

RTC | Research Report

Mobility Needs and Bus Use Survey of Aging and Disabled Adults Living In Santa Cruz County

January 2013

Santa Cruz County Regional Transportation Commission

Santa Cruz Office

1523 Pacific Avenue, Santa Cruz, CA 95060
phone – (831) 460-3200
fax – (831) 460-3215
email – info@sccrtc.org

Watsonville Office

Watsonville Civic Plaza Building
275 Main St., Suite 450, Watsonville, CA 95076 (4th Floor)
phone & fax – (831) 768-8012
email – info@sccrtc.org

Principal Investigators

Karena Pushnik
Senior Transportation Planner, RTC

David Pape
Transit Intern, RTC

This research project was funded by a Caltrans Planning – Transit Intern Grant secured by the Regional Transportation Commission in 2011.

Table of Contents

List of Tables	iii
List of Figures	iii
List of Appendices	iii
Executive Summary	1
Chapter 1. Introduction	7
1.1 Project Overview	7
1.2 Project Area	7
1.3 Need For This Research Project	10
1.4 Overall Research Approach	11
1.4.1 Literature Review: Summary of Key Findings	11
Chapter 2. Understanding Local Conditions	12
2.1 Survey Instrument Development	12
2.2 Survey Methodology	13
2.2.1 Survey Limitations	14
Chapter 3. Survey Data Analysis and Results	14
3.1 Overview of Data	14
3.2 Sample Demographics	15
3.3 Survey Data Analysis	17
3.3.1 Primary Means of Transportation	17
3.3.2 Bus Use	18
3.3.3 Barriers Affecting Bus Use	20
3.3.4 Encouraging Bus Use	25
3.4 Summary of Key Findings	28
Chapter 4. Research Conclusions and Recommendations	30
4.1 Limitations and Lessons Learned	30
4.2 Recommendations	31
4.2.1 Potential Projects	31
4.2.2 Areas for Future Research	34
References	36

List of Tables

Table 1.1 Respondent Age	15
Table 1.2 Respondent by Gender	15
Table 1.3 Respondent Monthly Income	16
Table 1.4 Primary Means of Transportation	18
Table 1.5 Respondent Bus Use	19
Table 1.6 Reasons for Not Using the Bus	19
Table 1.7 Encouraging Bus Use	25

List of Figures

Figure 1.1 Senior Dining Center Survey Site Map	9
Figure 1.2 Percent Population of Adults Age 65 and Older	10
Figure 1.3 Percent of Survey Respondents by Survey Site	16
Figure 1.4 Assistive Devices	18
Figure 1.5 Bus Use by Survey Site	20
Figure 1.6 Barriers to Bus Use	21
Figure 1.7 Knowing Where to Find A Bus Stop	22
Figure 1.8 Problems With Sidewalks	22
Figure 1.9 Feeling Safe	23
Figure 1.10 Travel Needs	24
Figure 1.11 Encouraging Bus Use Among Drivers	26
Figure 1.12 Methods of Obtaining Information	27

List of Appendices

Appendix A Literature Review	
Appendix B Survey Instrument	

Executive Summary

The Monterey Bay Area is likely to experience a 100 percent increase in the population of people age 65 and older¹. As a result of this projected growth, Santa Cruz County could potentially experience a greater demand for mobility of aging and disabled adults. Expecting to continue driving well into their later years, many older adults will not anticipate life without a car. Furthermore, it has been well documented that many older adults will retire in or migrate to low-density suburban areas, characterized by single family homes, that are poorly served by public transit or lack adequate pedestrian facilities. Older adults no longer able to drive could face severe mobility deficiencies such as isolation, lack of access to social or medical needs, increased risk of accidents, and even depression.²

Since public transit is one potential solution to the mobility needs of aging adults, the Regional Transportation Commission (RTC) for Santa Cruz County conducted a survey at five senior dining centers in order to identify local conditions affecting bus usage and barriers to bus use for older adults in Santa Cruz County. The project follows recent research suggesting there are a number of issues affecting bus use among aging populations. This project provides an evaluation of bus usage and barriers to bus usage that can help local planners better understand how the bus system can play a role in maintaining mobile independence for aging adults in Santa Cruz County and identify other transportation system improvements that may sustain mobile independence in older adults.

¹ Association of Monterey Bay Area Governments, 2011. *Envisioning the Monterey Bay Area: A Blueprint for Sustainable Growth and Smart Infrastructure*.

² Sungyop Kim, "Transportation Alternatives of the Elderly After Driving Cessation". *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

We would like to express our appreciation to Caltrans for funding this research project through the Caltrans Planning Transit Intern Grant. Without the support of Caltrans this project would not have been possible.

Project Objective and Methodology

The purpose of this research project is to evaluate the mobility needs of aging and disabled adults in Santa Cruz County and to identify strategies and improvements to increase bus use of aging and disabled adults living in Santa Cruz County as a way to continue mobile independence. Based on the findings, the project aims to propose potential projects to enhance the mobility of aging and disabled adults living in Santa Cruz County while also highlighting ways to encourage or improve bus usage.

A review of existing research was conducted to identify issues affecting the mobility of aging adults (Appendix A: Literature Review). The findings from the literature review were used to determine the best method for identifying the travel needs of aging adults and issues affecting bus usage specific to Santa Cruz County. After deciding a survey was the best method for collecting data, investigators administered surveys at five senior dining centers located throughout Santa Cruz County. A detailed explanation of the research approach is included in Chapter 3 including survey respondents demographics, primary means of transportation, use of assistive devices, bus use, and barriers to bus use.

Key Findings

The results indicate that the majority of adults surveyed drive themselves as their primary form of transportation at 43 percent. Next to driving the most common means of transportation is bus use at 16 percent, followed by getting a ride with friends or family and walking. While the automobile was the most common means of transportation among respondents, approximately 41 percent of respondents reported using the bus at least once in the past month. The majority

of respondents who did not use the bus in the past month reported that they prefer the use of a car. Although these findings suggest that older adults may prefer the use of a car, a significant portion of respondents still utilized the bus system at some point to fulfill their travel needs. Yet, participants strongly agreed that it would be difficult meeting the majority of their travel needs if they only relied on the bus.

Bus use varied by survey site. The Louden Nelson and Watsonville Senior Centers had the highest percentage of bus riders while the Scotts Valley Senior Center had the lowest percentage at 4.8 percent. The variation in bus use by location may indicate issues with bus accessibility or services. For instance, Scotts Valley respondents reported having the most issues with sidewalks and walking distances to bus stops when compared to other survey sites.

Survey responses suggest that carrying bags or packages is the largest barrier to bus use among respondents. Weather was reported as the second biggest barrier to bus use, followed closely by bus stops being too far away and knowing where to find a bus stop. However, specific barriers vary by survey site. Both Watsonville and Scotts Valley Senior Centers reported the most issues using the bus. Difficulties finding bus stops, problems with sidewalks, distance to bus stops, and feeling safe were the most frequently identified issues.

Participants indicated that buses that run more frequently was the most commonly reported improvement to encourage bus use. The second most commonly reported way to encourage bus use was the bus stopping closer to home, amenities, or recreation. These findings suggest that service and route related improvements have the greatest potential for encouraging bus use and that service and routes may not be addressing all the needs of aging and disabled adults in Santa Cruz County.

Conclusion and Recommendations

In conclusion, the results suggest that older adults predominantly rely on driving as their primary form of transportation and that bus services are not meeting *all* the needs of older and disabled travelers in Santa Cruz County. Nevertheless, as demonstrated in the study, many older individuals will still rely on the bus to meet their transportation needs. As the population increases there will inevitably be an increase in the demand for public transit in Santa Cruz County older adults. The data suggests that steps can be taken to potentially increase or improve local bus use among aging and disabled adults in Santa Cruz County.

Explore Programs or Funding Sources to Provide Collapsible Shopping Carts

Data gathered for this study indicates that carrying bags or packages presents a issue for aging adults using the bus in Santa Cruz County. According to the results, nearly 35 percent of respondents indicated that carrying bags or packages was difficult when riding the bus. According to Sandra Rosenbloom, shopping accounts for the majority of trips made by adults' age 65 and older.³ Since, shopping trips are so vital to the well being of aging adults, providing or promoting use of collapsible shopping carts to assist in the transport of packages could potentially increase bus use for shopping purposes among the aging population. Ranging anywhere from \$20 to \$50 per cart, subsidizing collapsible shopping carts may help individuals who have ceased driving utilize the bus for shopping purposes and reduce their dependence on family or friends to meet their transportation needs.

Increase Sheltered Bus Stops

According to the data, weather was reported as the second biggest barrier to bus use at 29 percent. In regards to weather issues, one potential solution may be to increase sheltered bus stops around elderly key destinations such as shopping centers, medical facilities, and senior centers in Santa Cruz County. Reducing exposure to the elements and creating a more comfortable waiting environment may help increase bus ridership for medical and shopping trips. Additionally,

³ Sandra Rosenbloom. "The Mobility Needs of Older Americans: Implications for transportation Reauthorization." *The Brookings Institution Series on Transportation Reform* (2003): 1-19.

because both Watsonville and Scotts Valley had a high percentage of respondents reporting weather as an issue, continued assessment and prioritization of bus stop facilities should be conducted in these areas.

Develop, Increase or Continue Transit Education Programs

This research has shown that knowing where to find a bus stop is an issue affecting bus use among aging adults in Santa Cruz County. Additionally, because a number of respondents marked “don’t know” or did not answer barrier related questions, it is likely a number of respondents may be unfamiliar with the bus. As noted in the preliminary research, older adults unfamiliar with bus services often avoid using them. Based on these findings, expanding educational programs such as the Metro’s Mobility Training, that better educate or familiarize older adults about bus routes, stops, and services could potentially increase or improve ridership.

Explore Driver Safety Programs

According to the data, the majority of respondents drive themselves as a primary form of transportation. Among these respondents, a vast majority reported that little could be done to increase or encourage bus use. Based on the population projections for the region and the data collected, Santa Cruz County could likely see an increase in the amount of older drivers which could lead to more accidents and increased green house gas emissions. Since a number of respondents rely on driving as their primary means of transportation, finding ways to keep Santa Cruz County older adults driving safely may be one option for meeting their mobility needs. Potential solutions to improve the safety among aging drivers may include driver safety programs such as AAA’s Roadwise Review, AARP’s Driver Safety Program, and confidential driver assessment programs. In addition, these driver safety programs could provide mobility training and information as a way to transition seniors to transit alternatives.

