

# On the road again?

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A case study of planners' opportunities  
to facilitate non-motorized travel behaviour of children



## Title Page



## Abstract

This project has its starting point in the increased use of motorized transportation of children to daily activities. The problem is receiving much attention nowadays due to the extensive consequences it has for children's health, the general traffic level and the quality of urban environments.

The Spanish city of Vecindario is struggling with high levels of car use within the city centre. The last years, city authorities have decided to invest in non-motorized infrastructure to fight against this trend. However, today much of the infrastructure stands unused and the car continues to be the dominant travel mode within the city. This implies that other factors outside the physical environment influence people's travel behaviour. This report investigates how factors in children's social environment can influence travel behaviour, and how planners can utilize such knowledge to facilitate non-motorized travel activities in cities.

The report first creates a theoretical framework of the complex factors in the social environment influencing individual behaviour, where the community presents the level of attention. Then factors in three different community components of Vecindario are analysed with respect to children's travel behaviour. This is done based on interviews with households, the school, the police and a local politician in Vecindario.

Throughout the analysis it is found that factors in the social environment have great influence on children's travel behaviour. Particular the reproduction of distrust to children's ability to deal with daily community challenges, without parents supervision, account for an important barrier when it comes to changing children's travel behaviour. The use of planning strategies targeting the structures which contributes to support the reproduction of distrust within the community seems to be important measures to facilitate non-motorized travel behaviour of children.



## Preface

This report is a master thesis from the Urban Planning and Management specialisation within the study programme of Urban, Environmental and Energy Planning under the Department of Development and Planning at Aalborg University. The project period stretched from February 2013 to June 2013.

In relation to my project, I would like to thank:

- Antonio Peña Betancor, City Counsellor of Mobility and Sustainability in the municipality of Santa Lucia for telling me about traffic challenges in Vecindario and to introduce me to the topic of traffic education of children
- Seima García Hernández, police officer responsible for traffic education in Vecindario, for setting aside other responsibility to take me around to schools in Vecindario and tell me stories and experiences with children and traffic
- Alfredo Ramirez Marrero, teacher at the primary school El Canario, and his pupil in 6<sup>th</sup> grade for answering my questions about travel behavior and community relations in Vecindario
- Ernesto and his father, and Kevin and his mother, to open their homes and share their feelings and experiments of living and travel in Vecindario

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Finally, I will direct a very special thanks to my supervisor at Aalborg University, Jin Xue, for great support and constructive feedback throughout the project.

*I hope you will enjoy reading my report.*

*Emilie*

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# 1. INTRODUCTION

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Cities have the last decades become dominated by cars and car infrastructure. Moving around walking and biking is often an uncomfortable activity due to reduced space, increased level of emissions and risk of traffic accidents (Litman, 2010). Children are one residential group that is directly affected by that. Children's daily travel practices has undergone significant changes during the last decades. In more and more countries the private vehicle has become the predominant transportation mode, since cars are affordable. Children are driven to and from daily activities by car, even within very short distances (Hillman, 1990). The increasing use of car as travel mode has effects on the children's health as obesity and other lifestyle illnesses. Furthermore, the long-term effects of decreasing activity level among children are alarming because physical activity patterns are elementary for the development in the childhood (McMillan, 2006).

In the last decades many countries have developed policy programmes to address the complex challenges related to the increased use of motorized transportation of children. Transport planners and urban planners are important actors in the design and implementation of such programmes. However a major challenge is poor knowledge among planning academics and practitioners about children's special needs under constraints of physical and cognitive capacity (McDonald, 2007).

The relationship between travel behaviour and the physical environment has been given relatively much attention within planning the last decades. Physical dimensions of the urban environment are found to hold properties which constrain motorized accessibility and facilitating suitable and convenient conditions for non-motorized travel modes. However implemented physical measures have in many cases not been enough to make people change travel behaviour. Factors in the social environment can be an important cause (Hume et al., 2009). This makes the study of factors in the social environment influencing children's travel behaviour to a necessary and timely topic in a planning context.

## 1.1 CONTEXTUAL FRAME

Existing knowledge about travel behaviour in urban space is mainly based on research directed towards analysing the factors which influence adults travel choices. This section will give a general introduction to factors found to influence children's travel behaviour based on a brief literature review. This is important as one cannot assume that associations between factors influencing adults physical activity are applicable to children as they differ from adults in several aspects; *"...children in contrast to adults, spend large parts of their day at school, have considerable time for recreation, are more likely to accumulate physical activity through play, are not able to drive, and are subject to restrictions placed on them by adults."* (Davison & Lawson, 2006, p.2). These aspects make it for planners to possess specific knowledge about the conditions which influences children's travel behaviour (McMillan, 2005).

### 1.1.1 APPROCHING CHILDREN'S TRAVEL BEHAVIOUR

The significant changes in children's daily travel practices the last decades were first and thoroughly documents in an influential study of Hillman and colleagues (1990). Based on the concept of *independent mobility*<sup>1</sup>, Hillman revealed that the period when children's outdoor activities are monitored and supervised by adults has extended due to increased traffic, reduced space to move and play and changes in the societal perception of safety in public space. The final outcome of these changes is that children have reduced time for daily independent mobility; children are getting older before they are permitted to move outside independently; and the use of car transportation for children's daily activities has increased compared to previous generations (Hillman et al. 1990, Mikkelsen and Christiansen, 2009).

Hillman's research, based on case studies from England and Germany, was a breakthrough in the field of transportation studies as it was one of the very first to highlight children as independent travellers. The interest for children's travel behaviour has subsequently increased and a large body of research has been conducted. Different factors expected to influence children's travel behaviour have been investigated. In this literature review four focus areas are highlighted: 1) characteristics of the child, 2) characteristics of the household, 3) characteristics of the neighbourhood community, and finally 4) characteristics of the built environment. In follow, the main findings will be elaborated based on research studies from different countries within different socio-cultural and physical conditions.

#### *Characteristics of the child*

Children's age is an important factor influencing children's travel behaviour. As already highlighted, the age when children are permitted to walk or bike independently has increased the last decades (Hillman et al. 1990). The age when children are permitted to travel independently seems to be related to a child's gender and ethnicity. Girls' independent mobility is restricted longer than boys. However, different studies have come up with contradictory results regarding sex differences in school travel practices (McDonalds et al., 2010). Furthermore ethnic white residents in US are found to have restricted mobility longer than other ethnicities; often related to differences in vehicle access and income in the household (ibid.).

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<sup>1</sup>Mikkelsen and Christiansen (2009) highlight that the concept of children's independent mobility, as introduced by Hillman and subsequently used as a source of inspiration for understanding children's physical activities in a multiple field of studies holds some important bias which often are ignored. The concept of children's independent mobility is treated as positive value to children and it assumes that children are essentially dependent. Furthermore it reflects a cultural focus on individuality and autonomy where children's own meaning often is ignored in terms of not considering children social preferences. In the case of influencing children's travel behaviour towards the use of non-motorized transport modes independency is not a prerequisite; the company of adults during the travel can coincide with the use of non-motorized transport modes. However, this implies that adults are willing to use non-motorized transport.

### *Characteristics of the household*

A family's socio-economic status does influence a child independent mobility; children from higher social class and with parents with high education level have less independent mobility (Barker et al. 2009). The family structure is also found to influence children's independent mobility. Siblings are more likely to have independent mobility from earlier age due to increased time pressure on parents, which limits their possibility to monitor and supervise children (McDonald, 2005).

Furthermore, women and non-full time workers are more likely to chauffeur their children to school. The tendency of chauffeuring children to school does also increase when other adults are present at home after school (Yarlagadda & Srinivasan, 2008). The car is generally used much more for journeys to school, compared to journeys from school, mainly because parents have the possibility of combining their own work-related travels in the morning with chauffeuring children but are unable to drive in the afternoon due to work schedule (Jensen, 2006, Larsen et al., 2009). Parents highlight benefits such as spending more time with their children and the possibility to supervise, and thereby protect, their children from unsafe environment when advocating the use of motorized modes (McDonald and Aalborg, 2009).

### *Characteristics of the neighbourhood community*

Few studies have focused on the relation between children's travel practices and social factors on a neighbourhood level. Two important exceptions should be highlighted. Hillman's research on changes in children's travel behaviour was based on a comparative study with cases from Germany and England (Hillman et al. 1990). In the German neighbourhoods children were given more and earlier independency in regards moving around without supervision of adults. According to Hillman, German children's interdependency can be related to parents' expectation of social intervention from adults in public space. A specific cultural attitude toward children, supported by the law, enables adults to correct any behaviour of child which does not correspond with the social accepted standards. This kind of control mechanism presents a type of surveillance network, which, according to Hillman, generates a feeling of security for the parents.

McDonald has conducted research on the neighbourhood level in California, U.S., and explored the link between social cohesion in a neighbourhood and children's travel behaviour to school (McDonald et al., 2010). The study found that contradictory results regarding sex differences in school travel practices seem to be related to differences in the social context where the research has been carried out. According to the analysis boys normally are given permission earlier than girls to move independently when parents perceive the neighbourhood environment as not good. Similar observations were found when ethnicity was taken into consideration. The study showed that parents' perception of the social environment had greater influence on the travel behaviour of non-Hispanic white children than children of other races.

### *Characteristics of the built environment*

The physical distance between children's home and school has significant influence on the likelihood of using motorized transportation mode. An American study shows that among children living less than 1 mile (1,6 km) 48 % children of ages between 5 and 13 years walked to school and only 3 % walked when the distance was more than one mile (McDonald et al., 2010). The results do coincided with findings in Italia (Tonucci, 2010).

An urban form consisting of mixed land use, green infrastructure and sidewalks is found to increase the number of children walking and biking to school in the U.S (Mc Millan, 2007). In Denmark traffic intensity and high speed limits are found to be factors with great influence on non-motorized travel modes among children. Traffic calming reduces use of cars and public transport and increase the use of bicycles. In the Danish case pedestrian and cycling infrastructure were found to have less effect on mode choice to school than traffic calming measures (Jensen, 2008).

#### **1.1.2 PLANNING FOR NON-MOTORIZED BEHAVIOUR**

The literature review of factors influencing children's travel behaviour shows that multiple factors of both social and physical nature influence children's travel behaviour. Despite such findings transport planners have traditionally mainly considered the role of factors in the physical environment, and ignored the role of social factors, when planning for behavioural change (McDonald, 2007; Mikkelsen & Christensen, 2009). This has caused cases where careful planned infrastructure solutions and convenient land use planning have had little success when it comes to influencing people's choice of transportation mode.

The city of Vecindario located on the Spanish Island of Gran Canary, the case of this study, has the last years planned and implemented solutions for non-motorized transportation modes to compete high levels of traffic in the urban environment. Large amounts of money have been invested in infrastructure to improve the comfort and accessibility for cyclists and pedestrians at the same time as car accessibility has been slightly restricted. However two years after the implementation of new infrastructure solutions started few changes has taken place when it comes to the modal share within the city; the car remains the dominant travel mode. The measures implemented to encourage the use of non-motorized modes of travel in Vecindario were based on a traditional planning approach where factors of the physical environment were adjusted. Since these measures have not been successful it seems necessary to change the approach.

Studies in urban sociology show that individual behaviour is strongly influenced by social processes and those social processes are spatially embedded. This implies that individual travel behaviour can be influenced by both social and physical environments (McDonald, 2006). Transport planning academics and practitioners who only consider factors of the physical environment, and ignoring the role of factors of the social environment, may

therefore run the risk of holding an incomplete understanding of external influence on individual travel behaviour. The outcome of incomplete understanding of external influence on individual travel behaviour among planners can lead to development of planning policies and practices based on ineffectual measures. A more integrated transport planning approach considering factors in the social environment seems therefor to be important. This is the starting point for this study.

Dealing with factors in the social environment that influences children travel behaviour means that I put myself in an academic tradition which acknowledges that individuals are influenced by social structures; where social norms, rules and obligations in a specific context shape, constrain and redirect people's behaviour (Coleman, 1988). Even though such approach already has been applied in studies on children's travel behaviour within social academic fields these fields have rarely considered the spatial context of the travel.

