BOLSTERING MOBILITY AND ENHANCING TRANSPORTATION OPTIONS FOR LOW-INCOME OLDER ADULTS

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EXECUTIVE SUMMARY

This study explores the travel patterns, needs, and mobility problems faced by diverse low-income, inner-city older adults in Los Angeles in order to identify solutions to their mobility challenges. The study draws information from:

1. a systematic literature review of the travel patterns of older adults;
2. a review of municipal policies and services geared toward older adult mobility in six cities;
3. a quantitative analysis of the mobility patterns of older adults in California using the California Household Travel Survey; and
4. empirical work with 81 older adults residing in and around Los Angeles' inner-city Westlake neighborhood, who participated in focus groups, interviews, and walkabouts around their neighborhood.

LITERATURE REVIEW

Physical health and other factors, such as perceptions of safety, the availability of transit, the proximity of shopping and social opportunities, affect the mobility and travel patterns of older adults. Limited mobility negatively affects social relationships among older adults by reducing opportunities to socialize and often by forcing them to rely on others for assistance in order to reach important destinations. Social and recreational activities are one of the least common trip purposes of older adults. Aspects of the built environment may also encourage or impede older adult mobility. One such aspect is safety: older adults face greater vulnerability to accidents and crimes than the rest of the population.

The literature review revealed that the personal automobile is the most common form of mobility for older adults, but the ability to drive decreases with age and is dependent on economic resources. While an alternative to driving, public transit use presents a number of challenges for older adults. Differences in travel patterns exist between older men and women, low- and high-income older adults, and urban-dwelling versus rural-dwelling older adults. Low-income, older adults, especially older women, use cars less, public transit more, and are more commonly passengers than drivers, when compared with higher-income younger adults.

Municipal Policies

Cities and other local governments have an important role in enhancing the mobility of older adults. An examination of municipal policies and services in six cities—Los Angeles, New York, Chicago, Houston, Phoenix, and Miami—showed that they have a variety of programs targeting the mobility of older adults, but in most cases, these programs are highly fragmented: Multiple agencies provide overlapping fixed-route and demand-responsive services, whose funding sources and fare structures vary considerably. In the absence of clear data on the costs and benefits of different programs, it is difficult to reach evidence-based judgments as to which are the most valuable. Moreover, the different sources of funding for these programs and the various legal obligations (i.e. ADA, the Willets settlement for sidewalk repairs in Los Angeles) further complicate assessments of what works and what doesn't. The high-level cooperation engendered by the Purposeful Aging initiative may give Los Angeles and Southern California the necessary impetus to shape these disparate efforts into a coherent, thoughtful strategy for improving the lives of Los Angeles's older adults.

California Household Travel Survey

Analysis of data from the California Household Travel Survey showed that older, inner-city, low-income, minority residents of Los Angeles take shorter, more frequent trips than older adults living outside the inner-city. They walk and use transit at higher rates and drive less than older adults living outside the inner-city, and less than the Los Angeles County average. They also exhibit much lower rates of car ownership than older adults living outside the inner-city, who have higher incomes. Driving behavior is most different for the "old-old," as people age 80 and older take fewer and shorter car trips, are less likely to own vehicles, and are much more likely to travel as passengers than to drive themselves. Gender affects driving behavior among the "old-old." Men who are age 80 and older are much more likely to be licensed to drive compared to women.

EMPIRICAL RESEARCH

The study gained valuable insights from 81 older adults living in Los Angeles inner-city neighborhoods. These research participants were largely able to accomplish their daily needs but often endured long transit trips and uncomfortable or scary walking environments that made their travel unpleasant. Many people voiced significant concerns about physical and social hazards that could cause them to trip and fall, significantly reducing their independence and quality of life.

We found that walking in and around their neighborhoods is the primary mode of transportation for these older adults. But while there are many retail and service establishments in close proximity to their residences, significant physical and social impediments constrain their mobility. These older adults also use public transit to reach more distant destinations, but encounter some significant hurdles when doing so. A very small number of study participants owned cars and, thus, at times had to use other point-to-point travel services. Such use is constrained by finances (in regards to taxi or ride hailing services), lack of competency with technology (to order ride hailing services), as well as scheduling and regulatory constraints that characterize the city- or county-subsidized paratransit services.

Mobility constraints affect the number and frequency of trips that these older adults take. In particular, differences exist among study participants in regard to social and recreational trips. Study participants fell into two categories: those visiting St. Barnabas Senior Services (SBSS) and those not doing so. The two groups exhibited somewhat different travel patterns, largely attributable to the different extent of their social engagement. Attending SBSS seemed to be correlated with a larger number of daily trips and with a higher likelihood of making social and recreational trips.

RECOMMENDATIONS

After taking into consideration the state of knowledge and practice and our own empirical work, we arrived at a set of recommendations to policymakers, including which agencies might be responsible for implementing them. The recommendations section also includes separate recommendations for researchers looking into older Americans' mobility. The following recommendations to policymakers seek to improve the mobility and quality of life of older adults living in inner-city areas.

STREETSCAPE IMPROVEMENTS

- Regularly clean trash and power-wash sidewalks, remove graffiti, and add trash cans.
  Responsible agency: Department of Sanitation / CleanStreets LA Program.

- Prioritize fixing cracked sidewalks and intersections in inner-city areas, especially in neighborhoods with high concentrations of older adults. Make the submission and repair request process user-friendly, since older adults in inner-city areas have less internet access and English proficiency than others.
  Responsible agency: Bureau of Engineering.

- Add benches at bus stops and at sidewalks.
  Responsible agency: Los Angeles Department of Public Works.

- Plant street trees for shade along inner-city streets that lack many trees. Choose tree species, whose roots do not damage sidewalks, and whose foliage does not hinder motorist visibility.
  Responsible agencies: City Plants, Department of Public Works, Urban Forestry Division, Bureau of Street Services.

- Ensure unobstructed passage by designating a band of the sidewalk as a throughway zone for pedestrian movement.
  Responsible agency: Bureau of Street Services.

- Remove sidewalk obstructions such as non-operational payphones or newspaper stands that present impediments for walking on narrow sidewalks.
  Responsible agency: Bureau of Street Services.

- Install signs, speed bumps, colored pavement, or mirrors in commercial areas with large pedestrian and vehicular volumes to make drivers lower their speed as they enter or exit driveways and to be aware of pedestrians at these dangerous spots.
  Responsible agency: Bureau of Street Services.

- Prioritize neighborhoods having high concentrations of older adults for installation of pedestrian-scale lighting on sidewalks, near bus stops and other destinations popular among older adults.

- Perform traffic studies to determine how to increase the amount of time allowed for crossing the street by increasing the length of traffic signal walk cycles or installing

leading pedestrian intervals at intersections near senior housing locations and other common destinations frequented by older adults.
Responsible agencies: Los Angeles Department of Transportation and Caltrans.

- Continue to implement scramble (diagonal) crosswalks where pedestrian volumes are high and vehicular flows permit.
Responsible agency: Los Angeles Department of Transportation.

PUBLIC TRANSIT IMPROVEMENTS

- Post information about bus schedules at locations frequented by older adults. Widely advertise ways to access real-time bus arrival information through postings in several languages in large fonts with highlighted call-in information numbers.
Responsible agencies: Los Angeles Department of Transportation (for their DASH service), LA Metro, other transit operators.

- As transit agencies purchase new vehicles, they should consider bus design modifications that can improve senior mobility. Because such modifications will likely reduce the seating capacity of buses, the transit agency could deploy specially retrofitted buses during non-rush hours, when many older adults travel.
  - Create areas for wheelchairs and the placement of grocery bags in the bus.
  - Continue highlighting priority seats for older adults.
  - Encourage bus design modifications that can better bridge the space between the vehicle and the sidewalk curb, without requiring the deployment of a ramp.

- Increase bus driver awareness of older adult mobility needs, and satisfy their requests to stop the bus as close to the curb as possible.
Responsible agencies: Metro, LADOT (for Dash service) and other municipal transit operators.

- Improve enforcement to reduce vehicles blocking bus stops, because obstructed bus stops make stopping close to the curb more difficult.
Responsible agency: LAPD Traffic Division.

- Make it less intimidating for older adults to ask drivers to deploy the ramp by placing a sticker or icon or a request button near the bus door that would allow people, including those with limited English proficiency, to ask for this service.
Responsible agencies: Metro and other municipal transit operators.

- Move bus stops closer to concentrations of residences of older adults and closer to common destinations for older adults.
  Responsible agencies: Metro and other municipal operators.

- Consider concentrations of older adults in a neighborhood as one of the criteria for the installation of bus shelters, benches, and pedestrian lighting at bus stops.
  Responsible agencies: Bureau of Street Services, Bureau of Street Lighting.

POINT-TO-POINT TRANSPORTATION SERVICES

- Encourage ride hailing companies to study the market of low-income older adults who are concentrated in inner-city areas. Initiate pilot programs to evaluate how to make point-to-point services more accessible.
  Responsible agencies: LA Department of Transportation, working in conjunction with ride hailing companies.

- As more cities experiment with and pilot-test new mobility services such as on-demand transit or car sharing, they should incorporate older adult needs to assess their promise for improving mobility for low-income older adults.
  Responsible agencies: LA Metro and LADOT.

- Increase access to taxi vouchers for very low-income older adults by restructuring the Access LA program.
  Responsible entity: Access LA.

- Widely advertise recently unveiled real-time tracking information for Access LA paratransit services, making it clear that people without smartphones can access this real-time information.
  Responsible entity: Access LA.

- Encourage Access LA to take advantage of current transportation options by exploring opportunities for agreements with ride hailing provider companies that may be able to dispatch cars on demand more quickly and efficiently.
  Responsible entity: Access LA.

MOBILITY COMPLEMENTARY IMPROVEMENTS

- Encourage supermarkets to explore possibilities of delivering groceries at modest cost for low-income older adults, in neighborhoods with high concentrations of senior housing.
  Responsible entities: Area supermarkets and Purposeful Aging Los Angeles Initiative.

- Encourage the establishment of telehealth stations at common destinations such as senior centers or local pharmacies.
  Responsible entities: Purposeful Aging Los Angeles and the Department of Aging and Adult Services.

- Bring medical care closer to older adults by locating basic medical services (such as immunizations, wellness screenings, and treatments for minor illnesses) in drug stores or other frequently visited retail locations.
  Responsible entities: Los Angeles County Department of Public Health; Purposeful Aging Los Angeles; CVS, Target, etc.

- Find opportunities for increased internet access in common spaces of residential developments that accommodate high concentrations of low-income older adults.
  Responsible entities: Purposeful Aging Los Angeles and the Department of Aging and Adult Services.

SAFETY IMPROVEMENTS

- Encourage the Los Angeles Police Department to expand its "foot beats" and community policing efforts, especially in high-crime areas in which there are concentrations of older adults, and have police officers patrol sidewalks on foot or bicycle rather than driving by in cars.
  Responsible agency: LAPD.

- In areas having high concentrations of homeless individuals, employ the services of social workers to address the issue through a social lens and engage social workers to help them.
  Responsible entities: Department of Aging, People Assisting the Homeless (PATH) and Los Angeles Homeless Services Authority.

- Support neighborhood safety programs that provide a variety of neighborhood safety improvements in areas having high concentrations of older adults.
  Responsible entities: Coalition of public sector, neighborhood groups and philanthropic interests.

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INTRODUCTION

INTRODUCTION

Over the next 20 years, California's population over age 65 is expected to grow from 14 percent to 23 percent of the state's population. This population will be more racially and ethnically diverse and more independent than older adults in years past.[1] As such, planning for future older adults will need to take different considerations into account. With more older adults residing in urban areas and outside of nursing homes and care facilities, the need to plan cities in age-friendly ways is of critical importance. Therefore, understanding this topic and turning knowledge into action can shape "age-friendly" efforts, and in turn support older adults in enjoying the highest quality of life in California cities and in cities around the nation.

Age-friendly cities are places where the social and physical environment allows older adults to age-in-place comfortably and actively. The social environment, composed of social relationships and networks, enables social participation, satisfying foundational needs such as respect and civic involvement, as well as employment opportunities, community support and health services. The physical environment, composed of buildings, streets, public spaces, and other urban artifacts, allows people to move freely and safely, and enables many aspects of the social environment to thrive.

For many older adults, the ability to participate in the social environment is dependent on the physical environment and the extent to which it enables mobility. For example, a city could invest time and energy designing and constructing a park specifically for older adults, with appropriate seating and other amenities and programming. But, if older adults cannot physically access the park, they are unintentionally excluded from this space. In many ways, transportation is the tissue that connects people to their physical and social environments. This research focuses on transportation and physical mobility for low-income older adults who live in dense urban areas of the inner city. We wanted to know:

- How do they move about in their neighborhoods and city to accomplish their daily needs, and what challenges do they face doing so?
- How do they connect with their social networks, and how do they access other needs and services such as healthcare or recreation?

Los Angeles's unique topography, geography and history contribute to the challenge of aging in place. While Los Angeles has a central core, the city and county are much more sprawling compared to New York or Chicago, for example. The size and urban form of the city means many services and facilities are quite dispersed in the metropolitan landscape. As household sizes are shrinking, and people are increasingly relying on private automobiles, older adults face more obstacles to connect to family, employment, social and healthcare networks. Family members living in Los Angeles County could be a three-hour drive from each other. Lower income residents without personal transportation can endure lengthy trips or forgo this travel altogether.

Social isolation is on the rise nationally.[2,3,4] While we do not have specific estimates of the number of socially isolated older adults in Los Angeles, we do know that a number of risk factors for social isolation are prevalent here. In Los Angeles, 42% of older adults live alone, a third of older adults speak English "less than very well," and poverty among older adults is increasing.[5] Further, limited housing availability and transportation access pose challenges to many Los Angeles neighborhoods. These challenges create risk factors for social isolation among older adults, in particular.
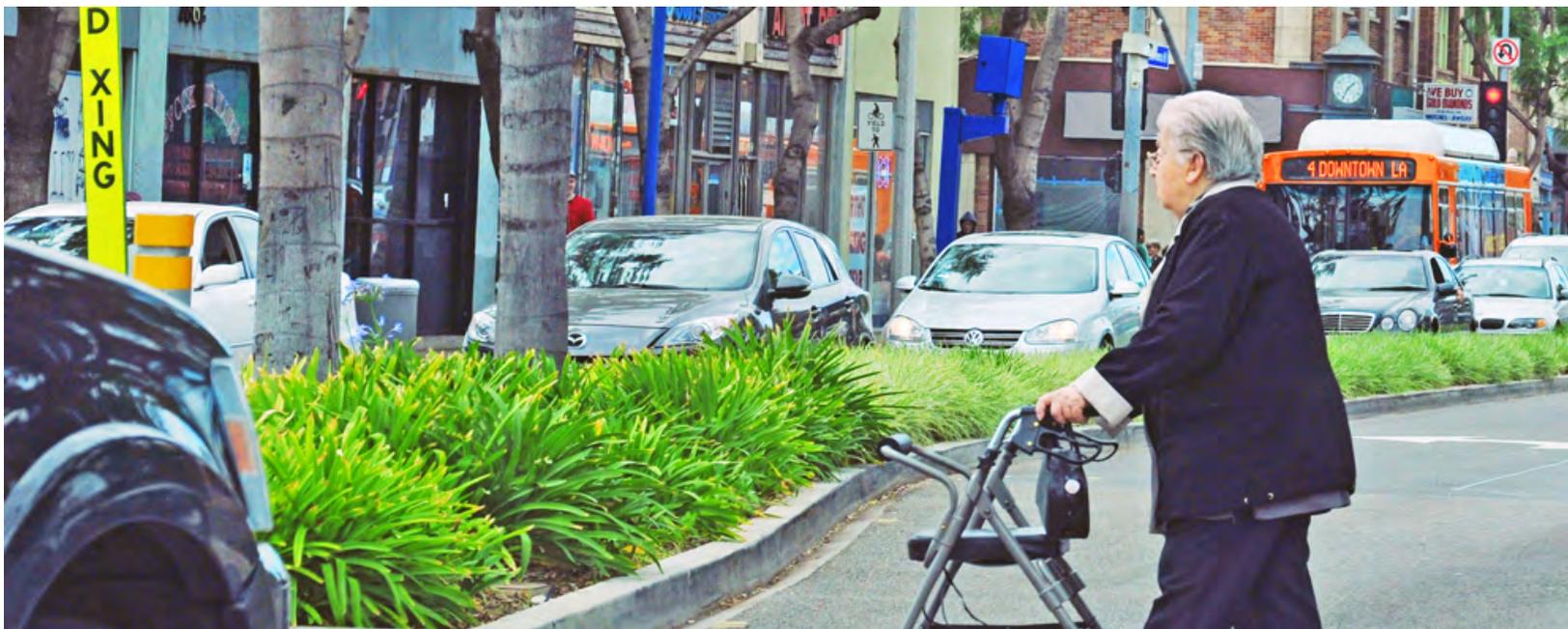
Why study the mobility of older adults?

Physical mobility declines with age. But, moving around a neighborhood or a city involves more than one's physical abilities. Mobility encompasses driving, walking, biking, using public transportation and other transportation options such as community vans and taxis.[6] Being mobile is particularly important for older adults because it helps counteract their isolation and social exclusion and allows them higher levels of social participation and integration in everyday life and civil affairs. The design and delivery of transportation systems affect physical mobility, and for this reason, transportation constitutes one of the eight domains of age-friendly cities, according to the World Health Organization.[7]

Unfortunately, however, transportation systems in large U.S. cities have rarely been designed with older adults in mind. And while cities have to comply with the Americans with Disabilities Act (ADA) standards, these often only meet the bare minimum needs for older people. Consequently, older adults face mobility challenges more frequently than other age groups.[8] This is particularly true in Los Angeles, where access and use of other transportation modes is particularly challenging in many areas of the city, especially for older adults.
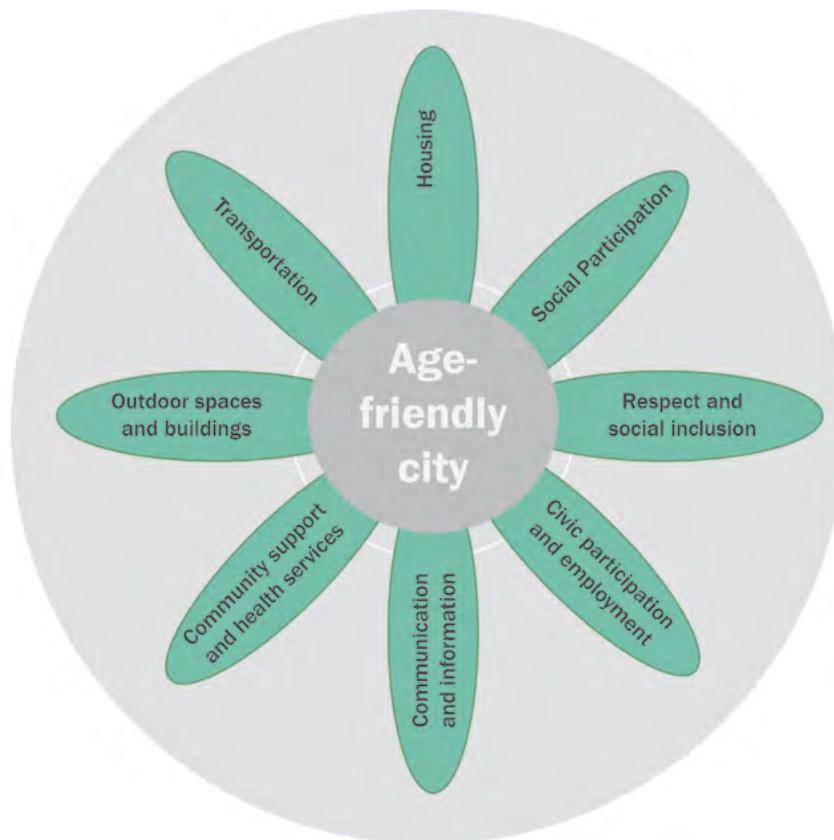
Figure 1: *Components of an age-friendly city*

Low-income individuals of all ages often face significant and unique mobility challenges stemming from their lack of economic resources.[9] They typically experience lower levels of car ownership, increased reliance on public transit, and fewer housing options as they age, although income is more influential than age. For this reason, low-income, older adults are one of the most mobility-limited groups in America.

As people age, their access to and use of different travel modes changes, often resulting in decreased opportunities to connect to social relationships and participate in social life. Significant implications emerge: when constrained by a lack of transportation options, older adults often experience a decline in their quality of life and deterioration in lifestyle.[10] Reduction in mobility not only leads to a decrease in participation in out-of-home activities but may also result in depression and institutionalization.[11]

For older adults, the ability to complete many activities of daily living hinges on maintaining their mobility. But older adults with lower physical stamina sometimes find walking and using public transit physically and emotionally strenuous. Not surprisingly, then, the vast majority of independent and mobile older adults rely heavily on private automobiles, as they lose their ability to walk to transit stops earlier than they lose their ability to drive a car.[12] Income, however, affects access to automobiles, and low-income older adults have the least access to private vehicles.

Older adults express concerns over their safety and comfort while traveling more than younger adults.[13] When making trips, they face particular difficulties accessing and using public transportation. Particularly important barriers for older adults include:

1. Physical barriers;
2. Psychological barriers (such as fear of transit, fear of tripping and falling, fear of crime, etc);
3. Barriers to information exchange including the use of technology.[14]

For walking trips, physical barriers, such as poorly maintained sidewalks and crosswalks, inadequate lighting, lack of mid-intersection pedestrian refuges, and traffic signals that allow a short time for slow walkers to cross combine to create a challenging environment for older adults.[15] Mobility barriers and difficulties using public transit often force them to turn to costly (for municipalities), demand-response paratransit services, and expensive (for low-income older adults) private services such as taxis.[16, 17]

A number of factors influence the diversity of older adult travel patterns and mobility levels.[18] Obviously, income affects travel patterns since higher income groups can afford more transportation options (e.g., taxis, on-demand transportation network company services, and chauffeurs). Within similar-income groups, socio-demographic, cultural and health characteristics, and residential location may influence travel patterns.[19, 20, 21] But, little knowledge exists regarding the travel needs and transportation preferences of particular groups of older adults. Lastly, most studies of travel by older adults have relied on aggregate data and statistical associations, and little qualitative information exists about the particular needs and challenges faced by older adults living in dense inner-city neighborhoods.

PROJECT APPROACH AND REPORT STRUCTURE

This study seeks to address some of the aforementioned research and policy gaps, and explore the travel patterns, needs, and mobility problems faced by diverse (regarding age and ethnicity), low-income, inner-city older adults in Los Angeles with the aim to identify solutions to their mobility challenges. Part One of the report reviews the literature to present current knowledge about the travel patterns of older adults and city policies from select cities, including Los Angeles. More specifically, the first section of Part One draws from the scholarly literature in urban planning, gerontology, transportation and physical activity studies to assess what scholars in these different disciplines know about older adult travel patterns, preferences, and needs. Information from the scholarly literature is complemented by information and data from "grey literature"—professional reports, planning documents, as well as media articles and blogs. The second section of Part One is a review of municipal policies and services geared towards older adult mobility —it presents information from six cities: Los Angeles, New York, Chicago, Houston, Phoenix, and Miami. The third section of Part One draws from the California Household Travel Survey to present data on how older residents of Los Angeles move around in the city—where they go, by what modes and when.

Part Two of the report presents the findings from our primary data collection. We recruited 81 older adults residing in Los Angeles inner city to participate in focus groups, interviews, and mobility audits around their neighborhood. Over the course of three months, we conducted six focus groups with older adults, collected 31 completed questionnaires from one-on-one interviews, and walked a short route around an inner city block with ten older adults. The physical context for this research was Westlake, one of the densest, most diverse, and oldest neighborhoods in Los Angeles. The focus groups, conducted in English, Spanish, and Korean, provided an open-ended discussion about mobility preferences and experiences. The short walks (mobility audits) provided first-hand experience analyzing the environment, where many study participants walk and travel daily. The interviews provided additional information, employing questions from typical travel diaries to allow older adults to enumerate their trips and discuss their travel patterns, as well as more qualitative questions relating to travel experience and quality. Our findings from these three distinct research efforts were strikingly consistent. For this reason, in Part Two of the report, we present our results by theme rather than by research task.

Lastly, Part Three of the report presents recommendations for improving mobility for older inner-city adults that draw from the knowledge generated by this study. We include recommendations for both policy makers and researchers, and have a particular section that discusses how age-friendly community indices can be enhanced. We intend this report to be useful to researchers seeking to expand knowledge of the needs of older adults and to policymakers who strive to make cities more age-friendly for current and future residents.

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PART 1: EXISTING KNOWLEDGE AND PRACTICES ABOUT TRANSPORTATION AND MOBILITY FOR OLDER ADULTS

LITERATURE REVIEW

Predictably, the travel behaviors and needs of older adults differ from those of younger people.[1] In general, total trips and mean distances decline with age.[2,3,4] However, the travel mode of choice continues to be the personal vehicle.[5,6] This is consistent in national surveys, such as the 2001 and 2009 National Household Travel Surveys (NHTS),[7,8,9] as well as regional studies.[10,11,12] While older adults prefer to use private vehicles for their trips, declines in their physical and cognitive functioning and increased difficulty with driving eventually reduce their mobility and may result in fewer contacts with social relationships and fewer activities of daily living (ADLs).[13] Reduced mobility can consequently lead to increased dependence on the services and amenities within one's immediate neighborhood[14] for which alternate forms of mobility must be utilized. This systematic literature review addresses the existing knowledge on the travel among diverse, older adults. It seeks to answer the following questions:

| **MOBILITY BEHAVIORS** | 1. What are the preferences of older adults with regard to their modes of transportation and mobility? |

2. What are the travel patterns and mobility of older adults?

3. How are mobility and travel patterns affected by sociodemographic characteristics, especially for people in low-income groups living in urban, inner-city areas?
How do mobility and travel patterns relate to social relationships and potentially isolation?

| **THE BUILT ENVIRONMENT** | 4. How does the built environment affect mobility and contribute to mobility challenges faced by older adults? |

Methodology

We conducted a literature review to summarize the current body of research that investigates the mobility of low-income, urban, community-dwelling older adults. We took several systematic steps in order to identify the relevant literature to review: We scanned peer-reviewed journal articles, reports, conference abstracts and professional reports between January 1990 and May 2017 in the fields of urban planning, public health, medical and social sciences. We further refined key search terms and databases under the guidance of a university librarian. Databases utilized in the search included: Academic Search Complete, Business Search Complete, CINHL, Web of Science, Sociological Abstracts, PsychInfo, PAIS, Transportation Research Record and PubMed. Search terms for mobility included: transportation, travel, mobility, paratransit, public transit, mass transit, rideshare, shared economy, taxi, cab, way-finding and last mile. Search terms for the population of interest were: older adult, older people, elderly, seniors, aging, poor, low income, low socioeconomic status, urban and metropolitan. These search terms were customized for each database.

We only considered English-language studies. Criteria for inclusion in the peer-reviewed literature were: having low-income, urban dwelling, adults 65 years or older in the sample, and addressing some aspect of mobility and/or travel with qualitative or quantitative research designs. We initially reviewed titles and abstracts and excluded publications regarding migration or tourism, which did not meet our search criteria.

Using keywords (see Appendix A), the bibliographic database search produced 445 citations, from which 54 duplicates were removed. The titles of the remaining 391 citations were reviewed by two members of the research team; exclusion was based on irrelevance to the research questions, reducing the literature to 116 citations. Next, we reviewed the 116 abstracts for relevancy and identified 17 studies that were particularly relevant for our study. We also included another 29 studies from previously collected articles, reports, conference papers, and items in the profession literature. Thus, we reviewed and drew information from a total of 49 publications for our literature review. Though we decided to focus on studies conducted in the United States, we also included studies from international contexts, if they were methodologically relevant and written in English (See Appendix B for these methods).

Mobility Behaviors

Modes of Transportation

Empirical studies suggest that older adults in the U.S. drive more commonly than any other mode of transportation, but regardless, car driving declines with age.[15,16] Public transit is an uncommon mode for older adults, in general, and this does not change with age, despite decreases in driving.[17,18] Some major challenges of using public transit include inconvenient schedules, having a place to sit while waiting for the bus, lack of adequate bus shelters, challenges getting to the stop or where one needs to go, and overall time of travel.[19] The cost of transit travel is seen as less of a barrier than the logistics of transit travel.[20] In all, the more common use of cars in comparison with public transit and other modes of transportation does not seem to subside with age. Instead, older adults' health needs change and force them to move to other transportation modes or being driven by others.[21] Thus, chronological age, per se, is less important than concomitant health status, but other factors affecting the choice of travel mode also co-occur with age, such as widowhood, retirement, and reductiion inhousehold size.[22] As expected, older adults in rural areas are largely car-dependent, while transit-dependent older adults live primarily in urban areas.[23]

Mobility and Travel Patterns

Adults 65 years and older vary significantly in their physical functioning.[24] Variation in older adults' activities and instrumental activities of daily living (ADL & IADLs, respectively) explain much of the variability in where and how often they travel.[25,26] The same holds for their "mobility disability" – the self-reporting of inability or difficulty to walk a half-mile or up/down stairs—when examined over time (versus over age).[27] Longitudinal studies find some differences in mobility disability across age subgroups, likely reflecting generational differences in travel patterns,[28] as well as a linear increase of mobility disability with age. A study of adults over the age of 65 found that women and low-income older adults exhibited more frequent incidents of mobility disability over an 8-year period compared to men and high-income individuals, respectively. Other research supports these trends over time among older adults, particularly among low income women.[29] Moreover, perceived crime increased the risk of new instances of mobility disability but only among "impoverished" older adults, who were just above retirement age. Interestingly, researchers did not find that actual crime levels predicted mobility disability,[30] thus, underscoring the importance of individual perceptions.

Travel patterns also vary among older adults. Consistent with previous research, one cross-sectional study in the Denver metropolitan area found trends in travel patterns across subgroups of older adults, reporting that both mean trip distance and mean number of trips decline with age, and older adults engage in walking more than transit after car use declines with age.[31] The same study found that mean trip distance was shorter for those living in transit-oriented developments (TOD) compared to non-TODs. Another cross-sectional study also found decreases in driving with increases in age, though its sample was from North Dakota and not nationally representative.[32]

Other documented forms of modification of driving behavior include 'co-piloting,' where the driver and passenger operate as a team; the driver conducts the physical task of driving, while the passenger acts as a lookout and provides direction.[33,34]

Diversity in Mobility and Travel Patterns

Gender and Income: In a literature review of older adults' mobility that synthesized the many ways to "cluster" older adults' travel patterns, two extremes emerged about gender. Men tended to be in the cluster of affluent drivers with good health, high income, and education; whereas women tended to be in the stratum that primarily used public transit or walking.[35] Another literature review found similar differences in travel patterns among low-income older adults, particularly women.[36] Also, an increased likelihood exists of women being passengers versus drivers[37] and more affected by low-income than men;[38,39] but these trends are primarily true for women in the older age groups.[40] Another, mixed methods study with equal proportions of men and women of different incomes from a seniors center (low income) and a retirement community (high income),[41] conceptualized "mobility systems" as "…various kinds and temporalities of physical movement. Movements examined range from the daily, weekly, yearly and over people's lifetimes. Also included [were] the movement of images and information on multiple media as well as virtual movement such as communication." These mobility systems, in turn, created different forms of participation in social relationships with implications that older adults within these mobility systems are not neutral but "…fragile, gendered, racialized, and aged."[42] In other words, mobility systems, like social relationships, are self-selected and not random.

Social Relationships: Older adults' ability to engage in social relationships depends on their mobility, and in turn, their mobility depends on their social relationships,[43] but even this bidirectional relationship oversimplifies the complexity of older adults' mobility. Losing one's driving license adversely affects social and recreational trips,[44] and older adults report wanting more social and recreational trips in their everyday mobility.[45] Even a mobility impairment, like a license revocation, affects older adults' familial and non-familial relationships, since others may have to become their means of transportation.[46] Moreover, caregivers are more likely to be female, especially for trips to medical appointments. When it comes to driving cessation, women are statistically more likely to give up their licenses proactively than men, who perceive driving as indicative of their independence and freedom.[47]

The Built Environment and Mobility

Multiple disciplines investigate older adult mobility. Though literatures on the built environment, transportation, clinical health and aging investigate and define mobility differently, they all agree that the built environment has a significant impact on mobility and health. To investigate this topic, we conducted a literature review across disciplines. The following sections describe the mobility challenges, preferences, and needs of older adults within the context of the built environment. When possible, our focus was on low-income individuals residing in inner-city areas.

Transportation Modes

Untangling the relationships between travel mode choice and the built environment can be difficult due to the complex relationship between sociodemographic factors, the effect of residential self-selection, attitudes regarding transportation as well as health status, which can have a cause and effect relationship with mobility patterns.[48,49,50] However, as the numbers and heterogeneity of older adults increase, understanding these relationships for the development of age-friendly cities becomes even more important.

Personal Automobile, as noted previously, is the most common mode of travel for older adults—a trend expected to continue into the future.[51,52] This is not surprising, because this mode requires minimal physical activity and gets them door-to-door with relative ease. Though compared with the rest of the U.S. driving population, older adults tend to travel less and reduce driving as they age,[53] the share of total travel by the growing baby boomer population, in both miles and trips, will continue to increase significantly.[54,55] A study focusing on specific minority groups, found that despite a shift from driver to passenger, as people

age, trip-making on private vehicles appears roughly constant, up until approximately the age of 75. [55] Most people decrease travel by private automobile around age 85. Therefore, as our aging population lives longer, there will likely be an increased number of older adult drivers on the road, including the old-old and the oldest-old. Blumenberg and Shiki (2007) also found several studies indicating physical and cognitive changes that accompany natural aging, which can affect older adults' choice of driving routes and behavior. Other studies found older adults to perceive freeway speeds, left-hand turns, and busy intersections challenging, and such perceptions may cause changes in route choices, so as to minimize the likelihood of encountering these situations. Examples of modifications in driving behavior and travel patterns include choosing to drive on specific roads and at times with lower traffic volumes, resulting in increases in off-peak trips and more one-destination ('unchained') trips throughout the day compared to younger populations.[55,56]

Population density has an adverse effect on people's likelihood of using a car, including older adults.[57] Urban density, measured by people and/or jobs per area, and income levels are key indicators of automobile ownership.[58] Evidence of the potential effect of the built environment on driving was shown in a recent study in Denver,[59] where living in or near a transit-oriented development (TOD) was found to influence travel behavior significantly: older adults drove less and made shorter but higher numbers of trips. Though this study offers some empirical evidence that TODs lead to lower levels of driving among older adults, it did not include a low-income population, and, therefore, results may not be generalizable. In general, the private car is the most frequent mode of transportation amongst the older adult population; however, amongst urban dwelling, low-income, older adults, vehicle ownership is lower and public transit rates are higher.[60,61]

While studies on looking at older adult use of ride-hailing services like Lyft and Uber are forthcoming, we identified one feasibility study that looked at electric vehicle car-sharing. This study conducted between 2009-2011, included surveys, interviews and focus groups in a large older adult community in the San Francisco Bay Area. Residents were satisfied with the car-sharing program, which had the potential to increase their mobility options in the surrounding communities. Residents did not pay per ride, and the cost was included in their monthly fees, which also included other expenses such as facilities management, utilities and other transportation (fixed-route bus, paratransit, and dial-a-bus).[62] Not much literature exists about car-sharing systems and driverless cars for older adults because of the newness of such systems. Nevertheless, current (automated vehicle assistance systems and ridesharing) and projected technological advancements (fully autonomous vehicles) will likely alter older adult mobility in meaningful and positive ways. Further research in this area is needed to evaluate the potential use and impact of such technologies.