Support Age Friendly Housing Within Walking Distance to City Centers and Transit Facilities

As noted in the preliminary research, low density land use patterns and trends surrounding suburban migration have vastly contributed to a reliance on the automobile. Once more, these land use patterns often exacerbate mobility issues for aging adults who can no longer drive. As the region continues to see a growth in the population of older adults, Santa Cruz County will likely experience an increase in older drivers and a greater demand for public transit. However, despite various transportation options, a portion of aging adults will inevitably face difficulties meeting their transportation needs due issues such as a lack of license and disabilities associated with aging. Therefore, supporting age friendly housing within a short, pleasant and safe walking distance to amenities as well as transit facilities has the potential to reduce auto dependence among aging adults and promote greater use of public transit. However, additional research should evaluate the likelihood of Santa Cruz County aging and disabled adults to relocate in such areas.

Areas for Future Research

Data gathered for this study indicates that buses running more frequently, buses that stop closer to home, amenities, or recreation, and buses that go more places could potentially increase bus use among aging and disabled adults in Santa Cruz County. These findings are significant as they may imply current bus service is not meeting the needs of older adults. However, a broader sample of older adults may reveal additional information. Therefore, future research should further explore the specific travel patterns and needs of older adults living in Santa Cruz County, assess whether current bus service and routes are meeting those needs, and whether mobility training or other means to increase familiarity would increase transit use.

Additionally, the results of this study indicate that distance to a bus stop, knowing where to find a bus stop, and problems with sidewalks are issues affecting bus use, especially in the cities of Watsonville and Scotts Valley. Since accessibility and the ability to walk to a bus stop are often cited as variables affecting bus use,

a future study should be conducted to identify *specific* pedestrian related projects and access issues. Once more, because the results suggest that bus use varies by survey site, further research should consider evaluating more locations and areas highly populated by older individuals.

Chapter 1. Introduction

The Santa Cruz County Regional Transportation Commission (RTC) conducted this study to better understand how changing demographics of aging adults may impact transit demand and identify potential barriers to bus use among local aging and disabled adults. Additionally, this research was conducted to determine strategies and improvements to increase bus use of aging and disabled adults living in Santa Cruz County as a strategy for continuing mobile independence. This study follows recent research that has demonstrated there are a variety of barriers to public transit use among aging populations. However, because each region varies geographically as well as demographically, the current study is unique to the needs of Santa Cruz County, California.

1.1 Project Overview

The primary objective of this research study is to assess the current level bus use among aging and disabled adults living in Santa Cruz County and to determine *potential* projects to encourage or improve bus ridership. The data gathered at the survey sites are anticipated to serve as an estimation of the overall issues affecting bus use among aging adults in Santa Cruz County, understand future potential demand for transit, as well as to identify additional localized barriers.

1.2 Project Area

The project area is located in Santa Cruz County, California along the northern coast of the Monterey Bay Area (see Figure 1.1). The survey was administered

at five senior dining centers within the county. The senior dining centers were chosen using a sampling technique, which allowed the researchers to gather basic data and trends regarding aging adults in the county.

The senior dining centers were a good source of data about local seniors because attendants' background characteristics are similar to that of the county. According to the 2010 US Census data, the Santa Cruz County population of adults age 65 and older is 43 percent male and 57 percent female. While in comparison, the study sample was 41 percent male and 57 percent female. Additionally, when cross examining respondents by age, the sample is relatively similar to that of the actual population (Figure 1.2). Furthermore, the senior dining centers are located throughout the county and generate a broad geographic reach of attendants.

The senior dining center locations are as follows:

- Highlands Park Senior Center, Ben Lomond
- Louden Nelson Community Center, Santa Cruz
- Watsonville Senior Center, Watsonville
- Elena Baskin Live Oak Senior Center, Live Oak
- Scotts Valley Senior Center, Scotts Valley

Figure 1.1 Senior Dining Center Survey Sites, Santa Cruz County

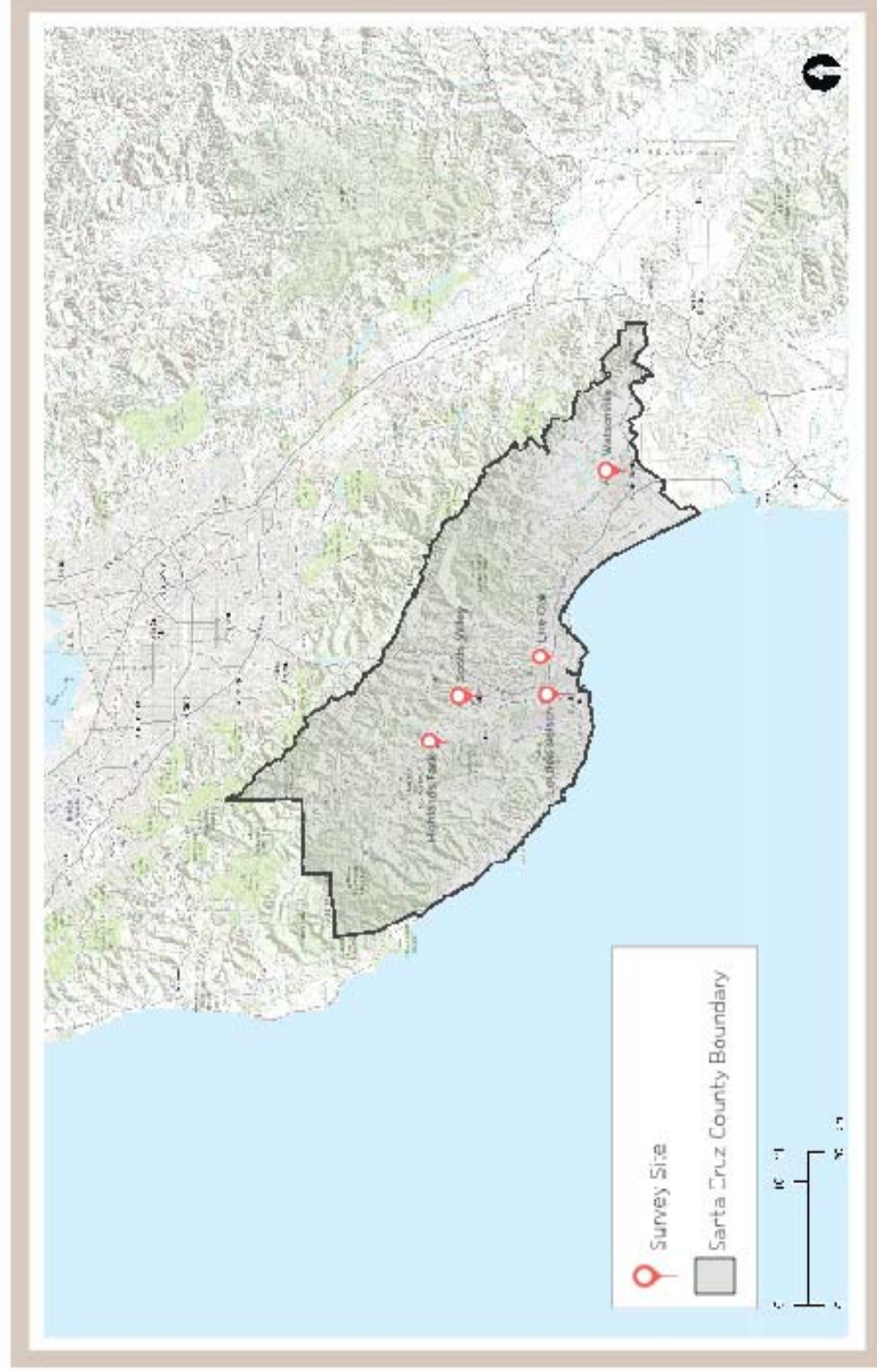


Figure 1.2 Percent Population of Adults Age 65 and Older

Age	Santa Cruz County	Study Sample
65 to 69 years	33%	14%
70 to 74 years	2%	15%
75 to 79 years	16%	15%
80 to 84 years	14%	19%
85 to 89 years	10%	11%
90 years and over	6%	5%

Source: US Census Bureau, 2010

1.3 Need For This Research Project

Although a number of research studies have identified barriers to bus use among aging and disabled populations, no formal research on potential methods for increasing bus use has been conducted in Santa Cruz County. According to the Association of Monterey Bay Area Government (AMBAG) 2035 population projections, the Monterey Bay Area is likely to experience a 100 percent increase in the population of people age 65 and older.⁴ Once more AMBAG attributes this growth to not only the region’s attractiveness as a place of retirement but the aging of the Baby Boomer generation. As a result of this expected growth within the region, Santa Cruz County could potentially experience a greater demand for mobility of aging and disabled adults. A growth in the population of older adults could lead to a variety of impacts including: isolation of individuals lacking access to social or medical needs, an increased strain on community non-profit transportation services, increased traffic accidents, increased vehicle emissions. Identifying the travel needs and travel patterns of older and disabled residents in Santa Cruz County will serve to highlight transportation gaps. Also, evaluating bus usage and barriers to bus usage can help planners understand how the bus system can play a role in maintaining mobile independence, since the bus is one potential solution to the growing mobility needs of aging adults in the county.

⁴ Association of Monterey Bay Area Governments, 2011. *Envisioning the Monterey Bay Area: A Blueprint for Sustainable Growth and Smart Infrastructure*.

1.4 Overall Research Approach

In order to identify potential methods for increasing bus use among aging and disabled adults in Santa Cruz County, the researchers utilized a bus use survey. The survey method was chosen as the approach most relevant to answering the research question, as well as addressing the logistical constraints of obtaining a meaningful sample size. The survey was developed based on a comprehensive review of existing research in regards to the transportation needs of aging and disabled adults and then peers tested to strengthen the mechanism for use in Santa Cruz County.

Based on the literature reviewed, the following section discusses the many variables and travel patterns affecting public transit use among aging and disabled adults.

1.4.1 Literature Review: Summary of Key Findings

- According to the literature reviewed, by 2030 nearly one in five residents living in the United States will be age 65 and older.⁵
- As a result of this expected growth, the United States could experience a major discrepancy in the mobility of aging and disabled adults. Such issues may include increased traffic accidents, isolation of individuals lacking access to social or medical needs, and an increased strain on community non-profit transportation services.
- Research suggests that heavy automobile use, poor pedestrian facilities, low levels of transit use, and suburban residential location will only exacerbate the mobility deficiencies of aging and disabled adults.

⁵ Vincent K. Grayson and Victoria A. Velkoff, "The Older Population in the United States: 2010 – 2050," *U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau*. (2008): 1

- There are a number of variables affecting older adult use of public transit including income, gender, ethnicity, health, location, and accessibility. Unfamiliarity with transit services has also been shown to be a factor affecting use.
- Transit services in and of themselves can also limit ridership through variables such as high costs, convenience, inaccessibility, and poor services.
- In order for public transit to become a viable solution to the changing mobility needs of an aging and disabled population, a wide variety of solutions are suggested. Such solutions include: increasing transit use education, service and route changes, improved pedestrian facilities, and improved access.

