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Pathways to Autonomy: Supporting Youth Independent Mobility in Westlake, Los Angeles

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AUTONOMY

PATHWAYS

SUPPORTING YOUTH INDEPENDENT MOBILITY IN WESTLAKE, LOS ANGELES

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EXECUTIVE SUMMARY

Each day, youth in Los Angeles venture out on their own to move to and from home, school, and after-school activities. Their travels represent important pathways to autonomy, agency, and urban citizenship, which a city can support with safe, pleasant paths that offer reassuring familiarity and opportunities for socializing.

In Westlake, a neighborhood with a gauntlet of challenges along its sidewalks, the 11 to 15-year-olds who travel independently accumulate extensive experience and valuable knowledge traversing the city. In the process, they develop ideas about what they like, what they dislike, and how their pathways can be improved. Yet urban designers, planners, and advocates interested in supporting safe mobility know very little about how youth experience the city, perceive their surroundings, and negotiate their travel. Data about traffic-related pedestrian injuries is not enough to explain adolescent mobility patterns, preferred routes, or modes of travel. Though these patterns involve safety, this study shows that many other factors shape independent mobility for urban youth.

To deepen understanding and inform the kinds of improvements we can make along streets and sidewalks, this study examines the experiences of late elementary, middle, and early high school students as they travel independently from school to after-school activities in Westlake: a dense, underserved neighborhood in Los Angeles with a high proportion of low-income, immigrant families and high incidence of traffic-related injuries and fatalities.

In this study, we use the concept of "sidewalk ecologies" to highlight the complex interaction between spatially situated social and material features of sidewalks that influence youth mobility. We use a range of interdisciplinary strategies, emphasizing youth-centered research methods and mapping to capture a rich portrait of the independent travel experiences, perceptions, and ideas of youth, in their own voices. This research was conducted in partnership with Heart of Los Angeles (HOLA), a community-based organization in Westlake that provides after-school programming to thousands of neighborhood youth, and yielded **important findings**:

NEGOTIATING INDEPENDENT TRAVEL

- **Familiarity is key:** For youth traveling from school to after-school activities, route choice is consistently driven by familiarity and efficiency.
- **Adaptation, not avoidance:** Students' expectations of the built and social environments along their travel routes are low, but instead of avoiding particular routes, they engage in smaller adaptive behaviors to manage and minimize risk.
- **Complex decision-making:** Youth engage in complex decision-making when traveling independently and hold in-depth neighborhood knowledge and experience.

MENTAL MAPS, REALIZED WALKS, AND YOUTH IDENTITY

- **Aging into walking:** Youth often negotiate their travel route with a caregiver, and slowly develop more confidence and capacity to navigate the route independently, eventually contributing to a sense of joy and freedom.
- **Gendered experiences:** The embodied, perceptual experience of travel is shaped by gender; girls in particular may experience harassment and unwanted attention and adopt adaptive behaviors to manage risk.

SIDEWALK ECOLOGIES AND INDEPENDENT TRAVEL

- **Influence of the built environment:** Youths' routes are marked by positive and negative elements of the built environment, but route and mode choice are more heavily influenced by familiarity, convenience, and efficiency.
- **Influence of the social environment:** Social concerns generally outweigh built environment concerns in influencing travel experiences, but youth adjust their patterns only minimally.
- **Negative "red spots," positive "green spots," and the spaces between:** Youth travel is marked by "green spots" associated with safety, familiarity, and comfort, separated by mixed areas and "red spots" associated with crime, risk, and discomfort. This lack of continuity means youth must navigate through a series of unsafe and unpleasant areas to reach their destination.

Our findings bolster our understanding of sidewalks as complex, sociospatial environments for youth. The findings also offer insights for future-oriented design and programmatic interventions to support safe and enjoyable independent travel for youth in Westlake and beyond. We put forward **six propositions** for planners, designers, and advocates invested in enhancing youth independent mobility:

1 Emphasize social determinants of safety and enjoyment

"Walking with friends, just having a time, you know, just trying to transition from school to HOLA. We are just talking. We are talking about how it's been. It's catching up."

The neighborhood social environment – including friends, neighbors, familiar faces, or strangers and threatening others – is often more impactful in shaping youth perceptions of their journeys than built environment factors. It is imperative to broaden the scope of research and interventions for safe youth mobility to include and actively address social factors. This reframes sidewalks as sociospatial environments and safety as more complex than the risk of injury.

2 Focus on the direct routes that most efficiently link destinations

"I think [this route] is more simple and faster to get to HOLA."

Even when negative social and built environment features are evident, youth overwhelmingly chose to travel the most efficient and direct route between school and after-school activities. Rather than assume youth will incorporate detours to access more interesting or enjoyable sidewalk segments, interventions should focus on the most direct and efficient links between key origins and destinations.

3 Reinforce preferred, familiar, and more public paths to increase certainties of travel

"I'm not sure how dangerous some places are... so that's why I take this route because it's more open and there's a lot of people passing."

Vehicular traffic can be a danger to young pedestrians, but it is paradoxically coupled with a sense of security. While most youth travel a direct path to their destinations, they choose streets with limited uncertainties and with more public activity, such as those with more pedestrian and vehicular traffic, transit stops, vendors, and storefronts, rather than quieter, residential areas. Visibility and open lines of sight along sidewalks offer certainty to travelers and allow them to make choices about who and what they encounter.

4 Address links between islands of safe, enjoyable spaces

"To be completely honest, I haven't taken a different route. I always stick with this one."

Faced with limited options and driven by efficiency, public visibility, and familiarity, youth continue their travel between islands of safe, enjoyable spaces through areas of unsafe or unpleasant built and social environment conditions. To create continuous paths of safe and enjoyable travel for youth, improvements can be directed to the "gaps" of negative physical and social conditions between "islands" of joy and comfort. Planners and designers should consider these "gaps" as key sites for transformations.

5 Support the social life on the sidewalk

"I'm usually with friends, depending on the day, but sometimes I do [walk] by myself. But there's lots of students here so I'm not worried about it."

Early independent mobility powerfully shapes adolescent perceptions of and participation in their community. Sidewalks should be reframed as spaces of urban citizenship for youth, with interventions that support meaningful opportunities for engagement such as purchasing food from vendors, socializing with friends, and chatting with teachers after school.

6 Demonstrate care for people and for place

"That gives you the idea maybe the government is trying to pay attention to us in this part of the neighborhood."

Beyond major infrastructural improvements like road and sidewalk repairs, improvements to youth mobility involve strategies that support and make visible care for people and for place. Street furniture like shade structures or trees, trash receptacles, pedestrian-scale lighting, and drinking fountains can support both sidewalk maintenance and user experiences. These interventions, which benefit a wider public, also encourage community ownership and care leading to feelings of belonging for vulnerable youth as they begin to independently traverse the city.

RESEARCHER OBSERVATIONS

unplanted sidewalk median | newly planted trees | well marked crosswalk | active basketball court | playground active with children | tent - unsheltered homelessness | gap in walkway | recreation center | construction in progress | litter and feces | narrow walkway beneath scaffolding | graffiti and vandalism | litter | greenery and shade | apartments | signage supports maintenance | greenery | lack of greenery | chalk art | canopy providing shade | litter | shared outdoor space

YOUTH OBSERVATIONS

tents, "probably not the safest" | "there's a security guard there" | "there's a lot of people that are walking and it's safe" | "I like to stop here and... go play" | abandoned couch blocked the main way | "this much graffiti... it doesn't seem right to me" | gap in sidewalk | "the grass, so green, it's intoxicating" | "construction that has been recently, progress" | trash and feces | "it's cool because it protects us from the sun" | scaffolding, "lots of ads," "graffiti, overgrowth" | "you can see the sun coming out or coming down" | "I like this place, it's calm" | "it feels like a huge garden... a greenhouse" | falling palm fronds | sidewalk "provide the ample enough space"

STREET VIEW

LAFAYETTE PARK

CONSTRUCTION SITE | HOLA BRYSON | HOLA BRYSON

WILSHIRE BLVD | S LA FAYETTE PARK PL | WILSHIRE BLVD | S RAMPART BLVD | WILSHIRE BLVD | S CORONADO ST

(ABANDONED) CHUCK E CHEESE | W SPA

STREET VIEW

YOUTH OBSERVATIONS

"I like to see it because it's modern" | "there's a lot of walking space" | "It makes me happy to see trees and flowers growing" | "a gap in the sidewalk, that worries me" | the cars are "crazy here" | "burnt down Chuck-E-Cheese" | "many tents, homeless people" | "a bumpy road... the pavement wasn't good" | litter

RESEARCHER OBSERVATIONS

new building, clean sidewalk | well maintained landscape | vacant retail spaces | urine smell | litter | tents - unsheltered homelessness | litter | overgrown sidewalk median | tents - unsheltered homelessness | graffiti | cracked curb, blocked gutter | tents - unsheltered homelessness | litter | litter | damaged planter/bench | unswept leaves | tree canopy and shade | unwelcoming building entrance | litter | housing services | unplanted sidewalk median | new housing

Legend:
● Physical Negative
● Physical Positive
■ Social Negative
■ Social Positive

INTRODUCTION

STUDY PURPOSE

For youth, the ability to travel safely, enjoyably, and independently in the city – whether to school, to after-school activities, or to other neighborhood destinations – supports their sense of independence, wellbeing, and belonging. However, youth independent mobility is often constrained by socio-physical conditions and structural inequities. This is particularly evident in Westlake: a dense, underserved, and largely immigrant neighborhood just west of downtown Los Angeles with little access to green space and a high incidence of traffic-related injuries and fatalities.

Youth in Westlake who navigate their routes to and from school each day hold extensive neighborhood knowledge, agency, and ideas. Yet we know very little about their sidewalk experiences. Understanding how youth negotiate and perceive walking in Westlake can support design, policy, and planning interventions to make their journeys safer and more enjoyable.

This study examines the experiences of 11 to 15-year-olds in Westlake as they travel independently from school to after-school activities. Here, we use the concept of "sidewalk ecologies" to emphasize the complex interaction between spatially situated social and material features of sidewalks, both positive and negative, that shape perceptions of safety and risk and influence youth mobility. In this study, the concept of "sidewalk ecologies" enables us to bridge across several dichotomies persistent in research on youth travel: built and social environments, objective and perceptual variables, travel behaviors and mental maps, and experiences and ideas.

While most research on youth travel is quantitative, based on surveying caregivers on their children's travel behavior (Fusco et al., 2012; Marzi & Reimers, 2018; Noonan et al., 2016), here we use a range of youth-centered, largely qualitative methods drawn from the disciplines of urban planning, architecture, and the humanities. In partnership with Heart of Los Angeles (HOLA), a community-based organization in Westlake, we engaged 28 students aged 11-15 in a series of exercises, including route mapping and walking audits, to understand their experiences and perceptions of the trip from school to after-school activities. Collaboratively with the youth participants, we undertook a series of mapping exercises in which we layered qualitative and quantitative data to build a complex, critical, ethnographic, and robust portrait of the travel experiences of youth in Westlake. This "thick mapping" was integrated throughout the study's design – in collecting data with youth, in organizing and synthesizing the data, in analyzing our findings, and in representing emerging insights.

Our findings deepen our understanding of how neighborhood social and built environment conditions influence youth independent travel behaviors, experiences, and perceptions in Westlake. These findings also offer insights for planners, designers, and advocates seeking to improve sidewalk environments to support safe, enjoyable travel for youth in underserved neighborhoods.

REPORT STRUCTURE

After introducing the research questions, we review the literature on the social and environmental factors influencing youth independent mobility and on contemporary design, planning, and policy directions. Next, we introduce the neighborhood context for our study and outline our research design and methods. We then present our research findings, organized according to our analytical framework. In the discussion, we synthesize our findings to produce insights and implications for designers, policymakers, and advocates seeking to create urban environments that support safe and enjoyable walking journeys for urban youth.

RESEARCH QUESTIONS

The goal of this research is to understand the independent mobility experiences of youth, aged 11-15, in the Westlake neighborhood as they travel from school to after-school activities. Specifically, we use a youth-centered research approach to understand how neighborhood social and spatial factors shape independent travel patterns and experiences, with the goal to inform related design, policy, and planning interventions. This research is guided by the following questions:

1 How do inner-city youth negotiate their independent walk from school, and what (if any) precautions do they take?

2 How are youths' mental maps, realized walks, and associated choices (detours, precautions, walking with peers) influenced by gender and age?

3 How are youths' path choices influenced by sidewalk ecologies (physical features, hot and safe spots, human activity)?

4 What design and policy improvements can enhance the independent mobility of inner-city youth?

LITERATURE REVIEW

YOUTH INDEPENDENT MOBILITY: BENEFITS AND DECLINE

Child independent mobility, or CIM, refers to children's freedom to actively travel through public spaces without adult supervision (Crawford et al., 2017; Marzi & Reimers, 2018; Mitra et al., 2014), and can be an important indicator of child-friendly environments that enable youth to safely explore the city and exercise freedom (Cook et al., 2015). Conceptually broader than active school travel (AST), CIM encompasses walking and cycling to school as well as independent travel to other local destinations like parks, shops, and community facilities (Marzi & Reimers, 2018). The two concepts are importantly linked and even mutually reinforcing: increased freedom of mobility overall may support children and youth in choosing more sustainable and active modes, like walking and cycling, to get to school (Mitra et al., 2014).

Both CIM and AST are associated with a wide range of benefits for youth. In addition to the well documented health benefits of increased physical activity (Stone et al., 2014), studies have found that independent travel can also support psychological and cognitive development (Crawford et al., 2017), social development and belonging (Loukaitou-Sideris, 2003), and a sense of confidence and self-esteem for youth (Mitra et al., 2014). Interpersonally, independent active travel offers opportunities for greater social interaction with peers and with the broader community, and an opportunity to participate in the social and civic life of the city (Cook et al., 2015; Crawford et al., 2017; Fusco et al., 2013). Additionally, children who walk are more likely to engage with the multi-sensory experience of their urban environment (Fusco et al., 2013), connecting with the physical and social aspects of their community to acquire neighborhood knowledge and develop a sense of place (Cook et al., 2015; Fang & Lin, 2017; Fusco et al., 2012). Through independent mobility, young people can learn about the city and about themselves, and participate in and contribute to urban life (Skelton, 2013).

CHILD INDEPENDENT MOBILITY (CIM)

Children's freedom to actively travel through public spaces without adult supervision; encompasses walking and cycling to school as well as independent travel to other local destinations like parks, shops, and community facilities

Despite these diverse benefits at the individual and community scales, and evidence of youth preference for active travel modes (Egli et al., 2018), youth independent mobility and active school travel have declined throughout the US and Canada in the past five decades. Many walking, cycling, and transit trips to and from school have been replaced by private automobile trips (Mitra & Buliung, 2015), even amongst youth who live within a mile of school (Martin et al., 2007), while other time spent in public space is now more likely to be supervised by an adult (Mitra et al., 2014).

SOCIAL AND PHYSICAL ENVIRONMENT INFLUENCES ON YOUTH MOBILITY

To inform policy and design interventions, it is important to understand the social and environmental factors that impact youth independent mobility. Integrating theoretical and methodological approaches from public health, environmental psychology, and transportation research, scholars have presented various social-ecological frameworks through which to understand the individual, social, and environmental correlates that influence youth independent mobility (Crawford et al., 2017; Mitra, 2013; Rahman et al., 2020; Riazi et al., 2019). Such models conceptualize mobility as influenced by multiple psychological, interpersonal, and objective factors that interact in complex ways to influence behavior (Marzi & Reimers, 2018; Rothman et al., 2018). Factors often considered in these models include external influences (including the natural environment and policy context), child characteristics (age, gender, confidence, cognitive development), household characteristics (parental attitudes, family composition, income, schedules), as well as both objective and perceived characteristics of the neighborhood social and physical environment, from the perspective of both parents and youth (Ahlport et al., 2008; Carlson et al., 2014; Marzi & Reimers, 2018; Mitra, 2013; Riazi et al., 2019; Rothman et al., 2018). While proximity to school or other destinations is often considered the most crucial factor influencing youth travel (Clark et al., 2016; Larsen et al., 2009; Mitra & Buliung, 2012), social-ecological models point to a much more complex relationship between neighborhood built and social environments, as well as caregiver-child interactions, that shape travel patterns.

At an individual level and household level, youth's ability to travel independently to school or other neighborhood destinations is mediated through complex child-environment-parent negotiations (Faulkner et al., 2010). These negotiations reflect factors including access to a vehicle, parental schedules, and convenience, as well as perceptions of the child's capacity, age, and gender. Child age appears more directly correlated to independent travel, with older children more likely to travel alone, though findings on the influence of gender are less consistent (Mitra & Buliung, 2015; Marzi et al., 2018; Riazi et al., 2019; Mitra, 2013). The decision to allow a child to travel independently also reflects parental perceptions of risk factors in the neighborhood built and social environment (Banerjee et al., 2014; Blakely, 1994). Research suggests that a lack of "environmental

trust" amongst parents and caregivers (Mitra et al., 2014, p. 3402), influenced by traffic safety concerns (Chaufan et al., 2012), growing fears over neighborhood social conditions (Rudner, 2012; Vlaar et al., 2019), and shifting community norms around "acceptable" boundaries (Crawford et al., 2017), has constrained youth mobility.

In addition to individual and household factors, youth travel is also importantly shaped by community-level factors, including the social and spatial attributes of the neighborhood (Banerjee et al., 2014). There is considerable research on the influence of the physical characteristics of the built environment – or "design and destinations" – on child independent mobility and active school travel for children (Forsyth et al., 2008). Many such studies consider both the objective characteristics of the built environment – neighborhood and street design, pedestrian facilities and active transportation infrastructure, traffic volumes, densities and adjacent land uses – as well as perceptions of the built environment, and how these features are understood to support or detract from safety and comfort (Bosch et al., 2020; Foster & Giles-Corti, 2008; McMillan, 2007; Stewart et al., 2012). Other research suggests that parental perceptions of neighborhood social factors like crime and social cohesion also strongly shape travel behaviors (Mitra et al., 2014).

Though relatively less studied than parental perceptions and behaviors, investigations into the travel experiences and perceptions of youth have found that urban youth have acute awareness of their neighborhoods and extensive place-based knowledge of the physical and social safety issues (Banerjee et al., 2014; Cook et al., 2015; Fusco et al., 2013). These studies have also revealed differences in the concerns of youth and parents: while parents may be more concerned about traffic-related risks like high vehicle speed and a lack of signaled crosswalks, youth may be more concerned about dangers in the "social milieu," like crime, strangers, bullying and harassment, and gang activity than those in the "physical milieu" or built environment (Banerjee et al., 2014; Crawford et al., 2017; Lin et al., 2017; Wilson et al., 2018).

INTERVENTIONS TO SUPPORT YOUTH MOBILITY

Acknowledging the many social and environmental barriers to child independent mobility, researchers and practitioners have proposed and delivered a range of design and policy improvements aimed at improving safety and comfort and increasing active, independent travel for youth. One such effort is Safe Routes to School (SRTS), an international movement that seeks to increase the number of children actively commuting to school by funding projects that create more supportive environments for walking and cycling (Chaufan et al., 2012; McDonald et al., 2014). Since gaining traction in the US in the 1990s, SRTS projects have been widely implemented across California, with millions of dollars of funding awarded to local transportation agencies and school districts to improve and encourage youth active travel (Boarnet et al., 2005; McDonald et al., 2014; McMillan, 2007; Stewart et al., 2012). SRTS efforts target the "three Es": education on and awareness of road safety for both youth and drivers, enforcement of traffic laws near

schools, and engineering of street environments, including the planning and construction of sidewalk and crosswalk improvements and traffic calming measures (McMillan, 2007).

While engineering improvements have been the focus of SRTS funding and have indeed been associated with increases in walking and cycling (McDonald et al., 2014), researchers argue that physical improvements alone are not sufficient to increase walking and cycling to school (Boarnet et al., 2005), and must be accompanied by other education and promotion components. In order to further develop these education and promotion components and support success, greater understanding of the many complex social and environmental facilitators and barriers to youth independent mobility in the city is required (Mitra, 2013; Stewart et al., 2012). Such a deeper understanding of the built and social facilitators and barriers to youth independent mobility could help planners and designers to tailor interventions more successfully. Furthermore, existing literature demonstrates that most of what is known about youth travel behaviors is informed by studies that center the perspectives of parents, as key decision-makers in children's mobility (Fang & Lin, 2017; Li & Seymour, 2019; Lin et al., 2017; Porter & Turner, 2019; Rothman et al., 2018). Given the recognized differences in how parents and youth perceive risk and opportunities in the neighborhood (Banerjee et al., 2014; Crawford et al., 2017; Wilson et al., 2018), more research centering the voices and experiences of youth is needed to inform effective interventions (Fusco et al., 2012).

CONTEXT - WESTLAKE

NEIGHBORHOOD DEMOGRAPHICS

Westlake, a neighborhood just west of Downtown Los Angeles, is home to approximately 158,000 residents,[1] making it one of the densest neighborhoods in the city. Analyzing 2020 ACS data for this area suggests that Westlake has a social environment that is distinct from that of greater Los Angeles County as a whole. The area is 61% Hispanic, compared to 48% across the county. Westlake residents are more likely to be low-income immigrants than residents in the County as a whole: 55% of area residents are foreign born (compared to 34% in LA County), 37% of residents are not American citizens (compared to 16%), 82% of residents speak a language other than English at home (compared to 59%), and 25% of residents live below the poverty level (compared to 14%). Educational attainment follows a similar pattern, with Westlake residents twice as likely to have stopped their education before graduating from high school (24% vs. 12%) (US Census Bureau, 2016).

NEIGHBORHOOD BUILT ENVIRONMENT

Like the social characteristics outlined above, the built environment of Westlake is also distinct from Los Angeles County in ways that importantly shape the pedestrian experience. A much higher percentage of residents in Westlake rent their housing (88% compared to 51%), and that housing is overwhelmingly in multifamily buildings with 10+ units (70% compared to 25%), rather than in single family homes (4% compared to 46%).

Public realm conditions in Westlake reflect an ongoing lack of investment, precipitating significant socio-physical challenges that contribute to unsafe and unpleasant pedestrian travel.
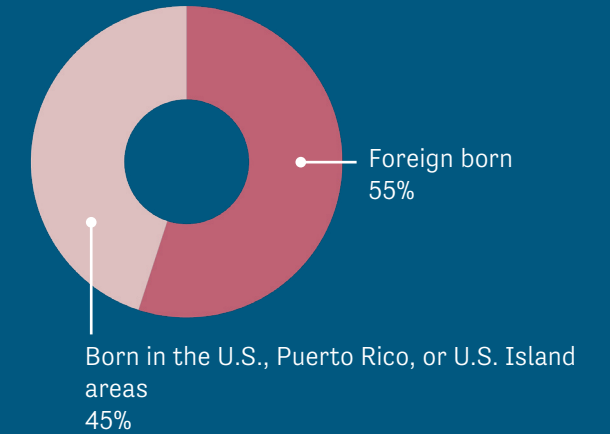
4

1 There are 46 census tracts within a one mile radius of HOLA in Lafayette Park. These census tracts house 157,747 people. Figures based on ACS data.
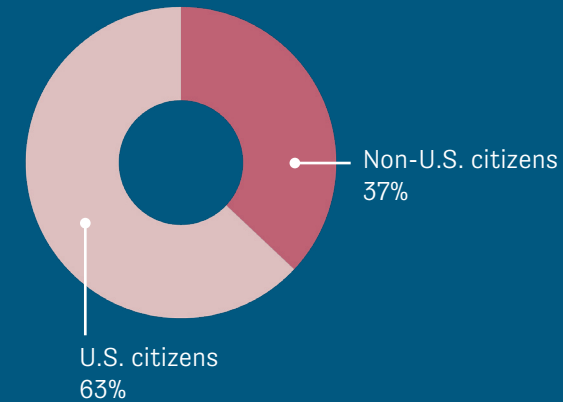
RACIAL DEMOGRAPHIC

- Hispanic 61%
- Non-Hispanic 39%
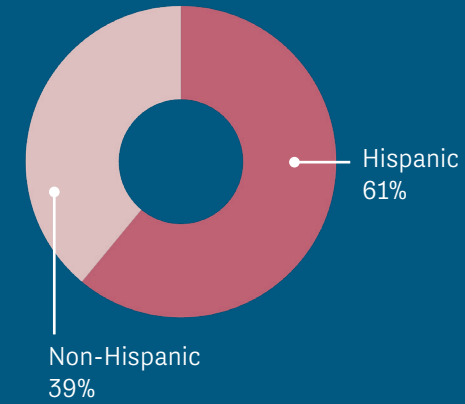
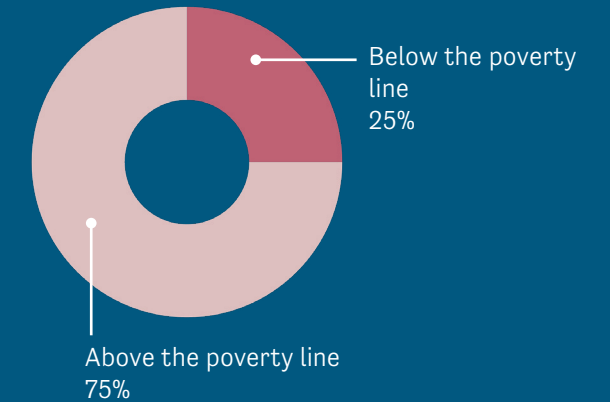*LA County share Hispanic: 48%*

PLACE OF BIRTH

- Foreign born 55%
- Born in the U.S., Puerto Rico, or U.S. Island areas 45%

LA County share foreign born: 34%

U.S. CITIZENSHIP

- Non-U.S. citizens 37%
- U.S. citizens 63%

LA County share non-U.S. citizens: 16%

INCOME

- Below the poverty line 25%
- Above the poverty line 75%

LA County share below the poverty line: 14%

RENTERS & OWNERS

- Owners 12%
- Renters 88%
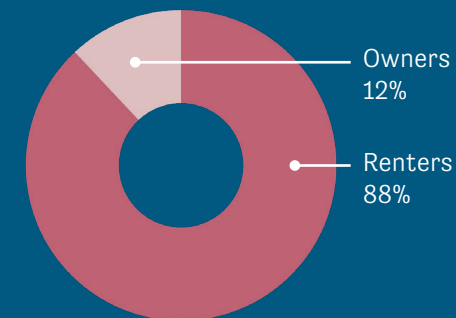
LA County share renters: 51%

HOUSING

- Single family homes 4%
- Multifamily with 10+ units 70%
- Multifamily with 2-9 units 26%
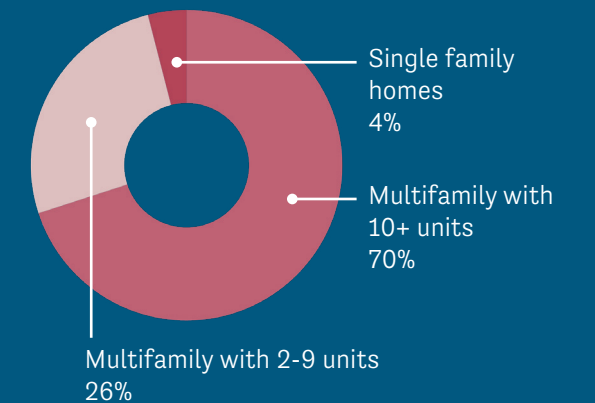
LA County share multifamily with 10+ units: 25%

Westlake neighborhood demographics and built environment

PEDESTRIAN-VEHICLE COLLISIONS

Our GIS mapping analysis, completed using data from the California Statewide Integrated Traffic Records System (SWITRS) database, demonstrates high instances of pedestrian-vehicle collisions resulting in injuries and fatalities, with particular concentrations along arterial streets and near transit stations and stops.

