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ABSTRACT

The size of the aging population in the United States is increasing, and transportation is critical to maintaining older adults mobility, independence, and quality of life. Travel training programs designed to increase individual knowledge are one way to encourage older adult use of fixed-route transit and improve the transportation options for older adults. The analysis conducted in this paper explores characteristics of travel-training participants in Alameda County, California in 2007-2008 and their knowledge and concerns regarding public transit. Specific issues addressed include transit habits, degree of increase in knowledge after participating in the training, and factors that predict training participation. Participants in this study represent a diverse group of older adults with a broad range of transportation experience and knowledge. After participation in the travel training course, participants showed an increase in knowledge of local public transit and how to access transit information independently. The study identifies *currently driving* as a predictive positive predictive factor for participating in the travel training course. Future travel training courses should make efforts to recruit current drivers who may wish to plan for their future mobility needs by becoming more familiar with public transit options.

INTRODUCTION

The aging of the baby boomer generation in the U.S. presents pressing issues for transportation planners and health policy makers. One of the many vital needs of this population is effective, accessible and older adult-sensitive transportation. Older adults face serious health and social challenges when they must give up their driver's licenses. Public transit may provide older adults with greater mobility options, but it is generally underutilized, even if it is available. To understand the reasons for this lack of use, it is necessary to better understand older adults' transit habits and the barriers that inhibit their use of transit, as well as how to overcome these barriers. Many transportation agencies are aware that public transit may provide a useful alternative to driving for older adults. Research specific to older adults is needed to explore how public transit can become a viable transportation option for this population.

In 2006, the UC Berkeley Traffic Safety Center, with funding from the California Department of Transportation, began a study to identify barriers to older adults' use of public, fixed-route transit and to evaluate interventions designed to eliminate these barriers. The aim of this research has been to identify the barriers that older adults face in accessing public transportation in the urban San Francisco East Bay Area and to explore travel training as a social marketing technique. The first phase examined older adults' transit habits and attitudes by conducting a survey (N=259) at senior activity centers in Alameda County, California. The results of this study were presented at Poster Session 551 at the 87th TRB Annual Meeting (1). The findings from the first phase echoed current literature, confirming that older adults do not have sufficient familiarity with, and knowledge of, public transit to successfully use it as a primary mode of transportation. The second phase consisted of an evaluation of a travel training program that educated older adults regarding public transit and familiarized them with how to successfully use it.

This paper discusses the results of the travel training evaluation phase of the study, and of an evaluation of the program to date. The results will enable transit and senior services agencies, planners, and advocates to better understand and serve older adults' public transit needs.

BACKGROUND ON OLDER ADULT MOBILITY AND TRANSIT HABITS

The primary mode of transportation for older adults is driving; public transportation use remains very low. Currently, only 5 percent of older adults use public transportation as their primary mode of transportation (2). Although many older adults continue to use private cars as their main mode of transportation, the portion of older adults who also rely on public or non-private modes of transportation is growing. Public transportation is a vital source of mobility for older adults who cannot or choose not to drive (3, 4). For many older adults, public transit helps them meet their medical/health and social needs (5).

Older-adult public transit utilization rates are likely to increase as this population grows and other forms of transportation become increasingly expensive. Public transit agencies must focus on making transit more "older-adult friendly," a change that would boost ridership and meet the transportation needs of older adults (3). Transit systems must take into consideration the needs of older adults in urban, suburban, and rural communities.

In future years, older people will most likely be healthier, better educated, and more active than their present counterparts. They are also likely to travel more frequently to a wider range of destinations and be more car dependent (6, 3). Trip rates and distances have increased significantly for all groups of elderly people, and as health and activity levels improve, they will be more likely to pursue a range of activities to meet a more active lifestyle, and need more

transportation access (3). Older adults who are accustomed to private automobile travel will demand high quality public transportation. The more flexible the public transportation service, the smoother the transition from the private car to public transit will be for older adults.

Older adults who ride public transportation are typically low-income, minority, and female (7, 3). Spain (1997) and Rosenbloom (2002) point out 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 meet their transportation needs. In addition, older adult minorities report having more limitations to their mobility and take fewer trips than their white counterparts (8, 10).