See [Appendix A](#) for complete Literature Review

Chapter 2. Understanding Local Conditions

This section describes the process for understanding local conditions including developing the survey instrument that was used to understand current means of transportation and identify ways in which to increase bus use among aging and disabled adults living in Santa Cruz County. Next, this section describes the methodology used to administer the survey.

2.1 Survey Instrument Development

The survey instrument used in this study was based on the review of existing research and a survey used in Michael D. Peck's study, *Barriers to Using Fixed Route Transit by Older Adults*.⁶ The initial draft survey was distributed for input and review to the Santa Cruz Metropolitan Transit District staff as well as the

⁶ Michael Peck, "Barriers to Using Fixed-Route Public Transit for Older Adults." *Green House Gas Emission Impacts of Car Sharing in North America No. CA-MTI-10-2402* (2010): 1-235.

Elderly and Disabled Transportation Advisory Committee, academic peers, and representatives working with senior populations. A number of changes were made to the survey based on their input. The survey was quantitative in nature and contained four sections asking a total of 14 multiple choice and one qualitative response question. Survey questions were used to capture preferred mode choice, current level of bus use, possible barriers to bus use, and ways to encourage or increase bus use.

A statement ensuring confidentiality was placed at the top of the survey to inform respondents that they would not be linked to the survey in any way. The final survey was consolidated to one double-sided page. The final survey was available in both English and Spanish languages.

See [Appendix B](#) for finalized survey instrument.

2.2 Survey Methodology

Survey respondents were gathered from five senior dining centers located in Santa Cruz County using a convenience sampling technique. Surveys were conducted at the senior dining centers because attendants have similar demographic characteristics to that of the greater Santa Cruz County population of adult's age 65 and older. In addition, senior dining centers are located throughout the county producing a broad geographic reach of survey respondents.

Surveys were conducted between July and October 2012. In total the Regional Transportation Commission (RTC) obtained a sample of 175 older adults between the ages of 43 and 95. At least two members of the RTC staff administered the survey in person at each senior dining center. Each senior dining center was only visited once, except for the Scotts Valley Senior Center, in which the RTC staff returned for a second session to gather additional responses during a non-meal activity.

Prior to each survey session, a five-minute presentation was made to explain the purpose of the survey, provide necessary background information, and indicate potential future mobility benefits. The surveys were completed on an individual basis; however, personal assistance was offered to respondents to complete the survey if there were eyesight, literacy or other issues. Additional staff members were utilized for the larger and more diverse senior dining centers of Loudon Nelson and Watsonville. Spanish translators were also present at the Watsonville Senior Center to assist Spanish-speaking respondents as well as to translate the preliminary presentation. All survey respondents received a small snack bag as encouragement to complete the survey. Each survey session concluded with a two minute debrief and thank you.

2.2.1 Survey Limitations

As is the case in most survey research, this survey has some potential limitations. First, this study utilizes questions from an existing survey that may have overlooked barriers unique to Santa Cruz County. Second, the sample size is relatively small, is not a statistically accurate sample size of the county's senior population, and was selected from a limited number of sites. Lastly, some respondents may have failed to complete the survey in its entirety or misinterpreted questions resulting in incomplete data.

Chapter 3. Survey Data Analysis and Results

The following sections provide an overview of the data and summarize the results of the survey. The four sections include an overview of data, sample demographics, data analysis, and summary of findings.

3.1 Overview of Data

The researchers conducted surveys at five senior dining centers in Santa Cruz County. The primary objective was to collect data to determine potential methods for increasing bus use among aging and disabled adults in Santa Cruz County.

A total of 206 surveys were collected, however, 175 surveys were usable due to a sizable amount of missing data. While most studies reviewed in the preliminary research defined older adults as age 65 and older, this study utilized all complete responses and includes data collected from 35 respondents between the ages of 43 and 65.

The data collected from the surveys were tabulated using Microsoft Excel. Frequency distributions were tabulated for each question to ensure data accuracy. Almost all surveys had some degree of missing data. However, because the sample size was relatively small, the data was used as is. In addition, many of the survey questions allowed for multiple responses resulting in totals n exceeding 100 percent.

3.2 Sample Demographics

As seen in Table 1.1, the final sample includes a total 175 responses from the five senior dining centers. A breakdown of responses by survey site can be seen in Figure 1.3.

As noted in Table 1.1, the sample has a mean age of 74 with a range of ages between 43 and 95. There were more female respondents than men at roughly 57 percent (Table 1.2). Once more, as shown in Table 1.3, respondent monthly income varies with the highest percentage of respondents (25.7 percent) earning between \$501 and \$1000 a month.

Table 1.1 Respondent Age

	Sample Size = 175			
Variable	#	%	Mean	Range
Age	173	98.9%	74.07	40-95
No Response	2	1.1%		
Total	175	100%		

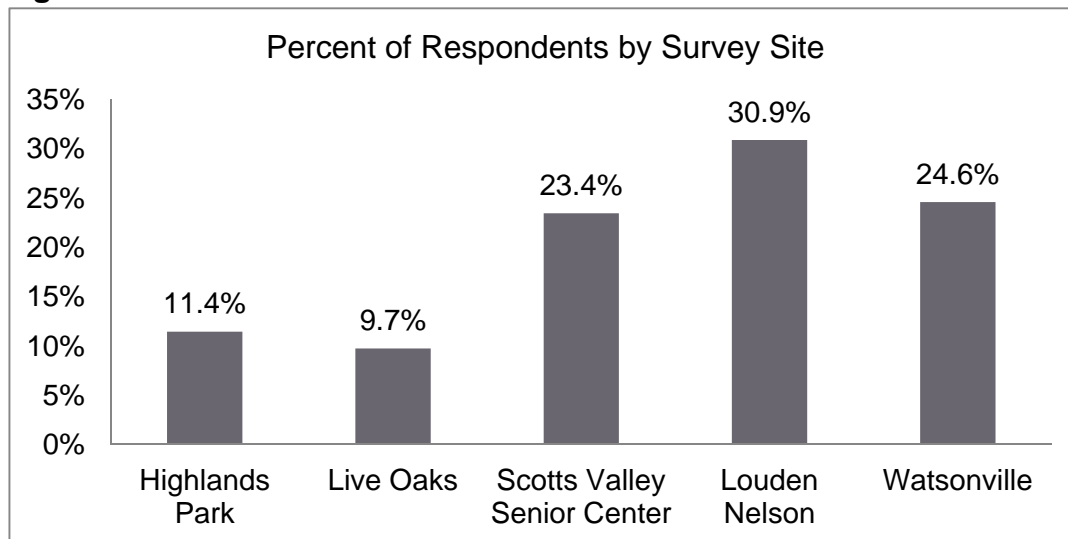
Table 1.2 Respondents by Gender

	Sample Size = 175	
Gender	#	%
male	72	41.1%
female	100	57.1%
No Response	3	1.7%
Total	175	100%

Table 1.3 Respondent Monthly Incomes

	Sample Size = 175	
Monthly Income	#	%
\$500 or less	26	14.9%
\$501 - \$1000	45	25.7%
\$1001 - \$2000	33	18.9%
\$2001 - \$4000	32	18.3%
\$4001 or more	8	4.6%
No Response	31	17.7%
Total	175	100%

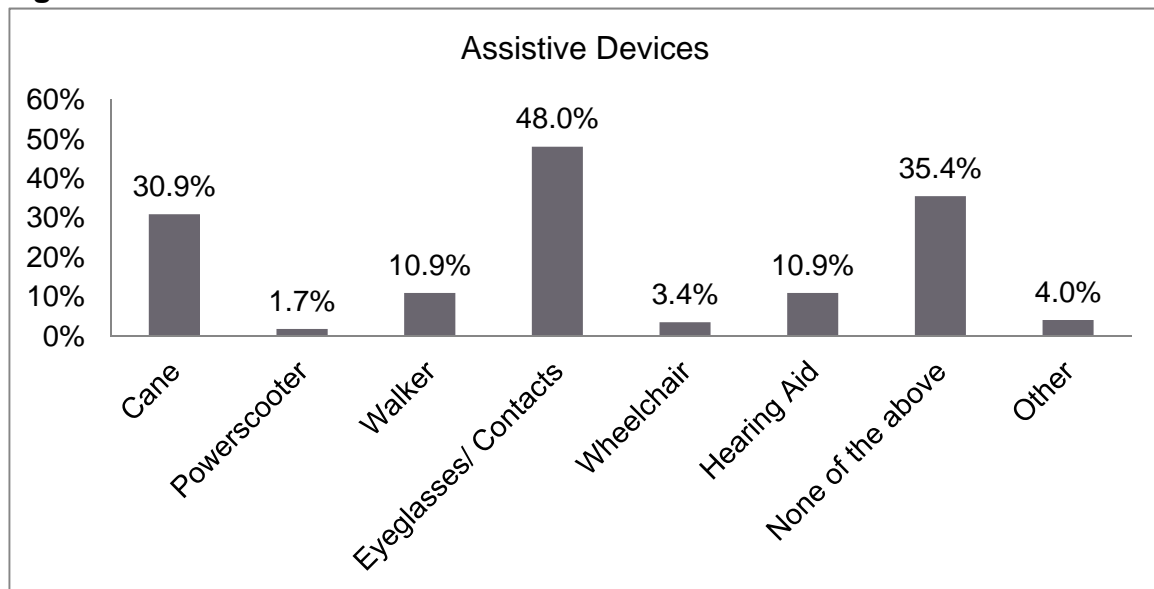
Figure 1.3



Assistive Devices

As shown in Figure 1.4, the majority of respondents use some form of assistive device on a daily basis. While this data does not specify the exact level of disability, it is worth noting that portions of respondents utilize some form of assistive device that potentially has a bearing on their mobility.

Figure 1.4



Notes

Because respondents could circle multiple responses, percent totals more than 100 percent.

3.3 Survey Data Analysis

The researcher performed various analyses to identify current barriers to transit use and to determine ways in which transit ridership among aging and disabled adults may be improved. Simple univariate analysis was performed for each question as a means to highlight barriers and to identify potential improvements. Cross tabulations were also performed to determine correlations between variables and to highlight locations or groups that may be experiencing significant challenges utilizing the bus.

