

Pedestrian Safety of School Children:
Toward Improving Walkability of Inner City Neighborhood

Final Report

Metrans Project 07-21

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Project Group

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Abstract

The proportion of children walking or biking to school has decreased significantly over the past decades. Despite considerable decrease in the rate of walking, pedestrian injuries remain a leading cause of unintentional injury-related death among children. With rising concerns about childhood obesity, promoting safe and active travel to school has been widely shared as a strategy to increase physical activity among children. The Federal Safe Routes to School (SRTS) Program makes funding available for a wide variety of programs and projects, from building safer street crossings to establishing programs that encourage children and their parents to walk and bicycle safely to school. However, the current state of knowledge is limited in the area of children's travel behavior, particularly lacking in understanding children's perspectives on school travel and safe walking environments. The purpose of this study is to identify safety issues perceived by children and associated measures that might promote children walking to school. In particular, we are interested in investigating risk and modifying factors associated with current school travel mode; examining child perceived barriers to and attractors of walking; and identifying policy measures for the improvement of children's propensity to walk by mitigating pedestrian risk. The study focused on schools in inner city Los Angeles in the USC neighborhood. Study subjects included six 5th grade classes from 5 elementary schools (four public and one private school) accounting for 104 children, 87 parents, 122 Kid Watch volunteers. Summary findings from our research are as follows:

- The majority of parental attitudinal and perceptual factors were significantly associated with how children travel to/from school. However, when parental perceptions were compared with those of their child, they did not appear to be in concordance.
- Among objective environment measures, only the density of crime along children's school travel routes was found significantly inversely related to both walking to and from school.
- Both barriers to and attractors of walking were more closely related to social milieu for the child participants in this inner city area than traffic or other environmental features.
- Children in this study expressed a high level of safety hazards in their neighborhoods and along their school travel routes, which were highly associated with gang related activities.
- When crime and violence were major concerns, commercial place played an important role, perceived by children as stimulating and safe, while parks or recreation centers were often perceived as unsafe or unfriendly.
- Children had an acute sense of place based knowledge about safety issues in their neighborhoods.
- Children demonstrated their capacity not only to observe and understand the environment but also to evaluate and reflect on making their neighborhood safer and walkable on their own terms.

The study points to the need for an ecological and child-centered approach in research and policy making on active school travel. We find that policy measures based on parents' perceptions may not appeal to children in the same way as adult parents. And any policy responses aimed to promote walking among children should be responsive to children's concerns about gangs, drugs, and crime as they pertain to how children experience and use their local environments in low income inner city areas.

Table of Contents

List of Tables	vi
List of Figures	vii
Disclosure	viii
Acknowledgement	ix
Chapter 1. Introduction	1-1
1.1 Project Background	1-1
1.2 Project Objectives	1-2
1.3 Structure of the Report	1-3
Chapter 2. Literature Review	2-1
2.1 Walkability for Children: A Review of Disciplinary Approaches	2-1
2.2 Conceptual Framework	2-2
Chapter 3. Methodology	3-1
3.1 Research Site	3-1
3.2 Study Subjects and Recruitment	3-2
3.3 Research Procedure and Data Collection	3-5
3.4 Data Analysis	3-10
Chapter 4. Attractors and Barriers to Active School Travel	4-1
4.1 Child Characteristics	4-1
4.2 Household Characteristics	4-3
4.3 Neighborhood Characteristics	4-6
4.4 Summary of the Chapter	4-11
Chapter 5. Children’s Perception of Walkable Environments	5-1
5.1 Affective Image	5-1
5.2 Behavioral Image	5-6
5.3 Summary of the Chapter	5-9
Chapter 6. Conclusions and Recommendations	6-1
Chapter 7. Appendix	7-1
Appendix A: Child Questionnaire	7-1
Appendix B: Parent Questionnaire	7-4
Appendix C: Parent Questionnaire (Spanish)	7-10
Appendix D: Focus Group Interview Questions/Questionnaire	7-17
Appendix E: Focus Group Interview Questions/Questionnaire (Spanish)	7-18

Appendix F: Built Environment Measures	7-19
Appendix G: Route Audit Check Sheet	7-21
Chapter 8. References	8-1

List of Tables

Table 1.1 :	Data collection: Types and Methods	1-3
Table 3.1 :	Child Demographic and Socioeconomic Characteristics	3-4
Table 4.1 :	Normal Travel Mode to and from School by Safety Perception	4-1
Table 4.2 :	Child Perceived Risk Factors for Walking to/from School	4-2
Table 4.3 :	Things that Would Encourage Children to Walk to School	4-3
Table 4.4 :	Selected Household Characteristics and Active School Travel	4-4
Table 4.5 :	Agreement to the Attitude and Perceptual Statements by School Travel Modes	4-4
Table 4.6 :	Parent Perceived vs. Child Encountered Traffic Barriers	4-5
Table 4.7 :	Travel Mode to and from School by Travel Distance	4-8
Table 4.8 :	Objective Built and Social Environmental Characteristics of Children's School Travel Routes	4-9
Table 4.9 :	Safety Issues in the Study Areas Raised by the Kid Watch volunteers	4-10
Table 4.10:	Things to Improve the Safety of Children Walking to/from School in the Neighborhood	4-11
Table 5.1 :	Unsafe Areas and Safety Concerns Raised by Children	5-5
Table 5.2 :	The Safest Places by Classroom	5-7
Table 5.3 :	The Least Safe Places by Classroom	5-8
Table 5.4 :	Children Identified Place Dissonance	5-10

List of Figures

Figure 2.1 : Conceptual Model of a Child' Active School Travel	2-3
Figure 3.1 : Study School Neighborhoods	3-2
Figure 3.2 : Selected Sites and School Characteristics	3-3
Figure 3.3 : Child-friendly Leaflet to Introduce the Research	3-6
Figure 3.4 : A Sample Template of Travel and Activity Diary	3-8
Figure 3.5 : A Sample Slide from the Photo Evaluation Activity	3-9
Figure 4.1 : Selected Characteristics of Children's School Travel Routes	4-6
Figure 4.2 : An example of the roundabout travel route	4-8
Figure 5.1 : Composite Images of Affective Environments	5-2
Figure 5.2: Characterization of places children like by functional categories	5-1
Figure 5.3: Characterization of places children dislike by functional categories	5-4
Figure 5.4: Characterization of places children felt unsafe by functional categories	5-5

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Chapter 1 : Introduction

1.1 Project Background

Over the years, a growing dependence on motorized travel has significantly changed how children get around in the public realm. Children now spend a considerable amount of their waking hours in the backseat of automobiles being chauffeured to and from organized activities even for a short distance. A steep decline in children's independent mobility is most evident in children's school travel. Whereas 48 percent of children between the ages of 5 and 15 walked or biked to school in 1969, this number has now decreased to less than 16 percent (U.S. Environmental Protection Agency, 2003). Despite a considerable decrease in the rate of walking, pedestrian injuries remain as the second leading cause of unintentional injury related death among children, disproportionately affecting ethnic minority children from low-income families (National SAFE KIDS Campaign, 2004). Particularly, a substantial number of pedestrian fatality and injuries among school aged children occurs during normal school travel hours, making walking the second most dangerous mode of travel after biking on a per mile basis (Transportation Research Board, 2002).

In recent years the issue of safe and active school travel has increased in practical and scholarly importance. This is in line with a rapid increase in childhood obesity over the past two decades, which has generated serious concerns about adverse health outcomes (i.e., hypertension, type II diabetes, depression, etc.) and a consequent increase in health care expenditure associated with childhood obesity. In recognition of school travel as an important opportunity for promoting daily physical activity among children, policymakers have put a wide array of initiatives into motion for the purpose of increasing the proportion of trips to school made on foot or by bike to prevent, inter alia, childhood obesity. For example, spawned at the state level with California being the first state in the U.S. to implement a statewide 'Safe Route to School' (SR2S) program in 1999, a new federal program, earmarked specifically for children's safe and active school travel, was established in 2005. This legislation promises to provide \$612 million to the state's SR2S programs over five fiscal years, largely supporting physical improvement projects to date.¹ Other local, community based programs include 'KidsWalk-to-School', 'Walking School Bus', or 'Kid Watch' being carried out by engaging schools, parents, and volunteers for the promotion of safe and active school travel.

The effectiveness of the current interventions, however, has come under scrutiny in recent years. Some argue that major public investments are being made without a sound understanding of factors that influence children's travel behavior and in particular children's walk to school (McDonald, 2006; McMillan, 2005). Furthermore, what we know today about children's travel behavior, and proposed interventions for walkable environment have primarily been built upon adult caregivers' (or parents hereafter)

¹ According to a recent report, 70% of the funding in California has been awarded for infrastructure projects (see Hubsmith, 2007).

attitudes and choices., Children's needs and perceptions are often subsumed by parental concerns and preferences as proxy measures in understanding the likelihood that children will walk to school. It is largely based on assumptions that: (a) children's travel is entirely under the control of parental decision; (b) parents have an acute knowledge about the risks that children actually encounter ; and thus (c) environments perceived safe and walkable by parents do reflect what children would perceive as safe and walkable. Through this chain of suppositions, children have, by and large, disappeared into the backdrop of parental anxiety and choice.

It is our contention that children are active agents in managing and negotiating their free movement within the context of opportunities and constraints. As much as understanding structural relationships between factors that influence children's travel is a timely topic, it remains largely under-explored. In light of this knowledge gap as well as a critical missing link in current school travel research, this study seeks to contribute to current research by correlational evidences centered on a child' eye view of safe and walkable environment.

1.2 Project Objectives

This project focuses on the pedestrian travel and safety of children -- a critical user group. The ultimate goal of the project is to identify and examine the major factors affecting the safety of children in the inner city, especially on their journey to and from school. An ecological approach to school travel suggested in this project contributes to a greater understanding of how to improve the safety of children walking by identifying relevant pedestrian safety issues perceived by children, particularly so that relevant intervention measures for promoting safe and active travel to and from school can be identified. The child-centered approach adopted in this study thus has two main purposes: (1) to enhance substantive understanding of children's active travel in general and their school journey in particular; and (2) to explore methodological strategies in engaging children as active participants.

Specifically, the objectives of the project are to:

- Examine risk and modifying factors associated with children's current school travel mode at the individual, household, and neighborhood level;
- Document children's environmental and safety perception and identify barriers and stimuli for walking to school as perceived by children themselves;
- Identify policy measures for the improvement of children's propensity to walk by mitigating pedestrian risk.

1.3 Structure of the Report

Chapter 2- the following second chapter presents a brief review of walkability research across disciplines, namely urban and transportation planning, public health, and

geography. We then suggest a conceptual model centered on children as active agents in negotiating environmental use and activities through transaction with their physical and social surroundings within the context of multiple spheres of influences. This model also considers risks and modifying factors associated with children’s trips to school. .

Chapter 3- The third chapter provides detailed descriptions of the methods used in the research, which includes the recruitment and characteristics of research sites and subjects as well as data collection methods and procedures involving children, parents, and community volunteers. This inquiry thus involved multiple levels -- individual, household, and neighborhood. At each level, we explored factors associated with children’s school travel with a specific focus on the issue of child pedestrian safety. Table 1.1 below summarizes the types and methods of data collected.

Table 1.1 Data collection: Types and Methods

	Child	Parent	Neighborhood
Subjective	<i>Visual</i> -Route drawing -Place mapping -Photo evaluation <i>Structured</i> -Travel activity diary -Survey questionnaire <i>Verbal</i> -Group discussion	Self-administered survey	-Focus group interview -Self-administered survey
Objective			School travel route environmental condition

Chapter 4- In the fourth chapter, we discuss our findings on the patterns of active school travel (barriers and stimuli) that is both subjective and objective. Specifically, we discuss subjective aspects of children’s experience and perception of school journey, in comparison with parents’ attitudes and concerns, collected mainly through survey questionnaires. We supplement these findings with various built environment measures that describe objective characteristics of children’s actual school travel routes based on the route maps drawn by children who participated in the study. In addition, we present content analysis of focus group discussion that identifies major safety issues in the neighborhood.

Chapter 5- The fifth chapter discusses results of various child centered activities that provide a detailed list of children’s environmental values and needs, particularly for safe and walkable neighborhood environments. This chapter adds to the exploration of participatory tools that provide valuable insights into the role of children in ongoing discussion about active living and school travel.

Chapter 6- This chapter provides a summary of the research findings with discussions about limitations and thoughts on future research. The chapter proposes recommendations to better address the issues of safe and walkable environments for children that we have learned from children themselves.

Chapter 2 : Literature Review

Children's travel, especially as pedestrians, has rarely been the center of interest in many disciplines, including planning. Although considerable knowledge has been accumulated primarily from child pedestrian safety and accident prevention studies (e.g., Christoffel et al., 1991; Mayr et al., 2003; Roberts, Norton, Jackson, Dunn, & Hassall, 1995), very little is known about what would encourage children (or their parents to allow them) to walk in the first place. The following presents a brief review of different disciplinary approaches in examining walkability of children.

2.1 Walkability for Children: A Review of Disciplinary Approaches

(a) Urban and transportation planning

In urban and transportation planning, studies that focus on non-motorized travel, albeit not of children, have appeared with increasing frequency in the past decade. The likelihood for individuals to walk has been empirically tested for different neighborhood types (Handy, 1996; Handy, Cao, & Mokhtarian, 2006; Moudon, Hess, Snyder, & Stanilov, 1997; Shriver, 1997); land use patterns (Cervero & Duncan, 2003; Cervero & Kockelman, 1996; Frank & Pivo, 1994; Greenwald & Boarnet, 2001); street networks, including accessibility and connectivity (Cervero & Duncan, 2003; Cervero & Kockelman, 1996; Krizek & Johnson, 2006); and pedestrian environment features (Alfonzo, Boarnet, Day, McMillan, & Anderson, 2008; Rodriguez & Joo, 2004).

This literature provides evidence of a correlation between various aspects of the built environment and adults' walking trips. In some of these studies children are however simply considered as trip generators who influence the amount of household travel (especially of mothers) and range of travel options (see McDonald, 2005b). In addition, the application of utility maximization theory does not fully capture individual motivations or constraints that come into play in making decisions and hence come short in explaining structural – social, economic, and environmental -- relationships that are likely to determine one's choice for walking, which also can be valued for its own sake.

(b) Public health

Unlike the urban and transportation planning literature that has considered walking for the utilitarian purpose of transport, health researchers traditionally have exclusively focused on a different subset of physical activity -- walking for recreation (Sallis, Frank, Saelens, & Kraft, 2004). Over the past decade, the scope of physical activity research has been evolving rapidly by embracing the idea of 'active living' that incorporates a broader range of physically active behaviors (e.g., occupational or utilitarian activities) and by expanding its focus beyond individual and cognitive domains (Sallis et al., 2006). In order to better frame broader and various factors that may influence behavior, increasingly this literature has presented an ecological model that encompasses the role of

individual, social, environmental, and policy variables (see e.g., Hoehner, Brennan, Brownson, Handy, & Killingsworth, 2003; King, Stokols, Talen, Brassington, & Killingsworth, 2002; Saelens, Sallis, Black, & Chen, 2003; Sallis et al., 2004; Spencer & Blades, 2006). Especially, it has generated interests on the effect of the built environment to attain long term effects on promoting active living (Sallis & Owen, 1999).

The built environment measures examined in physical activity studies however appear to be loosely selected. Mainly they look at a range of self-reported environmental attributes of individuals' immediate surroundings, perceived as either supports or barriers to physical activity of varying intensities in adults. Nevertheless, these studies have contributed to better understanding of the decision to walk that are more tailored toward individual constraints or freedoms (either perceived or actual), which are specific to one's settings and purposes.

(c) Geography of Human Behavior

Studies of children's experience, perception, and behavior in geographical space have long been of interests to scholars from a range of disciplines, notably psychology, that share the same passion for understanding the 'lifeworlds' of children (see Aitken, 1994; Matthews, 1992 for review). Being dependent upon a negotiation between child, parents, and the environment (Perez & Hart, 1980), children's spatial movement, or a 'license' (c.f., Hillman, Adams, & Whitelegg, 1990) to move around independently is influenced by a child's characteristics, particularly age and sex (Hart, 1979; Hillman & Adams, 1992; Matthews, 1987); ethnicity and other socio-cultural characteristics of the family (O'brien, Jones, Sloan, & Rustin, 2000; Valentine, 1997a); parents' (especially of mothers') psychosocial characteristics (i.e., sense of community, perceived safety or danger, social network, etc.) (Blakely, 1993; Prezza et al., 2001; Valentine, 1997b); and environmental settings or characteristics (Kytta, 1997; Mattsson, 2002; O'brien et al., 2000).