The U.S. Government Accountability Office (2004) has identified two types of transportation purposes: transportation that is necessary (medical and health needs), and that is life-enhancing (social and recreational activities). It has been shown that older persons who are primarily dependent on public transportation (as opposed to private vehicle use) are less able to meet health care and social needs, and have high rates of social isolation (7, 12). Bailey (2004) found that older adult non-drivers make 15 percent fewer trips to the doctor and 65 percent fewer social trips than drivers. Studies show that access to transportation promotes quality of life and increases life satisfaction by providing access to social and other activities (14). Older adults who maintain active lifestyles and are mobile are healthier and live longer than their transportation-disadvantaged counterparts, who are more likely to suffer from depression and isolation (15). Staying active and mobile allows people to engage with their social and physical environments, helping to reduce social isolation and increasing quality of life.

To identify barriers older adults face in using public transportation, their knowledge of and familiarity with public transit must first be understood. Such barriers are based on lack of information, lack of knowledge, lack of prior or regular usage, and/or lack of training on how to access public transit. Knowledge-based barriers can be addressed by social marketing, consumer education and training on how to use public transit services. Travel training programs that instruct older adults on how to ride transit can help address the knowledge and familiarity barriers for older adults. Video travel training instruction has been shown to positively affect older adult's habits when going to the destinations shown in the video. Participants also reported that they planned to increase their use of internet-based transit information after receiving video instruction. (16). A travel training program in British Columbia found that participants who completed the program used the bus more frequently than those who did not engage in the travel training program (17). This evidence suggests that travel training programs may provide a realistic and effective way of encouraging and supporting the use of public transit on the part of older adults.

Further studies are needed on the specific transportation needs of older adults and what works best for current and future older adult cohorts. Improvements to older adult public transit cannot succeed without taking the specific concerns of the elderly into consideration (7, 18, 2, 19, 15, 11). This study addresses the knowledge and familiarity needs of this population.

RESEARCH

Overview

Researchers conducted an informal search for public transit activities that were designed to educate and familiarize older adults in the urban East San Francisco Bay Area with public transit. This search identified one existing project, operated by a local senior-oriented nonprofit

organization, United Seniors of Oakland and Alameda County (USOAC), with funding from the Alameda County Transportation Improvement Agency. The Traffic Safety Center (TSC) partnered with USOAC to evaluate the travel training course and survey older adults who participated in the course on their transit knowledge and concerns.

The course was primarily designed for older adults who were thinking about using public transit, or needed to begin transitioning from the private automobile to using public transit as their primary mode of transportation. The travel training programs took place at local senior activity centers that were primarily frequented by an older adult population.

The training consisted of two components: a workshop-based training and a field-based training. The curriculum for the course was developed by Nelson/Nygaard Consulting Associates. The workshop-based training was held over three days. The first workshop introduced the types of local public transit available in the area and assessed the groups' understanding of public transit. The second workshop introduced curriculum training materials, including the fares, schedules, tickets, route information, etc. on the two primary public transit systems in Alameda County: Alameda and Contra Costa County Transit (AC Transit) bus system and the Bay Area Rapid Transit (BART) subway system. The third workshop reviewed the materials with participants, answered participants' specific questions, and concluded the workshop-based training. For the field-based training component, participants and training instructors practiced riding both AC Transit and BART.

Research Design and Methodology

The travel trainings were conducted throughout the urban East Bay Area. The trainings took place at senior centers in Oakland, Berkeley, and Emeryville. USOAC and the TSC researchers recruited participants by talking to program directors at the senior centers, distributing flyers at senior activity centers, and placing notices in the centers' monthly newsletters.

A comprehensive paper-based qualitative and quantitative survey was administered to participants both pre- and post-training. The survey was intended to measure participants' knowledge of public transit as well as their own comfort levels, attitudes, concerns, and degree of familiarity with riding public transit. The survey format provided for multiple-choice, scaled, and fill-in-the-blank responses. Participants were asked to complete the pre-survey on the first day of training and the post-survey on the third day of training. The research team obtained human subjects approval for this study.