3.3.1 Primary Means of Transportation

Table 1.4 summarizes the primary means of transportation among respondents. As noted, the majority of respondents drive themselves as their primary means of transportation at roughly 43 percent. This finding correlates with much of the preliminary research suggesting that older adults often prefer use of a private automobile. When considering vehicle access and licensing rates among respondents, the preference for automobile use is not surprising. Approximately 57 percent of the respondents are licensed to drive and 57 percent have access to a vehicle.

Second to driving, however, riding the bus was the most common means of transportation at 16 percent. This finding is significant as it conflicts with much of the preliminary research suggesting that older adults rarely use the bus. Beyond riding the bus, the data shows that getting a ride with friends or family is the third most common means of transportation at roughly 14 percent, followed by walking at 12.6 percent. The three latter variables are only separated by minute differences, and therefore these findings may not be representative of the larger population.

Table 1.4 Primary Means of Transportation

	Sample Size = 175	
	#	%
Drive myself	76	43.4%
Ride the bus	28	16.0%
Get a ride with friends or family	25	14.3%
Walk	22	12.6%
Other	10	5.7%
Bicycle	5	2.9%
Take a taxi	4	2.3%
Ride Paratransit or Lift Line	4	2.3%
Missing	1	0.6%
Total	175	100.0%

3.3.2 Bus Use

Table 1.5 shows bus use in the past month among respondents. When asked about how many times they have used the bus in the past month, approximately

41 percent of respondents reported using the bus at least once. Still, the majority of respondents reported not using the bus in the past month. This finding is significant as it demonstrates that although the majority of respondents have not used the bus, a remarkable portion of respondents have some familiarity with the services available.

For those respondents that had not used the bus in the past month, when asked why, roughly 59 percent of respondents that answered reported they prefer to drive or ride in a car (Table 1.6). While difficult to generalize, this finding may suggest that respondents, who prefer to drive, may be unfamiliar with or unable to access bus services. Never the less, these findings reiterate a preference for automobile use among respondents.

Table 1.5 Respondent Bus Use

		Sample Size = 175	
Question	Response	#	%
During the past month, how many times have you traveled on the bus? ⁷	0 times	99	56.6%
	1 or 2 times	22	12.6%
	2 to 10 times	14	8.0%
	Several times a week	21	12.0%
	Nearly every day	15	8.6%
	Missing	4	2.3%
	Total		175

Table 1.6 Reasons for Not Using the Bus*

		Total Response = 66	
Question	Response	#	%
If 0 times why? ⁸	Prefer to drive/ride in a car	39	59%
	Bus is not available	5	7.6%
	Bus is not convenient	11	16.7%
	Bus is too expensive	4	6.1%
	Other	7	10.6%
	Total		66

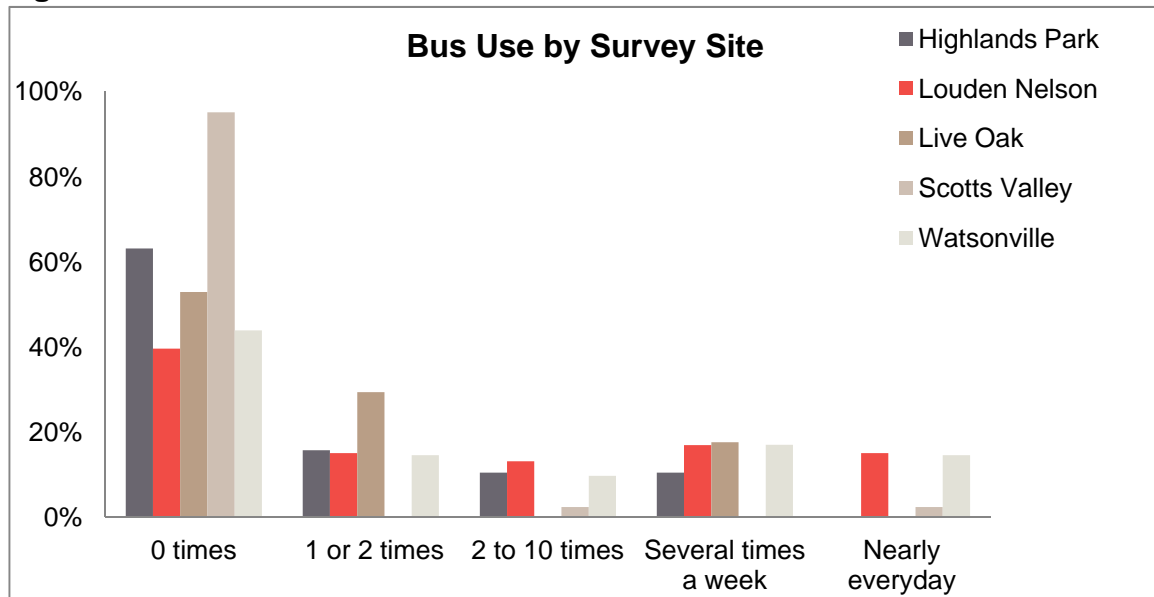
Bus Use by Survey Site

⁷ Michael Peck, "Barriers to Using Fixed-Route Public Transit for Older Adults." *Green House Gas Emission Impacts of Car Sharing in North America No. CA-MTI-10-2402* (2010): 1-235.

⁸ Ibid.

When comparing bus use by survey site, location is significantly related to use. As shown in Figure 1.5, bus use was considerably low for the Scotts Valley Senior Center with roughly 95 percent of the sites respondents using the bus zero times in the past month. In contrast, bus use was highest at Louden Nelson with nearly 60 percent of respondents riding the bus at least one time in the past month. While there could be any number of reasons for the varying levels of bus use, these findings are significant as they suggest certain areas in the county, such as Scotts Valley, may have a greater need for transit related improvements even though the Cavallero Transit Center is located across the street from the Scotts Valley Senior Center.

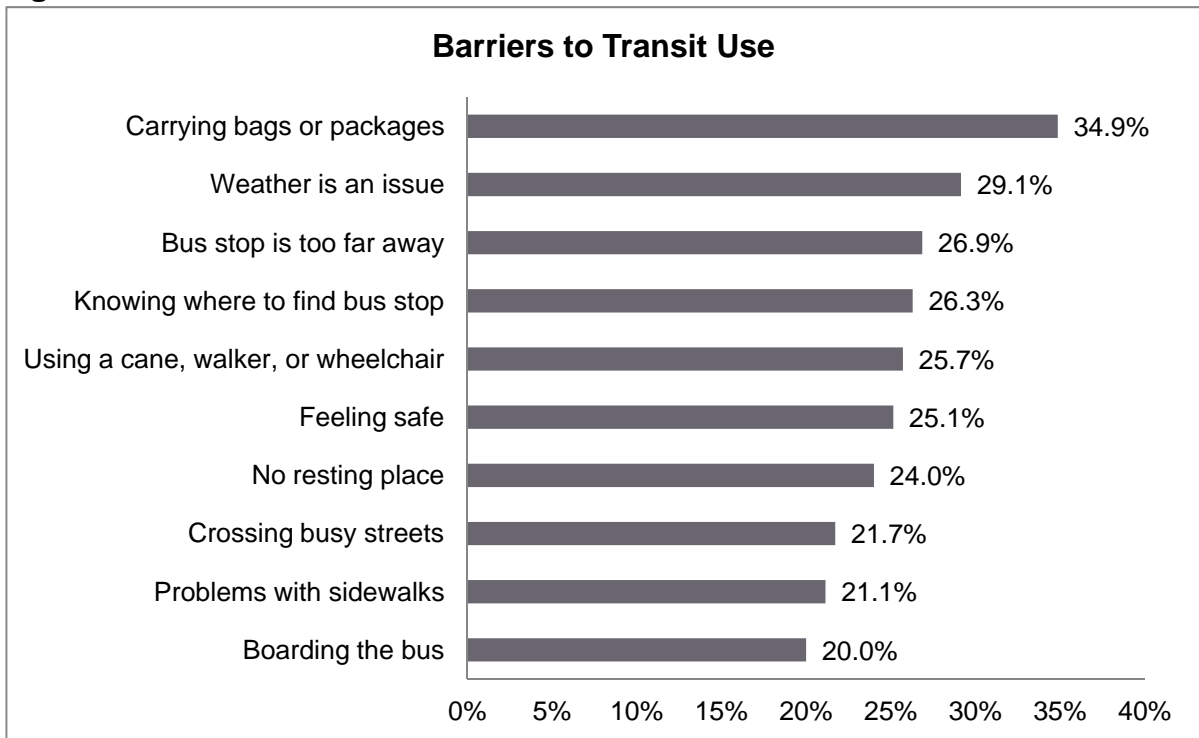
Figure 1.5



3.3.3 Barriers Affecting Bus Use

When asked about a number of potential barriers to bus use, respondents identified carrying bags and/or packages as the biggest barrier to using the bus at 34.9 percent (Figure 1.6). Weather was reported as the second biggest barrier to bus use at 29.1 percent, followed closely by bus stops being too far away (26.9 percent) and knowing where to find a bus stop (26.3 percent).

Figure 1.6



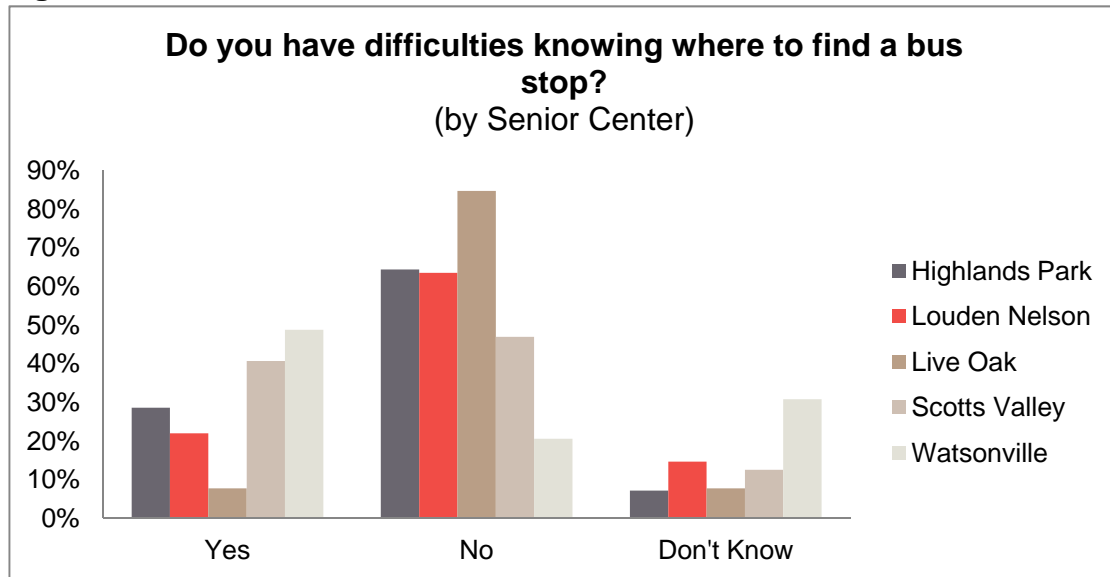
*** Notes**

Figure 1.6 only shows the percent of respondents that identified these variables as barriers.