What is certain, however, is that with the natural aging process, those who do utilize personal automobiles will eventually lose this mode of travel,[63,64] and alternate forms of mobility must be found. The process of shifting from being a drier to becoming a passenger is a gradual. Other modifications in driving behavior and travel patterns happen as well - choosing not to drive on highways or otherwise restricing driving to certain times or places with less traffic. [65,66] However, driving cessation eventually reduces out-of-home activities, sometimes leading to serious health problems including heart disease, strokes, fractures, and cognitive impairments[67,68,69] and an increased risk of depression among older adults.[70] This makes reducing dependency on personal vehicles a priority for policymakers in the coming decades for multiple reasons: the safety of the older drivers themselves and those around them, including pedestrians.

Further, though driving is familiar and may provide easier mobility, automobile dependency may wholly or partially remove the need for walking or public transportation use,[71] which is often associated with sedentary lifestyles and potential health problems. One aspect of the multifaceted issue of mobility is the provision of safe and accessible infrastructure such as better and more accessible public transportation services.[72]

Public Transportation options are often influenced by residential choices. In general, racial minorities are more likely to live in urban areas, where public transportation is commonplace.[73] Therefore, it is not surprising that older Blacks, Asians and Hispanics in urban locations use transit more than older White adults. Throughout the literature, however, public transit is not a substantial form of transport for older adults.[74,75] Though considerable work has been done by some transit systems to address the needs of older adults, nevertheless, transit lacks the flexibility, safety, reliability, comfort, and convenience regarding hours of service and routes. Additionally, older adults perceive public transit as less safe than the private automobile. Thus, older adults may not make the transition from driving to public transit, especially if public transit does not meet their specific needs and preferences. Multiple studies have explored the reasons why older adults may choose not to utilize various forms of public transit, even when available to them.[76,77,78] Such studies reveal

many preferences and needs of the older adult population regarding both physical design features and psychological comfort.

The following represent some of the challenges older adults face to using public transit:

Convenience	Lack of direct service to local destinations and lack of multiple transit connections.
	Limited transit service hours during off-peak periods and on weekends.
Reliability	Lack of prompt and reliable transit.
Physical Discomfort Related to:	Climbing stairs, paying fares, walking to and standing at stops, and standing on buses, lack of seating.
Safety - Fear of Crime	Waiting for the bus after dark, park-and-ride lots, bus rides after dark.
Utilization Difficulties	Understanding how to use transit.

Transportation challenges and preferences are significant for older adults, but the transportation literature also suggests that these preferences, particularly those relating to reliability and safety, to a degree, are shared by younger groups as well.[79,80] A focus on such improvements would, therefore, serve more than just the older adult population.

Similar to these findings, a regional survey of small urban areas in North Dakota found that urban residents, though more experienced and more likely to utilize public transportation, were also more likely to report worries about crime, inadequate shelter from the weather, and difficulty getting to their transit stop.[81] A qualitative study comparing urban and suburban older travelers (70+) echoed these concerns that influence transit ridership.[82] Focus group participants emphasized higher quality services (with an emphasis on reliability, frequency, and comfort of vehicles and waiting areas). Further, participants expressed a preference for door-to-door and spontaneous service serving a large variety of destinations. The study recommends that older travelers be provided a higher level of support (such as information and training programs), which can assist in making the transition from personal automobile to public transit use.[82] Such needs and preferences in using public transit often cause older adults to turn to demand-response paratransit services, which in some ways meet these concerns.

Paratransit is often considered an alternative to public transit as it addresses many of the constraints of public transportation, though ratings of the service have mixed reviews according to one study of New York City users.[83] Paratransit services provide a partial solution to the lack of personal automobile and insufficient public transit or other transportation services. Indeed, a report examining the relationships between residential location and travel patterns of older adults found that though many senior service centers offer fixed-route, door-to-door transportation services, these do not always adequately meet the needs of older adults.[84]

Paratransit services are costly. A Los Angeles study revealed that churches and senior centers in low-income neighborhoods struggle to provide paratransit services to their members because of the rising costs of liability and insurance.[85] Examining government subsidized paratransit programs, other research on the topic also finds these services costly both for municipalities and low-income older adults.[86] Further, as the number of older adults, especially the number of "oldest-old" grows, there will be a rapid increase in the number of those eligible for paratransit services, as required by the Amhericans with Disabilities Act (ADA).[87,88] Though door-to-door transit is critical for those with mobility disability or in poor health, the expansion of paratransit services represents a significant challenge, because of economic reasons.[89]

Cycling: This literature review identified little data regarding the use of bicycles as a mode of transportation by the older adult population in the U.S., though cycling plays a small part in helping people reach their destinations at little cost.[90,91,92] and potentially in keeping people healthy.[93] A Canadian study found that bicycles were only used for 3.2% of all travel by older adults over 60. The most common destinations of cycling trips were a "Community Center or Neighborhood House", followed equally by "Malls/large marketplace" and "Fitness center/

Gym."[94] Even when this mode of transportation for older adults is mentioned in the U.S. literature, it is either combined with walking or deemed insignificant.[95] For example, when survey participants were asked about transportation alternatives once personal automobile was no longer available to them, neither riding a bicycle nor residential relocation were considered.[96] In addition to issues of physical stamina, neighborhood design may also be a reason for the insignificant bicycle use amongst older adults. Another study suggests that neighborhood designs should facilitate bicycle use and ease of transit access to daily activities, which would reduce automobile dependence and increase the number of environmentally friendly and physically beneficial active travel trips.[95]

Walking is the most common form of mobility, aside from vehicular travel, particularly for older adults living in urban settings.[97] Walking is also necessary because of its public health benefits; it is the most accessible form of physical activity engaged by older adults.[98] Therefore, living in walkable neighborhoods, designed with pedestrians in mind, may not only assist older adults in maintaining independence, but also support their long-term health. Further, walking is essential to making public transit use possible, but, unfortunately, the distance between residence and public transit stops can be too long for older adults with functional deficits.[99] In recent decades, research on walkable neighborhoods with supportive community design features has gained popularity. Multiple studies show a positive association between such accessible neighborhood design and higher levels of walking.[100,101,102,103,104] In contrast, one of the reasons noted for the very low levels of walking among U.S. older adults living in the suburbs has to do with the configuration and pedestrian unfriendliness of the suburban built environment.[105]

A survey in Northern California investigating the influence of neighborhood design on travel behavior found various neighborhood design elements to be associated with walking to specific destinations.[106] After accounting for potential socio-demographic and attitudinal influences, researchers found that neighborhood characteristics preferred by older respondents for walking were: complete sidewalks and proximity to shopping and other amenities such as a pool. Designing neighborhoods with enhanced accessibility can be a promising strategy in promoting walking trips, most significantly when the destination is a shopping area. Another study found similar results for bicycling.[107] Interestingly, even though results showed that the older adult group had a stronger preference for driving-reducing neighborhood characteristics, they were less likely to live in such a neighborhood.

Safety

Issues of safety in the built environment are important to older adults in a variety of ways. In a study of nonfatal older adult pedestrian injuries in public roadways, the leading forms of injury were falling (77.5%) and being hit by a motor vehicle (15.0%).[108] Curbs were a significant factor in fall-related injuries reported in a hospital emergency room; unfortunately, this secondary analysis of hospital emergency room (ER) intake data did not include further detail (broken curb, curb height, etc) as to why a fall may have happened. The authors suggest the need for improving pedestrian environments, mainly where large numbers of older adults reside. The same study found curbs to be of importance; however, there are likely additional modifications necessary to address falls depending on neighborhood built environment factors. Since walking is one of the most common forms of travel for older adults, particularly within urban settings, attention to sidewalks and paths is critical.

Another study about driving safety looked at older adult travel patterns using the 1995 Nationwide Personal Transportation Survey (NPTS) and recommended that planners create safer driving environments. Their findings are congruent with current efforts to improve the safety of older drivers and their vehicles. They suggest "driver-friendly" as well as pedestrian and transit-friendly urban design alternatives such as an increase in the number and quality of signs and traffic controls, and easier to navigate parking facilities. Other researchers add depth to these suggestions by adding that signage, traffic control and lane marking

systems should be specifically attentive to older adults' diminished eyesight and sensitivity to contrast.[110] They note that the driving environment should also include improved street lighting, reserved lanes and signal priority for left turns. They further suggest that helpful pedestrian improvements include raised pavement markings, improved pedestrian crossings, and the addition of median islands.

The Pedestrian Safety and Mobility Audit Guide was designed as an audit tool to familiarize volunteers with issues related to pedestrian safety and mobility at intersections and road segments. This guide identifies a multitude of built environment safety issues important for older adult mobility, including attention to obstruction-free and continuous sidewalks and pedestrian crossing features such as grade, curb ramps, and refuge areas. The guide also familiarizes potential neighborhood traffic safety auditors with essential safety aspects such as the presence of curb extensions, walkways wide enough for cyclists and pedestrians, and adequate signage and lighting.[111] Though studies find that objective measures of neighborhood lack of safety are associated with risks for both reduced mobility and potential disability,[112] subjective perceptions of neighborhood safety also influence older adult mobility.[113,114,115]

Focus groups conducted with older travelers (70+) identified transit service quality as a critical issue. Participants noted their desire for higher service quality particularly concerning personal safety and "consideration" shown to them by transit drivers and emphasized their need for occasional assistance in boarding vehicles. Other aspects of safety included older adults' preference for door-to-door service, due to potential exposure to inclement weather, reduced walking distances to fixed route bus services, and needs for "comfortable" waiting areas.[116] Protection from weather, minimization of distance to bus stops, and assistance with boarding by transit drivers can also be considered as safety issues for older adult travel.

Indeed, older respondents are more likely to include issues of safety, when compared to younger respondents.[117] A Los Angeles study, which examined built environment concerns of low-income older adults, found that along with health and maintenance of activities of daily living (ADLs), safety from crime was a salient issue. Though study participants resided in a federally subsidized housing project providing an on-site medical clinic, a cafeteria, and regularly scheduled activities and outings; the neighborhood environment, which necessitated modification to travel behavior and avoidance of dangerous neighborhoods, was important for older adults.[118] Further highlighting the importance of the psychosocial dimension of neighborhoods, a longitudinal study of low-income neighborhoods found that perception of a safety hazard due to crime was associated with increased risk of mobility disability for those near retirement age (65-74). Within this population, the adverse effect of perceived safety was strongest among those who were impoverished and had fewer resources to buffer the effects of neighborhood conditions.[119]

CONCLUSION

To conclude, we return to the questions posed on page 10. Several major points must be underscored from this systematic literature review on older adults' mobility and travel patterns. In regards to mobility behavior, car driving is the most common form of mobility for older adults, but as people age, it inevitably decreases. This decrease exhibits two nuances: 1) it is more drastic as age progresses and 2) health, especially, physical functioning, explains much of the variation in travel patterns with increasing age. However, public transit use presents a number of challenges for older adults trying to use it after driving cessation. More research is needed to understand transitional mobility and travel behavior among older adults. Moreover, beyond physical health, other factors such as perceptions of safety may also affect the mobility and travel patterns of older adults. Urban planners and policy makers should address these issues proactively in transportation plans and prioritize outreach strategies with older adults in mind.

The second research question inquired about variation in mobility and travel patterns among social strata. The literature shows that differences emerge in travel patterns between older men and women, low- and high-income older adults, and urban-dwelling versus rural-dwelling older adults. However, it is difficult to separate the influence of these characteristics on mobility and travel patterns as these strata "cluster" to form distinct social groups that are more or less vulnerable. With that point noted, low-income, older adults, especially older women, use cars less, public transit more, and are more commonly passengers than drivers than are higher-income younger adults. A major issue with age strata, besides their clustering, is that they are likely to continue to evolve with each generation. Studies need to address age-related mobility and travel patterns with longitudinal designs to avoid confusing cohort and period effects with true age effects.

The third research question concerned social health in relation to older adults' mobility and travel patterns. The literature finds that one of the least common purposes of trips that older adults take is for social and recreational activity. Mobility-related impairments negatively affect their social relationships by reducing their ability to have them and often by forcing them to rely on others to assist with mobility. In turn, this can negatively affect their social relationships in addition to the older adults, themselves. Social health is as important as other aspects of older adults' health, so future research needs to explore the interface between older adults' social relationships, mobility, and risk for social isolation.

The final research question addressed the complex relationship between older adults' mobility and the built environment. The literature finds that aspects of the built environment may encourage or impede mobility for older adults. As mentioned earlier, perceived built environment safety among older adults affects their inclination to be mobile. Also, when mobile, older adults may face greater vulnerability compared to the rest of the population in terms of safety from tripping and falling, traffic, and crime. Planners should be cognizant of the importance of different physical and perceived aspects of the built environment as they relate to the mobility of older adults.

Overall, while the literature casts light on some important issues affecting the mobility and travel behavior of older adults, many opportunities exist to explore and better understand the specific needs and challenges faced by inner-city low-income adults of different age groups and cultural/racial backgrounds.

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As discussed in the literature review, major aspects of mobility for older adults are, in some ways, outside the purview of the cities in which they live, as American cities typically defer responsibility for licensing standards and other automobile-related matters to the governments of their states.[1] However, cities and other local governments can and do play a role in enhancing mobility for older adults. Their assistance is critical in addressing "transportation deficiency"—that is, one's inability to participate in desired activities due to lack of suitable transportation.[2] The following section presents information about how six cities: Los Angeles, New York, Chicago, Houston, Phoenix, and Miami, and their local transit agencies and social service providers, seek to improve mobility for older adults by providing different types of transportation and by influencing the design of the built environment. Since our study focused on the mobility needs of older adults in Los Angeles, we gave a particularly in-depth look at Los Angeles's programs and policies aiming at increasing the mobility of older adults.

AGE-FRIENDLY MOBILITY POLICIES: EXAMPLES FROM SIX U.S. CITIES

LOS ANGELES PROGRAMS AND POLICIES

Adults aged 65 or older comprise 11.5 percent of the city of Los Angeles's population. The City of Los Angeles Department of Aging Four-Year Area Plan on Aging[3] reports that the growth in the older adult population is significantly higher than Los Angeles's general population. The Los Angeles metropolitan area ranks #56 on the Milken Institute's 2017 *Best Cities for Successful Aging: Large Metros* list, and the city of Los Angeles scores 60 out of 100 for transportation on AARP's *Livability Index*.

We collected information about Los Angeles's policies and programs by surveying publicly accessible information made available by the City of Los Angeles, local transit agencies, and social service providers in the Los Angeles area. To learn further details on forthcoming programs, we conducted several telephone interviews with staff in multiple departments of the City of Los Angeles and with directors at St. Barnabas Senior Services.

FIXED-ROUTE TRANSIT

The Los Angeles County Metropolitan Transportation Authority (Metro) provides transit to most of the Los Angeles County and, along with many other local transit providers, offers reduced fares and special accommodations for adults age 62 and older.[4] Qualified older adults may forgo the standard fare of $1.75 per ride and instead pay 75 cents during peak hours (defined as weekday mornings between 5:00 and 9:00 AM, weekday afternoons between 3:00 and 7:00 PM, and weekends), and 35 cents off-peak. Metro also permits older adults to purchase one-day passes for $2.50 instead of the usual $7.00, and to purchase a 30-day pass, which typically costs $100, for $20. Older adults also receive

comparable discounts on Metro's EZ transit pass, which allows customers to purchase monthly access to various municipal bus services throughout the county.[5] To obtain reduced fares, older adults must apply for a personalized version of the TAP stored-value card used by Metro and other agencies throughout the county. The application requires a passport-sized photograph and official identification to establish proof of age.[6] Metro also offers priority seating for older and disabled passengers in all their buses and trains. Priority seats always face the aisle of a vehicle, rather than the front, and are located near the front doors of a bus or train for easy access. Older and disabled passengers have the right to request that others give up a priority seat to ensure that they have a safe place to ride.[7]

To encourage older adults to feel more familiar with riding transit, Metro also facilitates the creation of "On the Move Riders' Clubs": groups of older passengers who agree to ride transit together. The groups engage in sightseeing as well as everyday trips, and share tips about how to best use Metro's services.[8]

Low-income riders of all ages can also participate in Rider Relief Transportation Program (RRTP) or the Immediate Needs Transportation Program (INTP). Although Metro funds both programs, they are operated by two regional nonprofits in different areas of Los Angeles County. The FAME Assistance Corporations serves low-income riders in the central, western, southern, and northern area of the county, while the Human Services Association serves the east and northeast areas.[9] The RRTP offers coupon books by application for monthly transit passes to riders, whose household income falls below certain levels (which differ by household size). Low-income older adults can receive coupons for a $6 reduction in cost over and above the basic senior discount. The INTP instead serves cases of immediate one-time transportation need, such as job applications, medical visits, and court appearances, among low-income adults of all ages by offering bus tokens and taxi vouchers.[10] Both programs require that participants apply for relief and provide proof of low-income status, either through the primary social service organization that disburses funds or through smaller local affiliate organizations. The FAME Corporations, which serves as Metro's community partner for most of central and western Los Angeles County, reports that it distributes 96,000 bus tokens and 8,000 taxi vouchers each month.[11]

PARATRANSIT AND ADA

In 1990, Congress passed the Americans with Disabilities Act, which required sweeping efforts to make businesses and public accommodations accessible to persons with physical and other disabilities. The act imposed considerable requirements on transportation providers. First, it obliged them to make their vehicles and stations accessible to the disabled

through lifts, ramps, and various other physical alterations, according to federal regulations promulgated by the US Attorney General's office.[12,13] ADA regulations require that transit agencies provide a system for receiving accessibility complaints, and agencies that fail to meet ADA standards may be subject to investigation by the Federal Transit Administration and the Department of Justice or to private lawsuits.[14] Second, to the extent that agencies are unable to provide equivalent service through fixed-route transit to people who are disabled as to people who are not, the act mandated the provision of paratransit and other demand-responsive services to cover the gap.[15] Agencies have often opened up such paratransit services to older adults who are not disabled, in addition to the disabled persons of all ages for whom they were originally designed.

Both the City of Los Angeles and Los Angeles County operate paratransit services on this model. The city's program, entitled "Cityride," provides paratransit service and subsidized taxi fare to qualified disabled persons as well as all individuals over the age of 65, and is funded by the "local return" portion of the Proposition A half-cent sales tax for transportation, which passed in 1980.[16] After applying for and receiving a Cityride card, members receive $42 in "fare value" per quarter, which can be used for paratransit minibuses or taxi service. Both fare structure and scheduling requirements encourage Cityride members to use the program for planned, infrequent trips, preferably of short distance. For example, the program requires bus trips to be scheduled a day in advance—two days for medical appointments—and obliges individuals waiting for pickup to be ready to meet the bus at the curb within three minutes of arrival, which might take place at any time within a 30-minute arrival period. A single trip of one to ten miles costs $4 in fare

value, and members can only top off their accounts once per quarter. Accordingly, most individuals can only take up to 21 short trips on Cityride vehicles in a three-month span.

Taxi service, which operates 24 hours a day, offers more flexible scheduling, but costs considerably more, and Cityride members, who take trips costing more than $12 in fare value (roughly, a five-mile trip), must pay the additional cost out of pocket. The city does subsidize members' costs: standard members pay $21 per quarter for $42 in fare value, and members who have confirmed their low-income status on their Cityride application pay only $9 for the same amount of travel. As of March 2015, Cityride reported 40,000 active clients, and the program provided 90,217 one-way taxi rides and 86,458 van rides in fiscal year 2014. The county's program, Access LA, has similar features—required scheduling and tiered distance-based pricing—but does not subsidize fares and does not offer taxi service.[17]

Senior Multipurpose Centers and Shared Paratransit

In addition to the Cityride service, some older adults can obtain paratransit services through the city's 16 senior multipurpose centers (MPCs). The MPCs primarily direct older adults, who access their services to the Cityride program, but many MPCs also provide door-to-door paratransit service for older adults who, due to illness or another infirmity, need additional assistance to access and use transportation.[18] The service provided by the St. Barnabas Senior Services (SBSS) at their Mid-City location may be taken as an illustration. SBSS provides door-to-door paratransit to all registered older adults, who live within a defined service area of approximately 15 square miles. Like all of the MPCs' paratransit programs, SBSS's vans operate between 8:30 AM and 4:30 PM on weekdays and some holidays, and carry passengers for a suggested, but optional donation of 50 cents per ride.[19] As an additional service, SBSS drivers can take riders outside of the service area for a fee of $1. SBSS receives funding for its door-to-door service from the city's Department of Aging, and its three drivers, which the center hires directly rather than contracting with Cityride, can provide additional assistance, such as helping riders in and out of vehicles. SBSS paratransit service carries approximately 8,450 one-way trips per year.[20]

SBSS Echo Park location has also recently introduced a pilot program with a service called GoGo Grandparent (GGG) to leverage the growth of popular ride hailing applications into greater mobility for older adults. GoGo Grandparent is a telephone-based service that connects the 58% of adults over the age of 65, who do not own smartphones to apps like Lyft and Uber.[21] Once signed up for the service, a user of GoGo Grandparent can call a dedicated number and receive a Lyft or Uber ride, ordered and overseen by GGG staff. GGG also offers additional features, such as touch-tone dialing for frequent pickup

locations, automatic text message notifications to family members of its users, and 24/7 operators.[22] In June 2017, SBSS and the LA Department of Aging began a trial contract with GGG to provide free rides to registered older adults during those times when Cityride does not operate—specifically from 4 PM to 8 AM on weekdays and at all times on weekends. In Los Angeles, GGG currently prices its services at $0.90 per mile and $0.15 per minute, with a $2.10 base fee and a concierge fee of $0.19 per minute paid to the telephone operators who keep track of users' rides.[22] The pilot program gives each user $100 in funding per month, and users who exceeded $100 worth of travel would pay out of pocket, although no user has yet exceeded their limit during the pilot program. The Department of Aging plans to expand the program to other MPCs in the 2017-2018 fiscal year.[23]

"PURPOSEFUL AGING" AND THE BUILT ENVIRONMENT

On May 18, 2016, the City of Los Angeles announced a new initiative entitled "Purposeful Aging LA." Created as part of the AARP's' Network of Age-Friendly Communities and the World Health Organization's (WHO) Global Network of Age-Friendly Cities and Communities, the program seeks to encourage full inclusion of older and aging residents in city life.[24] The program operates at two levels. First, it began a regional partnership with the AARP and the Los Angeles County to respond to WHO's Age-Friendly Cities challenge by creating an assessment of current needs of older adults throughout the county and then implementing a strategic plan to address those needs. Second, it inaugurated an interdepartmental effort within the City of Los Angeles based on immediate action items for several departments and an Age-Friendly Task Force to determine other needs and methods of serving them.[25] As the initiative is still in its early days, the city's immediate action items focused on better attending to the needs of older adults, while carrying out existing city programs. Two such programs in the area of transportation are described below.

WILLITS V. CITY OF LOS ANGELES AND SIDEWALK REPAIR

On April 15, 2015, Los Angeles announced that it had reached a settlement in the ongoing case of Willits v. City of Los Angeles.[26] Acting on behalf of a class of persons with mobility disabilities, a group of plaintiffs had sued the city in 2010, arguing that the condition of the city's sidewalks and public roads violated the Americans with Disabilities Act, the Rehabilitation Act, and assorted California civil rights legislation. After receiving an unfavorable summary judgment in the Central District Court of California and beginning an appeal to the 9th Circuit Court of Appeals, the parties agreed to negotiate and came to a settlement in which the city agreed to spend a total of $1.36 billion over 30 years on

improving access for persons with "mobility disabilities," defined as "any impairment or condition that limits a person's ability to walk, ambulate, maneuver around objects, or to ascend or descend steps or slopes."[26] The city's obligated expenditures were divided into five-year terms and split between "Program Access Improvements," where the city agreed to install curb ramps, fix broken sidewalks, and address other deficiencies according to an agreed-upon priority list, and the Access Repair Program, which allows persons with mobility disabilities to contact the city and request repairs directly.[27]

Since the Access Repair Program is not restricted to persons with a specific physical disability (e.g., participants need not be wheelchair-bound), older adults with many types of mild to significant mobility impairments may take advantage of the program, if the condition of pedestrian facilities near their residence has impeded their ability to travel. As part of the Purposeful Aging initiative, the LA Department on Disability, which administers the Willits settlement, plans to advertise the program in senior multipurpose centers and other areas frequented by older adults in cooperation with the Department of Aging as the settlement comes into effect in July of 2017.[28] To make a request through the Access Repair Program, persons with mobility disabilities can contact a specific telephone hotline, the city's general 311 service request hotline and its online equivalent, or the city's online sidewalks portal. After the Department of Disability processes a request, employees of the Bureau of Engineering and the Bureau of Street Services assess the area and determine what repairs, if any, are necessary to comply with the terms of the settlement and state and federal disability law. Since the settlement requires accurate reporting of costs and the number of requests completed, the Department of Disability keeps continuing records of ongoing and fulfilled requests.[29] Although the settlement did not officially take effect until July 1, 2017, as of June 19 of the same year, the city had assessed 1247 sites requiring repairs, with construction complete at 317 sites and permits issued at another 293 locations.[30]

Vision Zero

Figure 2: Map of Los Angeles's high injury network

High Injury Network

65% of all deaths and severe injuries involving people walking occur on just 6% of our streets.

A second effect of the Purposeful Aging initiative is a renewed focus on extending Los Angeles's Vision Zero policy to older adults. Vision Zero, a national campaign whose local incarnation was inaugurated by Mayor Garcetti's Executive Directive No. 10 in August 2015, seeks to reduce the number of fatal traffic collisions in Los Angeles to zero by 2025.[31] The Vision Zero Initiative particularly seeks to protect children and older adults, who constitute a disproportionate number of the pedestrians killed in traffic collisions. The safety of children has been particularly targeted by the city's Safe Routes to School (SRTS) program, which seeks to both encourage students to walk to school and make it safe to do so through the "five E's:" engineering, encouragement, education, enforcement, and evaluation. To aid both programs, the city mapped out a "High-Injury Network"—the 6 percent of city streets where more than 65% of traffic-related deaths and serious injuries of pedestrians take place. SRTS then identified a group of the top 50 schools in need of safety intervention due to their proximity to the high injury network and their demographic risk categories.[32]

Building on the growth of Safe Routes to School, the city intends to inaugurate a "Safe Routes for Seniors" program. Akin to SRTS's focus on targeted interventions near institutional locations and collection of data on the travel behavior of vulnerable populations, Safe Routes for Seniors plans to begin a survey of the mode share of older adults through community institutions, such as the Senior Multipurpose Centers, and to identify areas where older adults in the city frequently travel and face danger as pedestrians. Future steps will likely include the extension of the High-Injury Network to identify locations where improved physical infrastructure and citizen education can reduce injuries and deaths among older pedestrians.[33]

New York City

Older adults make up 12.1% of the population in New York City, approximately 989,192 in total, according to 2010 Census data. New York ranks #11 on the Milken Institute's *2017 Best Cities for Successful Aging: Large Metros* list and scores 83/100 for transportation on the AARP *Livability Index*.

Public Mobility Assistance Programs

Fixed-Route Transit

The Metropolitan Transportation Authority (MTA) operates public transportation services in New York City, southeastern New York State, and Connecticut. MTA offers reduced fares for people ages 65 years or older, or those with qualifying disabilities. With the reduced fare MetroCard, riders pay half the current fare on local buses and subways. Applications for reduced fare MetroCards can be mailed in and must include proof of age or qualifying disability.

Paratransit

Access-A-Ride (AAR) is the city's paratransit system, offering shared-ride, door-to-door transportation service for people with disabilities, who are unable to use public transit for all or part of their trip. Lift or ramp equipped vans or vehicles are privately provided by contractors to MTA to provide this service. Riders receive an AAR Metrocard that serves as identification for paratransit and as a Metrocard, if the customer chooses to ride standard public transit. AAR Metrocards cannot be used to pay for paratransit trips. The AAR fares are the same as standard public transit fares, and riders must provide exact fare amounts at the time of the trip. Trips must be scheduled one to two days in advance over the phone. Eligible riders must schedule an in person appointment at an assessment center to become certified for this program.

OTHER PROGRAMS

Taxi Smart Card Program

NYC Department for the Aging (DFTA), in partnership with the Mayor's Office for People with Disabilities, launched a pilot program in 2013 in Brooklyn and Queens titled the Taxi Smart Card Program. It was intended to offer more transportation options for people with disabilities and older adults, who have mobility limitations. Eligible applicants received a $100 pre-loaded card to be used for the fare on taxi cabs or livery cars. Applicants paid an initial $12.50 for the card and the other $87.50 was paid by the city. The program ran for a short period but ended in July 2015, when the initial program funding was exhausted.

Yellow Bus Trips

DFTA's community partners, including senior centers, adult day care centers, Naturally Occurring Retirement Communities (NORCS), and case management centers, are eligible to use yellow school buses for day trips. This agreement with NYC Department of Education allows seniors to take group trips for entertainment, shopping, or other reasons between 9:30AM to 1:30PM, August through June.

DFTA Transportation Service Community Contracts

DFTA provides various transportation services for older adults through contracts with community based organizations. This type of service typically transports older adults to senior centers, medical appointments, or group shopping trips.

Built Environment

Senior Centers

DFTA operates 237 Neighborhood Senior Centers and ten Innovative Senior Centers throughout the five boroughs. Neighborhood Senior Centers provide meals; recreational, cultural, and health services; social services and counseling; and social benefits assistance[31]. Innovative Senior Centers are a different model of care that provide "robust health and wellness programming, mental health support, educational and socialization activities, and cultural and technology opportunities."[31]

Safe Streets for Seniors

The Safe Streets for Seniors program, administered by the New York City Department of Transportation (DOT), studies crash data and creates and implements mitigation measures to improve safety for pedestrians and other road users, particularly seniors. Since the initiative's launch in 2008, NYC DOT has addressed issues in 25 Senior Pedestrian Focus Areas (SPFA) in the five boroughs of the city. The SPFAs were selected based on the density of crashes involving older adults (over 65) resulting in fatalities or severe injuries in a five-year period. Examples of the Street Improvement Projects resulting from this program include the construction of pedestrian safety islands, extending crossing times, and installing new stop controls.
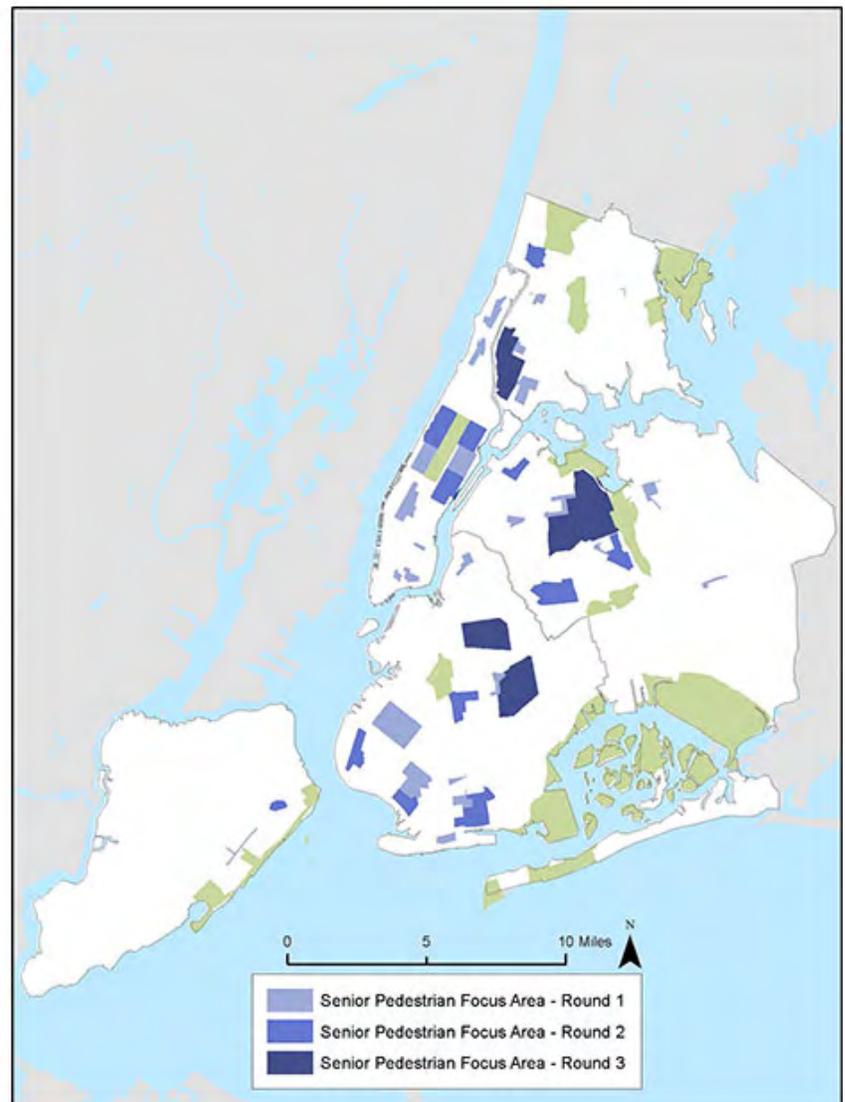
Figure 3: Map of New York City's senior pedestrian focus zones

Age-Friendly NYC

Age-Friendly NYC began in 2007 as a collaboration between the Mayor's Office, the New York City Council, and the New York Academy of Medicine to make New York more accessible to older adults. Age-Friendly NYC builds on the work of the World Health Organization's Global Age-Friendly Cities initiative, which named New York City the first Age-Friendly City under its new certification process.[34] The most current plan, released in 2017, includes 86 initiatives that update the previous 2009 plan.