On the days the surveys were taken, USOAC staff and the researchers distributed the survey and a consent form to travel training participants. As an incentive, the individuals who completed both pre- and post-surveys received a \$20 a gift card to Target, a national chain "big box" store. They 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 a paper survey and pen/pencil.

Participants completed the surveys of their own accord with no time restrictions; the survey was estimated to take no more than 10-15 minutes to complete. If a participant required assistance due to language, vision, or physical difficulties, USOAC staff or a researcher assisted him/her by reading the questions and completing the appropriate answer choice, based on the participant's response. The surveys were then collected, coded, and entered into a Microsoft Excel database.

Types of Analysis

Questions and answers to both parts of the survey were coded for analysis. Only affirmative, legible responses were accepted and coded. Nominal and ordinal responses were assigned a number and coded accordingly. Ratio responses were coded along a value of responses. Non-responses to any particular question were coded a “non-response” (“888” or “999” suffix) and excluded from the analysis.

Survey information was entered into Microsoft Excel for initial data compilation, and was then imported into Statistical Package for the Social Sciences (SPSS) for data analysis. The four analysis types presented in this report are frequencies, t-test, crosstabs, and binary logistic regression.

Results

Results included survey responses from a total of 53 participants from the four travel trainings that were conducted. Survey data was gathered for all participants. While participants did not consistently answer all questions on the survey, they did answer most questions. For this analysis, only the valid responses (excluding missing variables) were calculated in the sample in order to capture the relevant data pertaining to each question. ($N=50$, unless otherwise noted.)

Demographics and Characteristics of the Travel Training Participants

The majority (74 percent) of participants in the travel training program were women. While there were a few participants under the age of 65, 78 percent ($N=48$) were 65-84 years of age. Fifty-one percent ($N=49$) of the participants were educated with at least a Bachelor’s Degree. The three prominent ethnic/racial categories ($N=49$) were White/Caucasian (41 percent), Black/African American (31 percent), and Asian (14 percent). Eighty-six percent of the participants stated that their income was lower than \$30,000. Sixty-eight percent ($N=38$) stated that they lived alone. Seventy-six percent of participants stated that their self-reported health status was good, or very good, and 44 percent ($N=46$) reported that they had health concerns or anxieties that affected their decision and/or ability to ride public transit.

Travel Training Participation

Participants enrolled in the travel training course for a variety of reasons. The most frequently-stated reason was that they were planning for their future (56 percent). Other reasons included: they felt they had no choice (42 percent), they could not afford a car (28 percent), environmental concerns (26 percent), a medical condition that impacted their ability to drive (20 percent), or they were encouraged to attend by a family member or friend (14 percent). When asked about how they learned of the travel training program, 84 percent of participants said they had heard about the travel training program through the senior activity centers.

Primary Modes of Transportation and Demographics

While over half (58 percent) of the participants were current drivers, only 37 ($N=49$) percent use a personal automobile as their primary mode of transportation. 45 percent ($N=49$) used public transportation as their primary mode of transportation, and 42 percent use transit one or more times a week. 84 percent stated that they do use public transit (although, not as their primary mode and it should be noted that the East Bay Area has a variety of transit options, and many people use the Bay Area Rapid Transit to go to San Francisco on occasion).

The majority of the participants who used a personal automobile as their primary mode of transportation were female (67 percent). Thirty-three percent of all drivers were aged 55-64 and 50 percent were aged 65-74. Almost half (46 percent) of drivers lived alone. Primary drivers were from diverse ethnic/racial groups. Thirty-nine percent were Black/African American, 39 percent were White/Caucasian, 11 percent were Asian, 6 percent were Hispanic/Latino, and 6 percent declined to answer. Sixty-one percent of drivers reported they did not have concerns that would affect their use of public transportation.

Of the participants who used public transit as their primary mode of transportation, 71 percent were female, 29 percent were aged 65-74, 57 percent were aged 75-84, 74 percent lived alone, 67 percent self-reported good or very good health status, 53 percent did not have concerns/anxieties/fears that affected their use of riding public transit, 30 percent were Black/African American, 50 percent were White/Caucasian, 15 percent were Asian and 5 percent declined to answer.