Barriers to Bus Use by Survey Site

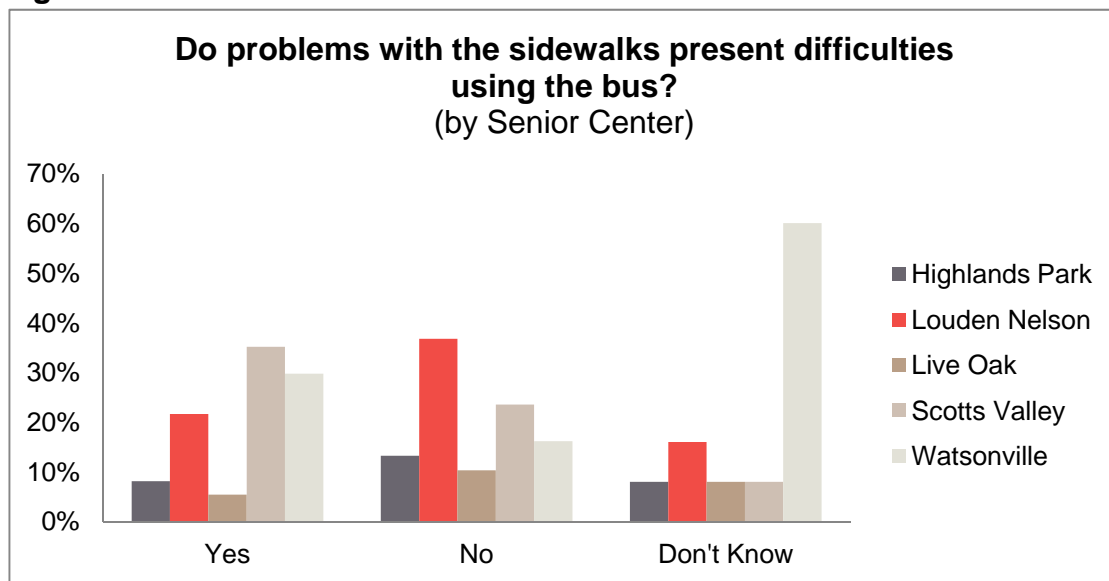
Since bus use was found to be related to location, possible barriers to bus use were compared to survey sites. According to the data, knowing where to find a bus stop was statistically related to location. As shown in Figure 1.7, respondents at the Watsonville Senior Center reported the most difficulty knowing where to find a bus stop at 48.7 percent.

Figure 1.7



Problems with the sidewalks are also statistically related to survey site. As shown in Figure 1.8, both Watsonville (29 percent) and Scotts Valley (39 percent) respondents reported more problems with sidewalks when compared to the other survey sites. Once more, 60 percent of Watsonville respondents reported not knowing if sidewalks presented problems with using the bus. The latter finding may suggest an overall unfamiliarity with the bus system.

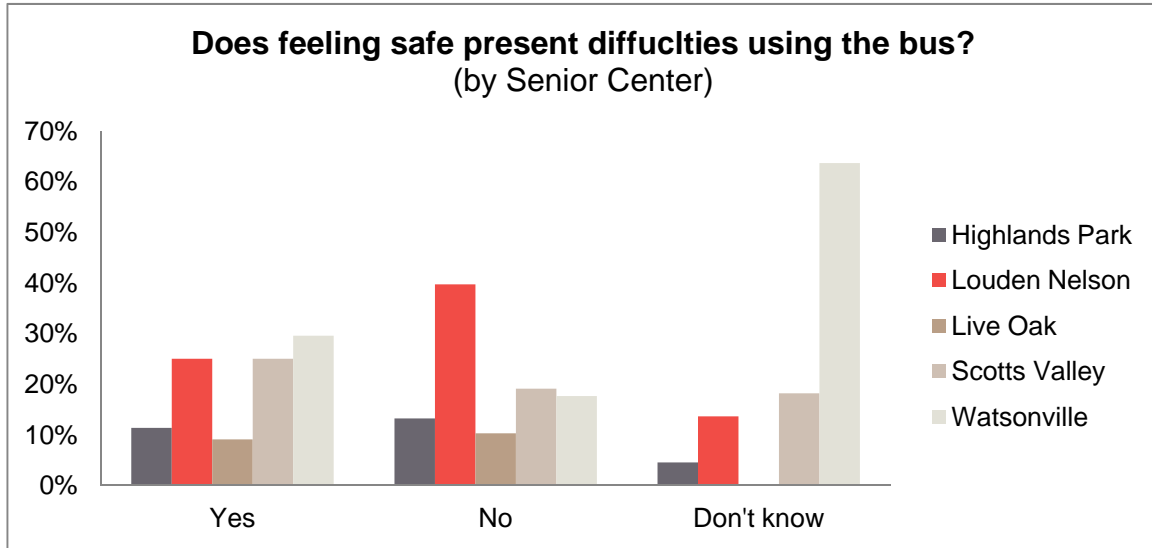
Figure 1.8



Additionally, distance to a bus stop is related to survey site. According to the data, Scotts Valley respondents reported the most difficulty getting to a bus stop at 54.5 percent. Watsonville had the most respondents reporting not knowing if distance to a bus stop was an issue.

Lastly, not feeling safe was statistically related to survey site. As shown in Figure 1.9, Watsonville had the highest percentage of respondents reporting not feeling safe as a barrier to bus use, as well as the highest percentage of respondents reporting not knowing if feeling safe was an issue.

Figure 1.9



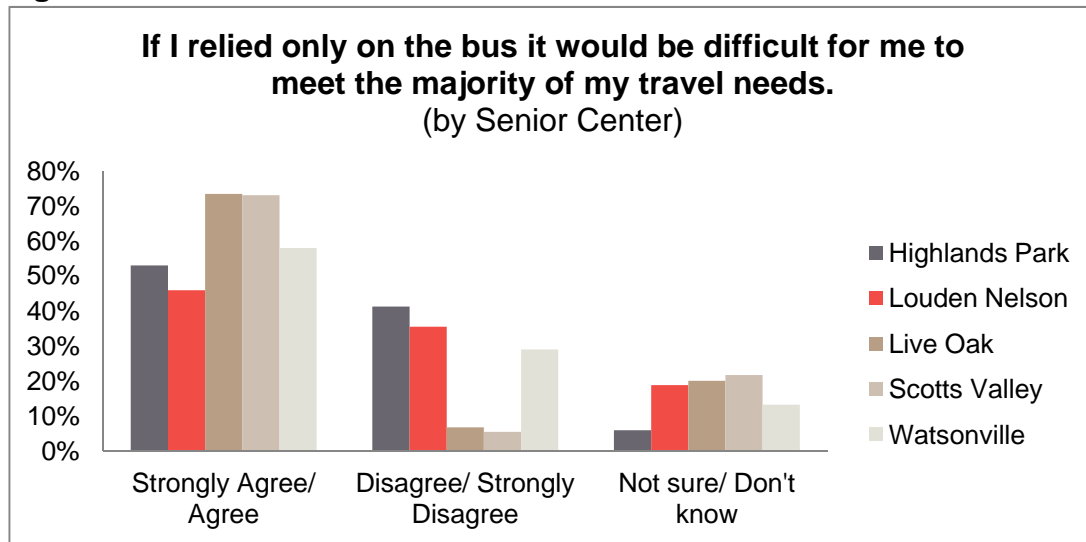
According to the data, both Scotts Valley and Watsonville respondents reported a number of issues affecting bus use. Once more, Watsonville respondents repeatedly showed high levels of uncertainty when asked to identify issues possibly resulting from unfamiliarity with the bus system. However, when examining the level of bus use among Watsonville respondents, it is unlikely this uncertainty is grounded. Based on the data, Watsonville had the second highest bus use among survey sites suggesting that the level of uncertainty may be the result of other factors such as language barriers during surveying or a misinterpretation of the questions.

Travel Needs

As a means to better understand whether or not the bus is currently meeting the needs of older adults in Santa Cruz County, respondents were asked if they only relied on the bus would they be able to meet the majority of their travel needs. As shown in Figure 1.10, the majority of respondents strongly agreed or agreed that

it would be difficult meeting the majority of their travel needs if they only relied on the bus. However, when analyzing responses by survey site, Louden Nelson and Highlands Park had the highest percentage of respondents disagree with the statement. This finding is significant when compared to bus use by site. For example Louden Nelson reported high levels of bus use when compared to other sites and therefore these respondents may disagree with the previous statement due to familiarity with bus service. Once more, this finding may suggest that bus services in the City of Santa Cruz are more accessible than other areas. Never the less, because respondents were not asked about their specific travel needs, it is difficult to verify this finding.

Figure 1.10



3.3.4 Encouraging Bus Use

In order to identify potential ways to increase bus use among aging and disabled adults in Santa Cruz County, respondents were presented with a number possible solutions identified in the preliminary research. As demonstrated in Table 1.7, buses that run more frequently was the most commonly reported improvement to encourage bus use at 28 percent.

The second most commonly reported way to encourage bus use was the bus stopping closer to home, amenities, or recreation at 26.3 percent. This response

is significant as it implies current bus service may not be meeting the travel needs of older individuals in the county or that older adults are having difficulty accessing a bus stop.

The third most selected response was nothing could be done to encourage bus use at 24.6 percent followed by buses that went more places at 24 percent.