The plan identifies several initiatives underway that expand transportation options for older adults, particularly for those who utilize wheelchairs. In 2014, New York's Taxi and Limousine Commission (TLC) adopted rules to introduce wheelchair-accessible green and yellow taxis, which will result in a 50 percent accessible taxicab fleet by 2020. A new accessible service requirement was also proposed, which would require a percentage of trips by For Hire Vehicle companies, including ride hailing apps, to be assigned to wheelchair-accessible vehicles (52).[35] The new service requirement was passed as a two-year pilot program in December 2017 by the TLC Board of Commissioners. TLC has also introduced citywide, 24/7 Accessible Dispatch for riders who use wheelchairs or other mobility aids. Additionally, DFTA and MOPD are collaborating with DOT on a three-year pilot program in which eligible riders in the Bronx, Brooklyn, and Queens use an app to hail door-to-door transportation. Rides can also be requested through a dispatcher. Running from 2018 to 2021, DFTA is "testing whether a customer-sensitive travel option can be offered cost-effectively while expanding the riders' access to the type of transportation that they need, when they need it" (52).[35] The pilot is funded by a $1.8 million grant from the Federal Transportation Administration.

In addition to increasing transportation options, one of the plan's initiatives seeks to enhance the built environment through universal design. The Mayor's Office for People with Disabilities (MOPD) released the second edition of Inclusive Design Guidelines in 2017, meant to create more user friendly, multisensory environments for New Yorkers of all ages with varying physical and mental capacities by offering technical guidance to designers and developers.

Chicago

Adults aged 65 or older comprise 11.2 percent of the city of Chicago's population. The Chicago Metropolitan Agency for Planning estimates that the number of older adults in the metropolitan area will double for those aged 65-85, and triple for those 85 or older, by 2040, and that, "much of this growth is projected to occur in parts of the region where residences, services, and commercial areas are currently more spread out and not well-served by public transit, creating difficulties for those who have limited mobility and cannot drive."[36] The Chicago metropolitan area ranks #48 on the Milken Institute's *2017 Best Cities for Successful Aging: Large Metros* list, and the city of Chicago scores 73 out of 100 for transportation on AARP's *Livability Index*.

Public Mobility Assistance Programs

Fixed-Route Transit

The Regional Transportation Authority (RTA) distributes Free Ride and Reduced Fare permits. Illinois residents enrolled in the state Department on Aging's Benefit Access Program have free access to fixed-route transit on the Chicago Transit Authority, Metra, and Pace Suburban Bus systems; and people with qualifying disabilities, Medicare card holders, or those age 65 or older are eligible for reduced fares. Free Ride permits require an in-person visit to a registration center. Reduced Fare permit applications can be mailed in or filed in-person. Proof of status is required for both types of permits.

Paratransit

The RTA provides an ADA Paratransit service for those with disabilities, who are unable to use the fixed route Pace bus or Chicago Transit Authority systems. Qualifying riders must schedule an in-person appointment for an ability assessment in order to gain access to this program.

The Chicago Department of Family & Support Services Transportation Program partners with the Chicago Transit Authority's Taxi Access Program to offer reduced rate door-to-door service for ADA Paratransit eligible seniors. A partner program with PACE Paratransit Services provides interim assistance for seniors, who are mobility-limited with life threatening conditions and in need of care. These seniors may use PACE's paratransit carriers for 30 days, after which they will need certification (established through the Regional Transportation Authority's ADA program).

Other Programs

The Chicago Department of Family & Support Services Transportation Program provides emergency transportation for medical care, including life-sustaining treatments, for seniors with no transportation alternatives.

BUILT ENVIRONMENT

Senior Centers

The City of Chicago's Family and Support Services Department runs the Area Agency on Aging. The agency operates six regional senior centers, which serve as "community focal points for information and assessment, and provide senior services in health and fitness, education, and recreation."[36] The agency also partners with non-profit organizations to operate ten additional satellite senior centers that offer information and assessments, and provide services.

General and Specific Plans

The Chicago metropolitan regional comprehensive plan, GO TO 2040, addresses anticipated growth in the senior population and recognizes that "sustaining our residents' ability to "age in place" — to remain in their homes and communities, as they age, if they choose — is a key challenge confronting the region." The document indicates that booming

senior populations are located in areas with limited transportation services. The plan also discusses the growing cost of the paratransit system, believed to be over-utilized as seniors avoid fixed-route service due to concerns around personal safety, difficult transfers, and unsafe and inaccessible sidewalks and bus stops. General transit improvements in the 2040 plan seek to alleviate those concerns and improve the accessibility of transit infrastructure. For example, the plan states that it supports transit agencies in their "continued progress" with accessibility and safety in the design of transit vehicles, stations, bus shelters, and facilities.

Age-Friendly Chicago

In 2012, the City of Chicago joined the World Health Organization Age-Friendly Communities and Cities initiative. The City, in partnership with local universities and organizations, completed a community assessment, which contains qualitative and quantitative findings intended to inform policy development recommendations. A variety of data collection methods were undertaken, including a review of age-friendly indicators worldwide, focus groups, stakeholder interviews and surveys, community surveys, neighborhood audits, and a townhall meeting. The assessment found that two of the three areas that older adults found most important — transportation and social participation, are those to which the city is most responsive.[37] However, survey results indicated that two areas needing improvement were transportation options and transportation safety. The report does not provide many explicit recommendations, stating that its purpose is to provide the City with age-friendly indicators and evidence to develop policy initiatives.[37]
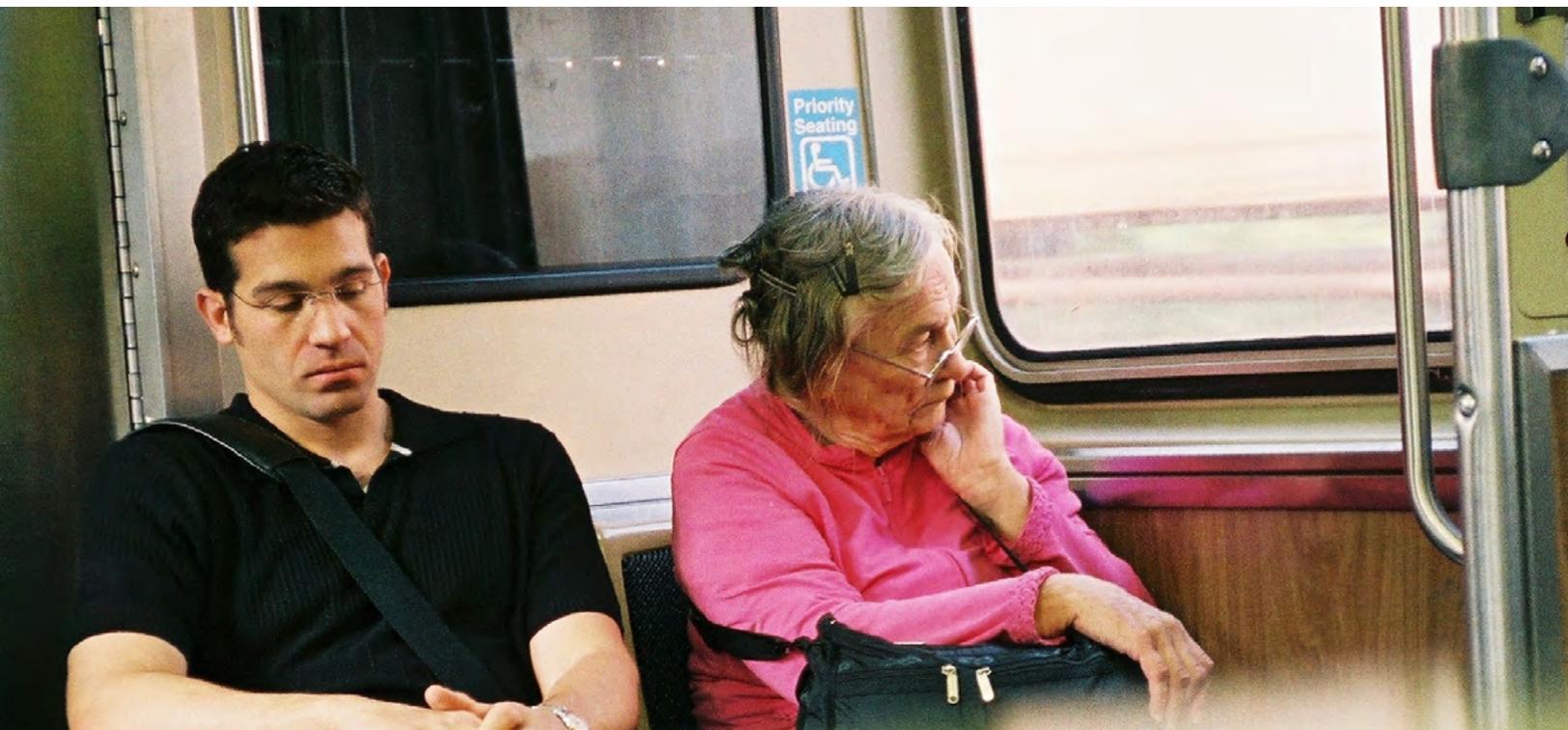
Houston

Seniors make up 9.8 percent of the total population of the city of Houston, according to American Community Survey 2016 estimates. The Houston-Galveston Area Council estimates that the percentage of the Houston metropolitan area's population aged 60 and older will grow nearly ten percent by the year 2040.[38] The Houston metropolitan area ranks #35 on the Milken Institute's *2017 Best Cities for Successful Aging: Large Metros* list, and the city of Houston scores a 52 out of 100 for transportation on AARP's *Livability Index*.

Public Mobility Assistance Programs

Fixed-Route Transit

The Metropolitan Transportation Authority of Harris County (METRO) is the major transportation agency serving all of Houston and most of Harris County. METRO operates bus and rail service throughout the region and offers seniors ages 65 to 69, Medicare cardholders, and the disabled a 50 percent discount on all Metro transit services. Seniors 70 or older ride for free. To receive an age-related discount, riders must mail in a registration form or visit the METRO RideStore in person. To receive the disability discount, riders must visit the METRO RideStore with a government issued ID, in addition to some form of verification of condition, such as a doctor's statement. All buses are equipped with ramps or lifts and reserve two priority seating areas for older adults and people with disabilities. All rail cars are wheelchair accessible and reserve four areas for wheelchairs, while all station platforms are completely ADA compliant. METRO does not currently offer discounted fares or administer any programs based on low-income in addition to those that are age related.

Paratransit

METROLift is a complementary, shared-ride, curb-to-curb paratransit service with travel times and timeliness of service comparable to METRO's fixed-route bus service. There are three categories of eligibility:

1. Persons with disabilities, who are unable without the assistance of another person, to board, navigate, ride or disembark from a wheelchair accessible local bus.
2. Persons with disabilities, who can use a wheelchair accessible vehicle but want to travel on a bus or rail route that is inaccessible.
3. Persons with disabilities, who are prevented from getting to and from the local bus by their disability. Eligibility is based on a functional limitation preventing the patron from walking or rolling to a bus stop without assistance from others.

According to METRO, "eligibility cannot be granted based solely on the lack of curb cuts or other environmental barriers, distance to the bus stop, or because METROLift is perceived to be safer or more convenient than local bus service".[39] To use this service, eligible applicants must fill out an application,

Figure 3: Map of METROLift service area. Green is base service area; yellow is extended

which can be mailed in or delivered to the METRO RideStore. The application requires a physician's statement explaining why the rider's disability prevents him or her from boarding, riding, or disembarking from standard transit.

The Dispatch Office or an online scheduling page allow the scheduling of rides. Fares are differentiated by service area, with monthly and annual pass options only available for the Base Service Area. A single trip costs $1.25 in the Base Service Area, and a premium fare of $2.50 is charged for a single trip within the Extended Service Area (Figure 3).

OTHER PROGRAMS

METROSTAR

METROSTAR is a cost-effective public vanpool service that operates beyond METRO's service area with routes in Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery and Waller Counties. Riders share the cost of the vehicle, fuel, maintenance, parking and tolls; and vanpools use HOV and diamond lanes to reduce travel time. New routes can be formed at any time. Employers can also set up a STAR program for their employees. A dedicated team at METRO helps identify riders and volunteer drivers, works with employers and arranges individual costs. For all vanpools, riders meet in a designated central location, where an approved volunteer drives the group. The van stays in possession of the group at all times. The primary contact, typically the driver, collects the money and pays the lease payment to METROSTAR. Gasoline, parking, and tolls are paid by the vanpool and not included in the lease payment. The program estimates an average daily rate of $4-6, and this estimate "is based on the number of miles from the STAR vanpool meeting place to the work site and includes van lease, liability insurance, 24/7 roadside assistance, routine maintenance and repairs, gasoline, parking and toll costs".[40]

METROSTAR is not targeted for older adults, however, it serves as one of the few options for lower-income people. As each route group designates a single driver, users are not required to drive, which may be useful for older, lower income workers, who are unable to drive a vehicle for any reason. This program is funded by METRO, Texas Department of Transportation, and the Federal Highway Administration.

Harris County Rides

Harris County Rides is another transportation option for older, lower-income Houstonians. Rides is a curb-to-curb subsidized program that allows eligible customers and participating agencies to purchase transportation services at a discount. The customer or sponsoring agency pays 50 percent of the total trip cost. The two service options include shared-ride or taxis. Shared ride service requires advance reservation and is non-metered. Taxi service is metered and can be booked up to 90 minutes in advance. For a one-way taxi trip, the maximum fare allowed is $48.00. The program is funded through federal grants.

BUILT ENVIRONMENT

Senior Centers

The City of Houston is served by the Harris County Area Agency on Aging (HCAAA), which was established through the Older Americans Act of 1973. With federal funding, the HCAAA plans and contracts services for older adults throughout Harris County to meet "the social, nutritional, educational and logistical needs" of residents ages 60 and above.[41] Thirteen senior centers in Houston are served by the HCAAA. The centers offer a range of activity programming including fitness classes, computer training, arts and crafts.

General and Specific Plans

Houston's City Council adopted the city's first General Plan, Plan Houston, in 2015. Plan Houston describes a vision and goals for the city and identifies twelve "core strategies" to realize that vision. Two of these strategies are to "nurture safe and healthy neighborhoods" and "connect people and places". Action items in the healthy neighborhoods strategy include using "localized planning to help neighborhoods improve and maintain quality of life" and "encouraging development that fosters healthy lifestyles for Houstonians of all ages".[42] Connectivity action items include: developing and maintaining a comprehensive mobility plan, encouraging compact, pedestrian-friendly development around transit, working with partner agencies to increase transit ridership among all Houstonians, and enhancing access to affordable transportation options.[43] However, these policies and objectives are not presented with the mobility of senior residents in mind; Plan Houston is silent on the needs of different age groups, particularly with respect to issues impacting senior mobility.

The Aging Agenda

In 2008, Houston's Department for Health and Human Services published the Aging Agenda in collaboration with the HCAAA. In 2016, a progress report was released describing the status of the Agenda's visions and highlighting work yet to be done. The vision for transportation and mobility is to "expand quality, cost-effective and reliable transportation options and improve neighborhood amenities to promote safe pedestrian and motorized mobility."[44] Recommendations to realize this vision include encouraging partnerships with medical communities and conducting mobility audits. Progress on partnerships has, thus far, been limited to outreach efforts, as Harris County Rides has not committed to being a partner in funding transportation services. However, Harris County Rides has collaborated with several local medical facilities in the region to expedite the intake and trip planning process.[45] Other improved mobility efforts stem from several agencies at different scales, each including improvements to the built environment. The City of Houston's Complete Streets and Transportation Plan requires several separate plans, which have each progressed toward development or implementation. The Harris County Consolidated Plan includes an objective to improve three miles of sidewalks and pathways benefiting low-income areas within the Houston and Harris County service area by February 2018.[45] Further, in 2015 the City of Houston joined AARP's Age-Friendly Communities Network, which will result in a citywide Action Plan to make Houston more livable for older people.[46]

PHOENIX, ARIZONA

Seniors comprise 9.8 percent of Phoenix's population, according to American Community Survey 2016 estimates. The Phoenix metropolitan area ranks #88 on the Milken Institute's 2017 *Best Cities for Successful Aging: Large Metros* list, and the city of Phoenix scores a 48 out of 100 for Transportation on the AARP *Livability Index*.

PUBLIC MOBILITY ASSISTANCE PROGRAMS

Fixed-Route Transit

Valley Metro—the Phoenix metropolitan area's regional transportation agency—provides free one-on-one transit training for older adults upon request. Travel trainers teach seniors to plan trips, navigate routes to and from stations, use fare machines, request and use bus lifts and ramps, and remain with seniors until they are comfortable using fixed-route transit independently.

Phoenix adults aged 65 or older and individuals with a disability qualify for a 50 percent reduced fare on the Valley Metro Bus and Valley Metro Rail programs. Reduced fare is approximately $1.00/ride. Riders must show a form of identification such as a driver's license, state-issued ID, Medicare card, or a Valley Reduced Fare ID. Valley Reduced Fare IDs are not required to receive the reduced fare but they are available for purchase for $5. Applications for the reduced fare card are available in English and Spanish. Local buses run

until midnight, 365 days a year. Rapid and Express service run Monday-Friday, but require paying an additional $1.25 over reduced fare.

Additionally, Phoenix runs four intra-neighborhood circulators free for all ages, to connect residents with schools, businesses, and services:
- ALEX (Ahwatukee)
- DASH (Downtown)
- MARY (Maryvale)
- SMART (Sunnyslope)

Paratransit

Like all age groups, older adults with a disability or disabling health condition, and who are unable to make some or any trips independently on fixed-route transit, qualify for local and regional curb-to-curb paratransit services, which are offered by Valley Metro Paratransit and various local Dial-a-Ride branches[47]. Valley Metro Paratransit runs service within Phoenix and regionally in the surrounding jurisdictions. The five local Dial-A-Ride programs operate within their respective locales. Qualifying seniors may have a Personal Care Attendant riding for free with them during the duration of the ride, as well as at least one Companion, who pays the same rate as the qualifying senior. As many Companions are allowed as space permits. Paratransit guides are available in Spanish and English[48].

Other Programs

Valley Metro RideChoice

This program provides taxi service at a discounted rate for older adults and people with disabilities in participating cities in the Phoenix region. Qualifying riders must demonstrate proof of residency within a participating community. The six participating cities offer different discount rates. For instance, riders from Gilbert can pay $3 for a trip of up to $18 and are responsible for all costs above $18. Gilbert participants are eligible for 16-one way any-purpose trips per month and up to 40 trips per month for work, school, or medical purposes. Riders must register with Valley Metro by submitting a RideChoice application with proof of eligiibility.

Senior/ADA Taxi Subsidy

The City of Phoenix operates a combined Senior/ADA taxi subsidy program, which discounts taxis for Phoenix residents. Seniors may buy one fare card per month, up to $80 in value at the following rates:

- $32.00 buys $80.00 worth of cab fare
- $22.00 buys $60.00
- $12.00 buys $40.00
- $6.00 buys $20.00

Senior Center Shuttles

The City of Phoenix also offers the Senior Center Shuttle program, which utilizes taxis from participating cab companies. Seniors can register for this program at any of the City's 15 senior centers. Riders may travel between home and the nearest senior center for $1.00 twice a day, during center hours (8AM - 5PM Monday - Friday).

The city also provides funding for group shuttles that transport seniors to various recreational activities such as sporting events, theaters, outdoor recreation areas, and volunteer events, as coordinated by Senior Center staff, for $1.00 per senior. These programs were partially funded by the FTA's New Freedom Grant Program (now replaced by the Enhanced Mobility of Seniors and Individuals with Disabilities Program).

Built Environment

Senior Centers

The City of Phoenix Human Services Department provides programming and services at 15 senior centers. Centers offer activity, education, personal development, nutrition, social services, and recreation oriented-programming. Online information about the Centers is offered in English and Chinese.

General and Specific Plans

The City's Transportation 2050 Plan focuses on the interdependence of good streets and public transit. Several components of the plan seek to improve transit access for seniors, and senior-friendliness in transit. Key goals to develop Phoenix as a "Liveable City" include:

- Walkable streets that lead to and from transit stops
- Enhanced Dial-A-Ride service
- Better alternative transportation services for seniors
- More shaded bus stops

Improvement benchmarks include:

- Increase bus frequency by 70%
- Expand services to 12AM on weekdays and 2AM on weekends for local bus and Dial-a-Ride
- Enhanced ADA/ Dial-A-Ride service
- More than 135 miles of new sidewalks

Funding for the plan is generated by a 0.7 cent sales tax which became effective in January 2016. The 35-year sales tax is expected to generate $16.7 billion in revenue—almost half of the plan's total costs. The remaining costs will be paid for by federal and county funds, passenger fares, and other sources.

Age-Friendly Phoenix

In October 2016, the Phoenix City Council approved joining the AARP Network of Age-Friendly Communities. A 19-person Ad Hoc Committee of community leaders was assembled to create an action plan to improve livability for older adults in Phoenix.[49] Through meetings with community members, the Ad Hoc Committee developed recommendations for three focus areas: civic engagement, employment, and social participation. Each focus area outlines a vision, a set of goals and related metrics. Older adults were surveyed prior to the development of the action plan to evaluate community need.[49] Though survey results indicated a majority of participants felt that transportation accessibility and a well-maintained built environment were important, the action plan does not further address transportation or mobility needs.

Miami, Florida

Seniors comprise 16.5 percent of the city of Miami's total population. Miami-Dade County has the largest number of older adult residents in Florida, and that number is expected to double within the next 25 years.[49] The Miami metropolitan area ranks #74 on the Milken Institute's 2017 *Best Cities for Successful Aging: Large Metros* list and Miami city has a score of 69 out of 100 for transportation on AARP's *Livability Index*.

Public Mobility Assistance Programs

Fixed-Route Transit

Miami-Dade Transit (MDT) is the primary transportation authority in Miami serving the city and the greater Miami-Dade County region. The agency operates bus and rail service in addition to Miami's MetroMover - a free automated people mover spanning 4.4 miles. Adults aged 65 and older, or Social Security beneficiaries who are permanent Miami-Dade residents, are eligible to ride for free with a Golden Passport EASY card. Reduced fares, which are half the price of regular fare, are also available for Medicare recipients, people with disabilities, and people with annual incomes between $18,090 and $24,120. All discount programs require riders to file an application in person, present an ID and social security card, and show proof of eligibility such as a Medicare card, physician's note, or income statement.

Paratransit

Special Transportation Service (STS) is Miami-Dade Transit's complementary paratransit service. Privately contracted sedans and vans equipped with lifts provide door-to-door, shared-ride service for eligible riders. Riders must apply to be certified for the STS program and should be determined as either "conditional" or "unconditional" ADA Paratransit eligible. Unconditional eligibility is defined as being unable to take standard fixed-route transportation service for any trip; conditional eligibility is the ability to take standard fixed-route transportation service under some circumstances and having an inability to do so under others. To become certified, riders must complete an application, which includes medical verification by a physician, and schedule an appointment by phone for an in-person certification interview.

Other Programs

The Transportation Disadvantaged (TD) program is a state-funded program offered by MDT that distributes free MDT ride passes to qualifying non-profit agencies or programs for use by their clients, who are considered transportation disadvantaged. This includes the disabled, homeless, the poor (with an income level at or below 150 percent of the Federal Poverty Level), adults and children at risk, or the unemployed. The organization or agency must be a 501C or IRS Exempt organization, be physically located in Miami-Dade County, in good standing, and serve residents whose documented household income level does not exceed 150 percent of the Federal Poverty Guidelines. The agencies are responsible for determining their client's eligibility. Pass types range from single trip to one month unlimited. A number of Transportation Easy annual ride cards are distributed on a first-come, first-serve basis until grant funds are exhausted.

BUILT ENVIRONMENT

Senior Centers

The City of Miami provides funding to non-profit agencies for the provision of social services but does not specify any agencies or particular centers. The Miami-Dade County website advertises three specialized senior centers under their Community Action and Human Services department. According to their descriptions, each center provides a variety of social,

educational, and recreational programs to older adults, however, only one is open to all seniors. One is actually a residential facility, serving residents only. The other is only open to Haitian Americans. It is unclear if these centers receive funding from, or are operated in any capacity by Miami-Dade County.

General and Specific Plans

The City of Miami's most recent update to its general plan, the Miami Comprehensive Neighborhood Plan, was adopted in 2017. The plan pledges to continue to support Miami-Dade County in the provision of public transit and paratransit, and to accommodate "the special needs of the City of Miami's population, many of whom are transportation disadvantaged."[50] However, the elderly are not mentioned specifically.

Age-friendly Initiative

The Miami-Dade County Age-friendly Initiative's goal is to "create a community where older adults of all ages can stay active, engaged, and healthy with dignity and enjoyment".[51] The initiative is led by coordinating agencies such as Miami-Dade County, AARP Florida, and the Miami-Dade Transportation Planning Organization.

Two of the Initiative's projects are the Age-Friendly Action Plan, published in 2015, and the Safe Routes to Age in Place project. The Action Plan prioritizes three of eight livability domains, which represent the built environment. The other five represent the social environment. The transportation domain lists strategies and actions to improve mobility for older adults, in addition to identifying potential partners. Overarching strategies focus on active transportation, safe streets, motorized and on-demand transportation, and better access to and improved quality of transit stops. The Plan emphasizes education and advocacy but also touches on policy and design. The Safe Routes to Age in Place project, similar to Safe Routes to School, was piloted in 2012 in Miami's Little Havana neighborhood with "the goal to empower older adults in Little Havana... to recognize their needs and identify changes to improve safety within their neighborhood."[51] Resident participants engaged in educational workshops, a walking audit, and discussions with officials and transportation agencies, allowing them to think about and advocate for changes in their environment.

CONCLUSION

Table 1 presents a summary of the cities we researched in this section. As the profusion of programs described previously indicates, improving the mobility of older adults is a complex topic. The dominant institutional narrative, particularly in transportation, is one of fragmentation: multiple agencies provide overlapping fixed-route and demand-responsive services, whose funding sources and fare structures vary considerably. Academic reviews of mobility programs in other regions have noted the disproportionate expense of some of these measures, particularly demand-responsive paratransit, and questioned whether such programs could viably maintain vital mobility for the baby boom generation as they age.[52] In the absence of clear data on the costs and benefits of the welter of programs, it is difficult to make evidence-based judgments as to which programs are the most valuable. Moreover, the many sources of both funding—Proposition A's local return, multiple city departments— and legal obligations—the ADA, the *Willets* settlement—that drive mobility programs further complicates the region's ability to properly assess what works and what doesn't. The high-level cooperation engendered by the Purposeful Aging initiative may give the region some necessary impetus to shape these disparate efforts into a coherent, thoughtful strategy for improving the lives of Los Angeles's older adults.

City	Old Adults as % of Population (ACS 2016 Estimates)	Paratransit Program	Reduced Fares on Fixed-Route Transit	General Plan contains specific policy aimed at Older Adults Policy	Age-Friendly Initiative
Los Angeles	11.5 %	✓	✓	✓	✓
New York City	12 %	✓	✓	—	✓
Chicago	11 %	✓	✓	✓	✓
Houston	10 %	✓	✓	—	✓
Phoenix	10 %	✓	✓	✓	✓
Miami	16.5 %	✓	✓	✓	✓

Table 1: Age-Friendly City Summary

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TRAVEL PATTERNS OF LOS ANGELES INNER-CITY LOW INCOME OLDER ADULTS: ANALYSIS OF THE CALIFORNIA HOUSEHOLD TRAVEL SURVEY

For this last section of Part One that describes existing knowledge about older adult travel, we describe the travel behavior of the aging population in Los Angeles. This description focuses on how minority, low-income, inner-city older adults travel, and compares how their travel behavior differs from older adults outside the inner-city, and from travel trends in Los Angeles County as a whole.

METHODOLOGY

Our findings are based on an analysis of the 2010-2012 California Household Travel Survey, a statewide travel-diary survey. The focus of this report is on L.A. County, with some comparisons to state averages. We studied three modes: walking, transit, and driving. We excluded long-distance intercity travel, as well as travel by bike, boat, plane, and other travel modes because the sample sizes for trips by those modes among the populations were too small to be representative.

The California Household Travel Survey is conducted every ten years by the California Department of Transportation (Caltrans). Its principal purpose is to create data for travel behavior models that will allow transportation planners to meet emissions standards mandated by state and federal regulations. The survey includes an interview portion in which respondents provide demographic information and self-report information about their typical travel patterns, as well as any long-distance traveling they may have done in the past eight weeks. The respondents in each participating household also self-report travel diaries that encompass a 24-hour period, and submit them either via mail, online or through CATI (Computer Assisted Telephone Interviewing). Survey respondents indicate their travel mode, trip purpose, time of arrival and departure, and other relevant data points in the diary (such as with whom they were traveling).

The households that participated in the 2010-2012 CHTS were randomly selected based on their address. Typically under-represented groups (such as non-English speaking groups) were over-sampled. Caltrans divided the state into 30 geographic-based samples and selected individual households from each stratum. The size of each geographic region is in proportion to the relative population size of each area. Approximately 42,500 households, located across California, participated in the 2010-2012 CHTS. Of these households, the survey included 8,219 households from L.A. County. As every member of each participating household must complete the survey, the total number of individual respondents that participated in L.A. County approximated 22,500 people. Survey weights that were developed by the CHTS were used to correct for over- or under-representing certain demographic groups. These weights were based on data from the 2010 U.S. decennial census and the 2005-2009 American Community Survey, both of which are conducted by the U.S. Census Bureau.

DEFINITIONS

- Low-income: We define low-income households as either:
  - One- or two-person households, whose household income is less than $25,000.
  - Households with three or more people, whose household income is less than $35,000.
  - These figures are based on the income categories provided by the CHTS as well as the 2015 L.A. Poverty Line.

- Minority: We define minority as anyone whose ethnicity is not White and anyone who identified as Hispanic. The survey asks, in a question separate from racial background, whether the respondent identifies as Hispanic.

- Inner-City: We define the inner-city as the census tracts that fall within Los Angeles City Council Districts 1, 8, 9, 10, 13, 14 (Figure 4). These census tracts were selected due to their distinct demographic and geographic characteristics. The map below highlights where the Inner City Council Districts are located within the City of Los Angeles.
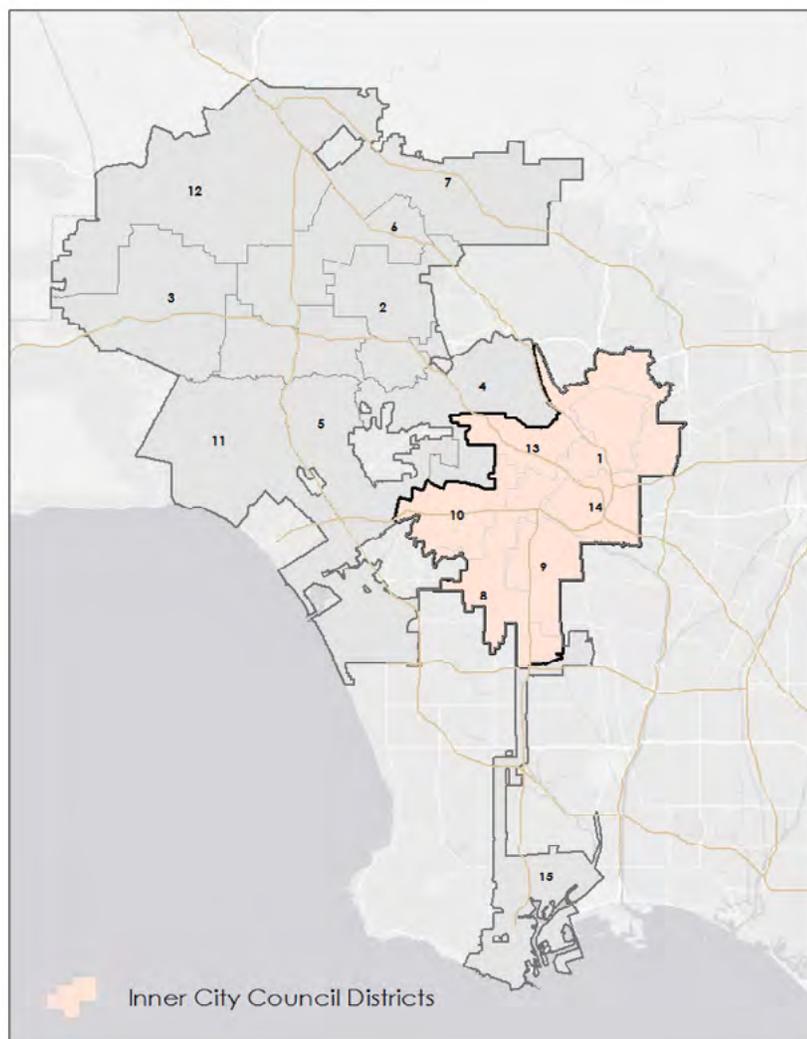
Figure 5: Map of inner city council districts in the City of Los Angeles

- Old: We define "old" or "older adult" as anyone over the age of 65. We also differentiate between "young old" (individuals between the ages of 66 and 79) and "old old" (individuals who are 80 years or older). These age categories are derived from the CHTS.

- Trip purpose: We differentiate between four broad trip purposes: employment, social/recreational, health care, and household chore trips. For both employment and recreational trips, we combined a variety of more limited trip purposes. Employment trips must be work-related; social and recreational trips encompass a wide range of activities, including eating, exercise, and volunteer work. Health care trips were defined by the CHTS as trips to a medical professional, including a "doctor, dentist, eye care, chiropractor, veterinarian, etc." The CHTS defines household chore trips as "errands (bank, dry cleaning, etc.)" We excluded school-related trips, as they were not relevant to this study, and other trip purposes, which were too infrequent to result in a robust sample trip size.

FINDINGS

TRIP PURPOSE

Employment trips among older adults are shorter than the average employment trip distance in Los Angeles County. A high proportion of employed older adults were included in the survey: 35.6% of older adults sampled in L.A. County were employed, which is much higher than the figure reported by the 2015 ACS census data, in which 20.2% of people over 65 years old in L.A. County were employed.[1] Low-income, minority, Los Angeles inner-city older respondents had a rate of employment of 22.9%, whereas older adults living outside the inner-city, who did not have low incomes had a rate of employment of 35.2%.