There were some notable differences between primary automobile users and transit riders. Automobile users tended to be younger than transit users. Public transit users reported living alone at much higher rates (74 percent vs. 46 percent for primary automobile users). Primary public transit users were more educated than primary automobile users. Thirty-five percent of public transit users had completed a master's degree, and 28 percent of primary automobile users had completed some college. Seventy-five percent of public transit users had an income of \$29,000 or less.

Knowledge, Familiarity, and Concerns Regarding Public Transit

In order to determine whether or not the travel training program was achieving its goal of increasing knowledge on how to confidently ride public transportation, knowledge was measured both before and after participating in the course (See table 1).

TABLE 1 Increase in Participant Knowledge

Survey question	"Yes" on Pre-survey	"Yes" on Post-survey
Know how to find the desired transit line	63% (N=48)	96% (N=44)
Know how to find frequency of desired transit line	51% (N=49)	93% (N=44)
Know the difference between day/night frequencies	61% (N=49)	96% (N=44)
Know the cost of riding public transit	60% (N=48)	91% (N=44)
Know where to purchase tickets for public transit	55% (N=47)	98% (N=45)
Know about senior passes	76% (N=49)	100% (N=44)
Know how to identify best seats for seniors	63% (N=49)	98% (N=45)
Know how to request a stop	65% (N=49)	98% (N=45)
Know how to identify emergency exit	57% (N=47)	98% (N=45)

A paired sample *t-test* on the mean knowledge was conducted on the pre-test compared to the mean sample of the post-test. There was a significantly positive association in the increase in participant knowledge after completion of the travel training course with $p < .001$.

In addition to increased knowledge, participants reported that they planned to increase use of all independent modes of accessing transit information, including paper schedules, the internet, brochures and local 511 services available both by telephone and internet. This increased independence could explain the reduction in the percentage of participants who reported that they were likely to ask a family member or friend for transit information.

