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and the Potential for Transit Ridership Growth**

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Removing Barriers for Seniors at Transit Stops and Stations and the Potential for Transit Ridership Growth

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ABSTRACT

As the baby boomer generation ages there is an increased need for older adult sensitive transportation. Currently a small percentage of older adults utilize public transit; however, the utilization rates are likely to increase as the corresponding population of older adults increases. Older adults are a diverse population and it is likely that future generations of older adults will require a wider range of transit options.

The current research addresses (i) barriers for older adults at transit stops and stations, and (ii) older adult public transit habits and attitudes. This discussion presents the initial findings of a survey on urban older adults' transit habits and attitudes. The preliminary findings suggest that older adults do not have enough information they require in order to access public transit, older adults are primarily concerned with real or perceived crime while utilizing public transit, and that older adults would be likely to ride public transit if the right conditions were met. Further research and actions are suggested to complete the understanding of older adult transit habits and needs.

INTRODUCTION

The aging of the baby boomer generation in the U.S. is ever-present. Among the many needs the aging population is faced with is the need for transit-sensitive and effective transportation. With the increase of older adults and the transportation, health and social challenges that arise as drivers must give up drivers licenses, public transportation fills a hopeful niche in providing a mobile population with mobility options. However, given the general underutilization of public transit, it is necessary to understand the transit habits and barriers that older adults are faced with while accessing public transit.

This study is designed to determine seniors' perspectives of, and behavior around, bus stops and transit stations in two locations (urban and suburban) and test the impact of various interventions to increase transit ridership among seniors. The research is sponsored by the California Department of Transportation (Caltrans) and is being conducted by U.C. Berkeley's California Partners for Advanced Transit and Highways (California PATH) and Traffic Safety Center. Our research includes gathering baseline measurements of ridership habits and perception of public transit at two study sites – (i) Rossmoor, a planned suburban community of older adults, and (ii) senior centers in Alameda County, an urban area serviced with fixed route transit. At Rossmoor, we are evaluating the impact of transit training for residents of the community. At the senior centers we have surveyed older adults on their transit habits and attitudes, and we are presently in the process of developing an evaluation measure on the impact of a social marketing/outreach campaign. Any changes in ridership and perception will be measured through post-intervention observations, focus groups and surveys.

Additionally, an in-depth literature review has been completed to enhance the research and provide evidenced-based intervention strategies and suggestions. The purpose of this research is to provide background on the issue of barriers for older adults accessing public transportation, primarily for future interventions in California. The completed research will identify barriers in urban and suburban areas and evaluate the impact of a range of design improvements, outreach, social marketing and training interventions on the traveling experiences of seniors in the setting of site-specific case studies. This research will enable transportation planning and policy to better serve the transit needs of an aging U.S. population.

This paper reports findings from an analysis of data from 259 completed survey questionnaires.

BACKGROUND ON OLDER ADULT MOBILITY AND TRANSIT HABITS

The primary mode of transportation for older adults is driving while public transportation remains last (1). Currently, only 5% of older adults use public transit as their primary mode of transportation (1). Although many older adults continue to use private cars as the predominant mode of transportation, many rely on public or non-private modes of transportation. Public transportation is a vital source of mobility for older adults who cannot, or choose not to, drive (2, 3), and for many seniors, allows access to medical/health and social needs (4). Additionally, public transit utilization rates are likely to increase as the older adult population increases. It would be advantageous to make public transportation more inviting to the elderly to simultaneously boost ridership with meeting their needs (2). There is a growing need for improvements in public transportation systems to meet the needs of the aging urban, suburban, and rural populations.

Older adults are a very diverse population and have a range of transportation requirements. Older people in the future will most likely be more healthy, educated, and active than their present counterparts; they are likely to travel frequently to a wide range of destinations and be more car dependent (5, 2). Older adults accustomed to private automobile travel will demand high quality public transportation. The more flexible the public transportation service is, the smoother the transition away from the private car for the older adult.

The elderly who tend to ride public transportation are low-income, minorities, and women. These populations may have specific transit needs and/or concerns such as financial, language, widowhood and outliving many of their male counterparts (6, 2). Spain (1997) and Rosenbloom (2002) articulate that women are the majority of the elderly population and are less likely in the coming generations to have others to care for them or the resources to fulfill their transportation needs. Similarly, older adult minorities report having more limitations of mobility and take fewer trips than their white counterparts (7, 9). As the demographics change with regard to race, class, and gender, older adults' mobility needs will continue to grow. Trip rates and distances have increased significantly for all groups of elderly, and they will be more likely to pursue a range of activities requiring transportation that meets a more active lifestyle (2).