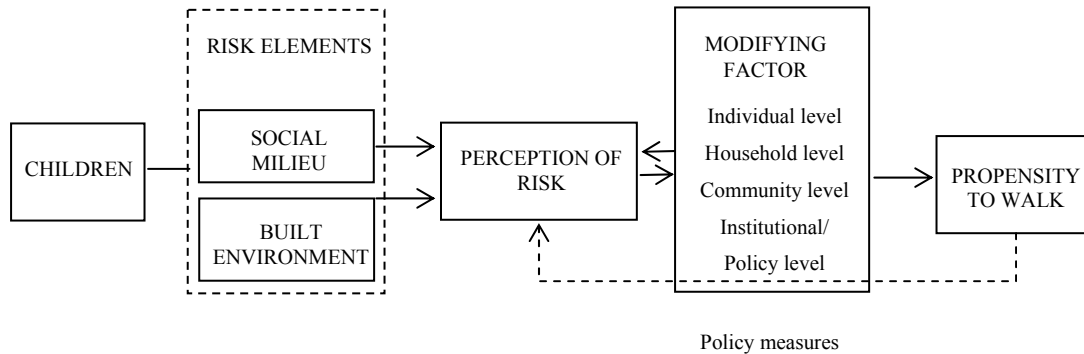
It is suggested that children are usually more competent in managing their own personal safety than parents would normally believe. Furthermore, children often actively engage in negotiating their parents' understanding of their environmental competence (Valentine, 1997b). Although this literature is largely exploratory, the inclusion of intergenerational negotiation centered on children in understanding their walkability is an important value that is mostly missing in the aforementioned groups of studies.

2.2 Conceptual Framework

The review of walkability research across disciplines suggests that a set of nested, interconnected elements at individual, household, community, and institutional/policy level collectively influences the propensity of children walking in general and walking to school in particular. The following model conceptualizes the basic premise of the study. That is environmental risk elements involving both the built environment (traffic, land use, pollution, etc.) and the social milieu (crime, drugs, gangs, etc.) influence children's

as well as parents' perception of risk which is then modified by household, community, and institutional factors (such as social programs and services). The assumption is that effective policy measures would mitigate the intimidating effects of perceived risks and thus improve walkability of neighborhoods.

Figure 2.1 Conceptual Model of a Child's Active School Travel



Below we present a brief summary of risk and modifying factors that are likely to influence the safety of child pedestrians at individual, household, institutional, and community level.

(a) Individual level: child characteristics

Safe travel behavior requires an adequate level of cognitive and behavioral skills such as recognizing risks, comprehending possible actions, making decisions about appropriate actions to take, and taking actions (Thomson, Tolmie, Foot, & McLaren, 1996). As children's ability to cope with traffic risks and their spatial knowledge are likely to increase as they grow older, age is understood as the most important predictor in pedestrian risks. Accordingly, a child's age largely determined the restrictions that the parent place on a child's travel activities (i.e., spatial ranges, crossing roads, riding a bicycle, etc) (Hillman et al., 1990). Parents, however, tend to allow more independence to boys than girls of their own age, which might partly explain a higher rate of pedestrian injuries and fatalities among boys (see National Highway Traffic Safety Administration, 2006).

Yet, the influence of a child's gender on travel mode choice to school appears to be mixed. A few studies have verified that more boys than girls walk or bike to school (Evenson, Huston, McMillan, Bors, & Ward, 2003; McMillan, Day, Boarnet, Alfonso, & Anderson, 2006; Timperio et al., 2006). On the contrary, a child's gender was found to have little or no significant effect on walking or being driven to school in other studies (McDonald, 2005a; Wen et al., 2008).

(b) Household level: family characteristics

Along with monetary resources, household transportation options such as the availability of a motor vehicle or the number of drivers' license holders have been found to be positively correlated with auto trips to school (Bradshaw, 1995; DiGuseppi, Roberts, Li, & Allen, 1998; Ewing, Schroeer, & Greene, 2004; Wen et al., 2008). In California, children from households with annual income below \$25,000 are nearly three times more likely to walk or bike than those from households with annual income above \$75,000 and be exposed to traffic dangers (Surface Transportation Policy Project, 2003).

In addition, it is suggested that parental support or supportive environments within the family, including parental availability, especially that of maternal (Rosenbloom, 1987; Yarlagadda & Srinivasan, 2008), parents' subjective mental constructs such as attitudes towards walking (Black, Collins, & Snell, 2001; McMillan, 2005) as well as their safety perceptions of neighborhood environment (Ahlport, Linnan, Vaughn, Evenson, & Ward, 2008; DiGuseppi et al., 1998; Ziviani, Scott, & Wadley, 2004), and parents' own travel activity (McMillan et al., 2006), are likely to determine how children travel to school and thus their level of exposure to pedestrian injury risks.

(c) Institutional level: school characteristics

School location that determines the level of accessibility to school is clearly the most notable barriers of walking. Previous research has consistently found that spatial distance (either actual or perceived) most likely to influence how children travel to and from school, as one would expect (e.g., Black et al., 2001; Bradshaw, 1995; Ewing et al., 2004; Timperio et al., 2006). McDonald (2007) suggests that increasing travel distance alone may account for half of the decline in active commuting to school between 1969 and 2001 in the U.S.

It is quite apparent that school siting policies may have a significant implication on school travel. But the school travel is also influenced by education reform strategies directed towards either redressing unequal educational opportunities or allowing parents more choices in selecting schools among alternative education, often bypassing their neighborhood schools. For example, one study found that children who attended non-neighborhood schools traveled 4.5 times more miles and as to be expected, were six times less likely to walk to school than those attending neighborhood schools (Wilson, Wilson, & Krizek, 2007).

(d) Community level: neighborhood characteristics

While safety issues need to be examined with sensitivity to specific localities and individuals, the presence of certain physical and social attributes in the neighborhood appear to cue a sense of insecurity. The presence of physical disorder (i.e., graffiti, boarded-up or "broken windows" (c.f., Wilson & Kelling, 1982), litter, empty beer bottles, and abandoned buildings or cars) and social incivilities (i.e., homeless, public drunkenness, gangs, drug selling activities, tagging graffiti) are likely to increase a sense

of fear, which may limit walking and active living (Day, 2006; Loukaitou-Sideris, 2006). Also, obstructed views or limited visual access, limited surveillance from the “eyes on the street” (c.f., Jacobs, 1961), and lack of familiarity can cause distress, and thus negatively influence on walking (Kaplan, Kaplan, & Ryan, 1998).

Several environmental attributes have been identified as risk factors for child pedestrian injuries, which delimit children’s opportunities for walking. Studies have found that streets with high traffic volumes, posted speeds and number of parked cars and absence of play areas for children pose a greater risk of injuries to child pedestrians (Agran, Winn, Anderson, Tran, & Del Valle, 1996; Appleyard, 1981; Roberts et al., 1995). While many parents drive their children to school, inter alia, for safety reason, children felt threatened by high traffic volume in the vicinity of the school (Collins & Kearns, 2001). Also, the absence or inadequate provision of pedestrian amenities such as sidewalks, crosswalks, and signalization en route to school provoke a higher risk (Transportation Research Board, 2002).

The review of the literature suggests the multifaceted nature of children’s school journey. Various influences at multiple levels interact with children to shape their school travel experience, including transportation mode as well as the quality of the journey itself. While encouraging children to learn healthy travel habits that they might keep as adults is important, necessary supportive environments with safety being the utmost concern is lesser known in terms of its structural and causal relations to active travel, especially from the eyes of children. Therefore, interventions directed to immediate and measurable physical improvement without comprehensive and systemic understanding of school travel with children as active agent and users of the environment may prove short-lived and certainly costly.

Chapter 3 : Methodology

This project involved a cross-sectional case study of 5 elementary school neighborhoods in inner city Los Angeles.² To measure objective as well as subjective quality of neighborhood environments for child pedestrian, this project used both qualitative and quantitative research methods, collecting information from both children and their parents. Particularly, the project used various child-centered research methods, which encouraged children to observe, document, and evaluate their neighborhood environment. Along with child generated materials, the parent survey, focus group interview later supplemented by questionnaires, and the built environment audit served as the main sources for this study. The study was approved both by the University of Southern California Institutional Review Board and by the Los Angeles Unified School District's Program Evaluation and Research Branch Committee on External Research.

3.1 Research Site

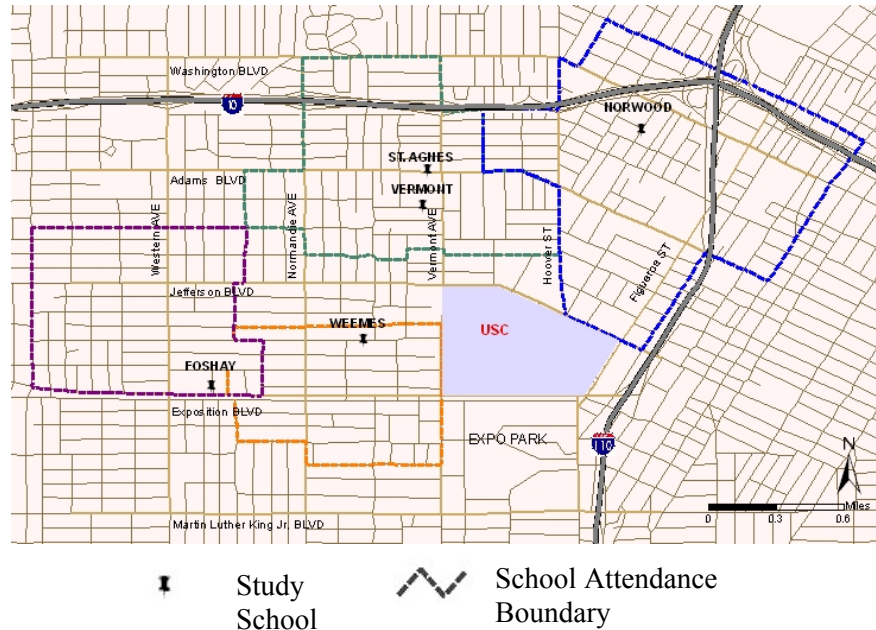
We approached five elementary schools located in the historic USC's University Park campus surrounding area to participate in the study. In collaboration with USC Civic and Community Relations (USC CCR), we initially contacted the principals of the selected elementary schools, currently involved in the USC CCR's Kid Watch program. Out of 7 elementary schools in the program at the time of the study, 5 schools (4 traditional public and 1 parochial) agreed to participate in the study.³ Figure 3.1 presents the study schools and their attendance boundaries.

Located in low income minority communities, just a few miles south of downtown Los Angeles, the study schools enrolled predominantly Hispanic students, ranging from 77% of student body (Foshay) to 97% (Norwood) (see Figure 3.2). Most of students in three public schools (close to and above 90%) were receiving free or reduced meals. The service areas of the study school neighborhoods (i.e., school attendance boundaries) range from 0.55 to 1.09 square mile and their population densities range from 24.15 to 42.86, much denser than the City of Los Angeles (13.10 persons per acres). In all cases land use is predominantly residential, ranging from 78% to 91% of the total land areas, except in Norwood. The study sites contain access points to two major freeways in and out of downtown LA that intersect the boundaries of the two school neighborhoods. Most of the study schools, except Weemes, are located along high traffic arterials or in close distance to freeways.

² In this study, a school neighborhood refers to a school attendance boundary area. For a parochial school (i.e., St. Agnes) that does not enroll children from an assigned area, the attendance boundary of an adjacent public school (i.e., Vermont) was used as a proxy.

³ The project originally included one charter school but dropped from the study due to a very low participation rate.

Figure 3.1 Study School Neighborhoods



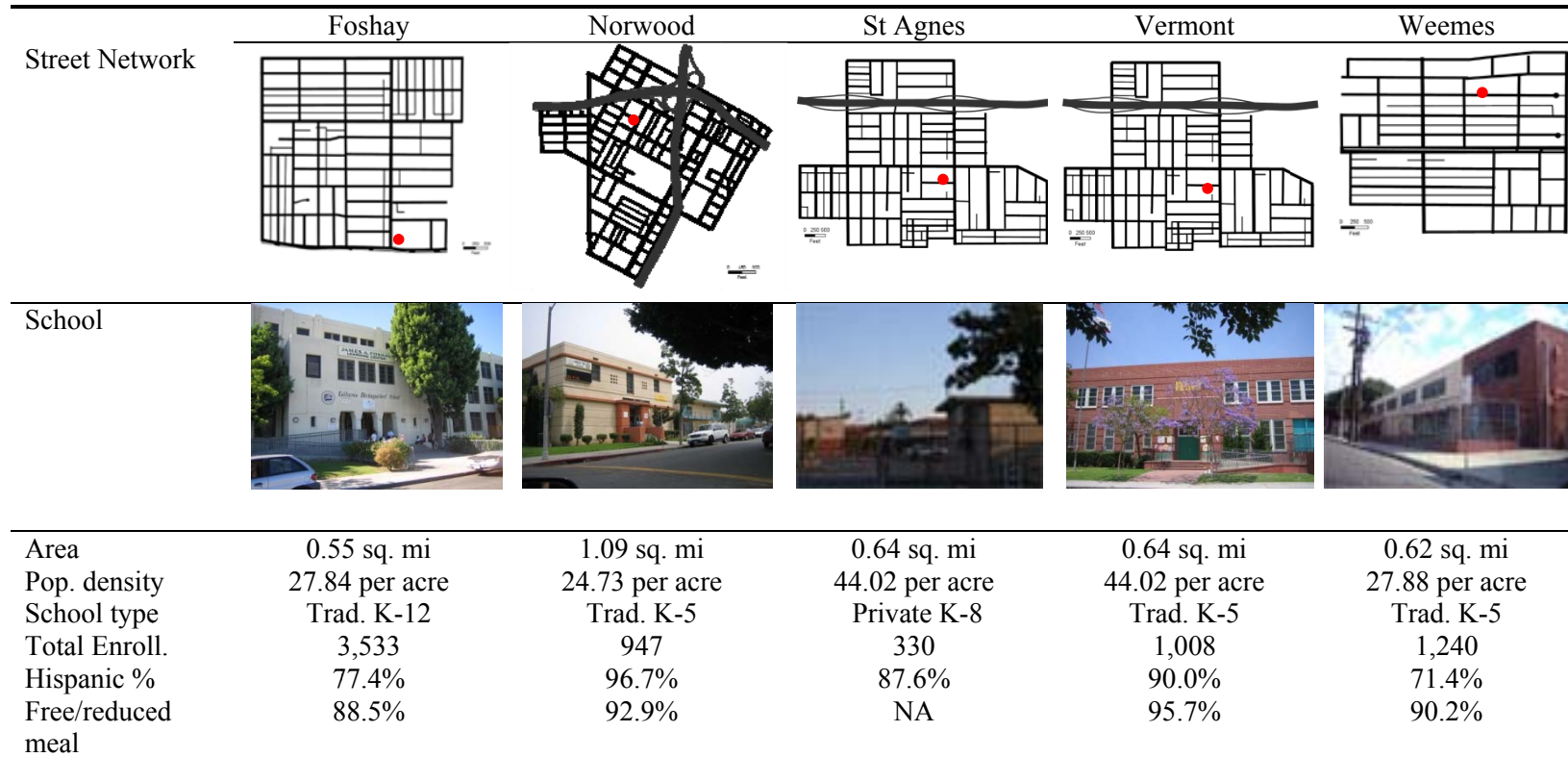
3.2. Subject and Recruitment

Through consultation with the school principals and in consideration of the availability of classroom teachers, a total of six 5th grade classrooms from the five study schools were identified, consisting of 176 child-parent pairs eligible from the study.⁴ To recruit children, written informed parental consent and the assent of the children were sought prior to the study according to the IRB guidelines. Parents of a total of 104 children (59% participation rate) agreed to have their children participate in the study by returning the signed forms. Reflecting a predominance of Hispanic student population in the study schools, close to 90% of the subjects were Hispanic origin. Participation was higher for girls (54%) than boys (46%). In addition to consenting to the participation of their child, some of the parents of the children also participated by completing and returning a survey questionnaire. Eighty-seven parent surveys were returned (49% response rate). Table 3.1 summarizes demographic and socio-economic characteristics of the children stratified by school.

The study also recruited Kid Watch program volunteers residing in the study communities. We asked the volunteers for their inputs about the issues pertaining to the safety of neighborhood children walking to school during organized Kid Watch events (i.e., summer picnic and training sessions). A total of 130 volunteers participated in the study by either partaking in a focus group or completing a survey questionnaire.

⁴ The study requested multiple class visits which made up of about 2.5 hours of in-class activities. Thus, the recruitment of classrooms was largely dependent upon the willingness of classroom teachers and class schedules. The Vermont school was most willing, which two classes volunteered to participate in the study.