## 1.2 RESEARCH QUESTION

This study seeks to investigate the potential to build up collaboration and synergies between social and physical structures in children's environment for the purpose of influencing travel behaviour. Questions arise about how planners can contribute to support children's non-motorized travel behaviour based on knowledge about social factors which prevent children from walking and cycling and use such knowledge in the planning processes. The main research question to be answered is:

*"How can planners utilize factors in social environment of the community to facilitate non-motorized travel behaviour of children?"*

When it comes to children's travel behaviour the daily school travel constitute the main focus as it accounts for an important percentage of children's daily travels and the community accounts for the level of analysis as planners are expected to have greatest influence on this level of the social environment. To guide each part of the study three sub-questions have been put forward:

1. *How can factors in the social environment influence travel behaviour and how can social factors be integrated into planning strategies?*
2. *What social factors in the community can pose barriers to change children's travel behaviour from motorized to non-motorized travel modes in Vecindario?*
3. *How can urban planning contribute to influence children's travel behaviour by integrating social factors in planning strategies?*

The first sub-question put forward provides a theoretical foundation about the formation of travel behaviour and the potential for transforming such behaviour through changes in the social environment. The answers will lay the foundation for the analysis of the remaining questions. The core of the analysis revolves around the second sub-question which will identify mechanisms in the social environment that have strong influence on children travel behaviour based on case findings. The final question looks at the potential

of influencing children's travel behaviour through build up collaboration and synergies between social and physical structures on the community level.



## 2. METHODOLOGY

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### 2.1 RESEARCH STRATEGY

This chapter presents the methodological considerations of this project. Firstly, the research design of the study is outlined by a description of the research strategy including clarification of the choice of doing a single-case study. Then, the methods used for data collection in the study are described, and finally the limitations of the research results will be discussed.

#### 2.1.1 SINGLE CASE STUDY

In this section, the research strategy of this study is presented. The choice of using a single case study as research method will be explained and the research design elaborated.

#### 2.1.2 RESEARCH DESIGN

This section provides arguments for the use of single-case study as the methodical framework of this study. The starting point for this study is a wish to investigate factors influencing travel behaviour in the social environment and the opportunities for planners to integrate such factors in planning strategies. According to Yin (2009), such a starting point can support the use of the case study method because the focus is to understand a real-life phenomenon in depth, when the boundaries between the phenomenon and the real-life context are not obvious. Three conditions should, however, be considered to sustain the choice of case study method: 1) the form of the research question stated, 2) the investigator's potential to perform control over the behaviour in the event, and 3) the time frame of the behaviour event in terms of contemporary or historical event (ibid.).

The research question formulated in this research project is a “how” question. A “how” question leads to an explanatory study dealing with linkages between evidence, rather than the frequency or incidence of evidence. In regards to the two last considerations listed above, this research study is a contemporary phenomenon (increased use of motorized travel behaviour among children) and a phenomenon that the investigator has no control over. In such circumstances, Yin (2009) highlights that case study is the most appropriate method.

Case study research can be based on one single case or multiple cases within the same study. Despite the fact that multiple case studies may not provide any stronger evidence to generalize knowledge from, an empirical result based on two cases which support the same theory are often considered more potent {{69 Yin, Robert K 2008}}. Multiple case studies are challenging in terms of time and resources as each case should be studied separately and not as a sampling of units. Due to limited time this research project is thus based on a single-case study to be able to go more in-depth with the causal explanation. The case chosen, the city of Vecindario, is a *representative case* as Vecindario is struggling with high levels of motorized transportation of children. A representative case is according to Yin (2009) circumstances which support the use of single-case study as it

provides informative knowledge about average people or institutions. This allows a generalization of knowledge from this single case to other contexts.

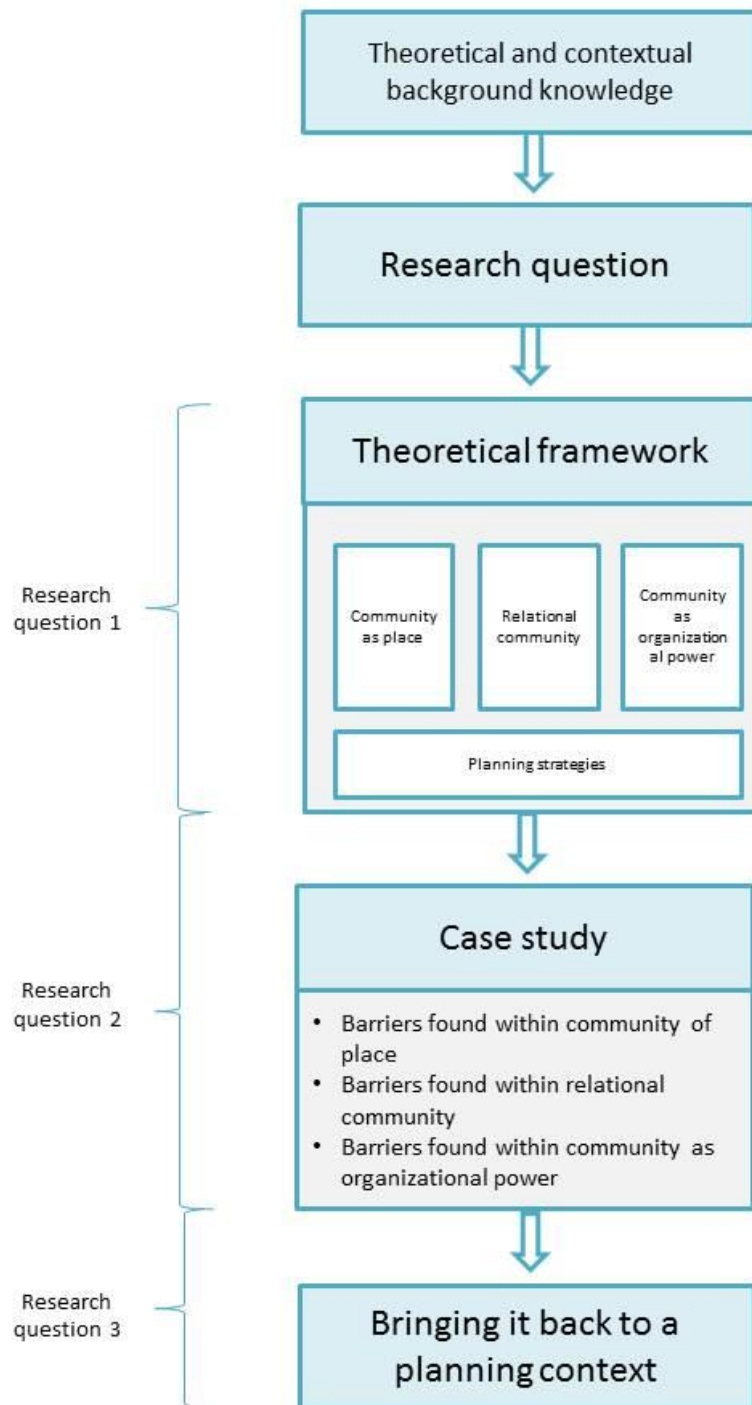


Figure 2.1. Research design (own figure)

## **2.2 DATA COLLECTION**

In this section the characteristics of the research methods used in this case study; literature review, direct observation and interviews will be elaborated, and the purpose of choosing these methods will be discussed and strategies implemented during the data collection to avoid bias will be deliberated.

### **2.2.1 LITRETURE REVIEW**

During the project a variety of literature has been used in order to create a greater understanding of factors influencing children's travel behaviour. Scientific articles found in data bases and books from the library have been used to obtain knowledge about 1) children's travel behaviour, 2) factors in the social environment influencing behaviour and 3) transport planning and community planning. The choice of literature for the topic of children's travel behaviour is based on great width when it comes to academic fields and national origin in order to ensure the broadest possible knowledge base. Since research on the relation between children, physical activity and the social environments is relatively new, much time has been used to searching out relevant literature based on references from other authors. Literature about the relation between individual behaviour and the social environment is mainly based on ecological and sociological theories that helped pointing about different components of the community. To understand the different components of the community, social capital theories and institutional theories were used. In this case, several sources for the same subject have been used to get several perspectives. Finally, literature about transport planning and community planning has been used to create an understanding of the different strategies which can be used by planners and their relations with both the physical and social environment. Here, literature was provided by researcher at the university.

### **2.2.2 OBSERVATION**

Direct observation is used as method to collect evidence about environmental conditions in Vecindario and particularly with regards to the physical conditions of the place and how people behave within such conditions. Observations were conducted during the three field trips arranged to Vecindario. Three physical conditions have been given special attention; the school environment, the parks, and the sidewalks and bike paths. These are all physical conditions which are expected to have great influence on children's travel behaviour. Pictures have been taken as documentation of the different physical conditions. Due to bad quality are most of the pictures used in this report from Google's street view services.

Two different school environments have been observed during the case study: 1) Observation of traffic education at the primary school Casa Pastores in Vecindario. This observation was expected to provide evidence of concurrency between the municipality's objective of changing the population's travel behaviour and the traffic education implemented at schools. 2) Observation of the school environment by the end of the school day in the primary school El Canario in Vecindario. Such observation was

expected to provide evidence of adults and children's travel behaviour beyond the data collected during the different interviews.

The parks as space for children to play and obtain skills of non-motorized travel modes, and the sidewalks and bike paths as infrastructure for travelling by non-motorized travel modes, were physical conditions observed during field trips. The physical environment of one park was observed (2 hours in total) during the interview with one of the children in addition to observing other parks while walking around in Vecindario. Throughout the field trips I was both car passenger and walked around in the different neighbourhoods of Vecindario and could thereby observe travel behaviour on the sidewalks and bike paths from different points of view.

### 2.2.3 INTERVIEWS

Interviews account for the main source of data in this research study. Three different types of interviews have been conducted; in-depth interview, focused interview and focus group interview. Each of these interview methods were based on a semi-structured interview guide prepared in advance. All interviews were conducted in Spanish. The interviews were recorded on digital sound files and are together with the interview guides enclosed in the appendix of this report. The interviews have not been transcribed due to time limitation as this would imply a process of translating the text from Spanish to English. Instead each of the interviews has been analysed systematically based on listening to each interview and taking notes according to the analytical framework.

*The in-depth interview* with the Counsellor of Mobility and Sustainability in the municipality of Santa Lucia took place in his office at the city hall. An interview guide was prepared, however, the interview evolved in a direction where the interviewee functioned primarily as an informant providing the researcher with insight into important matters relevant for the study; the historical development of Vecindario as a city, the case of traffic education of children in Vecindario and the formal conditions around policing and transport. Furthermore important contacts for the remaining data collection were obtained.

For *the focused interviews* three different interview guides were prepared; one for children, one for parents and one for teachers. Children are an important source of data in this case study. Kvale and Brinkmann highlight that; "...interviews with children allow them to give voice to their own experiences and understanding of their worlds." {{70 Kvale, Steinar 2009}} p.145. However, important power imbalance between the researcher as an adult and the child can easily entail a bias in the child's answers as it may feel influenced by expectations or leading questions. To avoid such situations interviewing children in their natural environment in the context of other task can provide adequate circumstance to make children talk more freely (ibid.).

The developed interview guide for children in this study is therefore based on two parts. The first part is composed of some brief questions about travel behaviour and the neighbourhood. The second part of the interview guide composes a walk in the

neighbourhood where the child is encouraged to show places for play, dangerous places, where friends live etc. However, it turned out that one of the interviewed children was not allowed to move around in the neighborhood. This made it complicated to implement the second part of the interview guide in this case. In the other case the interview was conducted outside in the park where the child normally plays. By conducting the interview outside the child could easily point out relevant places in the neighbourhood environment. However no walk was conducted. In both cases it was found challenging to establish a dialogue with the children during the interviews, since they were somewhat modest, and the presence of the parents was helpful in terms of elaborating on their answer. However such elaboration may have impaired the children's own experiences and understanding of their worlds.

The interview guide developed for parents and teacher was based on open semi-structured questions. The interviews took place by personal contact of researcher and interviewee. Such face-to-face contact was especially important as language in some settings was a barrier and body language was helpful communication tool. In addition, the face-to-face contact provided the researcher with possibilities to observe and evaluate unspoken attitudes via behaviour or atmosphere during the interview. Of the interviews with parents one was conducted at the family's home and one was conducted in a local café. In both cases the police officer who arranged the contact was present as a local person of confidence. However his presence may constitute a bias in their responding. The interview with the teacher was conducted after completing the focus group discussion with his pupils; partly in the class room while the children were studying and partly in a group room when he finished his lecture. This created a somewhat noisy environment for the interview.