Poor, minority older adults living in the inner-city travel on average 2.3 miles to work, which is particularly short when compared to the county average of 5.1 miles to work. This may be related in part to the high proximity of destinations in higher density inner-city districts. However, older adults living outside the inner-city also travel a shorter distance than the L.A. County average (3.9 miles compared to 5.1), and the average employment trip distance among older adults across California is shorter than the state average (4.1 miles compared to 5.3). These figures indicate that older people tend to work closer to home than the state average.

Similar to employment trips, older adults are more likely to make shorter social and recreational trips. Low-income, minority older adults living in the inner-city have particularly short social trips (3.3 miles on average). In comparison, the L.A. County average distance for a social trip is 5.2 miles.
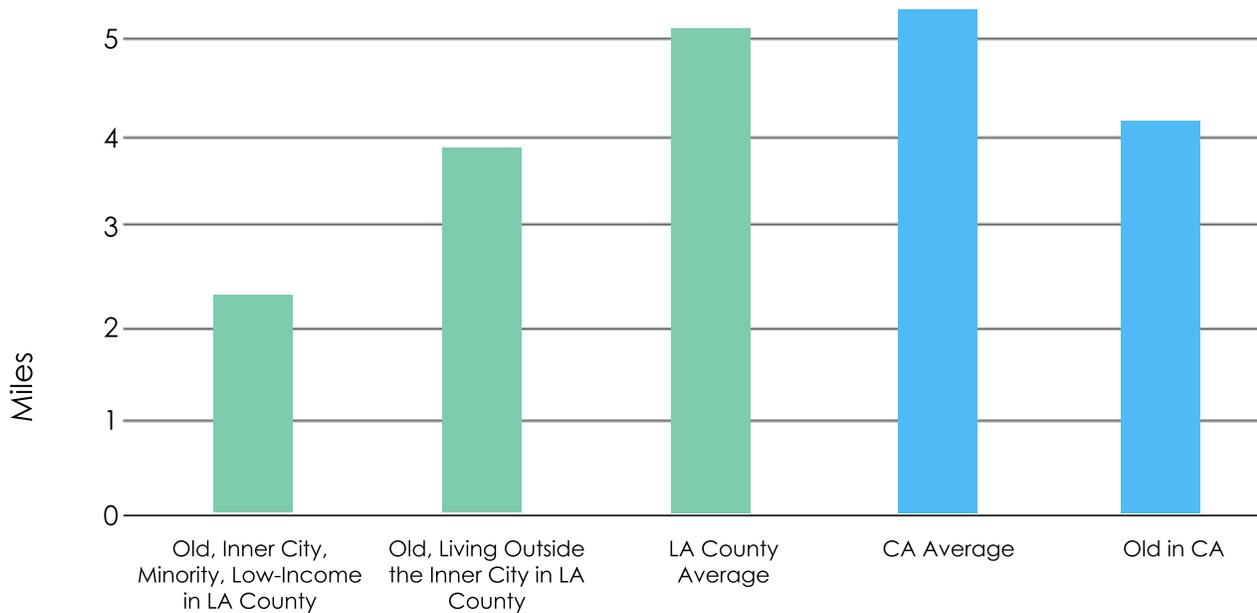
Figure 6: Average employment trip distance (in miles)
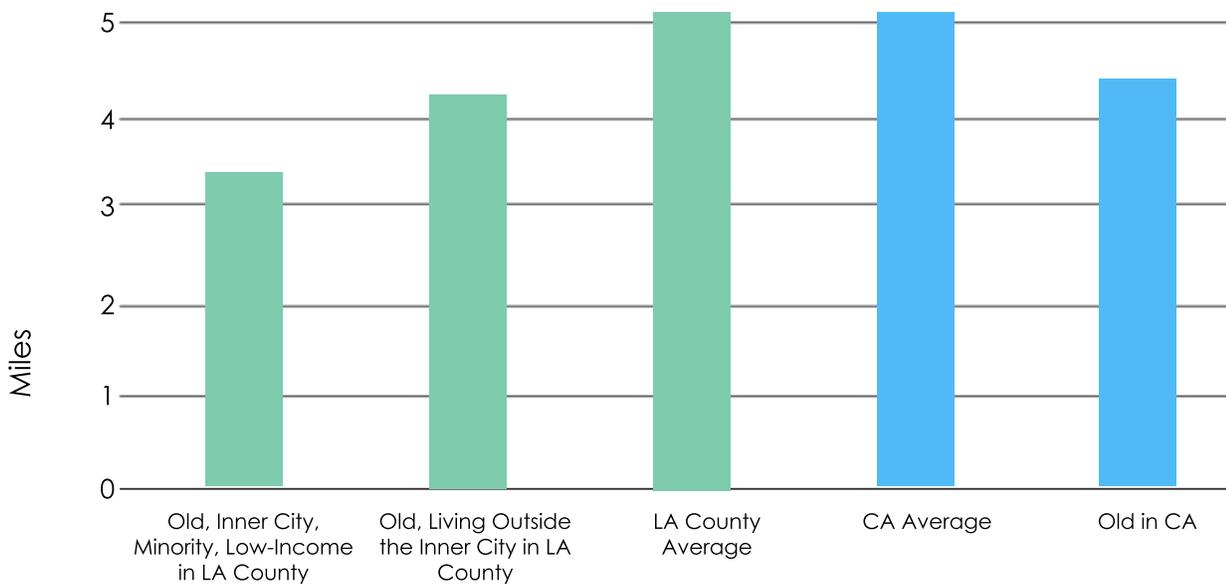
Figure 7: Average social/recreational trip distance (in miles)

Older adults in the inner-city travel shorter distances for healthcare-related trips compared to the average health care trip distance among people over 65 years of age in L.A. County (4 miles compared to 5.7 miles, respectively). This finding may be related to the greater accessibility to a variety of destinations within the inner-city. Older adults in the inner-city

may not need to travel as far from their homes to reach the closest healthcare facility. It is unclear whether they are restricted in their choice of health care facility by the mode choices available to them (i.e. they must choose the clinic that is within walking distance because they cannot drive to a clinic further away).

Healthcare trips varied in length and mode choice based on age and inner-city residency. Inner-city residents, both young and old, were more likely to make a healthcare-related trip (i.e. to the doctor, dentist, or another medical professional) by walking or transit than the average L.A. County resident. Some 78% of health care trips among people in Los Angeles County were made by car, which is slightly less than the share for older adults living outside the inner-city (who made 82% of their health care trips by car). However, the County average is much greater than the share for older adults living within the inner-city, for whom only 34% of health care trips were by car. The difference in travel mode for health care trips between inner-city residents and residents outside the inner-city indicates that residence in the inner-city influences the mode choice for health care trips. However, age also affects mode choice. About 38% of young people in the inner-city traveled to their health care trips via car, compared to 34% of their older counterparts.

Share of Healthcare Trips Made By:

Walking   Car   Transit   Other

People Living in the Inner City   People Living Outside the Inner City
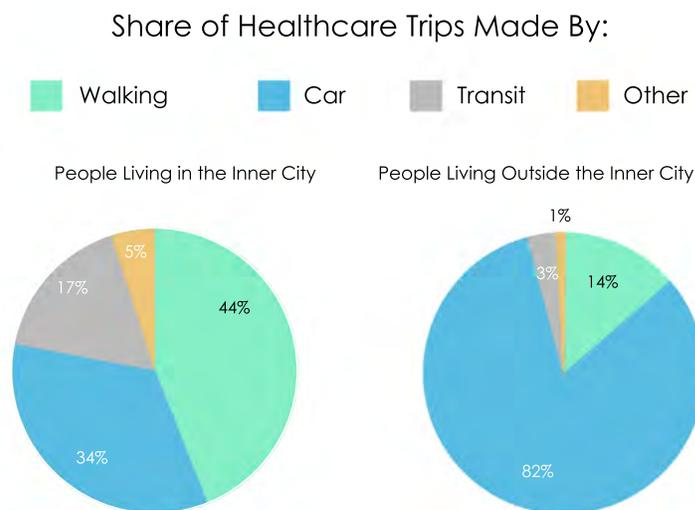
Figure 8: *Mode share for health care trips among older residents of L.A. County living inside vs. outside inner-city areas*

Household-serving trips were especially short among inner-city older adults, who were more likely to go on errands by walking and by transit compared to older adults living outside the inner-city. The average distance for a household trip among the inner-city older adults was 2.9 miles, which is much shorter than the average distance among older adults in L.A. County (5.1 miles). Mode choice was also significantly different. Among older adults in L.A's inner-city, 56% of household trips were made by car, compared to 85% among older adults living outside L.A. County's inner-city. It may be that older adults living in lower

density residential areas live further away from goods and services, and must, therefore, use different travel modes (i.e. the car) to reach these destinations.

TRIP DISTANCE AND TRIP FREQUENCY

Older adults in Los Angeles travel a shorter total distance in a day compared to the L.A. County average and the state average. This behavior may be partially due to the lower rate of workforce participation among the old: as work trips are typically the longest trip of the day; fewer work trips by older adults may reduce the overall average distance traveled by them. The average distance traveled per day by a resident of L.A. County is 34.2 miles, whereas an older adult, who is not poor and is living outside the inner-city, traveled 23.6 miles in a day. It is clear that poverty and inner-city residence impact the mobility of older adults in L.A inner-city: low-income, minority older adults in the inner-city of L.A. County travel a mere 12.7 miles per day on average.
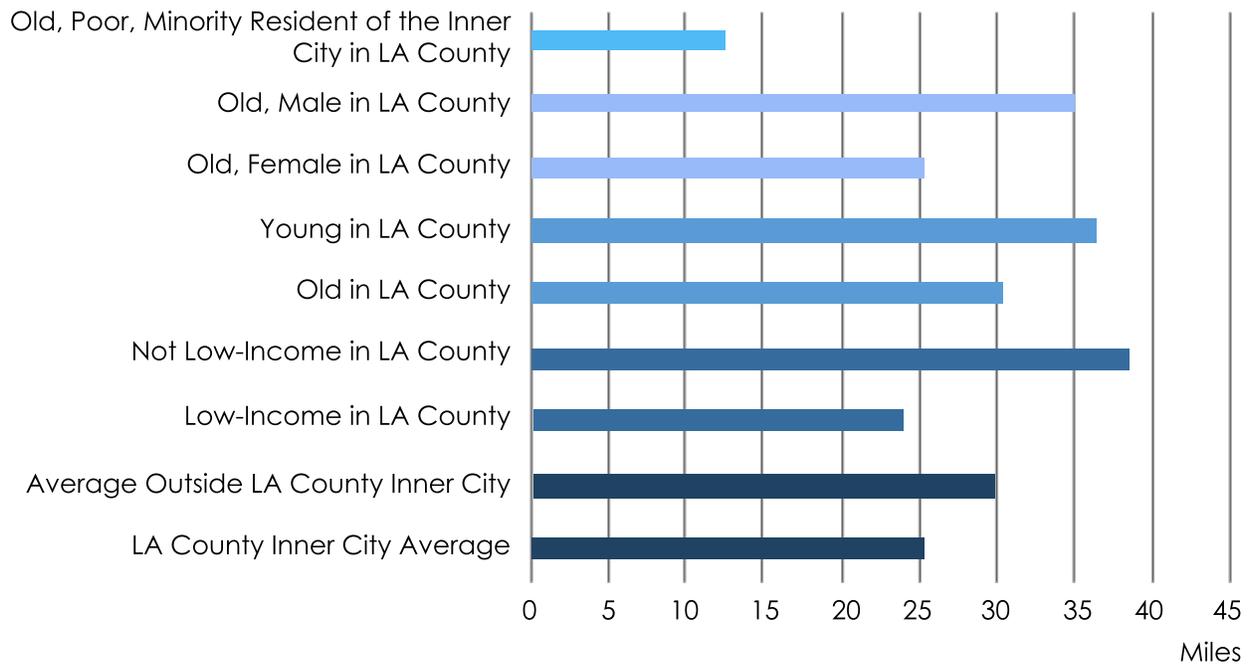
Figure 9: Average daily total distance traveled (in miles)

Despite the shorter total distance traveled, poor minority older adults living in L.A. County's inner-city take a very large number of trips per day (6.8 compared to the L.A. County average of 6.3). The average number of trips per day for residents of all ages living in the inner-city is much higher than for residents outside the inner-city (7.3 compared to 6.4 trips).

The high rate of trip taking among residents of the inner-city may be due to the greater accessibility they have to a variety of destinations that are typically located within close range

in higher density, inner-city neighborhoods. Income also may have an impact in the rate of trip making. People in households with low-incomes in L.A. County take on average 6.5 trips, whereas people in households that do not have low-incomes take 6.2 trips per day on average.

The trip frequencies of poor, minority older adults in the inner-city of Los Angeles are very different from the trip frequency trends of older adults on average. Older adults, on average, take fewer trips per day. Older adults, who are not poor and who live outside the inner-city, typically take fewer total daily trips than the L.A. County average (approximately 6 trips compared the county average of 6.3). The average number of trips taken by older adults across the state is also fewer than the average among all Californians (5.7 compared to the state average of 5.9).
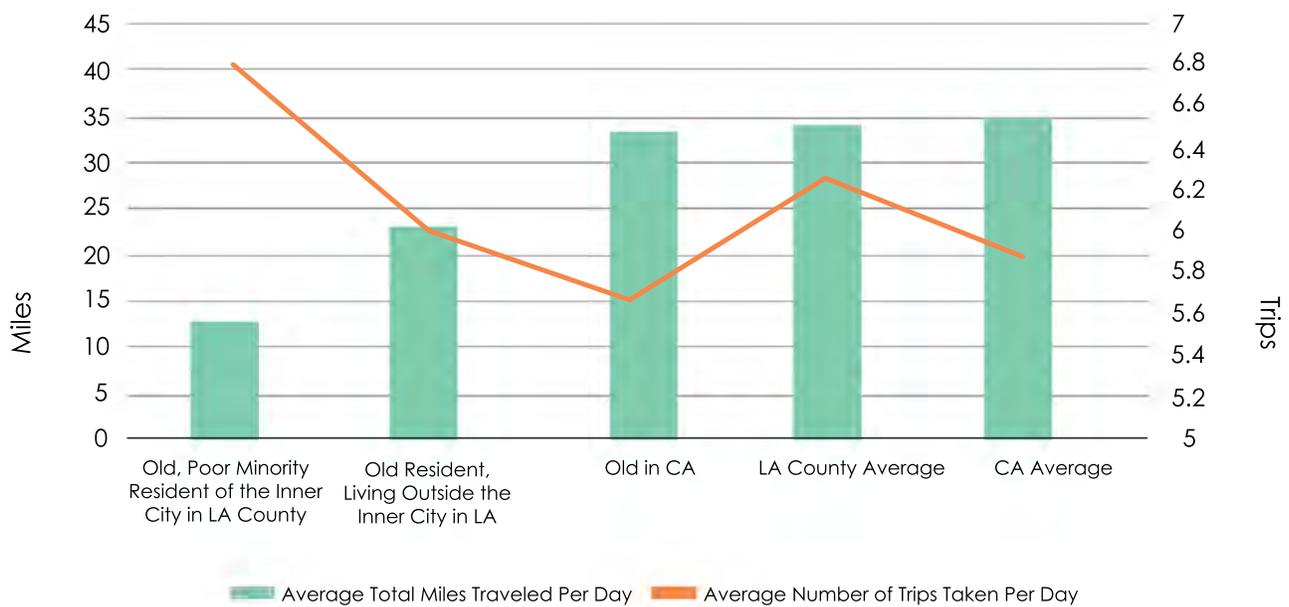
Figure 10: *Average daily distance traveled (in miles)*
compared to the average number of trips taken per day

MODE CHOICE

Mode Share by Total Number of Daily Trips: The difference in total miles traveled per day between low-income, minority older adults residing in the inner-city and older adults living outside the inner-city is related to the differing mode choices between the populations. Low-income, minority older adults in the inner-city take a far greater proportion of their trips by walking and transit and a far smaller proportion of their trips by driving compared to older

adults, who are not poor and do not live in the inner-city. Non-poor older adults outside the inner-city take a vast majority of their trips by car (86% of all trips, which is twice as much as the share of car trips for low-income, minority, inner-city older adults). They also take fewer walk trips (12% of their trips are made by walking, compared to 43% for low-income, minority, inner-city older adults). Driving confers a high degree of mobility on older adults, and it is clear that those who take more of their trips via driving are also able to travel greater distances per day.

Average Daily Share of Trips by Type

Walking   Car   Transit   Other

Old, Minority, Poor Residents in the Inner City

Old, Non-Poor Residents Living Outside the Inner City
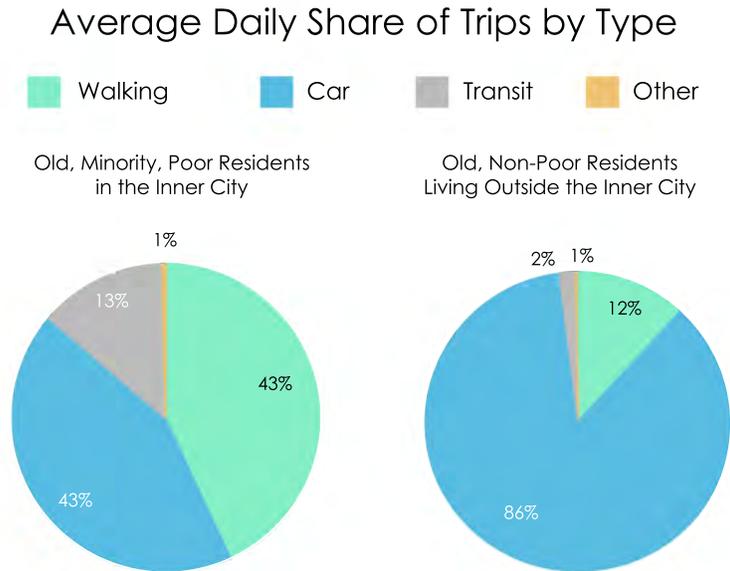
Figure 11: Mode Share among older, low-Income, minority, inner-city residents of L.A. county versus mode share among older residents of L.A. County earning above the poverty line who live outside the inner-city

Mode Share by Total Distance Traveled per Day: The proportion of the total distance traveled by each mode also provides insight into the degree of mobility that older adults in Los Angeles enjoy. Just as non-poor older adults outside the inner-city take a majority of their trips via car, they also cover most of their daily traveling distance by driving (63% of their total daily trip distance is made by car, and 33% by walking). In comparison, older residents of the inner-city, who are members of minority groups and are poor, travel approximately half of their daily trip distance by car, while 42% of their total travel distance is covered on foot. The modal share among non-poor older adults living outside the inner-city is nearly identical to the L.A. County average and the average state mode splits. The modal split of poor, minority older adults in L.A. County's inner-city, therefore, varies significantly from the modal split that is typical across the state: much more of their daily trip distance is made by walking, and far less is made by driving compared to the Californian norm.

The fact that transit makes up a much larger fraction of the total distance traveled compared to the total number of trips is most likely due to the fixed nature of transit routes. A car, or a walking trip, can be tailored to the individual who chooses the most direct path. A transit route, however, is fixed, and individuals using transit may not be able to take the shortest path to reach their destinations.

Average Daily Share of Distance Traveled

Walking   Car   Transit

Old, Minority, Poor Residents in the Inner City

6%
52%
42%

Old, Non-Poor Residents Living Outside the Inner City

4%
63%
33%
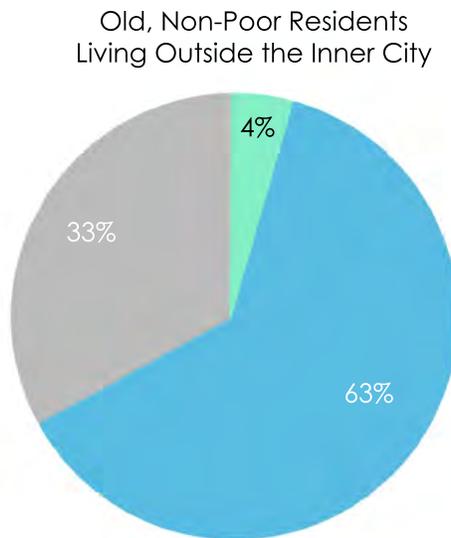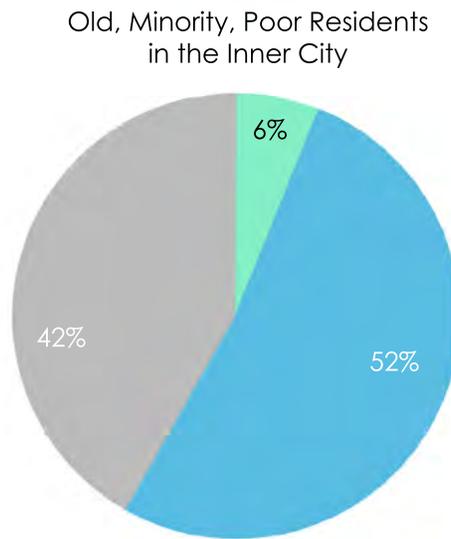
Figure 12: Mode Share among older, low-income, minority, inner-city residents of L.A. County (top) vs. mode share among older residents of L.A. County earning above the poverty line who live outside the inner-city (bottom)

*Driving Behavior and Vehicle Ownership:* The distance and frequency of driving trips are predicated on access to a personal vehicle. The rate of vehicle ownership does not vary substantially between the state average (94.7% of California households own at least one vehicle), the L.A. County average (92% of households), or the average ownership rate among older adults living outside of L.A. County's inner-city (93.3%). In contrast, poor, minority older adults living in L.A. County's inner-city have a far lower rate of vehicle ownership: only 64.2% of such households own a car. While a majority of poor, minority older adults in the inner-city are members of households that own a personal vehicle, they still face a lower rate of car ownership.
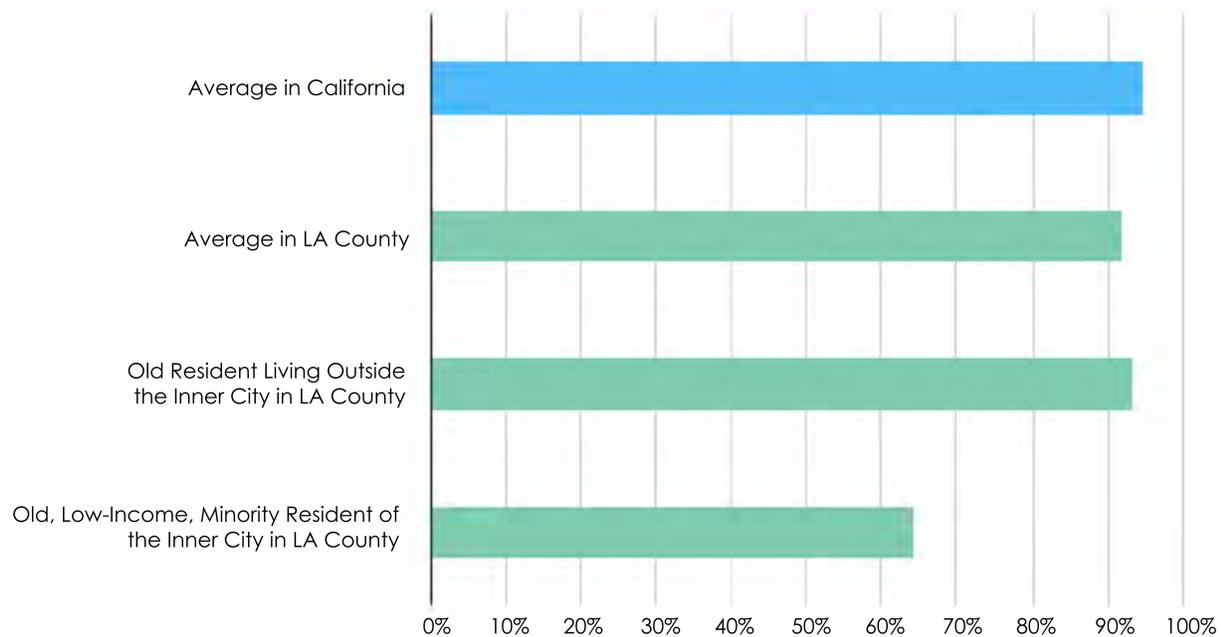
Figure 13: Proportion of people in households with a vehicle

The survey measures vehicle ownership by household, as opposed to by individual. A person's access to a vehicle may be better measured by whether a person has a driver's license. The percentage of people with a license is much smaller among the old. Whereas 80% of residents across L.A. County are licensed to drive, only 50.4% of the old-old in L.A. County have driver's licenses. In addition to age, inner-city residency and income influence the rate of driver's licensing. Some 83% of older people, who are not low-income earners and who live outside the inner-city, have licenses, a figure slightly higher than the County average. In contrast, 52.9% of minority older adults with low incomes and who live in the inner-city have driver's licenses (though the sample size is very small). This pattern has mobility implications, as fewer old, low-income older adults in the inner-city may have personal access or know a family member or friend who has access to a vehicle.

Gender affects driving behavior among the old. Regarding vehicle ownership, 91.7% of women in L.A. County over the age of 65 are in households with a private vehicle, compared to 92.3% of older men in L.A County. Sixty-eight percent of women over 65 years old living in L.A. County have a driver's license, which is a far smaller proportion compared to men, 83% of whom have driver's licenses. The difference in licensing between men and women may be specific to the old-old cohort. Until the age of 66, the rate of licensing for each gender in every age cohort is relatively equal. The gender gap widens among the young old, and is particularly large for the old-old: 62.6% of men in L.A County who are over 79 have licenses, compared to 42.8% of their female counterparts. The drop in licensing among the oldest female cohort compared to younger groups may be due to the fact that they never held driver licenses. In contrast, women in the younger cohorts more likely drove throughout their entire adult lives.
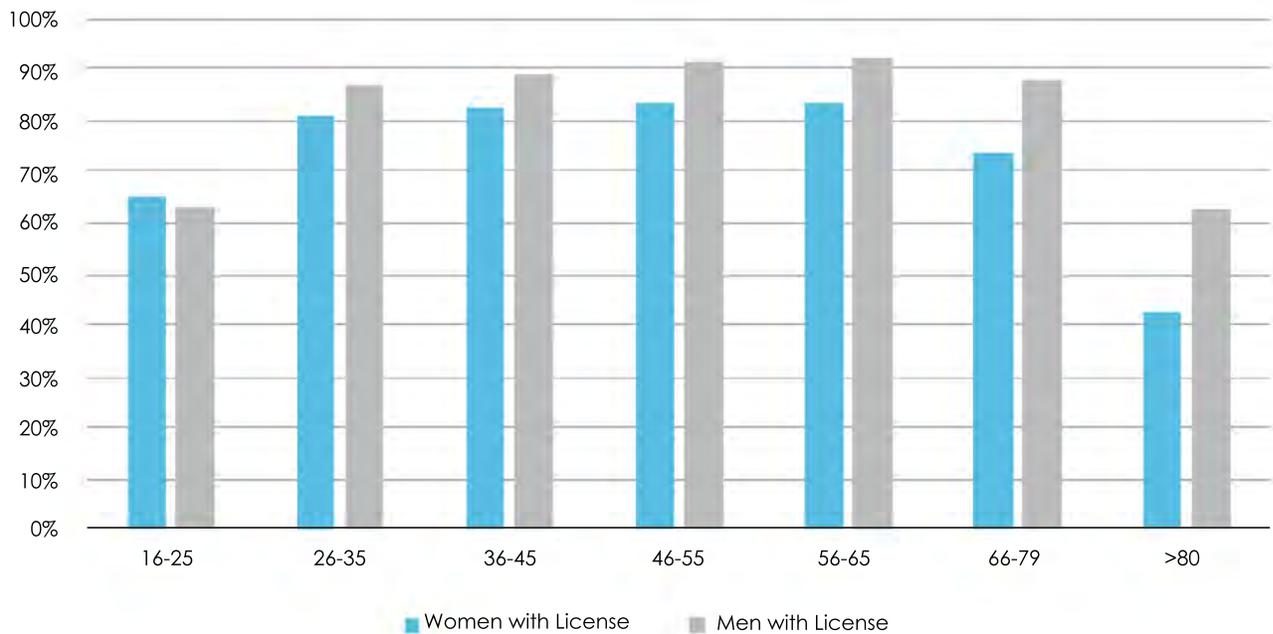
Figure 14: *Proportion of demographic group with a driver's license in L.A. County by gender*

Driving distances are shorter for those who are older. This is particularly true among the old-old in Los Angeles, whose average car trip is approximately five miles, a much lower figure compared to the 6.5 mile average in L.A. County. This difference in driving trip distance may be explained by cohort differences, but it may also be true that older adults have the propensity to self-regulate their driving. Older adults are more likely to avoid freeways, drive during off-peak hours, avoid driving at night, and choose less congested arterial roads.[3] Together these factors influence both the driving trip lengths and frequencies.

Gender may be another factor that influences trip lengths. However, we did not notice significant gender differences regarding car trip lengths and trip frequencies. For example, among the old-old in L.A. County, the average car trip distance among men is 5.6 miles, and 5.4 miles among women. Regarding driving trip frequencies, women in the old-old age group in L.A. County took on average 3.1 car trips per day, compared to 2.9 trips for men over 79 years of age.
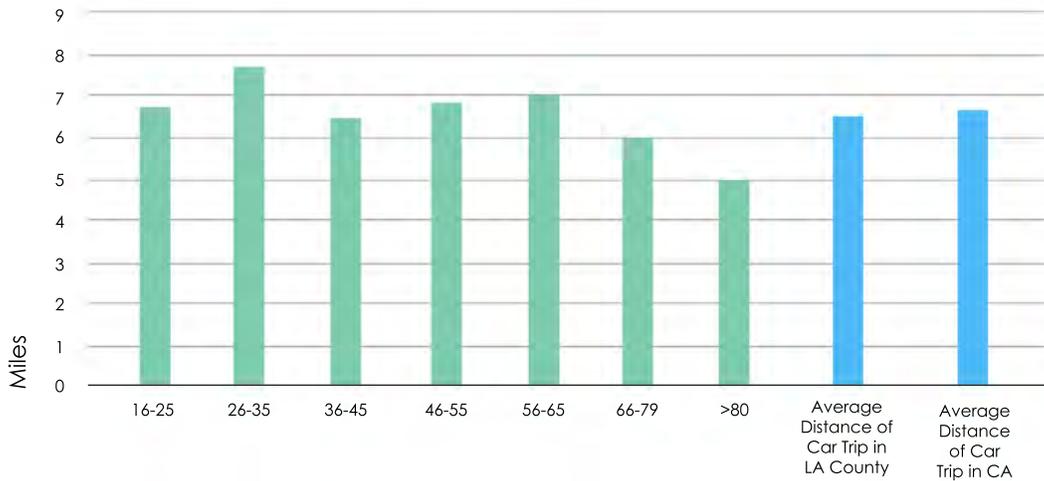
Figure 15: Average distance of a single car trip in L.A. County (in miles)

Age affects the rate at which people travel with others or carpool. While the rate of carpooling among age groups in Los Angeles fluctuates between 28% and 38%, the old-old drive with others for half of their daily car trips. While we do not know whether the old-old were the drivers or the passengers in these trips, given the decreased rate of vehicle ownership among this age group, it is likely that people over 79 years of age may rely on being driven by friends and relatives with access to cars. The old-old may face new restrictions that prevent them from driving alone as much as they were once accustomed to, or they may have relied on others to drive them when they were younger. It is unclear whether this difference in carpooling is related to a change in driving behavior that accompanies age, or whether the old-old age cohort exhibits a distinct driving behavior.
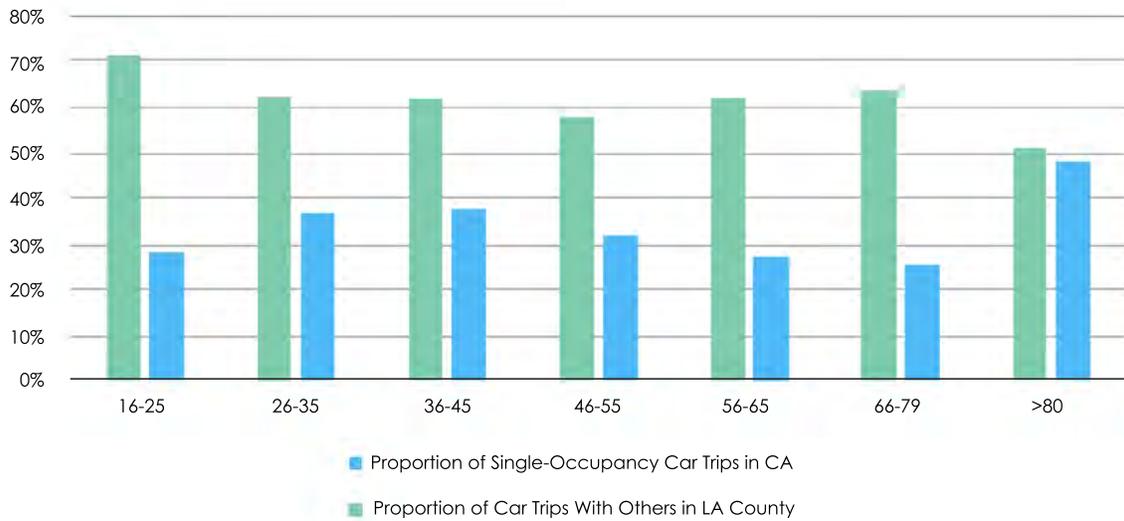
Figure 16: Proportion of Carpool Trips in L.A. County by Age Group

CONCLUSIONS

In summary, older, inner-city, low-income, minority residents of Los Angeles take shorter, more frequent trips than older adults living outside the inner-city. Just as the lengths and frequencies of trips differ, so do the modes. Older, inner-city, low-income, minority residents walk and use transit at a higher rate, and drive less than older adults living outside the inner-city, and less than the L.A. County average. We can explain these differences by the greater accessibility to multiple destinations that typically characterize higher-density inner-city areas. Low-income, older adults in Los Angeles likely exhibit lower rates of car ownership. As discussed in Part One, aging has a particularly big impact on driving behavior. After the age of 65 people take fewer and shorter car trips for all trip purposes. The difference in driving trips among older adults aligns with the travel behavior literature: older adults are less inclined to drive on highways and, instead, rely on short, local, and familiar routes.

Having explored a wide range of demographic and travel-related variables, the following findings represent the most significant takeaways:

- Older adults in L.A. County take shorter distance employment-related trips social/recreational trips, household chore, and healthcare-related trips than the L.A. County average. These distances are especially short among older adults in Los Angeles inner-city.
  - Older, inner-city residents are more likely to walk and take transit to health care and household chore trips compared to older adults outside the inner- city.

