between streets, blocks and destinations, that encourage spontaneous opportunities for walk, play and sociability throughout the neighbourhood (Krysiak, 2018).

Recent child-friendly initiatives have focused on active mobility as a way to support physical activity and health. While a valuable objective, in low income contexts with high levels of walking among children, yet seemingly low levels of free play, promoting higher independence to experience the neighbourhood and the street should be at the centre of research and discussion. Further studies in Cali and Colombia, should explore CIM from the perspective of attachment, affordance and meaningful places, to better capture children's voices in the promotion of child-friendly neighbourhoods. As Malone (2017) argues 'meanings and associated levels of freedom are not absolute', studies should extend to neighbourhoods of higher socioeconomic conditions, where access to motorized vehicles is high, and children commonly attend private schools.

In contexts with such vulnerable conditions, where children walk yet have few spontaneous opportunities for play, the study of children's independent mobility is a valuable path towards engaging children in the construction of their neighbourhoods and communities and promoting their well-being.

BIBLIOGRAPHY

Alcaldía de Santiago de Cali (2020) *Usos principales*, *Observatorio Inmobiliario*. Available at: https://geoportal.cali.gov.co/arcgis/apps/webappviewer/index.html?id=485f9dbe06c14163b6999f18d34edbbc (Accessed: 16 September 2020).

Aubert, S. *et al.* (2018) 'Global Matrix 3.0 physical activity Report Card grades for children and youth: Results and analysis from 49 countries', *Journal of Physical Activity and Health*, 15(Suppl 2), pp. S251–S273. doi: 10.1123/jpah.2018-0472.

Avineri, E. (2012) 'On the use and potential of behavioural economics from the perspective of transport and climate change', *Journal of Transport Geography*. Elsevier Ltd, 24, pp. 512–521. doi: 10.1016/j.jtrangeo.2012.03.003.

Badland, H. *et al.* (2016) 'Development of a systems model to visualise the complexity of children's independent mobility', *Children's Geographies*. Taylor & Francis, 14(1), pp. 91–100. doi: 10.1080/14733285.2015.1021240.

Cantillo-García, V., Guzman, L. A. and Arellana, J. (2019) 'Socioeconomic strata as proxy variable for household income in transportation research. Evaluation for Bogotá, Medellín, Cali and Barranquilla', *DYNA (Colombia)*, 86(211), pp. 258–267. doi: 10.15446/dyna.v86n211.81821.

Cele, S. (2005) 'On foot in the city of children', *Nordisk Arkitekturforskning*, (1), pp. 85–98.

Clark, C. and Uzzell, D. L. (2002) 'The affordances of the home, neighbourhood, school and town centre for adolescents', *Journal of Environmental Psychology*, 22(1–2), pp. 95–108. doi: 10.1006/jevp.2001.0242.

Corres, D. and González, A. (2018) *Recetario de Participación Ciudadana. Niños y niñas seguros a la escuela mediante el empoderamiento ciudadano para la transformación de entornos escolares*. México DF.

DANE (2019) *Resultados Censo Nacional de Población y Vivienda 2018. Cali, Valle del Cauca*. Bogota.

DAP (2017) *Unidad de Planificación Urbana. Aguablanca*. Cali.

DAP (2019) *Cali en Cifras 2018-2019*, *Cali: Departamento Administrativo de Planeación*. Cali.

Ewing, R. and Cervero, R. (2010) 'Travel and the built environment. A Meta-Analysis', *Journal of the American Planning Association*, 76(3), pp. 265–294.

Gleeson, B. and Sipe, N. (2006) 'Reinstating kids in the city', in Gleeson, B. and Sipe, N. (eds) *Creating Child Friendly Cities: Reinstating Kids in the City*. London: Routledge, pp. 1–10.

González, S. A. *et al.* (2019) *Reporte de Calificaciones en Actividad Física en Niños y Adolescentes: Colombia 2018–2019*. Bogotá.

Hallman, K. K. *et al.* (2015) 'The shrinking world of girls at puberty: Violence and gender-divergent access to the public sphere among adolescents in South Africa', *Global Public Health*. Taylor & Francis, 10(3), pp. 279–295. doi: 10.1080/17441692.2014.964746.

Heft, H. (1988) 'Affordances of children's environments: A functional approach to environmental description', *Children's Environments Quarterly*, 5(3), pp. 29–37.

Horton, J. *et al.* (2014) '"Walking... just walking": how children and young people's everyday pedestrian practices matter', *Social and Cultural Geography*. Routledge, 15(1), pp. 94–115. doi: 10.1080/14649365.2013.864782.