Although older adults are increasingly becoming more active, healthier, and mobile, there continue to be physical limitations that this population faces. For example, in the event of a pedestrian to car crash older adult pedestrians (65 years of age and older) can be very frail and more prone to injury, as compared to their younger counterparts. Older adults can be vision or hearing impaired, and can have diseases such as arthritis which make it more difficult to move freely and quickly (10). Regardless of the type of transportation older adults utilize, it is critical to understand the demographics of this population as well as their physical needs. Transportation research and planning efforts must take the characteristics of this population into consideration to effectively meet their needs.

The U.S. Government Accountability Office (2004) has identified two types of transportation: those which are necessary (medical and health needs), and those which are life-enhancing (social and recreational activities). It has been shown that older persons who are primarily dependent on public transportation (versus private vehicle use) do not engage in comparable medical and health care needs and have high rates of social isolation (6, 12). Bailey (2004) identified that older adult non-drivers make 15% fewer trips to the doctor and 65% fewer social trips. Transportation promotes quality of life and increases life satisfaction by providing access to social and other activities (14). Older adults who maintain active lifestyles through mobility are healthier and live longer than their transportation disadvantaged counterparts who can suffer from depression and isolation (15). Staying active and mobile allows people to engage in their social and physical environments, helping them to reduce social isolation and increase quality of life.

Barriers to public transportation for older adults can be grouped into five categories: environmental, educational, personal, planning and policy, and technology. *Environmental barriers* are barriers which occur in the physical or built environment and that are outside the scope of an individual's control. Environmental barriers include waiting outdoors for transportation, lack of security while at a bus stop or station, inconvenient or unsafe pedestrian approaches to bus stops or stations, and transit vehicle accessibility. *Educational barriers* are barriers due to a lack of information, knowledge or training. Educational barriers

include consumer education regarding bus schedules and routes, and training for transit drivers on the specific needs of the elderly population. *Personal barriers* consist of issues such as an individual's physical limitations, perception, and psychological barriers to accessing public transportation. *Planning and policy* activities can reduce barriers to public transit by modifying and adapting strategic planning through policy and political action to enhance transit services. These include strategic planning for the cost of public transportation, system wide coordination for regional transportation, political advocacy for sustainable transportation, and partnerships with local agencies and organization. *Technological barriers* are those which limit transit advancement due to lack of up-to-date technology. The utilization of advanced technology can reduce barriers and enhance ridership by decreasing information barriers and improving the riders experience while utilizing public transportation.

In light of the five categories of potential barriers to public transportation, there needs to be strategic planning for elder mobility needs. There is a growing consensus that governments should target public transportation as the primary, and potentially safer, alternative to elderly car use (16, 17, 5, 2, 13, 18, 11). Rosenbloom and Morris's (1998) study on Australian and European seniors revealed that older people in these regions appear to choose the best or most convenient mode for each trip regardless of car ownership. The research implication suggests that governments can strategically structure public transit and other services to reduce car use among the elderly.

Research has begun on older adult mobility and transportation use, and further studies need to be done on specific transportation needs of older adults and what works best for this population and subsequent generations. Policies and interventions on improving elderly public transit can not succeed without taking concerns of the elderly into consideration (6, 16, 1, 20, 15, 11). The current research addresses one subset of the transportation needs of the elderly by looking specifically at barriers to accessing public transportation.

RESEARCH

Overview

In order to gain a better sense of senior citizens' daily transit habits and their attitudes about public transportation, a survey of seniors in the eastern San Francisco Bay Area (i.e. East Bay) was conducted. The East Bay provided an ideal sample population pool of urban seniors living in a densely-populated, urban California environment with efficient public transportation.

Methodology

The researchers designed a comprehensive paper-based qualitative and quantitative survey that relied on multiple-choice and fill-in-the-blank responses. It was distributed at select senior citizen activity centers in the cities of Oakland, Berkeley, and Emeryville over a seven month period between September 2006 and March 2007. The research team compiled an extensive (non-exhaustive) list of senior activity centers in the East Bay area and contacted 16 to inquire about the opportunity to conduct surveys at their facility. The 10 centers that agreed to the surveys were chosen as survey sites. The researcher and senior center manager then mutually agreed upon an appropriate day and time that corresponded to high-volume times when the most number of seniors visited each center.

On the day of the survey, a small table was set up in the activity center and researchers approached all passing individuals who physically appeared to be 55 and over to voluntarily participate in the survey. As an encouragement, the researcher informed individuals that participants who completed a survey will be enrolled in a raffle for a gift certificate. Seniors were not obligated to take the survey and were in no way pressured into doing so. If an individual agreed to participate, he or she was provided the necessary materials: a paper survey and pencil.

Seniors completed the surveys on their own accord with no time restrictions. If a senior required assistance due to language, vision, or physical difficulties, the researcher on hand assisted by reading the questions and completing the appropriate answer choice based on the respondent's response.

Results

A total of 259 surveys were collected and analyzed. Only affirmative, legible responses were accepted and coded. Nominal and ordinal responses were assigned a number and coded accordingly. Ratio responses were coded along value of response. Non-responses to any particular question was coded a "non-response" ("-99" suffix) and excluded from this analysis. Statistical work was done using MS Excel.

Most Bay Area urban seniors travel frequently and rely heavily on their own private automobiles. Close to 79% of those surveyed leave their house to go somewhere 5 days or more per week. The survey asked about daily events such as grocery shopping, going to restaurants, and visiting family. For each mentioned activity over 50% of seniors responded that their primary mode of transportation was the private automobile. In addition, a majority of seniors (58.4%) replied that they drive themselves to places.

TABLE 1 Ranking of Average Number of Days Traveled, Urban Seniors

Number of Days (Top 5)	Percentage
7 Days	51.8%
5 Days	15.6%
6 Days	13.6%
4 Days	5.5%
3 Days	4.7%

When asked about the distance to respective places frequented by seniors, the majority of those surveyed believed that the time it takes to get there is "short" or "not too short or long [i.e. medium]" which suggests that distance may not be a factor in their automobile use. What is a factor is convenience and personal safety. When asked, these two ranked the highest (29.5% and 23.8% respectively) out of a list of thirteen common reasons for continued automobile use.

TABLE 2 Factors Urban Seniors Consider when Deciding between Car or Public Transit (Top 5)

Top 5 Factors	Percentage
Convenience	29.5%
Personal Safety	23.8%
Traffic Congestion	18.6%
Cost of Driving	18.1%
Travel Time	15.7%

TABLE 3 Urban Senior Perception of Various Distances

	Short Time	Not Too Long or Short	Long Time
Grocery Store	65% (n=144)	31% (n=70)	4% (n=9)
Restaurant	40% (n=67)	51% (n=86)	9% (n=15)
Mall	33% (n=53)	51% (n=80)	17% (n=26)
Doctor / Dentist	36% (n=78)	48% (n=104)	16% (n=35)
Senior Activity Center	54% (n=132)	30% (n=32)	16% (n=39)
Work	34% (n=18)	38% (n=20)	28% (n=15)
Other Destination	26% (n=17)	65% (n=42)	9% (n=6)

Public Transportation Findings

A vast majority (79%) of seniors in the Bay Area believe that they have “convenient access to buses near [their] homes.” Yet it appears that information about buses remains a major barrier. When asked if they knew about bus routes in their area, most seniors (69%) replied that they knew “little” or “nothing”. In fact, when asked about the bus fares and schedules, the most common response was that they also knew “little” (see Figure 2). While terms such as “a lot” or “little” may be subjective on the part of the respondent, it does indicate a level of comfort seniors have with regards to the basic information necessary for successful public transit use.

FIGURE 1 Do You Have Convenient Access to Public Transportation near Your Home?

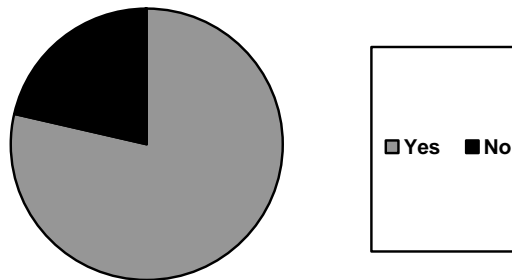
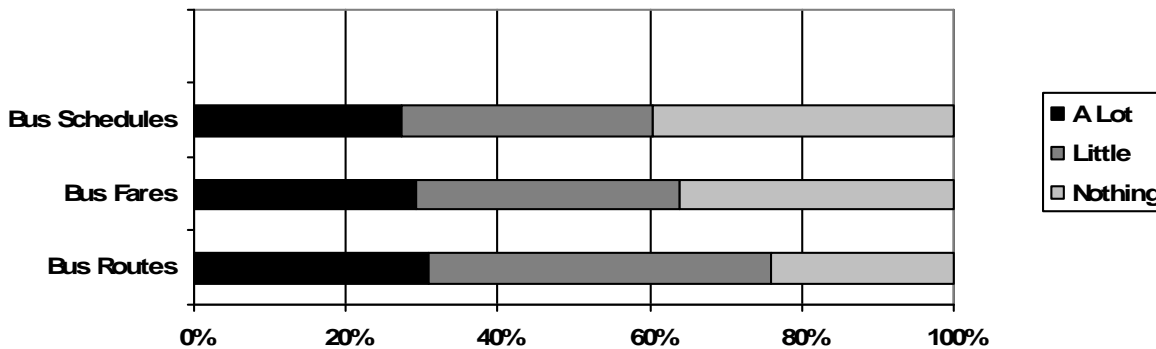


FIGURE 2 How Much Do You Know about Each of the Following?



The infrequent use of buses is also reflected in how seniors describe their own bus use status. The plurality of seniors replied that they “do use the bus but only occasionally”. Yet the ambiguity in Question 39 between responses “I DO NOT use the bus and will only use it if I had no other choice” and “I DO NOT use the bus but will consider using it under the right circumstances” (due to similarity in wording) suggests that the two may be interpreted the same way, thus if their responses are combined, it further suggests that the current limited use of public transportation can be increased under the right circumstances.

Questions about seniors’ perception of public buses reveal what seniors perceive as a barrier. First, bus reliability and operations received high positive feedback. Bus reliability perception remains high (67.4% of seniors believe buses are “usually” or “always” reliable) as well as bus frequency (58.6% believe “usually” or “always” frequent) and bus rapidity (54.2% believe “usually” or “always” rapid). Yet issues of safety, peer acceptance, and information remain low. Seniors’ perception of safety remains low, no matter on the bus (53.6% feel it is “never” or only “sometimes” safe onboard) or waiting at stops (53.2% feel it is “never” or only “sometimes” safe at stops). Similar results were found for the issue of peer usage, with 56.7% of respondents saying people their age seldom use public transit. When asked about how considerate buses are of “senior citizen” concerns, 54.2% feel it is minimal. Information poses a similar barrier. Seniors find that schedules and route maps to be harder to understand than they would like (54.8% find maps and schedules “never” or only “sometimes” easy). A surprising finding is the perception of transit fare costs by senior

citizens. The percentage of respondents who feel fares are “never” inexpensive (22.3%) received the highest negative perception for questions related to their perception of public transit.

TABLE 4 Urban Seniors’ Perception of Public Transportation

	Never	Sometimes	Usually	Always	TOTAL
Local buses are reliable overall	3% (n=7)	29% (n=62)	58% (n=123)	10% (n=20)	100%
Local buses come frequently	6% (n=12)	36% (n=73)	50% (n=102)	9% (n=18)	101%
Local buses are clean	3% (n=6)	40% (n=81)	48% (n=99)	9% (n=19)	100%
Local buses get me from one place to another quickly	12% (n=24)	34% (n=69)	45% (n=92)	9% (n=18)	100%
People who are my age use local buses	9% (n=19)	47% (n=96)	37% (n=74)	7% (n=15)	100%
My friends use local buses	19% (n=40)	57% (n=122)	17% (n=31)	8% (n=17)	101%
The local bus system is considerate of senior citizen concerns	4% (n=9)	50% (n=101)	34% (n=69)	12% (n=24)	100%
Local bus fares are inexpensive	24% (n=45)	32% (n=75)	32% (n=68)	8% (n=17)	100%
I feel safe riding on local buses	11% (n=24)	42% (n=90)	36% (n=75)	10% (n=22)	99%
I feel safe waiting at bus stops	13% (n=27)	40% (n=81)	36% (n=73)	11% (n=22)	100%
Local bus drivers are friendly and polite	2% (n=5)	39% (n=82)	46% (n=96)	12% (n=26)	99%
The schedule and route maps listed at bus stops are easy to understand	11% (n=22)	44% (n=88)	29% (n=58)	16% (n=33)	100%
I walk too long to get to a bus stop	42% (n=85)	36% (n=72)	13% (n=27)	9% (n=18)	100%

Open-ended responses by seniors seem to indicate that convenience remains a key issue (only 30% of respondents provided a response). When asked to give their position on why they don’t use the bus more often, seniors were provided opportunities to respond freely as to what they felt were most appropriate. During the analysis, researchers reviewed the responses and grouped the most common responses that shared a similar sentiment into distinct categories. The most prevalent of these categories found seniors generally stating a preference for their vehicle without stating specific reasons. They simply preferred their car. Responses in this category include “it is better for me to use my car,” and “driving is more convenient.” Another popular response referred to the inconvenience of buses / public transit themselves. Common responses include “buses are inconvenient,” and “buses are not for me.” Other responses talk more to specific issues, such as “it does not get me where I want to go on time” (time issue), “it does not run at night” (service issue) or “it is too far from my house” (location issue). Such free-responses speak to the prevalence of the dependence on private automobile that may be the result of already irrational biases against public transportation. The results indicate the need to actively clear up any misconceptions or provide new information about the convenience of public transit.

TABLE 5 Open-ended Responses on Perception of Cars vs. Public Transportation

Type of Response	Number of Responses	Examples
General Convenience of Cars	44	“it is better for me to use my car” / “driving is more convenient”
General Inconvenience of Buses	32	“buses are inconvenient,” / “buses are not for me” / “I just don’t like buses”
Specific Inconvenience: Time	10	“it does not get me where I want to go on time” / “buses take too long to get to XXX”
Specific Inconvenience: Service	6	“it does not run at night” / “it does not run on the weekends” / “the bus I need does not stop near my home”
Specific Inconvenience: Location	8	“I’m not close to the bus stop” / “I walk to far to get to the bus”

Car Users vs. Bus Users

We also analyzed the responses on public transit perceptions between those who primarily use their personal vehicle (i.e. car users) and those who primarily use public transit (i.e. bus users). A respondent is classified a “car user” or “bus user” by the frequency of their use of either forms of transportation in a given week. Those who use their cars more than public transit (or vice versa) in a given week are classified as a “car user” or “bus user” accordingly. Both car and bus users overwhelmingly feel they have good *access* to public transportation near their homes, with almost 4 out of 5 car users and bus users agreeing to this respectively. This may be due to the extensive network of public transit in the major Bay Area cities. Yet perceptions of *service* differ much more between the groups. For example, among car users, the perception of bus reliability is at 60% but among bus users, it is at an astounding 97%. While the majority of both groups believe bus service is overall reliable, the large difference between the two majorities shows a clear difference in perception. Other key factors also show the discrepancy between car and bus users. With the issue of bus safety and wait time, a slight majority of car users consider safety as adequate. Meanwhile, only a small majority of car users believe bus wait time is satisfactory. Conversely, a majority of bus users find both safety and frequency are adequate. Overall, it appears that bus users are more satisfied with public transit, but not by much on issues of safety and frequency. This is not surprising considering that overall, these two issues remain high on any individual’s criteria for using public transit.

TABLE 6 Comparison of Key Findings between Car and Bus Users

Car Users

Issue	Yes	No
Do you think you have convenient access to buses near your home?	77% (n=134)	23% (n=40)
I think local buses are reliable overall.	59% (n=83)	41% (n=57)
I feel safe riding on local buses.	45% (n=66)	55% (n=81)
I think local buses come frequently.	53% (n=73)	47% (n=64)

Bus Users

Issue	Yes	No
Do you think you have convenient access to buses near your home?	80% (n=66)	20% (n=17)
I think local buses are reliable overall.	97% (n=61)	3% (n=2)
I feel safe riding on local buses.	51% (n=40)	49% (n=39)
I think local buses come frequently.	62% (n=48)	38% (n=30)

Demographics and Mode of Transportation

A look at the respondents' demographics and responses reveal that there is no statistically significant difference between income and car use. Both lower and higher income individuals use the private automobile as their primary mode of transportation. Again, the results are not surprising when analyzing gender and car use. Similar proportions of men and women used public transit.

TABLE 7 Demographics and Mode of Transportation

	Car	Public Transit		Car	Public Transit
Income 40k or more	81%	19%	Male	68%	32%
Income < 40k	66%	34%	Female	77%	23%
	Car	Public Transit		Car	Public Transit
Less Educated.	70%	30%	White	61%	39%
More Educated.	77%	23%	Non-White	79%	21%

Key Survey Findings

Based on the survey results and analysis, several key findings emerged.

- Bus riders generally have more favorable perceptions of public transportation than drivers or passengers of private vehicles.
- Of the urban seniors who travel, many do it frequently, going out almost daily.
- Most mobile seniors use the private automobile for their travel, even for short distances.
- While mobile seniors DO know about the availability of public transportation near their homes, most possess little or no knowledge of fares, schedules, and routes.
- Mobile seniors will use public transportation if basic conditions are met.
- Chief among the complaints of public transportation is convenience and safety.
- The encouragement of seniors to use more public transit must be targeted at all income, racial and educational groups as well as both genders.
- Our findings were predominantly consistent with the transit habit findings in the literature review.

Implications

Results from our survey on urban older adults reveal similar patterns compared to past studies. First, barriers – environmental, educational, personal, planning and policy, and technological – continue to exist for seniors. Second, such barriers need to be identified, addressed, and dismantled in order to increase the number of seniors who use public transit. All barrier categories need to be addressed.

The results from the initial survey suggest that older adults are willing to use public transportation if the right conditions are met. The meaning of “right conditions” is a bit ambiguous and may vary from locale to locale depending on factors such as the size of the geographical region, development density, climate, and/or cost of transit. However, from our findings we have identified three key issues to understanding the needs and habits of older adults public transit use. First, ensuring information availability and outreach regarding the transit systems is critical to older adult’s knowledge in regards to public transit. Second, concerns for convenience and safety are at the top of the list when it comes to older adults concerns regarding public transit. And third, older adults are a diverse population and all outreach and planning efforts must target older adults of all economic, racial, educational groups, as well as both genders.

Yet accordingly, our survey results seem to suggest that personal fears and lack of information pose a higher barrier for seniors than previously thought. While it remains true that older adults who live in the East Bay may not represent the attitudes and trends of all seniors, they do represent our target population: seniors in urban environments with access to established, efficient public transportation. For this group, the objective is two-fold. One, service and facilities must be improved to better meet seniors’ need for convenience and accessibility. Two, seniors also require adequate information on the current available public transit system and its services in order to use it. Removing of physical and political barriers is perhaps the more complex task with higher costs and longer term planning. From a management standpoint, this very well involves impact reports, public review, construction, and major shifting in appropriations. As a more short-term task, it may be beneficial to target the more personal barriers of fear and lack of knowledge. Providing the necessary assistance

in breaking this barrier may be the first step to getting seniors to feel comfortable about public transit.

CONCLUSIONS AND NEXT STEPS

Next steps for this study will include partnering with a local organization and implementing an education-based intervention. The intervention will primarily focus on providing older adults with the information that they require in order to feel comfortable and safe accessing public transit. A sampling method will be developed to obtain a representative sample of greater San Francisco Bay Area residents.

Our research acknowledges that specifically looking at exclusively the barriers to public transportation at bus stops and stations is a very small sub-section, albeit a very important sub-section, of the transit needs of the older population. There are many other subsections of older adult transportation research that are needed in order to obtain a full picture of the mobility needs, habits and attitudes older adults have. Further research that would be beneficial to this field includes:

- Strategies and interventions to address real or perceived issues of crime while utilizing public transit
- Effective educational interventions and outreach to encourage public transit ridership
- Cultural attachments to a car-dependent lifestyle, and how this is changing with the new wave of older adults
- Shift the current transportation mindset to align with sustainability principles for the environment and individual transit needs
- Creating increasingly “flexible” transit options
- Multi-modal and multi-usage transportation

This further research would enable there to be a comprehensive view and approach to older adult transportation. A comprehensive view of transit needs for older adults would serve as a tool for many professionals in preparing for the surge of baby boomers entering old age.

In light of this research on older adult mobility and transit needs, it is critical to look at transit needs and habits of all people from every age group. It is reasonable to suggest that persons who are familiar with public transit are more likely to ride public transit all throughout their lives and into their elder years. Similarly, those who never or infrequently ride public transit are likely to not change their transit habits solely due to increasing age. This brings up two issues: first, some older adults may have a difficult time adjusting to new transit habits and learning new skills and systems based on life-long transit habits, therefore public transit options must be sensitive to older adults and their changing transit needs. The greater sense of satisfaction of transit among those who take buses versus those who drive or are driven (per the survey results) is perhaps a good omen for transit, especially in light of the growing role public transportation will need to play in older adults' lives. Second, having a wide array of transit options is not only beneficial for the elderly. People of all ages should have access to, be skilled at, and actively utilize forms of transit other than the private automobile. This level of transit flexibility and knowledge will better prepare people of all ages for their present and future transit needs, as well as having the potential to contribute to sustainable transportation for the future.

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