- Older, low-income, minority, inner-city residents take a high number of trips per day compared to older adults living outside of the inner-city. They also take far more trips per day than the L.A. County average. In contrast, older adults who are not poor and live outside the inner-city take fewer total trips per day than the L.A. County average.
  - Existing transportation literature supports the notion that higher-density areas with greater accessibility (i.e. the ability to reach destinations) are correlated with shorter and more frequent trips.[2]

- While older, low-income, minority, inner-city residents take a large number of trips per day, they travel a much shorter total distance per day compared to older adults living outside the inner-city. Overall, older L.A. residents travel a shorter total distance per day compared to the Los Angeles County average.

- Mode choice is significantly different for low-income, minority, inner-city older adults compared to older adults who live outside the inner-city. They take a higher proportion of their trips by walking and transit and a smaller proportion of their trips by car than older adults living outside the inner-city.
  - Similar to all travelers, access to a vehicle is an important determinant of mode choice. The rate of car ownership among older, low-income, minority, inner-city residents is much lower than that of older adults living outside the inner-city who have higher incomes.

- Driving behavior is most different for the "old-old," as people age 80 and older take fewer and shorter car trips, are less likely to own a vehicle, and are much more likely to drive with others than alone.
  - It may be that the oldest old drove similarly short distances when they were younger, and this travel behavior is a reflection of differences between age cohorts. It is, however, quite likely that age affects driving behavior. As discussed in the literature review, as people age they tend to self-regulate their driving and choose shorter, local routes.[3]
  - Gender affects driving behavior among the old-old. Men who are age 80 and older are much more likely to have a driver's license compared to women.

In part because of these empirical findings, our study places a particular emphasis on the most vulnerable segment of the older population: those who have low-incomes, are members of minority groups and live in the inner-city. As we saw, this population travels greater distances and more frequently by walking and by transit, and less frequently by driving than older adults living outside the inner-city. This behavior may be due, in part, to the greater accessibility of destinations in higher density inner-city regions, but it may also be attributed to the especially low rate of vehicle ownership among the inner-city, low-income older adults.

Shorter and fewer trips do not necessarily imply a lesser quality of life. It may be that older adults who take fewer and shorter trips do so out of preference and that they have goods and services delivered to them by a paid-for delivery system or by friends and relatives.[4] Further research is required to better understand how older adults in Los Angeles, particularly those who have limited resources, would prefer to travel, and the types of daily mobility obstacles they face.

End Notes

1. U.S. Census Bureau; American Community Survey, 2015 American Community Survey 1-Year Estimates, <http://factfinder2.census.gov>
2. Kockelman, K. (1997). Travel Behavior as Function of Accessibility, Land Use Mixing, and Land Use Balance: Evidence from San Francisco Bay Area. *Transportation Research Record*, 1607, 116–125. https://doi.org/10.3141/1607-16
3. Glasgow, N. (2000) Older Americans' Patterns of Driving and Using Other Transportation. *Rural America* (15)3.
4. Rosenbloom, S., and C. Winsten-Barlett (2002) Asking the Right Questions: Understanding Travel Needs of Older Woman who do not Drive. *Transportation Research Record*,1818. 78-82.

PART 2:
MOBILITY AND TRAVEL PATTERNS OF OLDER-ADULTS IN INNER-CITY LOS ANGELES: EMPIRICAL RESEARCH

APPROACH

To better understand the travel patterns and mobility needs of low-income older adults who live in the Los Angeles inner-city, we undertook fieldwork research during September 2017 and April 2018. We conducted focus groups and interviews with older adults, and took some of them to walks around one block in their neighborhood. Part 2 of this report details the process and findings of this work.

RESEARCH LOCATIONS
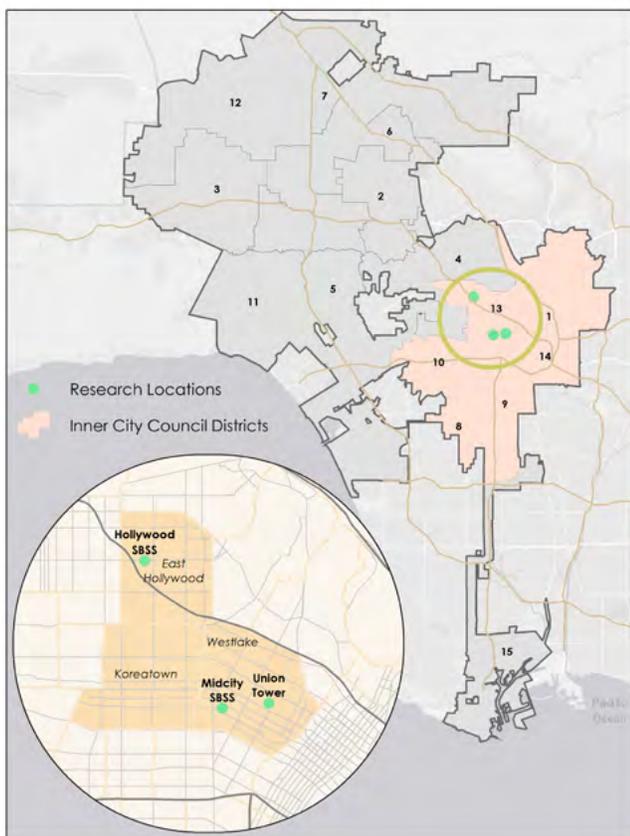
Figure 17: Research locations

Mid-City St. Barnabas Senior Services (SBSS) served as our primary research hub. SBSS is located in the Westlake neighborhood and is a nonprofit that serves older adults in multi-ethnic, low-income, densely populated areas of Los Angeles. SBSS locations are community centers that offer classes, recreational services, and meals to economically vulnerable older adults in Los Angeles County. We recruited most of the participants for the focus groups and interviews from the Mid-City SBSS, and a smaller number from the Hollywood SBSS location.

Working through another nonprofit organization, Los Angeles Walks, we identified Union Ferraro Tower, a nearby residential apartment building owned by the Housing Authority of Los Angeles and managed by a private property management company. The Section 8 program subsidizes the 200-units, which are open to low-income people, older adults, and people with disabilities. We recruited older adults living in this residential tower and used the location as the starting point for walks with older adults. Some Union Ferraro Tower residents were also recruited to participate in interviews.

RESEARCH METHODOLOGY

FOCUS GROUPS

Focus group recruitment occurred through in-person and sign-up sheets left at the St Barnabas front desk. A graduate student researcher conducted in-person recruitment with assistance from St Barnabas staff members for recruitment of Spanish and Korean speaking participants. The principal investigators created the interview guide, and graduate student researchers fluent in each language, translated the English focus group questionnaire into Korean and Spanish. These questions inquired about the needs, preferences, and challenges older adults face in terms of travel, mobility and technology. Appendix C contains questions discussed during the focus group. In total 6 focus groups took place over a one month period at St Barnabas. They were led by two experienced graduate research assistants. Each focus group lasted between 1.5-2 hours. Two focus groups occurred in each language (English, Spanish and Korean) for a total of 6 focus groups; each group included between 5-10 participants. A researcher fluent in the appropriate language conducted the Spanish and Korean-speaking focus groups with assistance from the second researcher. The researchers audio-recorded each focus group, and participants received a $25 gift card for their time.

DATA ANALYSIS

The six sessions were transcribed verbatim after their completion. The sessions conducted in Spanish and Korean were transcribed and then translated into English by native speakers. All six transcripts were entered into Atlas.ti 8.1, qualitative analysis software, which enables comprehensive analyses as well as efficient storing, retrieving, and sharing of data. Data analyses were conducted concurrently with data collection.

After reading the interview data thoroughly, researchers individually open-coded their transcripts line-by-line. Open coding is a means of managing, locating, identifying and sorting data found in the transcripts. Afterwards, codes were refined and clustered into categories or families. At this stage of the analysis, the two researchers compared their respective categories of codes and decided on the final categories or "families." The families were then placed into a matrix, which assisted in the identification of higher-level themes across families. The matrix was then used to identify rich and exemplary data within each theme. All memos and field notes served as audit trails.

INTERVIEWS

We conducted 31 detailed one-on-one interviews with older adults, each lasting approximately one hour to gather detailed information about their travel patterns and preferences. We worked with the staff and social workers at all research locations to recruit participants at each location. We conducted interviews in English (9), Spanish (12) and Korean (10). More women than men participated (22 women and 9 men),which is not uncommon as women are more likely to live longer than their male partners and are more likely than men to choose to participate in surveys.

We used interview questionnaires in the place of a traditional travel diary, which is the data collection method used in the California Household Travel Survey. We chose not to use this method, because we had concerns about capturing all trips with a paper survey. Travel diaries, in some ways, are unreliable measurements of travel behavior; studies show that travel diaries are prone to under-reporting trips. We considered instead using GPS devices but had further concerns about providing technology that our participants would not be comfortable using and because of the computing time needed to process GPS data properly. Ultimately, our research team came up with a travel questionnaire that combined aspects of a traditional travel diary with an interview-style survey. The instrument is available in Appendix D. The first section of the questionnaire contains questions about specific trip purposes. For example, we would ask about the last time a respondent made a trip to the grocery store, and how they got there, how frequently they take trips to the grocery store, and how long it takes to get there, and where they go afterward. By asking about specific trips first (which included trips to the bank, pharmacy, employment, senior center, grocery store, and social/recreational activity), we hoped to jog the memories of respondents before continuing to the remaining sections.

The second section of the questionnaire includes an in-depth interview concerning various aspects of mobility. These questions related to nine broad categories: use of technology, taxi use, public transit use, driving, staying home, safety while traveling, physical limitations to travel, cost of travel, and alternative transportation providers. The final section is most similar to a traditional travel diary. We asked respondents to recall every trip they had made on the most recent weekday and weekend day, and for each trip to include trip mode, purpose, travel time, destination, and any challenges they may have faced while traveling. This allowed us to approximately track any trip-chaining activity, as well as the average number of trips made per day.

WALKING AUDITS

We took older adults along a predetermined route to collect data for the third portion of the data collection process. We asked participants to talk about the things they experience (see, hear, or smell) along the route. The purpose of this effort was to have a direct understanding of what people experience while walking, the parts or aspects of the walk that they enjoy, as well as the elements and circumstances that they find problematic.

This approach was first used in 1959 by Kevin Lynch and Malcom Rivkin, who took individuals around an ordinary city block in Boston recording and later analyzing their comments on what these individuals encountered along this walk. The purposes of their study were to identify "what does the ordinary individual perceive in his landscape?" and "what makes the strongest impression on him and how does he react to it?"[1] Following this pioneering study, walkability audits in this and other forms have been used as a tool by researchers and public agencies wishing to gather information directly from individuals about their perceived characteristics, safety, comfort, and/or legibility of their urban environments.

While Lynch and Rivkin used their approach to understand what makes urban form imageable and legible for city dwellers[2], our particular goal was to understand the perceived and encountered impediments faced by older inner-city adults, when walking or waiting for the bus in the inner city; how such impediments affect their mobility; and ultimately, what can be done to make walking trips more pleasurable, safe, and comfortable for older adults.

We conducted these walks with ten older adults, pairing each of them with a graduate student, under sunny and warm conditions, during the late fall of 2017. At the beginning of the walk, the student researcher told the participant:

> "We are about to take a short walk. Please don't look for anything in particular, but tell me about the things you see, hear, or smell; everything and anything you notice."

The graduate student recorded the conversation throughout the walking trip, after receiving the participant's permission. If participants did not wish to have their conversation recorded, the student researchers took notes of their comments. Throughout the walk, student researchers prompted participants with a series of questions:

> "Describe the street and sidewalk for me. How does it make you feel?"
> "How do you about crossing this street?"
> "What about this walking environment do you enjoy or not enjoy?"
> "What about this walking environment do you enjoy or not enjoy?"

After returning to the participants' residence (Union Ferraro Tower) at the end of the walkabout, student researchers were instructed to sit down and ask participants a series of open-ended follow-up questions:

> "What things, in particular, did you remember from the walk?"
> "How comfortable did you feel during the walk?"
> "What was your overall experience from the walk?"
> "How did the street and sidewalk function for you?"
> "Anything else that stood out?"

The walkabout (Figure 18) was along a typical commercial stretch of the Los Angeles inner-city. The route was 0.4 miles and took on average 20-25 minutes to complete.[3] However, the duration varied among participants; one participant took nearly 40 minutes to complete the walk. The route started at the entrance of Union Ferraro Tower at 455 South Union Avenue and headed southwest toward West 6th Street, a four-lane commercial street with a moderate amount of traffic. Participants proceeded to pass Dollar Mart store with its large parking lot, a clothing store, a dental clinic and then prepared to cross the street at the end of the block.

Then the participant and the graduate student crossed the street at a traffic signal, using a visible crosswalk. On the south side of 6th Street, the walk continued along a large parking lot, which serves customers of Home Depot and Food for Less. After passing the Food for Less building, the researchers guided participants pass a stretch of small retail stores. At the end of the block, they again crossed 6th Street at a traffic signal with a visible crosswalk. The walk continued along the north side of 6th Street passing some small stores and a large restaurant. The pairs then crossed Union Ave. and proceeded back north returning to Union Ferraro Tower.

Figure 18: *Route of a walkabout*

Research Participants

We recruited a total number of 81 people to participate in our research. The focus group and walking audit participants were mutually exclusive groups of people, while some who completed the interviews also participated in either the focus groups or the walking audit. We offered people $25 for their participation in any of the three research activities. At the outset of each research activity, we had the participant complete a brief form with their demographic information. Appendix E contains this form.

As presented in Table 2, participant ages ranged from 55 – 90, with an average age of 74. The majority of people were either Asian or Hispanic, and more women than men participated. Participants had very low levels of automobile ownership and even lower levels of automobile use. The vast majority of participants did not use mobility assisting devices (such as a cane or walker) to get around, and none of the participants were in a wheelchair. Appendix F shows the demographic breakdown of participants in the different focus groups and research activities.

	All Participants	Focus Groups	Interviews	Walking Distance
Total Number	81	48	31	10
Average Age	75	73.8	73.3	74.3
Ethnicity	10% African-American 42% Asian 43% Hispanic 4% White 1% Other	11% African-American 40% Asian 45% Hispanic 4% White	9.5% African-American 39% Asian 42% Hispanic 6.5% White 3% Other	60% Asian 30% Hispanic 10% Other (Native American)
Auto Access and Use	25% car ownership 14 / 20 car owners drive themselves	29% car ownership 11 / 14 car owners drive themselves	18% car ownership 3 / 6 car owners drive themselves	10% car ownership 0 / 1 car owner drive themself
Gender	67% female 32% male 1% other	60% female 38% male 2% other	73% female 27% male	80% women 20% men
Self reported Mobility assisting device use (Wheelchair, cane, or walker)	25% use mobility device 0 participants in wheelchairs	19% use mobility device 0 participants in wheelchairs	30% use mobility device 0 participants in wheelchairs	20% use a mobility device 0 participants in wheelchairs; 1 participant walked with a makeshift walker (granny/grocery cart) during the route

Table 2: Demographics of research participants

FINDINGS

The findings from these three different data collection efforts were remarkably similar. We discuss these findings according to five main sections: walking, public transit, driving and point-to-point travel, transportation decision making. We also include a brief discussion about travel destinations and differences amongst ethnic groups.

Regardless of preferred travel modes, all participants emphasized how important they find travel in undertaking daily chores and necessary activities but also for counteracting feelings of isolation and for maintaining their mental and physical health. Particularly from the focus group participants, we heard how travel keeps feelings of isolation at bay.

> *"I go out if I want to. If you are at home, you [are] just isolated. I walk around the Galleria [Glendale mall]"* (Spanish Focus Group 3).

WALKING

Walking Behavior and Environment

Participants indicated that they walk commonly and frequently, both to accomplish their daily tasks and to engage in exercise. As will be discussed in depth at the end of this section, the physical environment of the inner city presents many challenges to walking. For this reason, some focus group participants felt the need to walk in other neighborhoods. Indeed, some indicated that they ride the bus to reach an area, where they can exercise or choose to walk to a destination. Some focus group participants also reported that they often get off the bus one stop early and walk the remainder of their trip, for exercise. This is not surprising, as the majority of older adults at SBSS walk as their main form of exercise.

> *"I walk to get to the places I regularly go. I need the exercise…"*
> (English Focus Group 1).

Nearly every trip that is not made by car requires walking. Many interview and focus group participants said they make a point to walk each day for exercise, which the literature points to as the most accessible form of physical activity among older adults.[3] Since the vast majority of participant trips are by bus, each trip also requires walking to and from the
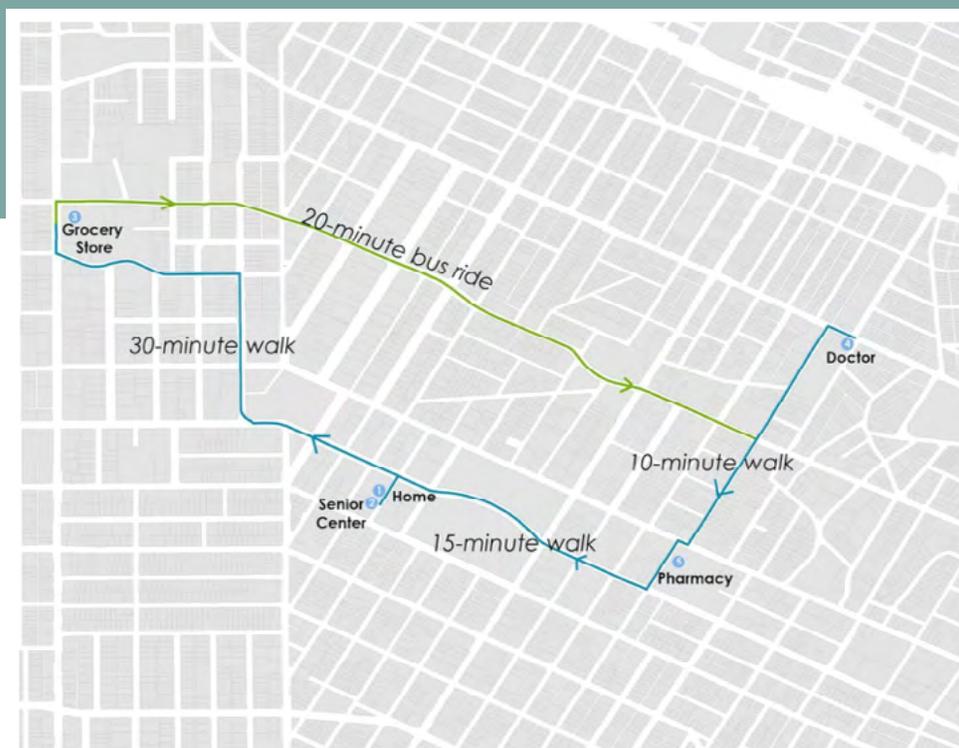
*Figure 19: **Visual representation of one participant's trip***

bus stop, and between bus stops if a transfer is required. In some cases, to avoid circuitous routes and transferring buses, these participants would choose to walk to their destinations instead. One questionnaire participant reasoned that rather than take two buses to the grocery store she would walk, which takes half the time. We can surmise, based on the prevalence of walking and the high cost of vehicle ownership, that some older adults may seek residences located in inner-city neighborhoods so that they may walk to their daily destinations. However, the influence of preference versus location, known as "residential self-selection," is difficult to identify. Over two-thirds of the interview participants agreed that most or all of their daily needs are met within walking distance from their homes.

Trip-chaining, i.e. making multiple stops in short intervals before returning home, is an important way for older adults to reduce the number of trips. Walking trips are often trip-chained. An older adult, who can access a pharmacy within or near a hospital can save a great deal of time traveling compared to an individual, who must travel a longer distance to and from the pharmacy. Interview participants reported that they sometimes extensively trip-chain before ultimately returning home. For example, one participant described walking from home to sign up for lunch at SBSS. From there, he walked five minutes to get paperwork, and he then returned to SBSS on foot for lunch. He proceeded to walk for half an hour to the grocery store before walking and taking the bus to a medical appointment. After the appointment, he walked 10 minutes to the nearby pharmacy, and he finally walked 15 minutes to return home. In order to reach seven destinations, the participant walked for over an hour and took one 25-minute bus trip (Figure 19).

Walking is clearly a necessary mode of transportation for older adults. We can surmise that if low-income, older adults in the inner-city are no longer able to walk, their mobility becomes very constrained. This is particularly problematic for older adults without strong social networks that include people who can transport them or provide them with necessary goods and services, while they are immobile. Immobile adults also affect their caretakers. One questionnaire participant, herself an older adult, spent several days each week without leaving her house because she is a caretaker for her mother and was not comfortable leaving her mother alone. She also gave up her weekly social trips to remain home with her mother.

Sidewalk Accessibility

While nearly every questionnaire participant claimed to have no difficulty walking for 15 minutes at a time, each described numerous obstacles in the built environment that made walking unpleasant or dangerous. Sidewalks were a major source of concern for many surveyed. Uneven sidewalks pose a high risk of tripping, falling, and potentially causing injury. Several older adults indicated that they had been injured as a result of uneven sidewalks. One person, for example, tripped and broke her ankle. The academic literature emphasizes sidewalks as a particular safety concern among older adults: 78% of nonfatal injuries on public roadways among older adults were due to falling, and the remaining injuries were attributed to motor vehicle collisions.[4]

Focus group participants responded similarly to interview respondents regarding their neighborhood's walkability. In addition to viewing walking as essential for accomplishing daily activities, walking was perceived as the primary form of physical activity. However, many found it difficult to walk in their neighborhoods. Difficulties expressed included uneven sidewalks caused by tree roots, homeless people and their tents on the sidewalks, as well as street vendors and litter on the sidewalks. Trash on the streets and sidewalks was viewed as aesthetically unpleasing, as well as a walking hazard. Focus group participants, mainly Korean speaking older adults, expressed concerns about the "dirty streets" caused by people not throwing away trash in receptacles:

> *"They make streets a trash landfill. Sometime there's a trash bin, like within one or two meters walking distance, but they throw [trash] away on the streets anyway"* (Korean Focus Group 5).

Sidewalks were also described as lacking benches and shade. Most interview participants stated a desire for more benches, preferably on every other block, which is understandable

given that many cited foot and back pain after walking. Bus stops were often mentioned as locations that lacked benches and shade. A recurring complaint was about the long wait times at bus stops, and needing to stand for long periods of time in the sun (or in inclement weather), while waiting for the next bus. Inadequate street lighting was also mentioned as an obstacle to traveling after dark. One participant chose to only walk during the day, because she was worried that she might fall after dark. Poorly-lit sidewalks heighten the perceptions of fear among older adults, who are less able to see. Older adults felt more vulnerable to not only crime due to their age but also because of poor visibility.

Crossing the Street

Crossing the street provided a particular source of stress for participants. One significant concern was the fear of falling while crossing busy streets:

> *"I try to walk fast, but we can't really run and it's dangerous to walk too fast due to risks of falling. So there's plenty of things to worry about these days"*
> (Korean Focus Group 6).

Focus group participants shared that potholes presented a falling risk. This fear is then worsened by the feeling that there is insufficient time to cross the street safely. One interview participant chose her walking route around street crossings, which she felt most comfortable using. Echoing these concerns, one focus group participant noted:

> *"As soon as you step off [the curb], it says stop!"* (English Focus Group 2).

Participants in both the English-speaking and Korean-speaking focus groups expressed similar concerns regarding the amount of time needed to cross the street safely, stating that they wished they "…have walk signals [last] a little longer at certain sections" (English Focus Group 2). The English-speaking participants were fearful of being hit and killed by oncoming traffic. The speed of traffic was also mentioned as a factor that made walking unpleasant; one respondent worried that cars driving too fast could drive over the sidewalk curb. One participant poignantly referred to the signs on sidewalks memorializing individuals killed in traffic accidents.

> *"I mean…that's why they have all these flowers and crosses"*
> (English Focus Group 2).

Some focus group participants also expressed fear of receiving a ticket for not walking fast enough while crossing the street, which they had heard was possible.

> "There were several people…that had gotten tickets. Because of the fact that they couldn't get across the street, because they just weren't that fast" (English Focus Group 2).

Built environment features such as unfriendly sidewalks and street crossings significantly affected participants' mobility, however, human elements also created safety concerns for them.

Safety in Public Spaces

Walking in public spaces is challenging for older adults not only because of physical obstacles but also because of safety concerns. Both focus group and interview participants mentioned street vendors as taking up space on the sidewalk, sometimes requiring older adults to walk on the street. Walking in the street is particularly concerning, since this space is shared with fast traffic. Spanish speaking focus group participants also expressed concerns about the physical barrier on the sidewalks created by street vendors, their customers, and the related debris. All participating older adults further shared the concern about safety regarding homeless people and their encampments on the sidewalks of their neighborhood. According to them:

> "It makes it so difficult to walk" (Spanish Focus Group 4).

Unhoused and mentally disabled individuals heighten the safety concerns among many older adults. The homeless were blamed for crime in the area, such as for stolen bicycles and car break-ins. One interview participant emphasized that he avoided walking through MacArthur Park because of the large homeless population there. Though Spanish speaking focus group participants did not appear to be as fearful of other participants, they did express concerns about the homeless people. According to them:

> "The sidewalks are taken over by the homeless..." (Spanish Focus Group 4).

Public drunkenness was another safety concern shared by older adults, as was general crime and gang activity. Older adults in the Korean-speaking focus groups were also fearful of

other individuals walking in their neighborhood, which included homeless or 'rough' looking people:

> "If they're [walking] behind us, we have to run. So it's very dangerous" (Korean Focus Group 6).

Because of safety concerns in public spaces, nearly every participant avoids travel after dark. While some older adults described their neighborhood as relatively safe, they still cited safety as the reason for avoiding evening trips. Bus stops were particularly undesirable areas to wait by at night. This may be due to lack of lighting, but it is also because unhoused individuals sleep on some bus benches in the evening. Many focus group participants reside in the neighborhood surrounding MacArthur Park, which has a large homeless population. While this was not the case for all participants, the presence of so many homeless individuals discourages a large number of them from walking for leisure, physical activity, or at all after dark. One Spanish speaking older adult stated:

> "I am scared after 6pm; I do not go outside" (Spanish Focus Group 3).

Though all participants shared safety concerns for nighttime travel, some interview participants also explained that they had no activities to go to at night and, therefore, had no need to travel then. If activities are available after dark, these older adults may not participate anyway due to safety concerns.

Street vendors selling food with carts or their customers blocking passage on the sidewalk, and the number of homeless people living in the area, especially in MacArthur Park, likely exacerbate these safety concerns. Together, these barriers described previously, as well as neighborhood attributes such as broken or pushed up sidewalks caused by tree roots, along with a general lack of traffic safety create challenges for older adults living in the neighborhood. Under these circumstances, older adults view walking as *"a great stress for seniors"* (Korean Focus Group 5).

To further understand some of these physical barriers faced by inner-city older adults walking in their neighborhoods, we augmented the focus group and interview findings with analysis of participants' comments during their walks around the block. What we found was extremely similar to what other participants said in the focus groups and interviews. Walking around the block was not pleasurable and, at times, uncomfortable and even scary for all participants.

The ten people who participated in the walkabouts encountered in general three categories of impediments:

1. environmental,
2. social, and
3. traffic-related.

All participants brought up many elements of the built environment that made them feel displeased, uncomfortable, and even scared while they walked. Environmental impediments represent the elements of the built environment that can contribute to *setting aggravation*—the presence of undesirable elements—or *setting deprivation*—the lack of desirable amenities[5], both of which can generate negative feelings. Table 3 shows the frequency of the different environmental impediments encountered by the ten participants. Figure 20 is a visual representation of the most commonly reported impediments; the size of each word is proportional to the frequency it was used by participants. Figure 21 shows various hazards and building landmarks along the route that were often mentioned by participants.

Environmental impediment	Frequency (N=10)	Type of Nuisance
Trash	10	setting aggravation
Lack of shade/trees	9	setting deprivation
Cracked, uneven, high-curb sidewalks	6	setting aggravation
Lack of benches	5	setting deprivation
Lack of trash cans	4	setting deprivation
Bad smells	3	setting aggravation
Ugly buildings	2	setting aggravation
Broken public phone box	2	setting aggravation
Graffiti	1	setting aggravation
Shop signs blocking sidewalk	1	setting aggravation
Overhead electrical wires	1	setting aggravation
Lack of birds	1	setting deprivation
Traffic noise	1	setting aggravation
Dirty restaurants	1	setting aggravation
Security bars on windows	1	setting aggravation

Table 3: Environmental impediments encountered

Figure 20: Hazards and building landmarks often described along the walking route

Figure 21: Visual representation of environmental impediments

Figure 22: Trash along sidewalk

Figure 23: More trash along sidewalk

Figure 24: Trash in alley along walking route

Figure 25: Trash along walking route

Figure 26: Empty tree well

Participants repeatedly and consistently mentioned trash on the sidewalks and once even a dead rat (Figures 22 - 26).

> *"The part of Union Street is almost never clean. There is so much trash all over the street and sidewalk"* (Latina female in her 60s).

> *"The sidewalk is sticky with trash. It has even dog crap that people don't clean after"* (Asian female in her 70s).

> *"Sometimes it is hard to make a step because of trash"* (Asian male in his 60s).

> *"The street environment is rendered by trash and food waste. One time, I even witnessed a driver just dumping his trash on the street at the stop sign. They just throw their trash on the street even though the trashcan is in front of them"* (Asian female in her 70s).

Some participants were critical of their fellow citizens dumping their trash in the public environment of the street and sidewalk, while others blamed the city for not providing enough trash cans:

> *"The government should place more trash cans and fine people who throw trash on the street"* (Asian male in his 80s).

> *"There should be more trash cans; maybe that way, people would throw their trash in them instead of throwing it on the ground"* (Latina female in her 70s).

Figure 27: Trees on sidewalk

Figure 28: Cracks and uneven pavement

The area has a dearth of street trees, and the hot temperatures during the walkabouts made participants very aware of the lack of shade and trees. As a Latina female explained:

> *"There are no more trees! There used to be trees, but they've been removing them. A business owner can say that the tree is impacting their business and call the city to remove it"* (Latina female in her 70s).

Some referred to the holes that are left behind when trees are removed (Figure 26), as a particular danger for their tripping and falling:

> *There are some holes on the sidewalk where trees used to be, and they get filled up with trash"* (Asian female in her 80s).

A couple of participants were appreciative of the trees on the sidewalk fronting Union Ferraro Tower (Figure 27) and disappointed that this was not the case for the rest of the neighborhood.

> *"There are a lot of trees in front of my building, which is nice on such a sunny day! It is very sunny today! There isn't shade on the rest of the street; just lots and lots of cars and buildings"* (Latina female in her 70s).

Another major impediment for walking mentioned by six participants, was the cracked and uneven sidewalks (Figures 28 and 29).

Figure 29: Cracks and uneven pavement on walking route   *Figure 30: Bus stop area near grocery store*

"The sidewalks here are deteriorated and very uneven. The cracks make it difficult for me to walk…. See, I am walking on this part of the sidewalk to avoid the big crack. Since I use a walker—today I am using a little shopping cart as my walker. My cart will get stuck on the crack, I have to go around it. I have to be always looking down and find a path that's even so my walker or cart doesn't get stuck" (Latina female in her 70s).

Five participants mentioned the dearth of benches and outdoor seating:

"I want to take a rest break on this little wall. You see there is nowhere for me to sit and take a rest" (female Asian in her 70s).

One participant mentioned that she tends to often take a rest at the outdoor seating of a restaurant, since the owner does not mind. Others, however, are often forced to walk less because they do not have spaces to seat and rest on their way:

"I often have to walk a shorter route because of lack of places to rest. Having some benches would have been useful!" (American Indian female in her 60s).

And while one of the bus stops on the route featured a bench (Figure 30), some participants indicated that these are often occupied by the area's homeless population.

"The bus stop across the street is the only one that has a bench, but the homeless are always sleeping on it. Sometimes, the homeless people are not there, but their stuff is—they leave their stuff on the benches or around the stop, so you can't sit" (Latina female in her 70s).

Some participants mentioned bad smells, ugly buildings, graffiti (Figure 31), overhead electrical wires, broken public phones (Figure 32), and security bars on the windows as aggravating their walk. Moreover, the cacophony of signs from stores, occupying part of the sidewalk, detracted from their pleasure.

One participant lamented the lack of birds and the domination of the soundscape by traffic noise:

> *"I don't hear any birds, just cars"* (female Latina, in her 70s).

Lastly, a puddle with dirty water at the end of a crosswalk was particularly offensive to two participants:

> *"This dirty water puddle is always here, and I don't want to push my walker through the dirty water, so I have to go around and up the driveway into the Food For Less parking lot to get back on the sidewalk"* (female Latina in her 70s).

> *"I don't know where the water comes from, but it is always there… I have to go around it. It also smells bad"* (female Latina in her 60s).

Participants felt that social behaviors and groups of individuals along the walk contributed to feeling unsafe. These social impediments are listed in Table 4. Becoming victims of crime was participants' primary concern, but traffic danger and the fear of tripping and falling also contributed to feeling unsafe.

Social Impediment	Frequency (N=10)
Drunk people	8
Homeless	6
Drug dealers	3
Rowdy teenagers	2
People peeing on sidewalk	2
Street vendors	2
Gangs	1

Table 4: Social impediments encountered by frequency

Drunkenness, homelessness, and drug dealing, which appeared to be fairly prominent in the area, make the older adults very scared to walk. Empty beer cans and liquor bottles littered the sidewalks (Figure 34), while the signs of homelessness (some blankets, an abandoned cart) were omnipresent (Figures 33 and 35).

Almost every participant had something to say about the social disorder of the streets:

"About three years ago these two buildings started getting filled by very poor people that drink a lot and do drugs. That's why we need to be very careful. I'm scared they'll think I'm talking to the government and ratting on them. … There are lots of people drinking in the streets. All that makes me nervous about being here. Everyone wants to live somewhere that is clean, you enjoy the outdoors and go out with your family, but here you can't go out because of these reasons I just told you. Groups of people like those men across the street are everywhere around here" (female Latina in her 70s).

"There are people lying on the ground near Food For Less" (Asian Male in his 70s).

"There are drunk people in front of the 99cent store" (Asian male in his 80s).

Figure 31: Graffiti in area

Figure 32: Broken pay phone filled with trash
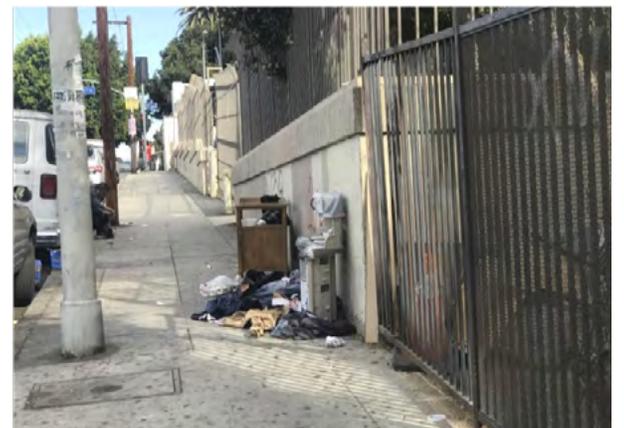
Figure 33: Blankets on sidewalk

Figure 34: Plastic and glass bottles   *Figure 35: Shopping cart hazard*

"I strongly dislike people around the street; especially those who hang out in front of the 99 cent store. They are drinking and some are sitting on the street. I don't feel comfortable because of them" (Asian female in her 70s).

"Sometimes I feel unsafe waiting for the bus" (Asian male in his 60s).

"The area appears calm, but it's daytime. At night, you know, things around here are different. I don't go out at night because I am scared. The police say there are a lot of homeless people around here and to be careful at night" (Latina female in her 60s).

"People drinking alcohol are sitting on the ground. …These people around make you feel not good to walk" (Asian female in her 80s).

"Drunk people on Union Street and rowdy teenagers are always hanging out in front of houses. Teens are too loud especially on weekends" (Asian female in her 70s).

"At 6th and Burlington one day, I witnessed someone peeing on the street; it was disgusting" (Asian female in her 70s).

"Sometimes, I have to step over a man lying on the street, and I don't like people approaching me on the street… Local gangs are more active at night, and I'm worried about having a run-in" (American Indian female in her 60s).

While crime was the prominent concern for everyone, a couple of participants also complained about the street vendors who block the streets with their merchandise:

"Come back on Friday, Saturday, and Sunday and the street is so packed with vendors, you can't walk. You often need to get off the sidewalk and walk on the street. That's dangerous because you can get hit by a car." (Latina female in her 70s).

Lastly, fears around traffic safety composed the third category of impediments. Many participants shared their fears that they might get hit by a car while crossing the street. Indeed, during the follow-up interviews, after the end of the walk-about, most remembered the experience of crossing the street as the most stressful part of their walkabout. At the crosswalks, many were frustrated by the traffic lights that turned red before they had the chance to cross, while others were frustrated that drivers drive too fast, are reckless, and have no patience for crossing pedestrians. As argued by three different women:

"I need to hustle across the street because there isn't enough time to cross before the light turns red. I don't feel very safe crossing at either crosswalk" (Latina female in her 70s).

"I walk slowly and the light changes so quickly" (Latina female in her 70s).

"That car just whizzed by! People get scared crossing the street because the drivers don't respect the pedestrian or speeding laws…. The crosswalks are very dangerous because drivers are speeding" (Latina female in her 60s).

Behavioral Adaptation

As a result of the previously discussed impediments that confront older adults when they walk in their inner-city neighborhood, many are forced to adapt their behavior in one or more of the following ways.

<u>Walking only when absolutely necessary.</u> Most participants indicated that they only walk when absolutely necessary: to go to the market, reach the bus stop, or a dental clinic. Most tend to avoid walking for pleasure or exercise.

<u>Limiting the extent of the walk or finding alternative places to walk.</u> Some people who wanted or needed to exercise indicated that they do so, only within a very narrow spatial range. As one Latina female participant mentioned:

"I prefer to walk for exercise only around my building. I sometimes make 15 laps around the building."

Another Asian female participant indicated that she only walks when she visits her sister, who lives in Beverly Hills.

Choosing a different route. Some participants explained how they sometimes have to change their routes to avoid passing in front of places and people that they deem as dangerous for their safety.

Limiting the time of the walk. Many participants indicated that they are scared to walk in the evening and at night.

Limiting distractions and interactions: A participant mentioned how she could not take notice of the environment around her while walking, because she feels compelled to "pay attention to the ground," so that she does not trip and fall. Another participant indicated that he avoids interacting with people on the street out of fear that they will bother him or take advantage of him.

Pleasures of Walking

The ten older adults who participated in the walkability audits experienced a frustrating and stressful walking environment in their neighborhood. They never described the walk as indicating a pleasurable experience. At best, participants characterized the walking environment as "walkable," "functioning," or simply "okay." Only a few items emerged as positive elements of the walk around the block. These included:

- The mixed-use environment which gives easy walking distance to neighborhood retail stores and in particular the Food For Less store that seems to be a common destination.
- Other people walking on the street, which makes older adults feel safer.
- The presence of generally wide sidewalks, though as discussed previously many of these sidewalks are cracked, uneven, and dirty.
- The recently repaved street, which now does not have potholes.
- The street lights.
- A restaurant with outdoor seating that allows people to rest.
- The row of trees along the sidewalk in front of Union Ferraro Tower.
- Music spilling out from a store.
- Police driving by frequently, though some participants wished that officers would walk the sidewalks and directly respond to the physical and social incivilities present, instead of simply driving by.

In general, the pleasures of walking are largely absent for these older inner-city adults, because of the impediments that exist in the physical environment and their social interactions. These barriers result in some behavioral adaptations on their end, which act as defensive strategies but do not necessarily promote the quality of their lives. Finding ways to improve the public realm of streets and sidewalks in the inner-city will go a long way towards making older adults living there more mobile in their neighborhoods.

Public Transit

The Benefits of the Bus System

The bus system provides low-income older adults in the inner-city with a vital means of daily travel, as well as additional social and economic benefits. For most participants, public transportation, particularly buses, was their primary travel mode. As one person stated: "the bus is critical for our lives." Many interview participants stated that using the bus allowed them to reach any destination they needed to go to. A few also reported using the bus to explore parts of the city with which they were unfamiliar. One person in particular mentioned using the bus as a special outing to break his routine and emphasized that it provided him with something to do. The responses also indicated that some older adults use the bus as an opportunity to socialize with fellow passengers. This perspective, however, was rare, and most participants were more concerned with the frequency and convenience of public transportation than they were with its social aspects. Nevertheless, some older adults, who are particularly isolated socially, may appreciate interacting with passengers.

According to the demographic intake forms completed by focus group participants, nearly three-quarters get around by public transit or walking. Despite generally being satisfied with public transit, these older adults expressed concerns about the cost of bus travel, the schedule, getting on and off the bus, finding a seat, as well as the safety of the bus ride. These concerns are discussed in detail in the following sections.

Cost of transit travel

Low transit fares are an important benefit to low-income older adults. Under federal law, seniors must receive a discount during off-peak times. In Los Angeles, the fare drops from $1.75 to 35 cents (see Part One). Additionally, the majority of interview participants (85 percent) reported using some kind of discount transit card (either a disability TAP card or a senior TAP card). Most considered the cost of transit travel to be "low" or "moderate," and many mentioned that they appreciated the low cost. One interview participant preferred the DASH bus system, a bus service in downtown L.A. that offers frequent headways and discounts for older adults (fares of 0.25 cents at all times of day). Another participant was pleased with a real-time transit mobile app, which provides her with the predicted bus arrival times. However, she was the only interview participant to mention using any mobile app to find out about transit arrival information. In focus groups, the financial burden of each added fare becomes a potential barrier to leaving the house and accomplishing daily activities. One Korean-speaking older adult, who is able to afford a monthly bus pass, knew of frail older adults who did not leave their homes:

> "…if the fare for those over 70 years old becomes free, then they will be motivated to go somewhere…instead of watching TV and sitting around all day. Because it takes costs to get around. So they stay at home…So, I wonder if making senior fares free can be considered by the city" (Korean Focus Group 6).

A homeless older adult in one of the English-speaking focus groups was particularly sensitive to the cost of bus fare. She would travel by bus when possible but also noted that the cost varied depending on the time of day. This variable then influences her travel behavior further.

> "… It's the time of day that you travel makes a difference! Because the prices on the buses peak…and that influences a lot of seniors' ability to get around because ok yes, it's cheaper but then you have to wait longer for the bus, because they cut back on the service because it's not that many people…" (English Focus Group 2).

Participants used the bus to travel both short- and long-distances; the cost of bus fare is, therefore, not only associated with daily activities but also with that of travel for leisure. Low-income older adults, particularly those who are homeless or who have housing-instability, are profoundly affected by the cost of transportation and are a particularly vulnerable population. They may not be able to even take transit trips because for them any fare is prohibitively expensive.

Bus Schedules and Night Travel

Older adults participating in our study obtain information reasonably easily about the bus schedule, but many mentioned that this information is not always reliable:

> *"At times I wait 30 [minutes] to [1] hour. At night, it is tough. After 7pm I do not leave. The buses are very late. How are people going to leave at night if the buses do not come?"* (Spanish Focus Group 4).

Some Asian American participants, who had visited or resided in countries such as Japan or Korea, offered suggestions on how to improve bus schedule information:

> *"…and there's no estimated arrival time shown at the bus stop. For instance, in Japan, there's an electronic sign at every bus stop"* (Korean Focus Group 5).

Though not a solution for bus delays, real-time information on bus arrival times may assist older adults to schedule their bus trips better and minimize long waits at the bus stop. Considering their feelings of lack of safety in certain neighborhoods, waiting for a bus is a valid fear. Because of this concern, some focus group participants reported altering their travel behavior and not traveling at night.

Physical Challenges of Using the Bus

Transit-dependent older adults face numerous challenges when using the bus system, and one of their prime concerns is about getting onto and exiting the bus. The frequency and wait times associated with using the bus are additional important concerns. Many questionnaire participants said that the wait times are too long; sometimes an older adult would wait at a stop for 30 minutes. All focus group participants shared experiences where multiple buses would not stop to pick them up, particularly during rush hour.

People from all groups spoke of having to wait an extended period for their bus only to find numerous buses arriving at the same time:

>*"… sometimes they come one after the other, you know…And then you wait a long time"* (English Focus Group 1).

Since many inner-city bus stops lack benches, this long wait for the bus can be very tedious for older adults. Weekend trips by bus are particularly lengthy, because headways are even longer than on weekdays. Older adults dislike full buses, and some stated that they would wait for the next bus, if the current one is too full. Since most of their trips occur during off-peak travel times, i.e. between mid-morning and mid-afternoon, many older adults may choose to avoid travel times, when buses and sidewalks are more likely to be crowded. In general, non-working older adults have less need to travel during peak hours, the times at which many people travel to and from work or school. Given that only two interview participants were employed, with only one respondent working full-time, the other trip types (i.e. grocery shopping, medical appointments, and social trips) could be arranged at other times of the day.

While many older adults felt that riding the bus is relatively easy, getting on the bus is often challenging. For example, entering the bus is particularly challenging if the driver does not stop directly adjacent to the curb. Many participants in both interviews and focus groups stated that they face difficulties getting onto the bus from the street, and some would wait for the next bus, if the immediate one does not stop at the curb. For older adults using mobility aids or carrying groceries, entering the bus by stepping up from the street is particularly demanding. Though many older adults who participated in the questionnaires stated that they would prefer to use the ramp to enter the bus, most hesitate to ask for ramps to be deployed, because they are afraid that the bus driver would be unwilling to help them and because doing so would lengthen the travel time for their fellow passengers. One of those participants, however, stated that the bus drivers she usually encounters automatically lower the bus ramp, when they see that she is handicapped. An English-speaking focus group participant noted, however, that he had seen bus drivers not stopping to pick up a bus rider in a wheelchair:

>*"… it depends on the driver in terms of wheelchair assistance. I've seen drivers that don't give a damn, and I've seen drivers that are very helpful. Some drivers that say 'I can't pick you up' you know they're rude. You know they have that discretion"* (English Focus Group 2).

When possible, many chose to travel during off-peak hours to avoid issues associated with rush-hour. Nevertheless, physically getting on and off the bus remains an issue:

> *"I wish the driver would stop closer to the curb… closer to the curb for getting on and off. Sometimes it's far away, you can't step on the curb, you have to go down on the street first and then up again"* (English Focus Group 2).

Exiting the bus is also a challenge if the bus driver is in a hurry and does not leave sufficient time for older passengers to exit at their stop particularly during busy times of the day. One passenger explained that she would sometimes need to yell at the bus drivers, if they did not give her time to exit at her stop.

In particular, the English- and Spanish-speaking focus groups noted concern with getting on and off the bus. Aside from the distance of the bus floor from the curb, other matters included tripping hazards on the sidewalk on the route to or from the bus stop:

> *"There's a [parking] meter…or a light…and it's not sitting in. It's crooked like this and the bus stop is right there. And one night the bus [driver] let me out and I started walking and my foot went like this, and when I tried to make another step then, I didn't fall…[but] a lot of people fell"* (English Focus Group 1).

Getting a Seat

Some Korean speaking focus group participants shared that they had no problem finding a seat,

> *"…I am lucky because people always give me a seat"* (Korean Focus Group 5).

But others reported issues with people failing to offer their seat to those who needed it the most. As a Spanish-speaking focus group participant shared:

> *"Sometimes there are pregnant women standing, and people will not let them sit because they have all their stuff on the chairs"* (Spanish Focus Group 3).

Using needed seats for storage occurs often:

> *"Some people put their backpacks on another seat and don't let you sit"* (Spanish Focus Group 4).

One older adult indicated that he was comfortable asking bus riders sitting in designated older adult/disabled seating to move their belongings:

> "… I only use a cane but I've seen the way they do that… they put a package alongside of them and… I said 'you're young!'... the older people are there standing…" (English Focus Group 2)

This older adult was an exception. Those who do not ask people to give up their seats or remove their belongings from the adjacent seat feel disrespected by bus drivers. They want the bus drivers to assist them in attaining a seat, particularly ones designed for older adults:

> "Also the truth is the drivers at times do not respect older adults…They're specific seats for older adults, and young people will be sitting there… drivers do not say anything to them" (Spanish Focus Group 4).

Other focus group participants shared that, at times, bus drivers are unable to assist them due to the number of people needing seats in designated areas:

> "…if you have a walker on this side, and there's someone with a cane or a wheel chair…and they both say 'I don't want to give up my seat' then you have to call another coach for them" (English Focus Group 2).

Safety Concerns on Public Transportation

Studies show that older adults are more likely to consider crime on public transportation to be a salient issue compared to younger people.[6] Similar to their experiences while walking on sidewalks, many older adults indicated that they face heightened perceptions of fear, when interacting with unhoused and mentally disabled passengers on the bus. Most passengers feel secure on the bus, but some say they choose to sit at the front of the bus, where they feel the most safe. Proximity to the driver helps older adults feel safe on the bus. However, one interview participant wished that the bus driver could play a greater role in mediating disputes, because he had witnessed numerous volatile situations as a bus passenger in which the driver avoided intervening. The seating arrangement on the bus may contribute to a feeling of safety; one respondent explained that she felt more secure sitting in the bus than in a light rail wagon.

Overall, crime on buses is very low. In 2010, 2.77 reported crimes occurred on the Metro bus system for every one million boardings.[7] The majority of crime that relates to bus service

occurs at bus stops, rather than on the bus.[8] Crime rates at bus stops likely reflect the crime rates in the area of the stop.[9] A Los Angeles study found that 67 percent of bus-related crime occurs at bus stops, with the remaining 33 percent on the bus.[10] Unsurprisingly, then, older adults may feel particularly vulnerable waiting at bus stops. One interview participant stated that, when she needed to wait at bus stops after dark, she asked her relatives to wait with her.

The ability to speak English may be a factor that makes some older adults feel safer when traveling. Some Spanish-only speaking participants stated they felt fearful when being accosted by English speakers while traveling. For example, one participant described an incident on the bus in which a fellow passenger yelled at him in English, which he was unable to understand. Sitting near the bus driver could help mediate such issues; however, older adults' experiences with bus drivers varied. Some older adults in the focus groups felt that some of the 'nicer drivers,' who might normally assist them with finding a seat, at times, did not do so because of fear of 'scary passengers' or 'gang members.' Across all focus groups, participants noted some problematic—even criminal behaviors—from some bus riders, ranging from robbing, doing drugs, leaving debris behind, or smelling bad. Other people were often 'scary' and left these older adults feeling unsafe. As one stated:

> *"Sometimes I don't feel safe. When they were on the bus they were fighting on the bus."* (Spanish Focus Group 3).

The bus system is a vital means of daily travel for low-income inner-city older adults. However, they face numerous challenges on a daily basis. The financial burden of bus travel as well as maintaining safety in getting on and off the bus, finding a seat, and feeling safe at the bus stop are primary concerns for focus group participants.

Driving and Point-to-Point Travel

Three distinct groups emerged in regards to vehicle use: car owners, individuals with access to someone else's car, and individuals with no or very rare access to a private vehicle. The very small group of interview participants who owned private vehicles (only six out of 31) took nearly every trip by car. The majority of these participants (81 percent) did not drive. Fifteen percent of them were non-drivers and explained that they had never learned to drive; 40 percent had stopped driving due to age-related mobility impediments; and the remaining 45 percent did not drive because of an unstated reason. It is unclear whether the last group had never driven, but we surmise from their responses that they were unable to afford a car.

Though nearly all daily destinations are located within walking distance from their homes, car owners choose to drive nearly everywhere. Given that each driver claimed to have no difficulty walking, using the car is likely much faster and more convenient. Based on the interviews and the trip descriptions, driving trips take much less time than trips made by bus or on foot. A grocery trip by car from Union Ferraro Tower takes 10 minutes, compared to 20 minutes by bus, and 40 minutes by walking.

Because driving is a convenient and fast travel mode, non-drivers, who are connected with someone who drives, sometimes coordinate certain trip types with them. Grocery trips are particularly cumbersome for respondents, who must carry their groceries on the return trip. Having access to a vehicle eases this burden considerably. Individuals, who themselves are not vehicle owners but are connected with someone who is, often plan their grocery trips around the availability of car owners. One questionnaire participant, for example, plans her trips to Costco based on the schedule of her landlady, who agrees to carpool with her. Others coordinate recreational trips with drivers. Participants generally view social and recreational trips as special occasions, and these trip types are often the only times that carless individuals use private cars. Social trips are most frequently family affairs, and relatives who live as far away as Northridge and La Puente drive participants for either part of or the entire trip.

Having no access to a personal vehicle significantly lengthens trip times. This is particularly salient when it comes to destinations that are too far to walk to or require multiple transit transfers. A trip to the bank, for example, is often a relatively long trip. Whereas participants with a car reported taking bank trips twice per month that lasted 10 to 15 minutes, most interview participants reported taking trips using one or two buses that lasted anywhere from 30 minutes to two hours. While some participants had spouses, who went to the bank for them or were able to use online banking tools, for most respondents bank trips were not optional: multiple respondents stated that they need to take bank trips on the third of each month in order to pay their rent.

People without any access to vehicles likely also have fewer economic resources. The primary reason interview participants, who had never driven, gave for not owning a vehicle was the prohibitively high cost of vehicle ownership and maintenance. Several of those participants also cited no interest in learning how to drive and explained that even if they had a vehicle, they would only use it to travel long distances because of the cost of parking and gasoline in the inner-city. In addition to cost, population density may contribute to limited driving among respondents. Vehicle ownership among older adults is negatively correlated with population density,[11] particularly among low-income older adults in inner-cities.[12]

While disaster planning is outside the scope of this study, policymakers must consider a particularly dire situation for older adults without access to a vehicle: emergency evacuations. Hurricane Katrina provides an illustrative example of the importance of prioritizing the mobility needs of vulnerable populations in a disaster: one quarter of low-income adults over age 65 living in flood-affected regions had access to a private vehicle, and only 33 percent of adults over the age of 74 were able to access a car.[11] Older adults, who are socially isolated and cannot afford private transportation services, are particularly vulnerable in evacuation situations.

Driving Behavior

In the focus groups, most participants did not own or operate a car. Those with children in the Spanish-and Korean-speaking groups often had children living locally driving them to certain destinations. One Spanish-speaking participant said:

> *"When I go far, my sons pick me up"* (Spanish Focus Group 4).

For the Korean-speaking older adults, who have children living locally, the option of being driven to destinations by a family member is quite common. Others limit their driving because their children have asked them not to drive anywhere over 20-30 miles from home. This sentiment was true for some Korean participants, who own a personal vehicle:

> *"For me, I drive within about an hour and 30 minutes distance. Any farther distance-travel, my children pick us up"* (Korean Focus Group 6).

Having a family member drive an older adult is less typical for everyday activities than it is for long-distance trips, and not all older adults who participated in the study have family members available to assist them with such travel. Possibly, these older adults feel that public transportation is sufficient for local travel but, at times, need or prefer that family members drive them to specific destinations. Having family members available to assist with transportation was not uncommon; in one case, a son asked his father to give up his driver license entirely:

> *"My son asked me not to [renew my driver's license]. He told me he can drive for me"* (Korean Group 5).

Another Korean speaking participant said that his son had asked him not to renew his driver's license, and shared a similar story:

> *"My daughter…take(s) full charge to give [me]rides to long-distance trips…I didn't get a license because they promised…They begged me not to drive because it's a dangerous area to drive around. So…when I want to travel far, I tell them: 'You promised. So, come!'* (Korean Focus Group 5).

In the Spanish-speaking focus groups, however, those without children or children living nearby had difficulty traveling long distances. This pattern was true for the English-speaking groups as well, who mostly do not own cars.

Interview participants, who were drivers, also reported having reduced their driving with age. These older adults cited impaired vision as the primary reason for more cautious driving habits. One stated that her driving had not changed, and that she felt far safer driving at night than waiting at bus stops after dark. She was much younger than the other drivers (60 years old, compared to 81 and 83) and said she was in good health. Other drivers said that they avoided driving after dark, drove shorter distances, and preferred to drive on side streets rather than highways, once their vision began to decline. These findings are consistent with the literature on age and travel behavior, which explains that as people age they tend to self-regulate their driving and choose shorter, local routes.[13] Some older adults may also feel stigmatized while driving; one respondent stated that at her age she is afraid to drive, and that other drivers dislike older adults and make offensive gestures towards her.

Driving behavior may differ among caretakers, who look after other older adults, compared to caretakers, who look after children. Though our sample only included two caretakers who drove, the travel differences may point to larger trends. The respondent in charge of her infirmed mother reported taking very few trips, and never making social trips, wishing to remain home as much as possible. In contrast, the respondent, who frequently looks after her young grandchildren, makes numerous trips per week, many of which are social trips for family events. Though the majority of trips for both respondents are made by car, the respondent, who looks after her young relatives, would often take the public transit system. She said her grandchildren enjoy using it, and it allows her to be among other people. Caretaking responsibilities can, thus, shift travel behavior.

Life after Driving

For some formerly-licensed drivers, the physical decline they have experienced with age prohibits them from driving entirely. Though many interview participants did not seem ever to have driven, a noticeable change occurred in lifestyle among respondents, who had recently given up driving. After giving up driving, one participant said she felts far more limited without a car. The other interview participants, who have given up driving, feel positive about relying on public transportation: they view driving to be stressful and are relieved not having to worry about potentially causing a car crash. One respondent explained that he initially found traveling without a car to be difficult but now enjoys not driving.

Cessation in driving happened largely due to physical challenges. Many reported arthritis, surgery, or poor vision as impediments to driving. In a few cases, older adults reported the cost of driving as being prohibitive. One driver said he is unable to drive because his car has been repossessed. Among the respondents, who gave up driving, nearly every one mentioned trips taken by transit. Former drivers were also more likely to view the cost of transit as lower than those who had never driven, and they are glad to now spend less on transportation.

OTHER POINT-TO-POINT OPTIONS: TAXIS, RIDE HAILING AND PARATRANSIT

Other less frequently used point-to-point modes of transportation include taxi or ride hailing services such as Lyft, Uber or GoGo Grandparent, ACCESS, CityRide, personal vehicles or Metro Rail, and Metrolink. Taxis are viewed as expensive and for emergencies only. The use of some unlicensed and informal taxis is a typical transportation mode for some Korean older adults.

Though a handful of participants have used ride hailing services, family members usually request them on their behalf. Across groups, use of ACCESS, CityRide, Metro Rail and MetroLink services is small, though, those who have used them reported being largely satisfied.

Driving is uncommon among study participants largely due to low levels of car ownership and use. Less than half of participants own a car and, further, some participants who own a car do not drive it themselves. Those owning a car, would typically drive their car only for certain occasions and to certain neighborhoods. We discuss the use of other point-to-point transportation modes below.

Taxi Use

Focus group participants largely indicated that they reserve taxi use for emergencies because of the high cost. The exception was some Korean-speaking older adults, who noted that they do not use taxis or ride-share services because of language barriers. Participants in one Korean focus group stated that they are able to acquire Korean taxi drivers through Bell Cab, while a participant in the other Korean focus group spoke guardedly about his use of 'bandit taxis'- an unlicensed taxi service with Korean speaking drivers.

> *"Because we can't really speak fluent English. So, we use it [Bell Cab] a lot; young people use Uber a lot..."* (Korean Focus Group 5).

Individuals within the Korean speaking focus groups were the only older adults that reported using taxi services, which may be due to a combination of financial ability and the presence of the aforementioned informal taxi service in Koreatown. Interview respondents, despite city-provided taxi subsidies, rarely use taxis, other than in emergency situations or for trips to the airport. Most of these respondents could not remember the last time they had traveled in a taxi and cited cost as a prohibitive factor. Similarly, very few focus group respondents use taxi services, and many could not recall the last time they had traveled in a taxi.

Ride Hailing

The majority of focus group participants have never used a ride hailing service (Uber, Lyft, etc.), or have little knowledge of such services, with some participants having never heard of the service at all. Ride hailing is not used for a variety of reasons such as having 'no use for it,' preferring not to get in a car with a stranger, not having a credit card, or not wanting to give out their credit card information. Others believe it is necessary to have computer knowledge to request a Lyft or Uber service:

> *"Well, you have to have a computer, I think. So, I'm not in that league yet"* (English Focus Group 1).

Spanish- and Korean-speaking groups appeared to have more knowledge about ride hailing, but only use these services when a friend or family member requests it for them:

> *"It's good, but we don't need it"* (Spanish Focus Group 3).

Though some have heard it is cheaper than using a taxi, most feel it remains too expensive to use and opt for other forms of transportation. Though the English-speaking focus group had less knowledge and experience using ride hailing services, one particularly mobile and independent older adult with a smartphone uses GoGo Grandparent, a service utilizing existing ride hailing providers but facilitating a third person in requesting pick-up and drop-off as well as notifications. Overall, though, participants viewed ride hailing as an 'absolute last' option (English Focus Group 2), because of its cost or perceived and actual difficulties in ordering it.

Ride hailing is also rarely used among interview participants. They listed three major impediments to travel by ride hailing, which mirrored sentiments from the focus groups. First, many of these older adults do not have smart phones and, therefore, cannot use mobile apps. We noticed distinctions based on race and ethnicity, when it came to access to smartphones: half of the Korean respondents owned a smartphone compared to a third of Hispanic respondents. A second impediment is lack of information. Some participants had never heard of ride hailing. Many older adults, who did have smartphones and had heard of ride hailing, stated that they felt uncomfortable using the ride hailing technology. One said he owned a smartphone but did not know how to access the internet using his phone. A third impediment is that not all of these older adults possess a credit card and, therefore, do not have the means to pay for ride hailing. Only four participants had ever made a trip using ride hailing. One had used it on a trip abroad, and two others had used ride hailing when their children made the arrangements.

Younger generations of older adults, who feel more comfortable using technology, may be more likely to travel via ride hailing. Only one interview participant regularly uses ride hailing, and she is 62 years old. She sometimes travels via ride hailing, particularly when she has not planned transportation 48 hours before her trip, as required by alternative, subsidized transportation providers (e.g., ACCESS). Another younger respondent (age 60) expressed interest in using ride hailing after learning of the service through her neighbor, who drives for Uber.

Ride hailing has the potential to greatly expand the mobility of older adults, who are not able to drive. Ride hailing may also be an economical option for cities to provide or to subsidize compared to alternative door-to-door transportation services. For example, one respondent made a trip at noon from the grocery store to her home using a taxi that was subsidized by Cityride, a program that offers older adults rebates for permitted taxi rides. Her trip took 10 minutes, and she spent $11, which was far more expensive than a comparable ride hailing trip would cost during off-peak hours. Ride hailing may not only be more affordable, but

transportation network companies are not limited to specific geographic regions as some subsidized transportation services are. One participant, for instance, stated she is interested in trying ride hailing after learning that ride hailing trips are not very expensive and that they could be an option, if her brother is unable to drive her to a nearby location.

Paratransit Services

Similar to the other groups, those in the English-speaking focus groups largely do not utilize ACCESS paratransit services, citing the bus as the most convenient and economical choice for transportation. ACCESS provides shared ride (van) pick up for anyone who lives within ¾ of a mile of a rail station or bus stop. With a high level of transit service in the Westlake neighborhood, most older adults can qualify to arrange ACCESS services. Participants noted that ACCESS and CityRide are reliable and cheaper than taxis. ACCESS is used primarily for longer distance trips, such as going to Santa Monica or the Getty Center. One Korean older adult said:

> *"I use Access. I call one day ahead to reserve…They are better than taxi in terms of being on time"* (Korean Focus Group 5).

However, many participants mentioned that they are in the middle of their renewal process with ACCESS or need to apply and, therefore, are unable to utilize the services.

In addition to walking, driving, and using the public transit system, some interview participants reported using alternative methods of transportation, such as Cityride, paratransit, and transportation provided by religious institutions. Only four had heard of Cityride, but only two regularly use the service. Paratransit is a common way for older adults to make trips to and from medical appointments. Religious institutions are another important provider of transportation. Church vans are a common way for older adults to attend religious services on the weekend. Buses are infrequent on weekends, and church vans expedite trip times considerably.

Transportation varies considerably for these older adults as they age, and depending on whether or not they own/have access to a car or have family to assist with travel needs. Additionally, transportation decisions appear to depend on multiple factors, such as language ability, knowledge, smart phone access and financial considerations, among others.

<u>Transportation decision making</u>

We further wanted to understand how study participants make decisions about how to get around. Focus group discussion suggested that decisions depend on multiple factors such as cost, convenience, and safety. One Korean-speaking focus group participant put it well, stating that their mode of transportation is diverse, and depending on the situation:

> *"Korean people say it's BMW: Bus, Metro, and Walking. [Group laugh]. BMW is not a luxurious car"* (Korean Focus Group 5).

As previously stated, distance is a major travel barrier. Thus, these participants noted that for neighborhood travel, the bus works well for them, while they utilize Metro rail for longer distances and when convenient. One Korean-speaking focus group participant specified:

> *"So I use the Metro when the distance is about two or three stops [or] more"* (Korean Focus Group 5).

Taking the train instead of the bus is easier, particularly for those using a walker or wheelchair.

> *"Access is easier [to the train], because number one, you have an elevator to take you… And then you can easily roll yourself onto the coach, as opposed to having someone let down a ramp for you"* (English Focus Group 2).

Westlake and the surrounding neighborhoods, where participants reside, have heavy automobile traffic as well as high levels of transit service, so that even those who have a car continue to use multiple modes of transportation. As one participant stated:

> *"For me, [I use] Metro, and bus, and I own a car at home, too"* (Korean Focus Group 5).

Another participant with a personal vehicle also makes transportation decisions based on factors of convenience and cost:

> *"The only reason I catch the bus is when I go downtown, and they want to charge you for parking so I catch the bus"* (English Focus Group 1)

The focus group participants also travel differently depending on their specific trip purpose. Across language groups, grocery shopping was reported as a challenge when using the bus. These older adults would take the bus to the grocery store but need to take a 'bandit taxi' or use ACCESS to return home because of the number of grocery bags they carry. Another common tactic that participants use is to take multiple trips in place of a costly taxi or use of ACCESS transportation:

> *"Usually [I take] the CityRide for groceries, but when it's urgent or unexpected, I take Korean taxis" (Korean Focus Group 6).*

> *"…Grocery shopping, I usually use the bus and the taxi… grocery shopping is necessary for living…." (Korean Focus Group 6).*

> *"When we go grocery shopping once a week, we can use the bus on the way there because we don't have anything to carry, but on the way back, you have many bags with you. That's a 4 week task" (Korean Focus Group 6).*

Lastly, regardless of financial ability, many participants keep health in mind when traveling:

> *"I have a car and can drive, but for health, I use bus so that I can walk more. I need to exercise. Sometimes I get off at an earlier stop to walk more, maybe around 30 min. walking distance" (Korean Focus Group 5).*

Thus, we see that different factors, and even concerns for their health, further influence the mode choices of inner city older adults.

CONCLUSION

The empirical research provides a wealth of information about the travel patterns of low-income inner-city adults. Walking is these older adults' primary mode of transportation in the neighborhood. But while a number of retail and service establishments are in close proximity to their residences, significant physical and social impediments constrain their mobility. Older adults also use public transit to reach more distant destinations, but their use of transit also encounters some significant hurdles. A very small number of study participants own a car and, thus, at times have to use other point-to-point travel services. Such use is, however, largely constrained because of financial reasons (in regards to taxi services), lack of competency with technology (to order ride hailing services) as well as scheduling and regulatory constraints that characterize the city- or county-subsidized paratransit services.

Mobility constraints affect the number and frequency of trips that older adults undertake. However, some differences exist among study participants in regards to social and recreational trips. Study participants fell into two different categories: those visiting St. Barnabas Senior Services, and those who do not; the majority of the latter live in Union Ferraro Tower (a Section 8 property available to older adults). The two groups exhibited somewhat different travel patterns, which can be attributed to the different extent of their social engagement. The scholarly literature explains that social connections both increase with and rely upon mobility. Older adults, who are socially engaged, are more likely to travel frequently, just as older adults, who travel more easily (such as older adults with driver's licenses) are more likely to make social trips.[15] Attending SBSS seemed to be correlated with a larger number of daily trips and with a higher likelihood of making social and recreational trips. One SBSS patron was unhoused and living in an encampment near a freeway at the time of the interview. While her housing arrangement is very different from those of other respondents, her travel behavior is similar to that of those who regularly attended SBSS. As a transit-dependent older adult, she makes near-daily trips by walking and bus to SBSS. She also makes multiple other trips each day to purchase groceries, attend medical appointments, socialize, and travel for the sake of exploring new places.