IDESC (2016) *Muertes por accidentes de tránsito en Cali 2009-2014*. Available at: https://geoportal.cali.gov.co/arcgis/apps/webappviewer/index.html?id=b3fc333bc1e243308bd6b3afe162dfda (Accessed: 20 September 2020).

IDESC (2020) 'Servicios WFS. Cali, Colombia'. Santiago de Cali. Available at: https://www.cali.gov.co/planeacion/publicaciones/46986/servicios_wfs_idesc/ (Accessed: 16 September 2020).

ISUH (2019) *Safe Active Routes for Adolescents in Cali*, *International Society for Urban Health*. Available at: https://isuh.org/projects-2019/safe-active-routes-for-adolescents/ (Accessed: 26 May 2020).

Jaramillo, C., Lizárraga, C. and Luis, A. (2012) 'Spatial disparity in transport social needs and public transport provision in Santiago de Cali (Colombia)', *Journal of Transport Geography*. Elsevier Ltd, 24, pp. 340–357. doi: 10.1016/j.jtrangeo.2012.04.014.

Johansson, M. *et al.* (2020) 'Urban space for children on the move', in Waygood, E. O. D. et al. (eds) *Transport and Children's Wellbeing*. Amsterdam: Elsevier, pp. 217–235.

Johansson, M., Sternudd, C. and Kärrholm, M. (2016) 'Perceived urban design qualities and affective experiences of walking', *Journal of Urban Design*. Routledge, 21(2), pp. 256–275. doi: 10.1080/13574809.2015.1133225.

Krysiak, N. (2018) *Where do the Children Play? Designing Child-Friendly Compact Cities*. Australia.

Kyttä, M. (2003) *Children in outdoor contexts*.

Kyttä, M. (2004) 'The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments', *Journal of Environmental Psychology*, 24, pp. 179–198. doi: 10.1016/S0272-4944(03)00073-2.

Kyttä, M. *et al.* (2018) 'Children's Geographies Children as urbanites: mapping the affordances and behavior settings of urban environments for Finnish and Japanese children', *Children's Geographies*. Taylor & Francis, 16(3), pp. 319–332. doi: 10.1080/14733285.2018.1453923.

Lester, S. and Russell, W. (2010) *Children's right to play: An examination of the importance of play in the lives of children worldwide*. 57. The Hague.

Levy, C. (2013a) 'Transport, Diversity, and the Socially Just City: The Significance of Gender Relations', in Dávila, J. D. (ed.) *Urban Mobility and Poverty: Lessons from Medellín and Soacha, Colombia*. London: UCL & Universidad Nacional de Colombia, pp. 23–29.

Levy, C. (2013b) 'Travel choice reframed: "deep distribution" and gender in urban transport', *Environment and Urbanization*, 25(1), pp. 47–63. doi: 10.1177/0956247813477810.

Lopes, F. *et al.* (2018) 'Independent Mobility and Social Affordances of Places for Urban Neighborhoods: A Youth-Friendly Perspective', *Frontiers in Psychology*, 9(November), pp. 1–21. doi: 10.3389/fpsyg.2018.02198.

Malone, K. and Rudner, J. (2011) 'Global Perspectives on Children's Independent Mobility: A Socio-Cultural Comparison and Theoretical Discussion of Children's Lives in Four Countries in Asia and Africa', *Global Studies of Childhood*, 1(3), pp. 243–259. doi: 10.2304/gsch.2011.1.3.243.

Malone, K. and Rudner, J. (2017) 'Child-Friendly and Sustainable Cities: Exploring Global Studies on Children's Freedom, Mobility, and Risk', in Freeman, C., Tranter, P., and Skelton, T. (eds) *Risk, Protection, Provision and Policy*. 1st edn. Springer Singapore, pp. 1–26. doi: 10.1007/978-981-4585-99-6.

Marzi, I. and Reimers, A. K. (2018) 'Children's independent mobility: Current knowledge, future directions, and public health implications', *International Journal of Environmental Research and Public Health*, 15(11). doi: 10.3390/ijerph15112441.

Matthews, H. and Limb, M. (1999) 'Defining an agenda for the geography of children: Review and prospect', *Progress in Human Geography*, 23(1), pp. 61–90. doi: 10.1191/030913299670961492.

Mitra, R. (2013) 'Independent Mobility and Mode Choice for School Transportation: A Review and Framework for Future Research', *Transport Reviews*, 33(1), pp. 21–43. doi: 10.1080/01441647.2012.743490.

Mitra, R. and Manaugh, K. (2020) 'A socio-ecological conceptualization of children's mobility', in Waygood, E. O. D. et al. (eds) *Transport and Children's Wellbeing*. Amsterdam: Elsevier, pp. 81–102.

O'brien, M. *et al.* (2000) 'Children's independent spatial mobility in the urban public realm', *Childhood*, 7(3), pp. 257–277.

Observatorio de Seguridad (2019) *Caracterización en Seguridad y Convivencia - Comuna 13, 14 y 15*. Cali.

Page, A. S. *et al.* (2010) 'Independent mobility, perceptions of the built environment and children's participation in play, active travel and structured exercise and sport: the PEACH

Project', *International Journal of Behavioral Nutrition and Physical Activity*, 7(17), pp. 1–10.

Panter, J. R. *et al.* (2010) 'Attitudes, social support and environmental perceptions as predictors of active commuting behaviour in school children', *Journal of Epidemiology and Community Health*, 64(1), pp. 41–48. doi: 10.1136/jech.2009.086918.

Panter, J. R., Jones, A. P. and van Sluijs, E. M. F. (2008) 'Environmental determinants of active travel in youth: A review and framework for future research', *International Journal of Behavioral Nutrition and Physical Activity*, 5, pp. 1–14. doi: 10.1186/1479-5868-5-34.

Peña-Rivera, N. I. and López-Navarrete, E. (no date) 'Children's Mobility and playability in the neighbourhood of Río Piedras: Perspectives from Children and adults', in Oviedo, D., Villamizar Duarte, Na., and Ardila Pinto, A. M. (eds) *Urban Mobility and Social Equity in Latin America: Evidence, Concepts, Methods*. Bingley: Emerald Publishing, pp. 169–190. doi: 10.1108/S2044-994120200000012012.

Pont, K. *et al.* (2009) 'Environmental correlates of children's active transportation: A systematic literature review', *Health and Place*, 15(3), pp. 849–862. doi: 10.1016/j.healthplace.2009.02.002.

Sharmin, S. and Kamruzzaman, M. (2017) 'Association between the built environment and children's independent mobility: A meta-analytic review', *Journal of Transport Geography*. Elsevier, 61(April), pp. 104–117. doi: 10.1016/j.jtrangeo.2017.04.004.

Shaw, B. *et al.* (2015) *Children's Independent Mobility: an international comparison and recommendations for action*. London. Available at: http://www.psi.org.uk/docs/7350_PSI_Report_CIM_final.pdf.

Sipe, N., Buchanan, N. and Dodson, J. (2006) 'Children in the urban environment A review of research', in Gleeson, B. and Sipe, N. (eds) *Creating Child Friendly Cities: Reinstating Kids in the City*. London: Routledge, pp. 86–102.

Smith, M. *et al.* (2019) 'Children's transport built environments: A mixed methods study of associations between perceived and objective measures and relationships with parent licence for independent mobility in Auckland, New Zealand', *International Journal of Environmental Research and Public Health*, 16(8). doi: 10.3390/ijerph16081361.

Torre Paz, S. *et al.* (2015) *Desplazamiento Forzado en las Comunas de Santiago de Cali: Análisis Espacial de Efecto Vecindad*. Cali.

UNICEF (2004) 'Building Child Friendly Cities', p. 24. Available at: http://childfriendlycities.org/building-a-cfc/cfc-conceptual-framework/.

UNICEF (2018) *Shaping urbanization for children. A handbook on child-responsive urban planning*. New York.

UT SDG and CNC (2015) *Encuesta Movilidad - Hogares Cali 2015*. Cali.

Vasconcellos, E. A. (2001) *Urban transport, environment and equity. The case for developing countries*. London: Earthscan Publications Ltd.

Villanueva, K. *et al.* (2012) 'Where Do Children Travel to and What Loca Opportunities Are Available? The Relationship Between Neighborhood Destinations and Children's Independent Mobility', *Environment and Behavior*, 45(6), pp. 679–705. doi:

10.1177/0013916512440705.

Villanueva, K. *et al.* (2014) 'Does the walkability of neighbourhoods affect children's independent mobility, independent of parental, socio-cultural and individual factors?', *Children's Geographies*, 12(4), pp. 393–411. doi: 10.1080/14733285.2013.812311.

Vivo Mi Calle (2020) *¡Estos jóvenes se le midieron a hacer realidad sus sueños y vos también podés! [...]*. Available at: https://www.facebook.com/VivoMiCalle/posts/134496201546698 (Accessed: 20 September 2020).

Waygood, E. O. D. *et al.* (2017) 'Transport and child well-being: An integrative review', *Travel Behaviour and Society*. Hong Kong Society for Transportation Studies, 9, pp. 32–49. doi: 10.1016/j.tbs.2017.04.005.

Waygood, E. O. D. *et al.* (2020) 'Introduction to transport and children's wellbeing', in Waygood, E. Owen D. et al. (eds) *Transport and Children's Wellbeing*. Amsterdam: Elsevier, pp. 1–17.

Waygood, E. O. D. (2020) 'Transport and Social Wellbeing', in Waygood, E. Owen D. et al. (eds) *Transport and Children's Wellbeing*. Amsterdam: Elsevier.

Weeb Jamme, H.-T., Bahl, D. and Banerjee, T. (2018) 'Between "broken windows" and the "eyes on the street": Walking to school in inner city San Diego', *Journal of Environmental Psychology*, 55, pp. 121–138. doi: 10.1016/j.jenvp.2018.01.004.

APPENDICES

Appendix 1. Children's questionnaire

Part 1. Health, leisure and perceptions

Interpretation	Prompt	Responses	Question/statement
General information			ID Children ID Survey School Grade Age Age Category Gender Neighbourhood Category Comments
Activities			Yesterday (or last business day), how many trips in total did you make? On the weekend, do you participate in any physical sports activity? For how long? On a weekend day, how many hours do you spend on video, computer, TV and/or cell phone games for things not related to schoolwork? On a school day, how many hours do you spend on video, computer, TV and/or cell phone games for things not related to schoolwork? On a weekend day, how long are you outdoors? On a school day, how much time do you spend outside before or after school? In general, how would you describe your health? On a school day, do you participate in any physical sports activity before or after school? For how long? During the past week (7 days), on how many days were you physically active for at least 60 minutes a day? (Activities that increased your heartbeat and made you breathe hard) What physical activity do you do regularly? Activity 2 Activity 3 What physical activity do you do regularly? Other

			Comments Why don't you do any physical activity, what are the reasons? Why don't you practice any physical activity? What are the reasons? Category
Perceived license	*Please check the box that best suits you*	*Strongly disagree* *Disagree* *Neither agree nor disagree* *Agree* *Strongly agree*	I can exercise going to and from school everyday I can walk to school by myself everyday I can cycle to school by myself everyday I can walk and cycle to school, even when it's hot or cold I can invite my best friend to cycle with me everyday I can walk to different activities before or after school I can cycle to different activities before or after school I walk to school because other people tell me I have to I can cycle during the weekend I can go out by myself after 6 pm (after dark) The streets I walk on are nice/pretty
Reasons to walk and cycle	*There are many reasons for walking or cycling to school. Please check the one that applies to you*	*Strongly disagree* *Disagree* *Neither agree nor disagree* *Agree* *Strongly agree*	Exercise is important to me Walking is enjoyable Cycling is enjoyable Walking makes me feel independent Cycling makes me feel independent I enjoy walking with my friends I enjoy cycling with my friends Everything is close to me; I don't need to use a car/Motorcycle/bus to get around Walking is my only choice I live very close Do you want to mention any other positive reasons? Which? Do you want to mention any other positive reasons? Which? Category
Walking perceptions	*Thinking about your journey to and from school… (Check the box that best describes how you felt)*	*Not at all* *A little* *Fairly* *Moderately* *Extremely*	Did you feel you can get robbed? Did you feel in danger of being run over? Did you feel lonely/alone? Was your journey pleasant? Did you feel full of energy? Did you enjoy the journey? In case of going with your friends, did you have fun with them?

			Did you feel Vulnerable? Comments
Sleeping patterns			During the school days last week, what time did you usually turn off the lights to go to sleep? During the school days of the past week, what time did you usually get up in the morning? During the days of last weekend, what time did you usually turn off the lights to go to sleep? During the days of last weekend, what time did you usually get up in the morning? During the past week, how would you rate the quality of your overall sleep (how well did you sleep)? During the past week, how would you rate the amount of time you slept overall (how long did you sleep)? Comments
Ciclovida			Do you know how to ride a bike? No? Why? Is there a bike in your house that you can use? Comments What is the condition of the bicycle? How often do you go to the 'Ciclovida'? What do you do in the 'Ciclovida'? (If the respondent used more than one option, cross out the main one and add the rest to the Other option) Other (specify) Who do you go with to the 'Ciclovida'? Comments

Part 2. Trips in the neighbourhood

Interpretation	Prompt	Responses	Question/Statement
Trip information			Student reportedly travelled to school Yesterday (or last business day), how many trips in total did you make? Where did your trip start? Where did your trip end? What was the main mode of transport you used to make this journey? Category Other or combined How long did it take you in total on this journey?

			Did someone accompany on this journey? Who?
			How many times do you take this route a week?
Reasons NOT to walk and cycle	*There are numerous reasons NOT to walk or ride your bike on this route. Please check the one that applies to you.*	*Never true* *Rarely true* *Occasionally true* *Almost always true* *Always true*	Someone can rob me A stranger can harass me or attack me An acquaintance known can harass me or attack me They can run me over Crossing the streets is dangerous Cars and motorcycles go very fast The sidewalks are unsuitable for walking Cycling paths are unsuitable for cycling There is a lot of noise and/or pollution I'm offered drugs along the way People say obscene or unpleasant things to me
Walking experiences	*Multiple choice, single answer question*	*Very bad* *bad* *poorly* *good* *very good*	Thinking about your wellbeing and the dangers you may have encountered; how did you feel during the journey? Thinking about your wellbeing and the dangers you may have encountered; how did you feel during the journey? Category Why did you feel this way in particular? Why did you feel this way in particular? Category Comments

Appendix 2. Caretakers' questionnaires

Interpretation	Prompt	Responses	Question/statement
General information			Relation to child Gender Age Age child Gender child Is your home multi-family/multi-home? How many people live in your household? How many are minors?

			According to the electricity bill, in what SES is your home located? Indicate the range of the TOTAL monthly income of your household On average, how much does your TOTAL monthly household income vary from month to month? Comments
Trip information			Did someone from the household take the child to school? If no one on the list takes/picks up your child from school, please indicate who is accompanying them How do they take them?
License	*Please check the box that best suits you*	*Strongly disagree* *Disagree* *Neither agree nor disagree* *Agree* *Strongly agree*	The child can walk to school only every day The child can ride a bike only every day The child can walk and ride a bike, even if it is very hot or raining The child can walk to other activities after school The child can use the bicycle to go to other activities after school The child walks to school because there is no other option The child can ride the bike on weekends The child can go out alone after 6 pm (after dark)
Reasons to walk and cycle	*There are many reasons for walking or cycling to school. Please check the one that applies to you*	*Never true* *Rarely true* *Occasionally true* *Almost always true* *Always true*	For me it is important that she / he exercises and / or stays active It is pleasant for the child to walk It is pleasant for the child to ride a bicycle Walking gives the child independence For the child, riding a bicycle gives them independence Everything is close to us, there is no need to use a car / motorcycle / bus to get around I like to accompany the child to school Other children I know cycle to school Other children I know walk without an adult
Reasons NOT to walk and cycle	*There are numerous reasons NOT to walk or ride your bike on this route. Please check the one that applies to you.*	*Never true* *Rarely true* *Occasionally true* *Almost always true* *Always true*	Someone can rob them A stranger may harass or attack them A neighbourhood acquaintance may harass or attack them Someone can run them over Crossing the streets is dangerous Cars and motorcycles go very fast The sidewalks are unsuitable for walking The cycle paths are unsuitable for cycling There is a lot of noise and / or pollution Someone can offer them drugs on the way

			Someone may say obscene or disagreeable things to them
Neighbourhood perceptions / Licence	*About your neighbourhood and the streets, you walk on every day. Check what best describes how you felt…*	*Not at all* *A little* *Fairly* *Moderately* *Extremely*	Are the streets dangerous? Are the streets dark? Are the streets nice? Is it possible for the child to go out alone at night? Is it possible for the child to go out with his friends at night? Can the child walk alone during the day? Can the child walk with his friends during the day? Can the child go out to play or practice some activity in the streets? Do you trust your neighbours?
Community ties	*Do you agree or disagree with the following statements?*	*Strongly disagree* *Disagree* *Neither agree nor disagree* *Agree* *Strongly agree*	People in my neighbourhood are willing to help their neighbours People This is a very close-knit neighbourhood People in my neighbourhood are trustworthy People in my neighbourhood usually don't get along in my neighbourhood do not share the same values, attitudes or beliefs
Ciclovida			Are you going to the Ciclovida? What do you do at the Ciclovida? How often do you go to the Ciclovida accompanied by the child? How often do you go to the cycle life without the child?
Afterschool activities			Thinking in afterschool activities, what is the place in the neighbourhood more frequented by the child? What is the main activity that the child does in that place?

Appendix 3. Household questionnaire

Question	Response
Total number of members	Number
Number of members without student	Number
Relationship with head of household	Head of household, child, father, mother, partner, grandparent, niece/nephew, sibling, other relative
Highest educational level	Incomplete primary school, primary school, incomplete secondary school, secondary school, technician, uncomplete university, university, uncomplete postgraduate, postgraduate.

Main modes of transport (multiple choices)	Walking, bus, cycling, motorcycle, informal transport, car drive, school bus
Main occupation	Open question
Main occupation trade	Category
Do they take the child to school?	Yes/No
How do they accompany them?	Mode
Vehicles: Car, Moto, Bike	Number
Quantity	Number
Condition of vehicle	Good, bad, poor

Appendix 4. Household socioeconomics and demographics

Household characteristics	Variables	%	MEAN	SD
Multi-family / multi-home household	No	72.2%		
	Yes	27.8%		
Number of people in household	2	14.6%	4.0769	1.5884
	3	25.7%		
	4	23.6%		
	5	20.1%		
	6	6.9%		
	7 or more	9.1%		
Number of children in household	1	31.9%	2.1667	1.0766
	2	33.3%		
	3	20.1%		
	4	12.5%		
	5	2.1%		
SES	1	71.5%		
	2	27.1%		
	3	1.4%		
Monthly income	Less than £50	8.3%		
	£50 - £100	43.8%		
	£100 - £200	41.0%		
	£201 - £405	6.3%		
	£406 - £810	0.7%		
Income variation	No variation	16.0%		
	Low variation	38.2%		
	High variation	45.8%		
Access to motorised vehicles*	Car	3.5%		
*At least one	Moto	25.0%		
	None	71.5%		
Head of household. Gender	Female	56.2%		
	Male	43.8%		
Head of household. Age	18-29	4.4%	31.4490	16.7305
	30-45	69.3%		
	46-60	23.4%		
	Over 60	2.9%		
Education level head of household	None	1.3%		
Complete or incomplete	Incomplete primary school	9.5%		
	Primary school	18.6%		
	Incomplete secondary school	21.3%		
	Secondary school	33.2%		
	Technician	12.7%		
	Higher education*	3.4%		
Trade of head of household	Household care	35.9%		
	Independent worker	28.8%		
	Service provider	26.1%		
	Construction	19.0%		
	Salaried employee	11.8%		
	Transportation (driver)	6.5%		
	Manufacturing	3.9%		
	Unemployed	3.3%		
	Informal worker	3.3%		
	Student	1.3%		
	Retired	1.3%		

Appendix 5. Demographics of caretakers who answered surveys

Variable	Responses	N	Percentage	Mean	SD
Age	20-29	16	11.1%	38.718	9.431
	30-45	104	72.2%		
	46-60	19	13.2%		
	Over 60	5	3.5%		
Gender	Female	125	86.8%		
	Male	19	13.2%		
Relation to child	Mother	104	72.2%		
	Father	22	15.3%		
	Grandmother	6	4.2%		
	Sibling	5	3.5%		
	Aunt	4	2.8%		
	Stepmother	2	1.4%		
	Stepfather	1	0.7%		

Appendix 6. Traces of play and socialising. Photos based on (Google Maps, 2020)

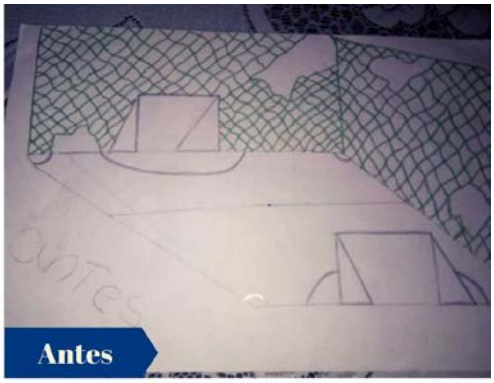
Appendix 7. Favourite places in the neighbourhood

Vivo mi Calle project asked children to participate in choosing a place in the neighbourhood to improve. Children shared their ideas through drawings and phrases (Vivo Mi Calle, 2020)

VIVO MI CALLE

Danny, 14 años

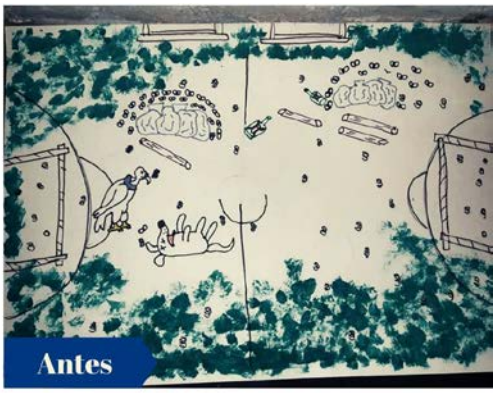
"La cancha está en muy mal estado, las mallas están arrancadas y lo que queremos es que nos ayuden a poner en buen estado: las mallas pintadas, los arcos y escaleras atrás de la cancha, para que la gente se siente. Esa es mi problemática".

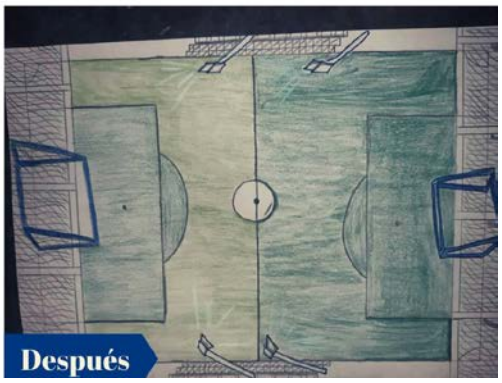


VIVO MI CALLE

Junior, 15 años

"La problemática que hay en mi sector es que no podemos jugar fútbol debido a que la cancha se convirtió en un botadero de basura, donde hay hasta perros muertos. Queremos recuperar la cancha Sembrando esperanza".





RISK ASSESSMENT FORM
FIELD / LOCATION WORK

The Approved Code of Practice - Management of Fieldwork should be referred to when completing this form
http://www.ucl.ac.uk/estates/safetynet/guidance/fieldwork/acop.pdf

DEPARTMENT/SECTION BARTLETT SCHOOL OF PLANNING
LOCATION(S) LONDON, UK
PERSONS COVERED BY THE RISK ASSESSMENT yes

BRIEF DESCRIPTION OF FIELDWORK The research did not include fieldwork

Consider, in turn, each hazard (white on black). If **NO** hazard exists select **NO** and move to next hazard section.
If a hazard does exist select **YES** and assess the risks that could arise from that hazard in the risk assessment box.
Where risks are identified that are not adequately controlled they must be brought to the attention of your Departmental Management who should put temporary control measures in place or stop the work. Detail such risks in the final section.

ENVIRONMENT	**The environment always represents a safety hazard. Use space below to identify and assess any risks associated with this hazard**
e.g. location, climate, terrain, neighbourhood, in outside organizations, pollution, animals.	Examples of risk: adverse weather, illness, hypothermia, assault, getting lost. Is the risk high / medium / low ? No hazard

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
☐	work abroad incorporates Foreign Office advice
☐	participants have been trained and given all necessary information
☐	only accredited centres are used for rural field work
☐	participants will wear appropriate clothing and footwear for the specified environment
☐	trained leaders accompany the trip
☐	refuge is available
☐	work in outside organisations is subject to their having satisfactory H&S procedures in place
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

EMERGENCIES	**Where emergencies may arise use space below to identify and assess any risks**
e.g. fire, accidents	Examples of risk: loss of property, loss of life No risk

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
☐	participants have registered with LOCATE at http://www.fco.gov.uk/en/travel-and-living-abroad/
☐	fire fighting equipment is carried on the trip and participants know how to use it
☐	contact numbers for emergency services are known to all participants
☐	participants have means of contacting emergency services
☐	participants have been trained and given all necessary information
☐	a plan for rescue has been formulated, all parties understand the procedure
☐	the plan for rescue /emergency has a reciprocal element
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

EQUIPMENT	Is equipment used?	No	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. clothing, outboard motors.	Examples of risk: inappropriate, failure, insufficient training to use or repair, injury. Is the risk high / medium / low ?		

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
☐	the departmental written Arrangement for equipment is followed
☐	participants have been provided with any necessary equipment appropriate for the work
☐	all equipment has been inspected, before issue, by a competent person
☐	all users have been advised of correct use
☐	special equipment is only issued to persons trained in its use by a competent person
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

LONE WORKING	Is lone working a possibility?	No	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
e.g. alone or in isolation lone interviews.	Examples of risk: difficult to summon help. Is the risk high / medium / low?		

CONTROL MEASURES	Indicate which procedures are in place to control the identified risk
☐	the departmental written Arrangement for lone/out of hours working for field work is followed
☐	lone or isolated working is not allowed
☐	location, route and expected time of return of lone workers is logged daily before work commences
☐	all workers have the means of raising an alarm in the event of an emergency, e.g. phone, flare, whistle
☐	all workers are fully familiar with emergency procedures
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

ILL HEALTH	**The possibility of ill health always represents a safety hazard. Use space below to identify and assess any risks associated with this Hazard.**
e.g. accident, illness, personal attack, special personal considerations or vulnerabilities.	Examples of risk: injury, asthma, allergies. Is the risk high / medium / low? LOW

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
☐	an appropriate number of trained first-aiders and first aid kits are present on the field trip
☐	all participants have had the necessary inoculations/ carry appropriate prophylactics
☐	participants have been advised of the physical demands of the trip and are deemed to be physically suited
☐	participants have been adequate advice on harmful plants, animals and substances they may encounter
☐	participants who require medication have advised the leader of this and carry sufficient medication for their needs
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

TRANSPORT	**Will transport be required**	**NO** ☐	**Move to next hazard**
		YES ☐	**Use space below to identify and assess any risks**
e.g. hired vehicles	Examples of risk: accidents arising from lack of maintenance, suitability or training Is the risk high / medium / low? LOW		

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
☐	only public transport will be used
☐	the vehicle will be hired from a reputable supplier
☐	transport must be properly maintained in compliance with relevant national regulations
☐	drivers comply with UCL Policy on Drivers http://www.ucl.ac.uk/hr/docs/college_drivers.php
☐	drivers have been trained and hold the appropriate licence
☐	there will be more than one driver to prevent driver/operator fatigue, and there will be adequate rest periods
☐	sufficient spare parts carried to meet foreseeable emergencies
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

DEALING WITH THE PUBLIC	**Will people be dealing with public**	**No** ☐	**If 'No' move to next hazard** **If 'Yes' use space below to identify and assess any risks**
e.g. interviews, observing	Examples of risk: personal attack, causing offence, being misinterpreted. Is the risk high / medium / low?		

CONTROL MEASURES	**Indicate which procedures are in place to control the identified risk**
☐	all participants are trained in interviewing techniques
☐	interviews are contracted out to a third party
☐	advice and support from local groups has been sought
☐	participants do not wear clothes that might cause offence or attract unwanted attention
☐	interviews are conducted at neutral locations or where neither party could be at risk
☐	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

WORKING ON OR NEAR WATER	**Will people work on or near water?**	**No**	**If 'No' move to next hazard** **If 'Yes' use space below to identify and assess any risks**

e.g. rivers, marshland, sea.

Examples of risk: drowning, malaria, hepatitis A, parasites. Is the risk high / medium / low?

CONTROL MEASURES **Indicate which procedures are in place to control the identified risk**

- ☐ lone working on or near water will not be allowed
- ☐ coastguard information is understood; all work takes place outside those times when tides could prove a threat
- ☐ all participants are competent swimmers
- ☐ participants always wear adequate protective equipment, e.g. buoyancy aids, wellingtons
- ☐ boat is operated by a competent person
- ☐ all boats are equipped with an alternative means of propulsion e.g. oars
- ☐ participants have received any appropriate inoculations
- ☐ OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

MANUAL HANDLING (MH)	**Do MH activities take place?**	**No**	**If 'No' move to next hazard** **If 'Yes' use space below to identify and assess any risks**

e.g. lifting, carrying, moving large or heavy equipment, physical unsuitability for the task.

Examples of risk: strain, cuts, broken bones. Is the risk high / medium / low?

CONTROL MEASURES **Indicate which procedures are in place to control the identified risk**

- ☐ the departmental written Arrangement for MH is followed
- ☐ the supervisor has attended a MH risk assessment course
- ☐ all tasks are within reasonable limits, persons physically unsuited to the MH task are prohibited from such activities
- ☐ all persons performing MH tasks are adequately trained
- ☐ equipment components will be assembled on site
- ☐ any MH task outside the competence of staff will be done by contractors
- ☐ OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

SUBSTANCES	**Will participants work with substances**	**No**	**If 'No' move to next hazard** **If 'Yes' use space below to identify and assess any risks**
e.g. plants, chemical, biohazard, waste	Examples of risk: ill health - poisoning, infection, illness, burns, cuts. Is the risk high / medium / low?		

CONTROL MEASURES **Indicate which procedures are in place to control the identified risk**

- ☐ the departmental written Arrangements for dealing with hazardous substances and waste are followed
- ☐ all participants are given information, training and protective equipment for hazardous substances they may encounter
- ☐ participants who have allergies have advised the leader of this and carry sufficient medication for their needs
- ☐ waste is disposed of in a responsible manner
- ☐ suitable containers are provided for hazardous waste
- ☐ OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

OTHER HAZARDS	**Have you identified any other hazards?**	**No**	**If 'No' move to next section** **If 'Yes' use space below to identify and assess any risks**
i.e. any other hazards must be noted and assessed here.	Hazard: Risk: is the risk		

CONTROL MEASURES **Give details of control measures in place to control the identified risks**

Have you identified any risks that are not adequately controlled?		
	NO ☒	**Move to Declaration**
	YES ☐	**Use space below to identify the risk and what action was taken**

Is this project subject to the UCL requirements on the ethics of Non-NHS Human Research? No

If yes, please state your Project ID Number

For more information, please refer to: http://ethics.grad.ucl.ac.uk/

DECLARATION The work will be reassessed whenever there is a significant change and at least annually. Those participating in the work have read the assessment.

Select the appropriate statement:

- ☒ I the undersigned have assessed the activity and associated risks and declare that there is no significant residual risk
- ☒ I the undersigned have assessed the activity and associated risks and declare that the risk will be controlled by the method(s) listed above

NAME OF SUPERVISOR DANIEL OVIEDO HERNANDEZ

SIGNATURE OF SUPERVISOR DATE