North Dakota Transportation Survey: Aging and Mobility

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Disclaimer

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ABSTRACT

Mobility is fundamentally important for people to live full and satisfying lives. As people age, however, their mobility may decline. To investigate issues of aging and mobility and other concerns of older adults, the AARP conducted a survey of its North Dakota members. This study analyzes the results from the transportation section of the AARP survey. Specific objectives are to determine how informed and satisfied older adults are with their transportation options, how often they make different types of trips, if they desire more trips, if lack of transportation limits the trips they make, what improvements they would like to see made for them to stay in their neighborhood as they age, and what problems they encounter with using public transportation. The survey shows that most AARP members in North Dakota continue to drive, and they are more satisfied than dissatisfied with their transportation options. Although many still drive, transit is found to be very valuable for certain segments of the population and for certain trips, and an analysis of the data using logit modeling shows that for all types of trips, transportation is more likely to be a limiting factor as age increases. Also significant is the impact that disabilities have on the ability to make trips.

TABLE OF CONTENTS

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LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

Mobility is fundamentally important for people to live full and satisfying lives. As people age, however, their mobility may decline. Their driving abilities may decrease, and they may have greater unmet transportation needs. This may especially be a concern in North Dakota, as the state has an aging population, and many people live in very rural areas. To investigate issues of aging and mobility and other concerns of older adults, the AARP conducted a survey of its North Dakota members. The Small Urban & Rural Transit Center (SURTC) worked with AARP to devise transportation-related questions that are included in this survey, and the AARP shared the survey results from the transportation questions with SURTC.

This study analyzes the results from the transportation section of the AARP survey. The general objective is to analyze the mobility of older adults and to determine if there are unmet needs. Specific objectives are to determine how informed and satisfied older adults are with their transportation options, how often they make different types of trips, if they desire more trips, if lack of transportation limits the trips they make, what improvements they would like to see made for them to stay in their neighborhoods as they age, and what problems they encounter with using public transportation. In addition, this study endeavors to explain how survey responses may vary based on the characteristics of the individual. For example, people in their 80s may respond differently than those in their 50s; women may have different concerns than men; people with disabilities may face different challenges than those without; and rural residents may be concerned with different issues than those in urban areas. This study investigates how different segments of the population respond to the survey questions. A logit model is developed and estimated to determine the significance of the characteristics of the individual. The results from this analysis will show what the greatest transportation issues and needs are for older adults in North Dakota and which segments of the population are more likely to have specific concerns.

The paper is organized as follows. The next section provides a brief overview of the AARP survey, followed by a section describing the demographics of the survey respondents. Section four presents detailed descriptive statistics showing the overall response to the transportation questions and how different segments of the population responded. These segments are based on gender, age, disability, how far the respondents typically travel to their most frequent destinations, the region of the state in which they reside, and whether they live in an urban or rural area. Section five describes the logit model used to analyze the data and results of this analysis. A summary of how transportation concerns differ by population segment is then presented in section six, followed by conclusions in the final section of the paper.

2. BACKGROUND ON AARP SURVEY

The AARP's North Dakota State Office commissioned a survey of its members to explore their views on important topics such as health care, economic security, and transportation. This survey, which was conducted in October and November of 2008, was mailed to 2,000 AARP North Dakota members. A total of 1,042 responses were obtained, yielding a response rate of 52%. A report providing the full results, along with the survey document, was published by the AARP (2009). The survey includes sections on personal concerns, AARP roles and activities in North Dakota, state legislative issues, long-term and in-home care, transportation, consumer protection for cell phones, and general information about the respondents. SURTC worked with the AARP to create the transportation questions and was provided with the data for this section as well as some of the demographic information of the respondents. The transportation section of the survey and the demographic information questions are shown in Appendix A.