Table 1.7 Encouraging or Increasing Bus Use

	Sample Size = 175	
Response	#	%
Buses run more frequently	49	28.0%
The bus stopped closer to home, amenities, or recreation	46	26.3%
Nothing	43	24.6%
Buses went more places	42	24.0%
Less expensive fares	37	21.1%
Improved sidewalks, street lights, or benches	24	13.7%
Travel times were shorter	19	10.9%
Other	19	10.9%
Access to training or mentoring programs to learn more about riding the bus	14	8.0%

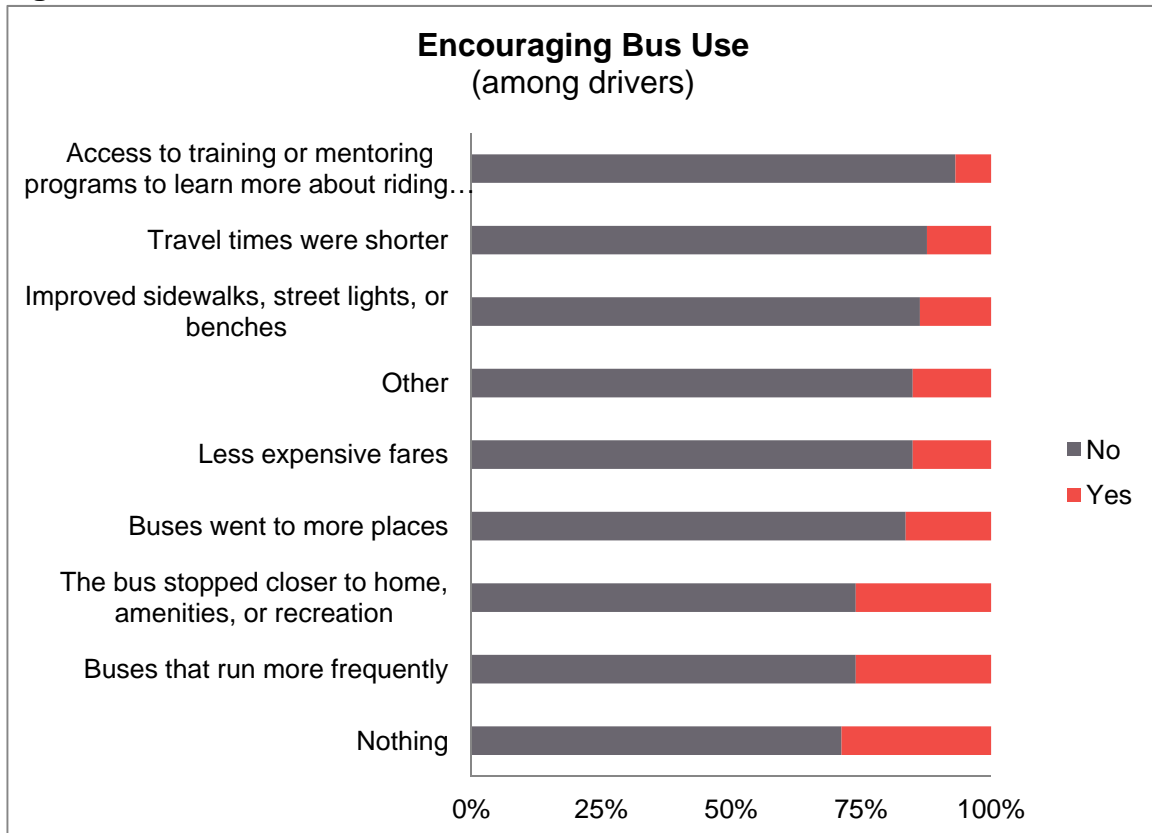
Notes

Because respondents could circle multiple responses, percent totals more than 100 percent.

Since the majority of respondents reported using a car as their primary means of transportation, potential methods for encouraging bus use was cross-examined with driving as a primary means of transportation. According to the results, the majority of respondents reported none of the proposed improvements would increase or encourage bus use (Figure 1.11). Among respondents who answered yes to the possible responses, nothing could be done was most commonly selected at 28.7 percent, followed by buses that run more frequently at 26 percent and buses that stop closer to home, amenities, or recreation at 26 percent. These findings are significant as they suggest little can be done in way of improvements to increase or encourage bus use among older adults that currently drive. However, it should be noted that service and route related

improvements were among the most commonly selected responses to increase or encourage bus use.

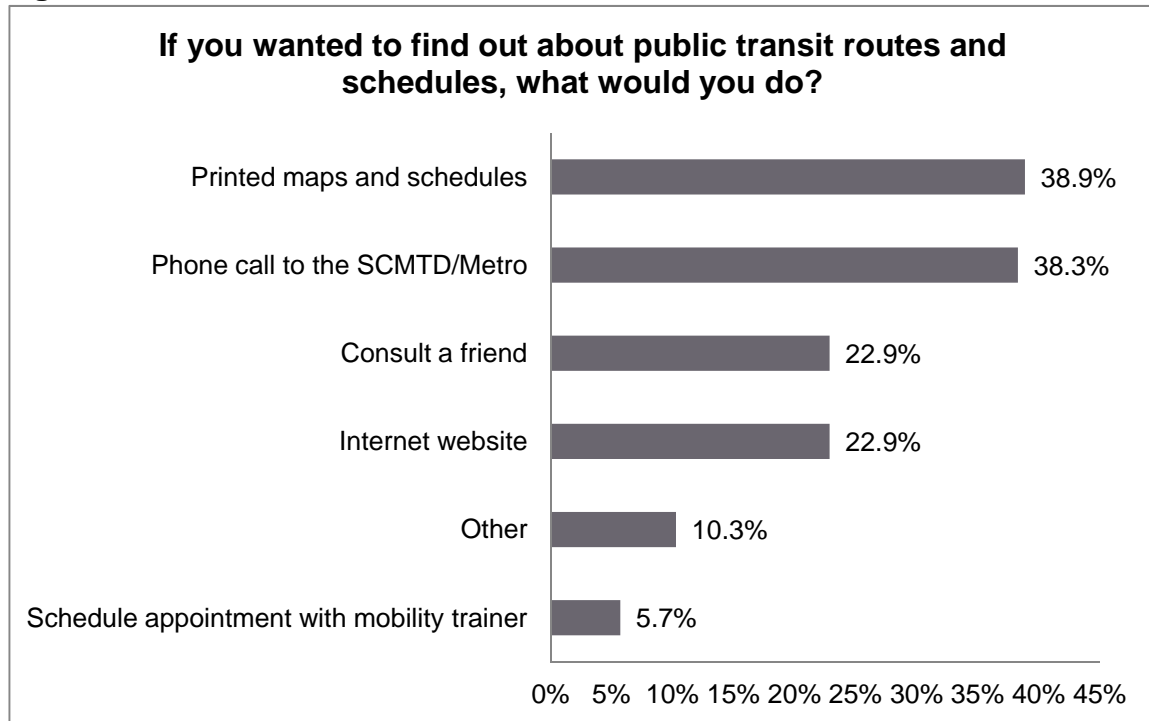
Figure 1.11



Information

According to the preliminary research, unfamiliarity with bus service can be a variable affecting bus use among aging and disabled adults. As a means to identify the best method for disseminating information and marketing bus services, respondents were asked what they would do to find out more about transit routes and services. According to the data (Figure 1.12), the majority of respondents would consult printed maps and schedules (38.9 percent) or call the Santa Cruz Metro (38.3 percent). Following this, consulting a friend or Internet website was the next most common way of obtaining information at 22.9 percent.

Figure 1.12



3.4 Summary of Key Findings

Primary Means of Transportation

According to the data, the highest number of respondents (43 percent) uses a private automobile as their primary means of transportation. Next to driving the most common means of transportation is bus use (16 percent), followed by getting a ride with friends or family and walking. The high level of vehicle accessibility and licensing among respondents may explain the overwhelming amount of automobile use.

Bus Use

Approximately 41 percent of respondents used the bus in the past month at least once. Still, the majority of respondents used the bus zero times in the past month

at 56.6 percent. The majority of respondents who did not use the bus in the past month reported that they prefer the use of a car. Nevertheless, bus use varied by survey site. Louden Nelson (60 percent) and Watsonville (56 percent) Senior Centers had the highest percentage of bus riders while Scotts Valley Senior Center had the lowest percentage at 4.8 percent. The differences in bus use by location may be the result of varying degrees of accessibility. For instance, Scotts Valley respondents reported having the most issues with sidewalks and walking distances to bus stops. Once more, the small amount of respondents at Live Oaks and Highlands Park make it difficult to generalize bus use for these areas.

Barriers to Bus Use

Carrying bags or packages was reported as the largest barrier to bus use among respondents at 34.9 percent. Weather was reported as the second biggest barrier to bus use at 29.1 percent, followed closely by bus stops being too far away (26.9 percent) and knowing where to find a bus stop (26.3 percent).

According to the data, barriers varied by survey site. Both Watsonville and Scotts Valley Senior Centers reported the most issues using the bus. Both Scotts Valley and Watsonville respondents reported difficulties finding bus stops, problems with sidewalks, distance to bus stops, and feeling safe.

Encouraging Bus Use

Buses that run more frequently was the most commonly reported improvement to encourage bus use at 28 percent. The second most commonly reported way to encourage bus use was the bus stopping closer to home, amenities, or recreation at 26.3 percent. The third most selected response was nothing could be done to encourage bus use at 24.6 percent followed by buses that went more places at 24 percent.

Among respondents who reported driving as their primary means of transportation, a majority reported that nothing could be done to encourage or

increase bus use. However, service and route related improvements were among the most commonly selected responses to increase or encourage bus use.

The service related responses are significant as they imply current bus service may not be meeting the travel needs of older individuals in the county or that older adults are having difficulty accessing a bus stop near their place of residence. Secondly, these findings may suggest that older adults are unfamiliar with bus services or are having challenges obtaining service and route information.

Chapter 4. Research Conclusions and Recommendations

In addition to research conclusions and recommendations, chapter four provides a summary of limitations and discusses areas for future research regarding aging and disabled adult bus use in Santa Cruz County.

4.1 Limitations and Lessons Learned

This research study provides an *estimation* of barriers to bus use and potential projects to increase or encourage bus use among aging and disabled adults living in Santa Cruz County. However, as is the case in most research, there are biases and limitations to the data making the results difficult to generalize.

First, this study used a convenience sampling technique that is often associated with systematic bias making it difficult generalize results to the greater population of aging and disabled adults in Santa Cruz County. Additionally, each survey site varies -- in attendance, demographics and transit service -- potentially obscuring the results. For instance, there is roughly a 20 percent increase in respondent rates from Live Oaks Senior Center to Loudon Nelson Community Center. The differences in response size by location make it difficult to generalize findings.

Secondly, the majority of the surveys were returned missing data. As a result of missing data, the response size varies by question and reduces the level of

confidence. The amount of incomplete responses may also be the result of survey structure and survey techniques. For instance, Watsonville Senior Center had a number of unusable surveys potentially resulting from language barriers. While the survey was available in Spanish and translators were on hand, survey administrators that did not speak Spanish may have had difficulties providing assistance and answering questions.

Lastly, this research study is quantitative in nature and thus does not provide the qualitative insight necessary to fully understand issues affecting bus use among aging adults. Future studies should consider utilizing a more qualitative approach as well as simplifying the survey to allow for maximum response rates.