*The focus group interview* was conducted with a group of 23 pupils from the 6<sup>th</sup> grade (11 years old) at the public primary school El Canario. The primary concern of the focus group discussion was to encourage a variety of viewpoints on the topic of non-motorized travel behaviour among children based on their own experiences as residents in Vecindario. Kvale and Brinkmann points out that: "... *the lively collective interaction may bring forth more spontaneous expressive and emotional views than in individual, often more cognitive, interviews.*" (2009, p.150). In this discussion the researcher took a moderating position by asking open-ended questions and encouraging different points of view. Unfortunately the recordings from this session failed so notes of keywords about children's comments and pictures are the only source of evidence from this interview session.

## **Selected Respondents**

In this section the selected respondents will be presented, where the following table presents an overview of the respondents and the interest they have for this study.

Respondents	Profession/interest	Profession	Place of work	Date of data
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	for this study			collection
Antonio Peña Betancor	Counsellor of Mobility and Sustainability	Teacher and Police officer	Municipality of Santa Lucia	3 <sup>rd</sup> of April, 2013
Seima García Hernández	Responsible for traffic education of children in Vecindario	Police officer	Municipality of Santa Lucia	4 <sup>th</sup> and 30 <sup>th</sup> of April, 2013
Alfredo Ramirez Marrero	Education of children between 10 and 11 years old	Teacher	El Canario, Primary school of Santa Lucia	30 <sup>th</sup> of April, 2013
<u>Household 1:</u> Candelaria Tejera Robaina	Mother of child in Vecindario	House wife	Vecindario	30 <sup>th</sup> of April and 7 <sup>th</sup> of May, 2013
Kevin	Child, 11 years old	Pupil	El Canario, Primary school of Santa Lucia	7 <sup>th</sup> of May, 2013
<u>Household 2:</u> Ernesto León Monzón	Father of child in Vecindario	Swimming Club Salinas, Santa Lucia	Municipality of Santa Lucia	30 <sup>th</sup> of April, 2013
Ernesto	Child, 11 years old	Pupil	El Canario, Primary school of Santa Lucia	30 <sup>th</sup> of April, 2013

Table 2.1 The table lists the respondents in the case study

### ***Councillor of Mobility and Sustainability***

**Antonio Peña Betancor** was selected as respondent in the light of his current position as counsellor of Mobility and Sustainability in the Municipality of Santa Lucia. Peña Betancor grew up in Vecindario, but for the last years he has been living in a nearby town with his family. The interview was conducted in **Peña Betancor's** office at the City Hall of Santa Lucia. His political commitment is relatively recent; he got involved in political activities before the last local elections, two years ago, for the political party of Nueva Canaria. Somewhat surprising, however very useful for this study, was his background as local police officer responsible for traffic education of children in Santa Lucia for 22 years. Firstly, such background facilitated first-hand information about how Santa Lucia has worked within the issue of children and traffic for the last two decades. Secondly, his background as a local police officer provided a relevant and interesting approach to Vecindario. Finally, his contact within the local police helped me to get in contact with the police officer currently responsible for traffic education in Santa Lucia, Seima García Hernández.

### ***The local police officer***

The collaboration with police officer *Seima García Hernández*, currently responsible for traffic education in Santa Lucia, was essential for the data collection of this research project as he provided connection to schools and children in Vecindario. One morning was spent with him while he was carrying out traffic education at the primary school Casa

Pastores for children in the 6<sup>th</sup> grade (11 years old). Furthermore, he provided contact and attended the focus group discussion and the interviews with the parents in the households. No formal interview was carried out with García Hernández, however, his experiences from working as a neighbourhood police officer for three years in Vecindario and current position as traffic educator were discussed in an informal way the two mornings I spent with him. These comments and reflections provided important background knowledge that was later important for the fulfilment of the remaining interviews.

### ***The school teacher***

*Alfredo Ramirez Marrero* has been selected as respondent in the light of his position as teacher of social science for the 5<sup>th</sup> and 6<sup>th</sup> grade (10-11 years old children) at the primary school El Canario. Involving a teacher in the research study offered the opportunity to get evaluation of the neighbourhood from the educational institution's point of view. Such perspectives are to provide important reflections on the structural forms of the relational and organizational community. In addition to working in Vecindario, Ramirez Marrero has been living most of his life here.

### ***Households driving their children to school***

The household respondents were selected based on their habits of driving their children to school. A letter directed to the households with children in 6<sup>th</sup> grade at the primary school El Canario, explaining the purpose of the study, was prepared and handed over to the local police officer García Hernández who was to pass the letter to the responsible teacher. However, based on García Hernández relations in the neighbourhood two households with habits of driving their children to school were requested to participate in the interviews. Both households responded positively to the request. The purpose of the interviews with the households was to get the families' own reflections on the neighbourhood community and their travel practices.

*Candelaria Tejera Robaina*, mother to Kevin (almost 11 years old), was selected as a relevant respondent because of her habits of driving her son to school every morning. The family lives less than one kilometre from Kevin's school in a residential area. Tejera Robaina is working as a housewife; dedicating most of her time to accompany her only son for different activities. The interview was conducted in her apartment with the husband Noveciso Huerta Huerta, who works in the tourist sector, and the local police officer García Hernández present. The son was at school during the interview. *Kevin*, the son, was interviewed one week after his mother. The interview took place in the park where he normally plays with his friends, located less than 100 meters from his home. The mother was present during the interview. After the interview, other mothers in the park joined and an open debate about the neighbourhood environment started. These comments and reflections provided important background knowledge about the relational community of Vecindario.



*Ernesto León Monzón*, father to Ernesto (11 years old), was selected as a relevant respondent because he drives his son to school daily. Ernesto León Monzón lives with his wife and only son in a residential area around 850 meters from Ernesto's school. The interview with *Ernesto*, the son, took place the same day as the father. I accompanied the father to pick up his son at school by car. The interview was conducted inside their home. The boy was very shy, so it was a challenging task to complete the interview with some detailed answers. The father who was present most of the interview responded in many cases for son.

### 2.3 LIMITATIONS

This study has some limitations based on the range of the research design. Firstly, multiple factors in both the physical and the social environment influence individual behaviour. In this research, the scope has been narrowed down to only encompass factors in the social environment and on the community level. This implies that causal factors between children's travel behaviour and the social environment might be influenced by factors outside the scope of this research, and not has been considered. Another research study would have to uncover this.

The use of a single-case study has within many field of social sciences been criticized due to fears about the uniqueness of the case chosen and that the results cannot be generalized (Jin, 2009). Flyvbjerg, however, points out that generalization just is one way of producing knowledge: *"That knowledge cannot be formally generalized does not mean that it cannot enter into the collective process of knowledge accumulation in a given field or in a society."* (2006, p.227). This study can therefore be seen as an addition to existing body of knowledge by adding a deep understanding of the phenomenon of children's travel behaviour.



### 3. THEORETICAL APPROACH

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In this chapter the theoretical approach will be elaborated as it serves as the fundamental thoughts that the analysis will be built on. Section 3.1 will elaborate on the social factors that influence travel behaviour from a general point of view then followed by section 3.1.1 and 3.1.2 which respectively looks at the factors that influence behaviour in the social environment to then set a frame of the level of analysis. The next sub-section looks at how social factors how social factors at the community level can influence children's travel behaviour; this is done from three point of views; the community as a place; the community as relational and: the community as organisational power. The last sub-section looks at ways of facilitating urban communities from a non-motorized behavioural from a planning perspective and is built upon the planning processes and the physical plans.

#### 3.1 SOCIAL FACTORS INFLUENCING TRAVEL BEHAVIOUR

In the field of transport planning travel is generally defined as movements from A to B and demarcate as 'a trip'. The concept of *trip* is composed of several components; the frequency of trips; the trip length; the mode of travel (driving a car, bicycling, walking, or a combination of modes) and the destination and purpose of the trip (Handy et al., 2002). Consequently, a change in travel behaviour can be achieved by changing one or more of the components of the trip. In this study the focus will be on the component of *mode of travel* and the potential to change travel modes for children's daily school trip from motorized to non-motorized travel modes.

##### 3.1.1 FACTORS INFLUENCING BEHAVIOUR IN THE SOCIAL ENVIRONMENT

In order to achieve changes in the transport sector private households are the key actors. Regardless of external constraints households' travel behaviour finally will be the outcome of their own prioritising (Lorek & Spangenberg, 2001). Within the household adults will have the greatest influence over children's modes of travel as children are largely dependent on adults (McMillan, 2005). Local authorities and service providers can also influence the household's decision making-process by providing suitable and convenient alternatives (Lorek & Spangenberg, 2001). Planners are one of the authorities and service providers which can influence the external environment of individuals and households and thereby facilitate conditions for use of some travel mode and discourage other (Litman, 2012).

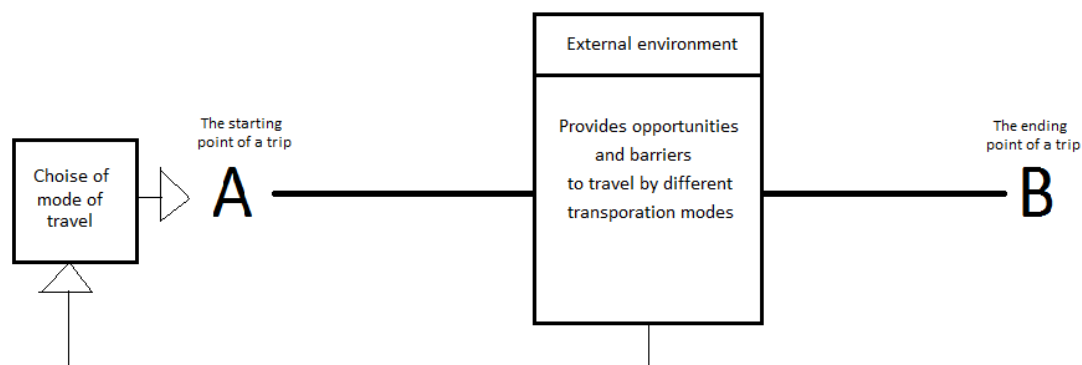


Figure 3.1: illustrates the mode of travel from point A to B.

This study will investigate the influence from the external environment on people’s behaviour by focusing on factors in the social environment. An ecological perspective will be used to analysis the influence of factors in the social environment on individual travel behaviour. Such approach implies that a multitude of factors on different levels of the social environment are expected to influence the behaviour of .... Five categories based on different levels of analysis can be identified: intrapersonal level, interpersonal level, community level, institutional, and public policy level (McLeroy et al., 1988). Factors expected to influence behaviour on each level of the social environment are summarized in figure 3.1. The level of analysis anticipated to influence behaviour will differ according to existing beliefs, understandings and theories in society (McLeroy et al., 1988).

Intrapersonal level	Characteristics of the individual such as knowledge, attitude, behaviour, self-concept, skills etc.
Interpersonal level	Formal and informal social network
Community level	Relationships among organizations, institutions, and informal network within defined boundaries
Institutional level	Social institutions with organisational characteristics and formal rules and regulation for operation
Public policy level	Local, state, and national laws and policies

Figure 3.2 Levels of analysis in the social environment according to ecological perspective. Source: Own elaboration based on McLeroy and colleagues work (1988).

### 3.1.2 LEVEL OF ANALYSIS

To focus on factors in the social environment is not an innovative approach in studies of travel behaviour among children. However, much of the research on children’s travel behaviour has been related to factors on the intra- and inter-personal level of the social environment. Several factors on these two levels were found to be associated with children’s physical activity (these factors are summarized in the literature review presented in the introduction of this report). However, a large proportion of differences

between children's travel behaviour cannot be explained based on intra- and inter-personal factors (Hume et al., 2008). Subsequently researchers have highlighted the need for further research on the relationship between children's travel behaviour and factors in neighbourhood's social environment as the local neighbourhood composes of crucial settings for children's daily travel activity (Hume et al., 2008; McDoanld, 2007; Mikkelsen & Christiansen, 2009).

Historically the neighbourhood has coincided with *the category of community* in the social environment. However currently such coextensive is changing because; "[...] *diversity of life-styles along with advances in transportation and communication allow for different types and numerous layers of community.*" (Chavis & Wandersman, 1990, p.61). This entails that some types and layers of communities have become detached from the neighbourhood, consequently the last decades many social sciences have claimed neighbourhoods to have diminished power and influence on individual behaviour (Heller, 1989).