3. DEMOGRAPHICS OF SURVEY RESPONDENTS

The demographic characteristics of the survey respondents are shown in Table 3.1. Women were more likely to complete the survey, as 55% of the respondents are female and 45% are male. The age of survey respondents ranges from 50 to 97, with the median age being 66. Twenty-seven percent of respondents are in their 50s, 32% are in their 60s, 25% are in their 70s, and 16% are age 80 or older. Close to half of the respondents are employed, either full time or part time, while 47% are retired.

Table 3.1 Demographics of Survey Respondents

	Number	Percentage
Gender		
Male	454	45%
Female	555	55%
Age		
50-59	262	27%
60-69	318	32%
70-79	249	25%
80+	158	16%
Employment status		
Employed full-time	287	29%
Employed part-time	118	12%
Self-employed full-time	25	3%
Self-employed part-time	43	4%
Retired	464	47%
Not in workforce for other reason	34	3%
Unemployed	10	1%
Income		
Less than $10,000	52	5%
$10,000 - $19,999	135	13%
$20,000 - $34,999	208	20%
$35,000 - $49,999	177	17%
$50,000 - $59,999	104	10%
$60,000 - $74,999	83	8%
$75,000 or more	156	15%
No Answer	135	13%
Disability status		
Physical disability	115	11%
Mental disability	9	1%
Homebound	38	4%
Receiving home care	14	1%
No disability	864	83%

Since disabilities can have a significant impact on mobility, the survey asked respondents to identify their disability status. Eleven percent of the survey respondents identify themselves as having a physical disability, while 1% indicate they have a mental disability, 4% say they are homebound, and 1% say they are receiving homecare. Eighty-three percent indicate they have no disability and are not homebound or receiving homecare.

Geographical comparisons can also be made because the survey asked the respondents to provide their 5-digit zip code and also to indicate how far they live from their most frequent travel destinations (e.g., grocery, pharmacy, neighbor, etc.). Twenty-four percent indicate they travel less than 1 mile to their most frequent destinations, 44% travel 1-5 miles, 11% travel 6-10 miles, 8% travel 11-20 miles, and 13% travel more than 20 miles (Table 3.2). The geographic locations of survey respondents can be categorized by using the first three digits of their zip codes. As shown in Figure 3.1, the first three zip code digits in North Dakota range from 580 to 588, dividing the state into nine geographic areas. The 581 area is strictly limited to Fargo. Table 3.2 shows the number and percentage of respondents from each area. All areas of the state are represented, while more responses were obtained from the state's more populated areas, as would be expected.

Table 3.2 Geographic Characteristics of Survey Respondents

	Number	Percentage
Distance from most frequent travel destinations		
Less than 1 mile	228	24%
1-5 miles	421	44%
6-10 miles	106	11%
11-20 miles	81	8%
More than 20 miles	125	13%
3-digit zip code		
580	111	11%
581	142	14%
582	131	13%
583	65	6%
584	84	8%
585	195	19%
586	78	7%
587	117	11%
588	41	4%
Other or no response	78	7%
Urban vs. rural		
Urban	443	46%
Small cities	130	14%
Rural	388	40%