Figure 3.2 Selected Sites and School Characteristics



Sources) 2000 US Census; Public school data: ed-source 2005-06 school report; private school data: National Catholic Educational Association (NCEA); Private School Universe Survey data for the 2003-2004 school year

Table 3.1 Child Demographic and Socioeconomic Characteristics (in percentage)[†]

Characteristics	Schools					Total n=87
	Foshay n=9	Norwood n=15	St. Agnes n=11	Vermont n=43	Weemes n=9	
Female (Child)	88.9	40.0	61.5	56.4	55.6	54.0
Living with both parents (or a parent and an unrelated adult)	66.7	53.4	81.8	67.5	66.7	66.7
Living with a single parent	33.3	33.3	18.2	27.9	33.3	28.7
missing	0.0	13.3	0.0	4.7	0.0	4.6
Siblings in a family (under age 16)	55.6	73.3	36.4	58.1	44.5	56.3
missing	0.0	20.0	36.4	32.6	33.3	27.6
Median household income less than \$15,000	44.4	26.7	45.5	30.2	11.1	31.0
Income between \$15,000-35,000	33.3	26.7	36.4	46.5	33.3	39.1
missing	11.1	13.3	0.0	9.3	44.4	12.6
Living without a car	0.0	13.3	9.1	4.7	22.2	8.0
missing	0.0	20.0	9.1	16.3	11.1	13.8
Parent born outside the United State ^{††}	22.2	80.0	54.5	69.8	44.4	62.1
missing	22.2	6.7	9.1	14.0	11.1	12.6
Parent completed high school or less ^{††}	44.4	66.7	54.6	72.1	77.7	73.4
missing	0.0	13.3	9.1	9.3	11.1	9.2
Lived in the neighborhood more than 10 years	80.0	66.6	100.0	75.8	88.9	71.0
missing	0.0	6.7	0.0	4.7	0.0	3.4

[†] This specific data was collected from the parent survey which represented 83.7% of the child participants

^{††} Information on the parent who completed the survey

3.3. Research Procedure and Data Collection

At the *individual* level, child-centered research techniques that employed written, verbal, and visual recording methods provided different yet complimentary information about children's insight into school travel and neighborhood environment. These methods presume that children are capable of forming their own view of the environment that each child actively experience, interpret, and negotiate in his or her "daily commerce" with their surroundings. The methods chosen for the study drew from a range of participatory methods used previously in other studies to elicit children's perspectives of 'lived' experience (see Greene & Hogan, 2005 for review). Specifically, the study sought to understand children's image of the neighborhood and their place feelings and values; examine children's travel pattern and experience while traveling to and from school; and determine neighborhood environmental quality associated with children's traveling preference. At the *household* level, we were able to examine parents' attitudes toward walking and concerns about their children's school travel through the parent survey. At the *neighborhood* level, parents as well as non-parents provided overall safety issues in the neighborhoods based on their experience in the program. Also, the characteristics of the built and social environment along children's school travel routes were documented.

Details on procedures and data elements at each level are outlined below.

(a) *Child-centered activities*

In each school we conducted three sessions with the children in their classrooms over a three weeks period. In the *first session* all children in a classroom received an introduction packet, including a study leaflet, parent informed consent form, child assent form, and parent questionnaire.⁵ A unique number marked in a small piece of colored paper was attached to each packet. This randomly assigned number served as an identifier, the child-parent pair receiving the same number. We instructed the child and parent participants to use the assigned number instead of their names in all the research materials. We distributed child-friendly leaflets, clearly written in simple language with graphic images, to explain the study and to inform children how they might participate in the different activities (see Figure 3.3). After a verbal introduction to the study, we explained the consenting documents to the children (i.e., what the forms were about, who would need to sign them where, and why). We then asked the children to take home the packet, discuss the study with their parents, and return the signed and completed forms to their teacher by the following session, indicating whether they and/or their parents agreed to participate in the study.

⁵ ~~Materials for parents were written~~ in English and then later translated into Spanish. Parents received both versions.

Figure 3.3 Child-friendly Leaflet to Introduce the Research



The *second session* began with collecting the signed consenting documents and completed parent questionnaires to identify study participants. All children who agreed to participate in the study with their parents' consents received an aerial map of the school neighborhood with all the street names clearly shown. We first asked them to locate their school and home on the map. The majority of the children were able to locate the two reference sites with street names. Assistance was given to those who had trouble reading the aerial view. We then asked the children to draw their normal route(s) to and from school with a colored pen, using arrows to mark directions. A total of 143 school travel routes (1.38 routes per child in average) were recorded, irrespective of mode of travel. We then asked them to identify places that they liked, disliked, or felt unsafe on the map with numeric numbers and write brief comments about each place on the back of the map describing why they liked, disliked, or felt unsafe about the places. The intent of this place mapping exercise was to elicit information about children's environmental perception and values in their respective neighborhoods. They were able to identify a total of 399 places (2.84 places per child in average). Overall, most frequently mentioned (67%) were places that children liked, followed by disliked (24%) and unsafe places

(9%). The project staff later visited the places and locations identified by the children and photographed them for group discussion.⁶

Following the place mapping exercise, each child received a travel/activity diary, developed to collect data on children's daily travel pattern and activities (see Figure 3.4).⁷ After a brief introduction on how to complete the diary, the children were asked to take home the diary, record what they did (not including activities at school), how they traveled, and with whom for 24-hour time over a three day period (2 weekdays and 1 weekend), and to return the completed diary to a researcher by the following session. Seventy five diaries were returned, which made a return rate of 72%. However, almost half of them were incomplete, either not recording for three days or including only activities occurred at schools during school hours (i.e., learning math, having lunch, chatting with friends, etc.). After eliminating incomplete sets, only 38 diaries (37%) remained valid for analysis, which raised a concern about the representativeness and generalizability of the collected data. Hence it was not included in the analysis of results. In retrospect, we believe that this part of exercise was not able to capture the children's full attention because we introduced it during the last minutes of the session, which was somewhat hurried to meet the given time frame. Furthermore, the children were usually eager to take a break after the drawing and mapping exercises.

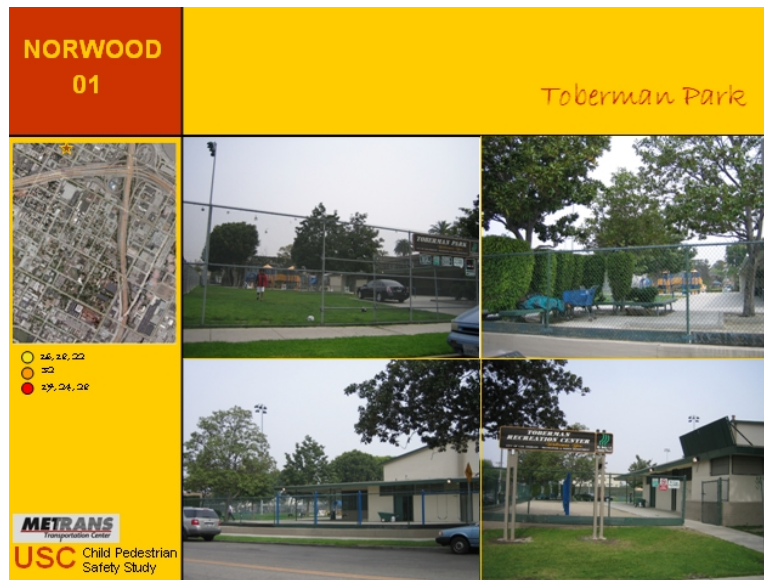
In the *third and last session*, the children first completed a survey questionnaire, developed to examine: (a) children's self report of their current travel mode to and from school; (b) experience of school journey (i.e., encountered barriers); (c) environmental risk perceptions en route to school; and (d) preference for mode of travel to and from school (see Appendix A). Questions included items comparable to those from the parent survey questionnaire as to examine dis(similarities) in the responses of the children and their parents. A total of 100 questionnaires were completed.⁸ Next, the photos of the child places collectively identified from the previous session were presented to the children in PowerPoint slides, each slide containing up to 4 photos with its location marked on the map and in the title (see Figure 3.5). An evaluation form made up of a bi-polar scale of safe-unsafe was distributed to the children and they were asked to select one after examining the photos in each slide. Children rated each slide containing up to four photographs based on either/both their experiences with the place or/and visual qualities of the scene.

⁶ Initially, the methodology was developed to distribute a disposable camera to each child so children can document their environments en route to and from school. However, it was rejected by the USC IRB on the basis of endangering children (i.e., possibility of causing unnecessary distractions and being exposed to social and traffic dangers, etc.).

⁷ The diary used in this study was adopted from the one used in the Children's Activities, Perceptions and Behaviour in the Local Environment (CAPABLE) project with a minor change in format. Developed by researchers from the University of London, the original version was found valuable in collecting rich data on children's travel and activity patterns (see Mackett, Lucas, Paskins, & Turbin, 2005).

⁸ For the activities in the third session, the study missed 4 children. They were either absent on the day of the session or in a different classroom for other lessons.

Figure 3.5 A Sample Slide from the Photo Evaluation Activity



After the photo evaluation activity, children were free to talk about their ideal neighborhood based on four categories-‘things they don’t have now but would like to have’, ‘things they would like to get rid of’, ‘things would make their neighborhood safer’, and ‘things would make their walking more enjoyable’. A list of items was noted on the board as children discussed the issue. This exercise was to understand children’s perceived ‘place dissonance’, created by undesirable land uses (“setting aggravation”) and the absence of desirable amenities and services (“setting deprivation”) (Banerjee & Baer, 1984). Although children spoke of things mostly for fun in the beginning (i.e., theme parks, amusement parks, game store, etc.), children’s list in the end reflected their capabilities as planners with civic mindedness. All the child participants received school supplies (i.e., a spiral notebook, highlighter, etc.) at the end of the third session as incentives for their participation.

(b) Parent survey

Parent questionnaires were distributed to all participating children to bring back home to their parents for completion (see Appendix B and C).⁹ Parents returned the complete questionnaires to school via their children. The aim of the parent survey was to elicit factors likely to influence parental decision about their child’s transportation to school, including socio-economic and demographic information. The questions included: (a) parents’ perception about neighborhood environments; (b) attitudes and concerns about

⁹ The questionnaire used in the study was adopted from a parent survey questionnaire developed for evaluating the California SR2S program by researchers at the University of California, Irvine. Slight modifications were made from the original questionnaire (see McMillan et al., 2006 for original version) and pilot tested for its validity.

children walking to or from school; (c) their own travel behavior; and (d) a level of social engagement. Overall, the Vermont parents were accounted for close to a half of the respondents with significantly high response rate (76.8%). Parents' responses represented more girls than boys (56.3% and 43.7%, respectively).

(c) Focus group interview

A research effort with the Kid Watch volunteers was initially planned as a focus group interview. A sign-up table was set up at the annual Kid Watch picnic held in a park on USC campus to recruit participants for a 30 minutes sit down interview in a classroom during the picnic event. Although many people signed up for an interview, bringing them to the interview room in the middle of festivity turned out somewhat problematic. Eight volunteers, some with their children, joined a structured focus group interview with nine open ended questions. The entire interview was conducted in Spanish by a graduate student assistant and later transcribed in English. Additional efforts were made four months later to reach the Kid Watch volunteers with a slight adjustment in method. After a brief presentation about the study, a survey questionnaire with open ended questions structured for the focus group interview was distributed to the volunteers during their training sessions. The questionnaire was prepared both in English and Spanish (see Appendix D and E). They were asked to return the completed questionnaire by the end of the session. A total of 122 questionnaires were returned.

(d) Built environment measure

Measurement of built environment characteristics comprised a variety of techniques, including analysis of geographic information system database, hard-copy maps, aerial photographs, and data collected from site visits. The urban context of the study school communities were first divided into a 0.25 x 0.25 mile grid and urban form measures were collected from the cells that contained children's school travel routes collected from child-centered activities. In total, 43 grid cells were measured on four broad themes expected to influence walking -- land use density and diversity, street pattern, pedestrian infrastructure, and traffic environment -- across the four school neighborhoods. Selected pedestrian infrastructure and design elements that required field observations were measured at the level of street segments along the school routes through windshield survey (see Appendix F for a list of observed items and coding methods). A total of 239 street segments were measured that ranged from 39 to 100 segments per school neighborhood. A team of two (each person observing one side of the segment), excluding the driver, recorded elements on 12 design and pedestrian environment quality items. The field survey took approximately 5 afternoon hours over two days.

3.4 Data Analysis

Data analysis comprised both quantitative and qualitative data, in association with children's current school travel mode. The quantifiable data were coded and analyzed, using the Statistical Package for the Social Sciences (SPSS) for Windows, version 13.0.

For the first part, descriptive statistics characterized the child participants and the proportions of children using each mode of transportation to and from school (i.e., private vehicle, walk or bike, or school bus). A number of bivariate correlational analysis techniques were conducted (i.e., Pearson's chi square, Spearman rank order correlation, and Point biserial correlation) to examine association between factors at each level and school travel mode. In addition, children's perceived risks associated with their school journeys and their needs and concerns for safe and active travel to school were analyzed and compared with their parents' perceptions. This part also includes the results of content analysis of focus group survey data that revealed the safety issues pervaded in the locality and social norms regarding parenting.

The second part largely consists of qualitative assessments of the materials collected from the child participants (i.e., place mapping, photo evaluation, and discussion), analyzing the collective image of neighborhood perceived by children. Where possible, mapping and place elements were also quantified to examine the relationship between children's perception of neighborhood environments and walking by similar bivariate correlational techniques used for the first part. The list of child generated environmental values and preferences were grouped into setting deprivation and aggravation that together measured the degree and intensity of perceived 'dissonance' of place for walking around the neighborhood and to school.

Chapter 4 : Attractors and Barriers to Active School Travel

A private vehicle was the most popular mode for the trip to school for the sample children. When asked about how they travel to school, 63% of the children reported that they are driven to school either alone or with other children. Approximately 32% of the children indicated traveling on foot or by bike most days for the trip to school. As expected, children walked or biked most days at a higher rate on the trip home (48%), while the rate of using a private vehicle decreased to 51%. This increased rate of walking is probably linked to the unavailability of parents to drive them home in mid-afternoon, often having conflicts with their work schedule. It might also be because children prefer to be driven in the morning to arrive on time for class.

The following presents information on factors associated with school travel, especially focusing on attractors and barriers to walking to or from school at the individual (child), household, and neighborhood level.

4.1 Child Characteristics

About 54% of the sample children perceived walking as safe, while 41% of them responded as unsafe. As expected, children who perceived walking as safe were more likely to actively travel to/from school (Table 4.1). However, the perceived safety of walking was found significantly related only to current mode of travel to school, [X^2 (1, N=95) =5.20, $p<.05$]. Especially, girls appeared to be more influenced by safety perception in walking than did boys. When controlling for gender, significantly more girls who perceived walking as safe walked to school (56% vs. 23%) than those who perceived unsafe, [X^2 (1, N=53) =5.84, $p<.05$].

Table 4.1 Normal Travel Mode to and from School by Safety Perception (in percentage)

Mode	Safety Perception						Total	
	Safe		Unsafe		Missing		T	F
	T	F	T	F	T	F	T	F
Active	44.4	57.4	22.0	39.0	40.0	20.0	35.0	48.0
Motorized	55.6	42.6	78.0	61.0	60.0	80.0	65.0	52.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

T=to school, F=from school

When asked about the things that made walking to or from school unsafe, the children most frequently selected ‘fast moving cars’ as the top risk factor, followed by ‘many strangers’ (Table 4.2). To these inner city children, social dangers, by and large, were perceived more as risks for walking than traffic dangers, ranked relatively low at the bottom. When examined between the two groups of children in terms of their current

school travel mode (active vs. passive), a similar trend was observed with a high level of agreement between the two groups regarding the rankings of perceived risk, $r_s(16) = .76$, $p < .01$.

Table 4.2 Child Perceived Risk Factors for Walking to/from School (in rank order)

Perceived risks	YES _o	Rank _o	Rank _a	Rank _p
Fast moving cars	68.8%	1	1	1
Many strangers	66.7%	2	2	1
Dogs without leash	62.5%	3	4	2
Homeless people	62.5%	3	2	1
Graffiti	58.3%	5	5	4
Bullies or gangs	52.1%	6	5	7
Tagger	52.1%	6	9	5
No crossing guard	49.9%	8	7	8
Difficult to cross a road	39.6%	9	14	8
Drug activities	39.6%	9	7	11
No stop light for pedestrians or bikers	33.3%	11	10	13
Empty street with no people	29.2%	12	15	10
No sidewalk or broken sidewalk	27.1%	13	11	14
No bike path or broken bike path	27.1%	13	15	11
Lights at intersections change before I can cross the street	27.1%	13	11	14
No crosswalk	27.1%	13	11	14

YES_o = overall percentage, *Rank_o* = overall ranking, *Rank_a* = ranking by children who are active travelers, *Rank_p* = ranking by children who are passive travelers

Children were also asked to select things that would make walking to school safer or encourage them to walk to school more. Although potential risks from ‘fast moving cars’ were identified as most dangerous for walking, ‘cleaner street’ was most frequently selected by over 69% of children as an attractor of walking, followed by ‘no graffiti’ and ‘less crime in my neighborhood’ (66% and 65%, respectively) (Table 4.3). Concerns related to crossing the street also ranked highly. Especially, children who are passive travelers identified ‘safe places to cross the road’ as the top attractor of walking, while the presence of stores that they can visit was selected least relevant for them to walk. A chi square analysis revealed that children who actively traveled to school were significantly more likely to perceive ‘less cars’ (67% vs. 40%) and ‘more stores’ (49% vs. 27%) en route to school as attractors of walking than those who were currently driven, [$\chi^2(1, N=97) = 6.64$ and 4.66 , $p < .01$ and $< .05$, respectively]. This suggests that land use mix appeared to be a stronger attractor for children who currently walked to school, but not much for those who did not. Nevertheless, there was a high level of agreement between the two groups of children regarding the rankings of perceived attractors of active commuting to school, $r_s(21) = .80$, $p < .01$.