Among the 12 respondents who live in Union Ferraro Tower, only two have ever visited the relatively proximate SBSS. These two participants (a married couple) visit SBSS twice per week by car and seem to take more trips per week than the average Union Ferraro Tower resident. This may be because they own a vehicle, but it may also reflect their access to a greater social network. Among other Union Ferraro Tower residents, only one reported taking regular social trips. The others either never make social trips or make them very rarely. However, the majority of all participants attend religious services at least once per week (some attend services three times per week).

Based on the responses, we can see a considerable difference in the number of social and recreational trips made by SBSS clients. This difference may be attributed to having a strong social network: older adults who maintain friendships and familial relationships make more trips to visit them. The responses showed that people attending SBSS were more likely to regularly visit their relatives, despite having to make very long trips by public transit to reach them (some travel two hours in one direction to meet their relatives each weekend).

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RECOMMENDATIONS

Part 3 draws from the findings of this study to offer recommendations for researchers, policymakers and practitioners for enhancing the mobility of low-income older adults living in inner-city areas. Some mobility challenges are endemic to the larger physical, social, and economic issues present in low-income, dense, urban neighborhoods. The location of this study, the Westlake neighborhood of Los Angeles, like other inner-city areas, has historically suffered from disinvestment, crime, an aging infrastructure, and inadequate services. However, inner-city neighborhoods also typically have affordable rentals and retail and other important services in closer proximity to residences than suburban neighborhoods. For these reasons, many older adults have lived in such neighborhoods for many decades and will continue to do so for the foreseeable future.

Our recommendations seek to improve the lives of older adults living in Westlake and other inner-city areas by understanding and addressing the hardships of people living in these communities. The real and perceived safety concerns of older adults were apparent in the focus groups, interviews, and walkabouts that our team conducted with them. Addressing these concerns is key to improving their mobility options, transportation experience, and quality of life. This study highlights the need for a better understanding of these issues and offers suggestions on ways for obtaining data, which better enable that understanding.

RECOMMENDATIONS FOR RESEARCHERS

As we noted in the literature review, studies about older adults either use quantitative methodologies and draw from large sample sizes and aggregate data (usually from the census) or use qualitative methodologies and employ very small samples. In our study we used both approaches, drawing quantitative data from the California Household Travel Survey (CHTS) and qualitative information from our empirical work with 81 low-income inner-city older adults. Using such "mixed methods" to research the mobility and neighborhood satisfaction of older Americans holds promise for future research efforts. Mixed methods refer to the complementary use of quantitative and qualitative approaches to the study of a population or a community. The types of information available from aggregate quantitative data (such as census data, assessor's data, etc.) are quite different from the qualitative information received from field observations of a neighborhood, its socio-

physical context and the personal reflections of its residents. Both types of data, though, inform researchers wishing to reach conclusions about the well-being of a community and for policymakers wishing to develop policy recommendations. "Triangulation" has occurred when the various types of information from mixed methods coincide with one another in part or in whole. That is, insights arrived at from one inquiry complement and help interpret insights gained from another.

In this particular study, quantitative findings from the CHTS provided extremely useful information about aggregate characteristics of travel by older residents of Los Angeles inner-city neighborhoods. Specifically, we compared aggregate information on travel by older Americans in such communities with travel by older residents of California cities more generally, as well as residents of suburban communities in California. CHTS data also allowed us to compare travel by older residents of inner-city neighborhoods with travel by younger residents of similar neighborhoods.

Background provided by the CHTS enabled us to design questions for focus groups and interviews with individuals confidently. On the other hand, when we interviewed low- income inner-city residents, listened to their discussion in focus groups, and engaged them in walking tours of their neighborhood, we found a very high degree of consensus among them concerning issues that had not been addressed at all in the quantitative analysis. This was especially revealing because some spoke English, others Korean, and others Spanish, but their responses were very similar despite language and cultural differences. And, their responses to interview questions, comments in focus groups, and observations as they traversed their neighborhood in the walkabouts were similar and mutually reinforcing. While attitudes toward these issues were similar across social groups, the qualitative studies also identified major differences among respondents that could not be found in the quantitative analysis. Some respondents, especially those living in Union Ferraro Towers, were relatively isolated and rarely ventured out of their homes. Others, particularly those we interviewed at the St. Barnabas Senior Services, were far more active and traveled more frequently around the city. Quantitative analysis of the CHTS provided aggregates and averages, while the surveys demonstrated the wide range of patterns leading to those averages.

All of the study participants live in a densely populated, inner-city neighborhood served well by public transit and characterized by heavy traffic flows on many nearby streets. Among the most common responses was a deep concern for safety while walking on streets in the neighborhood. Respondents feared the presence of threatening people on their neighborhood streets and chose to go out during daylight hours rather than after dark

because of these fears. They were concerned by the presence of homeless people who harassed them when traveling in their neighborhood. Moreover, a very high degree of concern existed among respondents about broken and uneven sidewalks and trash and debris on the streets. Additionally, the heavy and fast moving street traffic contributed to their feelings of danger when walking through their neighborhood. These sorts of issues were not revealed in an analysis of the CHTS data but help to explain transportation mode choices and frequencies of travel that are typically reported in such surveys.

Similarly, quantitative indicators can reveal information about the accessibility and frequency of public transit service, and the use of various transportation modes. But respondents also expressed concern about the places at which buses stopped, the tendency of buses to stop far from the curb, and the unfriendliness of some bus drivers. Such information can only be obtained from individuals who travel in communities being studied.

Our findings buttress many previous studies that advocate using mixed methods to analyze the travel patterns, living arrangements, and life satisfaction of older Americans. The qualitative study enabled us to address relationships not easily captured by quantitative indices between social and demographic characteristics of households, their neighborhood environments, and physical mobility patterns and degrees of isolation. Mixed methods research may lessen the inherently challenging efforts in studying the quality of life of older adults.

RECOMMENDATIONS FOR AGE-FRIENDLY COMMUNITY AND LIVABILITY INDICES

This section details two livability measures that focus on quality of life issues for older adults. We explore what is included in each index and discuss possible improvements of such indices based on our study findings. Both the Milken Institute's Best Cities for Successful Aging and the AARP Livability Index use a number of indicators to evaluate different cities and communities in terms of the opportunities they present for successful aging.

THE MILKEN INSTITUTE'S BEST CITIES FOR SUCCESSFUL AGING

The Milken Institute's 2017 Best Cities for Successful Aging index uses 83 indicators sourced from publicly available data. These indicators are divided into nine categories:

1. General livability
2. Healthcare
3. Wellness
4. Financial security
5. Education
6. Transportation and convenience
7. Employment
8. Living arrangements
9. Community engagement

To create the final rankings, indicators and categories are weighted and aggregated into a composite index. Each category in the index contains a number of indicators combined to yield a category score. The category scores are then combined based on category weights to provide an overall score and rank for the location. Weights are determined based on a combination of factor analysis and expert insight.

The Milken Institute provides three rankings for each city: an overall ranking, a ranking for those aged 65-79, and one for those aged 80 and older. Categories are weighted differently among the three rankings. For example, the overall ranking weights the category "Transportation" at 9 percent. The ranking for ages 65 through 79 weights "Transportation" also at 9 percent, but for ages 80 and older, the third ranking rates it at 11 percent.

The indicators within the "Transportation" category include:

- Walk scores
- Public transport fares
- Investment in public transportation for older adults
- Number of grocery stores per capita
- Number of passenger trips
- Average commute time
- Percent of commuters who walk to work
- Availability of transportation for special needs

Data for each indicator in the index were not obtained from the same year. Depending on data availability at the time of the index's compilation, data for the indicators were obtained from any year between 2009 and 2016. The 2017 Best Cities for Successful Aging is the third version of the index, which was previously released in 2012 and in 2014.

AARP LIVABILITY INDEX

The AARP Livability Index uses 40 metrics and 20 policies from 50 data sources. Of the 40 metrics, 21 use data at the census block group scale, while the others use data at larger scales. The metric and policy indicators are sorted into seven livability categories:

1. Housing
2. Neighborhood
3. Transportation
4. Environment
5. Health
6. Engagement
7. Opportunity

The Livability Index rates each neighborhood, city, county, or state from 0 to 100. The total score is the average of all seven category scores, which also range from 0 to 100. To calculate each category score, each metric is weighted equally, but communities receive additional points for each policy in place. An average community receives a score of 50 with 100 being the highest ranking.

The metrics for the "Transportation" category include:

- Frequency of local transit service
- Number of walk trips per household per day
- Congestion by hours per person per year
- Household transportation costs per year
- Speed limits
- Fatal crash rate per 100,000 people per year
- Number of ADA accessible stations and vehicles.

In addition to the metrics, the "Transportation" category examines if the jurisdiction has the following types of policies in place:

- Safe streets: both state and local complete streets policies.
- "Convenient transportation options" where the index gives credit to states that established committees to actively coordinate service between transportation providers.
- State volunteer driver policies; states receive credit for removing barriers and providing funding to volunteer driver programs where people drive older adults to their destinations for no or a modest fee.
- State and local plans to create age-friendly communities.

The index is updated approximately every year, depending on the data availability. For the metrics, the index primarily draws from publicly available data provided by federal agencies or research institutions but also, in some cases uses private-sector data.

CONCLUSION

The Milken Institute's Best Cities for Successful Aging ranking and AARP's Livability Index are examples of efforts to methodically integrate several categories of existing conditions into an understanding of a location's livability. Such indices are valuable composites of information, however, they often rely on quantitative data, whose scale is not fine enough to reflect the more qualitative experience of people living in a particular place. For example, many of the mobility audit participants in our empirical study mentioned the trash on the streets and sidewalks as impediments to walking; yet, the Los Angeles Clean Streets Index, an inventory of street cleanliness in LA, designates most streets along the walk route as "clean." The characterizations of places by indices are, thus, a result of the accuracy of their indicators. To develop a more complete understanding of a space and its use, index indicators could be expanded, strengthened, or supplemented, to include more qualitative built environment characteristics, in addition to the quantitative metrics and policy audits.

In addition to noting the omnipresence of trash on sidewalks, the low-income, inner-city, ethnically diverse older adults that participated in our study expressed concerns about the presence of homeless people on their neighborhood streets and the frequent occurrence of broken and uneven sidewalks. The Los Angeles Times has created an inventory of sidewalk repair requests by blocks and neighborhoods. Additionally, LA County and Los Angeles City perform annual censuses of homeless populations. These data sources, as well as a more appropriately structured and evaluated Clean Streets Index, capture valuable information about an urban environment that could be used to supplement the knowledge generated by indices, such as those created by AARP and the Milken Institute.

Based on the findings of our study, we argue that these indices may become even more useful in their application to particular metropolitan areas by combining insights from indicators with both qualitative data and further quantitative investigations suggested by qualitative research. For example, indices of neighborhood quality in Los Angeles could be made more useful if the indicators already included in the AARP Livability Index could be supplemented by an index indicating the degree to which homelessness was common in each neighborhood, and the degree to which neighborhood sidewalks are in good or damaged condition and their degree of cleanliness. This might not be possible, of course, in locales where such data are not present. It would be more challenging to incorporate into a livability index measures of traffic volumes, because heavily traveled streets intersect lightly traveled ones, as neighborhoods are comprised of many street types. However, records exist about the frequency and location of traffic crashes, also specifically indicating crashes in which pedestrians are hit, and those data could more readily be incorporated into an augmented livability index that addresses concerns of the sort raised by the study participants. Traffic volume data may be challenging to incorporate into a livability index, because traffic volumes are not typically available at all segments along a street network. However, for communities in California, the statewide integrated traffic reporting system (SWIRTS) database documents the location of all crashes, specifically indicating crashes in which pedestrians are hit. These data could be readily incorporated into an augmented livability index for communities in California.

In sum, both the Milken Institute and the AARP indices provide useful sources of information for older adults and are interesting models that researchers and planners could modify for the evaluation of urban communities. Incorporating more indicators of the built environment or augmenting the information provided by the indices with additional qualitative information could enrich and strengthen the insights derived by such indices.

Recommendations for Policymakers and Practitioners

The policy recommendations that follow suggest ways to improve mobility for vulnerable older adults in feasible, practical, and realistic ways, while recognizing that these topics intersect with systemic conditions continuing to plague inner-city areas. The policy recommendations fall into five improvement categories: streetscape design, transit, point-to-point transportation services, mobility complementary improvements, and safety. We link recommendations directly to findings from our empirical study. In most cases, we also highlight which group or agency might be responsible for carrying out a recommendation, and indicate relevant plans or policies that the city has enacted or intends to enact.

Streetscape improvements

The design and condition of the built environment can encourage or deter mobility. Many inner-city neighborhoods in U.S. cities suffer from disinvestment, lack of maintenance and deterioration of their public facilities and spaces. This often makes walking in these neighborhoods difficult, uncomfortable, and unpleasant.

Study Findings

1. Walking was one of the most common travel modes among older adults in the Westlake neighborhood, as they walked to different destinations for shopping and to and from public transit stops. Some indicated that they want to walk for exercise to maintain their physical health.
2. While nearly every respondent claimed to have no difficulty walking for 15 minutes at a time, each described numerous obstacles in the built environment that made walking unpleasant or even dangerous.
3. Participants during the focus groups, interviews, and walkabout commonly said that the sidewalks were dirty, cracked, and uneven making walking unpleasant and leading to many concerns about trips and falls. They also complained about the lack of street trees and benches, which make a walk around the neighborhood uncomfortable, particularly during warm weather.

Recommendations

- Regularly clean trash and power-wash sidewalks, remove graffiti, and add trash cans. *Responsible agency/entity: Department of Sanitation / CleanStreets LA Program.*

<u>City Plan/Policy</u>: Clean Streets LA was launched by Mayor Eric Garcetti in April of 2015 by executive directive, naming the City of LA's Bureau of Sanitation (LASAN) the lead agency for implementing a clean streets initiative. Through the improvement of the following five service metrics, the directive aims to improve livability and cleanliness by removing litter and debris from streets, alleys, and sidewalks: 1) Abandoned Waste Removal; 2) Alley Clean Ups; 3) Chronic Dumping Area Clean Ups; 4) Removal of Excess Vegetation; 5) Waste Receptacle Service: the city currently manages 1,000 trash receptacles, and the initiative aims to provide an additional 5,000 throughout the city in the next five years.

To further improve LASAN's response and service, Clean Streets LA has initiated a city-wide, quarterly cleanliness assessment of LA's public streets and alleys. During each assessment, LASAN staff drive throughout the city and score each block as "clean," "somewhat clean," or "not clean" based on the amount of litter, weeds, bulky items, and illegal dumping found on the block. This program is intended to allow LASAN to more strategically allocate resources and conduct clean ups, where they are most needed. The initiative also provides new funding for sanitation crews to address clean ups and empowers other city agencies such as the Los Angeles Police Department and the Bureau of Street Services to develop enforcement strategies to target illegal dumping.

- Prioritize fixing cracked sidewalks and intersections in inner-city areas, especially in neighborhoods with high concentrations of older adults. Make the submission and repair request process as user-friendly as possible, understanding that older adults in inner-city areas likely have less internet access and English proficiency.
  Responsible agency/entity: Bureau of Engineering

<u>City Plan/Policy</u>: In July 2017, the city enacted the Safe Sidewalks LA program as result of a class-action lawsuit settlement. Its "Access Repair Program" makes sidewalk repairs requested "by/for people with mobility disability who encounter physical barriers such as broken sidewalks, missing/broken curb ramps or other barriers in the public right-of-way."[1]   (see also information about the program in Part One of this report.) Currently, the Department on Disabilities and the Bureau of Engineering are directed to be as open as possible to all requests, including from anyone loosely defined as "elder."

- Add benches at bus stops and at sidewalks.
  Responsible agency: Los Angeles Department of Public Works
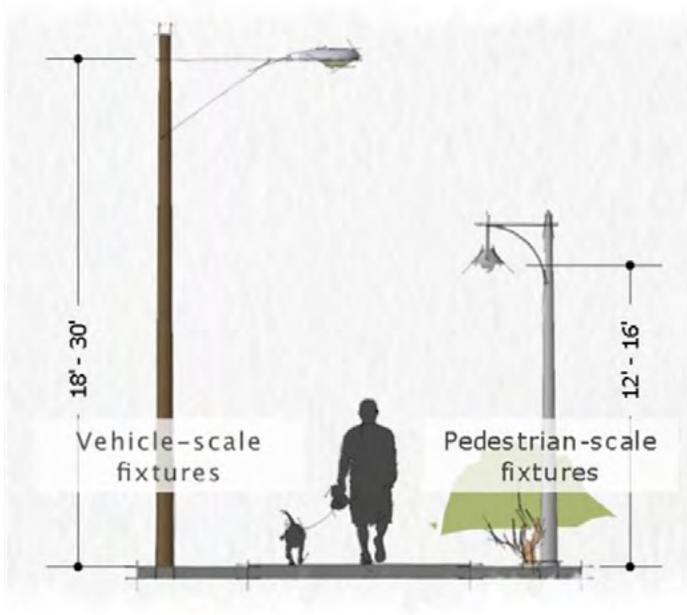
Figure 36: Lighting scales.
Source: Spokane, Washington
Municipal Code

Figure 37: Scramble intersection
treatment near SBSS

City Plan/Policy: The New York City CityBench Program can provide a model. In 2011, this program announced plans for the installation of 1,000 new benches at city streets in New York. Eighty percent of the program's initial funding came from the Federal Transit Administration Section 5310 funds. By 2015, the program had installed 1,500 benches across the city, and received an additional $1.5M to continue its work.[2]

The Street Furniture Revenue Fund is provided by the City of Los Angeles with the aim of funding public street furniture. Proposed projects must receive authorization by the local City Councilmember and by the City Council to gain funding (City of LA). Funding must be used for sidewalk repair and beautification projects, public safety improvements, and public amenities that improve the quality of life for public transit patrons, residents, and businesses.[3]

- Plant street trees for shade along inner-city streets that lack many trees, particularly as low-income communities of color have the lowest amount of tree canopy available in the City.[4] Council districts outside the inner city have 23% of tree canopy cover, while

inner-city districts have only 14% tree canopy cover.[5] Choose tree species, whose roots do not damage sidewalks, and whose foliage does not hinder motorist visibility. *Responsible agencies: City Plants, Department of Public Works, Urban Forestry Division, Bureau of Street Services*

City Plan/Policy: City Plants is a public-private partnership between the City of Los Angeles and local organizations administered by the Los Angeles Board of Public Works. This program combines the efforts of the Los Angeles Department of Water and Power's Trees for a Green LA Program and the Million Tree LA effort, which was spearheaded under previous Los Angeles Mayor, Antonio Villaraigosa. Under the City Plants Program, residents and businesses in the City of Los Angeles are eligible to request free trees. Residents can request trees on their private property or on the parkway (public space between the sidewalk and street). Businesses are also eligible to request trees through this program, given that they agree to water and care for the trees.

- Ensure unobstructed passage by designating a band of the sidewalk as a throughway zone for pedestrian movement (see Figure 38).
Responsible agency: Bureau of Street Services
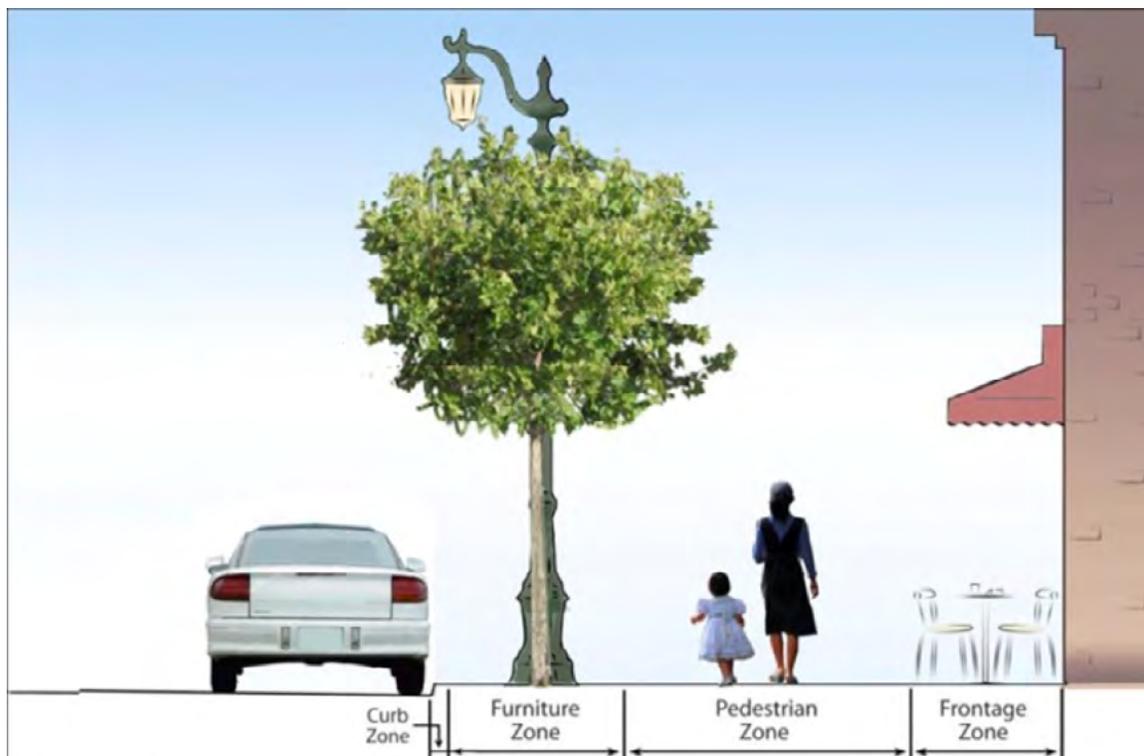
Figure 38: Sidewalk zones

- Remove sidewalk obstructions such as non-operational payphones or newspaper stands that present impediments for walking in narrow sidewalks. Since payphone companies are responsible for installing and removing payphones, the Bureau of Street Services will need to identify and work with them to remove their property from the streetscape.
  Responsible agency: Bureau of Street Services

- Driveway cuts on sidewalks often represent risks for pedestrians, who may be hit by cars entering or exiting the driveway. Install signs, or speed bumps, or colored pavement, or mirrors in commercial areas with pedestrian and vehicular volumes to make drivers lower their speed as they are entering or exiting driveways and to be aware of pedestrians at these dangerous spots.
  Responsible agency: Bureau of Street Services

- Prioritize neighborhoods with high concentrations of older adults for installation of pedestrian-scale lighting on sidewalks, near bus stops and other destinations popular by older adults. Pedestrian-scale lighting is shorter in height and more frequently spaced, thus, increasing comfort and safety by providing a more consistent level of light on the sidewalks.
  Responsible agency: Bureau of Street Lighting

  City Plan/Policy: The Bureau of Street Lighting in the Department of Public Works installs street lighting, but installation and annual maintenance costs are paid by property owners through an assessment. However, assessments are subject to Proposition 218, which requires that property owners have to vote on whether they can be assessed.[6] This policy often creates a disadvantage for low-income inner-city areas that have many absentee property owners or for small businesses with low revenues.

- Perform a traffic study to determine how to increase the amount of time allowed for crossing the street by increasing traffic cycles or installing leading pedestrian intervals at intersections near senior housing locations or other common destinations frequented by older adults. The City should install more Leading Pedestrian Intervals (as explained below) at traffic lights in neighborhoods with high concentrations of older adults.
  Responsible agencies: Los Angeles Department of Transportation and Caltrans

City Plan/Policy: As a part of its Vision Zero traffic safety program, the City of Los Angeles has installed 22 new Leading Pedestrian Intervals at signals throughout the city. A Leading Pedestrian Interval provides pedestrians with a walk signal several seconds before drivers get a green light. This increases the visibility of crossing pedestrians and gives them priority at the intersection. Evaluation of this initiative has revealed a decrease in collisions.

- Continue to implement scramble (diagonal) crosswalks where pedestrian volumes are high and vehicular flows permit. During our study period, three intersections in the neighborhood received this new treatment (Figure 37). Even though these treatments are new, some focus group participants noticed and appreciated these improved intersections.
  Responsible agency: Los Angeles Department of Transportation

PUBLIC TRANSIT IMPROVEMENTS

Public transit becomes an important transportation mode for inner-city older adults, who do not own a car or who have been forced to stop driving. However, the quality of the transit service, on and off the transit vehicle, can heavily influence the experience of the transit rider.

Findings

1. Older adults living in Los Angeles's inner-city areas rely heavily on public transit to meet their daily mobility needs.
2. Despite generally being satisfied with public transit, older adults expressed concerns about having to wait a long time for the bus, the difficulty of getting on and off the bus, finding a seat on the bus, as well as with issues of bus cleanliness and safety.
3. Some older adults mentioned that they hesitate to ask the driver to lower the ramp for them, despite their difficulty of getting on or off the bus.

Recommendations

- Post information about bus schedules at locations frequented by older adults (such as St.Barnabas Senior Services, churches, community institutions, and on transit vehicles). Widely advertise ways to access real-time bus arrival information through postings in several languages in large fonts with highlighted call-in information numbers.
  Responsible entities: Los Angeles Department of Transportation (for their DASH service) and LA Metro.

Figure 39: Areas for wheel-chairs and the placement of grocery bags in the bus

Source: Rendering of potential bus interior improvements http://www2.dh.umu.se/degree2009/app/webroot/img/data/71/main/cover.jpg

- As transit agencies purchase new vehicles, they should consider bus design modifications that can improve senior mobility. Because such modifications will likely reduce the seating capacity of buses, the transit agency could deploy specially retrofitted buses during non-rush hours, when many older adults are traveling.
  - Create areas for wheelchairs and the placement of grocery bags in the bus (Figure 39).
  - Continue highlighting priority seats for older adults.
  - Encourage bus design modifications that can better bridge the space between the bus vehicle and the sidewalk curb, without requiring the deployment of a ramp.
  Responsible entities: Los Angeles Department of Transportation (for the DASH service), LA Metro and other municipal transit operators.

- Increase bus driver awareness about older adult mobility needs, and satisfy their requests to stop the bus as close to the curb as possible.
  Responsible agency: Metro, LADOT (for Dash service) and other municipal transit operators

- Improve enforcement to reduce vehicles blocking bus stops, because obstructed bus stops make stopping close to the curb more difficult.
  Responsible agency: LAPD Traffic Division

- Make it easier and less intimidating for older adults to ask drivers to put down the ramp by placing a sticker or icon or a request button near the bus door that would allow people, including those with limited English proficiency, to ask for this service.
  Responsible agencies: Metro and other municipal transit operators

- Consider moving bus stops closer to concentrations of older adults and closer to common destinations for older adults.
  Responsible agencies: Metro and other municipal operators

- Currently, the location of bus shelters is based on criteria that do not take into account concentrations of older adult population (see below). Consider such concentrations of older adults in a neighborhood as one of the criteria for the installation of bus shelters, benches, and pedestrian lighting at bus stops.
  Responsible agencies: Bureau of Street Services, Bureau of Street Lighting

  City Plan/Policy: In January 2018, the Los Angeles City Council voted to instruct the city attorney to negotiate an amended contract with Outfront JC Decaux, a private outdoor advertisement company that installs bus shelters, and extend the term of the 20-year contract for another decade. The city expects installation of 600-700 new bus shelters. Bus shelters are distributed among the 15 council districts as follows: 25% by the council office, 40% by the Bureau of Street Services, and 35% by the private installation company. Sites are selected based on "physical criteria, bus service and ridership data, ADA guidelines, city council member input and program revenue requirements."[7]

POINT-TO-POINT TRANSPORTATION SERVICE IMPROVEMENTS

The diversity of needs among older adults require a wide range of transportation options, some of which include point-to-point transportation services. While cities have witnessed an explosion of ride hailing services (for example, Lyft and Uber) in the last decade, these services are used to a lesser extent by older Americans than by other citizens. Our research showed that they are rarely used by lower income, inner city older adults. Social network providers have formed experimental partnerships with home care agencies and health care providers to enable clients to reach medical destinations, but the study population had little familiarity with those options.

Access LA is an important paratransit service that offers older adults with disabilities a point-to-point transportation service, usually in the form of vans or minibuses rather than taxis. As indicated in Part One of the report, Access LA requires users to schedule trips at least 24 hours in advance, and its fares, which are based on a tiered distance-based pricing structure, are not subsidized.

Findings

1. While walking and taking the bus were the most common modes of transportation for nearly all study participants, their mobility was enhanced by occasional access to door-to-door transportation, such as rides from friends or family, Access LA paratransit service, or, on rare occasions, ride hailing services such as Lyft or Uber or taxis, often relying upon third parties like children and friends to call the services.

2. Few participants owned their own cars and less than half of the people who did own a car drove it themselves.

3. Those who use Access LA paratransit services expressed concerns about the onerous nature of the application and reservation process.

4. Older low-income inner-city adults face barriers in accessing point-to-point transportation services (see Figure 40 below). While cost was a concern for ride-hailing services, the decision to use or not use such services was influenced by the individual's awareness of these services, access to smartphone and credit card, and comfort with purchasing goods and services online. In general, we found more reasons why these older adults did not use these services, rather than pathways to their, even occasional, usage.

5. Large ride hailing companies are currently experimenting with pilot programs in different cities that are targeted to older adults, and most of these partnerships focus on trips related to medical care.
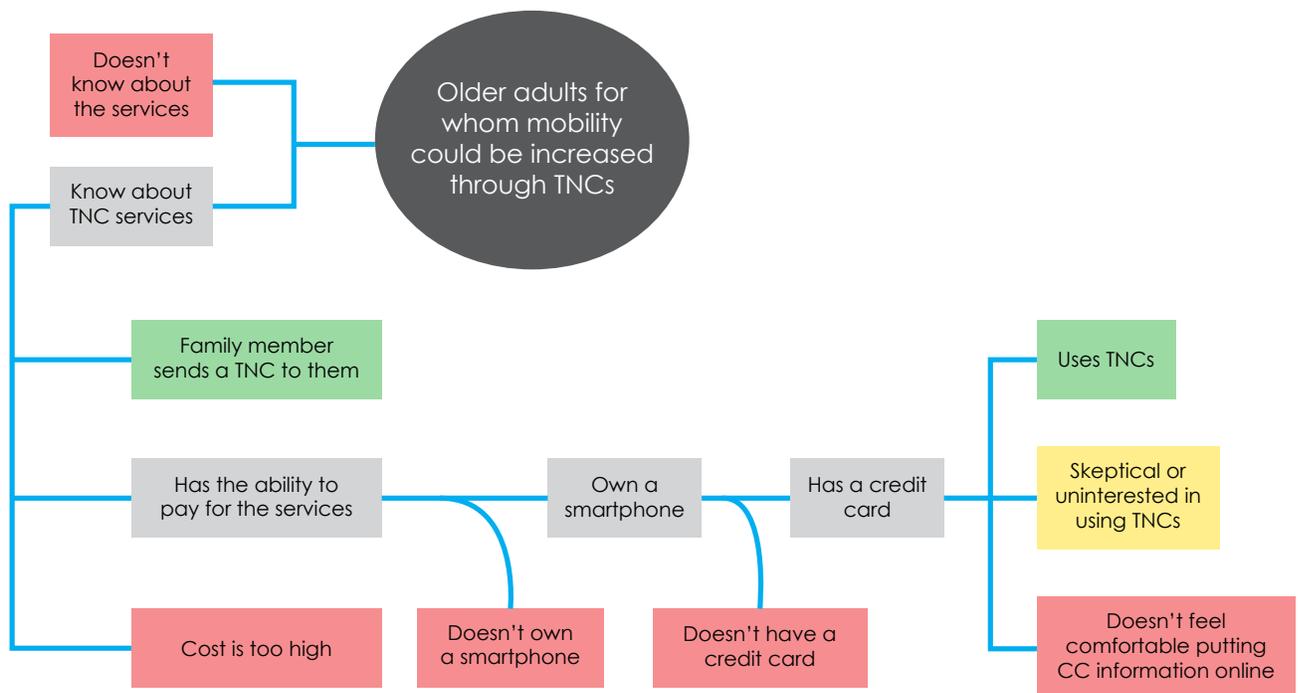
Figure 40: Older adult decision making to use ride hailing services. Red boxes represent deal-breaker reasons for ride hailing use. Green boxes represent pathways to using ride hailing services.

Recommendations

- Encourage ride hailing companies to study the market of low-income older adults that are concentrated in inner-city areas. Initiate pilot programs to evaluate how to make point-to-point services more accessible.
  Responsible entities: LA Department of Transportation, working in conjunction with ride hailing companies

- As more cities experiment with and pilot test new mobility services such as on-demand transit or car sharing, cities should incorporate older adult needs to assess their promise for improving mobility for low-income seniors.
  Responsible entities: LA Metro and LADOT

  City Plan/Policy: Los Angeles Metro's Office of Extraordinary Innovation is already experimenting with "micro transit," an approach to travel that uses electronic communication and ride-hailing companies to connect residences and fixed route transit stops and to substitute for fixed route services outside of peak service hours. Metro could be encouraged to focus on the role such services might be able to play for low income, inner-city populations, who do not speak English and who lack cell phone access and credit cards. While the provision of services to these populations presents challenges, this research shows that it could provide important benefits to them.

- Increase access to taxi vouchers for very low-income older adults by restructuring the Access LA program
  Responsible entity: Access LA

- Widely advertise recently unveiled real-time tracking information for Access LA paratransit services, making it clear that people without smartphones can also access this real-time information
  Responsible entity: Access LA

  City Plan/Policy: Access LA unveiled their "Where's My Ride?" program that allows passengers to check the location of their expected vehicle 15 minutes prior to its scheduled arrival. This program is accessible via smartphone, computer, tablet and SMS text messaging, but the system is currently only available in English.

- Encourage Access LA program to take advantage of current transportation options by exploring opportunities for agreements with ride hailing provider companies that may be able to dispatch cars on demand more quickly and efficiently.
Responsible entity: Access LA

MOBILITY COMPLEMENTARY IMPROVEMENTS

Certain trips for services that require long and/or arduous travel may be difficult for some older adults. Changes in the distribution and/or location of these services may ease the need for travel by bringing them into or close to the homes of older adults. Destinations such as grocery stores and even some doctors' visits could be brought to older adults with reduced cost through delivery services and telehealth, respectively. We call such services "mobility complementary improvements." Telehealth is using computer technology so that the healthcare provider and the patient can have a verbal consultation or use the technology to conduct certain types of clinical exams.

Findings

1. Older adults living in inner-city areas have lower levels of car ownership and use.
2. Older adults often need to take long trips for routine medical appointments at facilities that are far away from home, resulting in lengthy and time-consuming trips, especially when completed by public transit.
3. Older adults often need to take a taxi or rely on a family member or friend,who has a car, to take them to the grocery store or the doctor.
4. Older adults do not rely much on digital technology for their mobility needs, and if they need to do so they have to ask a family member or acquaintance to help them.

Recommendations

Many of the recommendations provided in this section may require a leading role by the private sector and could be further explored by some agencies and groups such as the Purposeful Aging Los Angeles committee. Demonstration projects to assess the cost-effectiveness of these pilots may be a path forward.

- Encourage more supermarkets to explore possibilities of delivering groceries at reduced cost for low-income older adults, who live in high concentrations of senior housing. Food retailers, notably higher end providers such as Whole Foods and Bristol Farms, are increasingly delivering within a 5-mile area. To most effectively help the

inner-city ethnically diverse population, the delivery services should be multi-lingual and include ordering options that do not require a smart phone.
Responsible entities: Area supermarkets and Purposeful Aging Los Angeles Initiative

Existing Program: An increasing number of grocery stores are now offering grocery delivery services. Walmart piloted this program in 2015 and is now expanding this service to over 100 metro areas in the U.S. Orders are fulfilled at certain stores and then delivered through Uber and other ride and delivery platforms. Other grocery chains are now looking at Walmart's example and considering grocery delivery services as well. An alternative model is to incentivize non-market delivery mechanisms. For example, in 2015, AARP piloted a program that provided incentives for organizations to deliver from local markets for older adults, who would use Supplemental Nutrition Assistance Program (SNAP) benefits for groceries.[8]

- Encourage the establishment of telehealth stations at common destinations like senior centers or local pharmacies.
Responsible entities: Purposeful Aging Los Angeles and the Department of Aging and Adult Services

City Plan/Policy: "TIPS: Telehealth Intervention Programs for Seniors" in Westchester County, NY debuted in 2014 and could serve as a model program for the use of technology remotely for prevention purposes. In this program, student nurses go to sites where seniors gather (e.g., senior centers) and collect digital data on their vital signs. This data is forwarded to graduate student nurses, who then decide whether to refer older adults to physicians. TIPS is sponsored by the Westchester County Department of Senior Programs and Services (DSPS) and the Westchester Public/Private Partnership for Aging Services.

Other telehealth programs could also serve as an in-home, self-care model (with nurse consultation as desired/needed). For example, an evidence-based, specialized tele-HEART program was effective in reducing emergency visits by providing in-home technology for daily monitoring by older adults. A nurse reviewed the data daily and made recommendations for self-care.

- Programs, such as the "CVS MinuteClinic," are bringing medical care closer to patients by locating basic medical services (such as immunizations, wellness screenings, and treatments for minor illnesses) in commonly frequented locations. Such improvements require the private sector to take a leading role. *Responsible agency: Los Angeles County Department of Public Health may consider a demonstration project to assess the cost-effectiveness of the concept or work with members of Purposeful Aging Los Angeles.*

- Find opportunities for increased internet access in common spaces (such as community rooms) in residential developments that accommodate high concentrations of low-income older adults. By offering low-cost internet services, low-income older adults can allow services to come to them and ease some of their travel burdens *Responsible entities: Purposeful Aging Los Angeles and the Department of Aging and Adult Services*

SAFETY IMPROVEMENTS

Safety, real and perceived, affects mobility. Policymakers need to consider not only the physical environment but also the social interactions of older adults during their daily journeys and respond to their fears.

Findings

1. In addition to concerns about the physical environment (discussed above), many older adults talked about some troubling social interactions, and how the presence of certain individuals, who they perceive as dangerous, affects their mobility. Criminal activities such as drug use, loitering, drunkenness and the presence of homeless individuals and street vendors who may obstruct sidewalk passage are of great concern to them.
2. Some complained that police officers travel through their neighborhoods in their cars, without taking notice of problems (crime, incivilities) on the streets.

Recommendations

- Encourage the Los Angeles Police Department to expand its "foot beats,"and community policing efforts especially in high-crime areas with high concentrations of older adults, and have police officers patrol sidewalks on foot or bicycle rather than driving by in cars. *Responsible entity: LAPD*

<u>Plan/Policy</u>: In 2015, LAPD doubled the number of foot patrols in some neighborhoods east of Downtown to largely deal with quality-of-life issues[9]. While no published evaluations of this program currently exist, expanding foot patrols is included in the "LAPD in 2020" strategic plan.

- In areas with high concentration of homeless individuals sleeping on the sidewalks, employ the services of social workers to address the issue through a social lens and engage social workers to help them.
  Responsible entities: Department of Aging, People Assisting the Homeless (PATH) and Los Angeles Homeless Services Authority

<u>Plan/Policy</u>: Los Angeles Metro is currently piloting a first of its kind program to send social workers onto the subway to help homeless riders.[10] This one-year $1.2-millon contract with People Assisting the Homeless aims to connect homeless riders to programs that can lead to permanent housing.

- Support neighborhood safety programs, such as the Safe Passage SF program noted below, that provide a variety of neighborhood safety improvements in areas with high concentrations of older adults
  Responsible entities: Coalition of public sector, neighborhood groups and philanthropic interests

City Plan/Policy: A neighborhood safety program could be modeled after the Safe Passage Senior program recently established in San Francisco's Tenderloin neighborhood.[11] The program seeks to increase the safety of seniors by offering assistance with street crossings, safe escort services, and safety training workshops. The program is funded by nonprofit foundations as well as San Francisco's Office of Economic and Workforce Development (OEWD) and grants from Vision Zero and the San Francisco Police Officers Association, and includes community safety trainings and safe escort services by volunteers.

Concluding Thoughts

Mobility should be an important right to the city for every resident, as it allows access to city settings and amenities. But inner-city, low-income older adults represent a vulnerable group that often faces constrained mobility options because of limited private resources and lack of private transportation. Walking is the most common mode of transportation for accomplishing many daily chores in inner city neighborhoods, but the systemic problems of the inner-city (poverty and homelessness, crime, deteriorated built environment, high-traffic arterials) make walking, waiting for the bus, or crossing the street quite challenging. On the positive side, the mixed-use environment of inner-city neighborhoods offers retail, commercial, and health establishments in closer proximity to residences than in suburban neighborhoods.

In the last decade, we have witnessed an emerging interest in the development of age-friendly cities—an interest that is shared by policymakers, urban planners, and researchers. Enhancing mobility for older adults should be a major pillar of age-friendly cities. But for this to happen, we need good policies, good designs, and joint and persistent efforts towards this goal by the public, private, and nonprofit sectors. We also need to hear directly from older adults, themselves, so as to better understand their lived realities. This study was an effort towards this direction: it gave voice to low-income inner city older adults to present their mobility challenges and transportation needs and, then, offered evidence-based and practical solutions for meeting these needs.

End Notes

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APPENDIX A

LITERATURE REVIEW SEARCH TERMS

ELECTRONIC SEARCHES
Peer-reviewed articles, reports, conference abstracts and grey literature published in English excluding dissertations, between January 1, 1990 and May 31, 2017 within the following electronic databases: Academic Search Complete, Business Search Complete, CINHL, Web of Science, Sociological Abstracts, PsychInfo, PAIS, Transportation Research Record and PubMed.

ACADEMIC SEARCH COMPLETE
'AB (transportation OR travel* OR mobility* OR paratransit* OR "public transit" OR rideshar*) AND AB (older* OR elder* OR senior* OR aging) AND AB (urban) AND TX (poor OR "low-income") NOT TX (migration OR student OR pregnant)

BUSINESS SEARCH COMPLETE
'AB ("urban transportation" OR transportation OR travel* OR mobility* OR paratransit* OR "public transit" OR rideshar*) AND AB (older* OR elder* OR senior* OR aging) AND TX (urban or metropolitan or city or cities) NOT TX (tourism OR "travel agen*" OR vacation* OR holiday OR "adventure travel" OR "business travel" OR "economic mobility" OR "residential mobility" OR "Advertising Agencies") NOT TX ("labor mobility" OR "Employee seniority" OR "senior leadership" OR "economic mobility" OR "emergency transportation" OR holiday)

CINHL
'AB(Urban) AND AB("urban transportation" OR transportation OR travel OR mobility OR paratransit* OR "public transit" OR rideshare) AND (aged OR elderly OR aging OR "older adult" OR "older people" OR "senior citizen")

WEB OF SCIENCE
'SU=(Geriatrics & Gerontology) AND TS=(transportation OR travel* OR mobility* OR paratransit* OR "public transit" OR "ride shar*" OR "shared economy" OR taxi OR cab OR "way finding" OR "last mile") AND TS=(urban) AND TS=("low income" OR "low socio*" OR "disadvantaged population*") Timespan=1990-2017 AND Search language=English

SOCIOLOGICAL ABSTRACTS

'ab(urban OR "urban planning") AND ab(elderly OR aging OR "older adult" OR "older peo-ple" OR "senior citizen*") AND ab(mobility OR transportation OR travel OR "public transpor-tation") NOT ("residential mobility" OR "upward mobility" OR migration)

PSYCHINFO

'(ab(elderly OR "old age" OR aging OR "older adult" OR "older person" OR "older people" OR "senior citizen?" OR "aging in place") AND ab("mass transit" OR transportation OR "pub-lic transportation" OR "older drivers" OR "geographic mobility" OR mobility) NOT ("residential mobility" OR "upward mobility" OR migration OR "social mobility" OR advertising OR "travel agencies" OR "gulliver's Travels" OR tourism OR "consumer behavior" OR "health literacy")) AND urban

PAIS

ab(elderly OR "old age" OR aging OR "older adult" OR "older person" OR "older people" OR "senior citizen?") AND ab("mass transit" OR mobility OR transportation OR travel OR "pub-lic transportation") AND (urban OR neighborhood) OR subject("Old age   Transportation") NOT ("upward mobility" OR "Disaster Relief")

TRANSPORTATION RESEARCH RECORD

Anywhere ("older adult" OR elderly OR senior OR "old age" OR older person" OR "older people" OR "senior citizen") And ("low income") AND (urban)

PUBMED

(((((((transportation[Title/Abstract] OR travel*[Title/Abstract] OR mobility*[Title/Abstract] OR paratransit*[Title/Abstract] OR "public transit"[Title/Abstract] OR rideshar*[Title/Abstract])) AND (older*[Title/Abstract] OR elder*[Title/Abstract] OR senior*[Title/Abstract] OR ag-ing[Title/Abstract])) AND "low-income"[Title/Abstract])) NOT (migration[Title/Abstract] OR student[Title/Abstract] OR pregnant[Title/Abstract] OR "upward mobility"[Title/Abstract] OR "Disaster Relief"[Title/Abstract]))) NOT (child[Title/Abstract] OR youth[Title/Abstract])

SEARCHING OTHER RESOURCES

Research previously collected

APPENDIX B

INTERNATIONAL METHODS

In the literature reviewed, there were specific publications of methodological interest to this study. These included studies from the domestic and international literature that utilized different methodologies and research tools to identify the travel patterns of older adult, such as travel diaries, GPS tracking technology, measures of urban form, and focus groups. The following section provides a short review of the lessons learned from these studies.

TRAVEL DIARIES

A study conducted in Metro Vancouver, Canada by M. Moniruzzaman et al. (2015) utilized travel diaries to analyze the travel behavior of lower income older adults. Participants' trips were recorded during a seven-day period immediately following intake sessions. In this study, a trip was defined as one-way travel between two destinations. In the diary, each diary log included the time and address (or intersection) at the start and end of each trip, as well as the trip purpose (e.g. walk, volunteering, exercise, education, shopping/errands, social/entertainment, health appointment, other). Diaries also captured the mode of travel (walking, bicycle, wheelchair, scooter, transit, taxi, car, other), and whether the participant travelled alone or with company (spouse, sibling, child, friend, neighbor, volunteer, other). By collecting start and end points in travel diaries, the researchers attempted to geocode trips using an online geocoder to calculate trip distance. Unfortunately, a significant portion of the diary trips (912 out of 3559) lacked adequate information to geocode origins or destinations and had to be excluded. While the model of trip distance tells us how far the older adults are traveling, a model of trip frequency would provide information on how frequent they are making those trips (2015). One of the weaknesses of travel diaries is the lack of the researcher's ability to control the completion of data entry by the participants; however, data loss may be improved with alterations to the data entry prompts. A second related weakness of travel diaries is that they are prone to recall bias including underreporting or over reporting of short trips.

Travel diaries were also used in a study of older adults 60 and older living in the downtown core of Vancouver to describe mobility of those who live in what they identified as a 'highly walkable neighborhood' (Winters, 2015). Like the previous study, logs collected information on start and end locations, times, purpose and destination; however, they did

not collect data on accompaniment which may be of interest. Further this study, unlike M. Moniruzzaman et al. (2015), included written instructions within a take-home package of the travel diary, which may increase ease of use and decrease omission data. This study also included the use of an ActiGraph GT3X+, an accelerometer worn by study participants for the same seven days they were collecting their travel diary entries. The purpose of the accelerometer was to objectively quantify physical activity and step counts. These instruments were used to determine where older adults go, (destinations), and how they get there (travel mode, physical activity). Study project managers provided each participant with detailed instructions on the accelerometer, specifically that it be worn 'on the right hip during waking hours for seven days, and only to remove it for sleep and water-based activities (e.g., showers, swimming)'. One of the strengths of using the accelerometer was the ability to capture objective measures of physical activity, which was important given the known association between physical activity with health. Interestingly, this study excluded trips that were within the participant's residential lot (e.g., to the mailbox) (2015), which may be of interest considering the research citing mobility difficulties within and just prior to accessing public spaces (stairs, entry ways, etc). Though accelerometers were useful in this study to measure active travel times, and in triangulating travel diary entries, they were unable to capture exact routes taken by older adults, thereby potentially leaving specific built environment elements and route choices unaccounted for.

GLOBAL POSITIONING SYSTEM (GPS) DEVICES

Until recently the ability of researchers to assess mobility of older adults relied mainly on such travel diaries or other observational approaches, activity monitoring, or behavioral checklists. However, the rapid development of and availability of GPS technology, coupled with its decreasing cost, make this reliable tracking device ideal for data collection of older adult mobility. A 2010 study by Shoval, et al. in the metropolitan Tel-Aviv area of Israel gives insights gained through the analysis of GPS data in combination with GIS platforms. Researchers were interested in the outdoor activities of demented older adults and were able to capture data using these advanced tracking technologies. Participants were tracked for an average of 28 consecutive days, which presented both an advantage and a challenge. They were able to identify differences in various walking and driving parameters, such as speed, length, timing, and frequency of travel. The significance of this technological advance was their ability to capture such data with older adults of varying levels of cognitive function.

With GPS-based data, the quantity of data obtained (for example every 10 seconds) for several days or weeks provides a large amount of data. This amount of information, though positive, is also potentially overwhelming and necessitating automated solutions for its processing. The authors present a framework of analysis to handle such challenges. They discovered that individual tracking was useful, but raw data did not provide much

information; they emphasized the importance of having a plan for the initial processing of raw data. A second issue was the difficulty in differentiating between participant riding as a vehicle passenger in traffic congestion, and actual walking activity. An important point in this study is that GPS technology cannot replace questionnaires, diaries, or interviews, which continue to be an important source of information on the activity itself. Travel diaries, for example, can provide data on the motives underlying the activity. The authors propose that GPS technology serves as a complement, enriching instead of replacing traditional research tools (Shoval et al., 2010)

FOCUS GROUPS AND INTERVIEWS

A comparative embedded case study (Grant, Edwards, Sveistrup, Andrew, & Egan, 2010) was conducted in four Ottawa, Canada neighborhoods that differed in urban form (inner-urban versus suburban) and socioeconomic status (SES) (higher versus lower). The study involved focus groups, which examined older people's perspectives on their walking experiences within each of the four neighborhoods. Each focus group lasted approximately 50 minutes and was audio-taped. Semi-structured questions were posed to elicit discussions on: 1) where people walked and why; 2) supportive and unsupportive aspects of the neighborhood environment; and 3) positive and negative neighborhood changes that had affected walking. A second phase of interviews were conducted with neighborhood key informants to better understand community processes. These were one on one and lasted approximately one hour; they focused on ascertaining the older adults' insights on the issue of walkability and associated community processes. Older adults were prompted to talk about: 1) the types of individual and group actors in a neighborhood; 2) types of issues and how they were addressed; 3) how groups were organized and how they communicated; 4) neighborhood resources; 5) municipal-neighborhood interactions; 6) opportunities acted upon. To measure the built environment elements as it related to walkability, quantitative measures from publicly available sources provided further information on commercial walking destinations (e.g. presence of grocery stores) and neighborhood amenities (e.g. walking/cycling paths, parks, recreation centers), as well as traffic volumes and pedestrian-vehicle collisions (Grant et al., 2010). The strengths of this qualitative methodology is that by using open-ended questions data can both complement and/or highlight unanticipated information, which cannot often be captured by quantitative data such as closed-ended surveys. By including the voices of both older adults and key stakeholders within each neighborhood, researchers were able to gain insights into previously unseen socio-political processes, which included inequitable walking and driving conditions based on neighborhood socioeconomic status (Grant et al., 2010).

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APPENDIX C

Focus Group Questions

1. How do you keep in touch with friends and family?

2. How do you use electronic devices (such as cel phones, smart phones, ipads, personal computers) for your daily activities and services?

3. What makes it hard to do so?

4. How do you use any technology (devices) for travel?

5. Are there destinations in the city that you visit regularly (offer prompts)? How do you go there?

6. Tell us a bit about walking in your neighborhood (prompts: How often? Where? Challenges?)

7. What kind of daily outings do you want to have but cannot? Tell us why?

8. What will make it easier for you to move around the city?

APPENDIX D

TRAVEL BEHAVIOR QUESTIONNAIRE

1. Where is your home located? (can give closest intersection)
2. In what year were you born?

Employment Trips - only ask after determining individual is employed

1. When did you last go to work? Where did you leave from?
2. Where is your work located?
3. How did you get there?
4. When you finished work, where did you go next?
5. How often do you go to work?
6. How long did it take you to get to work?
7. If you drove to work, did you drive alone? If not, were you the passenger or the driver?
8. Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)
9. Do you sometimes work from home? If yes, how often?
10. Is there a vanpool or carpool service that your work provides?

Grocery Shopping Trips

1. When did you last go grocery shopping? Where did you leave from?
2. Where did you shop at that trip?
3. How did you get there?
4. When you finished shopping, where did you go next?
5. How often do you go grocery shopping?
6. How long did it take you to get to the grocery store?
7. If you drove to the grocery store, did you drive alone? If not, were you the passenger or the driver?
8. Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Medical Care Trips

1. When did you last go to a medical appointment? This may include a trip to the doctor/therapist/physical therapist. Where did you leave from?
2. Where was your appointment located?
3. How did you get there?
4. When you finished, where did you go next?
5. How often do you make healthcare-related trips?
6. How long did it take you to get to the appointment?
7. If you drove to the appointment, did you drive alone? If not, were you the passenger or the driver?
8. Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Pharmacy Trips

1. When did you last go to a pharmacy? Where did you leave from?
2. Where was your pharmacy located?
3. How did you get there?
4. When you finished, where did you go next?
5. How often do you make pharmacy trips?
6. How long did it take you to get to the pharmacy?
7. Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Bank or ATM

1. When did you last go to the bank (or other financial institution) or ATM? Where did you leave from?
2. Where is your bank/ATM located?
3. How did you get there?
4. When you finished, where did you go next?
5. How often do you go to the bank/ATM?
6. How long did it take you to get to the bank/ATM?
7. If you drove, did you drive alone? If not, were you the passenger or the driver?
8. Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Visiting Senior Center (SBSS)
(If person currently at senior center, refer to previous trip)

1.   When did you last go to the senior center? Where did you leave from?
2.   Where is the senior center located? (if SBSS, no need to ask)
3.   How did you get there?
4.   When you finished at the center, where did you go next?
5.   How often do you go to the senior center?
6.   How long did it take you to get to the senior center?
7.   If you drove to the senior center, did you drive alone? If not, were you the passenger or the driver?
8.   Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Recreation (Movie theater/Play/Museum/Concert/Park/etc.) or Visiting Friends/Family
(If last social/rec trip was not visiting friends/family, ask "When was the last time you visited friends or family?")

1.   When did you last take a trip for entertainment/socializing/recreation, such as go to the movies, to the park, or a cultural event or visiting a friend or family member's home?
2.   Where did you leave from?
3.   Where did you go?
4.   How did you get there?
5.   When you finished your activity, where did you go next?
7.   How often do you take trips for entertainment?
8.   How long did it take you to get there?
9.   If you drove, did you drive alone? If not, were you the passenger or the driver?
10.   Was there any fare or parking charge associated with that trip? If so, how much did you pay? (No need to ask if walked/biked)

Additional Topics

Besides the trips I already asked about, are there any other trips outside of your home that you make regularly that I have not yet asked about? (Prompts: personal care (spa/hairdresser), exercise outside of the home, religious purpose (church, temple)

Technology
- Do you have a smartphone?
- Have you ever used Uber or Lyft? If so, when was the last time, where did you go and for what purpose? Where did you go and what did it cost?
- If you have a smartphone but have not used Uber or Lyft, why not?

Taxis
- When was the last time you took a taxi in Los Angeles? Did you phone for a cab, get it at a taxi stand or hail it on the street? Where did you go and how much did it cost? How often do you use taxis?
- Do you participate in the LA City Taxi Scrip program? If so, how often do you get taxi scrip and do you find the program useful or too complicated to use (reservations in advance, etc.)

Public Transit
- Do you use public transportation frequently? If you do not use public transit frequently, why do you choose not to? Is there any obstacle that keeps you from using the bus?
- If you use transit, what do you enjoy about using transit?
- If you use the bus, do you ever ask the bus driver to lower the bus for you? Are you hesitant to ask?
- If you do use transit, are there any challenges you face in doing so?
- Do you ever fear for your safety on public transit?
- Are there physical challenges you face using transit (stairs, walking)?

Driving
- If you drive, do you drive differently than when you were young? Do you tend to drive during daylight hours or avoid highways, or take other precautions?
- If you do not drive, why not?
- Have you ever driven? If not, why not?
- If you recently gave up driving, how has your lifestyle changed?

No Trips
- Was there any day last week that you did not travel outside of your home at all? (Remember, taking a walk counts as a trip!) If so: Which day?
- What was the reason? (record reason like I felt sick and unable to travel, or I just had no need to go out).
- How many days per week would you say that you usually stay at home?

Safety
- When you go for your walk to the grocery store or bus stop (etc) is the walk well-lit? Is the sidewalk uneven? Do you find it difficult to cross the street before the light is red? Is there a crosswalk for pedestrians you feel safe using? Is there a park bench to rest nearby?
- Have you in the last week or two been scared by a person stopping you on the street or at a bus stop? If so, record comments and observations and ask followup questions.
- Do you avoid taking trips at night? If so, why?
- Are you worried about leaving your home due to crime in your neighborhood?
- Do you prefer to travel with others? If so, why?

Physical Limitations
- Can you walk for more than fifteen minutes at a time? If you do not walk far more than a block at a time, or avoid walking far distances, why not?
- Do you face physical difficulties that make traveling unpleasant? For example, do you walk less frequently because it is painful or tiresome to do so?
- When you went to the grocery or the doctor, did you use a cane, a walker or any other aid to mobility?
- Would you consider your neighborhood to have all of your daily destinations (such as the grocery store and pharmacy) within a convenient walking distance? Or is driving/taking transit necessary?

Trip Costs
- Do you have a tap card? Do you have a senior tap card?
- If you do not drive, is this because of the high cost of owning and maintaining a vehicle?
- If you take transit regularly, do you consider the cost to be low, moderate, or high?

Trip Coordination/Transportation Services
- When you take trips by car, who drives you? How do you arrange for trips with that person? When driving, do you prefer to be the driver or the passenger and why?
- When taking a trip somewhere unfamiliar or somewhere you travel less frequently, how do you plan for that trip? Do you take any precautions, or avoid any particular routes? If so, why?
- Are you signed up for Metro's ACCESS services (door to door vans)? If not, are you eligible or not. (Don't know is a perfectly appropriate answer) If you are not signed up, what is the reason? (e,g, I don't need their services; I tried to sign up and they told me I need a doctor's note and I don't have one)
- Do you use another transportation service that picks you up from your home? If so, what is the service? Do you find it convenient? How do you arrange trips with that service provider? Is the service provider free of charge? If not, do you find the service cost to be low, moderate, or high?

- Have you ever heard of Metro's On the Move Rider's Club? If so, have you used it? Tell me about your experiences participating in this program. If you have heard of it but have not used it, why not?

Travel Diary Questions:

Travel diary of most recent weekday and most recent weekend day (e.g. if interview Wednesday, ask about yesterday and about last Sunday). If respondent is unable to remember, can ask "where do you go on a typical Sunday"

<u>Weekday:</u>

Did you take any trips outside your home? If not, why not?
Trip 1: When you first left your home, where did you go?

Where:
Purpose:
Mode:
Trip time:
Challenges:

Trip 2: Where did you go next?

Where:
Purpose:
Mode:
Trip time:
Challenges:

Trip 3: Where did you go next?
Where:
Purpose:
Mode:
Trip time:
Challenges:

[Repeat until back home for the day]

<u>Weekend day:</u>

"I'm going to ask you about all the trips you took on your last weekend day."
Did you take any trips outside your home three days ago? If not, why not?

Trip 1: When you first left your home, where did you go?
Where:
Purpose:
Mode:
Trip time:
Challenges:

Trip 2: Where did you go next?
Where:
Purpose:
Mode:
Trip time:
Challenges:

Trip 3: Where did you go next?
Where:
Purpose:
Mode:
Trip time:
Challenges:

[Repeat until back home for the day]

APPENDIX E
Intake Form Questions

1. *How did you get to St. Barnabas today?*
    a.   I walked from my home
    b.   I took public transit (Metro rail, Metro bus, DASH service)
    c.   I drove myself
    d.   Someone I know drove me
    e.   I took a taxi
    f.   I took a lyft/uber
    g.   I called an accessible van
    h.   Other_____

2. *How would you characterize the most common way that you travel?*
    a.   I drive myself
    b.   Someone I know drives me
    c.   I take a taxi
    d.   I take a lyft/uber
    e.   I take public transit
          i.   Dash bus
          ii.   Metro Bus
          iii. Metro Rail
    f.   I walk
    g.   I call an accessible van
    h.   I ride a bicycle

3. *Do you own a car?*
    a.   Yes (Do you drive yourself?)
    b.   No

4. *Do you use a mobility-assisting device to get around?*
    a.   Yes, I use a cane
    b.   Yes, I use a walker
    c.   Yes, I use a wheelchair
    d.   No

5. *What type of computing devices do you use? (Check all that apply)*
    a.   Computer in my home
    b.   Computer in my home with internet access
    c.   Tablet or e-reader(nook, kindle, ipad, Samsung galaxy, etc)
    d.   Tablet or e-reader with internet access
    e.   Computer with internet at cybercafé or other location (e.g. library)

6. *Do you have a cell phone?*
    a.   Yes
          i.   Basic cell phone
          ii.   Smart phone with data/internet service
    b.   No

About You

1. *How would you characterize your health, in general?*
    a.   Excellent
    b.   Very good
    c.   Good
    d.   Fair
    e.   Poor

2. What best describes your home?
    a.   Single family home
    b.   Multi-family home (duplex, triplex)
    c.   Apartment building
    d.   Other _____

3. What is your home zipcode
      _____

4. Who do you live with?
      _____

5. How would you describe your race/ethnicity? (check all that apply)
    a.   White
    b.   Hispanic
    c.   African-American
    d.   Asian
    e.   Native Hawaiian
    f.   Other _____

6. What best describes your gender?
    a.   Female
    b.   Male
    c.   Other

7. What year were you born? _____

APPENDIX F

PARTICIPANT DEMOGRAPHICS: FOCUS GROUPS

	English 1	English 2	Spanish 1	Spanish 2	Korean 1	Korean 2	Total	%
Total Participants	7	8	10	9	9	5	48	
How did you arrive at SBSS today?								
Walk	1	4	2	2	4	2	15	31%
Public Transit	6	3	6	4	3	1	23	48%
Drive themselves			2	2	1	1	6	13%
Driven by someone else				1		1	2	4%
SBSS Van		1			1		2	4%
How do you usually get around? (multiple responses allowed)								
Drive myself	1		3		3	2	9	9%
Driven by someone else	0		0				0	0%
Taxi	1		0		0		1	1%
Lyft/Uber	0	1	0		0		1	1%
DASH Bus	2	5	2	6	5	2	22	22%
Metro Bus	7	4	6	7	7	4	35	35%
Metro Rail	3	4	3	5	6	1	22	22%
Walk	1	2	3	1	1		8	8%
Access van	0		0	1	0		1	1%
Count of participants who get around only by public transit or walking								
	6	6	7	9	6	3	37	77%

Participant demographics: Focus Groups

	English 1	English 2	Spanish 1	Spanish 2	Korean 1	Korean 2	Total	%
Do you own a car?								
Yes	1	2	3	2	4	2	14	29%
No	6	6	7	7	5	3	34	71%
If you own a car, do you drive yourself?	1	2	3	1	3	1	11	79%
Uses a mobility device to get around	2	4	0	1	1	1	9	19%
Cane	2	3	0	1	1	1	8	8/9
Walker	0	1	0	0	0	0	1	1/9
Wheelchair	0		0	0	0	0	0	0%
What type of phone do you have?								
Smart phone	4	5	8	1	1	4	23	50%
Basic cell phone	3	3	2	4	5	1	18	39%
No phone	0	0	0	3	2	0	5	11%
What type of technology do you use?								
Home computer			2		0		2	4%
Home computer with internet	1	3	1		2	2	9	20%
Tablet	1	1	1		1	1	5	11%
Tablet with internet	1	4			1	1	7	16%
Computer with internet in a common place	4	2	1		5	1	13	29%
None				9			9	29%

PARTICIPANT DEMOGRAPHICS: FOCUS GROUPS

	English 1	English 2	Spanish 1	Spanish 2	Korean 1	Korean 2	Total	%
How would you describe your health in general?								
Excellent	0	2	0	2	0	0	4	9%
Very good	2	1	3	2	1	0	9	19%
Good	3	3	1	2	2	1	12	26%
Fair	2	2	5	3	6	4	22	47%
Poor	0	0	0	0	0	0	0	0%
What best describes your home?								
Single family home	3		1	2	0	0	6	13%
Multi-family home (duplex, etc)	0	1	1	0	0	0	2	4%
Apartment building	4	6	8	6	8	5	37	79%
Other	0	1	0	0	1	0	2	4%
What best describes your race/ethnicity?								
White	1	1	0			0	2	4%
Hispanic		2	10	9		0	21	45%
Black	3	2				0	5	11%
Asian	3	2			9	5	19	40%

Participant demographics: Focus Groups

	English 1	English 2	Spanish 1	Spanish 2	Korean 1	Korean 2	Total	%
What is your gender?								
Female	4	4	7	5	4	4	28	60%
Male	3	3	3	3	5	1	18	38%
Other	0	1	0	0	0	0	1	2%
Age								
54-64	2	1	0	0	0	0	3	6%
65-74	3	4	4	6	1	1	19	40%
75-84	1	1	6	2	8	4	22	47%
85+		2	0	1	0	0	3	6%
Average Age	67.6	71.5	73.9	73.4	78	78.2	73.8	

Participant demographics: Questionnaires

	Total	%
Total Participants	31	100
How do you usually get around? (multiple responses allowed)		
Drive myself	5	5%
Driven by someone else	4	4%
Taxi	10	10%
Lyft/Uber	0	-
DASH Bus	15	15%
Metro Bus	28	27%
Metro Rail	15	15%
Walk	24	23%
Access van	2	2%
Count of participants who get around only by public transit or walking		
	16	48%
Do you own a car?		
Yes	6	18%
No	27	82%
If you own a car, do you drive yourself?	3	50%
Uses a mobility device to get around	10	30%
Cane	9	9
Walker	21	2
Wheelchair	0	0
What type of phone do you have?		
Smart phone	12	36%
Basic cell phone	18	55%
Landline	2	6%
No phone	1	3%

Participant demographics: Questionnaires

	Total	%
What type of technology do you use? (Multiple responses allowed)		
Home computer	7	19%
Home computer with internet	3	8%
Tablet	4	11%
Tablet with internet	1	3%
Computer with internet in a common place (SBSS, library, etc)	6	16%
None	16	43%
How would you describe your health, in general?		
Excellent	1	3%
Very good	3	9%
Good	16	48%
Fair	11	33%
Poor	2	6%
What best describes your home?		
Single family home	0	-
Multi-family home (duplex, etc)	1	3%
Apartment building	29	94%
Other	1	3%
Race/Ethnicity		
White	3	9%
Hispanic	13	39%
Black	3	9%
Asian	13	39%
Native American	1	3%
Gender		
Female	22	71%
Male	9	27%
Age by category		
54-64	3	9%
65-74	15	45%
75-84	13	39%
85+	1	3%
Average age	72.8	

PARTICIPANT DEMOGRAPHICS: WALKS

	Total	%
Total Participants	10	100
How do you usually get around? (multiple responses allowed)		
Drive myself	1	3%
Driven by someone else	0	-
Taxi	6	21%
Lyft/Uber	0	-
DASH Bus	6	21%
Metro Bus	8	28%
Metro Rail	2	7%
Walk	6	21%
Access van	0	
Count of participants who get around only by public transit or walking		
	3	30%
Do you own a car?		
Yes	1	10%
No	9	90%
If you own a car, do you drive yourself?	0	0%
Uses a mobility device to get around		
Cane	2	(Both participants used both a cane and a walker)
Walker	2	
Wheelchair	0	
What type of phone do you have?		
Smart phone	4	44%
Basic cell phone	4	44%
Landline	0	-
No phone	1	12%

Participant demographics: Walks

	Total	%
What type of technology do you use? (Multiple responses allowed)		
Home computer	3	30%
Home computer with internet	1	10%
Tablet	2	20%
Tablet with internet		
Computer with internet in a common place (SBSS, library, etc)		
None	6	60%
How would you describe your health, in general?		
Excellent	0	-
Very good	0	-
Good	5	50%
Fair	5	50%
Poor	0	-
What best describes your home?		
Single family home	0	-
Multi-family home (duplex, etc)	0	-
Apartment building	10	100%
Other	0	-
Race/Ethnicity		
White	0	-
Hispanic	3	30%
Black	0	-
Asian	6	60%
Native American	1	10%
Gender		
Female	8	80%
Male	2	20%
Age by category		
54-64	1	10%
65-74	4	40%
75-84	5	50%
85+	0	-
Average age	74.3	