4.2 Recommendations

In conclusion, the results suggest that older adults predominantly rely on driving as their primary form of transportation and that bus services are not meeting *all* the needs of older and disabled travelers in Santa Cruz County. Nevertheless, as demonstrated in the study, many older individuals will still rely on the bus to meet their transportation needs. As the population increases there will inevitably be an increase in the demand for public transit in Santa Cruz County. While the results indicate that driving is the preferred mode of transportation, the data suggests that steps can be taken to potentially increase or improve local bus use among aging and disabled adults in Santa Cruz County. However, as noted in the preliminary research, aging adults are a diverse population. Therefore, addressing the transportation needs of a growing population of aging adults will require a variety of solutions.

4.2.1 Potential Projects

Explore Programs or Funding to Provide Collapsible Shopping Carts

Data gathered for this study indicates that carrying bags or packages presents a major issue for aging adults using the bus in Santa Cruz County. According to the results, nearly 35 percent of respondents indicated that carrying bags or packages was difficult when riding the bus. According to Sandra Rosenbloom,

shopping accounts for the majority of trips made by adults' age 65 and older.⁹ Since, shopping trips are so vital to the well being of aging adults, providing or promoting use of collapsible shopping carts to assist in the transport of packages could potentially increase bus use for shopping purposes among the aging population. Ranging anywhere from \$20 to \$50 per cart, subsidizing collapsible shopping carts may help individuals who have ceased driving utilize the bus for shopping trips and reduce their dependence on family or friends to meet their transportation needs. It may also be helpful to encourage use of carts on off peak routes, to minimize boarding delays, aisle blockage, and overcrowding issues that regularly occur on peak period transit runs. Sensitivity to the needs of all transit users is important.

Increase Sheltered Bus Stops

According to the data, weather was reported as the second biggest barrier to bus use at 29.1 percent. In regards to weather issues, one potential solution may be to increase sheltered bus stops around elderly key destinations such as shopping centers, medical facilities, and senior centers in Santa Cruz County. Reducing exposure to the elements and creating a more comfortable waiting environment may help increase bus ridership for medical and shopping trips. Additionally, because both Watsonville and Scotts Valley had a high percentage of respondents reporting weather as an issue, continued assessment and prioritization of bus stop facilities and shelters should be conducted in these areas.

Develop, Increase or Continue Transit Education Programs

This research has shown that knowing where to find a bus stop is an issue affecting bus use among aging adults in Santa Cruz County (26.3 percent). Additionally, because a number of respondents marked "don't know" or did not answer barrier related questions, it is likely a number of respondents may be

⁹ Sandra Rosenbloom. "The Mobility Needs of Older Americans: Implications for transportation Reauthorization." *The Brookings Institution Series on Transportation Reform* (2003): 1-19.

unfamiliar with the bus. As noted in the preliminary research, many older adults unfamiliar with bus services often avoid using them. Based on these findings, expanding educational programs such as the Metro's Mobility Training, that better educate or familiarize older adults about bus routes, stops, and services could potentially increase ridership. Programs that help senior become comfortable with transit could gradually transition them to transit and other non-private auto uses.

One possible solution to increase transit education may include developing senior transit ambassador programs that teach seniors how to navigate the bus system. Such programs often utilize volunteers to provide training, help passengers plan trips, and provide assistance to seniors when necessary. Examples of successful ambassador programs include Santa Clara's Senior Transit Ambassador Program and San Mateo County's Senior Mobility Initiative.

A second solution to enhance bus education among aging adults in Santa Cruz County is to ensure that key destinations for the elderly -- such as hospitals, recreation sites, dining centers, and shopping locations -- contain current bus service and route information. As noted in the data analysis, printed maps and schedules are the most widely used method of obtaining information for older adults in Santa Cruz County at 38.9 percent. Additionally, because Scotts Valley and Watsonville respondents identified not knowing where to find a bus stop as major issue and showed high levels of unfamiliarity with bus services, immediate updates and improvements should be directed towards these areas.

Explore Driver Safety Programs

According to the data, the majority of respondents drive themselves as a primary form of transportation. Among these respondents, a vast majority reported that little could be done to increase or encourage bus use. Since a number of respondents rely on driving as their means of transportation, finding ways to keep Santa Cruz County older adults driving safely may be one option for meeting their mobility needs. Potential solutions to improve the safety among aging

drivers may include driver safety programs such as AAA's Roadwise Review, AARP's Driver Safety Program, and confidential driver assessment programs. In addition, these driver safety programs could provide mobility training and information as a way to transition seniors to transit mobility alternatives.

Support Age Friendly Housing Within Walking Distance to City Centers and Transit Facilities

As noted in the preliminary research, low density land use patterns and trends surrounding suburban migration have vastly contributed to a reliance on the automobile. Once more, these land use patterns often exacerbate mobility issues for aging adults who can no longer drive. As the region continues to see a growth in the population of older adults, Santa Cruz County will likely experience an increase in older drivers and a greater demand for public transit. However, despite various transportation options, a portion of aging adults will inevitably face difficulties meeting their transportation needs. Therefore, supporting age friendly housing within walking distance to amenities as well as transit facilities has the potential to reduce auto dependence among aging adults and promote greater use of public transit.

4.2.2 Areas for Future Research

Data gathered for this study indicates that buses running more frequently, buses that stop closer to home, amenities, or recreation, and buses that go more places could potentially increase bus use among aging and disabled adults in Santa Cruz County. These findings are significant as they may imply current bus service is not meeting the needs of older adults. However, because the majority of respondents reported rarely using the bus, it is difficult to discern whether or not these findings are grounded. Therefore, future research should further explore the travel patterns and needs of older adults living in Santa Cruz County and assess whether current bus service and routes are meeting those needs.

Additionally, the results of this study indicate that distance to a bus stop, knowing where to find a bus stop, and problems with sidewalks are issues affecting bus

use, especially in the cities of Watsonville and Scotts Valley. Since accessibility and the ability to walk to a bus stop are often cited as variables affecting bus use, a future study should be conducted to identify *specific* pedestrian related projects and access issues. Once more, because the results suggest that bus varies by survey site, further research should consider evaluating more locations and areas highly populated by older individuals.

References

- Association of Monterey Bay Area Governments, 2011. *Envisioning the Monterey Bay Area: A Blueprint for Sustainable Growth and Smart Infrastructure*.
- Grayson, Vincent K., and Victoria A. Velkoff. *The Older Population in the United States: 2010 – 2050*. 2008. U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau.
- Freund, Katherine and Jackie Vine. "Aging, mobility, and the model T: Approaches to smart community transportation." *Generations* 34, no. 3 (2010): 76-81.
- Kim, Sungyop. "Assessing Mobility in an Aging Society: Personal and Built Environment Factors Associated with Older People's Subjective Transportation Deficiency in the US." *Transportation Research Part F: Traffic Psychology and Behaviour* 14, no. 5 (2011): 422-429.
- Kim, Sungyop. "Transportation Alternatives of the Elderly After Driving Cessation." *Transportation Research Record: Journal of Transportation Research Board* 2265 (2011): 170-176.
- Marottoli, Richard A. and Joseph F. Coughlin. "Walking the tightrope: Developing a systems approach to balance safety and mobility for an aging society." *Journal of Aging & Social Policy* 23, no. 4 (2011): 372-383.
- Peck, Michael. "Barriers to Using Fixed-Route Public Transit for Older Adults." *Green House Gas Emission Impacts of Car Sharing in North America No. CA-MTI-10-2402* (2010): 1-235.
- Rosenbloom, Sandra. "Meeting transportation needs in an aging-friendly community." *Generations* 33, no. 2: 33-43 (2009): 33-43.
- Rosenbloom, Sandra. "The Mobility Needs of Older Americans: Implications for transportation Reauthorization." *The Brookings Institution Series on Transportation Reform* (2003): 1-19.
- Shaheen, Susan A., Denise Allen, and Judy Liu. "Public Transit Training: A Mechanism to Increase Ridership Among Older Adults." *2009 Transportation Research Board Annual Meeting*, (2008): 1-15.
- Schmöcker, Jan-Dirk, Mohammed A. Quddus, Robert B. Noland, and Michael G. H. Bell. "Mode Choice of Older and Disabled People: A Case Study of Shopping Trips in London." *Journal of Transport Geography* 16, no. 4 (2008): 257-67.

Appendix A

Defining the Problem

According to the U.S. Census Bureau, by 2030 nearly one in five residents living in the United States will be age 65 and older.¹⁰ Moreover, the number of Americans age 65 and older is projected to reach 88.5 million people by 2050, which is more than double the 2010 population of roughly 40.2 million.¹¹ As a result of this population growth, the United States could face a serious challenge meeting the transportation needs of older adults. With a preference for automobile use and suburban living, older adults unable to drive may face severe mobility deficiencies. Thus, as the population of older adults continues to grow planners and policy makers will not only need to provide age friendly and accessible alternatives to the personal automobile, but also promote the use of public transit as a viable solution to transportation deficiencies.

In their report on public transit use among older adults, Shaheen et al note that automobiles have become an essential component in the lives of older Americans.¹² However aging is often linked to a higher risk of physical and cognitive deterioration, which can eventually lead to driving cessation.¹³ Moreover, it has been reported that the mobility of older adults often declines when driving is reduced.¹⁴ Therefore, as older and disabled adults forego automobile use, it is likely a large portion of this cohort will face difficulties meeting their transportation needs.

According to Sandra Rosenbloom, many analysts often assume that older adults unable to drive will come to rely on public transit and special demand responsive

¹⁰ Vincent K. Grayson and Victoria A. Velkoff, "The Older Population in the United States: 2010 – 2050," *U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau.* (2008): 1

¹¹ Ibid.

¹² Susan A. Shaheen, Denise Allen, and Judy Liu, "Public Transit Training: A Mechanism to Increase Ridership Among Older Adults" 2009 Transportation Research Board Annual Meeting (2008): 1-15

¹³ Sungyop Kim, "Transportation Alternatives of the Elderly After Driving Cessation". *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

¹⁴ Ibid.

Appendix A

services to meet their mobility needs.¹⁵ Unfortunately, there is little evidence to support these assumptions. It has been reported that older adults are unlikely to suddenly begin use of alternative transportation upon retirement.¹⁶ Once more, demographic research has demonstrated that the elderly often “age in place” or continue to live in suburban areas poorly served by public transit. Due to a lack of transportation options, suburban areas have been shown to increase the isolation or mobility deficiencies of older adults.¹⁷ With a high likelihood of retiring in suburban areas and low likelihood of public transit use, aging and disabled adults unable to drive may experience challenges maintaining mobile independence. In order to address the transportation needs of this aging population and subsequently utilize public transit as a solution, one must first understand the travel patterns and transportation barriers of older adults.