Table 4.3 Things that Would Encourage Children to Walk to School

Perceived attractors	YES _o	Rank _o	Rank _a	Rank _p
Cleaner street	69.1%	1	1	2
No graffiti	66.0%	2	2	4
Less crime in my neighborhood	64.9%	3	3	2
Safe places to cross the road	61.9%	4	4	1
Cars moving slower	54.6%	5	7	6
Crossing lights giving more time to cross the street	54.6%	5	4	7
School crossing guard	53.6%	7	8	5
Push buttons to change crossing signs	49.5%	8	9	8
Less cars*	48.5%	9	4	15
No abandoned buildings or vacant lot	46.4%	10	9	12
More crossing light	45.4%	11	11	9
More children to walk with	41.2%	12	13	9
Better street lighting	41.2%	12	13	9
Wider sidewalk	39.2%	14	13	12
More Kid Watch volunteers	36.1%	15	18	14
More bike paths	35.1%	16	13	16
More stores that I can visit**	34.0%	17	11	21
Lighter school bog	33.0%	18	17	17
More shady street	32.0%	19	18	17
More streets with sidewalk	28.9%	20	20	17
More speed bumps	24.7%	21	21	20

YES_o = overall percentage, *Rank_o* = overall ranking, *Rank_a* = ranking by children who are active travelers, *Rank_p* = ranking by children who are passive travelers

* $p < .01$: based on a chi square test

** $p < .05$: based on a chi square test

4.2 Household Characteristics

Table 4.4 lists demographic and socio-economic characteristics that were found significantly related to a child's school travel mode from chi square tests. Significantly higher proportions of children living with a single parent and of children from household with annual income less than \$35,000 were found to travel actively both to and from school than those of counterparts. Children with no or one car in their household and children whose parents received a high school degree or less were also significantly associated with active travel only for the trip from school. In addition, the length of residence in the neighborhood was found to have a significant negative relationship with active travel only for the trip to school.¹⁰

¹⁰ This is counterintuitive to a general assumption that people feel more comfortable to navigate on foot in the environment that they are familiar with. It may due to other confounding factors that were not adjusted for on this bivariate analysis. Another possibility is that familiarity may not positively influence the propensity of one to walk in areas where safety and crime related concerns are prevalent, as was true for this case.

Table 4.4 Selected Household Characteristics and Active School Travel
(in percentage)

Characteristics	Total ^a	Active ^b		<i>p</i> -value	
		T	F	T	F
Parental availability					
Single parent	27.6	52.4	66.7	0.02	0.03
Both parents or (a parent and an unrelated adult)	72.4	23.6	38.2		
Annual household income ^c					
Less than \$35,000	79.5	39.7	55.2	0.02	0.00
\$35,000 and more	20.5	6.7	13.3		
Car availability					
0-1	30.0	42.9	71.4	0.08	0.01
2 or more	70.0	22.4	34.7		
Parent education					
High school or less	69.9	33.3	54.9	0.61	0.03
Some college or more	30.1	27.3	27.3		
Living in the neighborhood ^c					
Less than 1 year	7.7	83.3	66.7	0.01	0.54
1-5 years	20.5	37.5	43.8		
6 years and longer	71.8	23.2	42.9		

T= to school, F= from school

^a Row %; ^b Column %; ^c *p*-values based on Fisher's exact test

As expected, parents' attitudes and perceptions were found to significantly influence how their child traveled to or from school (Table 4.5).

Table 4.5 Agreement to the Attitude and Perceptual Statements
by School Travel Modes (in percentage)

Statements (either agree or strongly agree)	School Travel Mode			
	Active		Motorized	
	T	F	T	F
Walking/biking to or from school would be good for my child's health ^{*†}	95.0	90.6	71.8	66.7
My neighborhood is safe enough for children to walk/bike to or from school alone [*]	60.0	47.8	26.2	26.5
I worry about strangers or bullies in the neighborhood approaching my child if he or she is walking/biking alone	72.2	79.3	75.5	71.1
The school is close enough for my child to walk or bike ^{*††}	72.2	73.3	40.9	28.1
My child is prepared or old enough to walk or bike to school [†]	30.0	46.4	34.1	22.2
Driving my child to or from school is more convenient or fits my schedule better ^{**††}	14.3	38.5	70.2	71.4
My child likes to walk or bike to/from school ^{*††}	63.2	65.5	31.8	20.6

T= to school, F= from school

^{*} *p*<.05: based on a chi square test to school; ^{**} *p*<.01: based on a chi square test to school

[†] *p*<.05: based on a chi square test from school; ^{††} *p*<.01: based on a chi square test from school

For example, children whose parents believed that walking was good for their child's health; their neighborhood was safe for children to walk; school was close enough; and their child would enjoy walking to school were significantly more likely to walk to or from school than those whose parents did not. Children whose parents perceived that driving was convenient to travel to school were more likely to be driven than those whose parents did not. Further, it appears that when parents' attitudes come into play, they tend to assign different values for the trip to and from school. For the trip to school, the convenience of driving was the strongest factor ($\phi=.48$), followed by perceived safety in determining children's travel mode ($\phi=.31$). For the trip from school, the association with school travel mode was the strongest for parents' belief about their child's preference for walking ($\phi=.46$), followed by their perceived school distance ($\phi=.45$).

It is noted that parents' perceptions of their neighborhood environments appeared more negative than those of their children. For example, 54% of children reported that their neighborhood was safe for walking, whereas only 27% of parents agreed that their neighborhood was safe enough for their child to walk. Parents were also more concerned about traffic related barriers than children would normally encounter en route to school. When parents' responses to potential traffic barriers that their child would meet while walking to school were compared with those reported by children, higher rates were reported by parents on the all traffic barriers, except in the case of sidewalk presence (Table 4.6). Further, no significant agreements were found between the parent and child pair across all items, except on encountering 'fast moving car' (Cohen's $k=0.32$, $p<.05$). This suggests that parents might not have correct information about their child's travel environment.

Table 4.6 Parent Perceived vs. Child Encountered Traffic Barriers (in percentage)



Traffic barriers	Parents	Children
	YES	YES
Cross a road with more than 4 lanes of traffic	35.8	26.6
Walk through unsafe areas or by buildings or activities that are undesirable (i.e., underpass, dark alley, parking lot or vacant lot, etc.)	33.9	18.8
Cross a road where there is no stop sign or street signals	32.2	21.3
Walk on the road or cross a road where cars are moving fast	22.0	19.1
Walk on the road because there is no sidewalk	1.7	7.4

Parents' own walking behaviors were also found to influence how their child traveled to or from school. A higher proportion of children whose parents walked more than a few times a week walked to (42% vs. 21%) and from school (63% vs. 26%) than those whose parents did not normally walk, [$\chi^2(1, N=83) = 3.89$, $p<.05$ and $\chi^2(1, N=83) = 11.63$, $p<.01$, respectively].

4.3 Neighborhood Characteristics




Each child's travel distance between home and school was measured from actual routes he or she normally takes drawn on an aerial view map. Figure 4.1 summarizes the selected characteristics of the children's travel routes. It should be noted that children walked or biked much longer distance than a quarter mile, normally considered as a walking distance appropriate for children. On average, children walked nearly 0.48 miles in network distance for the trip to school and those who were driven traveled about 0.61 miles for this trip. For the trip from school, children traveled longer distance from school on foot (0.54 miles).

Figure 4.1 Selected Characteristics of Children's School Travel Routes (in average)

School	Travel Routes	Travel distance		Walked route	
		Walked (mi.)	Driven (mi.)	Arterial (%)	Crossing (times)
Foshay (n=8)		T =0.81 F =0.81	T =0.74 F =0.76	T =14.3 F =14.3	T =3.00 F =3.00
Norwood (n=29)		T =0.53 F =0.56	T =0.56 F =0.57	T =19.2 F =22.9	T =4.46 F =4.61

T=to school, F=from school

Figure 4.1 Continued

School	Travel Routes	Travel distance		Walked route	
		Walked	Driven	Arterial (%)	Crossing (times)
St. Agnes (n=13)		T =0.40 F =0.39	T =0.65 F =0.48	T =78.0 F =86.0	T =5.00 F =5.00
Vermont (n=39)		T =0.40 F =0.52	T =0.58 F =0.60	T =31.7 F =33.4	T =3.50 F =4.27
Weemes (n=9)		T =0.86 F =0.76	T =0.63 F =0.61	T =30.0 F =52.5	T =8.00 F =8.00
Total		T =0.48 F =0.54	T =0.61 F =0.59	T =32.6 F =34.9	T =4.17 F =4.57

T=to school, F=from school

The proportion of children actively traveled to school decreased as travel distance was longer than a half mile (Table 4.7). Yet, short distance did not guarantee that the trip to school would be on foot. Nearly 43% of children living within a quarter mile and over

56% of those living a quarter mile to a half mile from school were driven to school. This trend occurred for the trip from school as well.

Table 4.7 Travel Mode to and from School by Travel Distance (in percentage)

	<¼ mi.		¼-½ mi.		½ -1 mi.		> 1 mi.	
	T	F	T	F	T	F	T	F
Active	42.9	33.3	43.2	54.2	28.6	54.1	12.5	40.0
Motorized	42.9	50.0	56.8	45.8	71.4	45.9	87.5	60.0
missing	14.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

T=to school, F=from school

Interestingly, when children walked to or from school, they often did not take the shortest route between home and school, unlike previous studies normally presume (e.g., Timperio et al., 2006). Figure 4.2 presents an example of the route drawn by a boy who preferred to walk about 0.81 miles which was much longer than the shortest route between his home and the school in network distance (0.45 miles).

Figure 4.2 An example of the roundabout travel route



The line with arrow (→) was drawn by a child who preferred to take rather indirect route to walk to and from school. The dotted line (---) indicates the shortest route between his home and school, drawn by the author.

Presumably there are various reasons: to avoid heavy trafficked roads or unsafe area, to walk with friends on the way to or from school, to experience more pleasant walking environment, and the like. This suggests that the notion of utility maximization may not adequately explain the complexity of decision associated with not only walking but also walking routes.

Children’s travel routes were further assessed through the examination of objective measures (see Appendix F) and through field observation (see Appendix G). Table 4.8 summarizes the objective characteristics of the routes taken by children to travel to or from school, categorized by the land use, street pattern, traffic environments, pedestrian features, aesthetics, and social milieu.

Table 4.8 Objective Built and Social Environmental Characteristics of Children’s School Travel Routes ^a

	Mean	Minimum	Maximum
<i>Land use</i>			
Net residential density	20.03	2.06	40.88
Land use mix	0.44	0.05	0.67
Retail floor ratio	0.47	0.05	0.79
<i>Street pattern</i>			
Average block size	5.86	1.01	9.26
Street connectivity	94.44	10.94	136.25
% street area*	26.68	4.27	34.29
<i>Traffic environments</i>			
Traffic capacity	2.72	0.38	3.52
Traffic speed	29.13	4.31	38.38
Transit stop density	3.79	0.17	9.14
<i>Pedestrian features</i>			
Streetlight coverage	35.09	4.42	50.40
% street segments with sidewalk width over 5ft	58.58	0.00	84.35
% street segments with pedestrian amenity	22.40	0.00	66.65
% street segments with well maintained sidewalk [†]	69.72	13.96	97.90
% street segments with no sidewalk obstruction	85.75	10.21	97.80
% street segments with natural surveillance	56.92	10.83	83.40
<i>Aesthetics</i>			
% street segments with no litter	89.12	8.54	100.00
% street segments with no abandoned or vacant lot	83.18	16.67	100.00
% street segments with well maintained buildings	91.88	16.67	100.00
<i>Social milieu</i>			
Crime density* ^{††}	14.88	1.92	23.33
Kid Watch site density [†]	30.82	6.08	61.00

^a Values summarized for the travel routes of 102 children, measured either at the 0.25 x 0.25 mi. grid cell or at the street segment level that contained a child’s travel route; Average number of grid cells assessed = 4.01 (min =1, max.= 8) per individual route; Average number of street segments assessed=14.02 (min.=2, max.=33) per individual route

**p*<.05: point-biserial correlation with travel mode to school

[†] *p*<.05: point-biserial correlation with travel mode from school

^{††} *p*<.01: point-biserial correlation with travel mode from school

Correlational analysis showed that none of the land use, traffic environment, and aesthetics variables was significantly associated with a child's school travel mode to or from school. For the trip to school, only percentage street area ($r_{pb} = -.21$) and crime density ($r_{pb} = -.22$) were inversely correlated with active commuting to school, both at a low level. For the trip from school, the number of Kid Watch sites was positively associated with active commuting from school ($r_{pb} = .21$), whereas sidewalk maintenance ($r_{pb} = -.21$) and crime density ($r_{pb} = -.32$) were inversely associated with children walking or biking for this trip. The negative association between sidewalk maintenance and walking from school is counterintuitive to a general assumption that well maintained sidewalk conditions can create a more amenable pedestrian environment with comforts and safety.

The density of crime along the child's travel route was the only factor found to be significantly inversely associated with both walking to and from school, which was also observed in the concerns raised by the Kid Watch volunteers from focus group discussion and survey. When asked about major safety issues in the neighborhood, crime and social incivility predominated the responses from the volunteers (Table 4.9). The issues related to gangs and drug activities were most frequently mentioned, particularly during school commuting hours.

Table 4.9 Safety Issues in the Study Areas Raised by the Kid Watch volunteers

	Safety issues	Frequency
Personal safety	Gangs; drug users and dealers; drinking; vandalism; robbery; street fight; child molesters; kidnapping; bad people; lack of security in the street and around the school; smoking; tagging; car break-ins; crime; racism; lack of police monitoring	81
Traffic safety	No light at crosswalk; traffic; fast moving cars; road crossing;	23
Behavioral	Fast driving; no respect for traffic (child); no respect for stop signs (drivers); irresponsible parenting (parents)	20

Although less prevalent, dangers associated with crossing the road was most recognized regarding traffic safety in the neighborhood. In addition, concerns directed toward behavioral aspects of drivers, children, or parents were often observed. Especially, social norms about parenting in general and escorting children in particular were expressed in the form of blaming the parents of children who were seen walking alone to or from school. One wrote;

...there are mothers that should not send their small children to school alone. If they work, they should ask a neighbor to accompany their kid to school. However, I have asked some of the kids I have seen walking alone and they have told me that their mothers are home in the house.

Various improvement of social environment was most widely suggested when responses to a question about things to enhance the safety of children walking to or from school in the neighborhood were categorized into individual (child), household, neighborhood (built and social), and institutional recommendations (Table 4.10). Particularly, more police patrolling and adult monitoring or escorting were most frequently mentioned. Along with peer pressures for parents to escort their child as a sign of responsible parenting, behavioral or spatial restriction was appeared to be given an added importance for children in these neighborhoods.

Table 4.10 Things to Improve the Safety of Children Walking to/from School in the Neighborhood

	Recommendations from the Kid Watch volunteers	Frequency
Child	Be alert; no running or be careful when crossing the street; no talking with strangers; no playing on the street	24
Household	More responsible parenting; parent education; communicating with children; more parent involvement; education of children	19
Built/traffic environment	Streetlight; crossing light; stop signs at crossing; speed bump; more sidewalk; more marked crossing; cleaner neighborhood; no double parking; less traffic; valet drop off; crossing guard	19
Social milieu	Police patrolling; adult monitoring; more security/monitoring of the street; adult/parent escorting; more people helping/watching kids; no graffiti, gangs, drunken people, dangerous dogs, or vendors; know your neighborhood kids;	97
Institutional	More programs for children; more community meeting; more volunteers at school	4

4.4 Summary of the Chapter

Bivariate correlational analysis confirmed that children’s school travel was influenced by the layers of factors within the context of children, family, and neighborhood.

Particularly, the majority of parental attitudinal and perceptual factors were significantly associated with how children traveled to and from school, which appeared to justify focusing attentions on parental values that the majority of research on children’s travel had continued to rely on. However, when parental perceptions were compared with those of their child, they did not appear to be in concordance. Furthermore, children demonstrated a high level of competence in expressing their knowledge or concerns about environmental risks en route to school. It suggests that when given the chance, children can provide insightful information about things that would make their walking to

school safe or enjoyable or about opportunity sets that would enable them to achieve what they value (walking or not walking). For this reason, the next chapter entirely devoted to children's perceptions of their neighborhood as they related to school travel, particularly for walking trips.

Chapter 5 : Children’s Perception of Walkable Environments

This chapter provides information about children’s perception of their neighborhood environment that may promote or hinder children from walking. A range of methods with children allowed constructing a composite image of their neighborhood environments from different angles- affective and behavioral image.

5.1 Affective image

Place mapping activities captured children’s positive, negative, or risk conscious emotional responses toward their neighborhood. Each child identified approximately four places on average and a total of 177 different places were distributed along but not limited to children’s current travel routes. Figure 5.1 presents children’s composite image of affective environments of the five schools.

Places that children identified as liked, disliked, or dangerous were sorted into the following six categories in terms of functional characteristics: residential area or street (including freeway, travel route, intersection, alley and underpass); shops or restaurants; park or recreational facilities; non-recreational community facilities; home (including homes of friends or relatives); and other (i.e., construction site, vacant lot, abandoned building, parents’ work place, etc.).

(a) Places children like

Children mentioned commercial spaces most often as their favorite places (36%), including a variety of stores and restaurants ranging from a small food market near their homes to a large chain grocery store and a shopping center in the neighborhoods (Figure 5.2). This suggests an increasing role of commercial spaces as a spatial anchor, more frequently selected than parks and recreational facilities (14%) commonly believed to be important child destinations. It is in part due to actual presence or absence of these functional spaces.

Figure 5.2 Characterization of places children like by functional categories

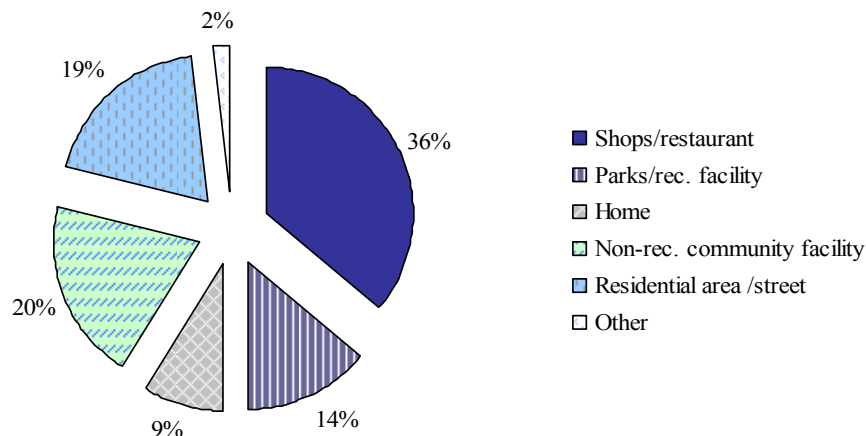


Figure 5.1 Composite Images of Affective Environments

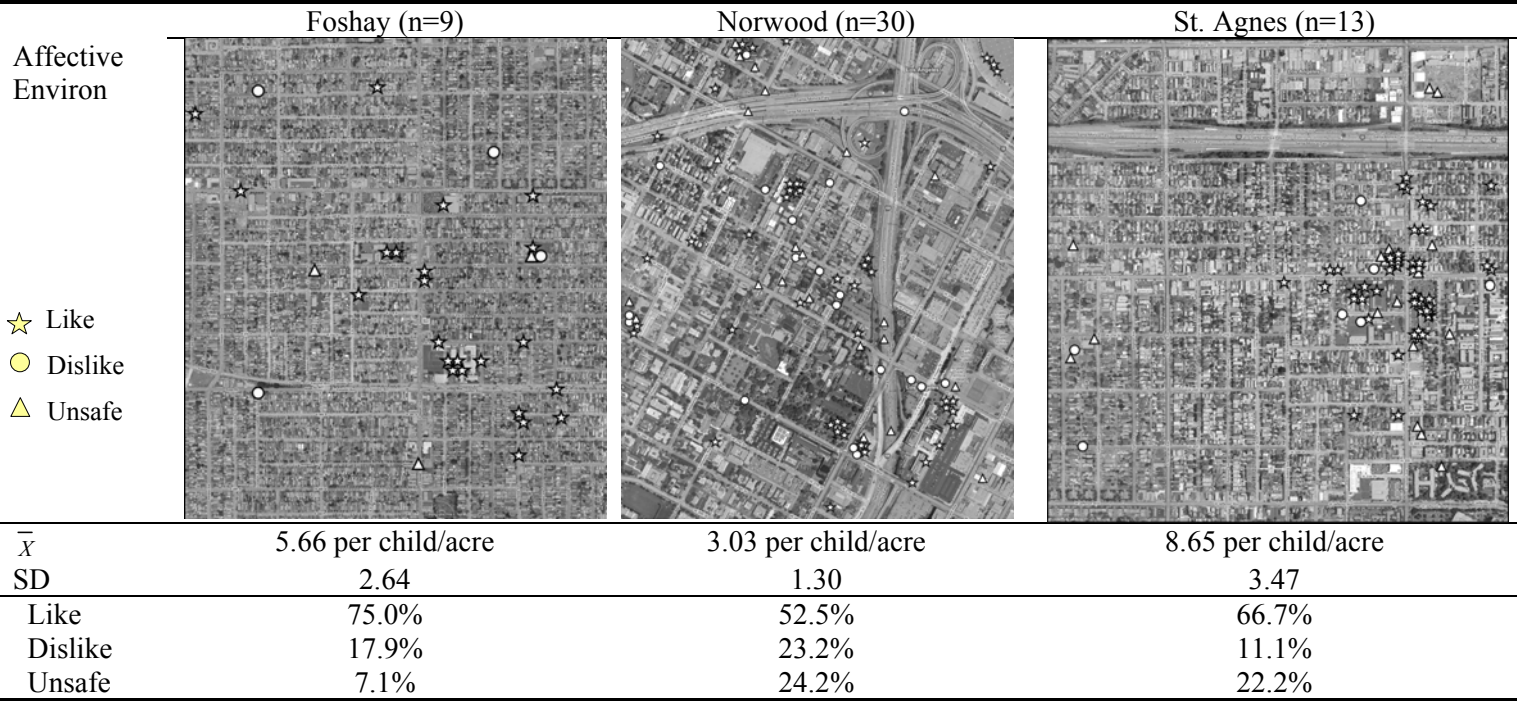
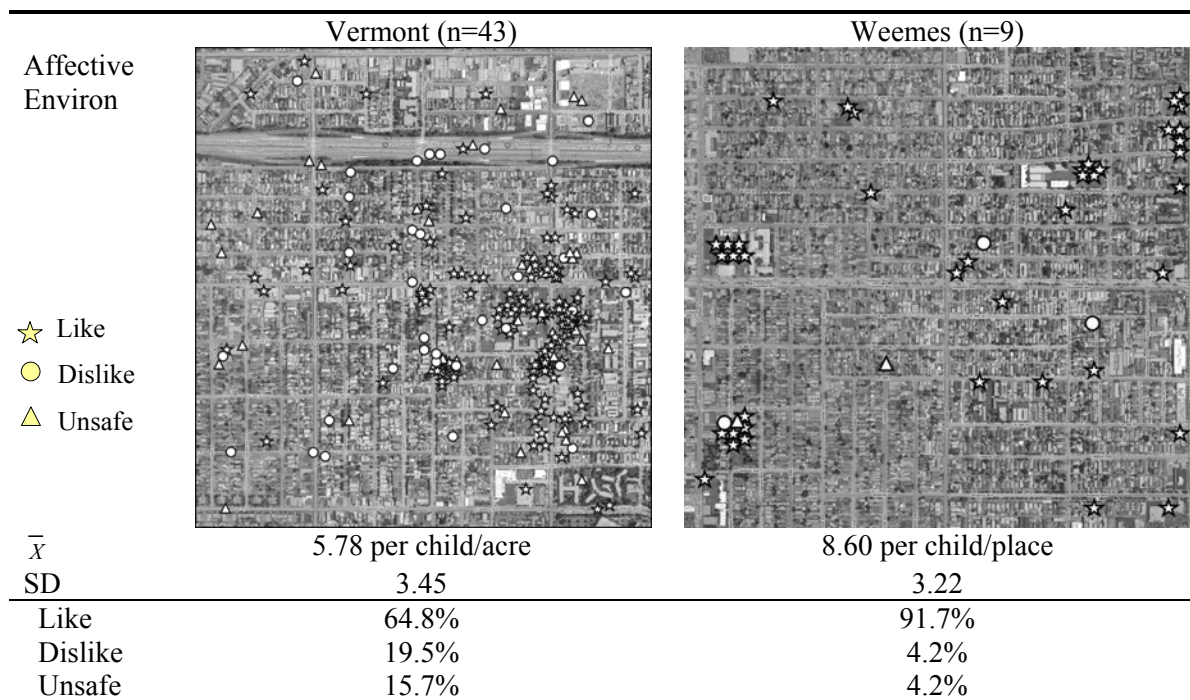


Figure 5.1 Continued



However, children’s reasons provided for liking these places were also closely related to the quality of places. Children most frequently mentioned opportunities for various physical, social, and commercial activities (70%), followed by safety reasons (22%). It is noticeable that commercial places (mostly food related) seemed to satisfy the two main qualities that children valued. Aside from enjoying foods and various things to buy or even look at, children also enjoyed the presence of other people and occasional chance to bump into friends. These places seemed to provide children with a sense of security as they became familiar with places and people, developing weak ties with the locality. Children felt safe with the presence of formal surveillance as well:

I like because there’s food. Safe because I feel protected because there’s people I see there
I like it and feel safe because lots of people know me
I feel safe because it is watched by camera

(b) Place children dislike or felt unsafe

Residential areas /streets were consistently mentioned most often as disliked (76%) or unsafe (74%) places by children, followed by parks/rec, facility (10% or 14%, respectively) (Figure 5.3 and 5.4). A main group of reasons provided why a place was disliked was mostly associated with safety issue (73%) and to a lesser extent, with visual and auditory qualities such as noise, dirty street, and ugly houses (22%).

Figure 5.3 Characterization of places children dislike by functional categories

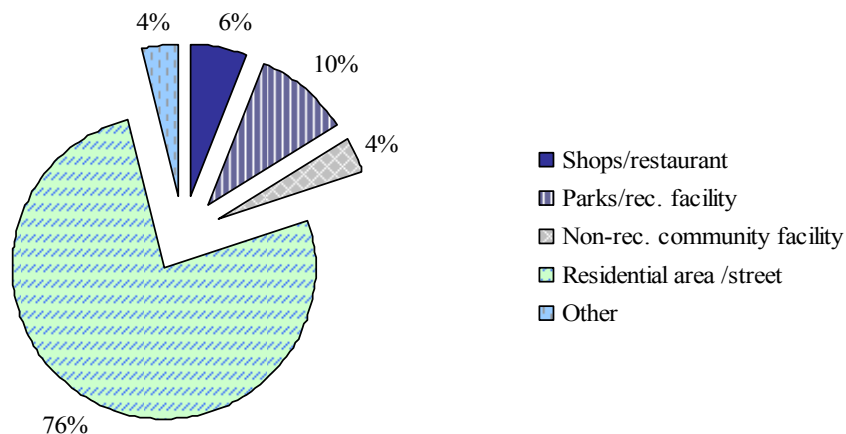
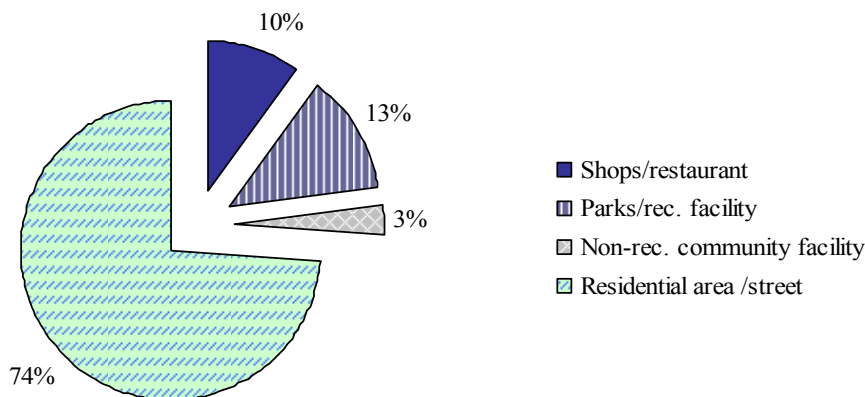


Figure 5.4 Characterization of places children felt unsafe by functional categories



When reasons why children felt unsafe were further examined, signs of social incivilities or social dangers by far predominated over perceived traffic dangers. Table 5.1 below summarizes children’s risk perceptions categorized by the characteristics of places.

Table 5.1 Unsafe Areas and Safety Concerns Raised by Children

	Place	Safety concerns	Frequency
Personal Safety	Residential areas/ Streets	Gangs; strangers; homeless; taggers; drunken people; skateboarders; shooting; murder; drive-by; rape; scary house; gunshot; stray dogs; dirty and dark; beggars; police presence/arrest	59
	Parks/rec. facilities	Gangs; homeless; killing; bugs	16
	Shops/restaurants	Gangs; strangers; homeless people	12
	Non rec. community facilities	Homeless; strangers	4
	Other (abandoned house, construction site)	Dogs; rape; gangs	3
Road Safety	Local streets/ intersections	Fast moving cars; reckless driving; traffic; car crash: short crossing time	8
	Freeways	Car crash; reckless driving	6

A majority of personal safety concerns were associated with gang related activities. Children were very much aware of places where gangs frequently appeared or signaled the occurrence of gang activities such as graffiti:

Unsafe because sometimes there are gangsters drinking and smoking and there is also tagging on the floor and the walls

Children were also able to identify crime hot spots in the neighborhood where violent crimes were known to happen or where they even directly witnessed:

I don't like Adams Street because there's a lot of violence, brutality, gangsters, drive by, and murders
I don't like this place because there is gun shooting at night and police cars
I don't like these places because I saw a dead body

In some places children were torn between opportunities that places would afford to them and safety concerns. Particularly, children mentioned their daily struggles in some of the neighborhood parks where their enjoyment of places was threatened by the presence of risk elements, ranging from dangerous objects to gang activities:

Like because kids play (but) unsafe because many trash, glass rocks, chips in sand
I don't feel safe on Toberman park because there are a lot of gangs

Streets were also seen as dangerous mainly due to fast moving cars that didn't stop for pedestrians and the possibility of getting involved in a car accident:

I dislike that place because the cars always go fast
Sometimes cars don't stop, and there might be an accident

All the child identified places were later visited and photographed by the project group. A total of six sets of PowerPoint slides were thus created with different sets of neighborhood photos for six participating classes. Table 5.2 and Table 5.3 each present the results of photo reaction exercises, which children evaluated the scenes based on a dichotomous scale of safe/unsafe. The places that children perceived as the safest were all linked to their formal functions (i.e., school, church, library, grocery store, or shopping mall) across the classrooms. Freeway underpass and dark alleys were perceived the least safe, along with the places where children complained about a bulldog barking whenever they walked nearby.

5.2 Behavioral image

Group discussions with children further revealed the environment that children valued or preferred. A good fit between environmental setting and users' expectation and activities is an important characteristic of a good city, among others (Lynch, 1981). Unmet expectations often result in frustration, uncertainty, and even fear. Children in inner city are however likely to suffer from 'place dissonance', that may limit opportunities for the fullest development of children (Banerjee & Baer, 1984). Children's environmental values, in this sense, are examined as to the extent that the neighborhood meets children's expectations. It was measured by the presence of things that children would want to get rid of and the absence of things that they would want to have in the neighborhood.

Table 5.2 The Safest Places by Classroom





















	Foshay	Norwood	St Agnes	Vermont1	Vermont2	Weemes
Safe	 <i>Rec. center</i>	 <i>Park/college</i>	 <i>Church</i>	 <i>Church</i>	 <i>Church</i>	 <i>School</i>
	 <i>Church</i>	 <i>Church</i>	 <i>Grocery store</i>			 <i>Public library</i>
	 <i>Residential area</i>		 <i>School</i>			 <i>Commercial center</i>
YES=	88.9%	93.1%	80.0%	100.0%	95.7%	93.1%

Table 5.3 The Least Safe Places by Classroom

	Foshay	Norwood	St Agnes	Vermont1	Vermont2	Weemes
Unsafe	 <i>House with a barking dog</i>	 <i>Area with a stray dog</i>	 <i>Alley</i>	 <i>Alley</i>	 <i>Alley</i>	 <i>Area associated with crime</i>
		 <i>Fwy underpass</i>				
YES=	88.9%	82.8%	82.7%	93.7%	95.7%	88.9%

A list of child generated items was sorted into four categories-environmental items (including urban form and design, and natural and physical amenities), commercial facilities, social milieu, and community facilities. Table 5.4 summarizes the result of group discussions.

The things that children wanted to have in their neighborhoods were relatively evenly distributed between the four categories. The things that children didn't want to have in their neighborhoods, however, were largely fallen into environmental items (47%) and social milieu (40%). The list of items exemplifies a perceived gap between what children want or do not want and the existing provision or condition. The things that children didn't want to have in their neighborhoods, however, were largely fallen into environmental items (47%) and social milieu (40%). The list of items exemplifies a perceived gap between what children want or do not want and the existing provision or condition.

5.3 Summary of the Chapter

This chapter attempted to explore ways to understand children's perceptual image of the local environments that would be enjoyable and friendly to child pedestrians based on their lived experiences and values. The results showed that children had an acute sense of place-based knowledge about community safety issues. Inner city minority children in particular reported a high level of safety hazards in their neighborhoods and along their school travel routes, which were more associated with the quality of social milieu than physical environment. Any policy efforts to promote active travel thus should address children's concerns about crime, drug, and gang related issues, along with traffic, to create environments in which children feel confident to walk. They also had various ideas to make their neighborhood safer and walking more enjoyable, ranged across recommendations toward improvements in the built and social environments and in the community facilities, which one might say, quite resembled adult planners' list. However, the meanings attached to the list of children may not be simply assumed or generalized.

Table 5.4 Children Identified Place Dissonance

	Setting Deprivation “things to have”	Setting Aggravation “things to get rid of”
Environ. Items: N _d =31 (26%)/ N _a =25 (47%)	Safer and cleaner street*** Wider/better/clean sidewalk*** Street lights (brighter)* Stop, road, or traffic signs*** Slower light change** More freeways; More parking Speed bump*; More bike parks** Bike rack**; More bike lanes* Bus (free bus pass)** School buses**; Crosswalk** Caution signs (for crossing streets)* More benches**; More trees** More shade**; Open space More gardens**; Water fountain** Art on the wall**; Wet places Better civilized places Relaxing places; Car Alarms* More places to look at**; More houses** Fun places on the way**; Cleaner house More construction (to fix)	Dirty street Traffic/ less traffic around malls/ at intersection*** Fast driving* Cars that don't stop at red lights Drunken drive; Less cars** Freeway entrances; Freeways Unsafe streets; Broken streets Alleys; Abandoned building/house Vacant land/lot Apartment Less pollution/air** Less second-hand smoking** Graffiti***; Junk yards Junk/garbage/trash Sprinklers Trees (obstructing views) Broken trees; Abandoned cars No tagging*; No littering**
Commercial Facilities: N _d =32(26%)/ N _a =7 (13%)	Burger king, Jack in the box Chuckee cheese, Home town buffet Restaurant, Trader Joe's Ice cream truck or vendor Hot dog stand; Candy shop** Vending machine/healthy foods** Healthier breakfast while you are walking to school** Fabric store, Clothing store Circuit city, Starbucks, Wall mart Mall, Comic book store Toy store/game store; Theme park/amusement park; (Movie)theater** Casino, Video arcade More school supply store Tattoo parole, Beauty salon Jewelry store, Pet store More retail stores***; Fortune teller; Gas station* Cheaper things	Bars Liquor store** Unhealthy foods (fast-food, junk food, vendors) Less taco places Donut cars Less gun stores** Ice cream truck that sell drugs

* indicates items valued as things that would make the neighborhoods safer

**indicates items valued as things that would make walking to school more enjoyable

***indicates items valued for both safety and enjoyment of walking

Table 5.4 Continued

	Setting Deprivation	Setting Aggravation
Community Facilities:	After school program* Daycare*; More schools/college Library (safer and closer)* Museums (science center)** Church*; Religious altars* More temples; Donation center Homeless shelter; Animal shelter* More community centers** Cultural center; More gyms** More sports playing fields (soccer field with grass/baseball field)** More playhouses for kids Safer playground (at school)** More parks/bigger parks** Skateboard park; Skating rinks Community garden; Dance complex Fire department*; Post office Police station(closer); Highway patrol Clinic*; Kids hospital (more doctors) Public bathrooms; Zoo; Fairs	NA
N _d =31(26%)/ N _a =0(0%)		
Social Milieu:	More Kid Watch*** More people watching you when you walk (outside protect)** More adults on the street* More parents supervision** More new people** Crossing guards***, Safe drivers** Safer people; More nice people More English/Spanish speakers More friends (going to friend's house)**; Community meetings* Walking with friends (or parents)** Vanpools for after school activities* More fire fighters* More cops (who care)*** Police giving tickets to bad drivers* Public safety*; Military*; Security guards* ; More surveillance cameras* Better police dogs*; Guard dogs* Good animals (that don't attack)* Dogs to walk with**; More animals More people who pick up trash**	Crazy people nasty people Strangers Bullies** No killers* Child molesters Alcoholics; drunken people** Robbers; Homeless/ bums** Less old drivers* Skate boarders Less people doing graffiti** Gangs***; Guns, shooting Less gang activities** Drugs (dealers, activities) Crime No auto break-ins* Drive-by; Car racing Stray dogs (bull dongs; pit bulls) Less war*
N _d =27(22%)/ N _a =21(40%)		
TOTAL	N _d = 121	N _a =53

Chapter 6 : Conclusions and Recommendations

The purpose of and motivation for this research was to provide much needed information about children's travel, particularly for safe walking trips, by bringing children into play within the spheres of ecological transactions between parents and the environment. The results from correlational analyses lead to several observations;

- The results suggest that the trip to school and trip from school are two distinct events and appear to be associated with different factors and values placed on each trip. For example, children whose parents perceived their neighborhood as safe for children to walk and did not agree on the convenience of driving were more likely to walk to school. Children's perceived safety was also associated only with this trip. In contrast, children whose parents agreed on the perceived closeness of school from home, their child's preference for walking (which more children indeed preferred to walk for this trip), and maturity of their child to walk alone were more likely to walk from school. Overall, the trip to school was more correlated with perceived safety and efficiency, whereas parents appeared to place more importance on their child's competence, preference, and social supports available in the neighborhood for the trip from school. This may be the results of attitudinal adjustment as parents become less available for the trip from school. While existing research generally views school travel as a single event, this result suggests developing strategies to target each trip separately.
- Children appear to walk longer distance than normally assumed quarter mile distance as an appropriate walkable length for children. Furthermore, children tend to take more roundabout routes than the shortest route between home and school, often resulted in walking much longer distance for the school journey. Thus the majority of research that largely uses an airline distance or the shortest network distance as a proxy measure of travel distance or travel route may not reflect children's actual travel distance and route condition. This study demonstrated the use of aerial map as an effective tool in collecting children's actual school travel routes.
- Parents' perception of probable risks for their children does not appear to well reflect barriers that children actually encountered as well as their perception of risks. Parents' view of their neighborhood tended to be more negative than their child's perception, and they were generally more concerned about traffic related barriers compared to children's reports of actually encountering them en route to school. Therefore, policy measures aim to improve walking conditions for children based on parents' perception may not appeal to children in the same way as adult parents. For example, while parents' sense of safety may be increased by the completion of sidewalk network or installment of additional traffic signals, they may then permit their child to walk to or from school. Per the evaluation of SR2S projects (see Boarnet, Anderson, Day, McMillan, & Alfonzo, 2005),

children's sense of safety or comfort may not be said to increase as same as their parents.

- Both barriers to and attractors of walking were more closely related to social milieu for the child participants in this inner city area than traffic or other environmental features, which children shared similar views regardless of their current mode to and from school. Children had an acute sense of place based knowledge about the safety issues in their neighborhoods that residential streets or areas were identified most dangerous for the reasons mainly associated with gang related activities, drugs, crimes, shooting or murder of which some of the children reported to directly witness such incidences. When given a chance, children are more than capable of forming and expressing their thoughts about the issues pertaining to the planning and design of their everyday surroundings.
- In this locality with a high level of concerns for personal safety, the presence of children being outside alone or walking alone to or from school were viewed as a sign of parental neglect and simply considered as placing children in unnecessary danger. Children were constantly advised not to play on the street at all. In this vein, commercial places were most liked by children and appeared to dominate children's mental image as strong landmarks. In addition to enjoying being consumers, children frequently cited their likeness of such places for a sense of security by being in the presence of informal and formal surveillance and for opportunities for meeting people or bumping into friends.
- Conversely, planners or policymakers' most typical responses towards children's environmental needs such as parks or playgrounds received significantly less favorable votes and are less likely to be recognized as landmarks by children. Many children expressed frustrations with such child-designated places as they were often threatened and felt unsafe by the presence of social disorders, while they longed for play opportunities. Any policy responses aimed to promote walking among children thus should be responsive to children's concerns about gangs, drugs, and crime as they pertain to how children experience and perceive their local environments in low income inner city areas.

The relatively small sample size in this research may influence the level of significance in observed relationships. Although the research did not set to test the proposed model or to conduct a rigorous quantitative analysis, the sample size did not allow examination interactions among identified elements and thus to understand their relative influence on active school travel. By adopting a convenience sampling strategy largely controlling for ethnicity and income within limited inner city area, the results from this study may lack generalizability. However, qualitative nature of this research intends to reflect the diversity and depth of individual child's perceptions and experiences. The future research can add to the contribution of the current research by engaging children in other settings and contexts (non urban, non ethnic minority, high income, etc.) that would make it possible to examine differences or similarities.

Chapter 7 : Appendix

Appendix A – Child questionnaire

1. How do you travel to/from school? (check as many boxes as apply in both columns)	To School	From School
Walk	<input type="checkbox"/>	<input type="checkbox"/>
Bike	<input type="checkbox"/>	<input type="checkbox"/>
School Bus	<input type="checkbox"/>	<input type="checkbox"/>
Car	<input type="checkbox"/>	<input type="checkbox"/>
Car share (traveling with your friends or other children in the same car)	<input type="checkbox"/>	<input type="checkbox"/>
2. How often do you walk to/from school? (check one box in both columns)	To School	From School
Most days	<input type="checkbox"/>	<input type="checkbox"/>
At least twice a week	<input type="checkbox"/>	<input type="checkbox"/>
Once a week	<input type="checkbox"/>	<input type="checkbox"/>
Never	<input type="checkbox"/>	<input type="checkbox"/>
3. How often do you bike to/from school? (check one box in both columns)	To School	From School
Most days	<input type="checkbox"/>	<input type="checkbox"/>
At least twice a week	<input type="checkbox"/>	<input type="checkbox"/>
Once a week	<input type="checkbox"/>	<input type="checkbox"/>
Never	<input type="checkbox"/>	<input type="checkbox"/>
4. When you walk or bike to/from school, who do you walk or bike with most of the time? (check one box in both columns)	To School	From School
Your parent	<input type="checkbox"/>	<input type="checkbox"/>
Other adults (parents of your friends)	<input type="checkbox"/>	<input type="checkbox"/>
Your sister or brother	<input type="checkbox"/>	<input type="checkbox"/>
Your friend	<input type="checkbox"/>	<input type="checkbox"/>
On your own	<input type="checkbox"/>	<input type="checkbox"/>
I never walk or bike to/from school	<input type="checkbox"/>	<input type="checkbox"/>
5. What do you have to do when you travel to/from school? (check as many boxes as apply)		
Cross a road with a heavy traffic	<input type="checkbox"/>	Cross a road where there is no crosswalk <input type="checkbox"/>
Cross a road where there is a crossing guard	<input type="checkbox"/>	Cross a road where there is no stop sign or signal <input type="checkbox"/>
Cross many driveways	<input type="checkbox"/>	Cross a road where cars are moving fast <input type="checkbox"/>
Walk/bike through an underpass	<input type="checkbox"/>	Walk/bike through an alley <input type="checkbox"/>
Walk/ bike in the road because there is no sidewalk/bicycle path	<input type="checkbox"/>	Walk/bike through a parking lot or a vacant lot <input type="checkbox"/>
Other: _____		

6. What do you see in your school neighborhood when you are traveling to/from school? (check as many boxes as apply)			
<input type="checkbox"/> Neighborhood park/playground/sports playing fields	<input type="checkbox"/> Abandoned building	<input type="checkbox"/> Abandoned car	<input type="checkbox"/> Building with broken or boarded up windows
<input type="checkbox"/> Restaurant	<input type="checkbox"/> Vacant lot	<input type="checkbox"/> Freeway ramps	<input type="checkbox"/> Alleys
<input type="checkbox"/> Church or temple	<input type="checkbox"/> Clothing/shoe store	<input type="checkbox"/> Community center	<input type="checkbox"/> Fast food store (burger, pizza, etc.)
<input type="checkbox"/> Bar	<input type="checkbox"/> Mural	<input type="checkbox"/> Trees	<input type="checkbox"/> Garden
<input type="checkbox"/> Library	<input type="checkbox"/> Museum	<input type="checkbox"/> Graffiti	<input type="checkbox"/> Movie theater
<input type="checkbox"/> Post office	<input type="checkbox"/> Fire station	<input type="checkbox"/> Bus stops	<input type="checkbox"/> Beauty or barber shop
<input type="checkbox"/> Police station	<input type="checkbox"/> Street lights	<input type="checkbox"/> Litter	<input type="checkbox"/> Pedestrian crossing
<input type="checkbox"/> Bike lanes	<input type="checkbox"/> Stop lights	<input type="checkbox"/> Heavy Trucks	<input type="checkbox"/> Billboards
<input type="checkbox"/> Food market	<input type="checkbox"/> Heavy traffic	<input type="checkbox"/> Light traffic	<input type="checkbox"/> Buses
<input type="checkbox"/> Banks	<input type="checkbox"/> Dry Cleaners	<input type="checkbox"/> Traffic signs	<input type="checkbox"/> Parked cars
<input type="checkbox"/> Seats or benches on the sidewalk	<input type="checkbox"/> Chain link fences	<input type="checkbox"/> Hospital or clinic	<input type="checkbox"/> Speed bumps in street
<input type="checkbox"/> Gas station	<input type="checkbox"/> Empty street	<input type="checkbox"/> Laundromat	<input type="checkbox"/> Other schools
<input type="checkbox"/> Shaded streets	<input type="checkbox"/> Public telephone	<input type="checkbox"/> Hardware store	<input type="checkbox"/> Auto repair shop
<input type="checkbox"/> Other: _____			

7. Do you feel safe walking or biking to/from school?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
→ If you checked “No”, which of the followings make you feel unsafe walking to/from school? (check as many boxes as apply)		
<input type="checkbox"/> Fast moving cars	<input type="checkbox"/> No crossing guards	<input type="checkbox"/> Bullies or gangs
<input type="checkbox"/> Difficult to cross a road	<input type="checkbox"/> Homeless people	<input type="checkbox"/> Drug activities
<input type="checkbox"/> No sidewalk or broken sidewalk	<input type="checkbox"/> No stop light for pedestrians or bikers	<input type="checkbox"/> Lights at intersections change before I can cross the street
<input type="checkbox"/> No bike path or broken bike path	<input type="checkbox"/> Empty streets with no people	<input type="checkbox"/> Dogs without leash
<input type="checkbox"/> No crosswalks	<input type="checkbox"/> Many strangers	<input type="checkbox"/> Tagger
<input type="checkbox"/> Graffiti	<input type="checkbox"/> Other _____	

8. Do you know about the Kid Watch program?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
--	------------------------------	-----------------------------

9. Have you ever received help from a Kid Watch volunteer while walking or biking to/from school?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
→ If “Yes” , what kind of help did you get? (check as many boxes as apply)		
<input type="checkbox"/> Kid Watch volunteer called my parent (or an adult in my family)	<input type="checkbox"/> Kid Watch volunteer called school	
<input type="checkbox"/> Kid watch volunteer called police	<input type="checkbox"/> Other _____	

10. Have you had an accident or been injured while walking or biking to/from school?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
→ If “Yes” , what kinds of accidents have happened or how have you been injured? (check as many boxes as apply)		
<input type="checkbox"/> Accident with a car	<input type="checkbox"/> Fell on the sidewalk	
<input type="checkbox"/> Accident with a bike	<input type="checkbox"/> Got into a fight	
<input type="checkbox"/> Other _____		

11. What would make walking to school safer or encourage you to walk or bike to school more? (check as many boxes as apply)	
<input type="checkbox"/> More streets with sidewalk	<input type="checkbox"/> Cleaner street
<input type="checkbox"/> Wider sidewalk	<input type="checkbox"/> Safe places to cross the road
<input type="checkbox"/> Less cars	<input type="checkbox"/> School crossing guard
<input type="checkbox"/> Cars moving slower	<input type="checkbox"/> More Kid Watch volunteers
<input type="checkbox"/> More children to walk with	<input type="checkbox"/> Less crime in my neighborhood
<input type="checkbox"/> Lighter school bag	<input type="checkbox"/> No graffiti
<input type="checkbox"/> Better street lighting	<input type="checkbox"/> No abandoned building/vacant lot
<input type="checkbox"/> Crossing lights giving more time to cross the street	<input type="checkbox"/> Push buttons to change crossing signs
<input type="checkbox"/> More speed bumps	<input type="checkbox"/> Removal of graffiti
<input type="checkbox"/> More stores that I can visit	<input type="checkbox"/> More shady street
<input type="checkbox"/> More crossing lights	<input type="checkbox"/> More bike paths
<input type="checkbox"/> Other _____	

12. If you could choose, how would you like to travel to and from school? (check one box in both columns)	To School	From School
Walk	<input type="checkbox"/>	<input type="checkbox"/>
Bike	<input type="checkbox"/>	<input type="checkbox"/>
School Bus	<input type="checkbox"/>	<input type="checkbox"/>
Car	<input type="checkbox"/>	<input type="checkbox"/>
Car share (traveling with your friends or other children in the same car)	<input type="checkbox"/>	<input type="checkbox"/>

13. How many people do you know in your neighborhood?	
--	--

14. How many friends with whom you can play do you have in your neighborhood?	
--	--

Appendix B - Parent Questionnaire (English)

Dear Parent,

Thank you for taking the time to complete this survey. We are researchers from the School of Policy, Planning, and Development at the University of Southern California. We are studying how your child travels to and from school and how your neighborhood environment supports the safety of children walking or biking to school.

Please fill out this survey tonight and send it back to school with your child by _____.

Answering these questions will take about 15 minutes. If you receive a survey from more than one child, please complete and send back only one survey. Your answers will remain confidential as we will not collect any of your personal information such as name and address. If you are unsure or not comfortable answering any of the questions, you can simply skip those questions. We hope that you will fill out this survey and we appreciate your cooperation and help.

If you have any questions or prefer to complete this survey by phone, please contact Ms. JungA Uhm at (213) 740-9494.

Thank you.



Dr. Tridib Banerjee
Professor
School of Policy, Planning, and Development
University of Southern California

(Question 1~ 7) These questions are about how your child *normally* travels to and from school. If the routine varies, please answer based on the most *regular routine*. For questions 1~5, please check one box in both columns.

	To School	From School
1. How does your child usually travel to/from school? (check as many boxes as apply in both columns) Driven alone or with others in household Car share Walk Bike School bus Public bus Other: _____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. How long does it take your child to travel to/from school? Less than 5 minutes 5-10 minutes 11-20 minutes More than 20 minutes Not sure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3. Do any adults travel some or most of the way to/from school with your child? → <i>If yes,</i> 3.1. Who does your child travel with? Mother Father Other adult relative or friend Brothers or sisters School friends from the neighborhood Other: _____ 3.2. Where does the adult normally go after dropping off/picking up the child at or near school? Return home To work, not at home Shopping or other errands Drop off other children or household members Other: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4. In the past two months, how often has your child walked to/from school? Not at all About once a month About two or three times a month Once a week More than once a week	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. In the past two months, how often has your child biked to/from school? Not at all About once a month About two or three times a month Once a week More than once a week	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	Before School	After School
6. Does your child participate in any before-or-after school activities? → <i>If yes,</i> 6.1. Where do these activities take place? At school Somewhere else in the neighborhood Somewhere outside the neighborhood	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7. About how far is your child's school from home? <input type="checkbox"/> Less than ¼ mile <input type="checkbox"/> ¼ ~ ½ mile <input type="checkbox"/> ½ ~ 1 mile <input type="checkbox"/> Greater than 1 mile <input type="checkbox"/> Not sure		
8. If your child already walks/bikes to/from school (or if your child were to walk/bike to/from school), would he or she have to do any of the following? (check as many boxes as apply) <input type="checkbox"/> Cross a road with more than 4 lanes of traffic <input type="checkbox"/> Cross a road at an intersection that doesn't have a street signal or a stop sign to stop traffic <input type="checkbox"/> Walk/bike on the road or on the edge of the road because there is no sidewalk <input type="checkbox"/> Walk/bike along a road or sidewalk that has traffic moving at a fairly high speed (more than 30 miles an hour) <input type="checkbox"/> Walk/bike through areas that are unsafe or walk/bike by buildings or activities that are undesirable for your child, such as (circle as many items from the examples below); underpass • dark alley • vacant lot • bar • parking lot • freeway on/off ramp • liquor store • abandoned building • adult shops • parking lot abandoned car • building with broken windows • areas associated with gang activities • graffiti		

(Question 9~11) These questions are about what helps you decide how your child travels to school. Please answer these questions no matter how your child currently travels to school.

9. On a scale of 1 to 5, with 1 being NOT TRUE AT ALL and 5 being VERY TRUE, circle the number that best matches your feeling about your child's travel to/from school.

	NOT TRUE AT ALL				VERY TRUE
9.1 Walking/biking to/from school would be good for my child's health	1	2	3	4	5
9.2 My neighborhood is safe enough for children to walk/bike to/from school alone	1	2	3	4	5
9.3 I worry about strangers or bullies in the neighborhood approaching my child if he/she is walking/biking alone	1	2	3	4	5
9.4 The school is close enough for my child to walk/bike	1	2	3	4	5
9.5 My child is prepared or old enough to walk/bike to school	1	2	3	4	5
9.6 Driving my child to/from school is more convenient/fits my schedule better	1	2	3	4	5
9.7 My child likes to walk/bike to/from school	1	2	3	4	5

10. If your child does not currently walk to/from school, how likely would it be that you would allow your child to walk to/from school based on the following conditions? (If your child currently walks to/from school, skip the questions below and go to question 11).

On a scale of 1 to 5, with 1 being VERY UNLIKELY and 5 being VERY LIKELY, circle the number that best matches your feelings. Would you allow your child to **WALK** to/from school if;

		VERY UNLIKELY			VERY LIKELY	
10.1	...you or an adult you knew walks with him/her?	1	2	3	4	5
10.2	...he/she was older?	1	2	3	4	5
10.3	...cars were moving slower and drivers paid attention to pedestrians when they drove?	1	2	3	4	5
10.4	...he/she didn't have to cross a busy road?	1	2	3	4	5
10.5	...you knew more people in the neighborhood?	1	2	3	4	5
10.6	...the school was closer to home?	1	2	3	4	5
10.7	...there were crossing guards at busy intersections on the way to/from school?	1	2	3	4	5
10.8	...if it was convenient for you to drive by school on your way to/from work and/or errands?	1	2	3	4	5
10.9	...other children in the neighborhood walked to school together	1	2	3	4	5
10.10	...your child could be driven to school?	1	2	3	4	5
10.11	...he/she has a light backpack to carry?	1	2	3	4	5
10.12	...there were neighbors watching out for your child when he/she walked to/from school?	1	2	3	4	5
10.13	...there were more Kid Watch volunteers in the neighborhood?	1	2	3	4	5

11. If your child does not currently bike to/from school, how likely would it be that you would allow your child to walk to/from school based on the following conditions? (If your child currently bikes to/from school, skip the questions below and go to question 11).

On a scale of 1 to 5, with 1 being VERY UNLIKELY and 5 being VERY LIKELY, circle the number that best matches your feelings. Would you allow your child to **BIKE** to/from school if;

		VERY UNLIKELY			VERY LIKELY	
11.1	...you or an adult you knew bikes with him/her?	1	2	3	4	5
11.2	...he/she was older?	1	2	3	4	5
11.3	...cars were moving slower and drivers paid attention to pedestrians when they drove?	1	2	3	4	5
11.4	...he/she didn't have to cross a busy road?	1	2	3	4	5
11.5	...you knew more people in the neighborhood?	1	2	3	4	5

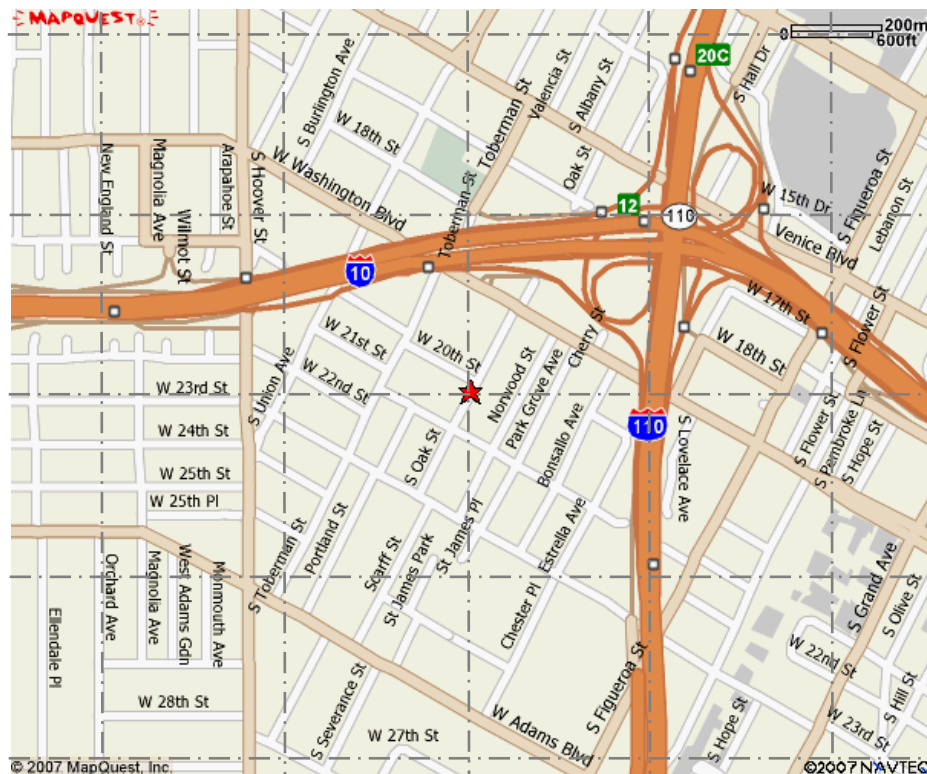
	VERY UNLIKELY				VERY LIKELY
11.6	1	2	3	4	5
11.7	1	2	3	4	5
11.8	1	2	3	4	5
11.9	1	2	3	4	5
11.10	1	2	3	4	5
11.11	1	2	3	4	5
11.12	1	2	3	4	5
11.13	1	2	3	4	5

(Question 12~25) These last few questions are about yourself and your family. As we have mentioned previously, all of this information is confidential.

<p>12. How often do you walk in your neighborhood?</p> <p><input type="checkbox"/> At least once a day <input type="checkbox"/> A few times a month</p> <p><input type="checkbox"/> A few times a week <input type="checkbox"/> Hardly ever</p> <p><input type="checkbox"/> Once a week</p>
<p>13. How many people do you know in your neighborhood? (please answer the both 11.1 and 11.2)</p> <p>13.1 People who are casual acquaintances _____</p> <p>13.2. Friends or relatives on whom you can rely in the case of a need or emergency _____</p>
<p>14. Do you participate in any neighborhood associations or community group activities? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>→ <i>If yes,</i></p> <p>14.1 What are the names of such associations or groups? _____</p>
<p>15. What is the sex of your child who brought home this survey? <input type="checkbox"/> Male <input type="checkbox"/> Female</p>
<p>16. Which of the following best describes your current status?</p> <p><input type="checkbox"/> Single</p> <p><input type="checkbox"/> Married</p> <p><input type="checkbox"/> Living with a partner</p>
<p>17. Please indicate how many people in your household are of the following age groups? (include yourself)</p> <p><input type="checkbox"/> 0~5 yrs old : _____ <input type="checkbox"/> 17~60 yrs old : _____</p> <p><input type="checkbox"/> 6~11 yrs old : _____ <input type="checkbox"/> Older than 60 : _____</p> <p><input type="checkbox"/> 12~16 yrs old: _____</p>
<p>18. How many people in your household have a driver's license? _____</p>
<p>19. On most days, how many cars are there in your household? _____</p>

20. How long have you lived in this neighborhood?	
<input type="checkbox"/> Less than 1 year	<input type="checkbox"/> More than 10 years
<input type="checkbox"/> 1-5 years	<input type="checkbox"/> All my life
<input type="checkbox"/> 6-10 years	
21. Were you born in the United States? <input type="checkbox"/> Yes <input type="checkbox"/> No	
22. What best describes your educational level?	
<input type="checkbox"/> Less than high school	<input type="checkbox"/> Bachelor's degree
<input type="checkbox"/> High school	<input type="checkbox"/> Graduate and above
<input type="checkbox"/> Some college	
23. How long have you lived in the United States?	
<input type="checkbox"/> Less than 1 year	<input type="checkbox"/> More than 10 years
<input type="checkbox"/> 1-5 years	<input type="checkbox"/> All my life
<input type="checkbox"/> 6-10 years	
24. What is your average annual household income?	
<input type="checkbox"/> Less than \$15,000	<input type="checkbox"/> \$55,001-75,000
<input type="checkbox"/> \$15,001-35,000	<input type="checkbox"/> More than \$75,001
<input type="checkbox"/> \$35,001-55,000	

25. Your child's school is located at the star on this map. PLEASE PUT AN X IN THE SQUARE THAT CONTAINS YOUR HOUSE. Do not mark the exact location of your house. If your house or the street you live on is not on the map, please just write "house outside the map."



THANK YOU!

Appendix C- Parent Questionnaire (Spanish)

Estimado Padre/Madre de Familia,

Gracias por tomar el tiempo en llenar esta encuesta. Somos investigadores de la Escuela de Política, Planificación, y Desarrollo en la Universidad del Sur de California. Estamos estudiando como su niño/a llega a y regresa de la escuela y como el ambiente de su vecindad apoya el bienestar de niños caminando o llegando en bicicletas a la escuela.

Por favor de llenar esta encuesta esta noche y mandarlo a la escuela con su hijo/hija antes del _____.

Respondiendo a estas preguntas se tomara 15 minutos. Si recibe una encuesta de mas de uno de sus hijos, por favor de llenar y regresar solamente una encuesta. Sus respuestas son confidenciales y no pedimos por información personal como nombre y domicilio. Si no se siente cómodo o seguro respondiendo algunas de las preguntas, simplemente puede pasar a la siguiente pregunta. Esperamos que llene la encuesta y le agradecemos mucho por su ayuda y cooperación.

Si tiene una pregunta o si prefiere llenar la encuesta por teléfono, por favor de contactar a Señorita Eleanor Tostado a (213) 740-1461.

Gracias.



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University of Southern California

(Pregunta 1 a 7) Estas preguntas se tratan de como su hijo/a usualmente llega a y regresa de la escuela. Si la ruta cambia, por favor de responder en términos de la ruta mas frecuente. Para las preguntas 1 a 5, por favor de seleccionar una caja de cada columna.

	A la Escuela	De la Escuela
<p>1. ¿Cómo llega usualmente su hijo/a a/de la escuela? (seleccione todas las cajas que apliquen de las dos columna)</p> <p>Esta manejado en coche solo o manejado con otras personas de la casa <input type="checkbox"/> <input type="checkbox"/></p> <p>En coche con otros personas que no son personas de la casa <input type="checkbox"/> <input type="checkbox"/></p> <p>Caminado <input type="checkbox"/> <input type="checkbox"/></p> <p>En bicicleta <input type="checkbox"/> <input type="checkbox"/></p> <p>En autobús de la escuela <input type="checkbox"/> <input type="checkbox"/></p> <p>En autobús publico <input type="checkbox"/> <input type="checkbox"/></p> <p>Otra manera: _____ <input type="checkbox"/> <input type="checkbox"/></p>		
<p>2. ¿Cuánto tiempo tarda su hijo/a en llegar a/de la escuela?</p> <p>Menos de 5 minutos <input type="checkbox"/> <input type="checkbox"/></p> <p>5 a 10 minutos <input type="checkbox"/> <input type="checkbox"/></p> <p>11 a 20 minutos <input type="checkbox"/> <input type="checkbox"/></p> <p>Más de 20 minutos <input type="checkbox"/> <input type="checkbox"/></p> <p>Usted no sabe <input type="checkbox"/> <input type="checkbox"/></p>		
<p>3. ¿Hay adultos que acompañan a su hijo/a por todo o parte del viaje de su hijo/a a/de la escuela?</p> <p><input type="checkbox"/> Sí <input type="checkbox"/> No</p> <p><input type="checkbox"/> Sí <input type="checkbox"/> No</p> <p>→ <i>Si la respuesta es sí,</i></p> <p>3.1. ¿Quién acompaña a su hijo/a?</p> <p>Mama <input type="checkbox"/> <input type="checkbox"/></p> <p>Papa <input type="checkbox"/> <input type="checkbox"/></p> <p>Otro adulto, pariente o amigo <input type="checkbox"/> <input type="checkbox"/></p> <p>Hermanos <input type="checkbox"/> <input type="checkbox"/></p> <p>Amigos de la escuela que viven en el barrio <input type="checkbox"/> <input type="checkbox"/></p> <p>Otra persona: _____ <input type="checkbox"/> <input type="checkbox"/></p> <p>3.2. ¿Adonde va este adulto usualmente después de llevar o recoger el niño/a a/de la escuela?</p> <p>A casa <input type="checkbox"/> <input type="checkbox"/></p> <p>Al trabajo, que no esta en la casa <input type="checkbox"/> <input type="checkbox"/></p> <p>De compras o a cumplir otra actividad <input type="checkbox"/> <input type="checkbox"/></p> <p>A dejar otros niños en la escuela o a dejar otras personas de la casa al trabajo <input type="checkbox"/> <input type="checkbox"/></p> <p>Otra cosa: _____ <input type="checkbox"/> <input type="checkbox"/></p>		
<p>4. En los últimos dos meses, ¿cuántas veces ha caminado su hijo/a a/de la escuela?</p> <p>Ninguna <input type="checkbox"/> <input type="checkbox"/></p> <p>Aproximadamente una vez al mes <input type="checkbox"/> <input type="checkbox"/></p> <p>Aproximadamente dos o tres veces al mes <input type="checkbox"/> <input type="checkbox"/></p> <p>Una vez a la semana <input type="checkbox"/> <input type="checkbox"/></p> <p>Más de una vez a la semana <input type="checkbox"/> <input type="checkbox"/></p>		

5. En los últimos dos meses, ¿cuántas veces ha montado en bicicleta su hijo/a a/de la escuela? Ninguna Aproximadamente una vez al mes Aproximadamente dos o tres veces al mes Una vez a la semana Más de una vez a la semana	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	Antes de la escuela	Después de la escuela
6. ¿Participa su hijo/a en actividades antes de o después de la escuela? → <i>Si la respuesta es sí,</i> 6.1. ¿Dónde toman lugar estas actividades? En la escuela En un lugar en el barrio En un lugar que no esta en el barrio	<input type="checkbox"/> Sí <input type="checkbox"/> No	<input type="checkbox"/> Sí <input type="checkbox"/> No
7. ¿Qué es la distancia entre la escuela de su hijo/a y su casa? <input type="checkbox"/> Menos de ¼ milla <input type="checkbox"/> ¼ ~ ½ milla <input type="checkbox"/> ½ ~ 1 milla	<input type="checkbox"/> Más de 1 milla <input type="checkbox"/> Usted no sabe	
8. Si su hijo/a ya camina o monta en bicicleta a/de la escuela (o, si su hijo/a pudiera caminar o montar en bicicleta a/de la escuela, ¿tendría su hijo/a que hacer alguno de las siguientes cosas? (seleccione todas las cajas que apliquen) <input type="checkbox"/> Cruzar una calle que tiene más de 4 carriles de trafico <input type="checkbox"/> Cruzar una intersección que no tiene una luz ni un señal para parar trafico <input type="checkbox"/> Caminar o montar en bicicleta en la calle porque no hay banqueta <input type="checkbox"/> Caminar o montar en bicicleta en una calle o una banqueta de una calle que tiene trafico yendo bastante rápido (más de 30 millas a la hora) <input type="checkbox"/> Caminar o montar en bicicleta pasando áreas que no están seguros o pasando edificios o actividades que son indeseables para su hijo/a, por ejemplo (dibuje un circulo sobre todas las cosas que apliquen de los ejemplos dados abajo): paso inferior . callejón oscuro . lote abandonado . bar . estacionamiento . tienda de licor . rampa a/de la autopista . edificios abandonados . tiendas de adultos . coche abandonado . edificio con ventanas rotas . áreas asociados con actividades de pandillas . areas associated with gang activities . graffiti Otra cosa : _____		

(Preguntas 9 a 11) Estas preguntas se tratan de cómo usted decide la manera en que su hijo/a llega a y regresa de la escuela. Por favor de responder a estas preguntas sin importar la manera en que su hijo/a actualmente llega a y regresa de la escuela.

9. En una escala de 1 a 5, con 1 siendo NO ES CIERTO PARA NADA y 5 siendo MUY CIERTO, dibuje un circulo sobre el numero que mejor refleja sus sentimientos sobre la manera en que su hijo/a llega a/de escuela

	NO ES CIERTO				MUY CIERTO
9.1 Caminar o montar en bicicleta a/de la escuela sería bueno para la salud de mi hijo/a	1	2	3	4	5

9.2	Mi barrio esta bastante seguro para que mi hijo/a pudiera caminar o montar en bicicleta sólo a/de la escuela	1	2	3	4	5
9.3	Me preocupa sobre gente desconocido o gente con malas intenciones acercando a mi hijo/a si estuviera caminando o montando en bicicleta sólo	1	2	3	4	5
9.4	La escuela esta ubicada bastante cerca para que mi hijo/a pudiera caminar o montar en bicicleta	1	2	3	4	5
9.5	Mi hijo/a esta preparado o es de una edad suficiente para caminar o montar en bicicleta a/de la escuela	1	2	3	4	5
9.6	Manejar mi hijo/a a/de la escuela conviene mejor con mi horario	1	2	3	4	5
9.7	A mi hijo/a le gusta caminar o montar en bicicleta a/de la escuela	1	2	3	4	5

10. Si su hijo/a actualmente no camina a/de la escuela, ¿qué es la probabilidad de que usted dejaría a su hijo/a caminar a/de la escuela según las siguientes condiciones? (Si su hijo/a actualmente camina a/de la escuela, usted puede ir directamente a la pregunta 11).

En una escala de 1 a 5, con 1 siendo NO ES CIERTO PARA NADA y 5 siendo MUY CIERTO, dibuje un circulo sobre el numero que mejor refleja sus sentimientos sobre la manera en que su hijo/a llega a/de escuela. ¿Usted dejaría a su hijo/a **CAMINAR** a/de la escuela si...

		NO ES CIERTO			MUY CIERTO	
10.1	...usted o un adulto que usted conoce caminara con su hijo/a?	1	2	3	4	5
10.2	...su hijo/a tuviera más años?	1	2	3	4	5
10.3	...los coches se fueran yendo menos rápido y los conductores se prestaran más atención en manejar?	1	2	3	4	5
10.4	...su hijo/a no tuviera que cruzar una calle con mucho trafico?	1	2	3	4	5
10.5	...usted conociera más personas en el barrio?	1	2	3	4	5
10.6	...la escuela estuviera ubicada más cerca de la casa?	1	2	3	4	5
10.7	...hubiera guardias para ayudar a su hijo/a cruzar las intersecciones con alto trafico en el camino a/de la escuela?	1	2	3	4	5
10.8	...su fuera conveniente para usted parar en la escuela de su hijo/a en su camino al trabajo o a hacer otras cosas durante el día?	1	2	3	4	5
10.9	...los niños del barrio caminaran juntos a/de la escuela?	1	2	3	4	5
10.10	...su hijo/a pudiera ser manejado a/de la escuela?	1	2	3	4	5

10.11	...su hijo/a tuviera una mochilla ligera para llevar?	1	2	3	4	5
10.12	...hubiera más vecinos echando una mirada para su hijo/a cuando caminara a/de la escuela?	1	2	3	4	5
10.13	...hubiera más voluntarios en el barrio del programa Kid Watch?	1	2	3	4	5

11. Si su hijo/a actualmente no monta en bicicleta a/de la escuela, ¿qué es la probabilidad de que usted dejaría a su hijo/a montar en bicicleta según las siguientes condiciones? (Si su hijo/a actualmente monta en bicicleta a/de la escuela, usted puede ir directamente a la pregunta 12).

En una escala de 1 a 5, con 1 siendo NO ES CIERTO PARA NADA y 5 siendo MUY CIERTO, dibuje un círculo sobre el número que mejor refleja sus sentimientos sobre la manera en que su hijo/a llega a/de escuela. ¿Usted dejaría a su hijo/a **MONTAR EN BICICLETA** a/de la escuela si...

		NO ES CIERTO				MUY CIERTO
11.1	...usted o un adulto que usted conoce montara en bicicleta con su hijo/a?	1	2	3	4	5
11.2	...su hijo/a tuviera más años	1	2	3	4	5
11.3	...los coches se fueran yendo menos rápido y los conductores se prestaran más atención en manejar?	1	2	3	4	5
11.4	...su hijo/a no tuviera que cruzar una calle con mucho tráfico?	1	2	3	4	5
11.5	...usted conociera más personas en el barrio?	1	2	3	4	5
11.6	...la escuela estuviera ubicada más cerca de la casa?	1	2	3	4	5
11.7	...hubiera guardias para ayudar a su hijo/a cruzar las intersecciones con alto tráfico en el camino a/de la escuela?	1	2	3	4	5
11.8	...su fuera conveniente para usted parar en la escuela de su hijo/a en su camino al trabajo o a hacer otras cosas durante el día?	1	2	3	4	5
11.9	...los niños del barrio montaran en bicicleta juntos con su hijo/a a/de la escuela?	1	2	3	4	5
11.10	...su hijo/a pudiera ser manejado a/de la escuela?	1	2	3	4	5
11.11	...su hijo/a tuviera una mochilla ligera para llevar?	1	2	3	4	5
11.12	...hubiera más vecinos echando una mirada para su hijo/a cuando montara en bicicleta a/de la escuela?	1	2	3	4	5
11.13	...hubiera más voluntarios en el barrio del programa Kid Watch?	1	2	3	4	5

(Preguntas 12 a 25) Estas últimas preguntas se tratan de usted y su familia. Como hemos dicho antes, toda esta información es confidencial.

<p>12. ¿Con qué frecuencia usted camina en su barrio?</p> <p><input type="checkbox"/> Una vez al día por lo menos <input type="checkbox"/> Dos o tres veces al mes</p> <p><input type="checkbox"/> Dos o tres veces a la semana <input type="checkbox"/> Casi nunca</p> <p><input type="checkbox"/> Una vez a la semana</p>
<p>13. ¿Cuántas personas usted conoce en su barrio? (por favor de contestar a 13.1 y 13.2)</p> <p>13.1 Numero de personas en el barrio que usted conoce _____</p> <p>13.2. Numero de personas en el barrio, amigos o parientes, en que usted pudiera depender en caso de emergencia o otra necesidad _____</p>
<p>14. ¿Usted participa en alguna asociación de la vecindad o otras actividades comunitarias en el barrio? <input type="checkbox"/> Sí <input type="checkbox"/> No</p> <p>→ <i>Si la respuesta es sí,</i></p> <p>14.1 ¿Cómo se llaman estas asociaciones o actividades comunitarias?</p> <p>_____</p>
<p>15. ¿Qué es el genero de su hijo/a que se trajo esta encuesta? <input type="checkbox"/> Hombre <input type="checkbox"/> Mujer</p>
<p>16. ¿Cuál de las siguientes opciones mejor refleja su estatus civil?</p> <p><input type="checkbox"/> Soltero/a</p> <p><input type="checkbox"/> Casado/a</p> <p><input type="checkbox"/> Viviendo con mi pareja</p>
<p>17. Por favor de indicar el numero de personas viviendo en su casa que están en las siguientes categorías de edad (incluyendo usted en el numero):</p> <p><input type="checkbox"/> 0 a 5 años: _____ <input type="checkbox"/> 17 a 60 años: _____</p> <p><input type="checkbox"/> 6 a 11 años: _____ <input type="checkbox"/> Más de 60 años: _____</p> <p><input type="checkbox"/> 12 a 16 años: _____</p>
<p>18. ¿Cuántas personas viviendo en su casa tienen licencia para manejar? _____</p>
<p>19. Usualmente, ¿cuántos coches están en su casa? _____</p>
<p>20. ¿Cuántos años ha vivido usted en este barrio?</p> <p><input type="checkbox"/> Menos de 1 año <input type="checkbox"/> Más de 10 años</p> <p><input type="checkbox"/> 1 a 5 años <input type="checkbox"/> Toda mi vida</p> <p><input type="checkbox"/> 6 a 10 años</p>
<p>21. ¿Usted nació en los Estados Unidos? <input type="checkbox"/> Sí <input type="checkbox"/> No</p>
<p>22. ¿Cuál descripción abajo mejor refleja su nivel de educación?</p> <p><input type="checkbox"/> No gradué de la prepa <input type="checkbox"/> Bachelor's</p> <p><input type="checkbox"/> Gradué de la prepa <input type="checkbox"/> Master's o más (JD, MD, PhD, etc.)</p> <p><input type="checkbox"/> Fui a la universidad, pero no cumplí</p>
<p>23. ¿Cuántos años usted ha vivido en los Estados Unidos?</p> <p><input type="checkbox"/> Menos de 1 año <input type="checkbox"/> Más de 10 años</p> <p><input type="checkbox"/> 1 a 5 años <input type="checkbox"/> Toda mi vida</p> <p><input type="checkbox"/> 6 a 10 años</p>
<p>24. ¿Qué es el ingreso anual de su casa?</p> <p><input type="checkbox"/> Menos de \$15,000 <input type="checkbox"/> \$55,001 a \$75,000</p> <p><input type="checkbox"/> \$15,001 a \$35,000 <input type="checkbox"/> Más de \$75,001</p> <p><input type="checkbox"/> \$35,001 a \$55,000</p>

¡Pregunta 25 esta en la próxima pagina!

Appendix D- Focus Group Interview Questions/Questionnaire

Dear Kid Watch volunteers,

We are interested in keeping children safe in the neighborhood as they walk to and from school. Please take a few minutes of your time to complete this questionnaire and return it to us today.

1. Please tell us about your experience in participating in the Kid Watch program?
2. What are the major safety issues in this neighborhood?
3. Do you think Kid Watch program needs assistance from other sources (supplemented with other programs/organizations/agencies)?
4. Children have mentioned the presence of gangs and drug activity in the neighborhood. How does this affect their physical activity? What suggestions do you have to mitigate such effects?
5. Please share needs that should be addressed to improve the neighborhood's built environment and social environment.
6. How can the Kid Watch program be improved or made better?
7. What three things would you recommend to improve safety of children walking to/from school in your neighborhood?
8. In your opinion, how effective is the Kid Watch program? And Why? Should the Kid Watch program area be expanded, and why?
9. How do parents perceive the Kid Watch program? Do you think more or less children are walking now as a result of Kid Watch?

Thank You!

Appendix E- Focus Group Interview Questions/Questionnaire (Spanish)

Estimados voluntarios de Kid Watch,

Nosotros estamos interesados en preservar la seguridad de los niños de la comunidad en su camino a la escuela. Tenga la bondad de tomar unos minutos de su tiempo para responder este cuestionario y entreguenos sus respuestas hoy.

1. Por favor cuéntenos sus experiencias al participar en el programa Kid Watch?
2. Cuales son las cuestiones de seguridad más preocupantes en la comunidad?
3. Cree Ud. que el programa Kid Watch necesite apoyo de otros grupos que puedan brindar más programas, organizaciones y agencias de servicios?
4. Los niños han reconocido la presencia de pandillas y la venta de drogas en la comunidad. Como es que esto afecta su actividad física? Que sugerencias tiene para solucionar este problema?
5. Por favor comparta con nosotros obstaculos que dificultan el mejoramiento del ambiente estructural y social de la comunidad.
6. Como podría mejorar o perfeccionarse el programa Kid Watch?
7. Denos tres recomendaciones para mejorar la seguridad de los niños caminando de la casa a la escuela en su comunidad?
8. Que opina de la eficiencia del programa Kid Watch? Debería extenderse el programa Kid Watch? Explique sus razones.
9. Como padre, cual es su percepción del programa Kid Watch? Cree que ha incrementado o bajado el número de niños que caminan debido al programa Kid Watch?

Gracias !

Appendix F - Built Environment Measures

(Scale of measurement: 0.25x0.25 grid cell; *= street segment)

Measure	Definition	Data Source(s)
<i>Land use</i>		
1. Net residential density	Number of residential units divided by residential use area (ea/acres)	Los Angeles County parcel- level land use database
2. Land use mix	Evenness of distribution of square footage of development across single family residential, multi-family residential, commercial, recreational, institutional, and manufacturing /industrial use	Los Angeles County parcel- level land use database
3. Retail floor area ratio	Retail building floor area divided by retail use area (sq. ft.)	Los Angeles County parcel- level land use database
<i>Street pattern</i>		
4. Average block size	Sum of block areas divided by the total number of blocks within the unit area (acres)	City of Los Angeles, Zoning Information and Map Access System (Zimas)
5. Street connectivity	Number of intersections divided by the unit area (ea/sq. km)	maps.live.com
6. Percentage street area	Proportion of street areas within the unit area (%)	Zimas
<i>Traffic environment</i>		
7. Traffic capacity	Sum of distance weighted traffic lanes (street length x traffic lanes) divided by the total street length within the unit area (ea)	Zimas; maps.live.com
8. Traffic speed	Sum of distance weighted traffic speed (street length x traffic speed) divided by the total street length within the unit area (mph)	SCAG/ LADOT
9. Transit stop density	Number of transit stops in the unit area (ea)	SCAG/ LADOT
<i>Pedestrian features</i>		
10. Streetlight Coverage	Number of streetlights divided by the total street length within the unit area (ea/mi.)	LA County public works
11. Sidewalk width*	Proportion of street segments with sidewalk width over 5ft of the total street segments traveled in the unit area (%)	Field audit
12. Pedestrian amenity*	Proportion of street segments with pedestrian amenities or street furniture of the total street segments traveled in the unit area (%)	Field audit
13. Sidewalk Maintenance*	Proportion of street segments with sidewalk in good condition of the total street segments traveled in the unit area (%)	Field audit
14. Sidewalk Obstruction*	Proportion of street segments with sidewalk with no permanent obstruction (i.e., trees,	Field audit

	signage, etc.) of the total street segments traveled in the unit area (%)	
15. Natural surveillance*	Proportion of street segments with sidewalk visually assessable on the street level (e.g., window at street level, active use on the ground floor) of the total street segments traveled in the unit area (%)	Field audit
<i>Aesthetic</i>		
16. Cleanness*	Proportion of street segments with sidewalk with no litter of the total street segments traveled in the unit area (%)	Field audit
17. Abandoned or vacant lot*	Proportion of street segments with no abandoned buildings or vacant lot of the total street segments traveled in the unit area (%)	Field audit
18. Building maintenance*	Proportion of street segments with no buildings in need of repairs of the total street segments traveled in the unit area (%)	Field audit
<i>Social milieu</i>		
19. Crime density	Number of reported crimes in the unit area	LAPD Compstat (04/2007-10/2007)
20. Kid Watch sites	Number of Kid Watch volunteer sites in the unit area	USC Civic and Community Relations, 2005

Appendix G- Route Audit Check Sheet

Date: _____
 Area: _____
 Observer: _____
 Time: _____

		Segment	start	end
			~	
MEASURES	Coding	N/E	S/W	
1	What is the effective width of the pedestrian path or sidewalk?	higher than minimum standard (> 5ft)=1; at or less than minimum standard=0		
2	What is the condition or maintenance of the pedestrian path or sidewalk?	moderate or good=1; poor or in need of repair =0		
3	Are there any features that obstruct the path? (e.g., pole, sign, trash can, greenery, parked car, etc.)	yes=1; no=0 (rec. yes=0, no=1)		
4	Are there furniture/sidewalk amenities on this segment? (e.g., bench, bike rack, newspaper stand, public garbage bin, street vending machine)	yes=1; no=0		
5	Is there a bus stop on the segment?	yes=1; no=0		
6	Are there measures on this segment that could slow down traffic? (e.g., speed bump or humps; raised crosswalk; dip; curb extension; median, etc.)	yes=1; no=0		
7	Are there traffic/pedestrian signals/signs or systems on this segment ? (e.g., traffic signal, stop sign, yield sign, pedestrian activated signal, pedestrian crossing sign, etc.)	yes=1; no=0		
8	Are there abandoned buildings or vacant lots on this segment?	yes=1; no=0 (rec. yes=0, no=1)		
9	To what extent does this segment encourages "eyes on the street"? (e.g., windows at street level, active use on the street level, proportion of blank wall, etc.)	more moderate or good=1; poor =0		
10	Does this segment exhibits mixed-use development?	yes=1; no=0		
11	Are there any security measures displayed on this segment? (e.g., chain- linked fence, gate, surveillance camera etc.)	yes=1; no=0		
12	Are the buildings on this segment well-maintained?	yes=1; no=0		
13	Is there a lot of litter on the sidewalks?	yes=1; no=0		

Chapter 8 : References

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