Pedestrian-vehicle collisions
SWITRS 2016-2020

Fatal
1   2-3   4+

Injury (severe)
1   2-3   4+

Injury (minor)
1   2-3   4+

Metro bus stops
Metro rail stops

0   0.25   0.5   0.75 Miles
N

Pedestrian-vehicle collisions geocoded using latitude and longitude coordinates. Source: SWITRS (2016-2020), Metro (2023), LA Geohub (2023)

East Hollywood | Silver Lake | Echo Park | Koreatown | Westlake | Pico-Union

HOLA
Lafayette Park
MacArthur Park

1-mile buffer
1/2-mile buffer

BICYCLE-VEHICLE COLLISIONS

While the number of bicycle-vehicle collisions reported is lower, instances appear to be similarly distributed along major arterials and near transit stops (California Highway Patrol, n.d.).

Bicycle-vehicle collisions
SWITRS 2016-2020
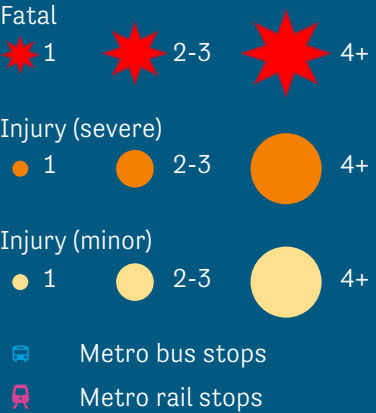
Fatal
1   2-3   4+

Injury (severe)
1   2-3   4+

Injury (minor)
1   2-3   4+

🚌 Metro bus stops
🚈 Metro rail stops

0   0.25   0.5   0.75 Miles
N

Bicycle-vehicle collisions geocoded using latitude and longitude coordinates. Source: SWITRS (2016-2020), Metro (2023), LA Geohub (2023)
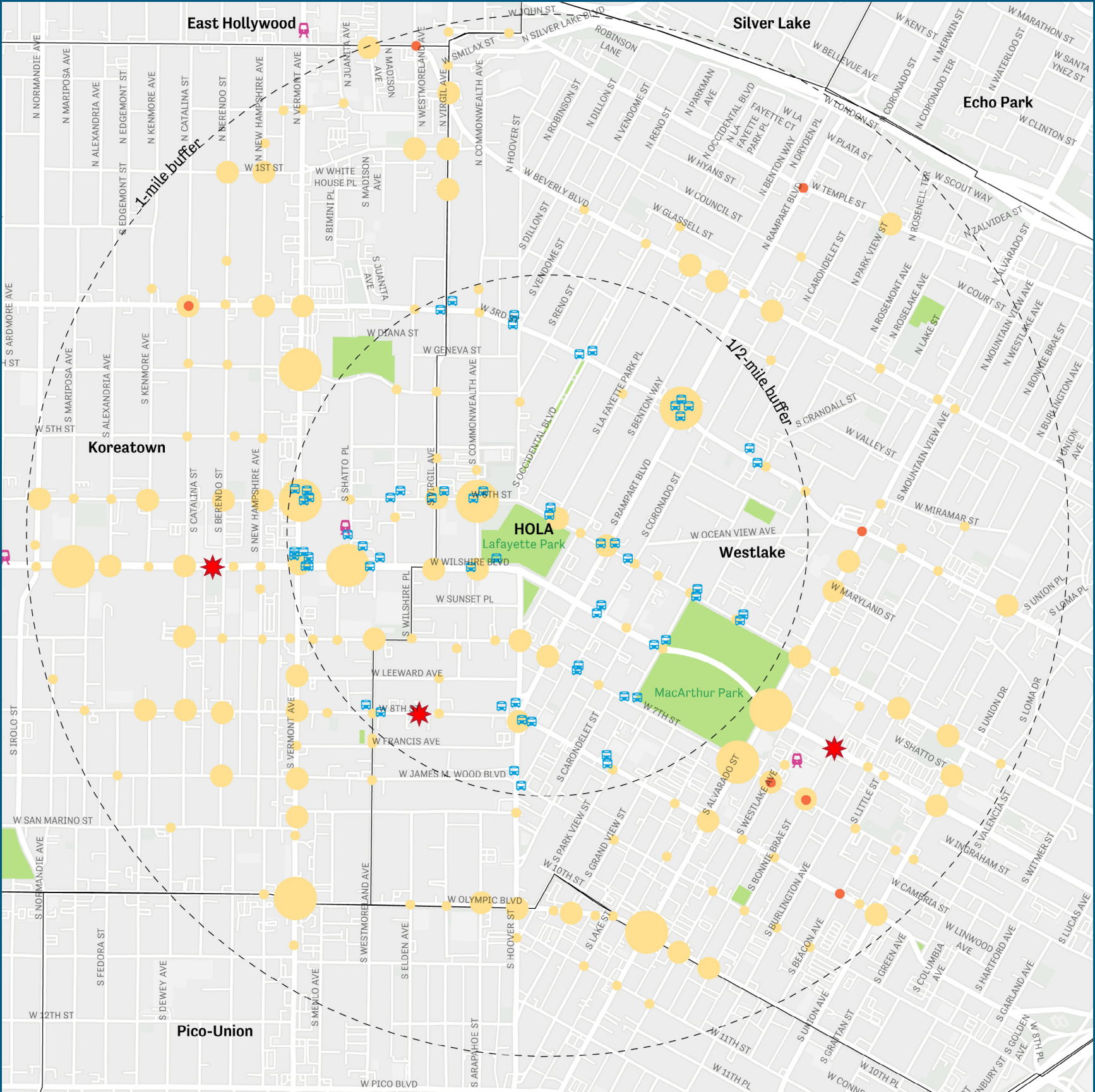
VEHICLE SPEED LIMITS

Arterial streets in the neighborhood (categorized in the map as "avenues and boulevards") have vehicle speed limits of 35 mph, are important transit corridors, and carry significant vehicular traffic. Arterial streets account for some of the routes most used by youth included in this study, as opposed to residential or "local" streets where the speed limit is 25 mph (LA Geohub, 2023).

Westlake's traffic risks are well-documented and recognized by the Los Angeles Department of Transportation (LADOT). Many of the streets in the neighborhood are categorized as part of LADOT's 470-mile High Injury Network, a network of 470 miles of city streets where the highest concentrations of traffic-related pedestrian injuries and fatalities take place and where LADOT plans to target interventions and strategic investments to improve road safety (Los Angeles Department of Transportation, n.d.). The High Injury Network includes key street segments near HOLA traveled by many youth in this study, including Wilshire Boulevard, West 6th Street, West 7th Street, Rampart Boulevard, and Hoover Street.

Vehicle speed limits

— Local streets: 25 MPH
— Avenues/boulevards: 35 MPH

0   0.25   0.5   0.75 Miles
N

Speed limits calculated by selecting local streets for 25 mph and avenues and boulevards for 35 mph. Source: LA Geohub (2023); Metro (2023)
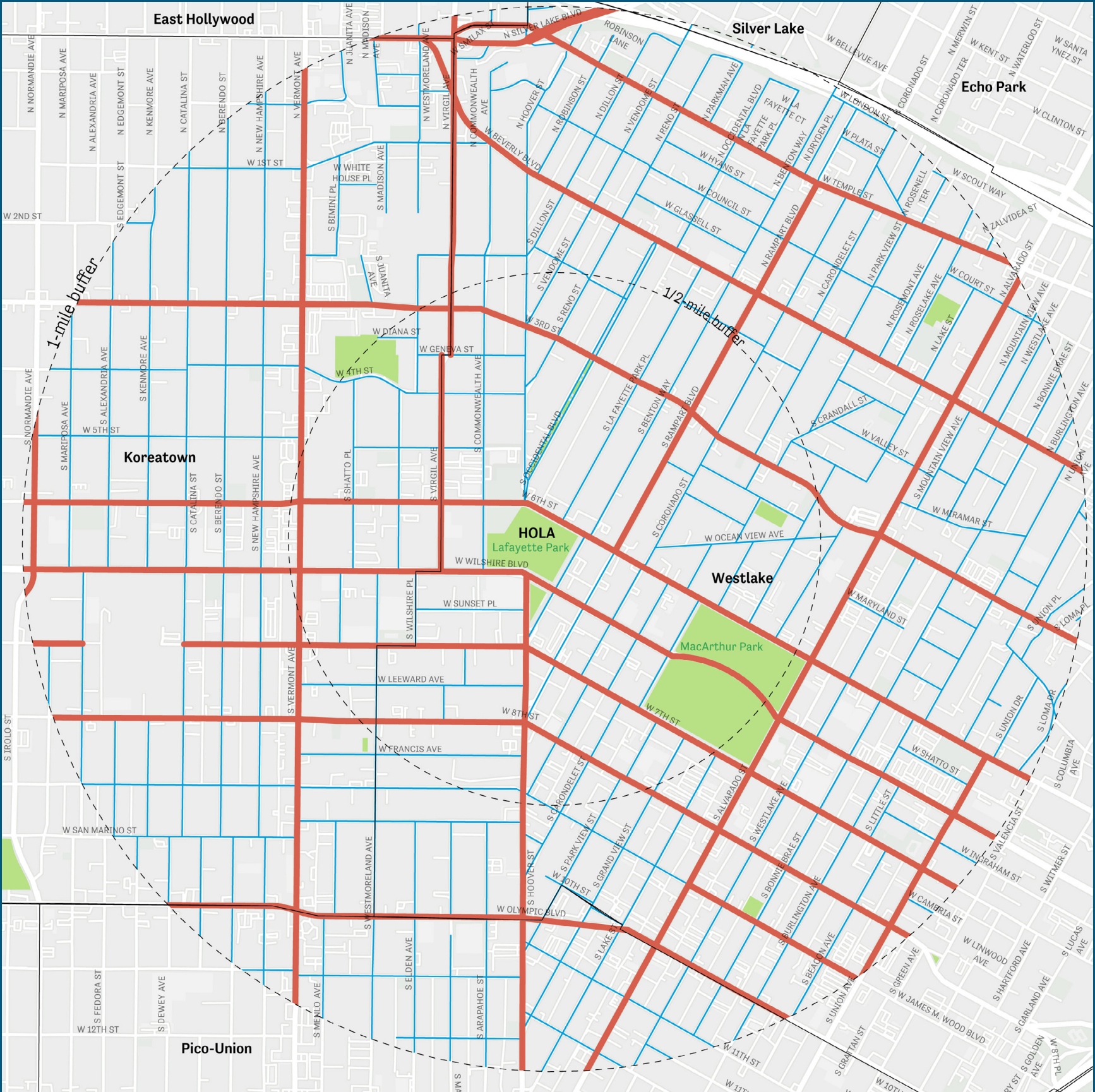
CLEAN STREETS INDEX

In addition to traffic conditions, the neighborhood also faces street maintenance challenges. City-level data show that many streets in the area, particularly those surrounding Lafayette Park, receive a "somewhat clean" or "not clean" rating on the Los Angeles Bureau of Sanitation's Clean Streets Index (Los Angeles Bureau of Sanitation, 2016).
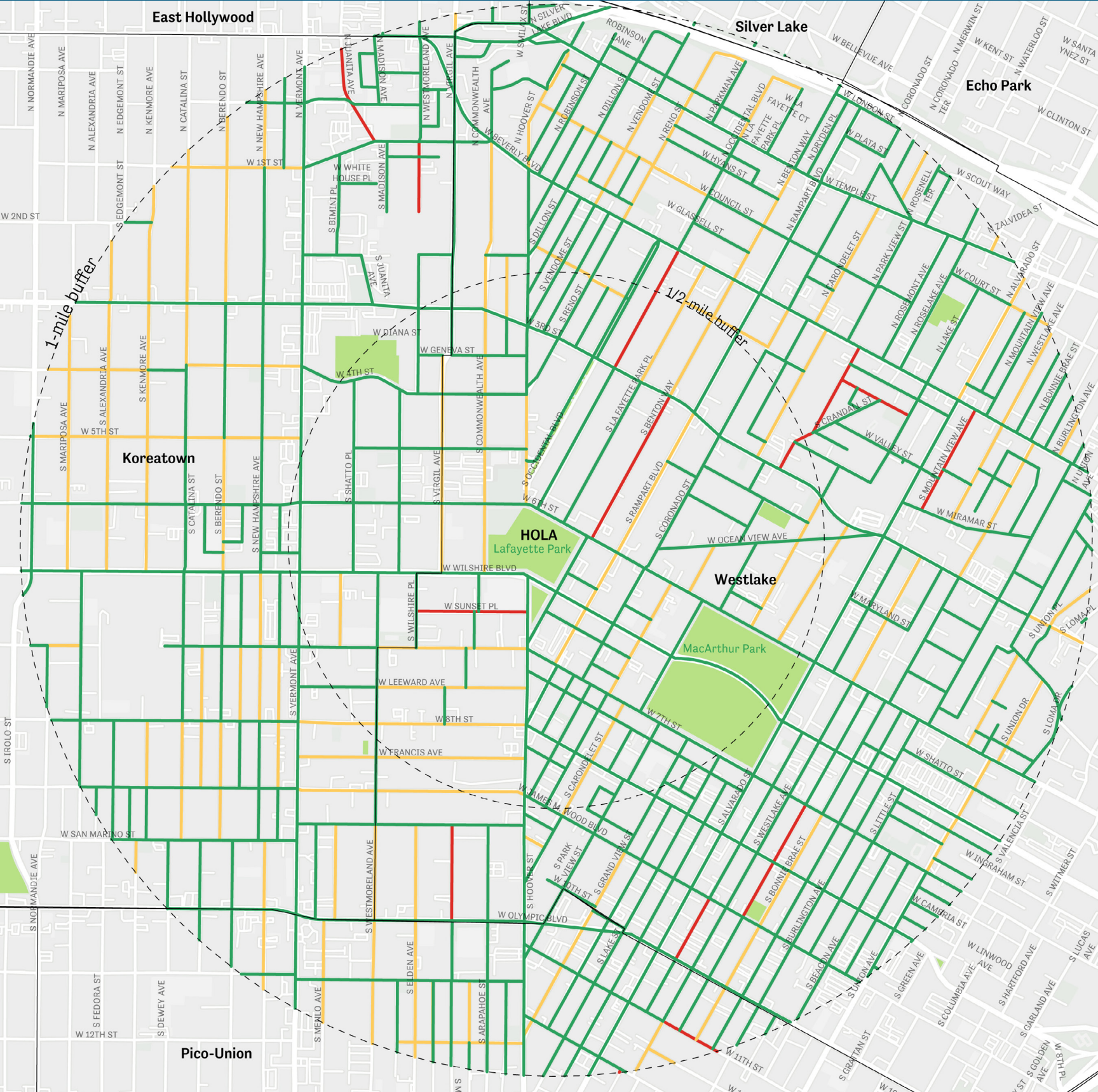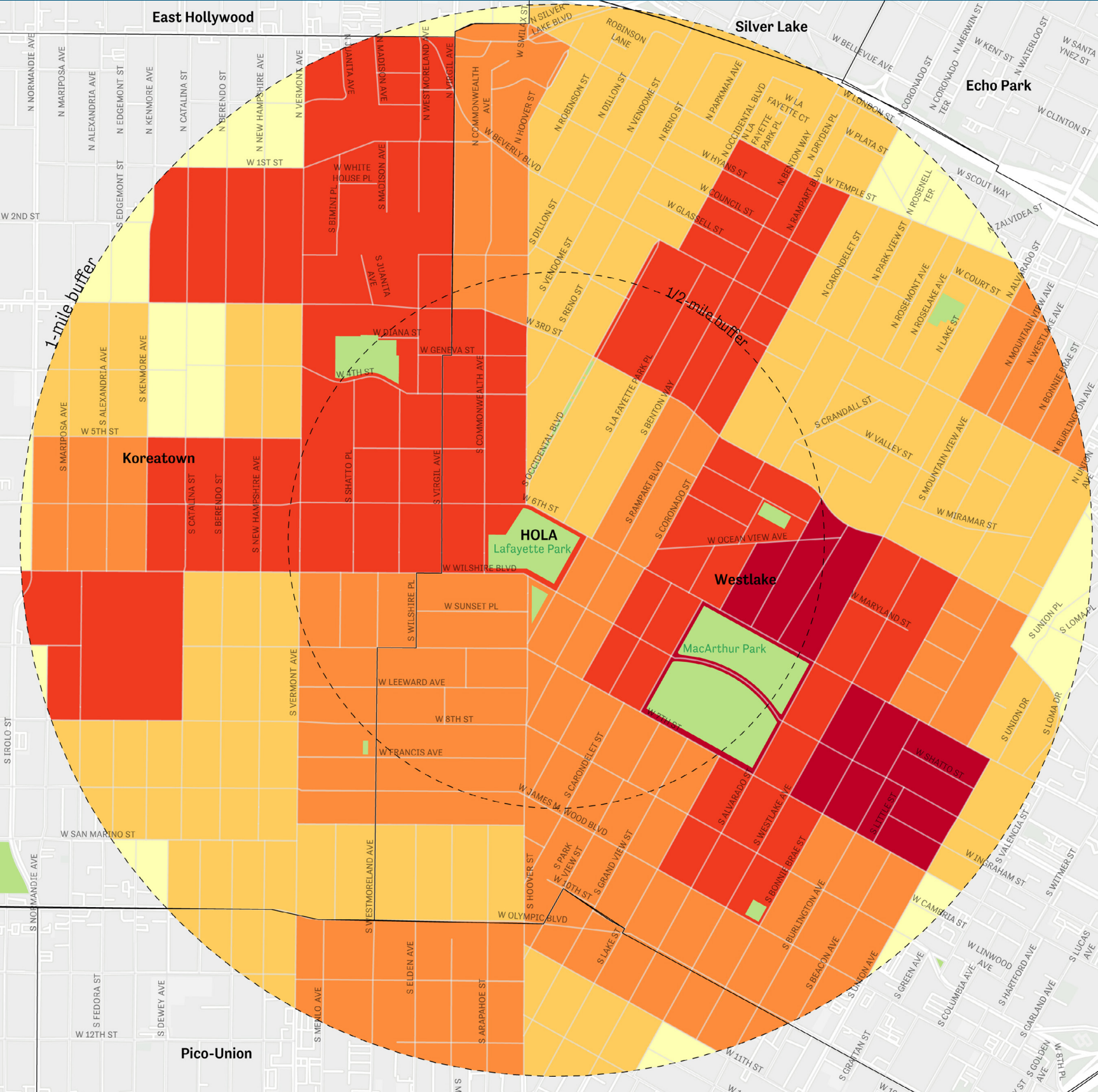

Clean Streets score (2020)

— Clean
— Somewhat clean
— Not clean

N   0   0.25   0.5   0.75 Miles

VIOLENT CRIMES

Social factors in the neighborhood also hinder sidewalk safety, with significant numbers of violent crimes reported in the area overall, particularly in and around the neighborhood's two major public spaces: Lafayette Park and MacArthur Park (LAPD COMPSTAT, 2022).

Violent crimes
per 1,000 residents (2022)

- 0 - 5
- 6 - 17
- 18 - 30
- 31 - 50
- 51 - 90

0   0.25   0.5   0.75 Miles

*Crime data geocoded using latitude and longitude coordinates. Counts added to census tracts, normalized by total population per census tract * 1,000.*
Source: LAPD COMPSTAT (January 2022 - December 2022), LA Geohub (2023), ACS 5-year (2015-2019)

RESEARCH APPROACH AND METHODS

DATA SOURCES AND COMMUNITY PARTNER

This study results from a partnership with a community-based organization that has strong connections to the Westlake neighborhood and directly serves neighborhood youth: Heart of Los Angeles (HOLA). With several buildings in and surrounding Lafayette Park, HOLA has served the Westlake neighborhood since 1989. Today, HOLA provides thousands of underserved youth, aged 6-19, with free after-school programming in academics, visual and performing arts, and athletics. HOLA and cityLAB are longstanding partners and have collaborated on several research projects related to youth experiences in urban public space.

Through partnership with HOLA, we recruited youth aged 11-15 who participated in HOLA after-school programming and who traveled independently in the neighborhood to participate in this study. Working closely with HOLA, we identified two classes, both part of HOLA's existing after-school programming, to engage in this research.

HOLA's Arts & Recreation Center located in Lafayette Park

YOUTH-FOCUSED, MULTIDISCIPLINARY APPROACH

For this study, we developed a youth-focused, largely qualitative, multidisciplinary research approach that was critical, ethnographic, and robust, and sought to address three key methodological challenges we observed in existing scholarship on youth travel. First, researchers typically use quantitative methods, often survey research, to understand youth travel behaviors. These studies often frame built environment features as static and unchanging; qualitative methods have been used much less frequently in research on youth mobility (Lin et al., 2017; Marzi & Reimers, 2018). While quantitative approaches effectively illustrate prevalence and associations between environments and travel behaviors, youth's individual interpretations, perceptions, and experiences of the built environment are critically important to inform successful interventions to support safe, independent youth mobility (Fusco et al., 2013; Noonan et al., 2016). Youth voices are surprisingly absent in existing youth mobility research. Accordingly, this study adopts a largely qualitative methodological approach that integrates a range of tools including photovoice, interviews, mapping, and walking audits to build a rich understanding of the affective experiences of youth as they travel through the city.

Second, many studies on youth travel engage parents or caregivers as research participants to respond and report on behalf of their children. Such approaches yield important information about adult perceptions of safety and built environment conditions, but given that youth are less commonly engaged as research participants (Sarmiento & Duarte, 2019), much less is known about their own perceptions of their travel environments (Sweeney & Von Hagen, 2015). While consulting parents or caregivers as proxies simplifies research design and may minimize ethical considerations of research involving children, parents' reports are likely to focus more heavily on parental license and issues related to personal safety while overlooking children's own affective experiences and perceptions of the built and social environments (Lin et al., 2017). Scholars have noted the need for in-depth research on travel that centers the participation of youth in order to better understand their mobility experiences, needs, and challenges (Porter & Turner, 2019). Given that youth hold unique insights into the experience, challenges, and benefits of independent travel, "the muted voice of children is a missed opportunity to inform research and policy from evidence gathered from the group most directly affected" by changes in school travel and independent mobility (Rothman et al., 2017, p. 318). Accordingly, to enhance understanding of their travel experiences, this study engages directly with young people themselves, and demonstrates that they have extensive knowledge of their environments and views about its future. This study includes 28 youth participants, aged 11-15, and employs a range of child-centered methods to enable participants with varying verbal and cognitive skills to communicate their own travel experiences, feelings, and ideas (Loukaitou-Sideris, 2003).

Third, there is considerable research on youth travel from a variety of disciplines including urban planning, public health, and traffic engineering. However, relatively few studies adopt a multidisciplinary research approach, bridging across those disciplines with a shared interest in safe, independent youth mobility (Porter & Turner, 2019). Our study brings together researchers from architecture and urban planning and integrates methods and practices from those disciplines, including GIS mapping, interviews, and walking audits. A novel, multidisciplinary methodological component of this study is our use of thick mapping. Thick mapping is a cartographic method in which layers of qualitative and quantitative data representing empirical data as well as personal experiences, narratives, and ideas, are overlaid onto a single map of a specific geography (Cuff et al., 2020). Once "thickened," the map offers a new representation of urban space that reveals previously fragmented, unobserved relationships between many social and environmental conditions. A thick map is spatial and social, historical and projective, integrating a humanistic emphasis on narrative representation together with the design disciplines' emphasis on projection and intervention. Thick mapping enables complex, contradictory, and human-centered knowledge of the city to be collected, analyzed, and documented, making it particularly well-suited to this study.

Here, thick mapping is a particularly effective tool to capture, organize, and synthesize highly complex data related to youth travel experiences. The practice allows us to understand and represent youth experiences of the city in a manner not typically captured by other, more conventional research methods and forms of documentation. By integrating many layers of qualitative and quantitative data, thick mapping enables our study team to both draw distinctions and analyze relationships between material and social conditions and between objective and perceptual variables – holding these factors together in a state of creative tension. Finally, thick mapping's flexibility as both a hands-on, hand-drawn practice and as a more technical, computer-based practice allows youth participants and researchers to map collaboratively. Thus, thick mapping is a particularly effective tool to address some of the noted methodological challenges of existing research on youth travel – namely, its quantitative emphasis, absence of youth voices, lack of child-centered approaches, and lack of interdisciplinarity – and to contribute to a deeper understanding of the independent travel experiences of youth in Westlake.

RESEARCH METHODS

Literature review
GIS mapping
Route mapping
Walking audits
Thick mapping
Site observations

RESEARCH METHODS

LITERATURE REVIEW

At the outset of the project, we conducted a review of the academic and gray literature (including reports and policy papers from non-peer reviewed sources) on the sociospatial factors shaping youth independent mobility, with a focus on underserved neighborhoods. To retrieve articles, we conducted a search of online databases using search terms informed by our research questions (see table below).

Research Question	Search Terms
RQ 1: How do inner-city youth negotiate their independent walk from school, and what (if any) precautions do they take?	youth; urban; "independent mobility"; school; perceptions
RQ 2: How are youths' mental maps, realized walks, and associated choices (detours, precautions, walking with peers) influenced by gender and age?	gender; age; youth; walking; school; decision-making; routes; safety
RQ 3: How are youths' path choices influenced by sidewalk ecologies (physical features, hot and safe spots, and human activity)?	"walking audit"; youth; mobility; walking; sidewalks
RQ 4: What design and policy improvements can enhance the independent mobility of inner-city youth?	policy; "routes to school"; children; inner-city; urban; safety

We retrieved articles in October and November 2022 and reviewed them between November and December 2022. We synthesized notes on key findings and arguments into a review (see Section 3: Literature Review). This review also informed our analytical framework (included at the end of this section), which combines elements of existing models on the individual, social, and environmental correlates of youth independent mobility, in particular, social-ecological frameworks that account for individual, social, environmental, and policy factors shaping youth mobility.

GIS MAPPING

We used GIS to create a series of maps illustrating existing conditions in the neighborhood that, based on the literature, could influence youth independent mobility (see Section 4: Context - Westlake). We created the maps using existing, publicly available, open data from LA Metro, LA Sanitation, California's Statewide Integrated Traffic Records System (SWITRS), and other sources. Using a base map showing the street networks, metro bus and rail stops, and parks, within a 1/2 and 1 mile radius of HOLA, we mapped the following:

- Pedestrian-vehicle collisions, 2016-2020 (minor injury, major injury, and fatal)
- Bicycle-vehicle collisions, 2016-2020 (minor injury, major injury, and fatal)
- Vehicle speed limits on local streets and avenues/boulevards, 2023
- LA Clean Streets Index Clean Streets score, 2020 (clean, somewhat clean, not clean)
- Violent crimes per 1,000 residents by census tract, 2022

We also experimented with combining the data onto a single, composite map that showed the relationship between these variables and their impact across the neighborhood (see Summary Thick Maps on pages 45-48).

ROUTE MAPPING

PARTICIPANT SELECTION

The route mapping activity took place in two ongoing HOLA classrooms over four weeks in October and November 2022. In collaboration with HOLA staff, we selected two existing classes of students already enrolled in HOLA's after-school programming to participate in the route mapping activity. The classes were selected for their size and age composition, with one smaller class of high school students on Tuesdays from 4:30 to 5:30 pm, fluctuating between 8 and 10 students, and one larger class of middle school students on Wednesdays from 5:30 to 6:30 pm, fluctuating between 20 and 30 students. These classes allowed us to engage a group of students with ages ranging from 11 to 15, ideally suited to this study as youth this age are likely to have begun traveling independently to and from school relatively recently.
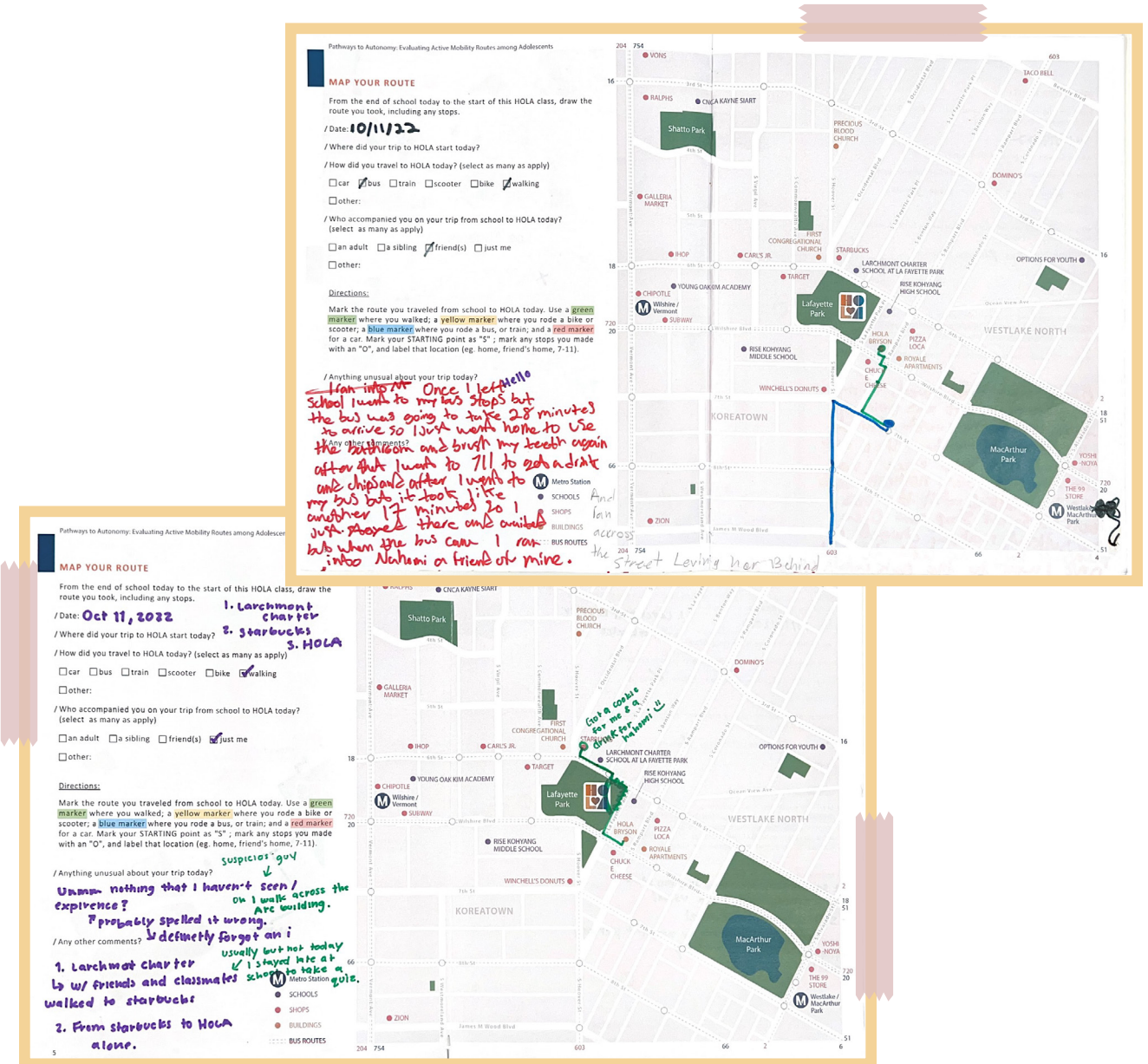
RESEARCH ACTIVITY

The study team visited the HOLA classrooms one week before the activity commenced to introduce the study, build rapport with the students, and engage the students in a guided cognitive mapping exercise. The goal was to develop comfort and familiarity with the student participants, to introduce some of the key concepts of the study, and to familiarize students with basic mapping tools and language.

The following week, the study team returned to the HOLA classrooms to guide students through the first week of the route mapping activity. Using route mapping workbooks developed, designed, and produced by the study team, each youth participant first filled out basic demographic information and school location details and then recorded their route from school to HOLA that day by responding to a prepared questionnaire and completing a guided map exercise. Study team members demonstrated how to use the workbook and offered assistance as students completed the mapping exercise. Study
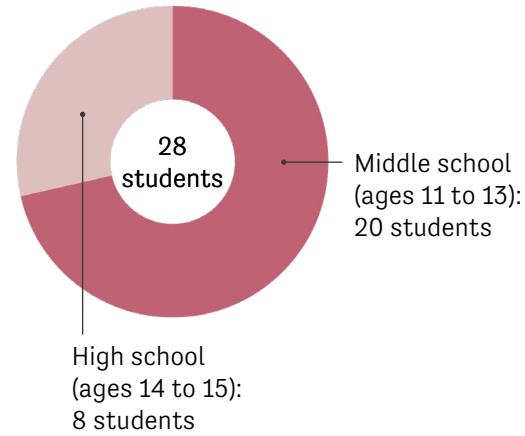
team members engaged youth directly in a conversation about their map in progress, asking questions about the origin, destination, and nature of their trip, and encouraging students to record this information directly on the route map. In total, the route mapping activity took approximately 20 minutes to complete.

Participants were asked to record their walking routes in the route mapping workbook one day per week for four weeks. In the case of the middle school class, it was clear from the first route mapping activity that many students required additional support from the study team members to successfully complete the activity. Study team members returned to this class the following week (though not to the smaller, high school class) to offer supplemental support to students completing the route mapping activity. In all subsequent weeks, HOLA teachers guided students through the week's route mapping activity (see Appendix for Route Mapping Guidelines).
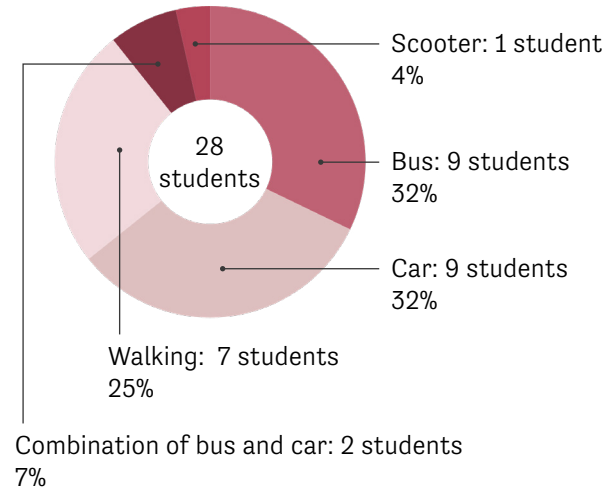

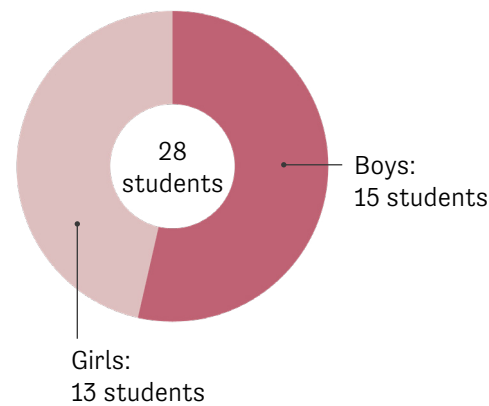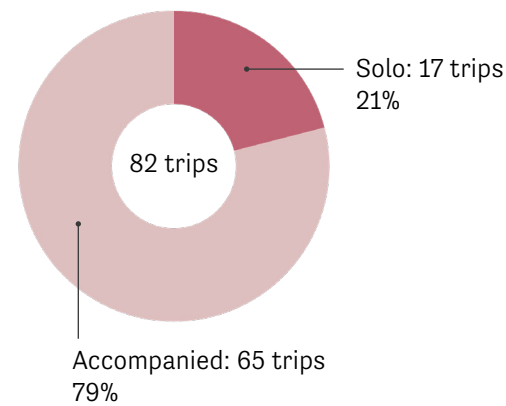*Route mapping workbooks completed by HOLA students*

AGE

28 students

Middle school
(ages 11 to 13):
20 students

High school
(ages 14 to 15):
8 students

GENDER

28 students
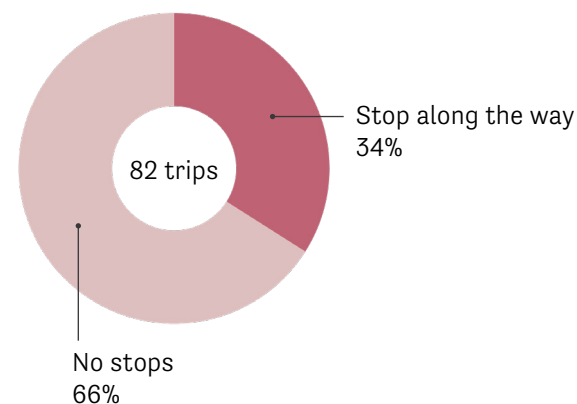
Boys:
15 students

Girls:
13 students

15 SCHOOLS
REPRESENTED IN STUDY

92% MEDIAN SHARE OF "SOCIOECONOMICALLY DISADVANTAGED" STUDENTS

98% MEDIAN SHARE OF NON-WHITE STUDENTS

88% MEDIAN SHARE OF HISPANIC STUDENTS

TRANSIT MODE

28 students

Scooter: 1 student
4%

Bus: 9 students
32%

Car: 9 students
32%

Walking: 7 students
25%

Combination of bus and car: 2 students
7%

ACCOMPANIMENT

82 trips

Solo: 17 trips
21%

Accompanied: 65 trips
79%

STOPS

82 trips

Stop along the way
34%

No stops
66%

ANALYSIS

In total, 28 students completed the route mapping activity. Some students failed to record their trips each week, leading to a total trip number of 82 recorded trips over four weeks. After completing the route mapping activity, study team members gathered and reviewed the completed workbooks, and entered data into a spreadsheet to identify and describe patterns in the data.

In total, we analyzed 20 workbooks from middle school students (ages 11 to 13) and 8 workbooks from high school students (ages 14 to 15). Of these 28 students, 15 identify as boys and 13 identify as girls.

Most of the participating students were enrolled in public magnet schools in relatively close proximity to HOLA. While we did not gather sociodemographic data directly from participating students or their families, we collected data about the schools the students attend through the California Department of Education (CDE) School Dashboards that report enrollment, racial breakdown, socioeconomic status, and academic performance figures for every school in the state (California Department of Education, n.d.). These CDE figures suggest that the schools attended by students who participated in our study are particularly disadvantaged when compared to other schools in Los Angeles. The 28 students in this study attend 15 different middle and high schools with a median enrollment of 638 students. Across all 15 schools, the median share of students who are defined as "socioeconomically disadvantaged" by the CDE[1] is 92%, and these schools are majority minority with a median share of non-white students of 98%. Most of the non-white student body at these schools is heavily Hispanic, with a median Hispanic student share of 88%. These data suggest that the students' schools are representative of the larger community, mirroring the racial and economic characteristics of the neighborhoods that abut HOLA.

Each student in our sample was asked to report information about the trips they took from their respective schools to the HOLA building. Their travel routes and the transit modes they utilized vary. Nine students reported traveling via bus as their primary mode of transit (32% of the sample), nine reported predominantly traveling via car (32%), seven reported predominantly walking (25%), two reported a combination of bus and car (7%), and one reported predominant usage of a scooter (4%). Of the 82 recorded trips, 21% were conducted solo without any accompaniment. Of the 65 trips where accompaniment was reported, the most common trip partner was an older adult or similar age friend. Finally, 34% of trips included a stop along the way, with the most common stops involving buying food or spending time at home.

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1 The California Department of Education defines socioeconomically disadvantaged students as "Students who are eligible for free or reduced priced meals; or have parents/guardians who did not receive a high school diploma."

ROUTES TRAVELED: ROUTE MAPPING

Summary of all routes recorded during route mapping activity, by mode

Route Traveled

Mode
- Walk
- Bike/Scooter
- Bus
- Car

Line width indicates number of participants sharing route

1-5	26-30
6-10	31-35
11-15	36-40
16-20	>41
21-25	

General

- Parks
- Metro bus stops
- Metro rail stops

Violent Crimes per 1,000 Residents
- 0 - 5
- 6 - 17
- 18 - 30
- 31 - 50
- 51 - 90

Clean Streets Score
- Clean
- Somewhat clean
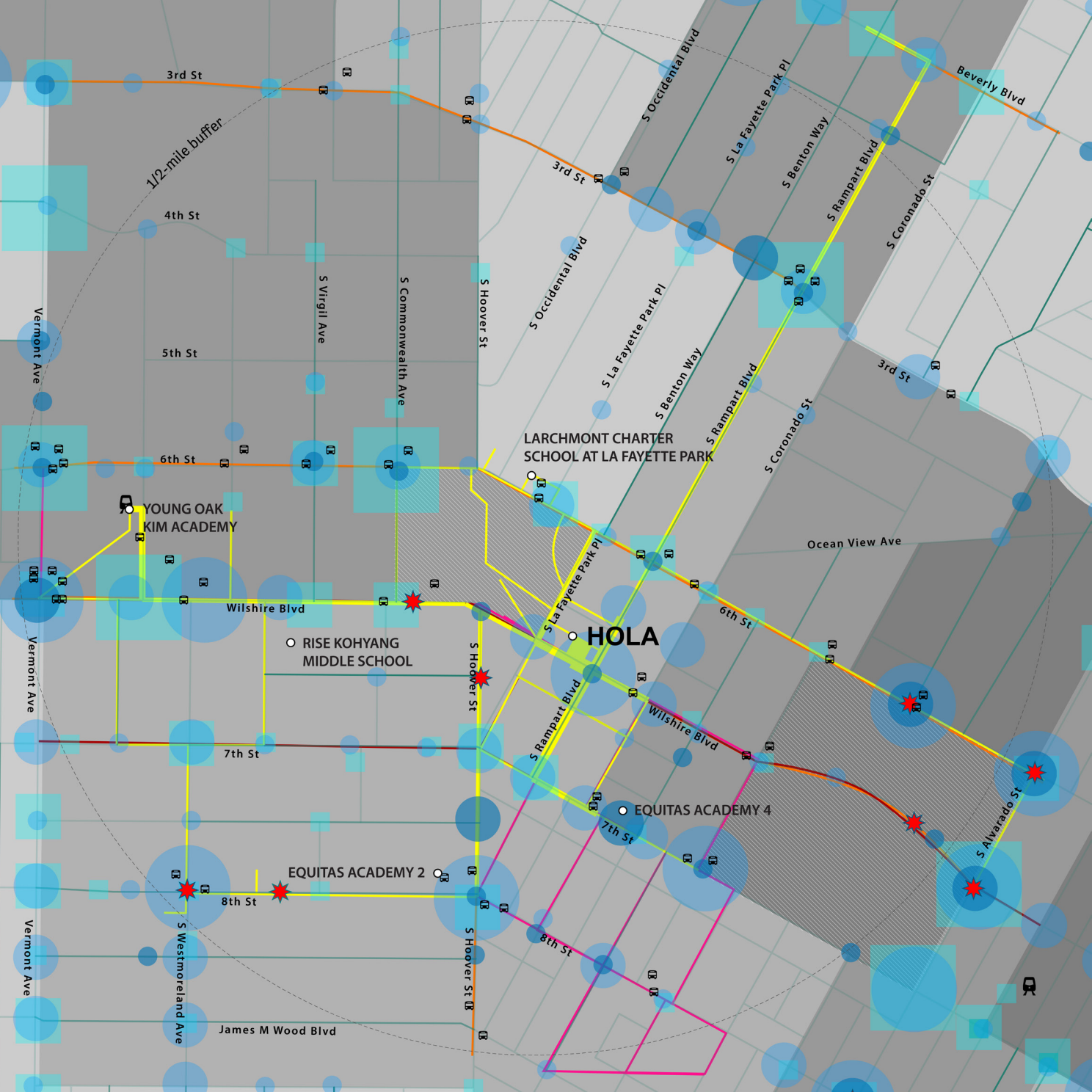- Not clean

Pedestrian-vehicle Collisions

Fatal
- 1
- 2-3
- 4+

Injury (severe)
- 1
- 2-3
- 4+

Injury (minor)
- 1
- 2-3
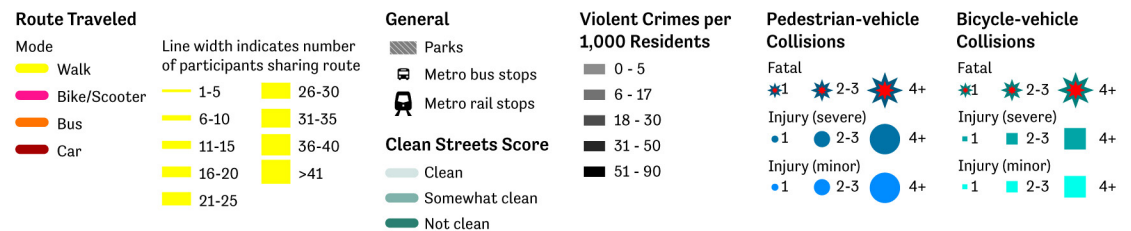- 4+

Bicycle-vehicle Collisions

Fatal
- 1
- 2-3
- 4+

Injury (severe)
- 1
- 2-3
- 4+

Injury (minor)
- 1
- 2-3
- 4+

34

ROUTES TRAVELED: ROUTE MAPPING (1/2-MILE BUFFER)
Route mapping data was analyzed to select participants for walking audits

Route Traveled

Mode
- Walk
- Bike/Scooter
- Bus
- Car

Line width indicates number of participants sharing route
- 1-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- 31-35
- 36-40
- >41

General
- Parks
- Metro bus stops
- Metro rail stops

Clean Streets Score
- Clean
- Somewhat clean
- Not clean

Violent Crimes per 1,000 Residents
- 0 - 5
- 6 - 17
- 18 - 30
- 31 - 50
- 51 - 90

Pedestrian-vehicle Collisions

Fatal
- 1
- 2-3
- 4+

Injury (severe)
- 1
- 2-3
- 4+

Injury (minor)
- 1
- 2-3
- 4+

Bicycle-vehicle Collisions

Fatal
- 1
- 2-3
- 4+

Injury (severe)
- 1
- 2-3
- 4+

Injury (minor)
- 1
- 2-3
- 4+

WALKING AUDITS

PARTICIPANT SELECTION

To determine which students to select for the walking audits, we began by reviewing the route mapping workbooks and sorting participants into three groups: those who primarily were driven to HOLA (nine students), those who primarily walked or used a scooter (eight students), and those who took public transit (eleven students). Participants who had been absent or who had no information recorded in the route mapping workbook for more than two of the four weeks were excluded from participation in the walking audits.

First, we reviewed the route mapping workbooks of participants who primarily were driven to school to determine if there was a significant walking portion of any of the trip. All nine participants who were primarily driven were excluded from the walking audits.

Next, we reviewed the route mapping workbooks of those participants who primarily walked or scootered (eight students), as well as those participants who primarily took public transit (nine students). We sorted these groups further based on the distance traveled (short or medium distances), trip variety (whether the trip route, stops, or mode changed from week to week), stops (home, food), mode (walking, bus, or scootering), and accompaniment (alone, with friends, with an adult). We created a shortlist of potential participants, with the goal to select participants whose trips exhibited different characteristics that would yield variety in trip length, route, mode, stops, and accompaniment.

Following the initial round of selections, we recorded and compared potential participants based on key demographic and trip characteristics, with a goal of including a balanced representation by age, gender identity, school location, travel mode, and trip accompaniment. Selections were reviewed and revised to ensure diversity in both individual and trip characteristics.

Of the 28 youth who participated in the route mapping activity, 13 were selected to participate in the walking audits. Of this group, several declined to participate or their caregivers did not return a signed permission form. In total, 10 youth ultimately participated in the walking audits. Participants ranged in age, gender, travel mode, and school location, and included 4 high school students (grades 9 and 10) and 6 middle school students (grades 7 and 8); 4 girls and 6 boys; and 2 bus riders and 8 walkers.

RESEARCH ACTIVITY

Walking audits took place over three weeks in February 2023. For each walking audit, two researchers met with a youth participant at their school and traveled with them along their typical route to after-school activities at HOLA's Bryson facility at 2701 Wilshire Boulevard. In advance, the researchers arranged a meeting time and place with each participant, with the assistance of caregivers and HOLA staff. Researchers were trained in advance and used a standard guideline for the walking audit activity (see Appendix for Walking Audit Guidelines).

While each walking audit began at the youth's school location and ended at HOLA, the routes differed and were guided by the student. Researchers asked participants to walk (or in some cases, travel by bus) along their typical route, including any stops. During the walk, researchers asked participants to describe what they were seeing, experiencing, and feeling, and asked follow up questions. The conversations were audio recorded, and researchers mapped the route and took field notes during the walk. Participants were handed a smartphone with a camera and asked to take photos of notable spaces along the walk.

After arriving at HOLA, researchers and participants met in a quiet room for a post-walk interview, where participants were invited to reflect on the walk they had just completed and on their experiences of independent travel, more broadly. First, researchers asked participants to draw their walking route on a simple neighborhood base map and to indicate any notable places. Researchers asked participants to review their map and describe it. Researchers then asked participants to review the photos they had just taken along the route, and to describe in detail what was pictured. By reviewing participants' photos and asking follow-up questions, researchers aimed to further capture participants' ideas and intentions in their own voice, avoiding the risk of misinterpretation associated with a researcher independently reviewing and interpreting students' photographs. Finally, researchers asked a series of semi-structured interview questions about the walk and independent travel experiences in the neighborhood. Post-walk interviews were audio recorded. In total, the walking audit activity took between 40 minutes and 90 minutes to complete, with total times varying considerably based on the duration of the student's trip.

The walking audits yielded rich data, including interview audio recordings that were then transcribed, researchers' maps and field notes recorded during the walks, participants' photos taken during the walks, and participants' hand-drawn maps created during the post-walk interview.
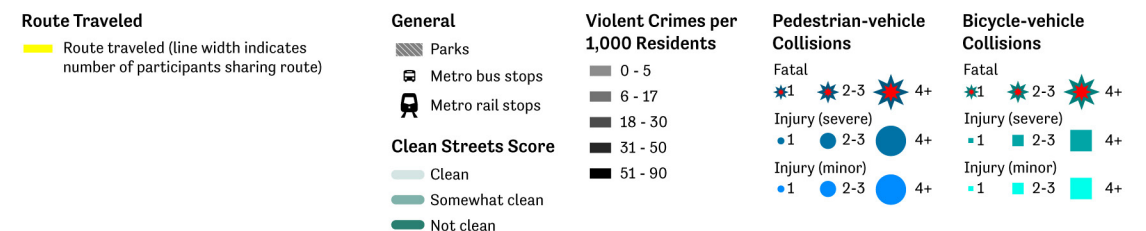
ANALYSIS

We analyzed transcripts from the walking audits (both from recordings captured during the walk and during post-walk interviews) using a thematic analysis approach. First, four coders conducted an initial review of the data by reading all interview transcripts and noting emerging concepts. Then, we developed a set of preliminary codes, based on the larger categories drawn from the analysis framework (developed from the literature review). Preliminary codes included, for example, "Neighborhood Built Environment: Landmarks" and "Travel Behavior: Mode Choice."
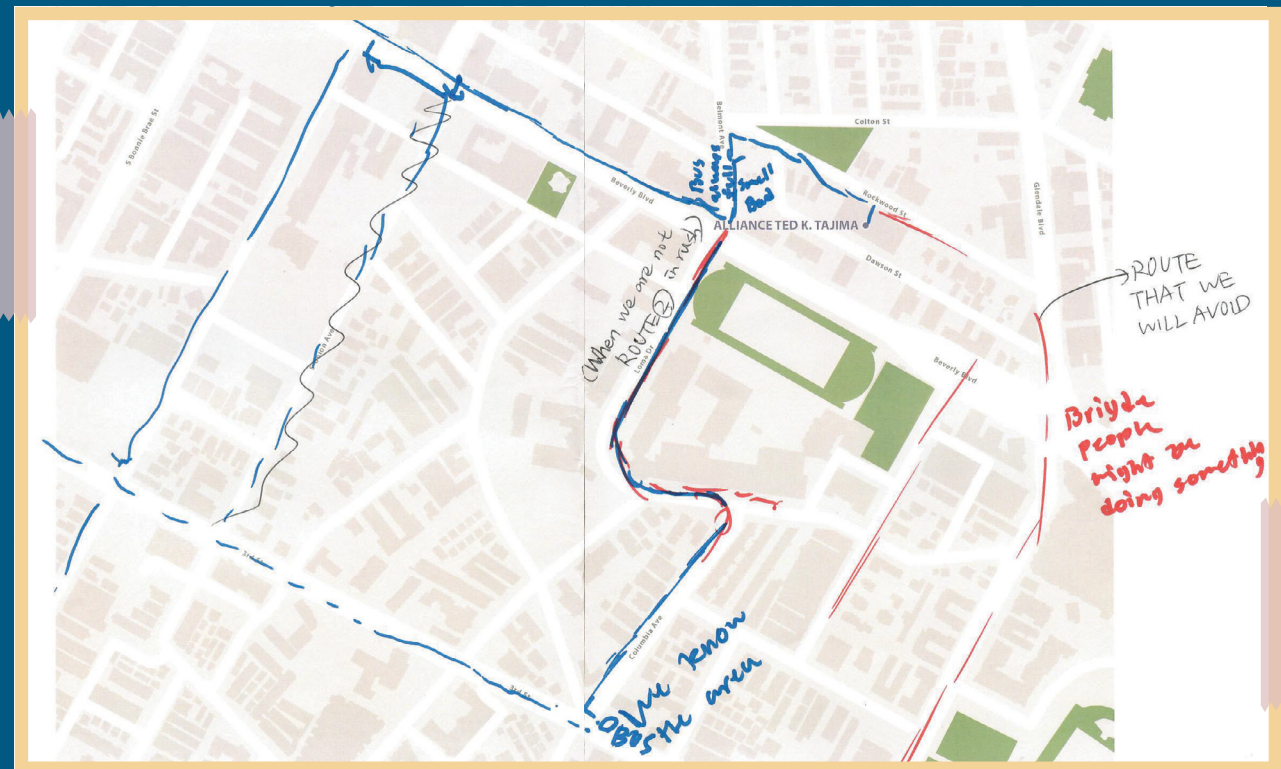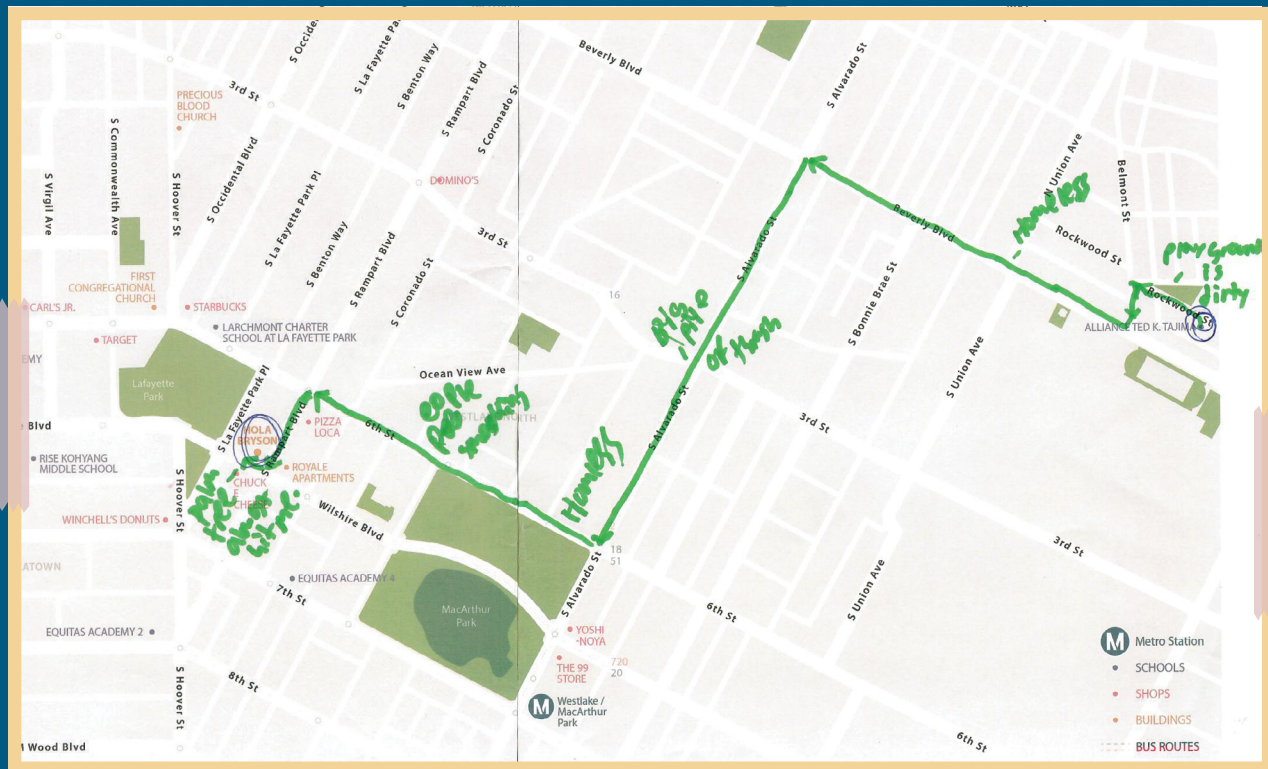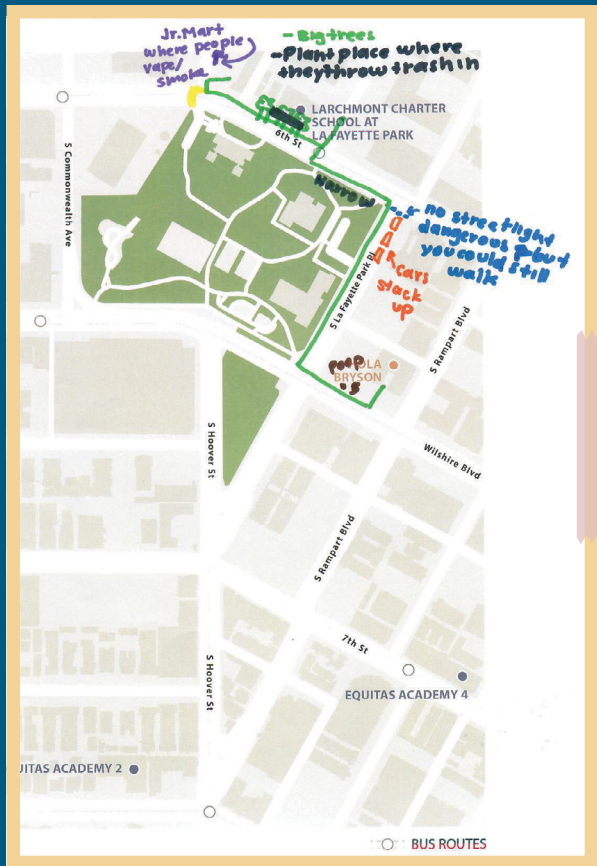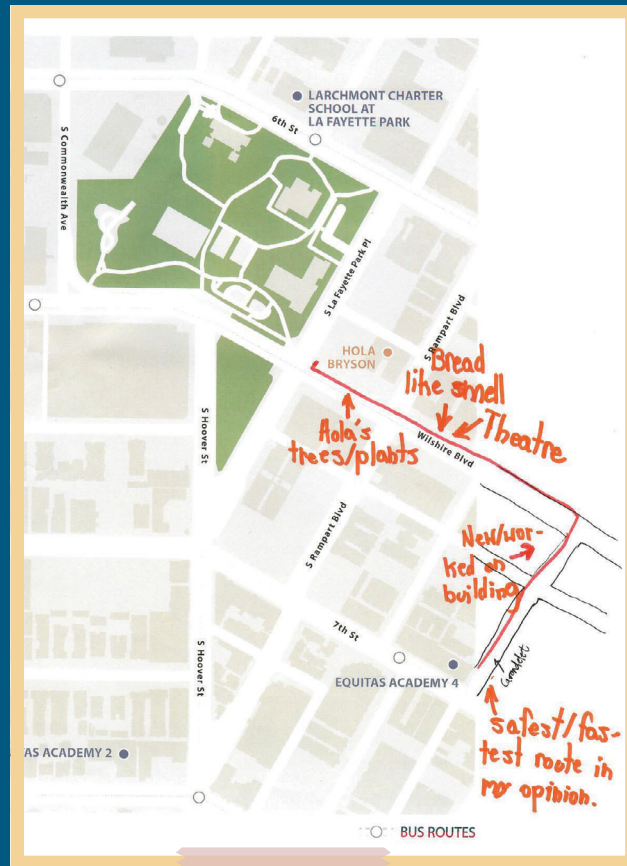
Two coders each applied these preliminary codes to portions of text in four of the same transcripts, compared findings, and refined the codes to generate a final codebook (see Appendix for Codebook). The same two coders then applied codes to the remaining transcripts, periodically reviewing and comparing progress to ensure inter-coder reliability. Once organized by code, we analyzed the data to identify concepts emerging from the data, to apply and refine these categories, and then to organize concepts together into categories. We then reduced categories to the themes which form the basis of this report's narrative, as reported in the Findings and Discussion sections that follow.
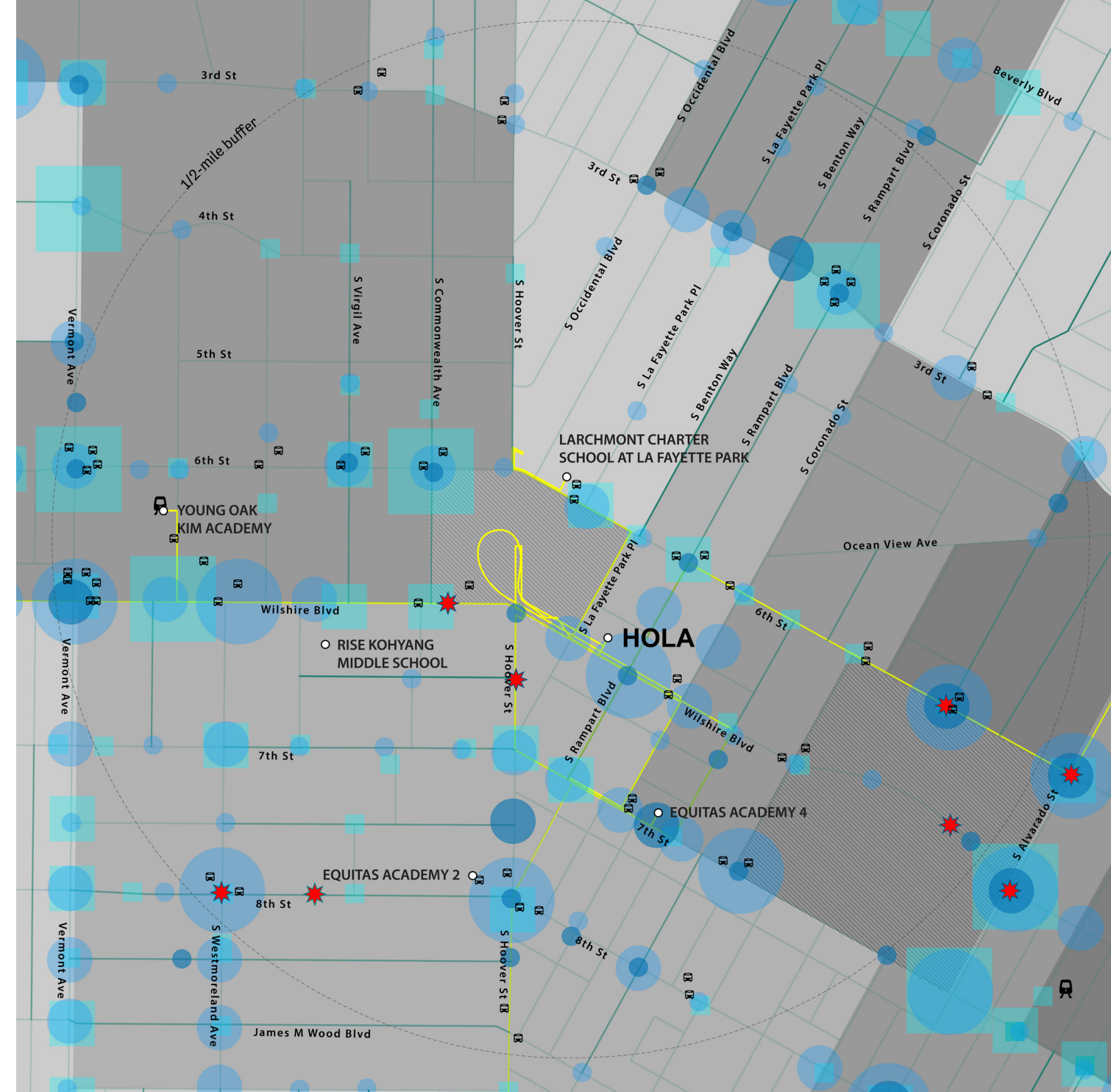
ROUTES TRAVELED: WALKING AUDITS (1/2-MILE BUFFER)
Summary of routes traveled by all 10 walking audit participants

Route Traveled
— Route traveled (line width indicates number of participants sharing route)

General
Parks
Metro bus stops
Metro rail stops

Clean Streets Score
Clean
Somewhat clean
Not clean

Violent Crimes per 1,000 Residents
0 - 5
6 - 17
18 - 30
31 - 50
51 - 90

Pedestrian-vehicle Collisions
Fatal
1   2-3   4+
Injury (severe)
1   2-3   4+
Injury (minor)
1   2-3   4+

Bicycle-vehicle Collisions
Fatal
1   2-3   4+
Injury (severe)
1   2-3   4+
Injury (minor)
1   2-3   4+

Students' hand-drawn maps created during walking audit post-walk interviews

THICK MAPPING

Thick mapping allowed us to combine and analyze data from all phases of the research (including GIS mapping, route mapping, and walking audits) in different media and formats (including GIS mapping, hand drawn maps, coded interview transcripts, photographs, and others), and to then integrate this data into a series of complex, multi-layered, interpretive and representative maps. With this method, representational overlays are evaluated based on their ability to produce insightful relationships while avoiding graphic confusions.

First, we began combining our GIS maps of existing neighborhood conditions into a composite map, layering and adjusting the design of the map to ensure that dense information was still readable and to visualize patterns between different layers of existing neighborhood data.

Next, using this composite map of existing conditions as a base, we added data from the route mapping activity, marking the paths traveled by students (separated by mode) and adjusting line widths to indicate those segments of the street network and their sidewalks most highly traveled by the youth.

Third, we printed the maps and manually layered on data collected from the walking audits. We developed a preliminary set of codes for observations recorded in the walking audits, on youth-drawn maps, in researchers' field notes, and in photos taken by the youth participants. While similar to the codes used for the thematic analysis, the codes used for thick mapping were, by necessity, further condensed and developed to facilitate the cartographic representation of the information. Information from each participant's walk was added to the map by hand, on its own layer of tracing paper. When layered together, these maps allowed us to visualize overlaps and points of intersection and conflict between the various walks. Through this process of visualization and layering, we identified some emerging insights and themes. Importantly, this was a group process that involved 4-6 researchers critically discussing the maps.

Finally, data from the printed map and layered tracing paper maps were reviewed, refined, and transferred back to the digital map in the form of four types of observations: built environment (positive and negative), and social environment (positive and negative). Observations from all ten walking audits were layered together onto a single digital map, titled a Summary Thick Map, which allowed us to identify places where there was a high instance of positive, negative, or mixed observations, and to analyze the relationship between these areas of concentrated observations and the existing neighborhood conditions on the map.

SITE OBSERVATIONS

Through thick mapping, we identified a street segment (Wilshire Boulevard from Hoover Street to Coronado Street) where there was a particularly high confluence of routes and a dense concentration of observations. We visited this segment in May and August 2023
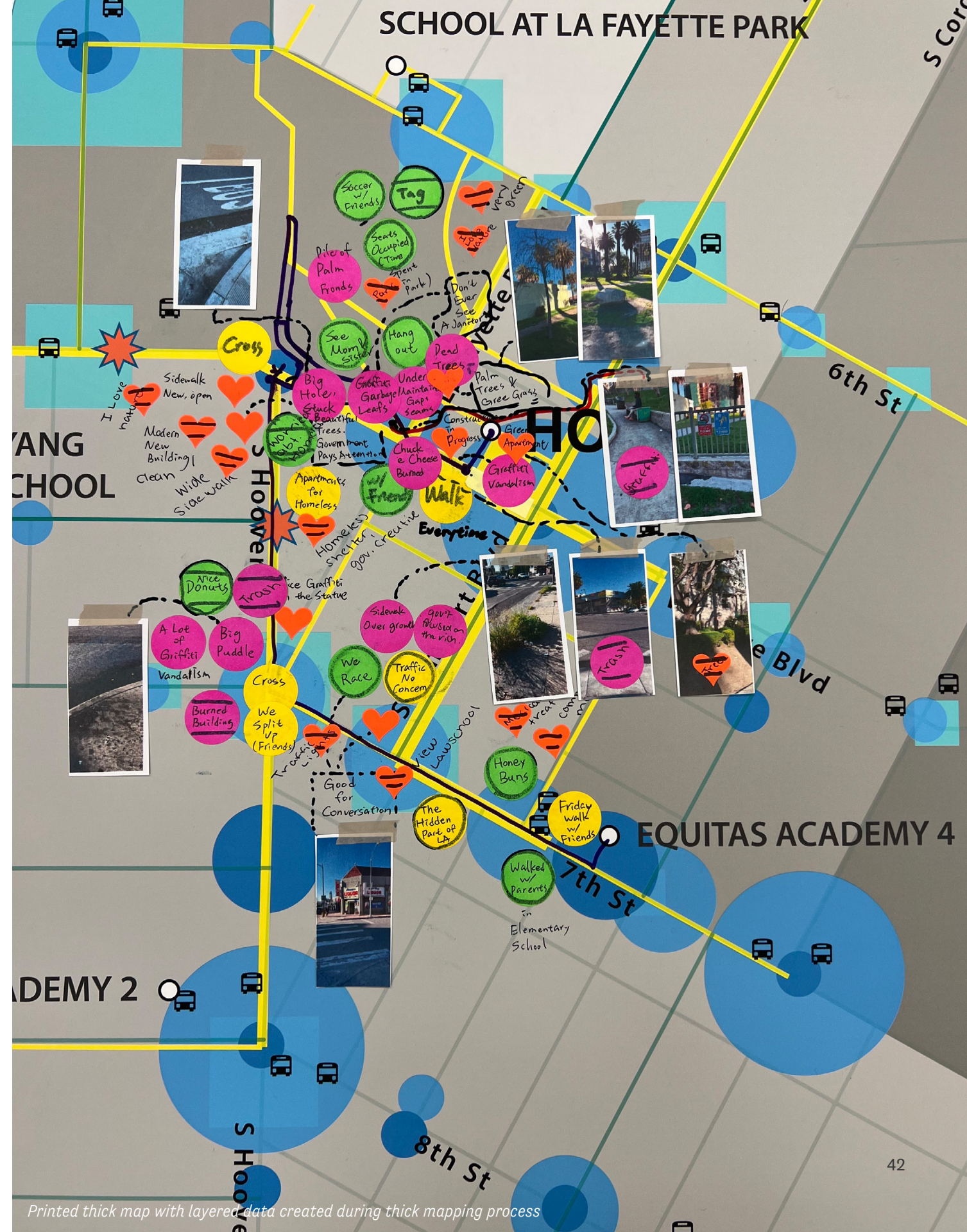
Printed thick map with layered data created during thick mapping process

Thick mapping process photographs
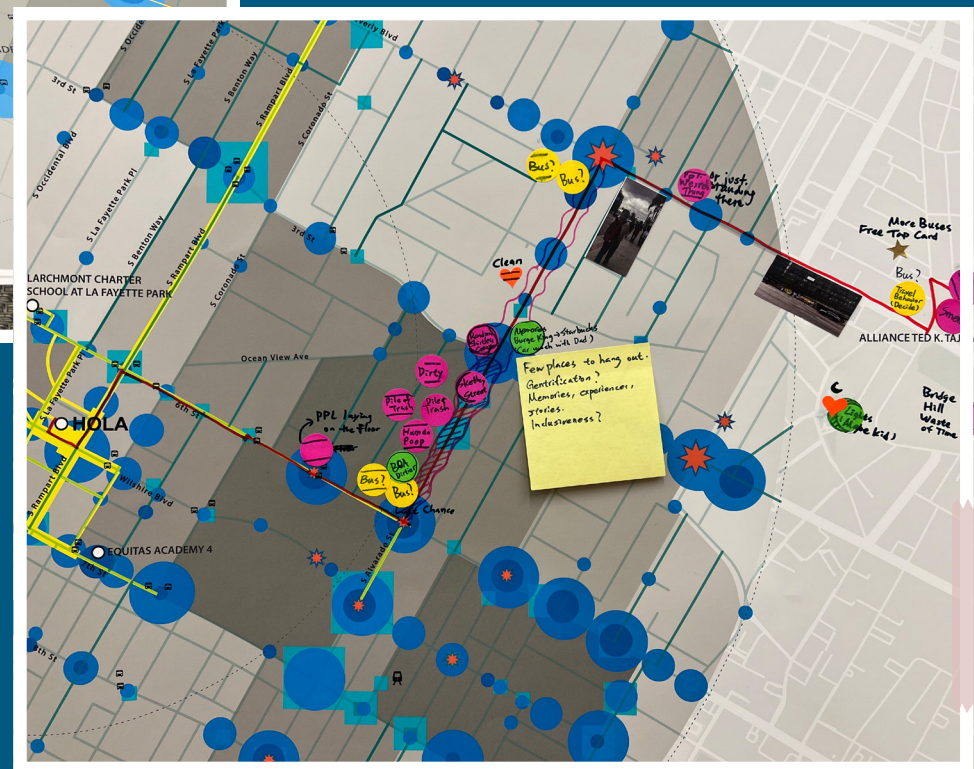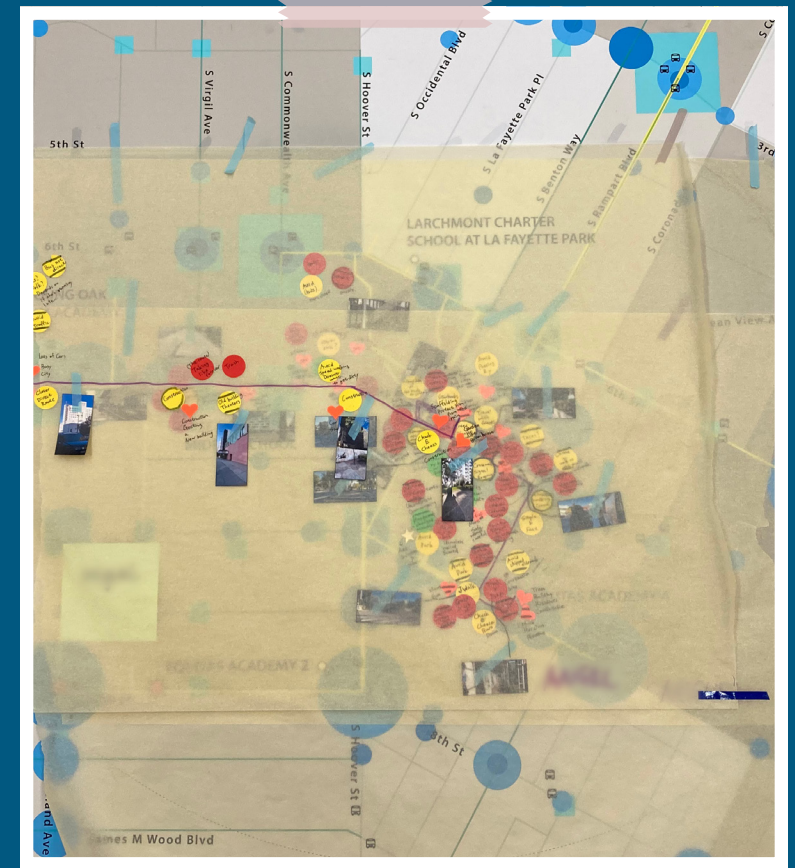
SUMMARY THICK MAP

Digital thick map summarizing the routes traveled and four types of observations from the walking audits: built environment (positive and negative) and social environment (positive and negative), layered over existing neighborhood conditions within a 1-mile radius of HOLA.
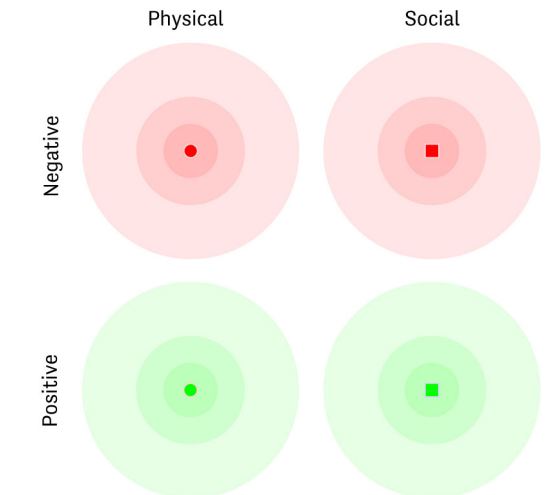
Walking Audits

Observations

	Physical	Social
Negative		
Positive		

Route traveled (line width indicates number of participants sharing route)

General

Parks

Metro bus stops

Metro rail stops

Violent Crimes per 1,000 Residents

0 - 5
6 - 17
18 - 30
31 - 50
51 - 90

Clean Streets Score

Clean
Somewhat clean
Not clean

46

SUMMARY THICK MAP (1/2-MILE BUFFER)

Digital thick map summarizing the routes traveled and four types of observations from the walking audits: built environment (positive and negative) and social environment (positive and negative), layered over existing neighborhood conditions within a 1/2-mile radius of HOLA.

Walking Audits
Observations

	Physical	Social
Negative		
Positive		

— Route traveled (line width indicates number of participants sharing route)

General
- Parks
- Metro bus stops
- Metro rail stops

Violent Crimes per 1,000 Residents
- 0 - 5
- 6 - 17
- 18 - 30
- 31 - 50
- 51 - 90

Clean Streets Score
- Clean
- Somewhat clean
- Not clean

48

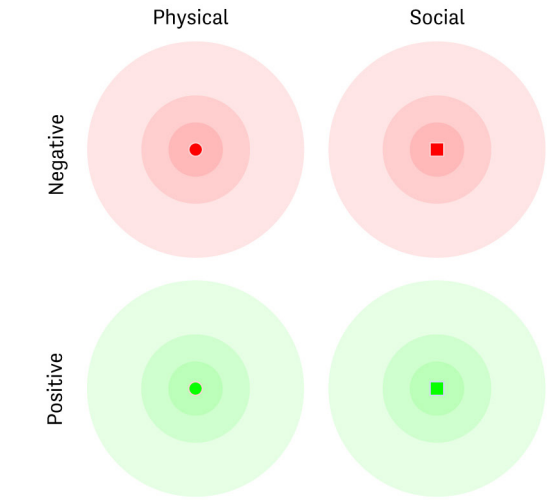to conduct additional site observations. Researchers walked both sides of the street, recorded field notes, and captured additional photographs of sidewalk conditions.

The field notes and photographs collected from these subsequent site observations were then combined with the walking audit data into a larger scale Focus Thick Map, highlighting only this segment, which includes more detailed descriptions and photographs, and a comparison between the observations of walking audit participants and researchers (see pages 5-6).
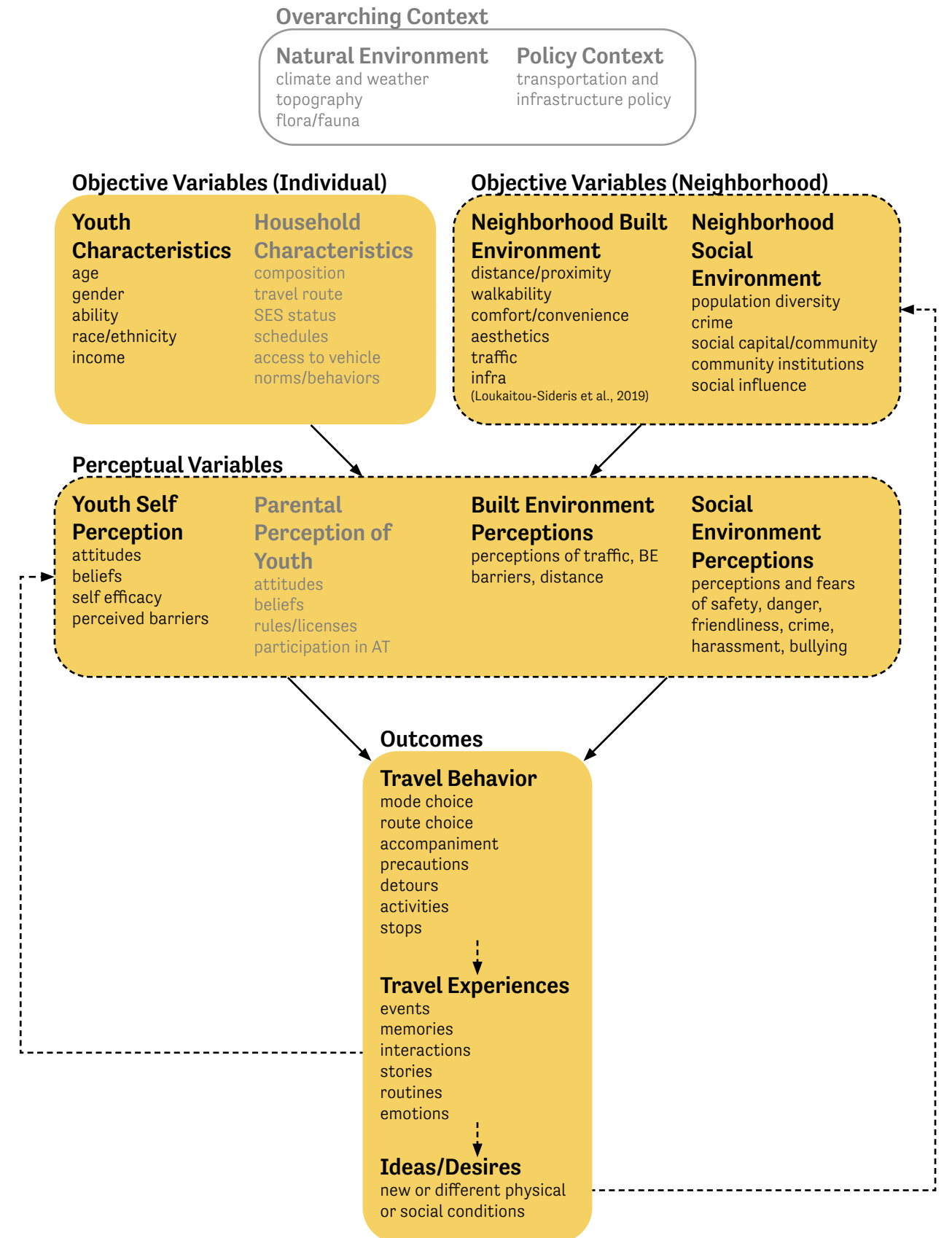
ETHICAL CONSIDERATIONS

Because participants in the research were between the ages of 11 and 15, additional effort was required to ensure safety, comfort, and confidentiality. In accordance with our approved research ethics protocol (UCLA IRB #22-001348), we worked with our community partner (HOLA) to distribute study information to prospective youth participants and their adult caregivers in both English and Spanish. For the route mapping activity, which was undertaken in regularly scheduled HOLA after-school classes, caregivers were asked to provide verbal consent for their child to participate, and a separate youth assent process was undertaken for all participants. For the walking audit activity, undertaken on the route from school to HOLA during the time between when school ended and HOLA after-school programming began, caregivers were asked to provide written permission for their child to participate, and a separate youth assent process was also undertaken for all participants. Pseudonyms are used for all research participants referenced throughout this report.

ANALYTICAL FRAMEWORK

To analyze data across all study activities, we developed an analytical framework, which draws from existing literature on youth independent mobility and active travel. Drawing inspiration from the social-ecological models of travel behavior (Carlson et al., 2014; Crawford et al., 2017; Mitra, 2013; Riazi et al., 2019), our framework captures the complex array of structural, social, spatial, and individual variables – both objective and perceptual – that together inform travel behaviors, and subsequently, travel experiences. These experiences, in turn, shape and reshape perceptions of neighborhood social and built environment factors. Travel experiences also inform ideas and desires for transformations in the objective built and social environment that could enhance youth experiences of traveling independently in the neighborhood.

The graphic here summarizes our analytical framework. While some variables (such as household characteristics) are beyond the scope of this study, those variables directly related to this research and reflected in our analysis are indicated in black text.

Overarching Context
Natural Environment — climate and weather, topography, flora/fauna
Policy Context — transportation and infrastructure policy

Objective Variables (Individual)
Youth Characteristics — age, gender, ability, race/ethnicity, income
Household Characteristics — composition, travel route, SES status, schedules, access to vehicle, norms/behaviors

Objective Variables (Neighborhood)
Neighborhood Built Environment — distance/proximity, walkability, comfort/convenience, aesthetics, traffic, infra (Loukaitou-Sideris et al., 2019)
Neighborhood Social Environment — population diversity, crime, social capital/community, community institutions, social influence

Perceptual Variables
Youth Self Perception — attitudes, beliefs, self efficacy, perceived barriers
Parental Perception of Youth — attitudes, beliefs, rules/licenses, participation in AT
Built Environment Perceptions — perceptions of traffic, BE barriers, distance
Social Environment Perceptions — perceptions and fears of safety, danger, friendliness, crime, harassment, bullying

Outcomes
Travel Behavior — mode choice, route choice, accompaniment, precautions, detours, activities, stops
Travel Experiences — events, memories, interactions, stories, routines, emotions
Ideas/Desires — new or different physical or social conditions

FINDINGS

YOUTH SELF-PERCEPTION

Interviews both during and after walking audits revealed complexities in how youth perceive their own capacity and efficacy as independent travelers. Given the age range of the study participants (11 to 15 years of age), some of the younger participants had only recently begun walking independently, while others had been navigating the city on their own for several years. (For a summary of the individual characteristics of youth participants in this study, see the "Participant Selection" headings under Section 5: Research Approach and Methods.) Participants spoke of a process of aging into independent mobility – a process of becoming more comfortable traveling independently and slowly gaining the confidence and neighborhood knowledge necessary to travel on their own. For most, the transition from walking with parents or siblings to walking alone or with friends occurred in middle school or early high school years. Several participants remembered feeling hesitant or nervous initially, but eventually became more confident. One participant shared, "I got more comfortable with it... it was kind of scary at first. Like, I didn't know where to go. Yeah, but since I did it, I feel confident, so I did it again. And then when I get there, I'm not scared anymore." (Alex).

> "I got more comfortable with it… it was kind of scary at first. Like, I didn't know where to go. Yeah, but since I did it, I feel confident, so I did it again. And then when I get there, I'm not scared anymore."
> - Alex

NEIGHBORHOOD BUILT ENVIRONMENT

LANDMARKS

Significant buildings, youth-oriented businesses like corner stores and fast-food restaurants, local institutions like HOLA and the library, and public spaces including Lafayette and MacArthur Park serve as key neighborhood landmarks for youth. These landmarks are often connected to vivid memories of the neighborhood: happy moments spent enjoying snacks at the corner store with friends after school, or helping a parent wash the car in a parking lot. Alberto and his friends visit the corner store near his school most days: "So the corner store? If you brought money, we would sometimes buy honey buns, pingüinos, things like that. It's a Mexican treat, it's like a cupcake." Locating key buildings and businesses helps to orient some participants along their route.

Corner store
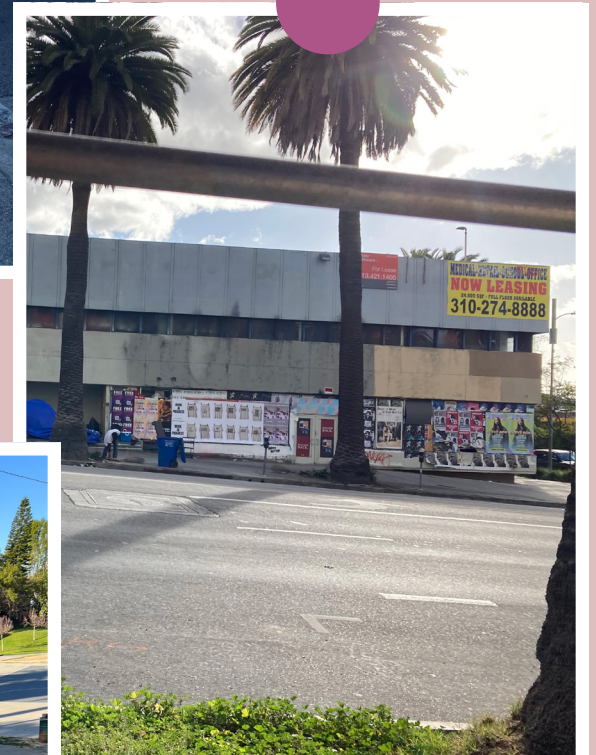
Former Chuck-E-Cheese

Lafayette Park

6

Uneven sidewalk and abandoned couch

Scaffolding

Garbage on sidewalk

Wide sidewalk with trees

Lafayette Park is an important landmark that evokes both positive and negative memories and perceptions: for some youth, it is associated with green, calm, and play, whereas for others, the park today is seen as poorly maintained and somewhat unsafe, due in large part to the presence of unhoused people. When asked if she ever took a shortcut through the park, Mila responded, "No... one, because I feel like there could be dangerous people, and two... there's some homeless people, and I don't know, they're weird." Another important landmark is the former Chuck-E-Cheese, located directly across from HOLA, which has been closed for months due to a major fire. Participants remembered when this business was operating and lamented that the site is now surrounded by temporary construction site hoarding, tagged with graffiti, and frequently lined by encampments. These findings suggest that notable local businesses, buildings, parks, schools, and community facilities serve as important neighborhood landmarks – grounded spaces of familiar activities and experiences – as youth navigate the city independently, assisting with wayfinding and serving as repositories for neighborhood memories and knowledge.

PEDESTRIAN ENVIRONMENTS

Throughout the walking audits, participants frequently cited issues related to perceived personal safety (less about oncoming traffic than about sidewalk inhabitants), maintenance, and the quality of the sidewalk environment. Pedestrian routes in the neighborhood are often littered with garbage and feces and sidewalks, curbs, and pathways are poorly maintained with cracks, unevenness, and overgrowth, and youth are quick to note these issues. For example, "When we were walking, the pavement wasn't good. And it was very bumpy and things were falling" (Marco). Mila noted, "There's usually a lot of trash here... there's sometimes poop," while Gabriel summarized the conditions by saying, "I feel like this street is more sketchy than the others."

> "When we were walking, the pavement wasn't good. And it was like very bumpy and things were falling."
> - Marco

Students' routes are often obstructed, for example, by garbage, scooters left on the sidewalk, or ongoing construction. In some cases, the obstructions, in combination with insufficient sidewalk widths in areas with high pedestrian traffic, cause crowding and force pedestrians into vehicle travel lanes, especially when passing others on the sidewalk. Mila summarized the issue: "[this part of the sidewalk] feels tight, too. Sometimes when there are scooters passing by or bicycles, or even other people, you have to squish... it's just uncomfortable." A lack of shade is persistent on most of the routes traveled by the participants. Inez actively sought out stretches of sidewalk with more shade: "I don't like the sun that much, and it blocks my eyes."

> "I don't like the sun that much, and it blocks my eyes."
> - Inez

With many active construction sites in the neighborhood, scaffolding often constrains or obstructs the sidewalk, and is frequently surrounded by litter and graffiti. While some participants expressed concern over these conditions, most were indifferent. "It's kind of like, it's just in the background. I don't really pay attention" (Jorge). One participant even suggested that the scaffolding was a benefit, as it offered protection from the rain.

While participants are quick to point out issues in the pedestrian environment, many appear familiar with and relatively undeterred by these challenges, suggesting that, troublingly, such issues are not unusual in youth's everyday experience of the sidewalk. Some youth assume adaptive behaviors to manage these risks, for example, "You gotta be careful when you're walking. And there used to be trash here, in the sidewalk... so you have to be careful where you step" (Mila). However, participants did express some discomfort, stress, and a concern over safety. When asked if the garbage on the sidewalk made her feel unsafe, or whether it was relatively common, Nallely responded, "Yeah, it's pretty common. But sometimes it just gets a little, sometimes it gets a little icky." Another participant suggested that the poor sidewalk maintenance is a sign of disinvestment: "You've heard me talk about how the government doesn't really pay attention to us. You can see a big hole [in the sidewalk], right?" (Alberto).

Along with all the negative impressions, a few positive features of the pedestrian environment were noted, for example, street signs that assist with wayfinding, stretches with wider sidewalk widths, and areas with trees, planters, and shade.

Bus interior

TRANSIT ENVIRONMENTS

"Cause there's people there and they'll see if someone's like looking at me or something, they'll see too."
- Nita

In transit environments, including both transit stops and transit vehicles, overcrowding is an issue that causes some degree of stress or discomfort for youth. "There are times where the bus is full and crowded. It's not necessarily annoying. That's not the right word. It's just a little crowded. A little uncomfortable" (Nallely). Poor or unreliable bus service shapes youth travel experiences significantly: for some, an overcrowded bus skipping their stop means waiting an extra 15 minutes, while for others, a delayed bus prompts a decision to walk instead of taking transit.

Traffic

The bus is, for some, an enjoyable environment: a space to socialize with friends or to enjoy the city passing by. "Especially when just looking outside the window. Watching everything pass by. It's really enjoyable." (Nallely). However, the bus is also sometimes associated with fear and discomfort, particularly at night, and often due to comments or glances from other riders – an issue frequently cited in literature on sexual harassment in transit environments (Ding et al., 2020). Other riders, including friends, can help to reduce these fears for youth: "Cause there's people there and they'll see if someone's like looking at me or something, they'll see too" (Nita).

VEHICULAR TRAFFIC ENVIRONMENTS

While participants note high traffic volumes and high traffic speeds in the neighborhood, sometimes describing the cars as "crazy," fears over traffic safety were seldom expressed during walking audits. Even when prompted to consider risks, youth demonstrate little concern over traffic – a notable difference when compared to studies of older adults in the same neighborhood (Loukaitou-Sideris et al., 2019). Youth note that after-school

Street trees

Graffiti

Construction

New, modern building

hours are a particularly busy time for vehicle traffic, and some express annoyance at cars blocking intersections or crosswalks. However, for most participants, these conditions do not elicit a sense of vulnerability. Mila: "I feel confident when I'm walking. I'm like, they won't run me over." Overall, crime and sidewalk characteristics appear to influence youth perceptions of their travel considerably more than traffic.

> "I feel confident when I'm walking. I'm like, they won't run me over."
> - Mila

SENSORY IMPRESSIONS

The experience of independent travel is rich with sensory impressions, both positive and negative. Participants appreciate the beauty of particularly historic as well as modern buildings, and of city views and sunsets. According to Marco, "Walking to HOLA, it's very beautiful out here... especially the clouds right on the front... it's like a beautiful sunset." Some youth express fondness for the neighborhood overall, sharing, for example, "It feels to me, it looks like the real, hidden part of Los Angeles... generally, this neighborhood is like this. There's always something that's unique about this neighborhood" (Alberto).

Participants also take note of more unpleasant features of the area, including smells of sewage, and poorly maintained benches, pathways, and trees on the street and in Lafayette Park, in particular. Graffiti is visible throughout the neighborhood but interpreted differently by participants. Some frame graffiti as artistic expression, some as vandalism, and others see both, as captured in the following statement from Alberto: "It's also graffiti, but I can see how beautiful it is."

> "It feels to me, it looks like the real, hidden part of Los Angeles...generally, this neighborhood is like this. Yeah. There's always like, something about it that's unique about this neighborhood."
> - Alberto

Landscaping, including street trees and planters, is appreciated by most participants, and is often associated with pleasant memories and a sense of calm amidst the busy urban environment. "I like to see trees around. Because me, I love nature, to be honest. Just that I never go out to see nature because I never can find the chance" (Alberto). Students enjoy the trees and planting at the front entrance of HOLA Bryson in particular, as mentioned by Jorge: "I think [the trees] are pretty good for the environment. And for the look of this place. It gives it a more natural look, as well as these plants that are here."

While the many construction sites throughout the area contribute noise and dust and prompt route detours or sidewalk obstructions, most participants are either indifferent to the new construction or view it as a symbol of progress. As Marco explained, "[The construction is] okay. Because it could be for something good, useful. It's annoying sometimes when I'm in a bad mood." Alex offered, "I think it's kind of cool, 'cause we're getting like a new building. 'Cause that building was so old, and we're getting a new one." Similarly, Alberto indicated, "I like walking here... because it's modern, you know? We're finally making new

buildings." Alberto believes that new, modern buildings are a sign of reinvestment in the neighborhood: "That gives you the idea the government is trying to pay attention to us in this part of the neighborhood." These comments further suggest that the participants, while young, hold in-depth knowledge about their neighborhood, its past, and its changes in the present.

NEIGHBORHOOD SOCIAL ENVIRONMENT

In addition to the built environment, the neighborhood's social environment plays a central role in youths' perceptions of their trip from school to HOLA. Perceptions of crime and risk, presence of social networks, and exposure to harassment and bullying all shape participants' views of their journeys and informed travel decisions.

Street vendor

The presence of other known sidewalk users – namely, friends, HOLA classmates, fellow students, and parents – contribute to students' sense of safety, security, and comfort. The presence of other students near school help Mila feel safer: "I'm usually with friends, depending on the day, but sometimes I do [walk] by myself. But there's lots of students here so I'm not worried about it." The presence of women on the sidewalk is also viewed as supporting safety. Speaking about the mothers waiting for their children near the HOLA building, Mila said, "It makes me feel safe. Yeah...I feel like women are more careful." Other "friendly faces" in the neighborhood include security guards and street vendors, who are consistently present and visible and thus recognizable to youth, and similarly associated with feelings of comfort and safety.

Reflections from several students suggest that clear sight lines and the presence of other street users – or an "eyes on the street" effect – may support independent youth travel in the neighborhood. The residents in the apartment buildings surrounding HOLA make Mila feel secure, while Marco said of his route: "I feel like it's the best, safest route because it's more open and you can see people and there's a bus, it's safe." He later added: "I feel like this place is more, I guess, safe because there's many people, a lot of things that are happening. Like there's less chance of me getting kidnapped or something like that." Nita, who takes the bus from school to HOLA, said the bus made her feel safe because "there's people there, and

they'll see... if someone's looking at me or something, they'll see too." Even in conditions that participants considered unsafe – for example, in the presence of unhoused people – the presence of others is seen as a mediating factor: "There's a lot of people that are watching and it's safe... so if anything happened, people can watch or help" (Marco).

Larger crowds of people on sidewalks and public spaces elicit a range of reactions from participants, from positive to neutral to negative. As indicated above, groups of parents, primarily women, are typically viewed positively as a source of comfort and safety, as are groups of other students. The sidewalk spaces near school entrances are often very crowded at the end of the school day, as students gather to meet friends or wait to be picked up by parents. About these crowds, most participants report neutral feelings: they are "just used to it" and it is "manageable" (Alex). However, some crowded spaces are viewed as threatening to youth. Speaking about her bus journey, Nallely stated, "For me, personally, I don't like crowded places... Once it starts getting full, that's when I start – not necessarily panicking. But feeling a little uneasy with the amount of people that are on the bus and the crowded area." Crowds are viewed negatively when they include people perceived as potentially threatening – namely men and individuals exhibiting psychological distress. Referencing a particularly narrow stretch of sidewalk on 6th Street where students from several other schools typically walk, Mila said, "They usually get let out around the same time as we do. So they just kind of crowd around here. And usually that's this part where people – not dangerous people, but like, the crazy weird people walk here."

Certain other sidewalk users are associated with crime, danger, and risk. While women are associated with feelings of safety and comfort, groups of unfamiliar men and boys were noted as a threatening presence by several of the girls participating in this study. Inez stated that she didn't like encountering a group of boys that typically congregated in front of her school because "they always yell and say some stuff." Speaking about a group of older men that congregated in Lafayette Park, Mila shared, "[I feel] kind of uncomfortable, yeah. Cause I feel like maybe they'll just – I don't feel safe. Or if something does happen, I feel like they're overpowering." For Mila, the presence of other people lessens this feeling of fear but does not eliminate it entirely.

Mila also noted she felt uncomfortable around and actively avoided a larger group of older students from her high school who congregated outside a Starbucks. "It's bad vibes over there... usually some people yell, or they get into fights. I don't know, I feel like something bad happens whenever you get close to those people."

> "There's a lot of people that are watching and it's safe...so if anything happened, people can watch or help."
> - Marco

> "Once it starts getting full, that's when I start – not necessarily panicking. But feeling a little uneasy with the amount of people that are on the bus and the crowded area."
> - Nallely

Past personal experiences and stories shared by others also contribute to perceptions of crime and danger. Marco recalled, "I heard something from my friend that there was like this kid passing by somewhere near the school and they went somewhere else. And I don't know what happened to them but they said that something happened to the child and that they can't find them anymore." Mila referenced an uninvited exchange on the sidewalk with a man who appeared "not in the right mind." Another participant recalled observing someone getting arrested outside of his school.

Homelessness is a considerable issue in the neighborhood, and recently, in fall 2021, a large encampment was cleared from nearby MacArthur Park to make way for minor park renovations, spurring significant criticism from activists. A 72-bed complex of temporary supportive housing opened in early 2021 at the southwest corner of Hoover Street and Wilshire Boulevard, separated by a fence from a sidewalk regularly used by students. However, unsheltered homelessness remains visibly present on sidewalks and in public spaces in the area, notably in Lafayette Park and surrounding the now-vacant site on Wilshire Boulevard that formerly operated as a Chuck-E-Cheese. This area was described as "probably the most not safest place" by Marco, who recalled seeing "many tents, like homeless people. I see some people fight there, start talking a lot of bad words, saying a lot of disturbing stuff."

Tents and unsheltered homelessness

Despite expressing empathy toward the condition of unhoused people in the neighborhood, students report feeling unsafe near encampments and actively avoid such spaces along their walking route. Jorge explained his decision to avoid encampments: "I would go this way, because otherwise it's homeless people, I don't think that's safe." He later added, regarding encountering unhoused people on the sidewalk: "I'd just like to avoid that. If it would be just any regular person, I think it would be safe." Mila said she avoided an area of Lafayette Park where unhoused people congregated: "Over here, there's a lot of tents where the homeless people sometimes go. I feel like I should avoid that part." However, the presence of other sidewalk users is again a mediating factor when encountering unhoused people, as illustrated by Jorge:

"So usually, there's not many homeless, but they are there. I think it's not the safest, but it is safe, because there's always kids who will go this way. Just in case something happened, there would be someone to help."

> "So usually, there's not many homeless, but they are there. I think it's not the safest, but it is safe, because there's always kids who will go this way. Just in case something happened, there would be someone to help."
> - Jorge

Youth often encounter people on the sidewalk who exhibit erratic behavior, signs of drinking or drug use, or appear distressed, and describe these people in a range of somewhat vague terms, including "not in their right mind," "dangerous," "sketchy," "suspicious," and "weird." When asked what situations are to be avoided, Gabriel explained, "I guess when there's like random people, like crazy people, that look crazy, I mean, like shirtless, just in the streets, walking around." Such interactions elicit feelings of discomfort and fear for youth, particularly when walking alone and unaccompanied by friends or family, and prompt some to adjust their travel behaviors. Hector referenced, somewhat vaguely, adjusting his route after encountering people "doing some weird things or just standing there." Several participants reported other strategies to avoid interactions with such people, such as avoiding eye contact, taking a slightly different route, or walking on the other side of the street.

Dark, nighttime conditions heighten the sense of fear and risk for youth. Mila described walking around the neighborhood at dusk as "eerie," and continued: "I don't know, if it feels weird. 'Cause it's way more calm and it's quiet. And then you have to kind of look around for people... I'm more cautious." Alex reflected on walking alone after dark: "It's kind of scary because there might be some bad people out there. And I can't figure out where to go. And it's too dark. So I just roll with it, and I get out my phone, using my flashlight. And then I just take the bus the rest of the way." Nallely said of her evening walk to the bus stop, "Sometimes there's people who, especially when it gets a lot darker, there's a lot of drunk people that makes it feel a little uncomfortable... there have been certain times when it has felt unsafe and uncomfortable, especially when it's dark." Nallely, who frequently travels alone after dark, also shared, "There'll be a lot of random situations like homeless and then drunk people. And once it started getting dark, that's when they started getting a little more unnerving. And then a little more, you know, unsafe. So I had to change my route from getting off at the particular bus stop to getting off one after." Even if allowed to walk independently during daylight hours, the caregivers of most participants do not permit them to walk alone at night.

> "It's kind of scary because there might be some bad people out there. And I can't figure out where to go. And it's too dark. So I just roll with it, and I get out my phone, using my flashlight. And then I just take the bus the rest of the way."
> - Alex

Certain physical environments also heighten a sense of fear and risk for youth pedestrians, including alleyways. As Jorge reported, "The little places between buildings, there might be bad – like people that do not do good there... Like, they might be doing graffiti or they might be doing a crime. You don't know." He added, "I don't really think about that [during the] day. If there's people around you, they would be able to help you in a situation like this. But at night, I don't think it's safe to go through an alleyway by yourself... I would just avoid it at all costs, because you don't know what might happen."

TRAVEL EXPERIENCES

Past travel experiences – particular events, memories, interactions, and related emotions – shape youths' perceptions of their neighborhood built and social environment and strongly influence their travel behaviors. Throughout the study, and often without prompting, participants recalled specific experiences traveling in the neighborhood to support their views or explain their behaviors. Phrases like "this one time," or "I remember when," peppered the interview transcripts, and added depth to our understanding of youth travel experiences in the area. Youth clearly have deep, accumulated knowledge about neighborhood conditions and change over time, and clusters of good and bad memories indicate that a place is rich with many associations. These associations and place-based memories shape travel decisions, and the experience of travel.

Although most of the students' narratives are cautionary, some of the travel experiences referenced by participants are positive – for example, remembering the feeling of walking alone for the first time and slowly building confidence over time, dining and shopping in a local plaza with family, washing the family car in a parking lot with a parent, playing games and racing with friends, or being surprised and amused to see a live chicken on the street. For these participants, a particular stretch of sidewalk, a building, or a park "brings back memories" (Nallely) and "reminds me of the places I used to go" (Hector), and can serve as a positive touchpoint along their journey.

> "There have been situations where there are drunks and then homeless. There was one time catcalling and then following."
> - Nallely

Many youth also have negative memories of experiences traveling alone in the neighborhood – for example, close calls with cars or bicycles, seeing people trip on poorly maintained sidewalks, or watching someone get arrested in front of their school. Several participants, all girls, recalled being catcalled, harassed, or receiving other unwanted attention while traveling alone, specifically from men. "There have been situations where there are drunks and then homeless. There was one time catcalling and then following" (Nallely). All of the participants who referenced such gender-based harassment have since adopted adaptive behaviors in response – whether simply learning to ignore strangers' stares on the bus, being more alert when walking alone, walking more quickly through certain segments of sidewalk, carrying pepper spray, or calling family and friends before traveling alone.

Stories about events in the area, heard through family and friends, also inform youth travel routines. For example, Marco heard about a kidnapping, which led him to stick to familiar routes with many other people around to limit risk. Together, all of these vivid past experiences, memories, and even second-hand stories have a profound impact on how youth perceive their independent travel experiences and also, in some cases, actively shape travel behaviors.

TRAVEL BEHAVIORS

MODE CHOICE

While some participants in the preliminary route mapping activity were driven from school to HOLA by a caregiver, all participants in the walking audits walked either a portion or all of the journey from school to HOLA. Existing literature suggests that distance is a key variable informing the decision to use active transportation modes, including walking (Rothman et al., 2018), and our findings confirmed this: participants whose schools are located within a few blocks of HOLA are more likely to walk, and others whose schools are further away are more likely to take the bus or be driven. However, in addition to practical considerations of distance, we found that some youth express a preference for walking and indicate that the walk itself is an enjoyable part of the day. The walk to after-school activities can be a social time to enjoy with friends or meet up with family in the park. For example, Nita prefers walking over being driven, "Because I don't really get to do things I'm doing right now, like talk to my friends after school." For others, even when alone, the walk itself is an engaging experience and a way to see the city: "It's something I would enjoy more because of the details that you experience" (Jorge). Alex appreciates walking as a form of exercise, "I kind of enjoy it, because I don't want to take a bus, so I can walk and get some exercise and stuff like that." Others prefer walking because it offers a more direct route from origin to destination than the available bus routes.

> "[Walking] is something I would enjoy more because of the details that you experience."
> - Jorge

> "We would normally wait at the bus stop. But we always check if the bus is coming, and it said 14 minutes. So when the bus doesn't come right away we just walk it."
> - Hector and Gabriel

Youth, particularly those who take transit, engage in complex decision-making about their trip based on service frequency, reliability, and crowding. In one of the walking audits, when a bus was delayed, a pair of friends chose to begin walking along the route typically traveled by the bus; when the bus did not appear for several blocks, they veered off course into a more pleasant pedestrian route, choosing instead to walk the full distance from school to HOLA. This process of choosing to walk to the next stop to wait for a delayed bus was shared by several participants. Hector and Gabriel explained, "We would normally wait at the bus stop. But we always check if the bus is coming, and it said 14 minutes. So when the bus doesn't come right away we just walk it." Hector later added, "We find it more efficient to walk instead of wait. We can just keep moving forward instead of waiting. They say the bus is coming in ten minutes and the stop is right over there, we'll just keep walking and waiting for it so we don't waste time." Other participants make moment-by-moment decisions regarding whether to take the bus or walk, based on a range of factors including their own timing, bus schedules, comfort, and weather. For example, Alex said, "I take the bus if I'm really late. If I only have five minutes left, I just take the bus."

ROUTE CHOICE

We initially hypothesized that complex confluences of built and social environment conditions influence how youth select and negotiate their walking routes, causing youth to avoid certain routes considered unpleasant and seek out other routes considered more enjoyable or attractive. However, our research reveals that participants overwhelmingly select the route that they consider to be efficient, direct, familiar, simple, and safe. Despite small modifications to routes based on bus service, participants are overwhelmingly consistent in their route choice and rarely make modifications. According to Nallely, "To be completely honest, I haven't taken a different route. I always stick with this one." Mila explained she also consistently takes one route: "In general, I feel like I've never walked this street, I usually come this way. I don't think there's a specific reason for that." Some youth admitted that they had never even considered taking a different route than the one they took when first traveling alone, suggesting how influential an initial route – whether learned through a caregiver or friend or devised by the walker themselves – can be in shaping engrained travel behavior.

> "To be completely honest, I haven't taken a different route. I always stick with this one."
> - Nallely

A lack of familiarity with other routes, and the associated risk of danger, leads some to repeat the same route each time. When asked if he ever takes other routes, Marco responded, "No, not right now. Just in case I get lost or something. As well, I'm not sure how dangerous some places are… So that's why I take this route because it's more open and there's a lot of people passing." Marco also indicated that his first criteria for route choice was, "Somewhere it's safe for me to go on the walk." Jorge said of his route, "I felt neutral, safe, and happy. Because it's the safest route you can take, because it avoids, you know, it avoids dangers. It also shows me things I recognize." The comfort he feels seeing familiar sights and places may counteract the insecurity that comes with uncertainty.

In addition to safety, efficiency and directness are key criteria for route choice, with many simply choosing the "fastest and safest route" (Jorge). Small modifications – for example, walking on a different side of the street, or using a crosswalk on another block – are largely influenced by vehicular traffic jams, people on the sidewalk, and wait times for traffic lights. For example, Alex said, "If there's a lot of people and the light won't change, I just go another way."

During walking audits, road safety was not often cited as an important factor influencing route choice, while other factors contributing to safety, including crime and sidewalk conditions, were cited more frequently. However, vehicular traffic does prompt some participants to make small modifications to their route, like crossing earlier or walking on a particular side of the street. One participant shared that she crosses at an earlier crosswalk because the other option feels "more dangerous" because "the cars are crazy." Mila agreed, "I feel like on that part of the street, the cars just come fast. It's just some people, some careless people who don't pay attention."

While route modifications were minor, safety concerns, particularly those related to social factors, influence some participants to avoid particular areas. Mila avoids a shortcut through Lafayette Park because, "If I walk through the park, I feel like there's a lot of people there. Maybe too many people. And people I don't know," including older men and unhoused people. Inez avoids walking on a particular side of the street, near an alleyway, because of the presence of unhoused people in the area. Nallely, who takes the bus for part of her journey, began disembarking at a later stop to avoid "random cases, like situations, homelessness and then drunk people," particularly at night.

The ability to walk with friends is another notable factor influencing small modifications to routes. For example, Alberto chooses a slightly less direct route to maximize the time and distance spent with his "little troupe" of friends walking in the same direction, before turning off towards HOLA.

ACCOMPANIMENT

Most participants typically travel independently from school to HOLA, but some travel with family members or friends. For several participants, the journey from school to after-school activities is valued as a social time to spend with friends, and a transitional period from the school day to leisure. Students appreciate having time to chat with friends while walking: "We talk about little things, video games, stuff like that" (Alberto). "I kind of enjoy [the bus] because I like to socialize" (Nita). "For the experience, it is walking with friends. Just having a time, you know, just trying to transition from school to HOLA. We are just talking. We are talking about how it's been. It's catching up" (Hector). Traveling with friends or family is also associated with safety, security, and feelings of ease, even in the presence of potentially dangerous or fear-inducing situations.

> "I kind of enjoy [the bus] because I like to socialize."
> - Nita

For some of the younger participants in our study, walking alone is a relatively new experience, having been accompanied by parents or a sibling on their journey until recently. Several participants described initially feeling somewhat nervous walking alone, and then gaining confidence and capacity over time. When reflecting on her first experiences traveling on the bus with a friend, Mila recalled, "It was good, it felt freeing. I was having little adventures." Jorge, who is 12 years old and typically accompanied by his mother, was looking forward to traveling independently in the future: "Yeah, it might change… once I get into high school. But in the meantime it's suitable. And then once I get to 13, it might be a reasonable option to go walking by myself." When asked why walking alone is appealing, Jorge explained, "It gives you just a fun journey because you're not with anyone else. You're just going to your place solo. And it's just like, pretty enjoyable because you don't need anyone to guide you through it."

> "It was good, it felt freeing. I was having little adventures."
> - Mila

STOPS

Some participants make stops along their journey; however, these stops usually align directly with their typical travel route and do not prompt a significant detour. Frequently noted stops include liquor stores for an after-school snack, coffee shops, and fast-food establishments. For some participants, stopping regularly at the same business for a snack breeds a sense of comfort and familiarity. Several participants, including Marco, often stop to purchase a snack from a food vendor located near their school: "I tend to get any kind of snacks

Coffee shop

– chips, juice, candy – anything just to bring to the walk." Stopping in Lafayette Park is also common, to meet up with a family member, play with friends, or simply to spend some time alone before going to HOLA. While we did not visit any home locations during our walking audits, several participants indicated that, in some cases, they stop at their own home or at a friend's home for a snack or to rest before continuing to HOLA.

PRECAUTIONS

Student mode choice is typically determined by distance and route choice by efficiency and familiarity, with travel behaviors rarely changing day to day. But youth still adopt a range of adaptive behaviors related to risk and fears over safety. Most participants believe that walking at night is less safe than walking during daylight hours, and either actively avoid traveling alone in the dark or are not permitted by their caregivers to do so. However, some participants do indeed travel alone at night, and adopt strategies to manage the risk and their own fears. "It's kind of scary because there might be some bad people out there. And I can't figure out where to go, and it's too dark. So I just would roll with it. I got my phone, using my flashlight, and then I just take the bus the rest of the way" (Alex). When walking alone at night, Mila reported, "I'm being more careful. If I see someone, I have this problem where I think some people are following me. So I just speed walk... I don't like looking back. I think that's weird. I just tend to speed walk or make sure I can hear if they're walking behind me." Mila indicated that these fears are only present when walking alone at night, and not when accompanied by others. Nallely, who often travels on the bus alone at night, adopted new strategies after several negative and fear-inducing first-hand experiences: "After a few incidents and telling my parents about it, my mom got me pepper spray. And then recently a friend got me a little pocket knife to carry around. Before I would just get out of HOLA and then immediately go home.

But after those situations, I started calling my mom and then calling my friends telling them, hey, I'm here just so you know, if anything happens, I was in this area. And then I started sharing my [GPS] location with people."

The sidewalk users perceived as threatening by youth pedestrians prompt additional precautions. Some participants avoid certain areas of Lafayette Park, stretches of sidewalk, and alleyways frequented by unhoused people, older men, or other people perceived as dangerous, while others do not change their travel route but instead use other strategies like walking with other students, avoiding eye contact, walking more quickly, or simply trying to ignore the issue. For example, Mila explained, "I try not to make eye contact. For the same reason that, I feel like maybe they think I'm saying something about them, and they come up to me. Or I just walk past them speed walking." Inez avoids the area near the vacant site of the former Chuck-E-Cheese restaurant, "because there's a lot of stuff that has happened there... like burned stuff, stealing, and there's some men right there."

While few expressed concerns over traffic safety, when asked to share how they managed the risk, many youth reported taking basic precautions around traffic, including remaining aware of their surroundings and looking both ways before using a crosswalk. The relatively poor sidewalk conditions are unavoidable for youth pedestrians, and in response to poor sidewalk maintenance, including garbage and feces on the sidewalk, Mila simply explained, "Yeah, you gotta be careful when you're walking. There used to be trash here in the sidewalk, in the little place where you walked through [the scaffolding]. So you have to be careful where you step. And there's also poop there sometimes."

The poor condition of the physical environment, the threatening aspects of the social environment, and the uncertainties of bus travel, establish students' independent travel as requiring skill, familiarity, confidence, but also precautions. Despite the challenges they navigate, youth also find pleasure in traveling without their caregivers, chatting with friends, feeling independent, and choosing to stop at certain destinations (for snacks, for example).

> "I try not to make eye contact. For the same reason that, I feel like maybe they think I'm saying something about them, and they come up to me. Or I just walk past them speed walking."
> - Mila

DISCUSSION

NEGOTIATING INDEPENDENT TRAVEL

In response to our first research question: How do inner-city youth negotiate their independent walk from school, and what (if any) precautions do they take?

FAMILIARITY IS KEY
"I have my routines."

For youth traveling from school to after-school activities in Westlake, travel behaviors are strongly shaped by familiarity. No participant was found to take unique or unfamiliar routes during the study; route choice was consistently driven by familiarity and efficiency. Across all the routes studied, students encounter some good elements and some bad elements, but familiarity – learning a route from a parent, traveling the same route over time, or walking with friends – is a strong driver of travel behavior, limiting the unexpected and offering simplicity, clarity, and convenience. Youth enjoy the positive elements of their familiar route – the favorite donut shop, the sunset view, the stop at the park – while also enduring and coping with the negative social and environmental elements – the uneven and crowded sidewalks, the unwanted attention from men in the park, and the unreliable bus service – in order to get to their destination. For most participants, there is an expectation that parts of the route will be negative, but familiarity still drives travel behavior.

ADAPTATION, NOT AVOIDANCE
"I just roll with it."

When seeking to understand the precautions youth take as they travel independently, it is clear there are pervasive social and built environment factors that detract from youth's ability to experience a safe and enjoyable journey from school to after-school activities in Westlake. Overall, students' expectations of the built and social environments along their routes are low. Sidewalk conditions are poor, bus service is unreliable, and vehicular volumes and speeds are high in the area around HOLA. Given these conditions and their consistency throughout the neighborhood, participants do not avoid particular routes, but instead continue to choose those routes that are most familiar, convenient, and direct while adopting a range of adaptive behaviors to manage the risk and unpleasantness of the route. For example, participants would cross the street one block earlier to avoid a crowded sidewalk, walk on the other side of the street to avoid an encampment of

unhoused people, exercise caution around high traffic areas, avoid making eye contact with strangers, or simply speed up when walking through an area where men gather. These findings contradict our initial hypothesis that youths' choice of travel routes would change regularly based on changing social and built environment factors. Instead, travel routes are basically set and youth engage in a range of smaller adaptive behaviors to manage and hopefully minimize risk.

COMPLEX DECISION MAKING
"If I only have five minutes left, I just take the bus."

Despite adherence to familiar routes, youth engage in complex decision making when they travel independently. Decisions about mode and route choice – whether to stop for a snack, to hop on the bus or walk, to cross at this crosswalk or the next – reveal the in-depth neighborhood knowledge and wealth of experience that youth travelers hold. Youth routinely contend with push and pull factors along their routes – to choose a less direct route to walk with friends, or to avoid a threatening alleyway. This elaborate decision-making is particularly evident amongst those participants who take the bus for a portion of their journey. Given the often unreliable bus service, bus travel prompts complex questions about travel times, convenience, stop locations, sidewalk safety, and other factors. Youth bring a wealth of knowledge – their growing expertise – to bear on the decision of whether to take the bus or to walk, and have intricate understandings of their routes.

MENTAL MAPS, REALIZED WALKS, AND YOUTH IDENTITY

In response to our second research question: How are youths' mental maps, realized walks, and associated choices (detours, precautions, walking with peers) influenced by gender and age?

AGING INTO WALKING
"I got more comfortable with it."

Many of the students included in this study, aged 11-15, began traveling independently from school to after-school activities only in recent years. Some of these youth spoke about the experience of learning a route by traveling accompanied by a sibling or caregiver and then slowly gaining the skills and confidence to travel alone. For these students, the travel route is thus a decision negotiated and selected in agreement with their caregiver. Youth self-perception of their confidence and ability to negotiate this journey shifts considerably during adolescence, with participants suggesting that traveling in the city independently now contributes to their sense of confidence, joy, and freedom.

GENDERED EXPERIENCES
"There are usually more men there. Guys, older."

We did not find significant gender differences in travel patterns within our small sample, but there were some indications that students' travel experiences – as an embodied, perceptual experience – are shaped by gender. All four girls participating in the walking audits made mention, at some point, of a particular sense of fear or threat posed by men encountered during their journey. These girls recalled being catcalled, being approached by, or receiving unwanted attention from men while traveling alone – experiences which were not similarly reported by the boys participating in the walking audits. For the girls, these experiences informed adaptive responses – avoiding a segment of sidewalk, trying not to make eye contact, or choosing to travel with a group of friends. While the girls noted that the presence of men was often a source of fear or discomfort, the presence of women, or "moms," contributed to feelings of confidence and safety.

SIDEWALK ECOLOGIES AND INDEPENDENT TRAVEL

In response to our third research question: How are youths' path choices influenced by sidewalk ecologies (physical features, hot and safe spots, human activity)?

INFLUENCE OF THE BUILT ENVIRONMENT
"I'm just used to it."

Overall, we found route and mode choice to be much more heavily influenced by familiarity, convenience, and efficiency than by built environment factors. Youth's routes are marked by positive elements of the built environment, including familiar landmarks, trees and vegetation, and beautiful views, as well as by more negative elements, including poorly maintained sidewalks and public spaces, garbage, and heavy traffic conditions. While youth are aware of these conditions and hold related opinions and perceptions, built environment factors rarely influence a change in travel behavior.

INFLUENCE OF THE SOCIAL ENVIRONMENT
"For the experience, it is walking with friends. Just having a time, you know…We are talking about how it's been. It's catching up."

Social concerns generally outweigh built environment concerns in influencing travel experience, yet youth still appear to adjust their behavior patterns only minimally, rarely altering a route or mode in response to either positive or negative social conditions. Students' travel routes are sprinkled with positive social elements, including time to socialize with friends, experiencing the city, and getting some exercise, but also by negative social factors, including harassment and unwanted attention, fear of crime, and erratic behavior from strangers. While not altering their routes, some youth do indeed assume some other adaptive behaviors in response to both positive and negative social environment conditions – for example, choosing to turn one block later to spend more time with friends, or avoiding a block where there are typically encampments of unhoused people. Our findings suggest that youth will continue to contend with the benefits and drawbacks of the most direct, familiar, and efficient travel route and mode, despite the range of sociospatial conditions that are present along the journey. It also appears that students make an informal agreement with a caregiver about route and mode of travel, established when they first start traveling independently, and keep this agreement.
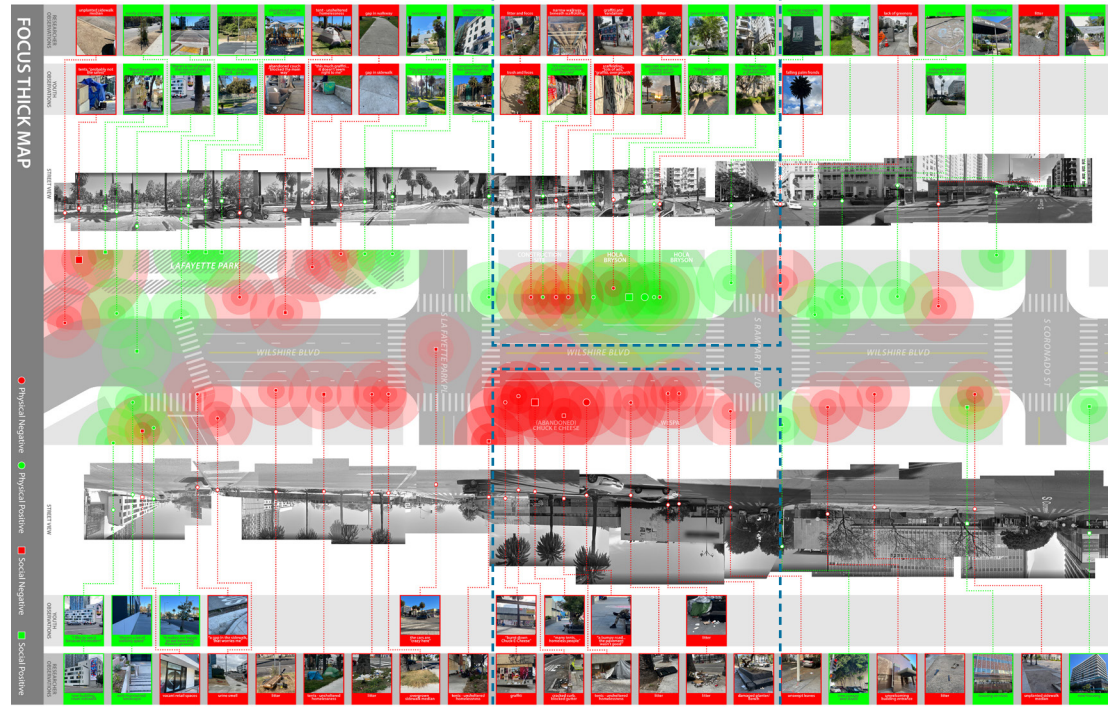
See pages 5-6 for full Focus Thick Map

NEGATIVE "RED SPOTS," POSITIVE "GREEN SPOTS," AND THE SPACES BETWEEN

"You're just going to your place solo."

Thick mapping reveals that youth travel routes are marked by "red spots" of negative associations with crime, risk, discomfort, or lack of safety, "green spots" of positive associations with safety, familiarity, and comfort (often near key landmarks like schools and HOLA), and a range of uncertain areas in between that hold complex associations with both positive and negative factors. These green spots are islands, separated by red and mixed spaces, leaving youth travelers without access to a consistent route of green spots – spaces where social and built environment conditions contribute to a sense of safety and enjoyment for youth – connecting their schools to HOLA. This lack of continuity means that students must navigate through a series of unsafe and unpleasant areas to reach their destination. Yet our walking audits reveal that youth indeed travel through, rather than avoid, difficult territory to reach those spaces of joy and safety.

One sidewalk segment analyzed in depth in our study clearly illustrates the relationships between green spots, red spots, and the spaces in between: Wilshire Boulevard between Hoover Street and Coronado Street (see Focus Thick Map on pages 5-6). This is a particularly important segment for analysis in part because every youth participant in this study – whether a walker, transit rider, or car passenger – was at some point in their journey a pedestrian along this segment.
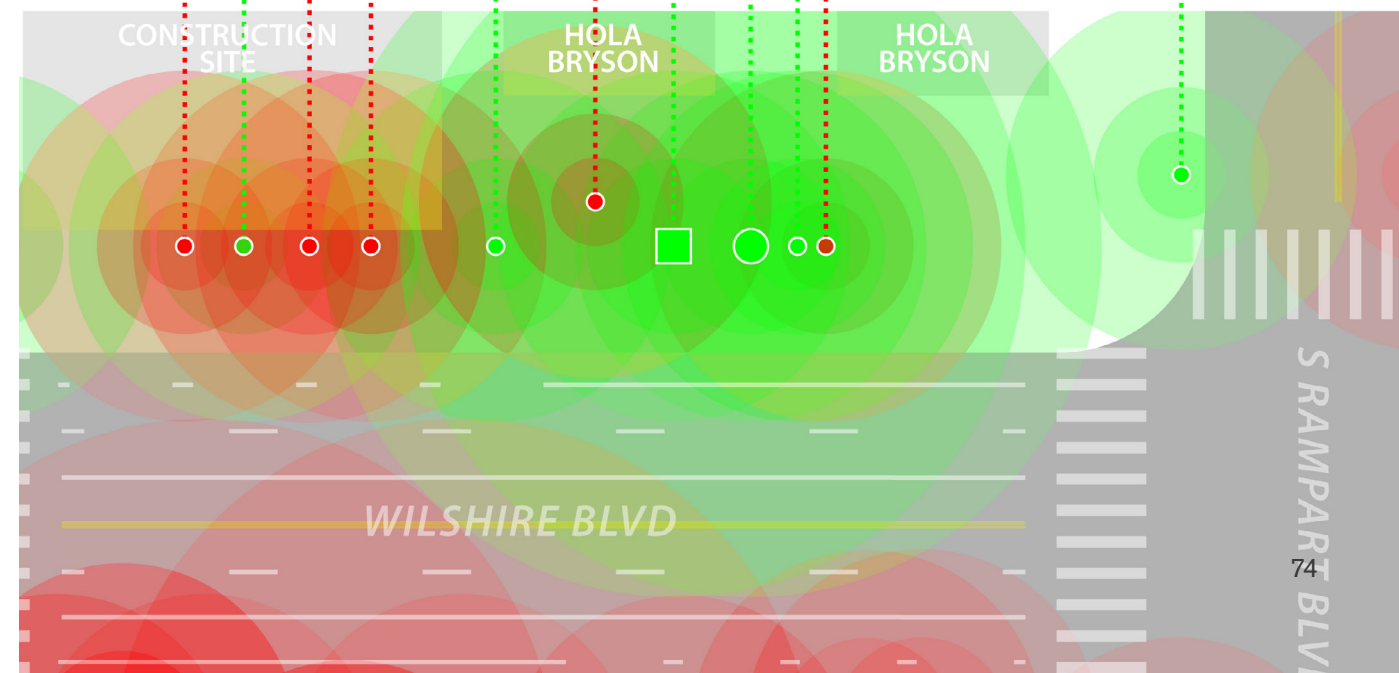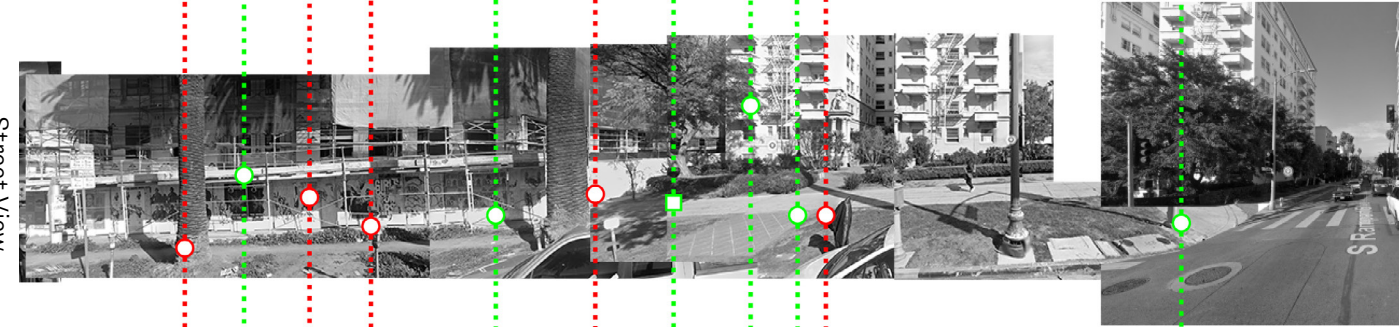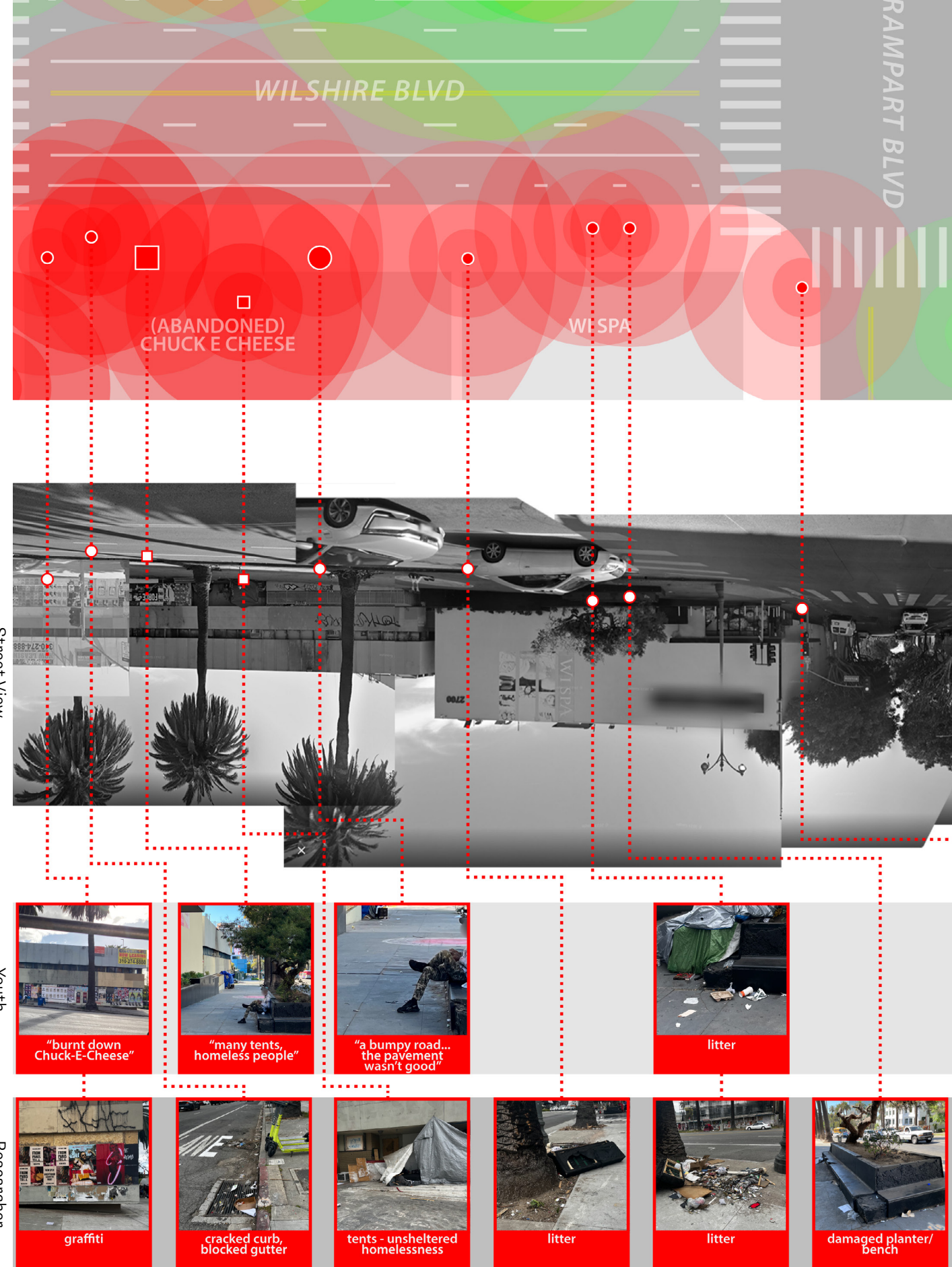
The research team first mapped each observation made by youth participants during walking audits on this segment, coded as a green or red spot according to positive or negative built and social environment characteristics. We then added an associated photo taken by students during the walking audit, and descriptive text, often using a direct quotation in the student's voice. When mapped, these observations paint a complex portrait of the social and physical characteristics that influence youth's perceptions and experiences of this important street segment.

Following the walking audits, we conducted supplementary observations along this same street segment. This allowed us to confirm conditions identified by the youth, but also to fill in the gaps and identify those built and social environment conditions that went unnoticed by youth participants. The features identified by the research team but overlooked by students demonstrate that some conditions that we believe are important in shaping the sociospatial experience of the sidewalk are considered unremarkable by youth. For example, some negative, unpleasant, or unsafe features noted by our researchers – in particular, poor sidewalk conditions and garbage – were not noted by youth participants, suggesting that such conditions may be so pervasive in the area that they become mundane and unremarkable.

Our analysis of the completed map reveals that "green spots" tend to coincide with sites where ownership claims, community, and care have transformed the experience of the built and social environment, as occurs around schools and around HOLA. For example, the one-block threshold around HOLA held powerful associations for youth, who felt they were arriving at the end of their journey at a space of community where they feel safe and connected socially and where the physical environment, including the wide sidewalks, greenery, and nearby apartments, contribute to positive feelings of relief and familiarity.

However, the blocks immediately surrounding HOLA were much more complex. Some "red spots" are associated with many more negative elements, including poor sidewalk conditions, garbage, crowding, high traffic volumes, and the presence of potentially threatening sidewalk users, including the unhoused. This confluence of material and social conditions, described by one study participant as simply "sketchy," points to the complex interplay between social and built environment conditions that together shape perceptions of safety, or lack thereof.

Still, there are those uncertain areas – sites of overlap between positive and negative social and built environment factors – that are rich with associations. Often, we found these spaces of uncertainty overlapping with key decision-making points for youth – for example, the decision to hop on the bus or to walk, to cross the street early or to wait for the next intersection – and at intersections of dangerous road conditions. These observations suggest that uncertain areas hang in a delicate balance. They have the potential to be transformed into "green spots," but also more pessimistically, they have the potential to become loci of negative sociospatial conditions.

WILSHIRE BLVD

RAMPART BLVD

(ABANDONED) CHUCK E CHEESE

WI SPA

Street View

Youth Observations

"burnt down Chuck-E-Cheese"

"many tents, homeless people"

"a bumpy road... the pavement wasn't good"

litter

Researcher Observations

graffiti

cracked curb, blocked gutter

tents - unsheltered homelessness

litter

litter

damaged planter/ bench

POLICY AND DESIGN PROPOSITIONS

In response to our fourth research question: What design and policy improvements can enhance the independent mobility of inner-city youth?

This study yields insights that deepen our understanding of how youth in Westlake experience the sidewalk as a complex, sociospatial environment, and how these experiences and perceptions influence independent travel behaviors. Extending our empirical analysis towards projective and interventionist ideas, we ask: how might the findings of this study inform design and programmatic changes to the sidewalk environment that could improve independent travel for youth in Westlake?

Effectively responding to this question necessitates (a) targeting sites (positive and negative) according to youth experience; (b) imagining effective interventions to overcome negative experiences or reinforce positive experiences; and (c) acknowledging the opportunity structure in the neighborhood for implementing change. Based on the discussion above, we can identify target sites for improvement. We found that, when asked what changes could improve their travel experiences, youth were seldom interested in or able to share concrete suggestions. It appears this may be due to the community's limited opportunity structure. Namely, considering future interventions is challenging when existing conditions offer few opportunities to imagine alternative futures. Furthermore, our study team's expectations of what is feasible in the present moment constrain what we believe should happen in the future. The following propositions imagine alternative futures to encourage youth independent mobility in Westlake that are not overly burdened by existing constraints but are also rooted in the realm of the possible.

1 Emphasize social determinants of safety and enjoyment

Our study suggests that social environment factors may be more impactful in shaping youth perceptions of independent travel than built environment factors, including traffic conditions. For example, familiar faces, accompaniment by friends and family, and the presence of trusted neighbors help youth feel safe, comfortable, and confident while walking in Westlake, and also frame independent travel as an enjoyable, social experience, often regardless of the poor physical conditions of the sidewalks. At the same time, large crowds, unfamiliar and threatening sidewalk users, and isolated spaces empty of people lead to feelings of distress, discomfort, and fear, and prompt adaptive behaviors such as walking more quickly, not walking alone or at night, or avoiding certain settings.

Current strategies to improve safe routes to school tend to emphasize changes to physical infrastructure and traffic environments (Chaufan et al., 2012), overlooking how social conditions, relationships, and networks shape travel behavior and experiences. **Planners, designers, and policymakers invested in supporting independent travel for youth should broaden the scope of research and interventions to include social factors, reframing sidewalks as sociospatial environments.** Examples of such a focus might include encouraging vendors in the neighborhood, and creating programs to introduce them to students; encouraging caregivers and trusted adults to spend time along frequented paths by adding benches, shade, and lighting; or creating social areas where sidewalks intersect with youth "green spots" like schools, snack retailers, or attractive landscaping.

2 Focus on the direct routes that most efficiently link destinations

Overwhelmingly and consistently, youth choose to travel the most direct and efficient route between school and after-school activities. Even where nearby alternative routes offer safer, quieter, or more pleasant alternatives – for example, walking through the park instead of along the street – youth primarily choose the most efficient route that they are familiar with without pursuing detours. This route is likely to have "eyes on the street" and to offer the shortest travel time. While the safety and comfort of the route are clearly important to youth travelers, the most direct and familiar route is the most traveled, even when negative social and built environment features are evident.

Given this, **planners and designers should not assume that youth will incorporate detours to access more interesting or enjoyable sidewalk segments. Instead, interventions should focus on the most direct and efficient links between key origins and destinations,** for example, from school to after-school activities. These major routes are more likely to be traveled by youth, supporting a critical mass of users that can contribute further to feelings of safety. Examples of interventions along direct routes might include increasing visibility and lighting up and down the street, adding low barriers to keep pedestrians separate from cars, widening sidewalks so that groups of students can travel together, enhancing bus stops, adding shade, and marking the sidewalk with colors and graphics that indicate some youth ownership.

3 Reinforce preferred, familiar, and more public paths to increase certainties of travel

Vehicular traffic can be a danger to young pedestrians, but it is paradoxically coupled with a sense of security. While most youth travel a direct path to their destinations, we found that they often choose streets with limited uncertainties and with more public activity, such as those with more pedestrian and vehicular traffic, transit stops, vendors, and storefronts, rather than quieter routes with fewer people and fewer cars.

Visibility and open lines of sight along sidewalks offer certainty to their travels and allow youth to make choices about who and what they encounter. Furthermore, the presence of others on the sidewalk – familiar faces, friends, and neighborhood residents – help youth feel safe and secure. **Interventions should identify and reinforce those familiar paths with more public activity that are already preferred by youth.** Doing so can help to minimize uncertainties of travel and support confidence and a sense of safety amongst young pedestrians.

4 Address links between islands of safe, enjoyable spaces

Youth travel from school to after-school activities is characterized by islands of safe, enjoyable spaces, often found around schools, beloved businesses, community facilities, and neighborhood institutions. These islands are separated by segments of sidewalk where youth endure negative built and social environment conditions, including poor sidewalk conditions, unsafe intersections, and social factors that breed discomfort and fear. We found that when faced with limited options and driven by efficiency, public visibility, and familiarity, youth continue to travel through these negative segments, experiencing a sense of relief when reaching their destination.

These "gaps" in the network are filled with complex challenges, but also represent some of the most compelling opportunities for planners and designers seeking to enhance youth travel experiences. **Linking the "islands" of joy, safety, and comfort by addressing those "gaps" where the physical and social conditions detract from the experience of the sidewalk could create continuous paths of safe and enjoyable travel for youth.** Planners and designers ought to consider these "gaps" as key sites of potential transformation. For example, green spots can be expanded so that the areas in front of schools or popular businesses receive special attention, increasing their size and range of possible activities; red zones can be improved with additions like trash receptacles, lighting, and landscaping to overcome their specific problems.

5 Support the social life on the sidewalk

For youth, travel from school to after-school activities is more than just a logistical task; it is also an important social experience, an avenue for exercise, and an opportunity to feel independent but also to experience and feel connected to the neighborhood. As youth begin to travel independently in the neighborhood, early mobility experiences have the potential to influence their broader perceptions of and participation in their community.

To fully acknowledge and accommodate youth as street and sidewalk users, planners and designers must go beyond supporting safety to also supporting meaningful opportunities for participation and connection. In their work, **planners and designers should recognize the importance of sidewalks as spaces of urban citizenship for youth, and aim to actively support the social life of the sidewalk.** Key social moments for youth – purchasing a treat from a vendor, eating a donut outside the shop, chatting with friends while waiting to be picked up from school, or meeting a family member in the park before after-school activities – take place on the sidewalk, and each of these social events may be facilitated or thwarted by the built environment. This offers opportunity and inspiration for planners and designers.

6 Demonstrate care for people and for place

Overall, sidewalk conditions in Westlake are poor, with maintenance issues including unevenness, cracks, obstructions, and garbage, as reported by many youth. These conditions not only detract from the safety and enjoyment of independent travel, but also suggest broader, structural inequities and a lack of care for the neighborhood.

Beyond major capital improvements to sidewalk infrastructures, practitioners and advocates interested in improving youth mobility should consider other strategies to demonstrate care for people and for place. For example, street furniture that supports both maintenance and user experience, like garbage cans and drinking fountains, can serve as strong symbols of care. Landscaping that is regularly maintained sends the same message. Empowering adjacent businesses, institutions, residents, and even vendors to care for their local sidewalk segment by reporting maintenance issues, activating space with simple marks of community ownership, and keeping an eye out for youth sidewalk users could meaningfully improve the sidewalk experience for youth. Given that unsheltered individuals on the sidewalk create insecurity, uncertainty, and fear among youth, there need to be community-based programs to focus on this contested terrain where students walking independently and homelessness collide. For example, those paths that are frequent student routes could become the focus of social service agencies and housing initiatives. Likewise, a program of adult community ambassadors might ameliorate some of the students' insecurity. In sum, on the narrow and constrained space of the sidewalk, **linking more involved design and outreach interventions to longer-term practices of community care and maintenance is a complex challenge which planners and designers ought to take seriously.**

REFERENCES

Ahlport, K. N., Linnan, L., Vaughn, A., Evenson, K. R., & Ward, D. S. (2008). Barriers to and Facilitators of Walking and Bicycling to School: Formative Results From the Non-Motorized Travel Study. *Health Education & Behavior, 35*(2), 221–244. https://doi.org/10.1177/1090198106288794

Banerjee, T., Uhm, J., & Bahl, D. (2014). Walking to School: The Experience of Children in Inner City Los Angeles and Implications for Policy. *Journal of Planning Education and Research, 34*(2), 123–140. https://doi.org/10.1177/0739456X14522494

Blakely, K. S. (1994). Parents' Conceptions of Social Dangers to Children in the Urban Environment. *Children's Environments, 11*(1), 16–25.

Boarnet, M. G., Day, K., Anderson, C., McMillan, T., & Alfonzo, M. (2005). California's Safe Routes to School Program: Impacts on Walking, Bicycling, and Pedestrian Safety. *Journal of the American Planning Association, 71*(3), 301–317. https://doi.org/10.1080/01944360508976700

Bosch, L. S. M. M., Wells, J. C. K., Lum, S., & Reid, A. M. (2020). Associations of the objective built environment along the route to school with children's modes of commuting: A multilevel modelling analysis (the SLIC study). *PLOS ONE, 15*(4), e0231478. https://doi.org/10.1371/journal.pone.0231478

California Department of Education. (n.d.). *California School Dashboard [Online Tool]*. Retrieved October 2, 2023, from https://www.caschooldashboard.org/

Carlson, J. A., Sallis, J. F., Kerr, J., Conway, T. L., Cain, K., Frank, L. D., & Saelens, B. E. (2014). Built environment characteristics and parent active transportation are associated with active travel to school in youth age 12–15. *British Journal of Sports Medicine, 48*(22), 1634–1639. https://doi.org/10.1136/bjsports-2013-093101

Chaufan, C., Yeh, J., & Fox, P. (2012). The Safe Routes to School Program in California: An Update. *American Journal of Public Health, 102*(6), e8–e11. https://doi.org/10.2105/AJPH.2012.300703

Clark, A. F., Bent, E. A., & Gilliland, J. (2016). Shortening the trip to school: Examining how children's active school travel is influenced by shortcuts. *Environment and Planning B: Planning and Design, 43*(3), 499–514. https://doi.org/10.1177/0265813515614678

Cook, A., Whitzman, C., & Tranter, P. (2015). Is 'Citizen Kid' an Independent Kid? The Relationship between Children's Independent Mobility and Active Citizenship. *Journal of Urban Design, 20*(4), 526–544. https://doi.org/10.1080/13574809.2015.1044505

Crawford, S. B., Bennetts, S. K., Hackworth, N. J., Green, J., Graesser, H., Cooklin, A. R., Matthews, J., Strazdins, L., Zubrick, S. R., D'Esposito, F., & Nicholson, J. M. (2017). Worries, 'weirdos', neighborhoods and knowing people: A qualitative study with children and parents regarding children's independent mobility. *Health & Place, 45,* 131–139. https://doi.org/10.1016/j.healthplace.2017.03.005

Cuff, D., Loukaitou-Sideris, A., Presner, T. S., Zubiaurre, M., & Crisman, J. (2020). *Urban humanities: New practices for reimagining the city. The MIT Press.*

Egli, V., Ikeda, E., Stewart, T., & Smith, M. (2018). Interpersonal Correlates of Active Transportation. In *Children's Active Transportation* (pp. 115–125). Elsevier. https://doi.org/10.1016/B978-0-12-811931-0.00008-9

Fang, J.-T., & Lin, J.-J. (2017). School travel modes and children's spatial cognition. *Urban Studies, 54*(7), 1578–1600. https://doi.org/10.1177/0042098016630513

Faulkner, G. E., Richichi, V., Buliung, R. N., Fusco, C., & Moola, F. (2010). What's "quickest and easiest?": Parental decision making about school trip mode. *International Journal of Behavioral Nutrition and Physical Activity, 7*(1), 62. https://doi.org/10.1186/1479-5868-7-62

Forsyth, A., Hearst, M., Oakes, J. M., & Schmitz, K. H. (2008). Design and Destinations: Factors Influencing Walking and Total Physical Activity. *Urban Studies, 45*(9), 1973–1996. https://doi.org/10.1177/0042098008093386

Foster, S., & Giles-Corti, B. (2008). The built environment, neighborhood crime and constrained physical activity: An exploration of inconsistent findings. *Preventive Medicine, 47*(3), 241–251. https://doi.org/10.1016/j.ypmed.2008.03.017

Fusco, C., Faulkner, G., Moola, F., Buliung, R., & Richichi, V. (2013). Urban School Travel: Exploring Children's Qualitative Narratives about Their Trip to School. *Children, Youth and Environments, 23*(3), 1. https://doi.org/10.7721/chilyoutenvi.23.3.0001

Fusco, C., Moola, F., Faulkner, G., Buliung, R., & Richichi, V. (2012). Toward an understanding of children's perceptions of their transport geographies: (Non)active school travel and visual representations of the built environment. *Journal of Transport Geography, 20*(1), 62–70. https://doi.org/10.1016/j.jtrangeo.2011.07.001

Larsen, K., Gilliland, J., Hess, P., Tucker, P., Irwin, J., & He, M. (2009). The Influence of the Physical Environment and Sociodemographic Characteristics on Children's Mode of Travel to and From School. *American Journal of Public Health, 99*(3), 520–526. https://doi.org/10.2105/AJPH.2008.135319

Li, C., & Seymour, M. (2019). Children's perceptions of neighbourhood environments for walking and outdoor play. *Landscape Research, 44*(4), 430–443. https://doi.org/10.1080/01426397.2018.1460336

Lin, E.-Y., Witten, K., Oliver, M., Carroll, P., Asiasiga, L., Badland, H., & Parker, K. (2017). Social and built-environment factors related to children's independent mobility: The importance of neighbourhood cohesion and connectedness. *Health & Place, 46,* 107–113. https://doi.org/10.1016/j.healthplace.2017.05.002

Loukaitou-Sideris, A. (2003). Children's Common Grounds: A Study of Intergroup Relations Among Children in Public Settings. *Journal of the American Planning Association, 69*(2), 130–143. https://doi.org/10.1080/01944360308976302

Martin, S. L., Lee, S. M., & Lowry, R. (2007). National Prevalence and Correlates of Walking and Bicycling to School. *American Journal of Preventive Medicine, 33*(2), 98–105. https://doi.org/10.1016/j.amepre.2007.04.024

Marzi, I., Demetriou, Y., & Reimers, A. K. (2018). Social and physical environmental

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correlates of independent mobility in children: A systematic review taking sex/ gender differences into account. *International Journal of Health Geographics, 17*(1), 24. https://doi.org/10.1186/s12942-018-0145-9

Marzi, I., & Reimers, A. (2018). Children's Independent Mobility: Current Knowledge, Future Directions, and Public Health Implications. *International Journal of Environmental Research and Public Health, 15*(11), 2441. https://doi.org/10.3390/ijerph15112441

McDonald, N. C., Steiner, R. L., Lee, C., Rhoulac Smith, T., Zhu, X., & Yang, Y. (2014). Impact of the Safe Routes to School Program on Walking and Bicycling. *Journal of the American Planning Association, 80*(2), 153–167. https://doi.org/10.1080/01944363.2014.956654

McMillan, T. E. (2007). The relative influence of urban form on a child's travel mode to school. *Transportation Research Part A: Policy and Practice, 41*(1), 69–79. https://doi.org/10.1016/j.tra.2006.05.011

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

Mitra, R., & Buliung, R. N. (2012). Built environment correlates of active school transportation: Neighborhood and the modifiable areal unit problem. *Journal of Transport Geography, 20*(1), 51–61. https://doi.org/10.1016/j.jtrangeo.2011.07.009

Mitra, R., & Buliung, R. N. (2015). Exploring differences in school travel mode choice behaviour between children and youth. Transport Policy, 42, 4–11. https://doi.org/10.1016/j.tranpol.2015.04.005

Mitra, R., Faulkner, G. E., Buliung, R. N., & Stone, M. R. (2014). Do parental perceptions of the neighbourhood environment influence children's independent mobility? Evidence from Toronto, Canada. *Urban Studies, 51*(16), 3401–3419. https://doi.org/10.1177/0042098013519140

Noonan, R. J., Boddy, L. M., Fairclough, S. J., & Knowles, Z. R. (2016). Write, draw, show, and tell: A child-centred dual methodology to explore perceptions of out-of-school physical activity. *BMC Public Health, 16*(1), 326. https://doi.org/10.1186/s12889-016-3005-1

Porter, G., & Turner, J. (2019). Meeting Young People's Mobility and Transport Needs: Review and Prospect. *Sustainability, 11*(22), 6193. https://doi.org/10.3390/su11226193

Rahman, M. L., Moore, A., Smith, M., Lieswyn, J., & Mandic, S. (2020). A Conceptual Framework for Modelling Safe Walking and Cycling Routes to High Schools. *International Journal of Environmental Research and Public Health, 17*(9), 3318. https://doi.org/10.3390/ijerph17093318

Riazi, N. A., Blanchette, S., Trudeau, F., Larouche, R., Tremblay, M. S., & Faulkner, G. (2019). Correlates of Children's Independent Mobility in Canada: A Multi-Site Study. *International Journal of Environmental Research and Public Health, 16*(16), 2862. https://doi.org/10.3390/ijerph16162862

Rothman, L., Howard, A., Buliung, R., Macarthur, C., Richmond, S. A., & Macpherson, A. (2017). School environments and social risk factors for child pedestrian-motor vehicle collisions: A case-control study. *Accident Analysis & Prevention, 98,* 252–258. https://doi.org/10.1016/j.aap.2016.10.017

Rothman, L., Macpherson, A. K., Ross, T., & Buliung, R. N. (2018). The decline in active school transportation (AST): A systematic review of the factors related to AST and changes in school transport over time in North America. *Preventive Medicine, 111,* 314–322. https://doi.org/10.1016/j.ypmed.2017.11.018

Rudner, J. (2012). Public knowing of risk and children's independent mobility. *Progress in Planning, 78*(1), 1–53. https://doi.org/10.1016/j.progress.2012.04.001

Sarmiento, C. S., & Duarte, C. (2019). All Paths Leading to the Library: Youth Mobility and Community-Based Planning. *Journal of Planning Education and Research,* 0739456X1988298. https://doi.org/10.1177/0739456X19882985

Skelton, T. (2013). Young People's Urban Im/Mobilities: Relationality and Identity Formation. *Urban Studies, 50*(3), 467–483. https://doi.org/10.1177/0042098012468893

Stewart, O., Vernez Moudon, A., & Claybrooke, C. (2012). Common ground: Eight factors that influence walking and biking to school. *Transport Policy, 24,* 240–248. https://doi.org/10.1016/j.tranpol.2012.06.016

Stone, M. R., Faulkner, G. E., Mitra, R., & Buliung, R. N. (2014). *The freedom to explore: Examining the influence of independent mobility on weekday, weekend and after-school physical activity behaviour in children living in urban and inner-suburban neighbourhoods of varying socioeconomic status.* 11.

Sweeney, S. M., & Von Hagen, L. A. (2015). Middle School Students' Perceptions of Safety: A Mixed-Methods Study. *Journal of School Health, 85*(10), 688–696. https://doi.org/10.1111/josh.12298

US Census Bureau. (2016). *ACS Demographic and Housing Estimates (5 Year Estimates ACSDP5Y2020.DP05)* [dataset]. https://data.census.gov/table/ACSDP5Y2020.ACS+Demographic+and+Housing+Estimates&g=050XX00US06037$1400000

Vlaar, J., Brussoni, M., Janssen, I., & Mâsse, L. C. (2019). Roaming the Neighbourhood: Influences of Independent Mobility Parenting Practices and Parental Perceived Environment on Children's Territorial Range. *International Journal of Environmental Research and Public Health, 16*(17), 3129. https://doi.org/10.3390/ijerph16173129

Wilson, K., Clark, A. F., & Gilliland, J. A. (2018). Understanding child and parent perceptions of barriers influencing children's active school travel. *BMC Public Health, 18*(1), 1053. https://doi.org/10.1186/s12889-018-5874-y

APPENDICES

APPENDIX A: ROUTE MAPPING ACTIVITY GUIDELINES

MATERIALS
- Printed route mapping workbooks (40)
- Extra large route mapping map printed (to be filled as examples)
- Box of markers
- Name tags
- Extra consent forms
- Printed guidelines

ARRIVAL
- 5:15 pm - Researchers arrive, set up room
- 5:30 pm - Students arrive and settle in

5:35 pm – WELCOME AND INTRODUCTIONS
- Researchers introduce themselves
- "Are there any HOLA students here today who were not here when we did our cognitive mapping exercise two weeks ago?" [give those students an opportunity to introduce themselves]
- "Today's activity builds on the mapping activity we did a few weeks ago. We've created these workbooks for you, and we want to gather your thoughts, ideas, and experiences about walking in the neighborhood around HOLA. You walk and take the bus and travel around the neighborhood, so you know it best – you are the experts."
- Researchers conduct oral assent process, based on approved script.

5:40 pm – WORKBOOK INTRODUCTION
- [researchers distribute workbooks]
- "We made these workbooks for you to record your experience traveling from school to HOLA. The workbooks will stay at HOLA, and you will fill out a new page each week. After four weeks, we will collect the workbooks and review what you have drawn and written to understand more about how you travel in the neighborhood."
- "On the front, PAGE 1, please write your first name and last initial"
- "Then, please flip to PAGE 2. On this page, we would like to collect some information about you – including your age, grade, and the location of your school. Please answer the questions to the right of the page, and put a circle on the map at the approximate location of your school. We will walk around the classroom and help you find the location of your school if you need help."
- [researchers walk around room as students fill out the first page, offering assistance with locating the school]

5:50 pm – ROUTE MAPPING
- "We want to know all about your journey today. How many of you walked from school to HOLA today?"
- [ask students to raise hands]
  - "How many of you took the bus or the train from school to HOLA today?"
  - "How many of you rode a bike or a scooter from school to HOLA today?"
  - "And how many of you did something else, like drove from school to HOLA today?"
- "Please flip to PAGE 4. On this page, we would like you to tell us about how you traveled from school to HOLA today, and also to draw your route on the map to the right. We are interested in only the route that you took today from your school to HOLA. And we are especially interested in the portions of that trip that you walked."
  - "First, fill in the survey on the left side of the page, and tell us about how you traveled, and with whom."

- "Next, draw your route on the map, using different colors to show whether you traveled by walking, on the bus, on a bike or scooter, or in a car. There are instructions on the page, including which colors to use for each type of trip."
  - "For example, I took the 16 bus on 3rd Street and got off at Rampart, so I would mark that part of my trip on the map with a blue marker. Then I got off the bus and walked south on Rampart to HOLA, so I would mark that part of my trip with a green marker." [show this on filled-in example map]
- "If you made any stops along the way – to get some food, to hang out with friends, to go home – please mark those with a circle on the map, and write a little description on the map of where you stopped and why."
  - "For example, I stopped at the store at Rampart and 6th to buy a pack of gum. So I circled the location on my map, and I wrote: 'stopped at corner store for 5 minutes to buy gum.'"
- "After you draw your route on the map, we want to know if there was anything interesting or unusual about your trip today. Did you take a different route or make a new stop? Did you run into a friend along the way? Did you see something unpleasant or scary? Tell us about what you noticed."
  - "For example, while walking to HOLA today I saw two street vendors on the sidewalk on Rampart that I hadn't seen before, selling fruit and clothing. So I wrote that down."
- "There is another spot for extra comments, where you can record anything else that comes to mind."
  - "For example, usually I would take the 720 bus along Wilshire but I've found recently that the 3rd Street bus is usually less busy at this time of day, so that's why I switched to that route. So I wrote that down under 'comments.'"
- "We'll give you about 15 minutes to work on your route maps and surveys, and we'll go around the class and help you out as you go along, and answer any questions."

5:55 pm – ROUTE MAPPING
- [Students work on first route mapping, while researchers staff walk around the classroom, comment on students' work, offer advice and feedback]

6:10 pm – SHARE OUT
- "We're going to go around the room and ask you to show us your map, and tell us about your trip to HOLA today. How did you get here, what did you notice along the way, and was it a typical trip for you?"
- [Students share their maps, researchers ask follow up questions and make encouraging comments, and offer feedback on how students could enhance them]
- Possible follow up questions for share out
  - How long did your trip take?
  - Did you walk, take the bus, scooter, or use another form of transportation?
  - Did you travel alone or with a group?
  - Is this your usual route, or did you take a different route today?
  - What did you notice on your way to HOLA today?

6:25 pm – CLOSING OUT
- "Over the next three weeks, your HOLA teachers will guide you through this activity at the beginning of class each week – it will take about 10 minutes. This will help us see if your routes change over time, and help us understand more about your experience walking around HOLA."
- "In January, we will come back to do some walkabouts, where we will join some of you on your trip from school to HOLA, and we'll take photos and record notes about what we see along the way."
- "Thank you for your time today!"

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APPENDIX B: WALKING AUDIT ACTIVITY GUIDELINES

MATERIALS
- UCLA cityLAB placard
- Clipboard
- Printed walking audit activity guide
- Printed walking audit worksheets
- Printed post-walk mapping worksheet
- Digital photo device (iPhone or similar)
- Audio recording device (iPhone or similar)
- Markers and pens
- Sticky notes
- Loaded TAP card (if taking transit)

PRE-WALK LOGISTICS:
- Study team to work with HOLA to determine a meeting time and place for each walking audit participant. Walking audits will begin at the student's school and end at HOLA, following the precise route and modes of the student's typical trip to HOLA
- Each student will be matched with a minimum of two researchers
- All participating researchers will attend a training session hosted by the study team in advance of the activity
- Walking audits may proceed concurrently if there is sufficient researcher availability - ideally, activity will be completed over a maximum of two weeks, with two sessions per week
- A designated meeting spot near school and time will be agreed upon in advance for each participant, in coordination with caregiver contacts and HOLA staff

RESEARCHER ROLES:
- As indicated below, Researcher #1 will hold the clipboard, deliver scripted information and questions, trace the walking route on the base map, and take detailed field notes with numbers corresponding to the map
- Researcher #2 will audio record the walk, assist the student with taking photos, and help with directions, watch for traffic and obstacles, etc.

ARRIVAL:
- Researchers #1 and #2 arrive at the designated meeting spot at least 15 minutes before designated meeting time (see schedule above for locations and times)
- Researchers will hold UCLA cityLAB placard and wait for participant
- Call student cell phone if necessary (refer to contact list)

ORAL ASSENT:
- After participant arrives, both researchers will introduce themselves
- Researcher #1 conducts oral assent process (see Oral Assent script)
- Researcher #1 records assent from participant (in notes), to retain with research records

INTRODUCTION TO ACTIVITY:
- Researcher #1 introduces the walking audit activity:
  - "Now that we know your route from school to HOLA, we want to understand more about your experience moving around the neighborhood and what you see, feel, and experience along that route. This activity is called a 'Walking Audit.'"
  - "We will start by walking with you along your typical route, including any stops you typically make, and ask you to explain what you are seeing and experiencing. We may ask you some follow-up questions. We'll record our conversation along the walk and take notes, and you can take photos of spots along the route that you find important."
  - "We'll end our walk at HOLA. There, we'll sit down and ask you to reflect on the walk and the photos you took, and describe more about what you remember about that experience."

- "If you have any questions along the way, don't hesitate to ask."

WALKING ROUTE:
- Researchers and participant begin walking the participant's typical route from school to HOLA.
  - Researcher #2 - Begin audio recording
- Researcher #1 asks participant to narrate the route – what they see, experience, feel, like or dislike. This will include all stops along the typical route.
- Researcher #1 prompts participants to expand on observations as needed, using the following potential questions:
  - "Describe the street and sidewalk for me. How does it make you feel?"
  - "Why do you choose this street over others?"
  - "What about walking here do you enjoy or not enjoy?"
  - "Are there spaces around here where you avoid walking? If yes, why?"
- Based on narration from participant, Researcher #2 encourages the student to take photos of important sites along the route - including landmarks, spaces of enjoyment, spaces of fear or discomfort, or any other notable elements. Photo prompts may include:
  - "That's interesting. Should we take a photo of that?"
  - "Can you point to what you're describing, so we can take a photo?"
- Throughout:
  - Researcher #1 marks the route on a base map, noting important sites with numbers, and recording field notes on a chart with corresponding numbers.
  - Researcher #2 audio records the walk, and helps student take photos
- Walking route concludes at HOLA facilities (2701 Wilshire Blvd. Los Angeles, CA 90057)

MAPPING EXERCISE:
- After arriving at HOLA, researchers and the participant move to a quiet room at HOLA (as directed by HOLA staff) to begin the mapping exercise.
- Researcher #1 introduces mapping exercise:
  - "Now, let's review our photos from the walk, and add more information about what we saw and experienced."
- Researcher #2 provides participant with post-walk interview materials (base map of the neighborhood, markers, pens, and sticky notes)
- Researcher #1 asks participant to draw out their route from school to HOLA and label key experiences they recall from the walk, using the following potential prompts:
  - "What things in particular do you remember from the walk?"
  - "How did you feel along the route? Where did you feel most safe? Most unsafe?"
  - "Were there any situations or parts of the walk you found stressful? Why?
  - "What did you like seeing or experiencing? Is this usually part of your route?"
  - "What did you not like seeing or experiencing? Is this usually part of your route?"
  - "What about walking at night? Does your route change when it's dark out? Do you take extra precautions?"
  - "Are there areas that you avoid or never walk through? Why?"
  - "What else stood out on your walk from school to HOLA?"
- Researcher #2 reviews photos collected from the walk with participant as a starting point for mapping exercise, and asks participant to describe the photos and expand on their importance.
  - "Please share with me any photos you may have taken. What did you photograph and why?"
  - "Remember this photo? Can you tell me more about it?"
  - "What is important about this space?"
  - "Can you describe more about what is happening in this photo?"
- As the participant discusses the route with the researchers, the participant draws and writes responses directly on the base map. Researchers will encourage participant to write or draw.
- At the conclusion of the exercise, Researcher #2 collects and securely stores the base map, photographs, and audio recordings for analysis. Personal identifying information will not be stored with the data.

CLOSING OUT:
- Researcher #1 thanks participant:
  - "Thank you for your time today, and for sharing your thoughts and ideas with us."
  - "This information is so important to our research, and to finding ways to improve travel in the neighborhood."

- "To thank you for your participation, we will provide you with a $25 Target gift card. Your HOLA teacher will distribute this to you during class in the next few weeks."
- Researchers ensure student joins their regular HOLA classroom (if there are questions about where to go, inquire at HOLA front desk)

DATA PROCESSING:
- Following the activity, researchers will be responsible for processing and uploading all study data to the secure shared folder.
- One folder should be created for each participant, in the Walking Audits folder on the team folders. See template folder for title and organization information.
- Folders will be labeled with participant first name, age, and date of activity.
- Each participant folder will contain:
  - PDF scans of walking audit worksheet
  - PDF scan of post-walk mapping worksheet
  - All photos from walking audit, numbered to correspond to walking audit worksheet, labeled according to file naming convention
  - Audio file of walking audit recording
  - Full transcript of walking audit recording

APPENDIX C: CODEBOOK

OBJECTIVE VARIABLES
1 Child characteristics (*age, gender, ability, race/ethnicity, income*)
2 Household characteristics (*composition, location, SES status, schedules, access to vehicles, norms/behaviors*)
3 Built environment characteristics (*distance/proximity, walkability, comfort/convenience, aesthetics, traffic, infrastructure*)
    3.1 Landmarks (businesses, notable buildings, parks, schools, community facilities)
    3.2 Pedestrian environment (sidewalks, crosswalks, street furniture, lighting, trash, signage)
    3.3 Transit environments (bus stops - location and amenities, bus routes, bus service)
    3.4 Vehicular traffic environments (right of way, traffic volumes, traffic speeds)
    3.5 Aesthetics (graffiti, building condition/maintenance, building look/character, views)
    3.6 Landscape (street trees, planting, landscaping)
4 Social environment characteristics (*demographics, population diversity, crime, social capital/community, social networks*)

PERCEPTUAL VARIABLES
5 Child self perception (*attitudes, beliefs, self-efficacy, perceived personal attributes/barriers*)
6 Parental perception of child (*attitudes, beliefs, rules/license, perceived attributes/barriers*)
7 Built environment perceptions - pos/neg
    7.1 Landmarks (*businesses, notable buildings, parks, schools, community facilities*)
    7.2 Pedestrian environment (*sidewalks, crosswalks, street furniture, lighting, trash*)
    7.3 Transit environments (*bus stops - location/amenities, bus routes, bus service*)
    7.4 Vehicular traffic environments (*right of way, traffic volumes, traffic speeds*)
    7.5 Aesthetics (*graffiti, bldg condition/maintenance, bldg look/character, views*)
    7.6 Landscape (*street trees, planting, landscaping*)
    7.7 Neighborhood change (*new construction, turnover*)
8 Social environment perceptions (*perceptions of demographics, population diversity, crime, social capital/community, social networks - friendliness, harassment, bullying, stranger danger*)
    8.1 Positive
    8.2 Negative

TRAVEL VARIABLES
9 Travel behaviors - and any temporal variation
    9.1 Mode choice (*walk, bus, scooter, bike, drive - and any temporal variation*)
    9.2 Route choice (*street blocks/sides, crossing location, detours, precautions*)
    9.3 Accompaniment (*solo, friends, family*)
    9.4 Stops (*food, park, home, etc.*)
    9.5 Precautions (*adaptive behaviors related to safety - proceeding carefully, walking quickly, other modifications*)
10 Travel experiences (*events, memories, interactions, stories, routines, emotions - "one time this happened"*)
11 Travel ideas/desires (*new or different social or physical conditions*)