Mobility Needs, Travel Patterns, and Mode Choice

In their report on travel patterns of the elderly, Giuliano et al note that “mobility contributes to well being by allowing people to meet their own needs” and that “transportation enables people to maintain their needs for daily life maintenance and social contact.”¹⁸ According to this statement, mobility and transportation are essential factors in determining quality of life (regardless of age) by providing individuals access to goods and services necessary to lead a healthy and happy lifestyle. Although the elderly are at a higher risk for mobility deficiency, they may actually have greater mobility needs than younger populations. However, defining the specific transportation needs of an aging population is a difficult and convoluted task. Research has shown that there are a number of factors that influence the mobility and travel patterns of older adults such as health, age, income, education, race, gender, and the built environment. Moreover, these

¹⁵ Sandra Rosenbloom, “Meeting transportation needs in an aging-friendly community,” *Generations* 33, no. 2 (2009): 33-43

¹⁶ Sandra Rosenbloom, “The Mobility Needs of Older Americans: Implications for transportation Reauthorization,” *The Brookings Institution Series on Transportation Reform* (2003): 1-19

¹⁷ Genevieve Giuliano et al, “Travel Patterns of the Elderly: The Role of Land-use,” *Final Report Metrans Project 00-8* (2003): 1-81

¹⁸ *Ibid.*

Appendix A

variables not only influence the various needs of older individuals but are also factors in determining travel mode choice.

Automobile

A number of research studies have shown that the automobile is the preferred mode choice of older adults as it often provides immediate mobility with fewer barriers. As noted by Rosenbloom, people “age 65 to 84 take roughly 90 percent of all their trips by car, most often as the driver” and that “even those 85 and older take 80 percent of their trips by car, still driving half the time.”¹⁹ Additionally, Kim notes “mobility is positively associated with having a driver’s license and the level of vehicle accessibility.”²⁰ According to this finding, one might infer that access to an automobile is a key element affecting a person’s ability to meet their daily needs.

Nevertheless, evidence suggests that there are differences in automobile use according to location, race, income, and gender. Minorities, women, people living in urban environments, people living alone, and people with lower income are less likely to be licensed.²¹ However, Kim notes that even the unlicensed elderly expect continued use of an automobile by getting rides and carpooling with friends or family.²² These findings are significant as they highlight the various segments of the population that may be at a higher risk for transportation deficiencies. Additionally these findings demonstrate that people who have ceased driving or are unlicensed still readily rely on the automobile for their transportation needs.

Public Transit

¹⁹ Sandra. Rosenbloom, “Meeting transportation needs in an aging-friendly community,” *Generations* 33, no. 2 (2009): 33-43

²⁰ Sungyop Kim, “Transportation Alternatives of the Elderly After Driving Cessation”. *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

²¹ Sandra. Rosenbloom, “Meeting transportation needs in an aging-friendly community,” *Generations* 33, no. 2 (2009): 33-43

²² Sungyop Kim, “Transportation Alternatives of the Elderly After Driving Cessation”. *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

Appendix A

Despite the heavy use of automobiles by older adults, there are still a large number of people who do not have access to a car or are physically incapable of driving. Regardless of the common misbelief that most of these people will use public transit to fulfill their mobility needs, evidence suggests that public transit is highly underused by older adults. According to Rosenbloom, “public transit services as currently funded are not responsive to the needs of most older travelers, particularly those no longer in the work force.”²³ Once more, in their study of increasing transit ridership among older adults, Shaheen et al reported “a number of potential barriers prevent older adults from using public transit such as a lack of door to door services, infrequent schedules, lack of direct routes and stops at certain key destinations, reliability of transit services, and transfers.”²⁴ These concerns are not completely unfounded, as a number of studies have shown that older adults often travel outside peak hours and transit services do not generally serve the destinations in which older adults most frequent.

The built environment has also been cited as a key factor influencing older adult use of public transit. A large portion of older Americans are aging in place in the suburbs where there is often heavy automobile use, a lack of sidewalks, poor connectivity, and low levels of transit service. However, Kim notes that the elderly who have transit stops within a ten-minute walking distance from home are more likely to use public transit.²⁵ These findings are significant, suggesting sidewalk improvements coupled with transit stops targeted towards areas highly populated by older adults may lead to greater use of public transit.

Lastly, a number of studies examining transit use among the elderly and disabled show that there are a number of safety concerns and educational deficiencies in regards to public transit. According to a Mineta Institute study of barriers to fixed route transit, a major concern of older adults was personal safety and challenges

²³ Sandra Rosenbloom, “The Mobility Needs of Older Americans: Implications for transportation Reauthorization,” *The Brookings Institution Series on Transportation Reform* (2003): 1-19

²⁴ Susan A. Shaheen, Denise Allen, and Judy Liu, “Public Transit Training: A Mechanism to Increase Ridership Among Older Adults” 2009 Transportation Research Board Annual Meeting (2008): 1-15

²⁵ Sungyop Kim, “Transportation Alternatives of the Elderly After Driving Cessation”. *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

Appendix A

accessing information regarding service routes.²⁶ Furthermore, the study revealed that older adults often have concerns about finding seats, discourteous and unhelpful bus drivers, and a fear of youthful riders. Additionally, Rosenbloom notes that a large number of people over the age of 65 have probably never used public transit, even when in the workforce.²⁷ These findings are significant as they suggest a large portion of older adults are completely unfamiliar with public transit and may potentially be contributing to safety concerns or abstinence from transit use.

Walking

Walking is often cited as the second most common means of transportation among older adults. Once more, walking plays an important role in elderly mobility as it can provide access to services as well as other forms of transportation. The ability to walk to transit stops or activities can immensely increase the mobility of older adults, especially those living in dense urban developments. However, there are a number of variables that limit walking as a mode of travel for older adults. Since the ability to walk is a factor in the use of alternative transportation, the importance of addressing these issues is critical.

Many studies have reported a number of barriers to the use of pedestrian facilities such as unsafe intersections, stairs, lack of connectivity, uneven pavement, safety, and weather conditions.²⁸ These variables are also often cited as barriers to public transit use among the elderly and disabled, possibly highlighting the importance of walking as feeder mode to public transit. Kim, among other researchers, notes that older adults are more likely to use public transit when it is within a ten-minute walking distance.²⁹ Thus addressing the physical barriers of pedestrian facilities may vastly improve or contribute to the

²⁶ Michael Peck, "Barriers to Using Fixed-Route Public Transit for Older Adults." *Green House Gas Emission Impacts of Car Sharing in North America No. CA-MTI-10-2402* (2010): 1-235.

²⁷ Sandra Rosenbloom, "The Mobility Needs of Older Americans: Implications for transportation Reauthorization," *The Brookings Institution Series on Transportation Reform* (2003): 1-19

²⁸ Susan A. Shaheen, Denise Allen, and Judy Liu, "Public Transit Training: A Mechanism to Increase Ridership Among Older Adults" 2009 Transportation Research Board Annual Meeting (2008): 1-15,

²⁹ Sungyop Kim, "Transportation Alternatives of the Elderly After Driving Cessation". *Transportation Research Record: Journal of Transportation Research Board* no. 2265 (2011): 170-176

Appendix A

use of public transit and other paratransit services. Once more, targeting solutions to these barriers in areas heavily populated by at risk groups, such as elderly women, may vastly enhance mobility.

Appendix B

Section 1: Background Information

Your answers are completely confidential and anonymous.

1. I am: Male Female

2. On my last birthday I turned _____ years old.³⁰
(Fill in number of years)

3. What is the zip code where you live?³¹ _____
(Fill in zip code here.)

4. What is your average monthly household income?³²
 \$500 or less per month \$501 - \$1000 per month \$1001 - \$2000 per month \$2001 - \$4000 per month \$4001 or more per month

5. Do you use any of the following devices to help you manage activities? (Check **all** that apply)³³
 Cane Walker Wheelchair None of the above
 Power Scooter Eyeglasses/ Contacts Hearing Aid Other _____
(Please Specify.)

6. Do you have a valid driver's license? No Yes

7. Do you have access to a personal vehicle? No Yes

Section 2: Transportation

8. What is your primary means of transportation? (Please check **one**.)
 Drive myself Walk Take a taxi Ride Paratransit or Lift Line
 Get a ride with friends or family Bicycle Ride the bus Other _____
(Please Specify.)

³⁰ Michael Peck, "Barriers to Using Fixed-Route Public Transit for Older Adults." *Green House Gas Emission Impacts of Car Sharing in North America No. CA-MTI-10-2402* (2010): 1-235.

³¹ Ibid.

³² Ibid.

³³ Ibid.

Appendix B

9. How many times have you stayed home in the last month when you needed or wanted to go someplace because you **DID NOT** have access to convenient transportation?³⁴
- (Please check **one**.)
- I never stayed home
- only a few times
- about once a week
- many times a week
- almost daily
- not sure/ don't know

Section 3: Public Transit

10. During the past month, how many times have you traveled on the bus?³⁵
- 0 times → **If 0 times, why?**
- 1 or 2 times
- 2 to 10 times
- Several times a week
- Nearly everyday
- Prefer to drive/ ride in a car
- Bus is not available
- Bus is not convenient
- Bus is too expensive
- Other _____

11. What, if anything, would encourage you to use or increase your use of public transit? (Check **all that apply**)

- Buses run more frequently.
- Less Expensive Fares.
- The bus stopped closer to home, amenities, or recreation.
- Travel times were shorter.
- Nothing
- Improved sidewalks, street lights, or benches.
- Buses went to more places.
- Access to training or mentoring programs to learn more about riding a bus.
- Other _____ (Please Specify.)

12. Do any of the following present difficulties in using the bus? (Please check **one** answer for each line.)³⁶

	Yes	No	Don't Know
Knowing where to find bus stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crossing busy streets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problems with sidewalks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus stop is too far away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carrying bags or packages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a cane, walker, or wheelchair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weather is an issue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No resting place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boarding the bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

Appendix B

13. If I relied **only** on the bus, it would be difficult for me to meet the majority of my travel needs.³⁷

- (Please check **one**.)
- | | |
|---|---|
| <input type="checkbox"/> Strongly agree | <input type="checkbox"/> Disagree |
| <input type="checkbox"/> Agree | <input type="checkbox"/> Strongly disagree |
| | <input type="checkbox"/> Not sure/ Don't know |

14. If you wanted to find out about public transit routes and schedules, what would you do? ³⁸

- (Please check **all** that apply.)
- Phone call to the SCMTD/ Metro
 - Internet website
 - Printed maps and schedules
 - Consult a friend
 - Schedule appointment with mobility trainer
 - Other _____
- (Please Specify.)

Section 4: Conclusion

15. Is there anything else you would like to tell us about your view on public transit? Use the space below to write your thoughts and ideas.³⁹

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid.