

Unraveling the Nexus between the Built Environment, Active Transportation, and Health Perceptions



A qualitative analysis of Los Angeles residents
across income, age, and gender

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Colophon

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Preface

As I reach the end of my educational journey that has spanned six years, three continents, and four countries, I would like to express my sincerest thanks to the people who have made this journey possible.

I would like to thank my supervisor, Dr. Samira Ramezani, for her support over this last year. Through every step of this process, she has been a thoughtful and attentive mentor. I could not have completed this study without her advice and support.

I would also like to thank my amazing family who instilled in my brothers and me the importance of education from an early age. Without their support, there is no way that I would be at this point today. Despite being nine time zones apart, they have continuously shown me their utmost love and support through every bump in the road.

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Finally, I would be remiss not to thank the sixteen people who took time out of their busy lives to speak with me. I am grateful to them for offering me an intimate glimpse into their lived experiences, and I thank them for trusting me with their stories.

Thank you for reading this thesis. I hope you enjoy the culmination of years of dedication and I hope it inspires you to strive for change in the places you call home.

Abstract

Active travel modes such as walking, cycling, and public transit are often cited as providing their users with a plethora of benefits for physical and mental health outcomes, but this research is limited in sprawling, car-dependent contexts such as Los Angeles, and is methodologically limited predominately to quantitative studies. This study, qualitative in nature, seeks to investigate how (perceptions of) built environment characteristics and the socioeconomic factors of income, age, and gender, converge to influence travel behavior across three Los Angeles neighborhoods, and how this in turn impacts residents' perceptions of their own physical and mental health.

This study explores the interplay between the socioeconomic factors of income, age, and gender, as well as built environment characteristics, travel attitudes and behavior, and health perceptions by conducting semi-structured interviews with 16 residents of the Los Angeles neighborhoods of Exposition Park, Koreatown, and Westchester. These interviews expand upon US Census and American Community Survey data to provide a more holistic look into the lives of Los Angeles residents in order to better understand the lived experiences of individuals of various socioeconomic groups with varying travel behavior patterns, built environment perceptions, and physical and mental health perceptions.

The findings reveal variations in travel behavior preferences across neighborhoods and sociodemographic groups. Contrary to literature from other cities, higher-income residents in higher-density Los Angeles neighborhoods appear more likely to utilize public transportation, as they are more likely to work flexible jobs more conducive to budgeting longer commute times. On the other hand, lower-income residents, regardless of neighborhood density, are all-but forced into car dependency due to the inflexibility of lower-paying jobs. In line with the literature, older adults are more likely to use a car to meet their travel needs due to physical constraints. Also aligning with the literature, women and gender minorities express heightened concerns regarding personal safety on public transit. Regardless of sociodemographic group or neighborhood, interviewees report higher perceptions of physical and mental health in regard to active travel modes. The findings of this study reinforce the idea that built environments and transportation systems require a fundamental overhaul to better meet the needs of people of various socioeconomic situations, ages and abilities, and gender expressions, arguing that this will provision higher rates of active transportation, greater equity, and improved health perceptions and outcomes.

Keywords: Active travel, built environment, sociodemographics, health perceptions, mobility transitions, health equity

List of Abbreviations

ACS	American Community Survey
AT	Active Travel
BE	Built Environment
BIPOC	Black, Indigenous, People of Color
DTLA	Downtown Los Angeles
LA	Los Angeles
LADOT	Los Angeles Department of Transportation
MC	Mode Choice
NH	Neighborhood
PT	Public Transportation
RSS	Residential Self-Selection
TOD	Transit-Oriented Development
USC	University of Southern California
3Ds	Density, Diversity, Design
5Ds	Density, Diversity, Design, Destination Accessibility, Distance to Transit

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1 Introduction

1.1 Societal Relevance

The history of urban sprawl in Los Angeles can be traced back to its beginnings as a colony under United States rule in 1849. After being ceded by Mexico, American settlers began moving west with a vision of a metropolitan “health resort”, leaving behind the dense, industrial cities that characterized the United States’ east coast. Envisioned as a “city of homes, and therefore a city without slums” (Stewart, 2016), the city’s low density and sprawl was planned and built decades before the advent of the automobile. To support this lifestyle, Los Angeles built an extensive electric streetcar network to connect the vast metropolis, further fueling sprawl into “streetcar suburbs” continuously encroaching into the surrounding region (Figure 1).

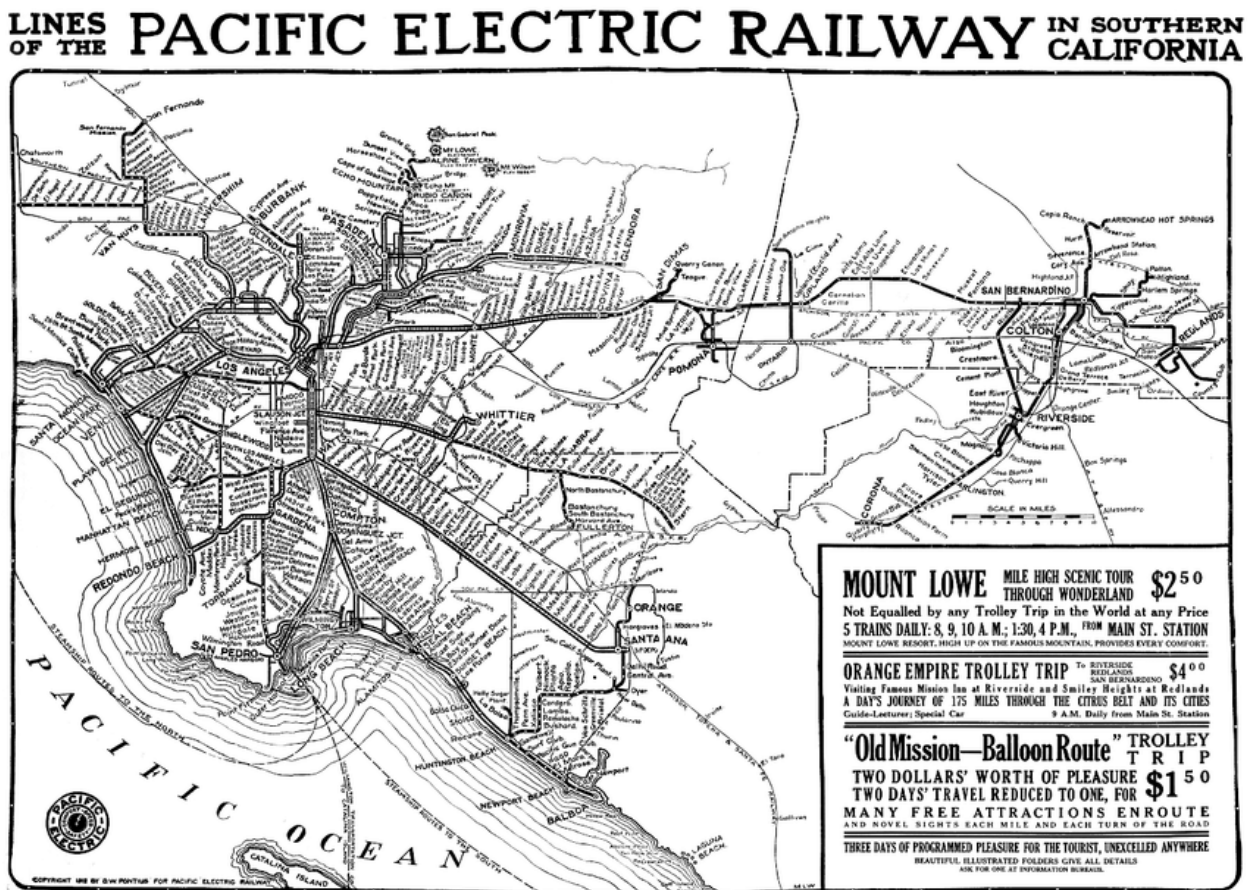


Figure 1
Map of the Los Angeles streetcar network, circa 1912
Ottensmann (2018)

In the 1950s and 60s, the proliferation of the private automobile led to the removal of the once-robust electric streetcar system, quite literally paving the way for the car dependency the city is known for today. Due to the history of LA's transportation system and built environment development, Los Angeles neighborhoods are highly diverse in their urban fabrics. With some neighborhoods being developed in tandem with a once-robust public transport network and others being born in the age of the automobile, residents' mobility options are highly dependent upon their neighborhood. As such, the built environment plays a large role in the accessibility of active transportation at both the local and regional levels (Singleton, 2019; van Kamp et al., 2003).

This urban sprawl, coupled with a diverse populace and 1950s racially discriminatory housing policies, created a highly segregated city whose legacy continues into the 21st century (Estrada, 2005). This division has created unequal outcomes across various metrics, including income, socioeconomic mobility, and health outcomes across communities (Houston et al., 2004; Mizdrak et al., 2023; Schwanen & Nixon, 2020). When streetcar lines were removed in favor of Los Angeles' now-infamous freeway network, neighborhoods of color were razed to secure land for this endeavor. To this day, communities of color are clustered alongside busy freeway routes, disproportionately bearing the brunt of automobile-borne pollution. In fact, black children in LA develop asthma and other respiratory problems at a higher rate than their white peers who are more likely to live in wealthier neighborhoods not divided by freeways (Meng et al., 2007). About one in 11 black children have asthma, compared to one in 13 in white children (Los Angeles County Public Health, 2018). The proximity of these neighborhoods to freeways led to their development into car-centric built environments which do not inherently support active travel. The built environment influences the accessibility of active transportation, thus informing different health outcomes across neighborhoods (Mizdrak et al., 2023; Northridge & Freeman, 2011; Schwanen & Nixon, 2020).

Today, only about 1% of trips in Los Angeles are made by bike, and cycling largely remains a leisure activity (Shavit, 2023). A similarly low 3% and 5% of trips are made by walking and public transportation, respectively (Deloitte City Mobility Index, 2020). With less than 10% of total trips being made by active transportation, there is much room for improvement. In response, various agencies and governments across Los Angeles are working with communities to enhance the region's active transportation network (Nicholas et al., 2019). This research will contribute to the transition to a less car dominant city by identifying patterns and correlations between the built environment, mode choice, and health perceptions. Through this understanding, Los Angeles can create a healthier and more equitable city.

1.2 Academic Relevance

Recent studies have examined the correlation between the built environment (BE), active travel (AT), and perceived health and psychological well-being (Avila-Palencia et al., 2018; Bhandal & Noonan, 2022; Fyhri et al., 2023; Martin et al., 2014), finding that the BE influences AT, and AT positively influences people's perceived health and well-being. Since most of these studies are conducted across Europe, their case study cities have drastically different urban typologies than North American cities. The previously studied cities tend to be denser and have more robust infrastructure to facilitate AT modes than North American cities, which are predominantly characterized by sprawl and car dominance (Lewyn, 2009).

There is a lack of research on this relationship in the North American context, and studies that do focus on the United States and Canada tend to examine the correlation between AT and obesity (Ceñido et al., 2019; Cervero and Duncan, 2003; Hu et al., 2014; Iroz-Elardo et al., 2020; Luan et al., 2019; Ogilvie et al., 2008; Smith et al., 2017), but expanding research into broader physical and mental health perceptions will create the theoretical foundation for more a more holistic approach to these studies. Furthermore, many studies into the North American context tend to study denser cities with relatively robust active transportation networks, such as New York City and Portland (Chen et al., 2008; Singleton, 2019). This research will fill this research gap by applying theory and methodology from the aforementioned studies to the context of Los Angeles, a more sprawling and car-dependent context than the previously studied cities and includes more typical characteristics of North American cities. Through studying one of the more extreme examples of North American urban development, this research can be applied to other sprawling cities across the continent.

As mentioned in Chapter 1.1, there are disparities between demographic groups in terms of the built environment, access to active transportation, and health outcomes. In 2006, the Federal Collaboration on Health Disparities Research outlined a gap in research surrounding the confluence of community, individual, and built environment factors contributing to disparate health outcomes across demographic groups, and this remains an under-studied topic (Hutch et al., 2011). This study focuses on this research gap by qualitatively studying how the built environment affects travel behavior and health perceptions across sociodemographic groups to highlight the necessity of adapting the BE and transportation systems to match the diversity of the people they serve.

By understanding the relationship between the built environment and active transportation across demographic groups, this research will add to the theoretical debate on the transition from sprawl

and car dependency (Juarez, 2020; Rind et al., 2015). This study will fill a research gap exploring the combination of sociodemographic and built environment characteristics that influence active travel behavior and in turn, how these factors affect individuals' mental and physical health perceptions.

1.3 Research Aim

By gaining a better understanding of mobility behavior in Los Angeles, this research contributes to the aforementioned research gap and can help inform Los Angeles' urban development and mobility transition. The aim of this study is to understand which sociodemographic and built environment factors most greatly influence active travel behavior, and in turn how this affects residents' self-perception of their mental and physical health. Thus, this study will be led by the following research questions.

1.4 Primary research question

How do built environment and socioeconomic factors influence active travel across ages, incomes, and genders in Los Angeles, and in turn, how does this affect individuals' perceptions of their physical and mental health?

1.5 Secondary research questions

What characteristics of Los Angeles neighborhoods affect active travel?

How do active travel choices affect Angelenos' sense of physical and mental health?

Which socioeconomic groups are most likely to use active travel as their primary mode of transport?

2 Literature Review

2.1 Active Travel

This study considers the role of AT in the sprawling context of Los Angeles. The term “active travel” is often used to refer to walking and cycling, but this definition is limiting (Cook et al., 2022; Lättman & Otsuka, 2024). Instead, AT can encompass any mode of transportation that is human-powered; including, but not limited to: walking, cycling, using a wheelchair, skateboarding, and running. For the sake of this study, public transportation is included under the umbrella term of “active travel” since people generally use AT to reach PT (Rissel et al., 2012). Cook et al. (2022) illustrate distinctions between types of active travel and associated modes; however, their study does not include PT. Therefore, Figure 2 below builds upon their framework to illustrate how AT is conceptualized for the purposes of this study.

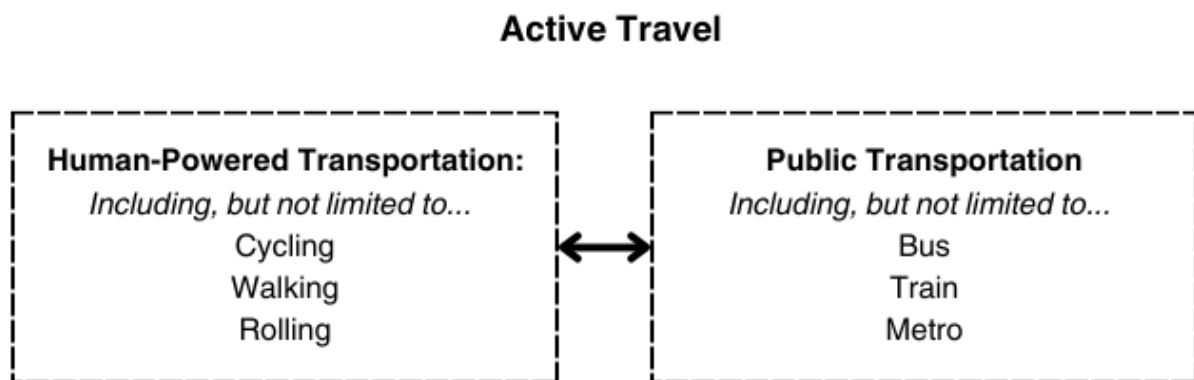


Figure 2

Visualization of active travel modes
Based on: Cook et al. (2022) and Rissel et al. (2012)

In the United States, travel mode is measured annually by the Bureau of Transportation Statistics and the American Community Survey, in addition to the (more thorough) decennial Census. From this data, travel behavior can be analyzed by state, county, city, and neighborhood. While these data are comprehensive for analyzing patterns and trends, they lack the humanistic element of understanding perceptions of built environment characteristics, active travel behavior, and health.

2.2 Built Environment and Mode Choices

2.2.1 Urban Fabric Typologies

The built environment (BE) plays a large role in daily life, influencing where people go and how they travel (Ramezani et al., 2018; Vischer, 2008). Spatial configurations create the broader urban fabric, which in turn influences infrastructure, which then influences mode choice (MC) (Thomson, 2021). Many studies (Cervero & Kockelman, 1997; Ewing & Cervero, 2010; Handy et al., 2006) have found a relationship between BE and MC. According to Boarnet (2011), land use patterns influence MC by raising or lowering the cost of different travel modes. For example, a dense urban area creates shorter distances between destinations. In these settings, AT is more pleasant while the cost of driving is more inconvenient and more expensive. In a low-density neighborhood the distance between locations is greater, making driving cheaper and more appealing while making AT unpleasant or difficult.

Newman et al. (2016) argue that there are three distinct types of urban fabric: walking-, transit-, and automobile-oriented. They argue that (Western) cities have a combination of these fabrics which correspond to the city's development timeline. They write that cities begin as walking cities—as dense, mixed-use developments in which activities can be reached on foot. As cities expand outward they tend to become transit cities, building density along transit lines. The result of the transition to a transit city is a loss of centralized density but a retention of density along transit corridors. The final evolution of a city's fabric, they argue, is that of the automobile city. When housing stock is exhausted in the dense inner city and transit corridors, the inclination is to expand further with little consideration of non-automobile modes, resulting in low-density suburbs.

2.2.1.1 Walking Neighborhoods

Walking neighborhoods are characterized by dense, mixed-use development in which various land uses, such as residential, commercial, and recreational, are integrated within a compact area. This urban fabric encourages walking as the primary mode of transportation due to the close proximity of destinations and amenities. The key features of walking neighborhoods typically include:

- High population and building densities
- Short block lengths
- Well-connected street networks
- A mix of land uses within a walkable distance
- Pedestrian-friendly infrastructure, such as sidewalks, street crossings, and traffic-calming measures

- Limited parking availability, making driving less convenient

In this typology, the built environment is designed to prioritize pedestrians and thus creates a community in which daily needs can be met without reliance on cars.

2.2.1.2 Transit Neighborhoods

Transit neighborhoods are characterized by concentrated development along transit corridors, such as rail or bus lines. These neighborhoods are designed to facilitate convenient access to public transportation, enabling residents to utilize transit as a primary mode of transportation. The key features of transit neighborhoods typically include:

- Higher population and building densities in close proximity to transit nodes
- A mix of land uses, including residential, commercial, and employment centers, located near transit nodes
- Pedestrian-friendly infrastructure connecting residential areas to transit nodes
- Reduced parking requirements near transit stations
- Efficient feeder bus services and/or other last-mile connections

Transit neighborhoods create a symbiotic relationship between land use and transportation in which the built environment supports and encourages the use of public transit by providing easy access and a mix of destinations within a walkable distance from transit nodes.

2.2.1.3 Automobile Neighborhoods

Automobile neighborhoods are characterized by a diffused pattern of development that prioritizes the use of private vehicles for transportation. The key features of automobile neighborhoods typically include:

- Low population and building densities
- Single-use zoning, separating residential and commercial functions
- Larger block sizes with a disconnected street network
- Limited active transportation infrastructure
- Abundant parking availability and wide roads designed for vehicular traffic

In automobile neighborhoods, the built environment is designed to accommodate and facilitate the use of private vehicles, with destinations often spread out and requiring longer travel distances. Walkability and access to public transportation are often limited, making driving the most convenient mode of transportation for daily activities.

2.2.2 Built Environment Characteristics

While Newman et al. define three broad urban fabric classifications, Cervero & Kockelman (1997) define three characteristics of the BE that influence travel demand: density, diversity, and design. These “3Ds” are the three dominant dimensions of the built environment that influence travel behavior, finding that building/population density, land use diversity, and AT-oriented designs significantly reduce car usage (Chen et al., 2008). Ewing & Cervero (2010) build upon this idea by adding two more factors—destination accessibility and distance to transit—to create the “5Ds”. Like the 3Ds, the additional indicators of the 5D framework influence how the built environment can support AT.

2.2.2.1 Density

Density influences travel behavior through shortening trips by having activities closer together and enabling more intra-community trips, reducing the need for long-distance travel (Cervero, 2003). Increased density can also support a more efficient provision of PT services in a given area, as it will be able to serve more people in a smaller area (Wolday, 2023).

High density lends itself to walking and transit neighborhoods (Newman et al., 2016). Conversely, low density development patterns, exhibited by cities across North America, have historically promoted driving behavior and car dependence. Early 20th century philosophies like the Garden City movement advocated for low-density, residential-only development segregated from commercial areas (Khavarian-Garmsir et al., 2023; Litman, 2024), leading to the proliferation of sprawl and single-use zoning across North America, particularly in Los Angeles (Chapter 1.1). Coupled by policies such as urban renewal, highway construction, and parking minimums, low-density planning has led to the ubiquity of private car use by making AT impractical (Iroz-Elardo et al., 2020; Litman, 2024).

2.2.2.2 Diversity

Diversity refers to a mix of land uses such as residential, commercial, recreational, etc. within a given area (Cervero & Kockelman, 1997; Giles-Corti et al., 2016). This can also shorten trip distances by providing a wide variety of amenities and services within a community, reducing the need for long-distance travel to reach a given activity. Especially when coupled with PT accessibility, mixed-use development can spur AT by providing many destinations in a single area. In a review of over 200 studies, Ewing & Cervero (2010) found that each quartile increase in land use mix correlates with a 10-12% increase in PT use and a 7-15% increase in walking mode share.

2.2.2.3 Design

Design encompasses the physical characteristics of the BE, including, but not limited to: intersection density, pedestrian infrastructure, cycling infrastructure, and public transportation infrastructure. Well-designed neighborhoods include traffic calming measures, sidewalks and bike lanes, and well-placed crossings, all of which can spur non-car travel by facilitating easy and safe AT (Cervero & Kockelman, 1997). Design can also help increase PT use by making it safer and more comfortable. For example, the installation of covered shelters, lighting, intuitive wayfinding, and bike parking at stations can all improve the overall design of a PT system and boost ridership (Alarasi & Buliung, 2021).

This also applies to overall urban planning, as a city's layout and street connectivity can influence residents' mode choice (Petrokofsky & Davis, 2016). Street connectivity with shorter blocks and frequent intersections have been shown to increase AT by providing more direct routes and better accessibility (Berrigan et al., 2010; Wolday, 2023).

2.2.2.4 Distance to Transit

Distance to transit refers to how far one must travel in order to reach a public transit access point, such as a train station or bus stop. The closer one's residence or place of employment is to PT, the more likely they are to use it. In other words, the closer the PT access point, the shorter and more convenient PT is.

Several studies further define what constitutes accessibility, defining the distance to transit capable of spurring PT trips that would otherwise be made by car. Renne (2009) studied three cities in California's San Francisco Bay Area: Berkeley, Hayward, and Fremont, and found that transit mode share was highest among residents living 400-800 meters, or a roughly 10 minute walk, from a train station. However, Renne notes that this distance can be extended to up to 1600 meters providing that the transit is high quality and the BE of the surrounding area facilitates comfortable walking or cycling. Beyond ~1000 meters, transit mode share diminishes as people are less likely to perceive PT as convenient (Aston et al., 2019; Renne, 2009).

2.2.2.5 Destination Accessibility

Destination accessibility refers to "the ease of reaching valued destinations" (Ewing & Cervero, 2010). Destination accessibility has been found to be the most statistically significant of Cervero & Kockelman's (1997) 5Ds as it relates to both land use and transportation connectivity, which influences the overall ease of travel between any given locations (Ewing et al., 2003). Thus, a higher

level of destination accessibility means that more destinations can be reached within a given travel time. As the final of Cervero & Kockelman's (1997) 5Ds, destination accessibility is made possible by the combination of the other dimensions. By facilitating high density, land use diversity, strong design, and comfortable distance to transit, cities therefore facilitate destination accessibility (Cervero & Kockelman, 1997; Ewing et al., 2003; Ewing & Cervero, 2010).

2.3 The Role of Preferences and Attitudes

2.3.1 Residential Self-Selection

Residential self-selection is the process by which people choose a neighborhood based on their lifestyle preferences and attitudes (Bohte, 2010). Several studies have examined the relationship between the BE and AT, but the issue of residential self-selection remains a point of contention. Some studies argue that self-selection and travel attitudes are more influential than BE factors in shaping travel behavior (Bagley & Mokhtarian, 2002; Ettema & Nieuwenhuis, 2017; Handy et al., 2005; Kitamura et al., 1997), meaning that individuals who prefer to use PT, for example, may choose to live in areas where PT service is accessible and convenient. Thus, while the correlation is well-established, the causation remains unclear.

However, it is important to recognize that socioeconomic constraints often restrict one's residential choices (van Wee, 2009). Not everyone has the luxury of choosing to live in their preferred neighborhood due to financial constraints, housing availability, or other socioeconomic factors (Bohte et al., 2009). Consequently, the relationship between BE and AT cannot be entirely attributed to the role of self-selection. The socioeconomic aspects of residential location, BE, and AT are further explored in chapter 2.4.

Furthermore, other studies have used methods to control for self-selection and have still found significant associations between BE and AT (Handy et al., 2006; Mokhtarian & Cao, 2008), suggesting that the BE indeed influences travel behavior even when accounting for residential self-selection.

2.3.2 Travel Attitudes

In one of the first studies of its kind, Kitamura et al. (1997) examined attitudes toward different travel modes, studying how attitudes are informed by the built environment and travel behavior. Since then, other studies have shown that travel attitudes directly impact mode choice (Bagley & Mokhtarian, 2002; Handy et al., 2005). Kitamura et al. (1997) show that individual travel attitudes

are more influential than built environment factors, suggesting that attitudes must change before the built environment does. This is perhaps antithetical to the predominant “if you build it they will come” mentality taken in regard to infrastructure planning in North America (McCarthy et al., 2021).

Several studies suggest that one’s place of residence affects their travel attitudes, and that attitudes reflect one’s current residential environment. Van de Koevering et al. (2018) show that living far from PT negatively affects attitudes toward PT use and positively affects attitudes toward car use. However, they show that when people move closer to PT, they develop more positive attitudes toward it. Similarly, De Vos et al. (2018) show that urban residents who move to more dense neighborhoods develop more broadly positive attitudes toward AT upon relocation.

2.4 Sociodemographics and Mode Choice

Sociodemographic factors such as income, age, and gender, all influence mode choice. For example, one’s income has the power to affect where they live, which in turn impacts the mode choices available to them (Anacker, 2019; Rind et al., 2015). The Neoclassical Consumption Theory and Spatial Mismatch Hypothesis provide a framework for understanding how income and residential location affect access to transportation and economic opportunities. Low-income people often face transportation insecurity through limited access to PT and the high cost of car ownership, which can perpetuate cycles of income inequality. In contrast, high-income people in urban areas often benefit from convenient access to PT and AT options through the phenomenon of choice ridership.

Age is also shown to influence mode choice, with older adults generally opting to drive to meet their daily travel needs. However, access to high quality PT and BE design can encourage AT among older adults, especially those on low or fixed incomes.

Finally, gender differences in mode choice are shown to be influenced by factors such as household responsibilities, occupational segregation, and gender-based safety concerns. Women, especially those from low-income and minority backgrounds, often face unique challenges in accessing transportation and are more likely to face sexual harassment and assault in public spaces.

This chapter highlights the importance of considering sociodemographic factors in transportation planning and urban design to promote equity among users.

2.4.1 Income and Mode Choice

2.4.1.1 Neoclassical Consumption Theory

According to the Neoclassical Consumption Theory, people select housing based on income and price constraints they face on the housing market (Megbolugbe et al., 1991). The theory suggests that people balance housing costs against other consumption goods and location-specific amenities such as safety, school quality, and access to jobs and amenities (Albouy & Stuart, 2020). Households are assumed to be mobile and thus choose locations that maximize their utility based on these factors and budget constraints.

In capitalist economies, this leads to self-selection into neighborhoods of people of similar socioeconomic status, leading to residential segregation (Anacker, 2019; Chauvin & Messina, 2021; Rind et al., 2015). According to Chauvin & Messina (2021), residential segregation leads to unequal economic opportunities, further entrenching cycles of income inequality. Poorer neighborhoods also tend to be less connected to public transportation, forcing residents to spend more time and money on transportation, further reinforcing existing socioeconomic statuses. Historically lower levels of PT investment in low-income neighborhoods perpetuates reliance on private vehicles or more time-consuming transportation options which further constrain mode choice (Garrett & Taylor, 1999), Chauvin & Messina (2021) argue that public transportation investments can improve access to economic opportunities, therefore helping to reduce economic inequality.

2.4.1.2 Transportation Insecurity

Low-income residents in poorly connected neighborhoods often struggle with meeting their transportation needs through the phenomenon of transportation insecurity (Murphy et al., 2022). Gould-Werth et al. (2018) describe five main dimensions of transportation insecurity: 1) lateness due to transportation problems; 2) skipping trips due to transportation problems; 3) spending a long time waiting, planning, or traveling due to one's transportation availability; 4) social isolation due to transportation problems; and 5) worrying about transportation. Low-income people can pay disproportionate amounts of their income towards transportation costs in relation to their middle- and high-income peers (Gössling et al., 2022; Moody et al., 2021; Walks, 2018), and are not always able to pay for the gas, insurance, and maintenance of their cars (Blumenberg & Agrawal, 2014). However, as low-income neighborhoods tend to be poorly connected to PT and other services (Chauvin & Messina, 2021), car ownership can be a way to unlock job, education, and social opportunities that would otherwise be difficult to access (Klein et al., 2023; Moody et al. 2022). Thus, faced with limited transportation options and transportation insecurity, facilitating

safe and convenient active transportation options in low-income neighborhoods can be a way to increase economic equality by freeing residents from the cost of car ownership (Ghimire & Barkada, 2023; Ricciardi et al., 2015; Walks, 2018).

On the flip side of this mismatch we see the phenomenon of “choice riders”, wherein often wealthy white-collar male workers use PT and AT to reach their jobs by choice rather than necessity (Guerra, 2022). These high-income individuals often benefit from the proximity and convenience of these options in their gentrifying urban neighborhoods. The salaried nature of their jobs allows greater flexibility than lower-income hourly workers who are more likely to be penalized by a late or cancelled PT journey (Barajas et al., 2018; Stern et al., 2024).

2.4.1.3 Spatial Mismatch Hypothesis

The Spatial Mismatch Hypothesis was first coined by John Kain in 1968 to explain worsening poverty in predominantly black, central city neighborhoods in Chicago and Detroit. Kain argues that job concentration has shifted outward from the central city toward suburbs and that communities of color are more likely to live in central cities, leaving them at a disadvantage in the labor market. He continues, arguing that high unemployment rates and the prevalence of low-wage employment among black communities is the result of their spatial separation from high-wage employment opportunities in suburban areas (Kain, 1968).

In looking at spatial mismatch in Los Angeles, Blumenberg & Ong (2011) find that low-income welfare recipients face difficulty in finding jobs which are easily accessible by public transit. They find that welfare recipients living in job-rich neighborhoods can easily reach employment opportunities using public transit. However, those in job-poor neighborhoods have extremely limited access to opportunities using public transit and must use a car to travel reliably between home and work (Blumenberg & Ong, 2011). In many job-poor neighborhoods, even if residents can easily reach a bus stop from their home, the time it takes to reach job opportunities via transit prohibits them from reaching their destination in a reasonable amount of time (ibid.). This shows that despite the high cost of car ownership, many low-income people are all-but forced to maintain personal car ownership to be able to access job opportunities.

2.4.2 Age and Mode Choice

In addition to income, age is also a significant demographic factor influencing mode choice. Older adults, regardless of geographic context, tend to rely more heavily than younger adults on private cars for their travel needs (Ramezani et al., 2021; Villena-Sanchez et al., 2022). As people age,

convenience and comfort become factors influencing higher rates of driving in older adults. Older adults are more likely to use a car for daily trips such as shopping and other errands (Ramezani et al., 2021; Villena-Sanchez et al., 2022).

However, there is a segment of older adults who rely on AT, including PT, to get around (Villena-Sanchez et al., 2022). According to Villena-Sanchez et al. (2022), access to good PT and BE design facilitating AT can encourage older adults to use AT as a means of transportation regardless of their car ownership status. To meet daily travel needs, older adults without access to a car may use PT and AT at a higher rate than older adults with a car. This also correlates with income, as older adults from lower-income groups are more likely to have limited access to a private vehicle and rely more heavily on AT due to financial constraints. In contrast, higher-income older adults show stronger preferences for driving, as they are more likely to be able to afford the costs associated with car ownership (Gimie et al., 2022; Lin & Cui, 2021; Villena-Sanchez et al., 2022).

2.4.3 Gender and Mode Choice

There is a convergence in travel patterns between men and women, with women tending to travel shorter distances and being more likely to trip-chain, the process of combining trips one after another (Hanson, 2010). Due to the complexity of women's travel behavior, being more likely to take on household support tasks such as running errands and bringing children around, women are more likely to drive compared to men (Blumenberg et al., 2018). According to Boarnet and Hsu (2015), women in Southern California have significantly different travel behavior than men, but only when there are children in the household. Still, differences arise when looking at broader societal gender differences. Women remain concentrated in sex-segregated occupations in which they earn less than men, which is exacerbated by the fact that women do more household support work than men (Blumenberg et al., 2018).

Building upon Chapter 2.3.1, examining the intersection of income and gender also shows great disparities. In studying low-income women, Blumenberg (2003) shows that they (particularly single mothers) experience transportation insecurity in accessing job opportunities, critiquing the spatial mismatch hypothesis (Chapter 2.3.1.2). In this case, it is not the problem of low-income women being concentrated in certain areas as in the original hypothesis studying black communities in inner cities (Kain, 1968). Rather, Blumenberg writes, it is the problem of existing transportation systems failing to meet the needs of these women. She argues that transportation systems must take into account the distinct travel modes and travel needs informed by the particular household responsibilities of women, writing that effective transportation policy and

design should account for where women are most likely to seek employment and their preferred modes of transportation.

In addition to gender differences in career selection and household support work, women are more likely to be sexually assaulted and harassed in public (Avendaño et al., 2022). A 2022 study on gender equity in public transportation by the Los Angeles Department of Transportation (LADOT) shows that women in LA, especially BIPOC (Black, Indigenous People of Color) women, are more likely than men to be concerned about their safety on public transit (Eberle et al., 2022). This sentiment is not unique to Los Angeles, as various studies from major cities worldwide show the same results, citing desolate bus stops, dimly lit areas, and overcrowded vehicles (Kacharo et al., 2020; Loukiatou-Sideris et al., 2008; Shah, 2018; Useche et al., 2024; Yasir et al., 2022).

However, despite many transit agencies recognizing that women have distinct safety needs, most still lack targeted programs to address these issues (Loukiatou-Sideris et al., 2008; 2009). Loukiatou-Sideris et al. (2009) write that these issues can be addressed increasing the presence of security personnel, enhancing lighting, and using design to make transit environments more comfortable. These changes not only benefit women, but make transit ridership more appealing and feel safer to everyone.

2.5 Active Travel and Perceived Health

2.5.1 Perceived Physical Health

AT has been shown to increase positive perceptions of both physical and mental health. According to a literature review of 68 studies, Larouche et al. (2014) find that AT has a high correlation with higher levels of physical activity and lower risk of obesity in children and young adults. The same outcomes hold for adult populations, with a longitudinal study by Flint et al. (2014) showing that adults who use AT have lower body mass indices and are at lower risk for cardiovascular disease.

Regular physical activity can prevent disease and boost overall health over one's lifetime (2018 Physical Activity Guidelines Advisory Committee, 2018). This is achievable through household tasks, school, occupation, recreation, or transport (Prince et al., 2021). Active travel is associated with better mental and physical health (Martin, 2014; Schauder & Foley, 2015). While AT is shown to increase perceptions of physical health (Mytton et al., 2016; Scheepers et al., 2015), but the relationship between AT and perceived mental health varies across contexts (Avila-Palencia et al., 2018; Kroesen & De Vos, 2020; Scheepers et al., 2015).

According to Caramenti & Castiglioni (2022), self-perceived health can be a predictor of chronic disease and mortality. To measure perceived health, the RAND-36 survey is widely used. This 36-item survey measures perceived physical and mental health across eight dimensions: physical functioning, role limitations caused by physical health problems, role limitations caused by emotional problems, social functioning, emotional well-being, energy/fatigue, pain, and general health perceptions (Hays et al., 1993). The RAND-36 survey is used across a range of contexts and disciplines to simply and accurately gain an understanding of populations' perceived physical and mental health.

2.5.2 Perceived Mental Health

Different travel modes affect perceived physical and mental health in different ways (Avila-Palencia et al., 2018). Car use is associated with higher stress (Novaco & Gonzalez, 2009; Mattisson et al., 2019) and lower mental health (Martin et al., 2014), while PT use is associated with low travel satisfaction (Novaco & Gonzalez, 2009) but higher mental health (Martin et al., 2014). AT provides the most benefits across all travel modes (Avila-Palencia et al., 2018), with decreased stress levels (Avila-Palencia et al., 2017), higher quality of life (de Geus et al., 2007), and higher perceptions of physical and mental health (Humphreys et al., 2013; Martin et al., 2014).

2.6 Conceptual Model

It becomes clear in the literature that the built environment and socioeconomic status do in fact influence AT behavior, and that this influences one's self-perceptions of physical and mental health. However, many of the studies reviewed in chapter two relate to the European context (Avila-Palencia et al., 2017, 2018; Bhandal & Noonan, 2022; Caramenti & Castiglioni, 2022; de Geus et al., 2008; Fyhri et al., 2023; Humphreys et al., 2013; Kreusen & De Vos, 2020; Lättman & Otsuka, 2024; Martin et al., 2014; Mattisson et al., 2016; Mytton et al., 2016; Pizarro et al., 2012; Scheepers et al., 2015), where BE characteristics and AT behavior differ widely from the North American context, particularly the sprawling and exceptionally car-dependent Los Angeles. This study will bridge this research gap by studying how the BE at the neighborhood level across LA interacts with socioeconomic status to influence mode choice, and how this nexus impacts health perceptions.

The literature shows how BE factors influence AT behavior through the 5Ds of density, diversity, design, destination accessibility, and distance to transit (Ewing & Cervero, 2010). These factors are shown to interact with socioeconomic factors of income, age, and gender through residential self-selection, age-based mobility constraints, and gender-based differences in travel behavior and

perceptions. Through an understanding of the Neoclassical Consumption Theory, we see how socioeconomic factors influence the BE through historical patterns of (dis)investment which influences differences in AT behavior across demographic groups. Regardless of sociodemographic status and the BE of one's residential area, the literature demonstrates the positive effect of AT on physical and mental health perceptions. Based on this, the following conceptual model (Figure 3) is applied to this study.

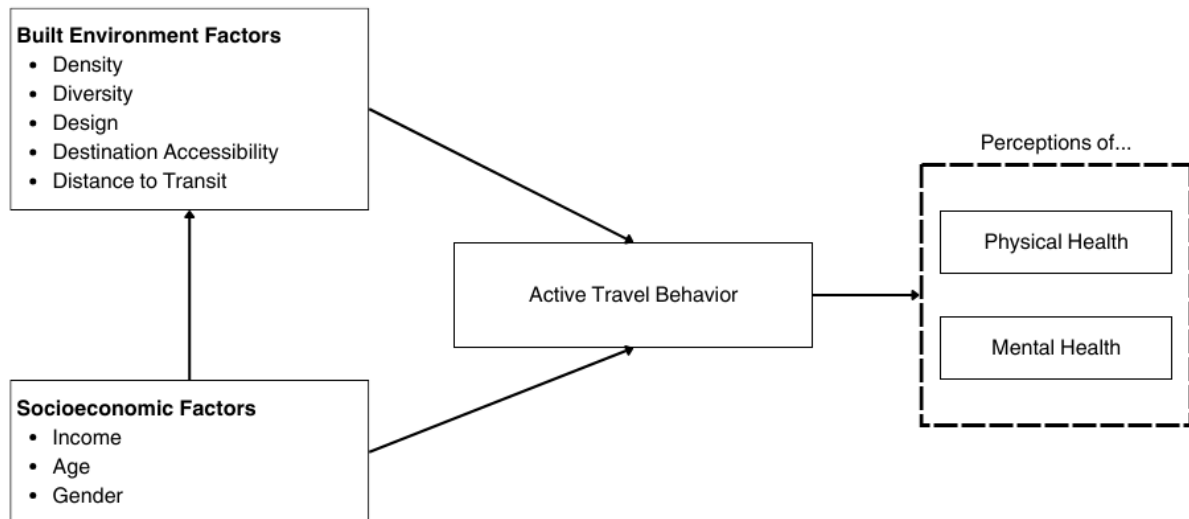


Figure 3
Conceptual model

3 Methodology

3.1 Case Studies

In the context of Los Angeles, a mixture of Newman et al.'s (2016) urban fabric classifications creates a diverse patchwork of neighborhoods with varying densities and built environment typologies. Los Angeles follows this three-step development pattern, with Downtown Los Angeles (DTLA) being the first settlement in 1849 and is now the densest neighborhood in the city. Following the expansion of the city's streetcar system, Los Angeles became a transit city as it built the largest streetcar network in the world in the late 1800s-early 1900s (Vallianatos & Brozen, 2019) (Figure 2). Despite the streetcar network being removed in the 1950s-60s, the city's history of transit-oriented development impacts density to this day. Today, neighborhoods once serviced by streetcars continue to have the highest density in the city as the legacy of the streetcar continues (ibid.).

Overall, the urban region of LA can now be classified as an automobile city, but neighborhoods within the region have walking and transit fabrics with varying degrees of 5D characteristics. In other words, LA lacks a cohesive built environment (Berrigan et al., 2010). While automobile use is the predominant mode of transportation in the region (Deloitte City Mobility Index, 2020), there are pockets of the city where mode share is more evenly distributed among travel modes (Shavit, 2023). The BE characteristics of these neighborhoods differ from the predominant BE of Los Angeles, providing residents with denser and more integrated AT infrastructure, including better transit connections. Due to the sheer scale and BE diversity of Los Angeles, the neighborhood is the most appropriate level at which to study travel behavior (Cervero & Radisch, 1996).

Using data from the US Census and American Community Survey (ACS), this study has identified three neighborhoods which exhibit a wide range of demographics, BE characteristics, and travel behaviors. This study will qualitatively analyze how the aforementioned factors are perceived by residents, and how these factors influence residents' AT behavior and health perceptions by conducting semi-structured interviews with a range of residents across an array of ages, incomes, and genders. These interviews will contextualize and humanize Census and ACS data by understanding a selection of personal stories behind the numbers.

3.2 Case Selection

The three neighborhoods of Exposition Park, Koreatown, and Westchester have been selected based on Newman et al.’s (2016) urban fabric typologies—walking, transit, and automobile-oriented. Using data from the 2020 US Census and the 2022 American Community Survey, these neighborhoods were selected based on their population density, land use mix, access to public transit, and rate of car ownership, as these characteristics are known to influence travel mode choice (Badoe & Miller, 2000). Figure 4 shows the case study neighborhoods in relation to the broader Los Angeles metropolitan region. Figure 5 shows LA Metro’s bus and train map, zoomed in to highlight the case study neighborhoods.

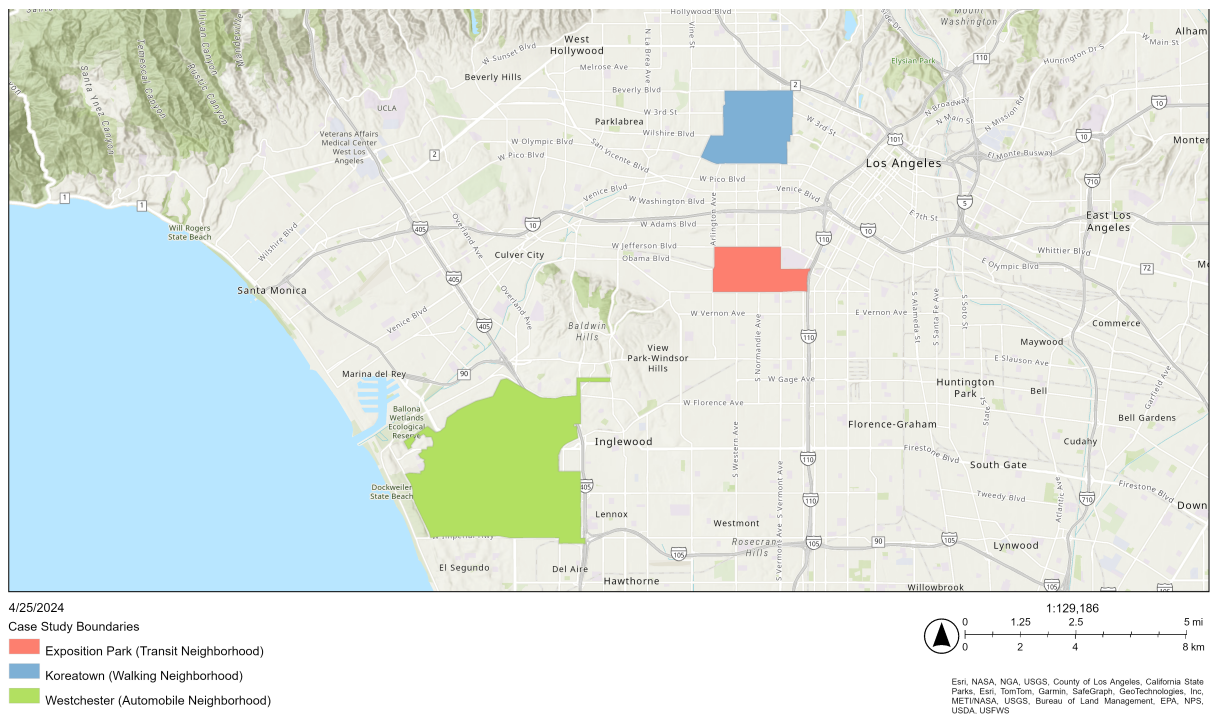


Figure 4
Case study neighborhoods visualized

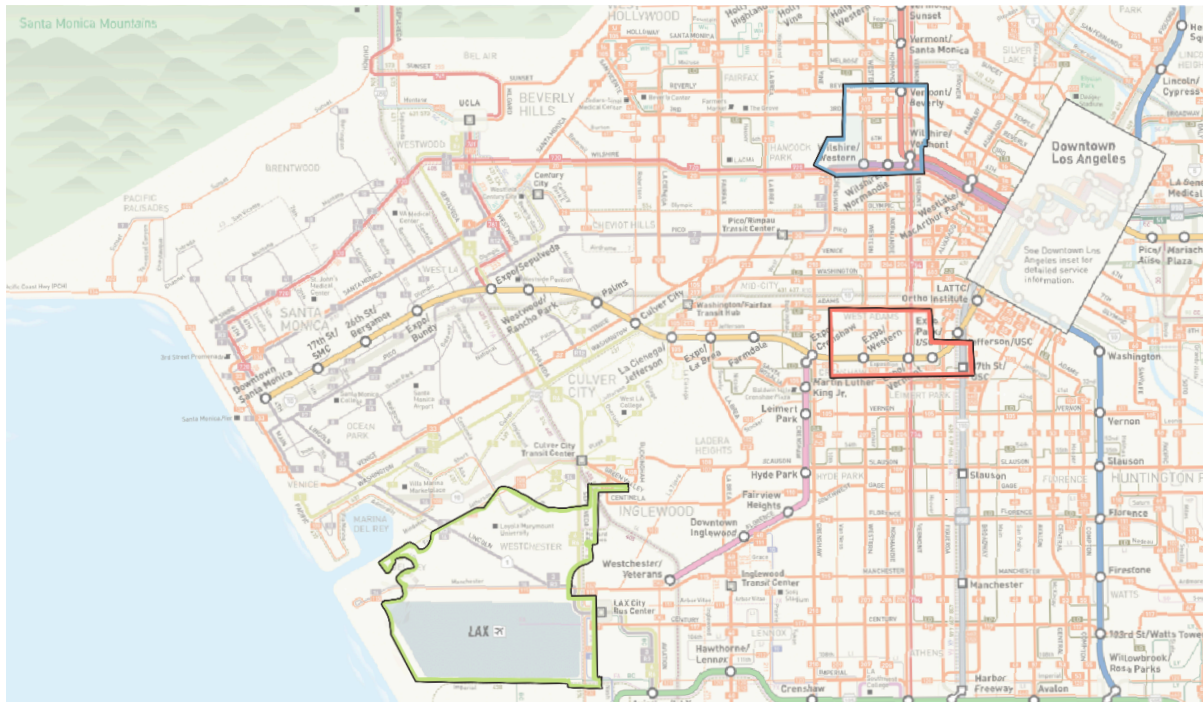


Figure 5
Bus and train map (case study neighborhoods highlighted)

3.2.1 Koreatown: Walking Neighborhood

Developing at the beginning of Los Angeles' settlement, walking NHs today have the highest population densities. This study will focus on the walking NH of Koreatown, which is adjacent to historic DTLA. Koreatown's historic mansions have since been subdivided into multi-family apartment buildings, giving rise to a high population density. The high population density combined with mixed-use zoning creates what Newman et al. (2016) describe as a walking neighborhood.

Koreatown lies 3.6 miles/5.8 kilometers west of DTLA and has a population of 114,047 with a density of 39,632 people/mile² (15,301 people/kilometer²) across an area of 2.7 miles²/7 kilometers² (US Census, 2020). Koreatown is a highly racially and economically diverse neighborhood with a wide variety in mode choice (American Community Survey, 2022). A more detailed overview of Koreatown's demographics, modal split, and car ownership rate can be found in Table 1.

As seen in Figure 5, Koreatown has a dense network of public transit, being served by Metro subway lines B and D, as well as the 10, 14, 16, 18, 20, 37, 204, 206, 207, 210, 212, 720, and 754 buses. This rich transit connectivity provides Koreatown with highly accessible PT. This is reflected

by a high PT mode share and the lowest rate of car ownership among case study neighborhoods (Table 1). Figure 6 shows a zoning map of Koreatown which indicates a high degree of intermixed land use functions. Koreatown is dominated by mid-density housing and commercial buildings which contribute to high density and destination accessibility.

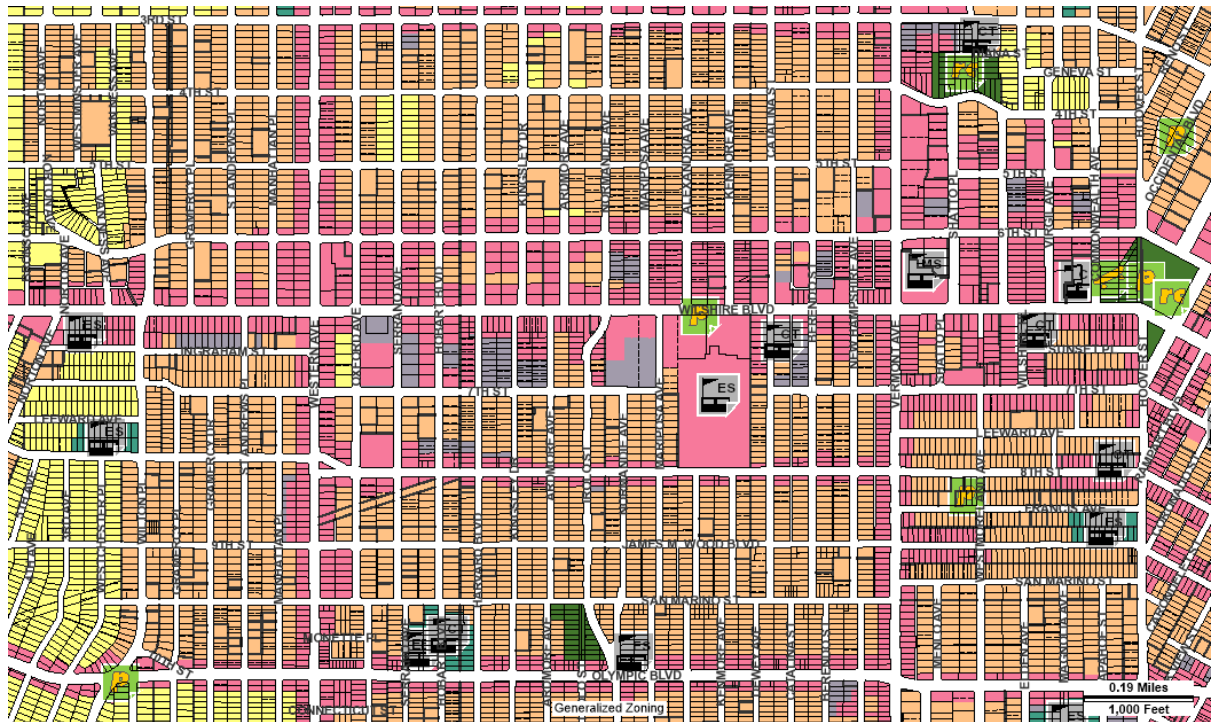


Figure 6
Koreatown zoning map
(Los Angeles Department of City Planning)

GENERAL PLAN LAND USE

LAND USE

RESIDENTIAL

- Minimum Residential
- Very Low / Very Low I Residential
- Very Low II Residential
- Low / Low I Residential
- Low II Residential
- Low Medium / Low Medium I Residential
- Low Medium II Residential
- Medium Residential
- High Medium Residential
- High Density Residential
- Very High Medium Residential

COMMERCIAL

- Limited Commercial
- Limited Commercial - Mixed Medium Residential
- Highway Oriented Commercial
- Highway Oriented and Limited Commercial
- Highway Oriented Commercial - Mixed Medium Residential
- Neighborhood Office Commercial
- Community Commercial
- Community Commercial - Mixed High Residential
- Regional Center Commercial

3.2.2 Exposition Park: Transit Neighborhood

Transit neighborhoods developed around the historic LA streetcar lines, becoming streetcar suburbs before the proliferation of the automobile and are now connected to rail transit via LA Metro. These have mid-high population densities. This study will focus on the neighborhood of Exposition Park, which lies 4.2 miles/10.8 kilometers southwest of DTLA and has a population of 104,995 with a population density of 18,543 people/mile² (7,159 people/kilometer²) over an area of 5.5 miles²/4.6 kilometers² (US Census, 2020). Exposition Park is a highly racially and age-diverse neighborhood, being home to many students from the University of Southern California. As seen in Figure 5, Exposition Park is serviced by the Metro E line light rail, J line bus rapid transit, and 40, 81, 102, 105, 204, 206, 207, 209, 210, and 754 buses. A more detailed overview of Exposition Park's demographics, modal split, and car ownership rate can be found in Table 1.

As seen in Figure 7, Exposition Park is primarily characterized by mid-density housing, with some commercial zoning along arterial streets. Further to the neighborhood's western periphery, it is dominated by single-family housing. When compared to the zoning plan of Koreatown, it is clear that Exposition Park is less dense and has less land use diversity. This is reflected by its AT and PT mode shares being lower than Koreatown, and its driving and car ownership rates being higher (Table 1).

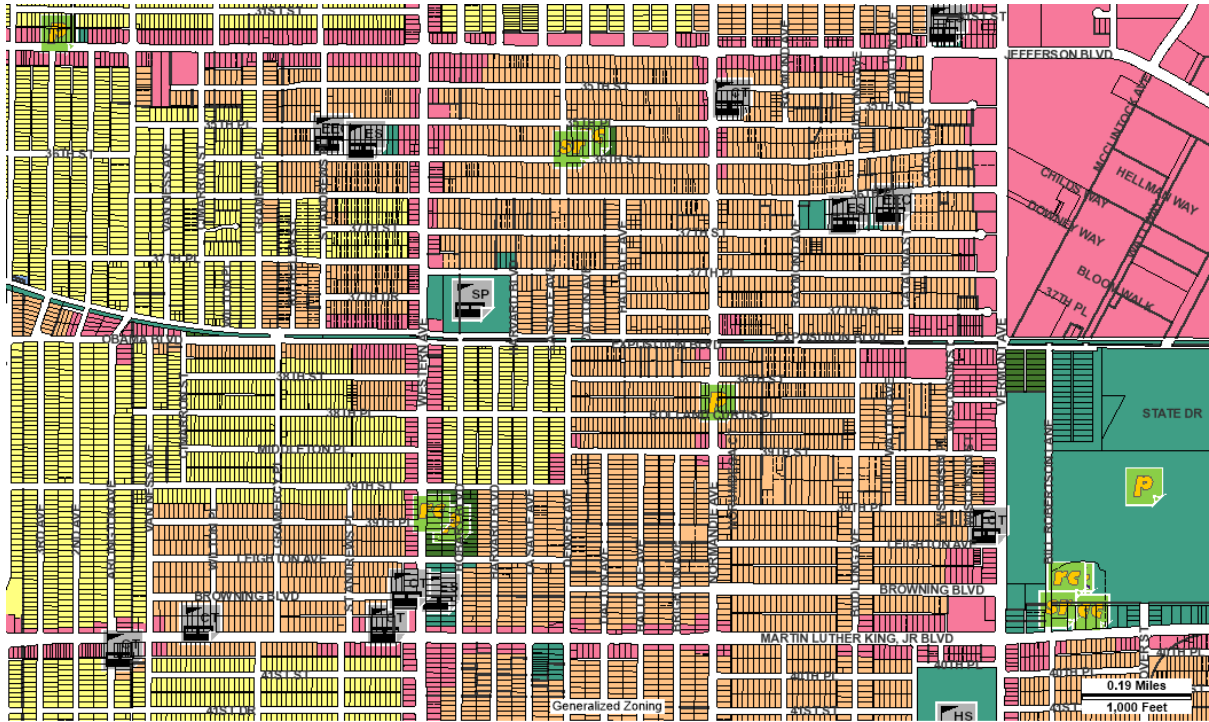


Figure 7
Exposition Park zoning map
(Los Angeles Department of City Planning)

GENERAL PLAN LAND USE

LAND USE

RESIDENTIAL

- Minimum Residential
- Very Low / Very Low I Residential
- Very Low II Residential
- Low / Low I Residential
- Low II Residential
- Low Medium / Low Medium I Residential
- Low Medium II Residential
- Medium Residential
- High Medium Residential
- High Density Residential
- Very High Medium Residential

COMMERCIAL

- Limited Commercial
- Limited Commercial - Mixed Medium Residential
- Highway Oriented Commercial
- Highway Oriented and Limited Commercial
- Highway Oriented Commercial - Mixed Medium Residential
- Neighborhood Office Commercial
- Community Commercial
- Community Commercial - Mixed High Residential
- Regional Center Commercial

3.2.3 Westchester: Automobile Neighborhood

According to Newman et al. (2016), automobile neighborhoods developed in tandem with the proliferation of the private automobile, after streetcar lines were dismantled. These neighborhoods are heavily car-oriented with low population densities relative to the rest of Los Angeles. This study will focus on Westchester, which lies roughly 18 miles/29 kilometers southwest of DTLA. Covering around 9.2 miles²/23.8 kilometers², Westchester has a population of 65,093 with 7,046 people/mile² (2,720 people/kilometer²) (Los Angeles Department of Planning, 2022). Westchester is not served by a Metro Rail line, though LA Metro, Culver Bus and Santa Monica's Big Blue Bus operate bus lines here with varying degrees of service frequency. Bus lines serving Westchester are Big Blue Bus 3 and 16; Culver Bus 1, 2, 3, 4, and 6; and LA Metro Bus lines 115, 108, and 110. As seen in Figure 5, these bus lines are relatively sparse, making them inconvenient options for Westchester residents. A more detailed overview of Westchester's demographics, modal split, and car ownership rate can be found in Table 1.

As seen in Figure 8, Westchester is dominated by single-family homes, with commercial functions pushed to the outer peripheries of the neighborhood. There are some mid-density homes toward the edges of the neighborhood, as Westchester is an island of low density amid the bordering medium-density neighborhoods of Playa del Rey, Marina del Rey, Inglewood, and Culver City. Westchester's zoning hinders destination accessibility, as residents generally live too far from services to reach by AT. The low density, diversity, destination accessibility, and distance to transit create a neighborhood in which the car is generally the only viable option by which to get around.

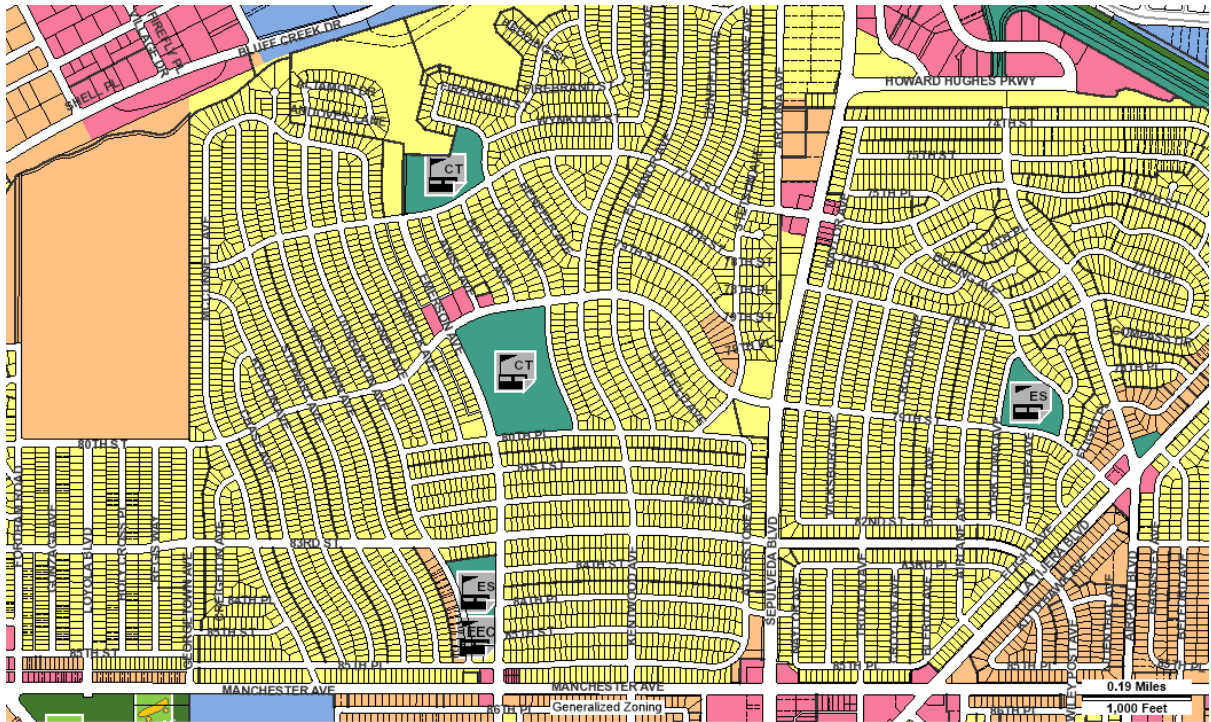


Figure 8
Westchester zoning map
(Los Angeles Department of City Planning)

GENERAL PLAN LAND USE

LAND USE

RESIDENTIAL

- Minimum Residential
- Very Low / Very Low I Residential
- Very Low II Residential
- Low / Low I Residential
- Low II Residential
- Low Medium / Low Medium I Residential
- Low Medium II Residential
- Medium Residential
- High Medium Residential
- High Density Residential
- Very High Medium Residential

COMMERCIAL

- Limited Commercial
- Limited Commercial - Mixed Medium Residential
- Highway Oriented Commercial
- Highway Oriented and Limited Commercial
- Highway Oriented Commercial - Mixed Medium Residential
- Neighborhood Office Commercial
- Community Commercial
- Community Commercial - Mixed High Residential
- Regional Center Commercial

Neighborhood	Population	Population Density	Walking or Cycling (% of mode share)	Public Transit (% of mode share)	Driving Alone (% of mode share)	Rate of Car Ownership (% of population)	Average Age
Koreatown	114,047	38,632 people/mile ² (15,301 people/km ²)	5.18	20.85	65.12	75.18	30
Exposition Park	104,995	18,543 people/mile ² (7,159 people/km ²)	4.43	16.91	72.52	83.07	34
Westchester	65,093	7,046 people/mile ² (2,720 people/km ²)	7.23	1.75	83.36	94.46	40

Table 1
Overview of neighborhoods

Note that walking and cycling mode share is calculated separately at the city level but are combined at the neighborhood level. Also note that the mode share percentage does not add up to 100% due to this study excluding working from home, a category used by the ACS (American Community Survey, 2022).

3.3 Data Collection

3.3.1 Qualitative Semi-Structured Interviews

This research will consist of qualitative interviews of residents of the aforementioned neighborhoods. The interviews will gauge residents' sociodemographic characteristics, travel behavior, perceptions of neighborhood characteristics, and mental and physical health perceptions. The full interview guide can be found in Appendix 1.

Qualitatively studying travel behavior and mode choice is a small but growing subset of mobility research (Mars et al., 2016). Studying the research questions qualitatively allows this research to go beyond US Census and ACS data to understand the people behind the numbers, and how their perceptions, preferences, and lifestyles influence how they choose to get around. Conducting semi-structured interviews with residents allows this research to get to the heart of how and why people travel around LA. By investigating how people feel about different modes of transport, how they perceive their neighborhoods, and how they feel about their health, this study is able to unravel the research questions more holistically than previous quantitative studies. These interviews explore residents' lived experiences and unique perspectives on the factors that inform their travel behavior, perceptions of their built environment, and their health perceptions. The interviews were semi-structured to allow flexibility to explore unforeseen topics that arise in conversation. The interviews were collected in Los Angeles, with a mix of in-person and online meetings to allow interviewees flexibility.

Participants from the aforementioned neighborhoods were recruited through community outreach, social media advertising on platforms like Facebook, Reddit, and Nextdoor, and posting fliers around each neighborhood (Appendix 2) with the goal of obtaining a representative sample of residents across gender, age, and income ranges within each neighborhood. Data from the interviews has been compiled into Table 2 to provide an overview of each interviewees' alias, neighborhood of residence, income, age, and gender. Note that interviewee names have been changed for anonymity.

Interviewee	Neighborhood	Annual Household Income	Age	Gender
Adeline	Koreatown	\$60-120k	23	Woman
Amelia	Koreatown	\$60-120k	25	Woman
Joel	Koreatown	\$60-120k	37	Man
Luke	Koreatown	\$120-200k	29	Man
Remi	Koreatown	< \$60k	23	Woman
Sophie	Koreatown	\$60-120k	31	Woman
Anthony	Exposition Park	< \$60k	23	Man
Katherine	Exposition Park	< \$60k	25	Woman
Mayra	Exposition Park	< \$60k	23	Woman
Zhen	Exposition Park	< \$60k	21	Non-Binary
Zahuk	Exposition Park	< \$60k	26	Man
Alice	Westchester	\$120-200k	53	Woman
Jane	Westchester	Retired	76	Woman
Julia	Westchester	\$60-120k	71	Woman
Madison	Westchester	> \$200k	48	Woman
Matthew	Westchester	Retired	78	Man

Table 2
Interviewee overview

Participation in this study was voluntary and anonymous. Due to the sensitive nature of studying health perceptions, aliases have been assigned to all participants in order to protect their identities, and any distinguishing or otherwise sensitive information such as places of residence, employment, or identifying information of children has been redacted from the interview transcripts. The data is stored on a password-protected device and will not be shared with third parties. The contact information of the researcher has been provided to all participants in the case that they would like their information withdrawn from the study.

3.3.2 Interview Guide Overview

The interview consists of four main sections:

- 1) Sociodemographics: This section asks about respondents' age, gender, race/ethnicity, income, education level, employment status, and neighborhood of residence.
- 2) Travel Behavior: Respondents are asked about their typical travel patterns, including how often they use AT, drive, how they perceive elements of AT, and car ownership/access to a car.
- 3) Neighborhood Perception: Respondents will be asked to describe their neighborhood based on Ewing & Cervero's (2010) 5D classifications (density, diversity, design, distance to transit, and destination accessibility). These questions use accessible language to gauge neighborhood perceptions without using academic or planning jargon.
- 4) Health Perceptions: The final section asks respondents to share how they perceive their physical and mental health based on questions from the RAND-36 survey.

The full semi-structured interview guide can be found in Appendix 1.

3.3.3 Qualitative Coding

Using Atlas.ti, the interviews were analyzed using qualitative coding to parse key words and identify linkages between factors (see Appendix 3). These findings provide an in-depth understanding of the relationship between the built environment, travel behavior, and health perceptions in Los Angeles.

This study utilizes a deductive code tree based on the research questions and the literature review (Chapter 2). Codes were parsed from the literature and matched to themes arising in interviews.

3.3.4 Data Representativeness

While this study represents income, age, and gender diversity, it does not reflect the general population in terms of educational attainment. The participants in this study skew toward the highly educated, with no participants' highest educational attainment being lower than a bachelor's degree. However, despite this not being a sociodemographic metric of interest to this study, interviewee's high educational attainment may reflect income, as people with a Bachelor's degree or higher tend to have higher incomes (Tamborini et al., 2015). Despite the skew toward highly educated people, the wide range of income, age, and gender diversity illustrates a representative sample of Los Angeles residents.

4 Results

In Los Angeles, a city with a high degree of income inequality and where alternatives to driving are perceived as unsafe, uncomfortable, and/or inconvenient, driving remains the most popular mode choice across demographic groups. However, contrary to existing literature on other cities, LA residents with higher incomes appear more likely to use public transportation. This also correlates with NH connectivity, AT infrastructure, and PT accessibility. According to interviewees, PT in LA (particularly buses) is unreliable and feels unsafe, especially to women. This makes PT journeys take significantly longer than the same journey made by car.

The following chapter is an amalgamation of nearly eight hours of interviews, which have been transcribed and coded to parse and connect various topics and themes.

4.1 Mode Choice Patterns Across Neighborhoods

4.1.1 Koreatown

As a walking neighborhood (Newman, 2016), Koreatown enjoys a high population and building density with a rich urban fabric of mixed land use and accessible PT. Out of the three case study neighborhoods, residents of Koreatown were the most likely to use AT as their primary mode of transportation, with AT users exhibiting high degrees of multi-modality, switching between PT, walking, and cycling depending on trip distance. (Table 3).

Interviewee	Annual Household Income	Age	Gender	Primary Travel Mode	Physical Health Perception	Mental Health Perception
Joel	\$60-120k	37	Man	Active	Good	Good
Remi	< \$60k	23	Woman	Car	Okay	Poor
Luke	\$120-200k	29	Man	Active	Good	Okay
Amelia	\$60-120k	25	Woman	Car	Good	Okay
Adeline	\$60-120k	23	Woman	Active	Good	Good
Sophie	\$60-120k	31	Woman	Car	Good	Okay

Table 3
Koreatown interviewee overview

4.1.1.1 Walking

Los Angeles is decidedly not a walking city; however, Koreatown residents do utilize walking as both a means of transportation and for leisure. Adeline enjoys walking whenever possible, only recently getting a car to navigate the far distances of Los Angeles outside of her neighborhood. She walks almost every day for leisure, taking advantage of the nice weather and extensive natural preserves nearby her house, emphasizing the role of green space in shaping mode choice. She also uses walking as her primary form of transportation to and from work, as well as for simple errands like grocery shopping:

“My office is a mile to a mile and a half¹ away from where I live. So I walk to and from work every day during the week. And then if I were to go anywhere outside a few mile radius from my house, I usually drive there. I have a car. Other than that, I pretty much walk wherever I need to go. If I need to run errands or something, there’s a grocery store less than a mile away from me.” (Adeline)

4.1.1.2 Cycling

Despite lacking extensive cycling infrastructure, residents of Koreatown bike at the highest rate among the three case study neighborhoods. Four out of the six Koreatown interviewees regularly bike for both transportation and leisure, citing the convenience of not having to find parking or rely on public transportation.

Joel is a daily bicycle commuter to his office in DTLA and expresses frustration with what he describes as the “piecemeal transit system” of Los Angeles, wherein certain streets or neighborhoods are well-served by AT infrastructure but getting between pockets of good infrastructure is a challenge. He expresses concerns with his safety while cycling due to the car-oriented nature of Los Angeles streets, even in the most dense, AT-friendly neighborhoods. While cycling he remains cautious and vigilant, employing tools like turn signals, rear view mirrors, and bright lights to increase his visibility and predictability. He emphasizes his cautious approach to cycling, citing inattentive drivers who are not used to sharing streets with cyclists:

“If I observe you doing anything strange, I want you in front of me and not behind me. So I will often wave cars ahead when I have the right of way because I saw them pull up halfway through the stop sign... It’s all about pretending that everyone else is

¹ 1 mile = 1.6 kilometers

going to do something very dangerous for you very quickly... That's the best way to bike in the city for now. Hopefully it gets better.” (Joel)

Despite his perceived need for vigilance, cycling continues to be Joel’s primary mode of transportation. He cycles for both commuting and non-commuting purposes such as visiting friends, family, and enjoying the plethora of entertainment and cultural opportunities Los Angeles offers. Over time, he has refined his cycling routes to minimize time spent on major arterial roads:

“After a few months of riding up Olympic, I decided to just bite the bullet and take Eighth, which is quiet and residential... You modify your bike routes based on how the road is designed, which influences how the drivers behave and how impatient they are.” (Joel)

Amelia enjoys cycling but doesn’t feel safe cycling in most of LA due to the lack of protected cycling infrastructure and the presence of cars. She says that she frequently sees people cycling on the sidewalks in Koreatown to avoid traffic. She does not cycle much nowadays, but used to cycle frequently in her previous neighborhood of Santa Monica, which has a robust network of bike lanes, emphasizing the importance of infrastructure in shaping mode choice.

4.1.1.3 Public Transportation

Public transportation is the most widely-used form of transportation for Koreatown interviewees, even among those who primarily drive for their commutes. However, there are widespread concerns over the system’s reliability, with some interviewees, namely Remi and Amelia, preferring to drive to work due to the extra time public transit necessitates.

Joel is a frequent public transit user, taking advantage of his proximity to the Metro D and A subway lines. He frequently takes the bus, using stops that are a few minutes’ walk from his house. He often combines modes, such as combining cycling with public transit:

“I’ll take my bike down to the station that’s attached to the Metro at Seventh & Flower, take [the train] to Wilshire & Vermont or Wilshire & Normandie, whichever shows up first, then walk or bike home.” (Joel)

He views driving as largely unnecessary, as someone from Boston who is accustomed to using mass transit as his primary form of transportation. He does have occasional access to his partner’s car, which they use on occasion for large shopping trips or visiting friends in less transit-accessible areas. Overall, his car use is extremely limited and he aims to bike and use transit whenever possible.

Remi has a negative perception of public transit, citing safety concerns, long travel times, overcrowding, and unreliable service. She has previously used public transportation as a university student but no longer does as a working adult. She cites safety concerns in and around her neighborhood, largely due to visible homelessness, particularly in the nearby MacArthur Park. In this area, she prefers to take the bus or train at nighttime to avoid walking through the park:

“If you’re in MacArthur Park it’s definitely safer to use transit. I feel like sometimes buses feel safe and sometimes they don’t.” (Remi)

She says that if Los Angeles focuses on improving its public transportation through expanding connections, reducing crime, and better maintaining system cleanliness, she would be more apt to use it:

“I love the idea of [public transit]. I want to love it more so badly, but it just doesn’t feel great here... if it were better though, I’d take it all the time.” (Remi)

She cites the main reason for not using public transit more often is the long travel times and some places not being well-served by transit:

“You have to leave at least two hours earlier than your arrival time, and then sometimes buses are late... But then sometimes they’re just so full, they cannot stop to pick up more people... I’d say most of the time [public transit is] accessible, but sometimes it takes a long, complicated route. And then there’s [sic] some times where you have to get off at one point and have a long walk to get to where you need to go.”
(Remi)

Overall, despite being a regular car user, Remi is willing to use public transit if it were more reliable and better-connected. Amelia similarly cites the long commute time necessary on transit, saying:

“I do worry about using public transit for work just because it feels less reliable.”
(Amelia)

Amelia’s freelance work takes her to far corners of Los Angeles, as far as Pacific Palisades on the city’s West Side. While most of her work is nearby Koreatown in DTLA and West Adams, she says that the time it takes via transit to reach these destinations deters her from building it into her

regular travel routine. While she dislikes driving due to traffic and negative perceptions of safety due to other drivers' behaviors, it is currently the most practical option for her daily needs.

Luke notes that his multi-modal travel behavior is shaped by his experience living in Chicago, whose robust AT and PT networks made getting around the city easy. Upon moving to Los Angeles, he introduced driving into his multi-modal behavior but still relies heavily on AT modes. He lives in Koreatown and works roughly 14 miles/22 kilometers east in Pasadena. He notes:

“I both drive and take the train to get [to work], depending on exactly what I’m planning to do that day. If I’m just going straight there and straight back, and I don’t have much else on my calendar that day, I usually just take the train. But if I want to do something a bit more off the beaten path...then I’ll drive. Or if I’m running late, because [the train] takes about twice as long.” (Luke)

He notes that despite the longer travel time by train, he prefers it because it builds in exercise walking to and from the stations and gives him time to catch up on emails and podcasts. His train commute takes about an hour and ten minutes each way, including 20-25 minutes of walking, compared to a roughly 30 minute drive in average traffic. Amelia prefers to use transit over driving, particularly for leisure trips. She says:

“I feel good about using public transit. Sometimes there’s [sic] situations, or just people, that feel uncomfortable or unsafe, but I’d say most of the time it’s fun.” (Amelia)

“To get around the neighborhood, to just go to a bar or to go out for the weekends, I’ll usually take a bus or a train.” (Amelia)

4.1.1.4 Driving

While multi-modal travel behavior is most common in Koreatown, the two interviewees who exhibit primarily driving behavior do so due to the nature of their jobs, which require traveling around the Los Angeles region to serve various clients. They cite LA’s public transit to be unreliable, and is perceived as unsafe for women (Chapter 4.2.3). People talk about the greater time required to travel by PT versus a private car. Overall, Koreatown residents express discontent with the city’s car-centric infrastructure and a desire for more robust AT infrastructure.

“I wish LA was structured in a way that we could utilize more of the space for public transport or walking or biking rather than driving, because I feel like all of those experiences trump driving in my mind.” (Adeline)

Remi almost exclusively uses her car for transportation. She views having a personal vehicle as a necessity for getting around the greater Los Angeles region:

“You basically have to have a car. You can make it work with public transit but it’s much harder.” (Remi)

Her feelings regarding driving are conflicted; while she acknowledges the practical benefits such as saving time and personal space, she also notes the high stress levels involved for her:

“I think driving is the most practical option... but it’s so stressful because you have to be so alert... You have to learn how to read the body language of cars... I feel all tense and knotted up most of the time [after driving] from traffic and other drivers.” (Remi)

Luke owns a car and uses it one to four times per week, depending on his work schedule. He works from home most days, goes to his Pasadena office some days, and other days visits clients across the Greater Los Angeles region. Luke enjoys driving despite his frustrations with it, but prefers active modes when possible. He says:

“I have a lot of thoughts about driving. I personally enjoy driving a lot, but the conditions of driving in Los Angeles are frequently infuriating because of traffic and then because of just the density itself. Even if there’s not traffic, you’re interacting with other drivers so much that their behavior and decisions and abilities play such a big role in the experience, whether that’s them doing things that are dangerous or inconsiderate or just not paying attention. Things like that make this experience more frustrating and also feel more dangerous.” (Luke)

Amelia tries to use AT whenever possible, especially for leisure trips, though driving makes her jobs more accessible. As a freelance worker she finds herself in different corners of Los Angeles depending on the day of the week, often commuting 15-35 minutes by car. She dislikes driving, saying it feels “really dangerous”. She mentions that entering and exiting Koreatown by car is difficult due to its narrow streets and traffic, but says that once you leave the streets get wider and there are more lanes to facilitate car traffic.

Adeline does own a car, and uses it for distances that are too long to walk. Her typical driving distance is less than three miles/five kilometers. She is rather neutral towards driving, as she enjoys a scenic drive in rural areas but dislikes urban driving, particularly in Los Angeles due to high traffic. She says:

“I like a nice scenic drive, but I think locally, there’s just so much car traffic in LA. I think it’s easy to get kind of angry and stressed out in your car, but driving is...fine... So, I’m pretty neutral towards driving.” (Adeline)

Overall, Koreatown residents are skeptical of car use, citing stress from traffic, other drivers, and finding parking. They express a desire for LA’s infrastructure to better facilitate AT and PT.

4.1.2 Exposition Park

Interviewee	Annual Household Income	Age	Gender	Primary Travel Mode	Physical Health Perception	Mental Health Perception
Catherine	< \$60k	25	Woman	Active	Good	Poor
Zhen	< \$60k	21	Non-Binary	Car	Good	Okay
Anthony	< \$60k	23	Man	Active	Good	Good
Mayra	< \$60k	23	Woman	Active	Good	Okay
Zahuk	< \$60k	26	Man	Car	Good	Okay

Table 4
Exposition Park interviewee overview

4.1.2.1 Walking

In the interviews of Exposition Park residents, walking emerged as a dominant mode of transportation, used daily by all participants, though it is not as prevalent as driving. The prevalence of university students in the neighborhood influences this, as they mostly walk to and from campus and the surrounding amenities, mostly located in the USC Village, a large pedestrianized plaza with a plethora of shopping options. One interviewee noted:

“I love being able to walk places. I feel like living in a walkable area is kind of a luxury in LA. Luckily, everything’s really close and all my friends live close by for the most part. So, walking everywhere is possible for me.” (Mayra)

The neighborhood's walkability is seen as a significant asset by many interviewees, providing both physical and mental health benefits as well as a sense of connection to the community. The students interviewed appreciate being able to walk to their classes and neighborhood amenities, and not needing to leave Exposition Park on a daily basis.

However, the interviews also revealed several challenges and barriers to walking in the neighborhood. Many interviewees expressed concerns regarding the car-dominance of the surrounding areas, leading to concerns about pedestrian safety. The presence of high-speed traffic on major arterial streets throughout the neighborhood such as Jefferson Boulevard and Figueroa Street contributes to a feeling of vulnerability and discomfort for some residents. Interviewees praise the pedestrian quality on side and residential streets, but criticize the lack of safe crossing points on arterials.

"I wish there were more crosswalks. That's one thing in LA that's really frustrating. You have to walk a lot further as a pedestrian to hit a crosswalk." (Mayra)

Others mention that while crosswalks are physically accessible, they prioritize car traffic leading to long wait times as a pedestrian. Catherine, Zhen, and Mayra all describe impatience with waiting for the pedestrian signal:

"My patience across crosswalks make me feel like they're less accessible, but generally speaking, there's always somewhere safe to cross, and I just wanted to jaywalk."
(Catherine)

Despite these challenges, walking remains highly popular due to its accessibility and convenience. Interviewees express a strong desire for the urban fabric of Exposition Park to change in favor of pedestrians.

4.1.2.2 Cycling

In contrast to walking, cycling is not a common mode of transportation among Exposition Park residents. Interviewees cite the lack of safe and dedicated cycling infrastructure as the main barrier to using a bike for daily trips:

“I don’t cycle. I’m kind of nervous about it honestly. I haven’t gotten on a bicycle in a long time, so I never really cycle around LA. There’s [sic] not really bike lanes or anything like that, which kind of stresses me out.” (Mayra)

Echoing a similar sentiment:

“It’s just not my ideal choice of transportation, even though I’d love it to be.” (Zhen)

The perceived danger of sharing the road with high-speed car traffic emerged as a major deterrent to cycling for Exposition Park residents:

“I would love to do it more, I just don’t think that there’s any place that’s really safe to do it in LA unless it’s a dedicated park or something.” (Zhen)

The interviewees suggest that investments in the cycling infrastructure in Exposition Park would be necessary to making cycling a viable and appealing mode of transportation for the masses. They consistently emphasize safety concerns as the primary barrier to cycling, highlighting the need for dedicated space for bikes, separated from car traffic.

4.1.2.3 Public Transportation

The interviews reveal mixed experiences and perceptions of public transportation among Exposition Park residents. For some, particularly those without access to a car, public transportation is a lifeline for accessing destinations both within and beyond the neighborhood. The Metro E Line, which passes through Exposition Park on an east-west axis from Santa Monica to DTLA, as well as the dense network of bus routes serving the area, are frequented by some interviewees.

“I definitely [use transit] a lot in LA since I don’t have a car on a day-to-day basis. I feel like it’s not too bad since most of the time I just have to go to class... and luckily the [E Line] is near USC.” (Mayra)

However, many interviewees express frustrations with the challenges and limitations of relying on public transit in LA. The most common criticisms center around the lack of reliability, frequency, and speed of buses and trains. One person vented:

“I think it’s pretty difficult to access some parts of LA via public transit. Something will be a 20 minute drive but two hours on public transportation because of the way the bus lines run, which is really frustrating.” (Mayra)

The disconnected nature of the transit network, combined with sometimes infrequent service and indirect routes, makes it difficult for many residents to depend on public transit for daily needs. The desire to use public transit is there, but the barriers prove too great:

“I love public transit, just not LA’s public transit.” (Zhen)

They recognize the potential benefits of transit in providing affordable mobility, reducing car dependence, and creating a more equitable transportation landscape:

“I think a big thing in LA is [that] there’s such a class divide that you see, and a racial divide on who’s [using] public transit, and then who’s in their cars. I think it’d be better if all of us were just on public transit together.” (Mayra)

Safety concerns are also a barrier to transit use for some participants, particularly when traveling alone at night in unfamiliar areas. The presence of some riders experiencing mental health crises and engaging in illicit drug use makes some interviewees feel uncomfortable and vulnerable while taking the bus or train.

“The bus and subway, those scare me... I just had a couple [of] bad experiences... I don’t want to put myself in that situation.” (Zahuk)

“I feel very safe on public transit in LA. I think, like in any city, you have to be aware of yourself and your belongings. You always see some people who are kind of weird, that might be doing some weird stuff, but you just walk to the next car. That’s usually what I do if I’m uncomfortable... I usually don’t take public transit [at night], though, just for safety reasons.” (Anthony)

The interviews suggest that significant investments in service quality, frequency, and safety are necessary to make public transit a more viable and attractive option. They highlighted the need for a more interconnected and legible network, with faster and more direct routes to key destinations.

4.1.2.4 Driving

For many Exposition Park residents, driving remains the default mode of transportation for longer trips outside the neighborhood. The majority of interviewees own or have regular access to a car (such as through a friend or housemate), and those who do not still frequently use a car in the form of ride-share apps like Uber and Lyft. Interviewees value the freedom of being able to travel on their own schedule and being able to choose from a wider selection of destinations than public transit or active travel modes provide. The convenience, flexibility, and speed of driving make it an attractive option for accessing destinations across LA's sprawling geography.

"I prefer to have my car with me wherever I travel, just in case...I need to go somewhere else. Plans change. It's nice that I have control over my route." (Zahuk)

However, the interviews also highlight the significant downsides and stressors associated with driving in LA. Traffic congestion, the driving behavior of others, and the challenges of parking in dense urban areas all contribute to feelings of frustration and anxiety:

"[Driving is] the most anxiety-inducing thing you can do in LA. I hate driving here so much." (Zhen)

"I prefer to have a car and live in LA, but I think the ideal situation would be to live in LA with good public transit." (Anthony)

Even residents who do not have cars still use ride-share apps such as Uber and Lyft, utilizing the university's free ride scheme. Catherine, who commutes to internships alongside her studies, uses ride-sharing to get between neighborhoods:

"I had considered using transit, but nothing went door-to-door... If it's a good day... I can get there in probably 45 minutes. But between traffic and [carpooling] we gotta go out of our way 20 minutes. It's really bad." (Catherine)

Still according to interviewees, despite the time required to drive, it remains the fastest option.

4.1.3 Westchester

Interviewee	Annual Household Income	Age	Gender	Primary Travel Mode	Physical Health Perception	Mental Health Perception
Jane	Retired	76	Woman	Car	Good	Good
Matthew	Retired	78	Man	Car	Okay	Good
Alice	\$120-200k	53	Woman	Car	Good	Good
Madison	> \$200k	48	Woman	Car	Good	Good
Julia	\$60-120k	71	Woman	Car	Okay	Good

Table 5
Westchester interviewee overview

4.1.3.1 Walking

In the low-density, suburban neighborhood of Westchester, walking is considered a leisure activity but is not practical for commuting or running errands due to long distances:

“Westchester is really not walkable at all, unless you live close to certain points. Even then, there’s not a lot to walk to.” (Alice)

All interviewees in Westchester express contentment with walking for leisure or for exercise, acknowledging that the neighborhood’s urban form is not conducive to an active lifestyle:

“I love walking, it’s just not a reasonable thing here... There’s not really anything that’s a reasonable walk from where I live.” (Julia)

“I absolutely wish that our area was more walkable.” (Madison)

Aside from Madison, all other interviewees are content with the form of their neighborhood and do not desire to live somewhere walkable, expressing skepticism regarding denser neighborhoods:

“[Westchester] is becoming more dense. There are more apartment buildings now. That’s what a lot of the construction is currently, so it is shifting. There’s been a lot of pushback for various reasons, about having more density in Westchester. There’s [sic] pros and cons, as I see it. A lot of times these projects are developed not necessarily

taking in the considerations of the people around these developments. I think the biggest issue is that people would like Los Angeles to be something that it currently isn't, which is a place where people take a lot of public transportation. And so they're trying to force that. They're trying to force people into that option when there's not really good options right now. And so that's where the tension lies, as I see it. It's like they build a lot of apartment buildings that are really expensive to live in, and you probably need a roommate, but they don't provide parking or they provide one space. And so because of the way LA is structured, people need cars. And so oftentimes those cars, those extra cars that don't have an allocated parking space, end up parking on our street and take away our parking. So I think that's probably one of the biggest issues right now with the higher density. People are trying to make things happen that might not happen for years and years and years.”(Alice)

Overall, Westchester residents do not mind having a driving lifestyle, and are resistant to citywide densification policies and shifts toward low-carbon mobility options.

4.1.3.2 Cycling

Cycling is not a common mode of transportation among the Westchester interviewees, with many expressing safety concerns and a lack of proper infrastructure, along with a disdain for cyclists and cycling infrastructure at large.

“I personally wouldn't cycle. I support people who do want to cycle as long as they obey the rules of the road. That is a huge problem. It's a huge safety issue, especially with the introduction of e-bikes. So I support people who use cycling as transportation, providing that they do obey the laws of the road as they're supposed to. And that is a huge gap, I have found. And so it creates this tension where maybe you don't support the cyclists as much as you might otherwise if they obeyed the rules of the road.”(Alice)

“I think they've been putting in bike lanes, which... I feel like are more hazardous to automobiles. And I'm not sure that they actually keep people safer, especially when those posts pop up out of nowhere. I mean, downtown Culver City is a horrific mess right now with the way they restructured it. It's much more unsafe for driving automobiles and also has impacted traffic to make it two or three times worse than it was... When they add things and they don't tell you that some changes are coming, or ... when you turn the corner, there's going to be a big post sticking out the corner, and

you don't know that's coming, then there are many people who crashed right into those stupid posts.”(Julia)

It is unclear whether this mentality is a cause or an effect of Westchester’s low cycling rates, but among the interviewees surveyed, none had ridden a bike in many years. This is also likely compounded by the aging population, with a higher prevalence of older adults in Westchester, health issues and aging processes hinder active travel.

4.1.3.3 Public Transportation

Public transportation is also rarely used by the Westchester interviewees due to inconvenience, longer travel times, and safety concerns:

“I don't feel good about [public transportation]. I wish I did... there are so many barriers to using public transportation in Los Angeles... you can't just take it from point a to point b very easily.”(Alice)

“[In Los Angeles], I do not feel safe. There's been a lot of crime on the transit system, especially recently there's been an increase. I've taken it once or twice. Most of the time, it just doesn't go where I need it to go... but even so, if I'm going to drive somewhere versus take public transportation, it's going to take me three or four times longer to get there via public transportation.”(Julia)

“If it were convenient and safe, I think it's a great idea. But, for example in Westchester, we have buses but not the Metro... And unfortunately right now, it's not very safe. I would be afraid at this point to use it.”(Jane)

However, other residents acknowledge the city’s strides in expanding its public transportation network. Many have used the system a handful of times in the past, but have never been regular public transit commuters.

4.1.3.4 Driving

Driving is far and away the primary mode of Westchester interviewees, with all relying on cars for their daily commutes and errands:

“I feel some guilt about driving 15 minutes as much as I do, but it feels like the most functional way to get basic stuff done.”(Madison)

Residents find driving to be the most convenient option for both short and long distances. According to the interviews, not much can be reached by foot or bike in Westchester, so driving remains the only convenient option to get things done.

Despite the convenience, interviewees expressed frustrations with traffic and the need for constant awareness while driving. Madison mentions:

“I usually get frustrated because when I’m walking, when I’m driving, I finally have this quiet time to myself and all these ideas start coming. And sometimes it’s work-related or even home-related, like ‘I’ve got to do this’ or ‘here’s an idea about this’ but I can’t capture it while I’m driving, but when I’m walking I [can do] that.” (Madison)

4.2 Sociodemographic Influences on Mode Choice

This study focuses on three sociodemographic factors that have the capacity to influence individuals’ mode choices, including income, age, and gender. These factors often intersect and collectively shape interviewee’s perceptions of different modes and influence their travel behavior.

4.2.1 Income

According to the interviews, the influence of income on mode choice is highly dependent upon the interviewee’s neighborhood. In the low and mid-density neighborhoods of Westchester and Exposition Park, respectively, travel behaviors are more parallel across income groups. In these neighborhoods, AT, particularly PT, accessibility varies widely, leading to high rates of driving in higher-income groups, and multi-modal behavior with an emphasis on driving more prevalent in lower-income groups.

However, in Koreatown where AT and PT are more accessible, these become the mobility tools of higher-income people. In Koreatown, those with lower incomes and more rigid jobs are more likely to drive, citing the perceived unreliability of PT.

4.2.2 Age

Age also plays a significant role in shaping interviewee’s travel behavior. Older adults tend to utilize driving as their primary mode of transportation, citing age-related challenges to walking and cycling. Matthew, 78, describes his experience with his physical health limiting his mobility:

“I haven't ridden bike in probably at least 20-30 years. I used to do it occasionally... and right now my knees are bothering me, so I don't know if I want to do it right now. So medium-short walks, like, less than a mile are about all I can handle... So, cycling right now? No.” (Matthew)

A high rate of driving behavior is compounded by the concentration of older adults in the car-dependent neighborhood of Westchester, where AT and PT access is limited. However, older Westchester residents describe walking for leisure and exercise:

“I love walking... I walk at the beach with friends on the weekends, 3-4 miles. I walk with friends in the neighborhood several times a week... it's pretty much all for leisure. Leisure, physical exercise, purposeful walking.” (Julia)

Younger interviewees express a higher propensity to utilize AT and exhibit multi-modal travel behavior. Amelia, a 25-year-old Koreatown resident states:

“To get around to work I usually drive between 15-35 minutes, and then to get around the neighborhood, to just go to a bar or to go out for the weekends, I'll usually take a bus or train.” (Amelia)

Younger residents who live in neighborhoods like Koreatown and Exposition Park are more likely to use AT when they are viable options, particularly for social or optional trips.

4.2.3 Gender

Gender also plays a strong role in shaping travel behavior and experiences, particularly in regard to safety perceptions among women. Women express more concerns about personal safety while walking and using PT, particularly at night. While a lack of safety on PT is a perception across genders, women more explicitly relate this worry to their gender:

“The subways... can be really sketchy and it's hard because you want to feel safe when you're a young lady and you're kind of small and it's just... kind of scary.” (Remi)

“Yeah I think just as a smaller woman anytime after like 9, 10p.m. I'm always a little wary of my safety solo.” (Catherine)

Remi goes so far as to note that she sees more men and less women walking around Koreatown at nighttime:

“It's pretty sketchy walking around... Outside is more of a man's space.” (Remi)

Among Exposition Park residents, this disparate safety perception leads women to use ride-share services at nighttime out of fear for their safety.

While all genders report feeling various levels of discomfort on PT, women report feeling unease at higher rates, and link it explicitly to their gender. In contrast, Luke acknowledged that his appearance as a tall man contributes to his sense of safety:

“I feel pretty safe using public transit, for the most part... I don't feel like I'm at a particular risk of being robbed or any kind of violence happening to me.” (Luke)

This is contrary to women such as Remi and Catherine who explicitly mention that being smaller women creates a sense of vulnerability not described by male participants.

4.3 Mode Choice and Health Perceptions

The interviews provide a look into the lived experiences of the interviewees, delving into how they perceive their physical and mental health in relation to their travel behavior. Across the sociodemographic spectrum and intersections of income, age, and gender, interviewees discuss the ways in which walking, cycling, public transportation, and driving impact their sense of well-being.

4.3.1 Physical Health Perceptions

According to the interviews, mode choice does not appear to have a large impact on interviewees' perceptions of their physical health, as those whose primary travel behavior is non-AT supplement their physical activity with non-travel exercise such as the gym, sports, or walking/cycling for leisure and exercise. Matthew, age 78, reports physical limitations impacting his ability to walk or bike:

“I have arthritis, bone on bone, and I've had surgery for torn meniscus [sic] on both my knees.” (Matthew)

“I had a mild stroke which affected just my right arm and leg, [the] right side of my body. Just physical stuff, not mental.” (Matthew)

Despite the difference in physical health due to aging in older adult populations, physical health perceptions remain consistent across sociodemographic groups regardless of their dominant mode choice. Residents across neighborhoods and sociodemographic groups report feelings of improved

physical performance after walking or cycling, regardless of its nature being leisure or transportation-related.

“I always feel better afterwards.” (Mayra)

“[Cycling] wakes me up and gets me in a good mood to start the day working, and then it’s a really good reset button, physically and mentally after I’m done working.”
(Luke)

Interviewees report feeling neutral about their physical health after using PT, but Luke acknowledged the AT component of PT:

“I think that’s one of the things I like about public transportation in general, is because it builds in that walking, even a short amount of walking, does kind of get the blood moving and makes me feel physically and mentally better.” (Luke)

While driving was mostly associated with mental health in the interviews, Luke did correlate driving to his physical health, both as a way of accessing physical activity and of hindering it:

“Driving makes me feel] pretty exhausted, typically. You know, one of the reasons I drive is to be able to do more physical activities. So that might be going on a run after work with my friends or disc golfing. And so it enables me to build in some more exercise, but the driving itself tends to make me physically worn out. It’ll often make my sciatic nerve or my hip or back hurt if I’m doing it for a long period. So, yeah, [it’s] mentally and physically much more draining.” (Luke)

4.3.2 Mental Health Perceptions

Walking emerged as a mode choice that many participants associate with improved mental health, even among those who walk for leisure or exercise rather than transportation. Nearly all interviewees report feeling happier and calmer after walking.

“I feel much better. I feel like I’m refreshed... I feel like it empties my brain of too many thoughts.” (Remi)

“I feel really good, lighter and brighter.” (Julia)

“I do some of my best thinking when I’m walking... I feel a lot more productive... the ideas flow.” (Madison)

According to the interviews, walking is a source of mental clarity, creativity, and rejuvenation.

Cycling was another mode choice that interviewees associated with positive mental health outcomes. Despite the perceived lack of safety on his bike, Joel says:

“The mental load while riding a bicycle is both very high and very low. You’re kind of coasting, but you’re also on faint threat assessment... your brain’s activated, but you’re also meditating.” (Joel)

Others note the positive mental effects of exercising on a bike, especially on bike-only routes such as exists at the beach, citing feeling happier:

“I love the endorphin rush. Being outside is so nice. I always feel better after I’m outside and working out.” (Adeline)

However, the “runner’s high” (Zahuk) of cycling is not enough for others to feel better after cycling, citing higher levels of anxiety and alertness required to safely cycle in their neighborhoods:

“If a bike and a car collide, the bike rider is going to come out second best.” (Matthew)

Overall, though, walking and cycling are reported as being a positive influence on interviewees’ mental health.

The influence of PT on interviewees’ mental health perceptions is mixed, with some citing the convenience and sense of community, and others noting safety concerns.

“I really love taking the metro in LA. I like being able to not have to pay attention like you do when you’re driving... I’ve met a lot of interesting people on public transit. [Striking] up conversations with people happens sometimes, and that’s always cool.”
(Mayra)

In Mayra's case, these serendipitous social encounters contribute to a sense of community and improved mental well-being. However, other interviewees express concerns over the safety and cleanliness of public transit, which they say negatively impacts their mental health:

"I feel frustrated usually. If it goes over well, you don't feel anything, right? Because public transportation infrastructure is supposed to be invisible until it stops working, which is maybe why I'm so frustrated all the time here." (Zhen)

Driving, while often seen as a necessity in Los Angeles, was associated with having a mostly negative impact on mental health, though some interviewees express an enjoyment of driving, citing enjoying having their own space:

"I think one of the other great things about having your own car and using your car is you're in control of that space. Completely in control of it, unless someone hits you. So that's kind of one of the gratifications or one of the plus sides of driving for me is I'm like, oh, nothing on the control freak. But it's nice. Like, you know, bus stops for every stop when you're in a car, like, I don't have to if you don't want to... It's your space, an extension of the home." (Zahuk)

However, others, including those who enjoy driving, express frustrations with other drivers which negatively influence their mental well-being, albeit temporarily.

"I do have road rage every now and then, which I never used to have until I...moved out here for a couple years. So that'll change my mood, but it's all. It stays in the car." (Zahuk)

"[Driving] just always feels really dangerous." (Amelia)

"I feel like once I arrive to a destination, I feel fine. But sometimes there are trials and tribulations getting there, which cause road rage and anger." (Adeline)

"One of the most frustrating things you can do in terms of getting yourself around LA is to drive." (Zhen)

"On the record, I do not like driving. I have car anxiety and would prefer not to drive." (Catherine)

It is clear from the interviews that despite all the cited benefits of driving such as convenience and speed, driving produces temporary negative emotions that are not in line with interviewees' overall perceptions of their mental health. While these feelings are described as “[staying] in the car” (Zahuk), driving is a distressing, anxiety and frustration-inducing experience.

5 Discussion

As seen in Chapter 4, there is a drastic variation in mode choice by neighborhood, and sometimes even within neighborhoods. However, certain truths stand out across interviews: public transportation is inconvenient and takes longer compared to driving, cycling is unsafe due to a fragmented cycling network, and walking is often unfeasible due to long distances caused by sprawl.

This chapter explores the results presented in Chapter 4 in greater depth, drawing on the qualitative data to illuminate the perspectives of residents as they navigate Los Angeles.

5.1 The Built Environment's Role in Shaping Mode Choice

The interviews of this study tapped into residents' understanding of their local BE from a non-planning perspective. By framing planning questions in simple, non-jargonistic language, interviewees were able to discuss the features of their neighborhoods and discuss their preferences and hopes for BE change. Their responses are consistent with the literature on the influence of the 5Ds (Ewing & Cervero, 2010). The interviews provide an understanding of this framework, contextualized to the unique case of Los Angeles, revealing how these dimensions interact to create a distinct mobility landscape and experience.

In the high-density, mixed-use neighborhood of Koreatown, the urban form making up what Newman et al. (2016) describe as a “walking neighborhood”, the density, land use diversity, and proximity to transit enable residents to meet many of their daily needs without reliance on a private vehicle. The concentration of housing, jobs, and amenities within such an environment creates a virtuous cycle of AT mobility behavior as residents are able to access destinations by foot or bike, or leave the neighborhood to venture into the broader city via the rail and bus network. As seen in Chapter 4, Koreatown residents exhibit a high degree of multi-modality not seen in the other case study neighborhoods. This finding aligns with the wide body of literature demonstrating the influence of density, land use mix, and transit accessibility on travel behavior and modal split (Cervero & Kockelman, 1997; Ewing & Cervero, 2010; Handy et al., 2006).

However, Koreatown's BE is far from perfect. The interviews reveal how the experience of navigating the streetscape by foot or bike is not always comfortable and stress-free. Interviewees express concerns regarding traffic safety, competing with vehicles for street space, and inadequate protected cycling infrastructure. Nonetheless, some Koreatown interviewees regularly use AT to travel to work and leisure, their concerns highlight the third dimension of Ewing & Cervero's

(2010) 5D framework, design, wherein the quality, connectivity, and human-centeredness of infrastructure and the broader urban fabric influence mode share of AT beyond the presence of high density and mixed-use zoning. Koreatown's urban form provides a strong foundation upon which to promote AT, but its streetscape and traffic planning still often prioritizes the movement and storage of private vehicles, creating a sense of vulnerability for those navigating the neighborhood via AT.

This suggests that walkability and bikeability require more than simply maintaining a certain level or combination of density and diversity, but a fundamental overhaul of street design and traffic planning that promotes the safety, comfort, and dignity of AT users over the speed and convenience of car traffic. This echoes the growing call for "complete streets" (Brown et al., 2016; McCann & Rynne, 2010; Zurborg, 2023), which describes rethinking urban environments with the intention of safety and inclusivity for all users regardless of age, ability, or mode choice. By reallocating street space to wider sidewalks, protected bike lanes, traffic calming measures, and pedestrian-friendly amenities such as benches, trees, and lighting, cities can create the conditions for providing more welcoming and safe AT.

The low-density, car-oriented BE of Westchester stands in contrast to Koreatown, presenting significant barriers to AT and PT use, as reflected in the interviews. With large distances between destinations, limited land use diversity, and infrequent transit service, residents are largely relegated to car dependence to meet their daily mobility needs. The dispersed, single-use BE creates a self-reinforcing cycle in which the lack of AT-accessible destinations and the lack of viable alternatives to driving make it difficult for residents to even consider getting around without a car (Newman & Kenworthy, 2006). This underscores the path-dependent nature of mobility and land use systems, as decades of car-oriented planning and investment have created a physical and cultural landscape in which driving is not only the dominant mode, but is the often the only practical option for most trips.

However, even in this context, the interviews reveal a latent desire among some residents for more walkable, human-scale environments. Several participants spoke of the pleasure they derive from walking for leisure or exercise within the neighborhood, even though utilitarian trips by foot are not often feasible. This suggests an intrinsic appeal to AT-friendly BEs that transcends pure transportation utility, reflecting the role of AT, especially walking, as a fundamental human activity which provides physical, mental, and social benefits (Gehl, 2010). While the low-density, sprawling BE of Westchester may limit the potential for walking as the primary mode of transport, there may

still be opportunities to enhance the pedestrian environment and create more appealing, accessible, and inclusive spaces for AT and community interaction.

The case of Exposition Park presents a more nuanced understanding of how the BE shapes travel behavior, reflecting its institutional and demographic context that stands out among other Los Angeles neighborhoods. As a major university district, home to the University of Southern California (USC), Mount Saint Mary's University, Hebrew Union College, and the Los Angeles Trade-Technical College, Exposition Park is home to a high concentration of students. The neighborhood exhibits some characteristics of a traditional urban environment, but is anchored by the AT-accessible USC campus. Many interviewees rely on walking, cycling, and public transportation for their daily commutes and trips to, from, and on campus, taking advantage of the short distances between classrooms, housing, and amenities, as well as direct connections to the rest of LA via the Metro E Line and buses.

However, the interviews reveal that this AT- and transit-oriented bubble is rather isolated from the surrounding urban fabric, which remains largely car-dominant and lacking in meaningful AT infrastructure. Interviewees expressed frustration with the challenge of safely and comfortably navigating the arterial streets that surround campus, with fast-moving traffic and infrequent crosswalks creating a hostile environment for AT. This highlights not only the importance of creating pockets of walkability as found on university campuses, but ensuring that these are well-integrated into a broader network of safe and accessibility AT infrastructure.

The case of Exposition Park underscores the role of the dimension of destination accessibility in shaping travel behavior, particularly for large trip generators such as USC. The concentration of activities and amenities within its campus and surrounding area creates a strong incentive for students and staff to live nearby, using AT and PT as their primary modes of transport. However, the interviews reveal that this is contingent upon the quality and connectivity of AT infrastructure beyond campus boundaries. Enhancing the safety and comfort of AT in the wider Exposition Park and surrounding neighborhoods can extend the benefits of USC's AT-friendly nature to an even larger geographic area and population.

Across the three case study neighborhoods, distance to transit emerges as a nonsignificant option due to the nature of LA's transit. All interviewees report having access to a bus stop or train station within a 10 minute walk from their home, but destination accessibility via PT is lacking. Distance to transit in LA does not appear to predict or influence PT behavior, as it retains a low modal split despite high accessibility to a PT access point. For the most part, interviewees report not being able

to access the things they need or want via public transportation, citing excessive wait times and inconvenient routes. This is compounded by the factor of safety, which emerged as a dominant driver (or gatekeeper) of PT use. Most interviewees, particularly women, report feeling unsafe on transit due to the prevalence and visibility of homelessness, drug use, and mental health crises.

Overall, the findings from these three neighborhoods provide evidence for the powerful influence of the BE on travel behavior and mode choice, while also revealing the complex, context-specific ways in which the 5Ds interact to shape residents' lived experiences of mobility. The interviews highlight how the presence of density, diversity, and destination accessibility can create the conditions under which AT and PT can thrive, but also how the design of AT infrastructure and the connectivity of the PT network are critical barriers to overcome in translating this potential into reality. This suggests that a holistic, multi-scalar approach to transportation and land-use planning is needed, one that not only focuses on the quantitative metrics of the BE but also the qualitative dimensions of how people actually inhabit these spaces.

5.2 Sociodemographic Influences on Mode Choice

The interviews also shed light on how sociodemographic factors such as income, age, and gender intersect with BE factors and transportation systems to shape mobility behavior and experiences. While the 5Ds provide a useful framework to understand the physical and spatial determinants of travel behavior, these findings suggest that these dimensions are not experienced uniformly across all sociodemographic groups but rather are mediated by identities and inequalities that confer differing levels of mobility privilege and disadvantage (Chauvin & Messina, 2021; Gould-Werth et al., 2018; Murphy et al., 2022).

Income emerged as a salient factor influencing interviewees' travel behavior, impacting both their mode choice and subjective experiences of different transportation options. The literature suggests that due to the high cost of car ownership, low-income groups are more likely to use AT and PT as their primary modes of transportation (Blumenberg & Agrawal, 2014; Murphy et al., 2022; Gould-Werth et al., 2018; Walks, 2018). However, in the case of Los Angeles, this theory appears to contradict the lived experiences of interviewees, as low-income interviewees reveal a higher degree of car dependence due to the fragmented and often unreliable nature of LA's AT and PT networks. In Exposition Park, lower-income residents often faced significant barriers to mobility due to the confluence of high car ownership costs and the reliability of public transportation. For these interviewees, transportation was often a source of stress as they struggle to cobble together a patchwork of modes and strategies to meet their travel needs.

In contrast, higher-income residents, particularly in the transit-rich neighborhood of Koreatown, have a greater degree of choice and flexibility in their mode choice. The ability to choose between walking, cycling, and public transportation based on their trip purpose creates a level of multi-modality not exhibited in the other case study neighborhoods. Interestingly, those Koreatown interviewees making higher incomes whose jobs come with greater flexibility are more likely to use PT than lower-income residents whose job security is more precarious. For these people, transit accessibility is framed as a lifestyle amenity rather than a necessity. On the other hand, lower-income residents in Koreatown and Exposition Park are often forced into car dependence despite relative transit accessibility. Due to the fragmented nature of LA's PT network, these interviewees must drive to employment in order to reach their destinations in a predictable and timely manner. This finding aligns with what is described in the literature as the phenomenon of "choice riders", often wealthy white-collar male workers who use PT and AT to reach their jobs by choice rather than necessity (Guerra, 2022). These high-income individuals often benefit from the proximity and convenience of these options in their gentrifying urban neighborhoods.

The interviews also reveal how the aforementioned dynamic of transportation privilege is not solely a function of income, but also intersects with the BE context of different neighborhoods. For example, in Koreatown, the density, diversity, and accessibility of frequent transit create the conditions under which higher-income residents can feasibly and comfortably live car-free or car-light lifestyles (Bass & Ferreira, 2020). In contrast, the experiences of Westchester interviewees demonstrate that without AT-accessible destinations and viable car alternatives, even higher-income residents are largely dependent on private vehicles to meet their transportation needs. This suggests that while income can be a powerful determinant of mode choice, its effects are dependent upon the BE characteristics of the neighborhood.

In addition to income, age is a second key theme that emerged from the interviews, particularly in relation to the unique mobility needs and challenges seen across various life stages. For younger residents, particularly those of university age in Exposition Park, AT and PT were often the primary modes of travel, reflecting both the options available in this neighborhood and the financial constraints and lifestyle preferences of this demographic. Many interviewees under 40 expressed a desire for more car-free, AT-friendly urban environments that prioritize social interaction, sustainability, and financial freedom over the convenience of owning a vehicle. Many of the interviewees under 40 have lived in dense, AT and PT-rich urban environments like Boston, Chicago, New York, Seattle, and Washington D.C., and express a desire for Los Angeles to follow in the footsteps of these juggernauts of North American urbanism.

On the other end of the age spectrum, the interviews confirm the unique transportation experiences and needs of older adults found in previous studies (Ramezani et al., 2021; Villena-Sanchez et al., 2022), particularly those aging-in-place in the low-density neighborhood of Westchester, whose experiences represent a departure from those of younger generations in Koreatown and Exposition Park. Many older adults express a strong attachment to their cars and the lifestyle it represents and facilitates, seeing it as a tool for independence, mobility, and social connection, even as they face increasing physical challenges driving. The lack of accessible and reliable transportation alternatives in Westchester often leaves older adults with limited options for mobility, particularly for those who are no longer able to drive safely.

This highlights the importance of considering the transportation needs of different age groups in planning and policymaking, and of creating BEs that support the mobility, agency, and inclusion of residents across the age spectrum. This includes providing transportation options for older adults, as well as designing AT-friendly streetscapes and public spaces that facilitate social interaction, physical activity, and community engagement (Loukaitou-Sideris et al., 2018). In creating more age-inclusive and equitable transportation systems that respond to the diverse needs of various age groups, cities can support the health, well-being, and quality of life of residents at every stage of life.

In addition to age and income, gender emerged in the interviews as another significant influence on transportation experiences and perceptions, particularly in relation to safety and comfort. Many female interviewees expressed heightened concerns about personal safety and vulnerability when using PT or walking alone at night, reflecting the well-documented “gender gap” in mobility experiences (Loukaitou-Sideris et al., 2017). In both the literature and the interviews, women report experiencing harassment or unwanted attention on PT or walking, especially at night, creating a sense of unease that limits mobility options.

In contrast, male interviewees often expressed a greater sense of confidence in using PT and AT, especially in situations that would be perceived as risky or uncomfortable by their female counterparts. This underscores the ways in which gender norms and gender-based power dynamics are deeply rooted in society, shaping the social and psychological experience of transportation systems. It also highlights the need for incorporating the gender lens into mainstream planning and policy, as recognizing the unique mobility needs, challenges, and perceptions of women and gender minorities can be a step toward increased gender equity.

Overall, the sociodemographic findings of this study underscore the importance of accommodating the diverse—and often divergent—transportation needs, perceptions, and experiences of different

sociodemographic groups in planning. While the BE does indeed play a critical role in shaping travel behavior and outcomes, these effects are neither deterministic nor uniform, rather dictated by the sociodemographic identities which structure modern urban life. Creating a more just transportation system thus requires not only a shift in the path-dependent paradigms upholding car-centric planning, but also addressing and transforming the broader social and political structures which uphold transportation inequalities across lines and intersections of income, age, and gender.

5.3 Mode Choice and Health Perceptions

The interviews also provide insight into the complex and multifaceted ways in which mode choice intersects with physical and mental health perceptions. While the relationship between BE, travel behavior, and health is well-established in the literature, this study offers a nuanced and contextualized understanding of how these connections are lived and perceived by residents.

One of the key themes emerging from both the literature and the interviews is the role of AT in promoting positive physical health perceptions. Many participants who regularly use AT for utility or recreation report feeling more energized and healthy as a result, citing benefits such as improved cardiovascular health, weight management, and stress reduction. This aligns with an ever-growing body of research highlighting the positive correlations between AT and various health outcomes, such as increased physical activity levels and the reduced risk of obesity and chronic disease (Flint et al., 2014; Larouche et al., 2014).

However, the interviews also reveal how the relationship between AT and health is not always straightforward or unidirectional, but rather can be shaped by a complex interplay of individual, social, and environmental factors. For some interviewees, especially older adults and those with mobility limitations, AT did not provide the positive benefits it does for others. For these residents, AT can be a source of pain or discomfort, particularly in BEs where AT infrastructure is inadequate. This underscores the importance of creating safe, accessible, and comfortable environments which accommodate the needs of a diverse populace, highlighting the importance of design implementations such as wide, well-maintained sidewalks, protected bike lanes, and frequent seating and rest areas.

The interviews also highlight the impact of travel mode choice on mental health perceptions, with many interviewees describing the psychological benefits and stressors associated with various modes. Walking and cycling were often framed as restorative and mentally refreshing, providing a chance for interviewees to be with their thoughts and ground themselves in the present, with many

regarding these trips as therapeutic. These benefits were absent from the more passive and isolating experience of driving. This finding resonates with other research on the mental health benefits of AT, such as reduced symptoms of depression and anxiety, improved mood, and enhanced cognitive function (Avila-Palencia et al., 2017; Avila-Palencia et al., 2018; de Geus et al., 2007; Humphreys et al., 2013; Martin et al., 2014).

The interviews also reveal how the mental health impacts of travel mode can vary widely depending on the social and environmental context of different modes, aligning with literature regarding the impact of perceptions and preferences on shaping mode choice (Bagley & Mokhtarian, 2002; Ettema & Nieuwenhuis, 2017; Handy et al., 2005; Kitamura et al., 1997). For some, the experience of driving in congested or aggressive traffic, and struggling to find parking at their destination was a significant source of stress, frustration, and anxiety. However, others are not as bothered by these factors, seeing the privacy and control afforded by their car as outweighing the negative attributes of driving. Similarly, while some interviewees found PT to be a relaxing and socially engaging mode of travel, others described feeling unsafe and uncomfortable, particularly in situations of overcrowding and uncleanliness.

These findings suggest that the mental health implications of mode choice are not shaped by the mode itself, but rather by the confluence of individual preferences, social norms, and contextual factors that define the quality of the travel experience. In Los Angeles, and in North America more broadly, the contextual factors of our BEs have engrained in the popular imagination a romanticization of car use and a negative connotation surrounding other modes, perhaps creating a self-enforcing cycle perpetuating subpar AT and PT infrastructure. Creating transportation systems that support mental health and well-being thus necessitates the optimization of the efficiency and functionality of different modes, but also the personalization of the social and psychological elements of the travel landscape, including perceptions of safety, comfort, autonomy, and belonging (Delbosc, 2012).

The interviews also highlighted the importance of considering the health impacts of different mode choices beyond just the direct individual effects, but also on the broader community-level consequences of different transportation systems and land use patterns. Many participants expressed concerns about the negative externalities of a car-based transportation model such as noise, air pollution, and traffic injuries. These concerns echo the growing calls in public health literature for “upstream” interventions that address the systemic determinants of health such as land use policy, transportation investments, and urban design standards (Northridge & Freeman, 2011).

The information arising from the interviews affirms previous studies and historical accounts of the implications of planning and policy in regard to how the uneven distribution of transportation networks across neighborhoods can, and has, exacerbated health disparities. For example, as mentioned in Chapter 1.1, low-income and minority communities across Los Angeles have been disproportionately impacted by the negative health effects of transportation infrastructure, leading to higher rates of asthma and pedestrian and cyclist injuries and fatalities (Houston et al., 2004; Mizdrak et al., 2023; Schwanen & Nixon, 2020). These communities have also been historically underserved by investments that could improve health outcomes, such as investments in safe and accessible AT, PT, and green space (Baciu et al., 2017).

Addressing these disparities will require a more holistic and community-centered approach to planning, one that prioritizes the needs and perspectives of historically marginalized groups while actively focusing on reducing said disparities. Further research should delve further into qualitatively studying travel behavior to better understand the perspectives and lived experiences of the people affected by decades of disinvestment and disparity. This shift represents a departure in the focus of the academic side of mobility transitions, as studies too often focus purely on data and neglect the people behind the numbers. Rethinking our car-centered mobility paradigm will require radical shifts across fields and sectors in order to meet equity and climate goals, so the research powering these transitions should reflect their upending nature.

6 Conclusion

The findings from this study have several implications for transportation policy and planning in Los Angeles and beyond. First and foremost, the interviews underscore the need for a more holistic approach to transportation and mobility that recognizes the complex ways in which mobility intersects with land use, urban design, public health, and equity. For too long, transportation planning has been disconnected from these fields with a narrow scope of moving vehicles efficiently rather than considering its role in creating healthier and more equitable communities. The experiences and perspectives shared by the interviewees suggest that a paradigm shift is necessary in transportation planning, one that puts people at the forefront of the process to create BEs that are safe, accessible, and vibrant, and that support active lifestyles and social engagement.

One key implication of this study is the necessity of investing in AT infrastructure and programs that make AT safer, more convenient, and more enjoyable for people across sociodemographic groups. This includes not only the classic examples of building more sidewalks and (protected) bike lanes, but also more subtle implementations like shade trees, benches, and wayfinding measures that enhance the comfort and legibility of the AT network. Additionally, policies and programs that encourage AT such as safe routes to school initiatives, bikeshare systems, and incentives for using AT for commuting can help to normalize AT by building a broader culture of active mobility and making these modes more accessible to a wider range of users.

Another key policy implementation is the need to prioritize PT investments and service improvements that make buses and trains more reliable, efficient, and appealing to (would-be) riders. All interviewees noted the perception of inconvenience and safety concerns, highlighting the necessity not only of extending the geographic coverage and frequency of transit service, but also enhancing the quality and safety of the PT experience through measures like dedicated bus lanes, real-time travel information, clean and well-maintained stations and vehicles, and increasing the presence of personnel to deter antisocial behavior. This also includes improvements regarding the integration of last-mile connections such as improved AT infrastructure around transit stops, as well as mobility hub concepts providing easy transfers between PT modes.

Heartening to note is the resounding passage of Los Angeles' Measure HLA in March 2024, which will lead to the rollout of complete streets across the city over the coming years. The measure requires the city to redistribute street space for AT and PT every time a street is due to be resurfaced, a tremendous undertaking that will reimagine the BE of Los Angeles (Hetrick, 2024). These changes include sidewalk widening, protected cycling infrastructure, and increasing the

prevalence of dedicated bus lanes. The passage of this initiative and the voting of pro-transit city officials prove that it's not just in interviews that LA residents express desire for revolutionary change in their BE and transportation system, but also at the ballot box. In the coming years, LA will be hard at work to better meet the mobility needs of its residents by implementing the AT network interviewees expressed a strong desire for.

In addition to transportation-specific interventions, this study's findings also highlight the importance of land use and design policies that support the creation of more dense, mixed-use developments that support AT. This includes the redesign of zoning regulations to allow for higher densities and a greater mix of functions. As discussed in their book *Retrofitting Suburbia* (Dunham-Jones & Williamson, 2011), low-density suburbs like Westchester are not lost causes, and change is already stirring. In response to its housing shortage, the City of Los Angeles has introduced a policy of "upzoning" as a way to increase housing and population density in low-density neighborhoods. This plan aims to provide around 255,000 low and middle-income units across the city by 2029 (Sharp, 2024). Westchester can use this plan to its advantage by concentrating construction around nodes of the newly constructed Metro K Line light rail to simultaneously increase its housing stock and improve transit ridership. However, Westchester interviewees express discontent with these changes, highlighting the necessity of working more closely with residents to realize projects that meet development goals while appeasing the people they affect.

Income, age, and gender are shown to be salient factors shaping residents' travel behavior, experiences, and perceptions, often in complex and intersecting ways. For example, while higher-income residents in transit-rich Koreatown enjoy a high degree of flexibility in regard to mode choice, their counterparts in Westchester remain car dependent. The interviews also reveal the unique mobility challenges faced by women, who often experience heightened personal safety concerns in using PT or walking alone at night. These findings underscore the need for transportation policies and investments that prioritize the needs of historically marginalized and underserved populations, and actively work to reduce existing disparities in mobility and health outcomes. This includes focusing transportation resources and services to low-income neighborhoods that have historically faced under- and disinvestment, such as through community-based planning, participatory budgeting structures, and workforce development programs aimed at providing jobs in transportation construction and operations (Bernaciak & Bernaciak, 2019). This also includes implementing more equitable transportation pricing mechanisms such as progressive fare structures and expanding discount transit cards to wider swaths of the population.

This study also provides insight into the ways in which mode choice affects physical and mental health perceptions. Many interviewees who regularly use AT report feeling more energized, less stressed, and generally healthier. However, the relationship between AT and health perceptions is not always straightforward, particularly in older adults and those with mobility limitations who find walking and cycling to be a source of discomfort. The interviews also highlight the mental dimension of travel experiences, with driving being overwhelmingly associated with feelings of stress and frustration, while AT modes are seen as mentally restorative and therapeutic.

In advancing its policies and planning with greater synergy, LA can work toward creating a more sustainable, equitable, and healthy transportation system that serves the needs of all of its residents. This requires a fundamental reorientation of transportation-related decision-making processes which prioritize the lived experiences of our diverse populace, elevating the voices of those who have historically been excluded from these conversations. This also requires a higher degree of collaboration and experimentation with the recognition that there is no one-size-fits-all solution to these complex challenges; context-sensitive and community-driven approaches responding to the unique challenges and opportunities of different people and places are imperative to realizing these goals.

Ultimately, the goal of 21st-century North American transportation planning and policymaking should be to create more just and sustainable urban environments that ensure residents have access to safe, reliable, and affordable mobility options that are as diverse as the communities they serve. The insights provided by the interviewees in this study provide a valuable starting point for envisioning and realizing this future. By grounding our planning and policymaking in the lived experiences of the people who rely on these systems every day, we can utilize collaborative learning to translate their insights into actionable policies which promote equitable and thriving transportation systems for future generations.

6.1 Limitations and Recommendations for Future Research

Due to the high levels of difference across a variety of metrics exhibited by neighborhoods across Los Angeles, the three case study neighborhoods are solely proxies for the study metrics and are not necessarily completely representative of the city or region as a whole. Future research should study other neighborhoods to see if the patterns found in this study hold true in other Los Angeles contexts.

Additionally, future research should seek to further our understanding of other sociodemographic categories that may influence findings to further encapsulate the enormous diversity of Los Angeles. By adding categories such as race, immigration status, country of origin, US state of origin, and/or educational attainment, other studies can better reflect the diverse people of Los Angeles. This study skewed toward people with higher educational attainment and higher incomes. Additionally, conducting similar studies in different languages could widen the scope and scale of understanding on this topic. According to the 2020 Census, there are over 224 languages spoken across Los Angeles. In fact, according to the 2022 American Community Survey, 56% of households speak a language other than English at home. Academic research should reflect this linguistic and cultural diversity through representation.

Finally, with qualitative travel behavior studies being an emerging field of literature, future research should focus on expanding upon this by conducting larger scale data collection at the individual level. This also has the potential to be more representative, as there is more room for diversity across broader socioeconomic categories.

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Appendices

1 Qualitative Semi-Structured Interview Guide

Introduction

Short introduction about myself, my research, and the expectations for this interview.

Section 1: Sociodemographics (Based on Handy et al., 2006 and Stecher et al., 1995)

- Can you tell me a bit about yourself?
 - Age, gender, race/ethnicity, etc
- How many people in your household?
- What is the highest level of education you've completed?
- Can you share information about your current employment status?
- Where do you currently reside?

Section 2: Travel Behavior (Based on Handy et al., 2006)

- Can you walk me through a typical day in terms of how you get around and the modes of transportation you use?
- How do you feel about cycling?
- Do you prefer to bike rather than drive when possible?
- What are your thoughts on walking?
- Do you prefer to walk rather than drive when possible?
- How do you feel about using public transit?
- Do you prefer to take public transit rather than drive when you can?
- Do you or someone in your household own a vehicle? If so, how often do you use it for daily commuting or errands?
- What are your general thoughts on driving versus other modes of transportation?
- How safe do you feel driving compared to cycling, walking, or using public transit?

Section 3: Neighborhood Characteristics (Based on Cerin et al., 2006 and Inoue et al., 2009)

Density

- How would you describe the main type of housing in your neighborhood?

Diversity

- How accessible would you say the places you need to go are from your home, whether by walking, cycling, or public transit?

Design

- What infrastructure does your neighborhood have for biking and walking, such as bike lanes, paths, and sidewalks? Are there any major barriers that make active transportation difficult?

- How easy do you find it to access parks, public spaces, and other amenities from your home?
- What is the distance like between intersections in your neighborhood?

Destination Accessibility

- How difficult to you find it to get where you need to go?
 - Biking, walking, public transit, driving
- Do you feel like you can choose *how* you get where you need to go?

Distance to Transit

- How accessible would you say public transit is from your home?

Safety

- How safe do you feel in your neighborhood, especially when walking alone at night or during the day?

Section 4: Health and Well-being (Based on RAND-36 Survey)

- How would you rate your overall physical health, and what factors contribute to that assessment?
- How would you rate your overall mental health, and what factors contribute to that assessment?
- How has your physical health impacted your ability to do various activities over the past 4 weeks?
- How has your mental health impacted your normal social activities or work over the past 4 weeks?
- How do you feel physically/mentally after cycling?
- How do you feel physically/mentally after walking?
- How do you feel physically/mentally after using public transit?
- How do you feel physically/mentally after driving?

Additional Comments

- Is there anything else you would like to share about your experience with active travel, your neighborhood, and/or your health and well-being?

2 Recruitment Flyer

Travel Behavior and Health Study

University of Groningen | Participate Remotely or In-Person



More about this study

I'm a Master's student researching travel behavior and health perceptions among Los Angeles residents. I'd love to hear your story about how you get around and how you feel about your health.

Who can participate?

Residents of Exposition Park, Koreatown, and Westchester

What can I expect?

Just a short, anonymous conversation (about 30 minutes), either in-person or remotely via phone or Google Meet.

Send me an email or scan the QR code if you're interested:

jamesclark@onmail.com

Scan to register



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