Despite announcements of diminishing power and influence on individual behaviour the neighbourhood is still expected to play a vitally role for: "[...] *the life of many people, including those limited in their mobility, their ability to integrate into the larger social systems, or their resources.*" (Chavis & Wandersman, 1990, p.61). Children are limited in their mobility (Hillman et al., 1990). The neighbourhood can therefore be expected to play an important role in the life of children. To which extent this role can influence children's travel behaviour will be discussed theoretically in the following sections. The discussion will be based on three structural types of communities.

### **3.2 HOW SOCIAL FACTORS AT THE COMMUNITY LEVEL CAN INFLUENCE CHILDRENS BEHAVIOUR**

Three different notions of community will be elaborated and related to children's travel behaviour in this section. (1) *The community as place* composes the physically or territorial area of a community. (2) *The relational community* constitutes personal relationships unbounded by their location due to modern communication and transportation technology. (3) *The community as collective political power composes* spatially embedded organizational power distributed within geographical units.

#### **3.2.1 THE COMMUNITY AS A PLACE**

Three different notions of community will be elaborated and related to children's travel behaviour in this section. (1) *The community as place* composes the physically or territorial area of a community. (2) *The relational community* constitutes personal relationships unbounded by their location due to modern communication and transportation technology. (3) *The community as collective political power composes* spatially embedded organizational power distributed within geographical units.

### 3.2.2 THE COMMUNITY AS A PLACE

Community as a place is a physical or territorial defined area. Community as a place traditionally has developed due to practical reasons by taking advantage of economic markets or as defensive enclaves. The physical, psychological or social needs of citizens were seldom emphasized in the development of such communities. In modern times, the function of the locational community has changed by putting forward procedures to ensure the *quality of living space, the distribution of services, and the conservation of safety and order* (Heller, 1989).

Despite procedures to provide people's needs in modern society, commonly the agenda of some people may obstruct the fulfilment of other people's needs within the community (Heller, 1989). In this context children are often found to be a vulnerable group; the agenda of individual adults or governments has often set aside children's needs and rights within the locational community. Therefore in 1989 a legally binding instrument to protect children's needs and rights was put forward by the United Nations and national governments worldwide agreed on a set of non-negotiable standards and obligations in *The Convention on the Rights of the Child* {{57 UNICEF 2013}}.

In the context of children's travel behaviour Article 3 of *The Convention on the Rights of the Child* is of great importance as it deals with public responsibility in regards to actions undertaken by public or private institutions and administrative authorities. The article emphasizes that the primary consideration in all actions concerning children shall be in the best interests of the child by protecting and taking care of the child's well-being {{57 UNICEF 2013}}. Non-motorized travel behaviour is expected to support a child's well-being, as discussed in the introduction of this report. This implies that to avoid the use of procedures which oppose *The Convention on the Rights of the Child* a community of a place should facilitate the quality of living space, the distribution of services, and the conservation of safety and order which support the non-motorized travel behaviour among children.

#### *The quality of living space*

As pointed out in the introduction of this report parents' perception of the quality of the neighbourhood environment influences the travel behaviour of children. However, the quality of living space is rarely an objective assessment rather it is a subjective judgement based on: "[...] the degree to which the environment or a specific aspect of the environment is positive or negative to the individual."{{58 Chavis, David M 1990}} p.57. This means that different people can perceive the community environment as of good quality and be satisfied with local conditions while other can find the same environment problematic and of low quality. In this context the sense of a community for individual's and their feeling to belong to a group and place, within the neighbourhood,, has been found to be a determining factor.

Four conditions have been found to influence people's sense of community; membership, influence, integration and fulfillment of needs and shared emotional connection {{43 Cohrun, Steven Edward 1994}}. This means that when the sense of community within a neighbourhood decrease, community members will feel less influence by what happen in the social community and feel to have less control over what happen within the place (Cohrun, 1994). This will contribute to weakening the trustworthiness among people in the community and finally obstruct the flows of sociality among community members. In neighbourhoods with low levels of trust and social control, children are less likely to be permitted to walk to school {{45 McDonald, Noreen C 2007}}. Facilitating neighbourhood conditions fostering sense of community can therefor seems to be a important way to influence children's travel behaviour.

### ***The distribution of services***

Within the community of a place educational services for children are provided. Traditionally, educational services were located within the boundary of the neighbourhood and the distances between children's home and the school tended to be relatively close. However, in the last part of the 20th century planning policies have tended to encourage construction of large school campuses, most often accommodated on the outskirts of neighbourhoods, to provide children from different neighbourhoods within educational services within one educational centre. Such service policies are expected to be more efficient economically. However, by augmenting the distances between home and school the need for transport of children increases {{45 McDonald, Noreen C 2007}}.

### ***The public conservation of safety and order***

Public conservation of safety and order is a major concern for a community of a place. In regards of children and transport, safety and order have traditionally been maintained by focusing on behaviour control and modification of children's travel behaviour by manipulating children to fit into adult world {{19 Davis, A. 1996}}. According to Davis and Jones planners have traditionally supported such an approach: *"[...] acknowledging that children see the world differently - not recognizing danger from traffic or judging distance accurately - transport researchers conclude not that motor vehicles should be strictly controlled in city streets but that children should be."* (1996, p. 107).

The restrictions on children's travel behaviour, to provide safety and order within the community, is a tendency which goes back to the 60's and 70's when the intensification of road traffic resulted in increased numbers of traffic accidents involving children. By strictly control of children's travel behaviour these numbers have generally been decreasing the last decades {{23 Hüttenmoser, M. 2011}}. For example in Spain, , pedestrian accidents among children has dropped from 14.900 total victims in the year of 1970 to 11.100 victims in the year of 2000. In the same period the level of motorization has more than doubled {{31 Román Rivas, M. 2011}}. These numbers can be used to

claim that the safety of children within a traffic environment has been largely improved the last decades.

However, statistics which support claims of safer neighbourhood for children do seldom take into account that children's travel behaviour has changed in the last decades as result of the implemented traffic policies. Where children travel less by non-motorized travel modes, and when they do they are more often supervised by adults {{29 Hillman, M. 2006}}. This suggests that statistics of safeness, usually measured in accident numbers and crime rates by traffic planners and the police, does not necessary coincide with households' perception of safety in public space {{31 Román Rivas, M. 2011}}.

### 2.1.2 THE RELATIONAL COMMUNITY

In this section the second notion of community, the relational community, will be elaborated and discussed in regarding children's travel behaviour. The relational community is defined by personal relations where the relationships between family members, friends, neighbours and contacts at work or in an educational setting account as the most important {{42 McLeroy, Kenneth R 1988}}. Unlike the notion of community as a place, the relational community is not bounded by location as modern communication and transportation technology allow individuals to maintain contact over large distances. This implies that the relational community not necessary is located within a neighbourhood {{43 Cohrun, Steven Edward 1994}}.

Social relationships compose of 'mediating structures' in social networks by connecting individuals to a larger social order. The mediating structures account for important sources of influence on individual behaviour through emotional support, information, and concrete aid {{58 Chavis, David M 1990}}. Attitudes among individuals are however not formed as a direct response to one source of influence; rather individuals acquire norms through their social linkages to different social networks. The following sections will discuss how *the structural characteristics of relations* in social networks and *the quality of relations* in social networks can have important implication for children's travel behavior.

#### **Structural characteristics**

The theory of social capital is frequently used to study the mechanisms within social networks which enable relational influence on individual behaviour {{61 Coleman, James S 1988}}. According to this theory advantageous conditions for addressing and resolving individual or group problems are the main motivation for individuals to adjust to mediating structures and stick together in networks {{62 Stone, Wendy 2001}}.

Children's behaviour is largely affected by mediating structures in social networks. Studies conducted by Mikkelsen and Christensen (2009) show that children are involved in *dense social networks*. Dense social networks, in contrast to sparse network, consist of multitude of social relations and linkages connecting the individuals to different social networks types and thereby different types of social resources. In the case of children



these different social network types are typically composed of children's friends, parents and other family members, and neighbours (informal networks) and teachers at school or activity centres (formal networks). When problems appear in one social network, children, and other members of the network, can use the mediating structures to address and resolve the problems. When individuals belong to dense networks assistance can be called from more than one network and one may be better equipped to solve the problems {{62 Stone, Wendy 2001}}.

The capacity to address and resolve problems within a network tends to depend on to which degree the network is open or closed; *structural closure of the network* is expected to facilitate flows of social resources among network members and thereby contribute to increase the possibility to resolve community challenges based on consensus. Agreement upon community norms can lay the basis for establishing effective sanctions used to monitor and guide behaviour within the community {{60 Coleman, James S 1988}}.

Hillman and colleagues (1990) found in their comparative study about children's travel behaviour in England and Germany that network closure between neighbours has important effect on children's travel behaviour.. The study revealed that German children are permitted to walk and cycle in the neighbourhood from an earlier age than British children due to; *"German children out alone are much more under the general supervision of adults on the street whom parents know and will, if necessary, act in loco parentis. (...) en route to any destination children will be observed and 'guided' if their behaviour falls short of the standard expected."* (1990, p. 84).

The study findings of Hillman are illustrated in figure 3.4 by using Colman's (1988) model of network closure. Figure a) represents the English case where children are less likely to have relation to neighbours which gives the social network an open structure. Figure b) represents the German case where neighbours, children and parents are interrelated based on common norms of correct behaviour within the neighbourhoods. A network closure thus exists and neighbours can guide children's behaviour according to established community norms. The network closure also has some qualitative characteristics which serves; *"[...] generates a feeling of security for parents, and other who operate this mutual surveillance network."* (Hillman et al., 1990, p.84). The qualitative characteristics of network structure will be elaborated in the next section.

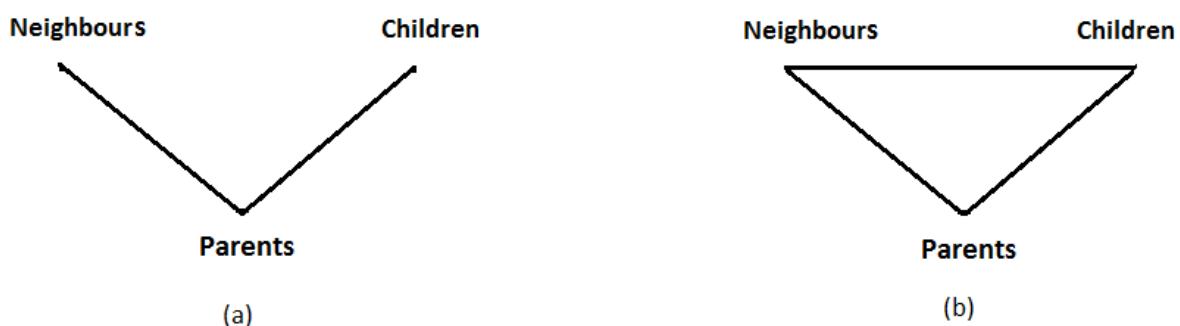


Figure 3.4 Social networks involving parents, children, and neighbours. Figure (a) illustrate a social network without closure and figure (b) illustrate a social network with closure. Source: Own elaboration based on Coleman (1988)

### ***The qualitative characteristics***

According to Coleman (1988) trustworthiness of the social environment is an important component to address and resolve problems within social networks as obligations and expectations can be proliferated. The proliferation of obligations and expectations within networks does depend on a closed network structure so norms of trust and norms of reciprocity can be established. Norms of trust is based on expectation among individuals in the network of regular, honest and cooperative behaviour, encouraged by norms of reciprocity that facilitate conditions for incentives to be less likely to defect and thereby decrease the uncertainty of problem solving incentives (Stone, 2001). According to Stone (2001) two types of trust can be found within the social relations; *trust of familiars* (within social network) and *generalized trust* (expectation of behaviour of strangers). Base on Hillman and colleagues (1990) findings these two types of norms of trust do influence children's travel behaviour.

### **3.2.3 THE COMMUNITY AS AN ORGANIZATIONAL POWER**

The last structural form of community is organizational power by means of sources and transmitters of behavioural influence on its members through regulative, normative and cultural-cognitive elements {{66 Scott, Richard W. 2001}}. Unlike the relational community organizational power is spatially embedded and distributed within geographical units. The most important organizations in terms of influencing individual's behaviour are educational and work institutions, political and administrative organizations and leisure activities associations {{44 Heller, Kenneth 1989}}.

The most important role played by community power structures, according to McLeroy and colleagues (1988), is the control of what issues are permitted to be placed on the public agenda. Children's travel behaviour has been an important issue on the public agenda for decades where the main concern has been children's safety. However, rather than considering modifying environmental factors to facilitate favorable conditions for children travelling the public agenda has highlighted the need for behaviour modification among children to adjust it to the environmental conditions {{19 Davis, A. 1996}}. In the following section organizational support and influence on the process of modify children's travel behaviour will be discussed.

### ***Organizational support for behaviour change***

On a community level traffic education programmes has constituted an important vehicle to diffuse the modification of children's travel behaviour by: "...*amplify the perception of danger, to encourage parents to restrict their children's freedom even more, and to inculcate in children attitudes of deference to traffic.*"{{67 Hillman, Mayer eds. 1993}} p.88. In continuation the process of institutionalizing the content of the traffic educational into different



community organizations will be elaborated. Three processes will be highlighted; regulative, normative and cultural-cognitive.

To diffuse the institutional form of the traffic education programmes *regulative processes* have been important. The mechanisms employed in regulative processes can be based on authority, as a legitimate agent of control, or the use of inducement. In both cases, to be effective, regulation will require clear demand, effective surveillance and significant sanction {{66 Scott, Richard W. 2001}}. When it comes to the regulation of children's travel behaviour traffic authorities and the police have had especially interest in regulating children's travel behaviour to reduce the accidents involving children. According to Hillman measures implemented in traffic education programmes have typically involved: "...put more and more effort into improving children's road safety skills as if children can be trained to be as careful as adults and as if they have equal responsibility for preventing injury to themselves. Thus the Child Accident Prevention Trust has urged children to use roads that are well lit and to remember that drivers may find it hard to see them in the dark for which reason they should wear reflective clothing!" (2006, p. 64).

*Normative processes* are composed of rules embedded with relational structures as informal or formal governing of behaviour within organizations. The normative systems include values, as conception of the preferred or the desirable, and norms, as how things should be done {{66 Scott, Richard W. 2001}}. In the case of traffic educational programmes the relational structure between parents and children has been the main target to normatively diffuse an institutional form: "...effort has been put into road safety education aimed at alerting children and their parents to the growing danger, to the point at which a Minister of Transport asserted that parents who do not escort their children are irresponsible—a view widely shared today." {{29 Hillman, M. 2006}} p.62.

The final process which is found as important for institutionalizing modifications of children's travel behaviour is *cultural-cognitive processes*. This process comprises that; "...different roles can and do develop in localized contexts as repetitive patterns of action gradually become habitualized and objectified..." {{66 Scott, Richard W. 2001}} p.58. Hillman (2006) highlights that the process of culturally and cognitively institutionalize restrictions on children's travel behaviour already have succeeded as; "it is now commonplace to hear conversations in which the role of accompanying children, not infrequently older than 10 years, is referred to as if it were a basic requirement of child-rearing." {{29 Hillman, M. 2006}} p.62

The above elaboration points out processes used to institutionalize forms of children's travel behaviour into different community organizations. In the next section organizational influence on programme diffusion will be discussed.

### **Organizational influence on programme diffusion**

Traffic education programmes are normally conducted within schools, where the school constitutes a 'host organization' used to initiate and implement programmes developed by other federal or state sources. In such cases the objectives and activities implemented

do not necessary coinciding with the norms and values which is expected to be communicated in the host organization {{42 McLeroy, Kenneth R 1988}}. This seems to be a major problem in today's traffic education, where promoted restrictions on children's travel behaviour are provoking health problems among children in the community {{19 Davis, A. 1996}}.

The reason for incompatibility between different organizations in a community can be related to political and economic ramifications which lay the foundation for transport policies. Davis and Jones points to a study about language used by decision makers in the transport sector in Norway and highlight that policy was set by economic and political forces: *"Car organizations and commercial interests were highly influential while 'children were a peripheral element in the decision makers' daily work, even though the decision makers did not want children's problems to be peripheral'."* (1996, p. 108). The reason can be related to; *"...that mobility and economics are closely linked where policy decisions are justified in terms of economic prosperity. In contrast, children's needs are not directly quantifiable and have no direct economic returns."* (Davis & Jones, 1996, p. 108).

Organizational support and influence on diffusion of traffic education programmes seems to be an important factor influencing children's travel behaviour. Changing these structures can be challenging as important community power structures actively or passively can work against such changes due to real or potential threats to their interest {{42 McLeroy, Kenneth R 1988}}.

#### 3.2.4 SUMMARY

In this sub-section three structural forms of the social environment expected to influence children's travel behaviour on a community level have been discussed. The conditions found to be important for non-motorized travel modes among children will shortly be summarized.

Community of place. A positive perception among parents about the quality of living space is related to sense of community among residents and have positive effect on numbers of children walking. The distribution educational services within the neighbourhood increase the possibility for children to walk or bike. Statistics on traffic accidents used by traffic planners and police does not reflect safety for children in public space as many children rarely are exposed to hazards due to surveillance by parents.

Social relations. Mediating structures within communities can have important implications for children's travel behaviour. Network closure in social network can contribute to agree upon community standard which can be used to guide community members' travel behaviour; inevitable both motorized and non-motorized travel modes might be selected. Social closure is also important for the proliferation of obligations and expectations within social networks as guidelines for community behaviour.

Organizational power. Power structures within communities influence what issues are placed on the public agenda through regulative, normative and cultural-cognitive

processes. Traffic education programmes has been an important measure to diffuse the modification of children's travel behaviour into different community organizations. The modification has in many cases become institutionalized. To change the programmes can be challenging as it may threaten the economic and political interest of some community members.

### **3.3 FACILITATING URBAN COMMUNITIES BENEFICIAL FOR NON-MOTORIZED TRAVEL BEHAVIOUR THROUGH PLANNING**

This last section of the theoretical chapter aims to discuss planners' potential to build up collaborations and synergies between social and physical structures in children's environment with the purpose of influencing travel behaviour. The purpose is to establish a set of tools which can be incorporated into different planning strategies to encourage the use of non-motorized travel modes among children. These tools will provide a foundation in order to discuss solutions to the barriers empirically identified in this report. Both the planning processes and the physical outcomes of planning strategies will be briefly discussed.

#### **3.3.1 PLANNING PROCESSES**

Based on the previous theoretical discussion about the three different components of community it is evident that individual behaviour are formed by; "*...the places in which we live and work, the institutions and organizations to which we belong, and by our shared activities with others.*" {{44 Heller, Kenneth 1989}} p.4. This implies that it might be impossible to develop common planning strategies which can target community problems on a general level as causes will vary with respect to values, norms and attitudes between communities and within different subgroups of the community. It therefore seems important, at an early stage of the planning process, to identify mechanisms that support current behaviour within different sub-groups in the community and thus pose potential barriers for behaviour interventions. This will require direct contact with the public.

#### **3.3.2 PHYSICAL PLANS**

When it comes to the physical outcome of the planning strategies, social factors can potentially be integrated into three physical dimensions of the urban environment; land use, urban design and transport system. Each of them is expected to hold properties which can constrain motorized accessibility and facilitating suitable and convenient conditions for non-motorized travel modes (Handy et al., 2002).

*Urban land use* is expected to provide availability for some travel modes and discourage others by facilitating the location of activities in space. The location and density of different activities in urban environments will vary according to planning traditions. Cities and towns from the turn-of-the-century are typically based on a mixed-land use of housing, stores, offices and public spaces. Modern urban environments, built in the period of post-World War II are to a greater extent composed of areas with segregated

activities (McMillan, 2005). Newer studies have found a correlation between proximity of commercial and residence areas, non-motorized travel and social capital among residents {{47 Leyden, Kevin M 2003}}.

The design of physical components in urban environments and the arrangement of them are referred to as *urban design*. Urban design can contribute to facilitate or constrain accessibility for specific modes through reinforcing specific functions of public spaces. Thoughtful use of urban design elements can contribute to reduce physical and psychological barriers of walking and bicycling; and thereby influence to which degree people interrelate in urban space. The mechanisms by which urban structures influence travel behaviour will also be related to the quality of the travel experience. The quality will be influenced by travellers' perceptions of safety along the route, the comfort of chosen mode, aesthetics conditions, and so forth. On an urban level, these qualitative characteristics are found to have greater influence on non-motorized modes than motorized modes (Handy et al., 2002).

Finally, the *transportation system* provides physical infrastructure for circulation and services for different modes and it includes everything from road infrastructure, as sidewalks and bike paths, bridges and vertical and horizontal signal system, to type and frequencies of public transport (Handy et al., 2002). Restricting space for motorized circulation and parking, at the same time as speed limitation for motorized modes are introduced, are all measures found to qualitatively improve the conditions for non-motorized travel modes and social interaction. At the same time, these measures constrain motorized accessibility and limit benefits previous given to motorized modes (Litman, 2012).

## 4. ANALYSIS AND INTREPRETATION

This case study investigates how factors in the social environment on a community level influence children travel behaviour to school based on a case study of the city of Vecindario. The city is located on the island of Gran Canary in Spain. The first part of the chapter briefly outlines some general characteristics of the city. The last part of the chapter aims to analyse what social factors in the social environment of Vecindario pose barriers to change children's travel behaviour from motorized to non-motorized travel modes to school. The community will be the level of analysis and the three different notions of community elaborated in the theoretical chapter of this report represent the structure of the analysis.

### 4.1 THE CITY OF VECINDARIO

This first part of the chapter briefly outlines some general characteristics of the city of Vecindario with respect to geography and history, urban structures and social conditions.

#### 4.1.1 GEOGRAPHY AND HISTORY

The city of Vecindario is located in the municipality of Santa Lucía on a flat terrace extending from the western coast of the island of Gran Canaria. As on the rest of the island, the climate is stable with up to 300 days of sun per year and temperatures between 18 and 25 degrees. This gives a dry climate where green infrastructure is depending on watering. The city of Vecindario emerged as a residential area in the 50's for workers exploited in the tomato plantations owned by the aristocracy on the southern part of the island. The workforces mainly immigrated from other villages on Gran Canaria and settled temporarily. The workers were poor, illiterate and lived under very marginal conditions during their stay in Vecindario.

However, little by little the workers became permanent residents, and Vecindario as a city took shape. The city's future growth was mainly related to the growth in the tourism sector on the southern part of Gran Canaria during the 70's, where the city could provide convenient residential infrastructure for people migrating to the service sector. An extensive construction period in the 2000s, based on creating residential housing of good quality at affordable prices, has contributed to a continued population growth. Vecindario is today the third largest city of Gran Canaria with around 65.000 inhabitants from 108 different nations (ISTAC, 2013). Despite the socio-cultural diverse population, city councillor Peña Betancor (2013) points out that the crime rates are low. However, he highlights that the city is struggling with some important challenges of coexistence.

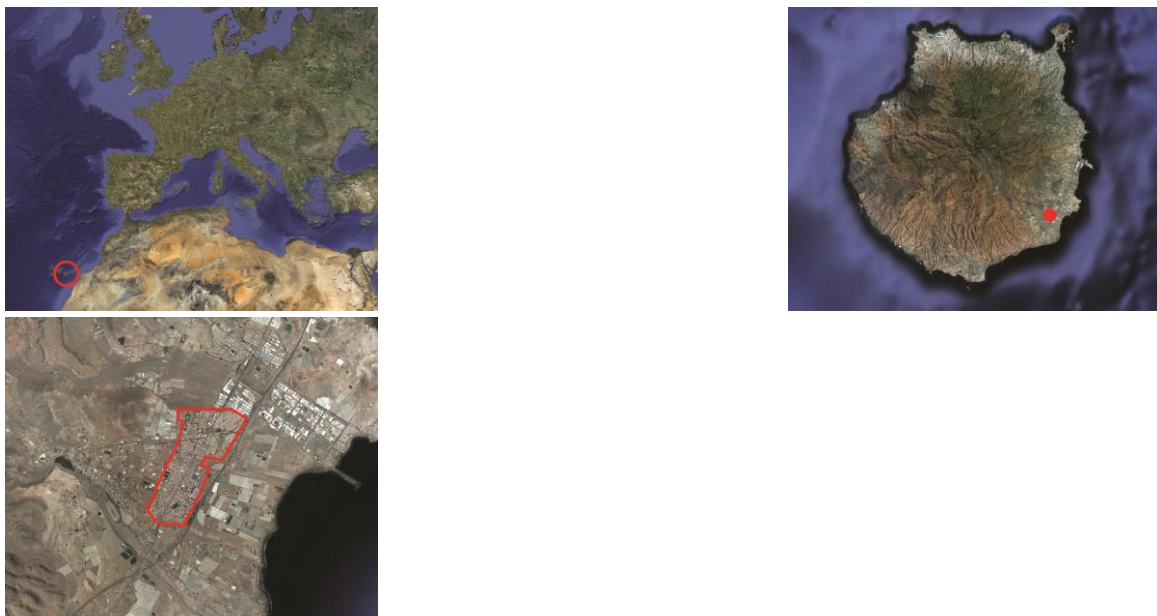


Figure 4.1. The localization of the city of Vecindario. Source: [www.map.google.com](http://www.map.google.com)

#### 4.1.2 URBAN STRUCTURES

The first residential houses built in Vecindario emerged along the road of *Avenida Canarias*; the first road connecting the northern and southern part of Gran Canaria. The



subsequent urban development was relatively uncontrolled based on occasional extensions of housing and small scale commercial activities, facilitated by the agrarian companies and carried out by residents themselves in small villages located close to the cultivation areas. This development tendency still characterizes the oldest areas of the city, making up a mix use neighbourhood design of residential housing and small scale commercial activities. Aesthetically the buildings found in these older neighbourhoods are found little attractive as a result of the spontaneous self-assembling which has taken place.



Figure 4.2. The urban streetscape in Vecindario is mainly reserved car infrastructure with high spatial occupation of circulating and parked cars. Source: [www.maps.google.com](http://www.maps.google.com)

Today, the traditionally small villages which represented the urban agglomeration of Vecindario, have merged together, and Vecindario has become a compact city. The recent urban development, built during the last two decades, is characterized by a modern sub-urban planning approach, where neighbourhoods are composed of entire quarters of apartment complexes or townhouses, separated by wide streets with large numbers of car parking facilities. In these neighbourhoods, commercial activities are separated from the residential areas and the car account for the main mode of transport to fulfil daily needs. However, the councillor of mobility, Peña Betancor (2013), points out that on a general basis, within both the traditionally mix-used neighbourhoods and in the modern neighbourhoods, the car is the dominant travel mode. This is visible as urban streetscape is mainly reserved car infrastructure with high spatial occupation of circulating and parked cars.

During the last few years, the municipality of Santa Lucia has taken important initiatives to improve the quality of the public spaces in Vecindario. Particularly green infrastructure, public spaces and traffic situation have been targeted (Peña Betancor, 2013). A number of new parks have been created with a focus on providing opportunities for sports activities for residents. Within the different neighbourhoods traffic calming measures are implemented. Parking infrastructure has become regulated, and in the commercial areas parking places are charged. Furthermore, an important part of the thoroughfare artery of the city, Avenida Canarias, has become a pedestrian zone.



Figure 4.3. The public parks in Vecindario are mainly built in the past decade and offers space for leisure activity. Source: Own pictures

The changes have not been implemented without resistance from commercial and neighbourhood organizations. Despite initial resistance the councillor of Mobility and Sustainability, Peña Betancor (2013), believes that people at present are very satisfied with the changes, as the main street of Vecindario has become a place which looks nicer, and is a more comfortable place to shop or meet for leisure activities.

Apart from implementing measures to restrict the accessibility of motorized traffic in Vecindario, important non-motorized infrastructure has been implemented during the last few years. The first bicycling path network on the island of Gran Canary was implemented a few years ago. Subsequently, all public buildings have been equipped with bike parking infrastructure. Furthermore the municipality, represented by the department of tourism, has arranged weekend excursions to encourage the use of bicycles. Despite the measures taken, Peña Betancor (2013) points out that the cycling still is perceived as leisure activities among residents. This was confirmed during the remaining interviews;

none of the children or adults interviewed had used the bike for means of transport to work, school or other activities in the neighbourhood.



Figure 4.4. The photo illustrates already implemented cycling infrastructure in Vecindario. The map illustrates the cycling net planned to be implemented. The implementation of the whole network is still not completed. Sources: Own picture. The map is provided by GIPIC.

#### 4.1.3 SOCIAL CONDITIONS

According to the primary school teacher Ramirez Marrero (2013), Vecindario has transformed from a traditional, rural community village, into an urban agglomeration in relatively short time. This has caused some important social challenges. Despite an important increase in living standard, the city is struggling with low education levels, gender- and ethnic related issues, and high unemployment among certain groups of the population. Over the last few years the municipality has therefore developed and implemented different social programmes to address some of the main problems. The target of intervention has mainly been intrapersonal factors such as knowledge, attitudes and skills among women, children or youngsters. By providing these groups with extra social resources, such resources are expected to be reinvested into the households and the neighbourhood communities, and promote greater community cohesion (Peña Betancor, 2013).



## 4.2 SOCIAL FACTORS IN THE COMMUNITY INFLUENCING CHILDREN'S TRAVEL BEHAVIOUR

After this brief introduction of the city of Vecindario, this last part of the chapter aims to analyse what social factors in Vecindario pose barriers to change children's travel behaviour from motorized to non-motorized travel modes to school. The community will be the level of analysis and the three different notions of community elaborated in the theoretical chapter of this report represent the structure of the analysis; community as place, the relational community and the community as organizational power. The analysis is primarily based on information obtained from interviews with two households in Vecindario; Ernesto (11 years old) and his parents and Kevin (almost 11 years old) and his parents.

### 4.2.1 COMMUNITY AS A PLACE

The community as place is a physical and territorial defined area. In the theoretical chapter of this report, three different functions of the locational community were discussed; *quality of living space*, *the distribution of services*, and *the conservation of safety and order*. The following section aims to identify social factors within these three complex functionalities of Vecindario which can pose barriers to change children's travel behaviour from motorized to non-motorized travel modes to school.

#### *The quality of living space*

The physical qualities of the urban environment of Vecindario were elaborated in the first part of this chapter. It became clear that the different neighbourhoods in the city have developed based on different urban design principals; the oldest neighbourhoods are characterized by an urban form of mixed-use development and are consequently more pedestrian oriented, while the newer neighbourhoods are characterized by a modern, suburban division of houses and commercial activities, and thereby more car-oriented. However, due to the density of the city, the distances from the residential areas to parks, schools and commercial areas will rarely exceed 800 meters in any of these neighbourhoods.

Both households interviewed in this case study, lived within the newer residential parts of the city, however with short distances to parks, schools and commercial areas. The proximity to grocery stores and pharmacies was highlighted as a very positive characteristic of the neighbourhood. However, regardless of the proximity, both households use the car when they take the children to school in the morning. In addition, they also use the car to do grocery shopping or to resolve other everyday needs. This implies that in the case of Vecindario, pedestrian accessibility has not contributed to decrease the automobile dependency and traffic level.



Figure 4.5. The physical neighbourhood environments of the two households interviewed in Vecindario. Source: [www.maps.google.com](http://www.maps.google.com)

The high level of traffic and automobile dependency among inhabitants in Vecindario, is providing a barrier to improve the quality of living space according to the city councillor Peña Betancor (2013). The municipality is aware of this barrier and is working actively with 'humanizing' urban spaces based on different physical intervention strategies as mentioned in section 4.1.2.

In contrast to Fotel and Thomsen (2004) findings from Denmark, where parents wish to regulate their child's movement firstly was related to the threat of traffic, the parents interviewed in Vecindario find their children capable of walking to school alone in regards to handling different traffic situations. The traffic level is not something that worries them noteworthy, and it is certainly not the main reason why they choose to drive their children to school. For example Kevin's mother highlights that Kevin, apart from the traffic education given at school in 1<sup>st</sup>, 3<sup>rd</sup> and 6<sup>th</sup> grade, has received traffic education during the local summer school organized by the municipality the last two years. The mother considers Kevin to be well trained when it comes to traffic rules, and he will therefore not participate in the summer school this year.

Nevertheless, when the interviewed children have asked their parents for permission to walk unaccompanied to school, both parents have denied them to do so. When the parents are asked about concrete reasons for this, a desire to spend more time with their children is mentioned. Such arguments coincide with findings from England (McDonald & Aalborg, 2009). Despite the fact that the parents state that spending more time with their children is the reason, the car, as a fast means of transport, is used as travel mode to get to school. The choice of car as mode of transportation is according to Ernesto's father related to time limitations, while Kevin's mother mentions that she is too tired to walk in the morning. None of them reflect over the possibility to overcome these challenges by letting their children walk or bike to school without their company.

The need for accompanying the children to school, in spite of time pressure and tiredness, seems to be related to a desire to monitor the children. Davis and Jones points out that; *"adults often want to segregate children, to 'park them' in safe places and provide set places which are deemed to be safe for them to play and go."* (1996, p.109). Monitoring of children, as segregating them from dangers, can have two faces; a face of care, and a face of control (Fotel & Thomsen, 2002). In the case of Vecindario, the face of control seems to be very present, as it is not only the school route which is monitored by parents. Children's spare time is characterized by a high degree of adult control; neither Kevin (almost 11 years old) nor Ernesto (11 years old) is currently permitted to leave the house to meet friends or play unaccompanied.

The perception of what aspects of the environment are unsafe for children, seems to vary among households and among members of the household. Ernesto (11 years old) highlights that he finds the neighbourhood park to be an unfriendly environment and never goes there to play because of the older children hanging out there. However, the father clearly emphasizes during his interview that Ernesto is not allowed to be with other children in the neighbourhood: *"...it is a topic of security, but first of all it is a topic of controlling with whom he interrelate (...) we are concerned with whom he relates in the community..."* (Ernesto's father, 2013). Kevin (almost 11 years old) is a frequently user of the neighbourhood park and find it to be a safe place as he knows all the children. However, his parents fear that something might happen with him while he is playing in the park and therefore think it is important to be present.

Two qualitative characteristics of social structures in the community seem to be causal for households' perception of safety in this case; lack of *trust of familiars* in the case of Ernesto's household and lack of *generalized trust* in the case of Kevin's household. In both cases the lack of trust has consequences for children's travel behaviour, as the need to monitor children's travel is reinforced. This appears to be a barrier when it comes to the use of non-motorized travel modes to school as children becomes dependent on adults' transport decisions.

### ***Distribution of services***

The educational services for children in Vecindario are provided by local neighbourhood schools; 16 primary schools and 7 secondary schools. This means that the maximum distance between children's home and school seldom exceed 1 km. When the distance exceeds 3 km the children will be provided with public transport until 12 years old. Despite such favourable characteristics, the use of car for the school trip is a common phenomenon in Vecindario. According to the counsellor of Mobility and Sustainability Peña Betancor (2013), the municipality is aware of the problem and measures are implemented to combat the phenomenon. However, when asked about specific measures implemented, it turns out that they are mainly directed toward improving the traffic safety around schools.

Both households interviewed in Vecindario had deliberately chosen not to use the public school closest to their home for their children's education. This choice has contributed to influence the household to use the car as transportation mode. However, current distances between the households and the school do not exceed 1 km. In these two cases, the self-selection of schools, does not seem to pose a barrier for children to be walking or cycling.

### ***Public conservation of safety and order***

Children's safety in terms of traffic has been a matter of concern within the municipality of Santa Lucia for a long time. Traffic educational programme has been run in every school in the municipality for more than twenty years in collaboration with the local police. Each school will be designated to one neighbourhood police officer who is responsible for implementing the educational programme. The content of the programme will be further discussed in the sub-chapter 4.2.3 of this report.

In addition to traffic education, different measures have been implemented to secure the safety conditions around the schools in Vecindario, as chaotic situations tend to arise when large numbers of children are brought by car to school simultaneously. According to the theory, children are especially exposed for danger in such situations, as they do not have the same cognitive capacity to handle complex situation as adults (Hüttenmoser, 2011). To maximize the security when children start and end their school day, and to avoid accumulation of parked cars in front of the schools, most of the education centres in Vecindario temporarily restrict the circulation of motorized traffic in front of the

schools. Motorized traffic is not temporarily restricted in front of the school El Canario, where the interviews for this study were conducted. The school is located next to a thoroughfare road which from the municipality's point of view has higher priority than pedestrian accessibility (Peña Betancor, 2013).



Figure The school environment of the public school El Canario at the hour when parents pick up their children. Due to safety considerations, the police control the traffic in front of the school. Source: [www.maps.google.com](http://www.maps.google.com)

Despite the fact that the street in front of the school El Canario is not temporarily restricted, parents are forced to park further away from the school due to limited numbers of parking places and strict control by the police of irregular parking within the school environment. Ernesto's farther for example, normally leaves the car around 100 meters from the school. Nevertheless, he finds the car to be the most comfortable mode of travel. This implies that physical solutions which contribute to increase the distance from parking facilities to destination do not pose any obstacle to the use of motorized modes of travel in this case. However, such solutions might be perceived as a safer environment for those who use non-motorized modes of travel.

### *Summary*

One important barrier when it comes to changing travel behaviour from motorized to non-motorized travel behaviour to schools in Vecindario, seems to be related to a lack of trust in the community, influencing parents' perception of neighbourhood safety. Lack of trust within the community implies that parents feel a need to monitor children's activities outside the home. This involves that children become more dependent on parents transportation choices.

Parents monitor their children's school trip despite the fact that different safety measures are implemented by public authorities to increase children's safety. This indicates that implemented security measures has not resolved, or do not coincide with parents perception of negative aspects of the environment. A gap between public authorities and parents' perception of qualities of public space can pose a barrier to change children's travel behaviour as inaccurate security measures might be implemented.



#### 4.2.2 THE RELATIONAL COMMUNITY

The relational community is composed of social relations. The social relations represent mediating structures within the community and can have great influence on individual behaviour by facilitating support, information and aid (social resources). This part of the analysis aims to identify social factors in mediating structures in Vecindario that can pose barriers to change children's travel behaviour from motorized to non-motorized travel modes to school. Both structural and qualitative characteristics of the mediating structure will be analysed.

Within the relational community the social relations between children and parents seem to compose the main barriers towards the use of motorized travel modes to schools in Vecindario. As highlighted in the previous section, both children in the households interviewed have requested their parents to start to walk to school with friends. In both cases the parents have denied them to do so. However Kevin's mother highlights that it sometimes is hard denying the son such right, especially when the son has come together with friends to negotiate the right to walk to school, unaccompanied by adults. Currently the negotiation process is suspended as Kevin, his parents, the friends and their parents have achieved a form of consensus about letting the children start walking together when they start secondary school. The achievement of consensus within this group, across generation and households, indicates that network closure exists.

Independently of Kevin's household, also Ernesto's father mentions secondary school as a stage when his son should be permitted to walk to school unaccompanied by adults. However in both Kevin's and Ernesto's case the parents are somewhat reluctant about giving up the control of their sons. Kevin's mother has already started to discuss with other mothers in the neighbourhood how they can continue to monitor the children when the children start secondary school and should be permitted, according to the consensus agreement, to walk unaccompanied by adults. At this stage they have agreed that the best way is to allocate the responsibility of monitoring the children between the parents so one of them always can follow the group of children to school from a distance.

As described in the previous part of the analysis, qualitative characteristics of relational structures in the community seem to be causal for households' perception of safety and thus parents need to monitor children's outdoor activities. The lack of trust of familiars and the lack of generalized trust were highlighted as reasons for households to not let their children be outside without accompany from adults. However the social factors causing lacking norms of trust within the community were not discussed. In continuation, the meaning of different network structures will be used to analyse the lack of trust between residents in Vecindario.

The first incident to be analysed is the case of Kevin where lack of *generalized trust of stranger* was found to pose a barrier when it comes to let Kevin and his friends walk unaccompanied to school. As already mentioned in this section Kevin's household forms

part of a neighbourhood network with structural closure. This network closure appears to represent a structural condition to generate and maintain a lack of generalized trust within the social network through flows of information about unresolved neighbourhood problems. This was emphasized during a spontaneous talk with mothers gathered in the park, after the interview with Kevin. The mothers highlighted threats such as dangerous dogs, social violence, attempted abductions of children, and the abduction of a boy in the neighbourhood as elements which cause the need for protecting children carefully. According to Valentine (1997) these kinds of stranger-danger discourses have great influence on parent's awareness of risks in public space without necessarily having been related to actual incidents taking place.

In the context of Vecindario an important incident has taking place; 'the case of Yeremi'. In 2007, the 7-year-old boy Yeremi Vargas disappeared while he was playing in the street with neighbour kids. The case was followed by national news media over several months. Locally a social phobia was generated with a major influence on the stranger-danger discourse among residents. The city councillor Peña Betancor (2013), who at that time worked as a police officer, highlights that the use of public space subsequently changed as children were less likely to be permitted to play outside. This shows that events in a community can have long term effects when it comes to "influence generalised social trust" among community members. Furthermore, the effects can be maintained and reinforced through network structures that facilitate flows of information used to support a stranger-danger discourse within the community.

The second incident to be analysed is the case of Ernesto where lack of *trust of familiars* was found to pose a barrier when it comes to letting Ernesto walk unaccompanied by adults in the neighbourhood. Unlike the case of Kevin, who has many social relations in the neighbourhood, Ernesto has few social relations. The reason is that his parents deliberately have restricted his possibility to interrelate with children in the neighbourhood on the basis of negative expectation to how positive these interactions are for Ernesto. With few mediating structures between Ernesto and other networks in the neighbourhood, Ernesto currently forms part of sparse social networks. This implies that it can be difficult for him to call on assistance to solve a problem, like Kevin did with his friends to negotiate the right to walk to school without adults accompany. Furthermore, it can be hard for outsiders to target Ernesto undesirable behaviour as mediating structures are few.

### **Summery**

One important barrier when it comes to influence children's travel behaviour from motorized to non-motorized travel modes in Vecindario are mediating structures in the community which currently facilitating flows of information sustaining a stranger-danger discourse among parents. A stranger-danger discourse can contribute to decrease "generalized trust of stranger" and finally contribute to restrictions on children's travel behaviour. A second barrier can be found in sparse social networks with few social



linkages to the rest of the community. This may impair the ability of outsiders to influence group members' behavior as there are few mediating structures which can be targeted.

#### **4.2.3 THE COMMUNITY AS AN ORGANISATIONAL POWER**

The last structural form of community is the organizational power. The most important role of this notion of community is the control of what issues are permitted to be placed on the public agenda. This part of the analysis aims to identify social factors in power structures between organizations in Vecindario, which can pose barriers for changing children's travel behaviour from motorized to non-motorized travel modes to school. The starting point is the current traffic education programme in Vecindario and the three institutionalization processes expected to provide organizational support; regulative, normative and cultural-cognitive.

##### ***Regulative process of the traffic programme***

Currently a traffic education programme is implemented by a trained police officer during three of the seven school years at primary schools (2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> grade) in Vecindario. Over a period of two weeks each class has a daily lecture about a safe traffic behaviour. The lecture is based on locally developed manuals for each age group which are adapted to the local conditions of Vecindario.<sup>2</sup> The youngest children learn about adequate passenger behaviour in the car and adequate pedestrians behaviour; how to move on sidewalks and crosswalks and the different traffic sign which guides the pedestrians. The older children learn about how to behave in public spaces and how to travel by bike in different traffic situations. The practical part of the traffic education in Vecindario is carried out in a recently constructed educational field which represents a typically residential area. In two important conditions the park differs from the real traffic situation of Vecindario; the size of the infrastructure in terms of distance and altitude, and the lack of traffic.

In addition to regulate children's traffic behaviour, the traffic education programme has some clear demands to children; in addition to adapt desirable traffic behaviour they should become the police's extended arm in the community by surveying the traffic behaviour of other family member's and to correct inappropriate behaviour. According to the interviewed household in Vecindario, the traffic educational strategies are working; children know how to behave in different traffic situations and they do correct their parents when it comes to the use of seat belts and correct behaviour on pedestrians (Kevin's mother, 2013).

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<sup>2</sup> In the appendix of this report an example of the traffic manual used in 6<sup>th</sup> grade in Vecindario can be find

### *The normative process of the traffic programme*

Public institutions in the municipality of Santa Lucia mainly allocate obligations for obtaining desirable travel behaviour among children to two actors; children themselves and their parents. Both groups are provided with information about desirable behaviour (values) and how they should be done (norms). Children are provided with theoretical knowledge and practical skills about safe traffic behaviour during the two weeks programme, as described above. The parents are provided with information about desirable traffic behaviour of children and how they should support it, based on two arrangements: 1) in advance of the implementation of the educational programme of children an information meeting is arranged for parents at the school, and 2) when the programme is completed parents and other friends of the households are invited to take part in the celebration of the completed traffic course. During this last event both representatives from the school and the police are present and each child is handed a diploma and a police certificate which proves their possession of knowledge and skills about correct traffic behaviour. According to Peña Betancor (2013) the celebration of the completed traffic course is a symbolic way of highlighting the proliferation of obligations and expectations among the different mediating structures expected to influence children's travel behaviour. The organizational structures expected to influence children's travel behaviour in Vecindario through normative processes are presented in the following figure (Figure X).

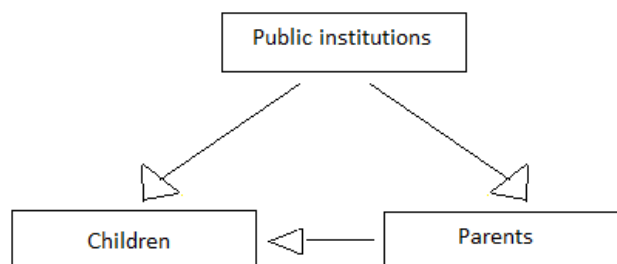


Figure x. Organizational structures expected to influence children's travel through normative process. Source: Own elaboration.

The normative processes of the traffic education programme of Vecindario target the norms, the values within the relational structures between public institutions and children, and the relational structures between public institutions and the parents. Children are provided with norms and values about own traffic behaviour, while parents are provided with norms and values about how to support children's travel behaviour. This implies that the norms and values directed to parents by public institutions in the current traffic education programme of Vecindario are only targeting the norms and values for the caregiving of children rather than targeting norms and values about how parents should adapt an alternative travel behaviour. The structures and flows of social resources within the normative process of the programme are illustrated in figure...

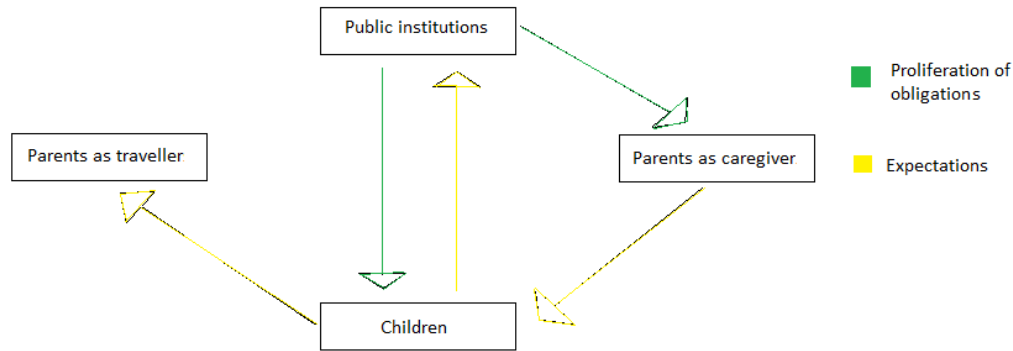


Figure y. Structural relations between different actors influencing children's travel behaviour

There can arise conflicts between the flows of social resources in the relational structure between parents and children. This can pose barriers for changing children's travel behaviour from motorized to non-motorized travel modes.

### **Cultural-cognitive process of the traffic programme**

According to residents in Vecindario the use of cars in proximal distances is related to a cultural phenomenon: *"It is not enough to create infrastructure for bikes, you also need to change the culture (...) It will take time. We should start with the youngest residents"* highlights Ernesto's father (2013). Similar attitude was found among the other interviewees. Despite advocating the need for changing travel behaviour through adapting an alternative travelling culture none of the interviewees appear to have forthcoming plans to change their personal travel habits or influence their children to do so. Some form of disclaimer among the residents was evident: *"A lot of effort will be needed (to change this culture) especially from the public administration side [...]"* (Ernesto's father, 2013). At the same time as responsibility for changing current car-based travel behaviour is allocated to the public the interviewed parents claim their right to regulate their own children's movement in the neighbourhood. This seems to support Hillman's (2006) claim that; *"It is now commonplace to hear conversations in which the role of accompanying children, not infrequently older than 10 years, is referred to as if it were a basic requirement of child-rearing."* {{29 Hillman, M. 2006}} p.62. The repetitive patterns of use of motorized travel modes, not targeted by the traffic education programme, pose an important barrier for changing children's travel behaviour from motorized to non-motorized travel modes.

#### **4.2.4 Summary**

The table ... summarizes the main findings of the analysis by pointing out the main barriers within the social community environment in Vecindario when it comes to change children's travel behaviour from motorized to non-motorized travel modes to school. These findings will form the basis for the discussion about how urban planning can contribute to influence children's travel behaviour by incorporate social factors in planning strategies in the next chapter of this report.

Level of analysis	Barriers
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Community as place	<ol style="list-style-type: none"> <li>1. Lack of trust among community members contributes to reinforce the need to monitor children where children become more depend on adults' transportation choices</li> <li>2. A gap between public authorities and parents' perceptions of safe environment for children's school route</li> </ol>
Relational community	<ol style="list-style-type: none"> <li>1. Network closure facilitating flows of information which sustained a stranger-danger discourse among parents</li> <li>2. Sparse social networks within the community obstructing the establishment of alternative norms within the network</li> </ol>
Community as organizational power	<ol style="list-style-type: none"> <li>1. No correlation between the norms and values that children and the norms and values that parents are demanded to follow in current traffic education program</li> <li>2. Implementation of traffic education programmes supporting car drivers' interests by modifying children's travel behaviour</li> </ol>

## 5. DISCUSSION

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Throughout this report the factors in the social environment on a community level which are influencing the use of car as a travel mode to the school, by households has been investigated. Social factors which influence children's travel behaviour were identified theoretically in chapter three and in chapter four. The barriers which currently prevent households from using non-motorized modes of transportation on a neighbourhood level were revealed based on a case study. The aim of this chapter is to discuss how urban planning can contribute to influence children's travel behaviour by integrating social factors into planning strategies, to overcome current barriers found within the social environment. The discussion will be based on the main results of the analysis presented schematically in the summary of the previous chapter.

### 5.1 TARGETING BARRIERS IN COMMUNITY AS A PLACE

The case study revealed two social factors within the notion of a community as a place apparent to pose barriers to change children's travel behaviour from motorized to non-motorized travel modes. The first social factor is the parent's monitoring of children within the neighbourhood environment which in case of the school trip makes children dependent on adult's transportation choices. The second social factor is the gap between public authorities and parents' perceptions of the quality of the public space, subsequently leading to implementation of inaccurate safety measures.

#### 5.1.1 LACK OF TRUST

In the case of Vecindario, parent's extensive control of children's outdoors activities is expected to be a barrier to achieve changes in children's travel behaviour due to children's dependency on parent's transportation choices; currently highly car dependent. Based on the analysis of this report, the monitoring of children travel behaviour seems firstly to be an outcome of parent's negative perception of the social environment. Two factors are highlighted to be causal; the lack of trust among familiars (Ernesto is not permitted to relate to children in the neighbourhood) and lack of generalized trust to strangers (Kevin is not permitted to be out alone in case something happens to him).

Despite the fact that the quality of the community is a subjective judgement some properties are found to be generally important for the residential satisfaction with the neighbourhood environment and to enhance norms of trust within the community. Such properties are related to possibility for social interactions among residents; walk able, mixed-use neighbourhoods where car-dependency is reduced, can contribute to increase resident interactions as it provides possibilities to spontaneous "bumping into" neighbours. Leyden (2003) found that interaction in form of trivial conversations among neighbours can help to encourage emotional connections to community members and thus encourage a sense of trust within the neighbourhood.

Physical outcomes like walkable and mixed-use neighbourhoods constitute one important urban planning strategy. Another important planning strategy is to encourage public involvement in the planning process. Chavis and Wandersman (1990) highlight that perceptions of environmental problems, such as lack of trust among familiars or strangers, can serve as a motivation to action within neighbourhoods. An important planning strategy can thus be to offer technical assistance to initiate neighbourhood groups which can be used to address community problems (Cohrun, 1994).

### **5.1.2 INACCURATE SAFETY MEASURES**

The second social factor found to pose a barrier to change children's travel behaviour within the notion of a community as a place is the gap between public authorities and parent's perceptions of safe environment for children's school way. As the analytical findings indicate have public authorities in the municipality of Santa Lucia primarily considered safety measures targeting children's school route, in terms of restricting traffic and parking facilities around the schools, the presence of a police officer at specific times and implementation of traffic education programmes. However, in Vecindario parents perceive the traffic environment only to a limited extent as a problem for children's safety. This kind of mismatch appears important to be corrected to overcome current motorized travel behaviour to schools. A solution can be to establish forums where a dialogue between actors can take place and encourage community members to come up with proposals for necessary solutions (Litman, 2010).

## **5.2 TARGETING BARRIERS IN THE RELATIONAL COMMUNITY**

Based on the case study findings, two social factors within the relational community are apparent to pose barriers to change children's travel behaviour to school. The first social factor is the social network closure facilitating flows of information which sustained a stranger-danger discourse among parents. The second social factor is sparse social networks with few social linkages within the neighbourhood, obstructing the establishment and support for alternative travel norms.

### **5.1.3 SOCIAL NETWORK WITH CLOSURE**

In the case of Vecindario it is evident that social relations between parents are used to exchange information about unresolved community challenges which represent potential hazards for children. In this way the network closure becomes a way of supporting children control within the community and finally the use of motorized travel modes to school as the fastest, safest and most comfortable way to perform the task. Despite the fact that the network closure currently poses a barrier for the use of non-motorized travel modes this kind of social structure can be a good starting point to address the need for behavioural change and as a structural base to sustain a desirable travel behaviour.

To use already existing social networks to trickler alternative behaviour will require that persons involved in planning processes are capable to identify the social networks that current sustain different behaviour within the community. When such networks are

identified it will be necessary to develop strategies that can be used to modify the norms that support current behaviour within the networks. When it comes to develop and implement strategies to influence children's travel behaviour it will be important to intervene into mediating structures between parents and children. The analysis revealed that these mediating structures pose the main source of influence on children's behaviour.

MeLeroy and colleagues (1988) highlighted skill training directed towards all parties in the network by creating support groups and establishing linkages to alternative networks as important strategies to obtain behaviour changes, based on interpersonal relations. Despite the fact that these strategies aim to change individual behaviour the proximal targets are social norms and social influences in the mediating structures (ibid.). When it comes to planning processes a favorable strategy to encourage behaviour changes can be skill training for both adults and children, for examples through arranging bike training workshops. When it comes to create support groups the implementing of programmes such as 'safe routes to school' can be a favourable strategy. Finally the establishment of linkages to alternative networks within the community, e.g. through cycling federation or sport clubs, could pose important supply of resources to support behavioural change within the community. Furthermore, it can provide planners with important information about local conditions.

#### **5.1.4 SPARSE SOCIAL NETWORKS**

The second social factor found to support the use of motorized travel modes within a community is a sparse social network. The two children interviewed in Vecindario are part of two very different social networks. Kevin is part of a dense social networks and he use it to negotiate travel behaviour with parents or other members of the community. Ernesto instead is a member of a sparse networks structure, mainly due to the restrictions put on him by his parents, and has few social relations which he can use to negotiate travel behaviour. When children and families are part of sparse networks only a few mediating structures are available which can be used to target current travel behaviour.

To overcome such barriers planning strategies targeting the cohesion of a community seem to be important. According to Littman (2010) events and activities, such as street parties and fairs, and local sporting and cultural events can be a major contributor. This however requires public spaces suitable for this type of gatherings in terms of land use and urban design. In this context Cohrun (1994) highlights the need to softening up the transitions between public and private spaces by increasing the width of sidewalks, reduce traffic lanes and traffic speed as important physical planning outcomes.

### **5.3 TARGETING BARRIERS IN THE COMMUNITY OF ORGANIZATIONAL POWER**

Based on the case study findings, two social factors within the community of organizational power are apparent to pose barriers to change children's travel behaviour



to school. The first social factor is a lack of correlation between the norms and values that children and parents are demanded to follow within traffic education programmes. The second social factor is the norms and values mediated through traffic education programmes supporting car driver's interests by modifying children's travel behaviour.

### 5.1.5 TRAFFIC EDUCATION PROGRAMMES

The current traffic education programme in Vecindario is based on a structural model where different relational structures in the community are provided with different norms and values when it comes to correct travel behaviour. In this context parents are target as caregivers, rather than travellers. This seems to cause an over-protection of children. One of several dangers of such an approach is that children do not acquire road safety skills and can't cope with unexpected situations, as this is achieved through thousands of real-life experiences (Hillman, 2006). An important planning strategy to overcome this barrier is to facilitate transport systems which are adapted to children's needs and cognitive skills rather than building education parks where children can be trained to adapt to needs of car drivers. To facilitate transport systems adapted to children's needs some important organizational power relations have to be touched and will, in many cases be a challenging task. This requires that the planner is well prepared. Knowledge about local organizational power structures is indispensable for planning strategy to be successful in implementing physical solutions which can influence children to use non-motorized modes.

Changing this kind of programmes implies adapting alternative programme (innovate), implement it and institutionalize it within the different community organizations. In the implementation stage this will require support from higher level management, training of staff, and material support. During the institutionalization phase; *"...perceptions of the costs and benefits of the innovation, the development of coalition support around the innovation, the consistency between the innovation and the organization's mission and goals, and the extent to which there is an appropriate niche for the innovation within the organization, are all related to successful institutionalization."*{42 McLeroy, Kenneth R 1988}} p.362 However, to adapt alternative programmes implies touching some important organizational power relations and will in many cases constitute a challenging task. This will require that the planner is well prepared. Knowledge about local organizational power structures seems to be an important planning strategy to successfully implement physical outcomes which can influence children to use non-motorized modes.

## 6. CONCLUSION

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The report started by claiming that planning strategies just considering factors of the physical environment might not be enough to make people change travel behaviour; especially not when the travellers belongs to a vulnerable group such as children. The meaning of factors in the social environment for individual behaviour, in both a theoretical and empirical perspective, has been elaborated and the findings discuss

throughout the report. In conclusion, this chapter will answer the main research question:

*How can planners utilize factors in social environment of the community to facilitate non-motorized travel behaviour of children?*

Based on a systematic review of three components of the community; community as place, relational community and community as organizational power, this report has identified some important factors that currently obstacle children from using non-motorized travel modes for they school trip in Vecindario. These factors take different form, following the type of component of the community to which they belong. In the community of organizational power these factors can have a regulative, normative or cultural form. In the relational community the factors constitute social resources flowing between community members. In the community as place the factors constitute procedures for safeguarding community members' needs.

Planners are forming part of each of the components of the community. The membership of community as organizational power facilitates the possibility to make use of regulative, normative or cultural strategies to influence what issues are permitted to be placed on the public agenda. Planners have succeeded in creating cities for cars. This implies that it also should possible to create cities where children can walk and cycle. However, this might imply that planners have to "clean up in their own ranks". Many public institutions are currently blocking strategies targeting pedestrian or bike accessibility on the expense of restricting car circulation and parking places. A small example is the street in front of the primarily school in Vecindario where car circulation was given priority over children non-motorized accessibility (15 min morning and 15 min afternoon) during school hours. If to succeed in facilitating non-motorized travel behaviour of children, or other groups of the populations, an important planning task seems to be to put less car and more non-motorized transportations modes on the public agenda. This will require collaboration across fields to reach consensus about new/alternatives objective and goals.

For the children in Vecindario the mediating structures between themselves and their parents seem to pose the greatest barrier to change travel behaviour. These kinds of barriers, located within the relational community, have traditionally been perceived as outside the natural range for a planner. However, as member of the community as place the planner poses opportunities to facilitate favourable conditions for the flow of social resources between community members which can be used to inform, support and provide help to change behaviour, based on different planning procedures which safeguard the need of children as travellers.

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