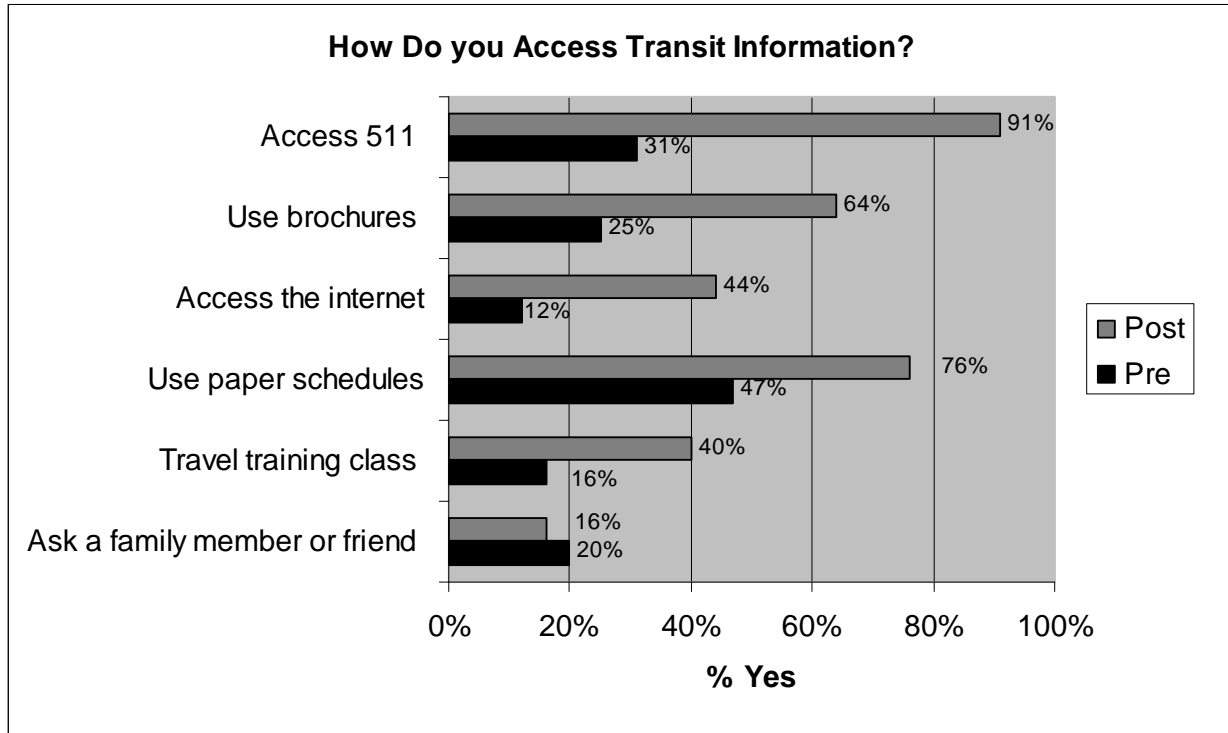


FIGURE 1 Accessing transit information pre- and post-training.

Participant’s Concerns Regarding Accessing Public Transportation

Participants were asked if they had any concerns regarding accessing or using public transit. The five most common concerns included: not having enough information regarding public transit routes (61 percent), lack of information regarding schedules (51 percent), concerns with public transit taking too long (45 percent), a fear of falling on the bus (40 percent), and concerns with crime at the bus or transit stop (39 percent).

For primary auto users only, the six concerns with the highest frequency included: a concern with public transit taking too long (78 percent), lack of information regarding routes (67 percent), lack of information regarding schedules (61 percent), lack of information regarding fares (50 percent), concerns with crime on the bus (50 percent), and concerns with public transit not being convenient (50 percent).

Primary public transit users reported a slightly lower level of concerns, including: fear of falling on the bus (60 percent), lack of information regarding routes (46 percent), lack of information regarding schedules (36 percent), not being able to obtain a seat on transit (36 percent), and crime at the bus stop (36 percent).

For Future Travel Training Programs

In an effort to understand why older adults enrolled in the travel training program, participants were surveyed about their reasons for enrolling. Planning for the future was the most common reason for enrollment (56 percent). Participants citing this as the reason for enrollment were more likely to be current drivers than to use public transit as their primary mode of transportation. Regression analysis revealed a significant association between *currently driving* and *planning for the future* ($p = 0.002$).

DISCUSSION AND IMPLICATIONS

Transportation is critical to health and well-being. Central to healthy aging, it allows people to maintain mobility, independence, and quality of life. Travel training programs to increase individual knowledge are one way to encourage older adult use of fixed-route transit, thereby increasing the transportation options for seniors. This analysis describes the results of a travel training program designed to increase knowledge and familiarity of fixed-route transit in the urban East Bay. Participants in this training voluntarily enrolled. This recruitment procedure potentially introduces selection bias, as people who use transit, or want to ride transit, may enroll in the training at higher rates than those who are adverse to transit. Additionally, the East Bay is a transit-rich area so many participants are likely more familiar with transit than they would be in less transit-rich areas. These potential biases make the findings of this research less generalizable than if a randomized population had been recruited. However, the findings can provide insight into older adult transit attitudes and use, given the availability of transit.

Contrary to the literature, this study found that many of the older adults in the East Bay area use public transit as their primary mode of transportation, and almost all of the participants use public transit sometimes. Despite having prior experience with public transit, participants enrolled in the course, suggesting that older adults want additional experience with transit. While many participants came with preexisting knowledge and familiarity, it should not be assumed that the general population of older adults has prior knowledge and experience with transit. Individual travel training programs must assess the transit knowledge of their participants prior to the training, as well as be prepared to instruct individuals with varying levels of transit familiarity. Further, as mentioned earlier, this study was conducted in an urban area, with an existing transit infrastructure. There are many areas in suburban, rural, and some urban, communities that need an infrastructure before travel training can become a viable intervention.

Understanding the demographics and characteristics of travel training participants is important for any program evaluation and for future outreach plans. The older adults who participated in the East Bay Area travel training course were ethnically/racially diverse. All the participants in this study self-reported having fairly good health status. However, this may also be the result of self-selection for participation bias. Older adults with health concerns may have more difficulty engaging in a travel training course and/or may have difficulty during the course and would likely not choose to participate. In reality, public transit may not be a feasible option for older adults with health issues. An assumed prerequisite to riding public transit is that one is healthy and mobile enough to be able to walk to the bus, step on the bus, and get into a seat or stand.

Additionally, consistent with the literature, women living alone were predominant within this population and may be the primary users of public transit within the older adult population. This population, by virtue of living alone is at elevated risk of social isolation, and is therefore

particularly important to reach in programs such as travel training. The training itself fostered a sense of camaraderie from the participants through the group learning process. This camaraderie can assist in older adults increasing their social networks and reducing the risk for social isolation.

This study found that current drivers were more likely to attend the training than non-drivers, suggesting that older drivers are thinking about future transportation options in the event that they lose their driving privilege. Focusing on older drivers as potential candidates for travel training courses is an important strategy to prevent the negative consequences associated with driving cessation or reduction, and subsequent decreased mobility. If current older drivers are trained on how to ride public transit before they *need* to use it, they will be increasingly familiar with it, potentially reducing the distress, discomfort and “dis-ease” caused by driving cessation.

Recruitment is possibly the single most important strategy for travel training programs. Travel training and other public transit encouragement programs and policies must ensure that they are reaching older adults who are most vulnerable. Vulnerable older adults include those who no longer drive, are at risk of driving cessation, live alone, have poor health status, have modest incomes, and older women. This can be challenging, as many of these older adults may already be socially isolated. The travel training reported here recruited participants on a voluntary basis through flyers and word-of-mouth at Senior Activity Centers. Senior Activity Centers are an opportunistic place to begin recruitment for a travel training program, but are by no means the end to recruitment. This strategy was effective in recruiting the desired number of participants in its initial implementation, but did not address reaching socially isolated older adults. There are many opportunities to recruit older adults who may not already be accessing community services. Strategies to recruit older adults may include partnering with the local Department of Motor Vehicles, Medical providers, newsletters, TV/Radio advertisements, and having adult children refer their parents. All these entities are allies in maintaining older adult mobility.

Organizational support and funding are critical to understanding the senior population in individual communities and increasing ridership. Transit agencies (from planning departments to drivers/operators) need to be familiar with the needs and concerns older adults have when accessing public transit. Senior services agencies and transit agencies are natural partners in conducting transportation planning for older adults. Departments of Motor Vehicles are central repositories of potential transportation resources available to older adults. Interdisciplinary partnerships and collaborative efforts can be extremely beneficial to any travel training program, not only to share information and adequately respond to the needs of the older adult community, but also in pulling resources. Working collaboratively can assist program planners and policy makers in obtaining funding, or advocating for funding that supports older adult mobility.

CONCLUSION

Transportation is critical to older adult mobility and independence, and consequently affects quality of life and overall health. In preparation for the growing older adult population, it is imperative to understand the transit needs and habits of older adults. Driving is the most prevalent mode of transportation for current older adults, but many older adults' driving abilities will at some point become limited or will cease altogether. Before older adults become stranded due to driving cessation, other transit options need to be identified, developed, and widely accepted by the general population. While travel training has been identified as a successful option in knowledge gain and familiarity for older adults - it remains only *one* option for older

adult independent mobility. Other options that address issues of mobility beyond the individual's knowledge and responsibility need to be addressed. Areas to be addressed include environmental barriers that affect mobility, lack of transit infrastructure, social/cultural norms that romanticize the private automobile, and policies that neglect to ensure that transit options are realistic and sensitive to older adults.

All levels of barriers that older adults face in accessing public transit should be identified and eradicated. These include built-environment barriers, city and regional planning barriers, transit access, technological barriers, and policy barriers. Strategies such as creating older adult transit-oriented livable communities that provide easy access to transit as well as other daily needs address many of the identified barriers at the same time as creating communities that are older adult friendly. In an age of global climate change, increasing gas prices, and environmental consciousness, transit use should be promoted among people of all ages before they become public transit dependent.

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