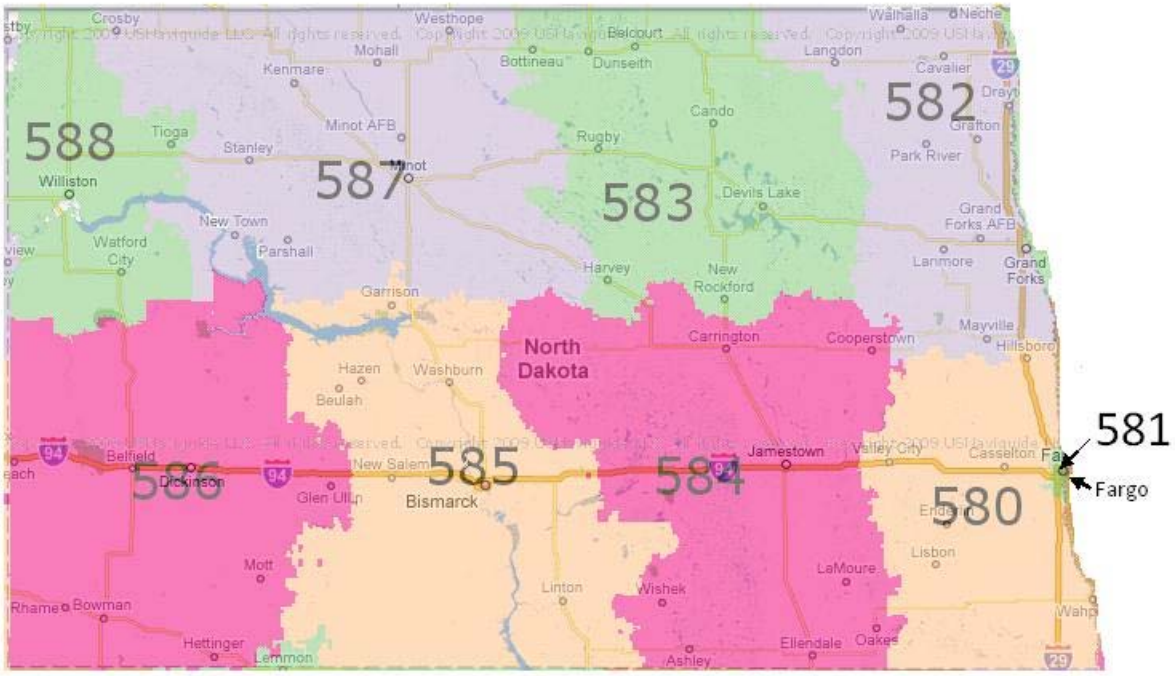

Figure 3.1 Three-digit Zip Code Areas of North Dakota

To compare the responses of those living in urban versus rural areas, the respondents are categorized into one of three groups based on the population of their city or town. The three categories are urban, rural, and an in-between category that will be referred to as "small cities." Individuals with zip codes from any of the four largest metro areas in the state are categorized as urban. This includes those from Fargo, West Fargo, Bismarck, Mandan, Grand Forks, and Minot. Individuals with zip codes from any other town with a population above 5,000 are categorized as small city. This includes those from Dickinson, Jamestown, Williston, Wahpeton, Devils Lake, and Valley City. All others are classified as rural. Forty-six percent of the respondents are from urban areas, 14% are from small cities, and 40% are from rural areas.

4. SURVEY RESULTS

This section presents the survey results for the transportation-related questions, with detailed analysis for different population groups.

4.1 How Informed Are You of Transportation Services in Your Community?

The survey shows there is a wide range in the degree to which individuals are informed of the transportation services in their community. While some claimed to be very informed, nearly as many say they are not very informed, and the most common response is that they are somewhat informed. More specifically, approximately 31% of respondents indicate they are extremely informed or very informed about the transportation services in their community (Table 4.1). Forty-four percent say they are somewhat informed, and quarter of respondents indicate they are not informed. Female respondents are slightly more likely to indicate they are informed of transportation services. Older respondents are also slightly more likely to be more informed. Among those aged 80 or older, 37% are very or extremely informed and 23% are uninformed, while just 28% of those in their 50s are very or extremely informed and 29% are uninformed. Perhaps this could be explained by older adults having a greater need to be informed about transportation services. Awareness among those with physical disabilities tends to be slightly below average. Ten percent of these respondents are not at all informed, and 21% are not very well informed.

Table 4.1 How Informed are You about the Transportation Services in Your Community?

	Not at all informed	Not very informed	Somewhat informed	Very informed	Extremely informed
	----------%----------				
Total	6.8	18.2	44.3	24.1	6.6
Gender					
Male	7.4	19.2	44.9	23.5	5.0
Female	6.5	17.3	43.9	24.4	7.9
Age					
50s	8.6	20.2	42.8	21.0	7.4
60s	5.1	22.2	45.3	21.2	6.1
70s	6.7	13.4	45.8	25.6	8.4
80+	9.0	13.5	40.6	32.3	4.5
Disability/Homebound Status					
Homebound	5.4	27.0	37.8	24.3	5.4
Receiving home care	7.1	21.4	50.0	21.4	0.0
Physical disability	9.8	21.4	37.5	23.2	8.0
Mental disability	0.0	22.2	44.4	22.2	11.1
No disability	6.4	17.5	45.7	23.9	6.4
Geographic Region: 3-Digit Zip Code					
580	6.5	15.0	46.7	22.4	9.3
581	2.8	26.2	46.8	17.7	6.4
582	8.7	23.0	36.5	27.8	4.0
583	4.7	15.6	37.5	32.8	9.4
584	4.9	24.4	42.7	23.2	4.9
585	7.7	13.3	50.8	23.1	5.1
586	5.3	16.0	45.3	22.7	10.7
587	8.9	15.2	45.5	25.0	5.4
588	7.3	17.1	41.5	24.4	9.8
Distance from Most Frequent Destinations					
Less than 1 mile	5.8	15.2	43.3	28.1	7.6
1-5 miles	4.6	17.2	47.8	23.3	7.0
6-10 miles	4.9	27.5	43.1	19.6	4.9
11-20 miles	10.1	20.3	51.9	13.9	3.8
More than 20 miles	16.4	20.5	33.6	23.0	6.6
Urban vs. Rural					
Urban	5.3	18.7	50.2	21.5	4.3
Small Cities	5.6	14.5	44.4	27.4	8.1
Rural	8.2	19.5	38.4	25.5	8.4

There are some geographic differences in awareness. The most informed respondents are in area 583, while the least informed are in 581, 582, and 584. The Fargo area is interesting in that it has the smallest percentage of respondents that indicate they are not at all informed (2.8%), but it also has the highest percentage that say they are not very informed and the lowest percentage answering that they are very or extremely informed. This suggests that residents in the Fargo area have greater knowledge of the existence of transit services than those residents anywhere else in the state, but that they are not well informed of the details of those services. The survey similarly shows that urban residents are least likely to be not at all informed and also least likely to be very or extremely informed. They are most likely to be somewhat informed, with half of respondents answering in this way. Rural residents tend more to the extremes. Respondents from rural areas are most likely to be extremely informed and also most likely to be not informed at all, compared to those from other areas.

When analyzing the results by how far the respondents drive to their most frequent destination, we find that the highest percentage indicating they are very informed are those who drive less than a mile. The level of awareness drops as distance traveled increases, until we get to the longest distance. Those who travel 20 or more miles tend more to the extremes, with 30% being very or extremely informed, and 16% not informed at all, which is considerably higher than how those who travel shorter distances responded.

4.2 In Your View, Whom Do You Think Public Transportation Serves?

One barrier that may prevent some people from using transit is an attitude that it is not for them. They may think that the service is there just to serve certain groups such as the elderly, people with disabilities, or low-income people. The survey shows that a significant majority, 72%, of respondents think that public transportation does serve everyone. The most interesting result from this question is that urban residents are more likely to think that transit is for everyone. Of those from urban areas, 82% answered that they think public transportation serves everyone, compared to 66% of those from rural areas and 68% of those from small cities.

4.3 Do You Believe there are Adequate Transportation Options for People in Your Community?

Respondents are about twice as likely than not to believe there are adequate transportation options for people in their community, but there is still a sizable group that say their transportation options are inadequate and many who were not sure. More specifically, when asked if they believe there are adequate transportation options for people in their community, 47% say yes, 22% answer no, and 31% are not sure (Table 4.2). There is little difference in responses based on gender, though males are more likely to be unsure. Older respondents are more likely to answer yes, as 54% of those 80 or older respond yes and just 43% of those in their 50s think there are adequate transportation options. Those who have disabilities or are homebound are less likely to believe the transportation options are adequate. While 48% of those with no disability indicate that transportation options are adequate, just 37% of people with physical disabilities, 44% of people with mental disabilities, 37% of the homebound, and 14% of those receiving home care believe there are adequate transportation options.

Table 1.2 Do You Believe there are Adequate Transportation Options for People in Your Community?

	Yes	No	Not Sure
	----------%----------		
Total	46.8	21.9	31.3
Gender			
Male	45.6	20.3	34.1
Female	47.5	23.6	28.9
Age			
50s	42.8	29.2	28.0
60s	44.1	24.8	31.2
70s	48.1	15.8	36.1
80+	54.2	15.5	30.3
Disability/Homebound Status			
Homebound	36.8	23.7	39.5
Receiving home care	14.3	35.7	50.0
Physical disability	37.2	28.3	34.5
Mental disability	44.4	55.6	0.0
No disability	47.8	21.3	30.9
Geographic Region: 3-Digit Zip Code			
580	54.5	21.8	23.6
581	52.5	15.1	32.4
582	49.6	20.3	30.1
583	50.8	15.4	33.8
584	41.7	21.4	36.9
585	46.1	19.4	34.6
586	40.8	34.2	25.0
587	45.1	23.9	31.0
588	31.7	36.6	31.7
Distance from Most Frequent Destinations			
Less than 1 mile	52.7	16.5	30.8
1-5 miles	52.0	17.6	30.5
6-10 miles	40.8	28.2	31.1
11-20 miles	35.0	30.0	35.0
More than 20 miles	29.3	34.1	36.6
Urban vs. Rural			
Urban	16.0	32.5	51.5
Small Cities	19.5	26.6	53.9
Rural	28.5	31.2	40.3

Those who live in areas 580, 581, and 583 are more likely to believe there are adequate transportation options. Only 32% of respondents in area 588 answer yes to this question, the lowest of any region by a significant margin. Rural residents are less likely to believe their communities have adequate transportation options. Forty percent of those from rural areas answer yes to this question, compared to 52% of those from urban areas and 54% of those from small cities. Those who travel longer distances are also less likely to believe there are adequate transportation options. The percentage of those responding yes to this question drops sharply from 53% for those who travel a mile or less to 29% for those who travel 20 or more miles.

4.4 How Satisfied are You with the Transportation Options Available in Your Community?

A similar question asked how satisfied the survey respondents are with the transportation options available in their communities, with responses ranging from very satisfied to very dissatisfied. A much greater percentage is found to be satisfied than dissatisfied. The results show that 3% are very dissatisfied, 5% are somewhat dissatisfied, 22% are neither satisfied nor dissatisfied, 21% are somewhat satisfied, 28% are very satisfied, and 21% are not sure (Table 4.3). There are very small differences based on gender, but larger differences based on age. Older respondents tend to be more satisfied with their transportation options. People with physical disabilities tend to be slightly less satisfied.

Table 4.3 How Satisfied are You with the Transportation Options Available in Your Community?

	Not sure	Very dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Very satisfied
	----------	----------	----------	%----------	----------	----------
Total	21	3	5	22	21	28
Gender						
Male	20	4	4	21	25	26
Female	23	2	5	23	17	30
Age						
50s	23	3	6	26	19	23
60s	22	5	6	23	19	25
70s	22	2	2	18	24	31
80+	15	1	3	22	22	38
Disability/Homebound Status						
Homebound	14	5	3	19	32	27
Receiving home care	14	0	7	21	43	14
Physical disability	21	6	3	26	22	22
Mental disability	33	0	0	11	44	11
No disability	22	2	5	23	20	29
Geographic Region: 3-Digit Zip Code						
580	24	1	4	17	20	34
581	19	1	5	26	21	29
582	21	3	3	27	22	24
583	13	3	2	23	26	33
584	23	5	12	20	10	30
585	20	1	1	24	27	27
586	27	5	11	15	19	22
587	25	5	4	22	19	26
588	26	8	3	24	11	29
Distance from Most Frequent Destinations						
Less than 1 mile	20	1	4	16	18	42
1-5 miles	17	2	4	23	26	27
6-10 miles	17	3	4	26	26	24
11-20 miles	32	5	7	32	9	15
More than 20 miles	33	7	7	25	13	14
Urban vs. Rural						
Urban	20	1	4	22	25	29
Small Cities	22	2	8	17	17	33
Rural	23	5	4	25	18	25

Geographically, those in area 583 are the most satisfied, followed by those in areas 585 and 581, and those in areas 586 and 588 are the least satisfied. Those who travel longer distances are less satisfied with their transportation options. Only 27% of those who travel 20 or more miles to their most frequent travel destination are either somewhat or very satisfied, compared to 59% of those who travel a mile or less. Urban residents are also more satisfied with their transportation options, but the distance the respondents travel is more important than whether they live in an urban or rural setting.

4.5 Do You Currently Drive?

Most respondents to the survey, 96%, currently drive (Table 4.4). The survey shows 98.5% of men and 94.5% of women currently drive. The percentage of respondents who drive declines with age, but the rate is still high even amongst the oldest group, as 88% of those 80 or older indicate they currently drive. Those with disabilities are less likely to drive, but there is still a very high percentage, 89%, of people with physical disabilities who drive. Only 56% of those with mental disabilities, 50% of those receiving home care, and 75% of those homebound currently drive, though there is a small sample of people in these groups. There is little geographic difference between those who drive and those who do not. There is no difference between urban and rural areas. Those who travel a mile or less to their most frequent travel destinations are slightly less likely to currently drive. This makes sense as these people may have the option of walking or using transit, or they may have moved to an area where they did not need to drive specifically because they could no longer drive. The magnitude of the difference is small, however.

Table 4.4 Driving Behavior of Survey Respondents

	Do you currently drive?		Do you avoid driving during any of the following times?				
	Yes	No	During the winter	When it is raining	When it is dark outside	Other	I do not avoid driving
	--------%--------		----------%----------				
Total	96	4	14	6	24	6	60
Gender							
Male	98	2	8	3	16	4	67
Female	95	5	17	8	27	7	49
Age							
50s	99	1	8	4	12	6	68
60s	98	2	10	3	20	5	65
70s	97	3	14	6	27	6	52
80+	88	12	24	15	36	5	32
Disability/Homebound Status							
Homebound	76	24	26	16	39	5	24
Receiving home care	50	50	21	14	21	0	29
Physical disability	89	11	29	16	39	10	33
Mental disability	56	44	0	0	0	0	56
No disability	98	2	11	5	20	5	61
Geographic Region: 3-Digit Zip Code							
580	94	6	12	5	22	4	50
581	96	4	11	6	24	4	62
582	96	4	19	7	26	4	56
583	97	3	12	3	28	6	51
584	98	2	12	8	18	10	55
585	98	2	11	7	17	7	64
586	95	5	10	6	24	5	65
587	97	3	21	9	28	7	54
588	100	0	10	5	29	0	46
Distance from Most Frequent Destinations							
Less than 1 mile	96	4	17	8	27	7	49
1-5 miles	97	3	12	4	22	5	60
6-10 miles	97	3	8	4	13	7	65
11-20 miles	96	4	9	6	16	5	68
More than 20 miles	98	2	13	6	22	6	61
Urban vs. Rural							
Urban	97	3	12	6	23	5	60
Small Cities	96	4	9	5	18	7	56
Rural	97	3	16	7	26	6	54

4.6 Do You Avoid Driving under Certain Circumstances?

Some respondents indicate they avoid driving at night or in poor weather. Twenty-four percent say they avoid driving when it is dark outside, 14% avoid driving during the winter, 6% avoid driving when it is raining, and 6% avoid driving under other circumstances, while 60% indicate they do not avoid driving for any of these reasons (Table 4.5). The results differ significantly by gender and age, as women and older respondents are more likely to avoid driving. Approximately one-third of male respondents indicate they avoid driving for one of these reasons, while just over one half of female respondents avoid driving. Two-thirds of respondents age 80 or older avoid driving due to one of more of these conditions, while just under one-third of those in their 50s avoid driving for any of these reasons. People with disabilities are also significantly more likely to avoid driving during certain conditions. Two-thirds of those with a physical disability will avoid driving during one of more of these conditions, compared to 29% of those with no disability.

4.7 Problems Using Public Transportation

The most frequently cited problems respondents have with public transportation is adequate shelter from the weather while waiting and inconvenient schedules (Figure 4.1). The time it takes to use public transportation is also frequently mentioned as a minor problem, though it is not often cited as a major problem. The next greatest problems are being able to get where they need to go, having a place to sit while waiting, and getting information about fares, routes, and schedules.

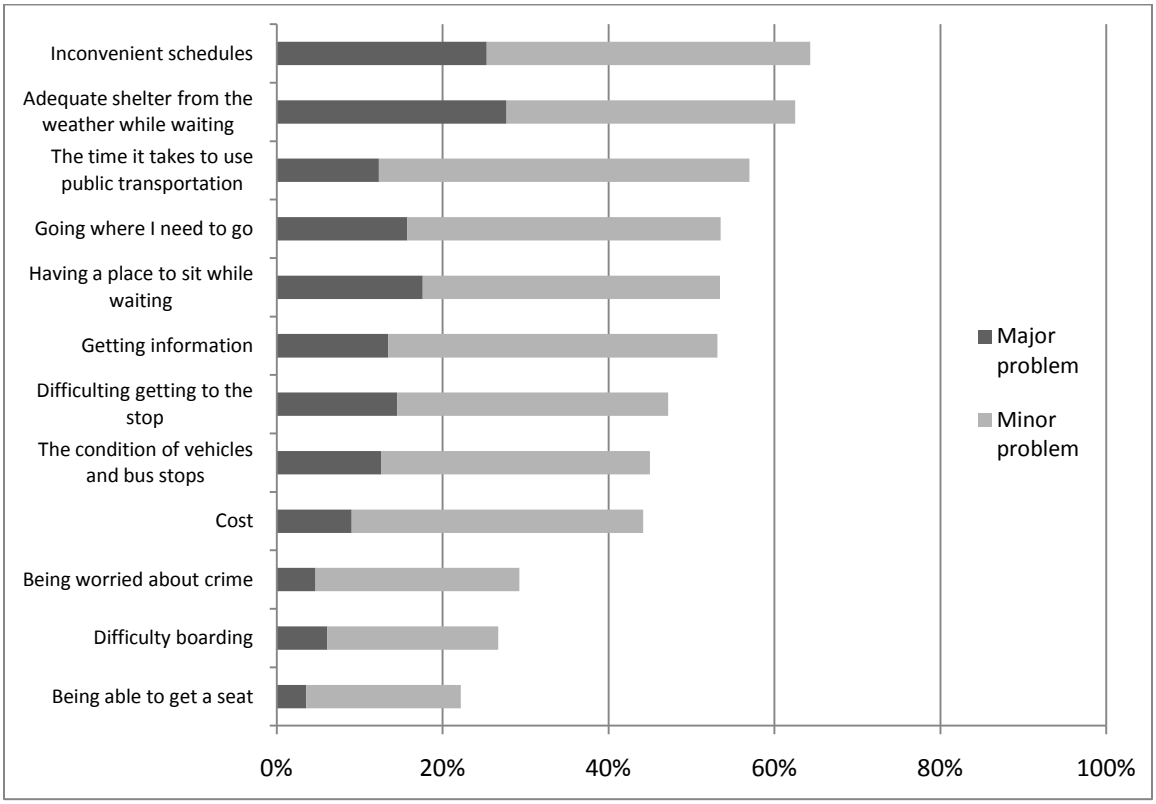

Figure 4.1 Problems Using Public Transportation

In many cases, women tend to be more likely to report a problem, but the differences are small. There are some differences based on age. Older respondents are more likely to have difficulties boarding, more likely to be concerned about finding a seat, more worried about crime, more worried about having a place to sit while waiting, and slightly more likely to have a problem getting information. On the other hand, older respondents are less likely to report a problem with the time it takes to ride public transportation. In other instances, there is little difference in response based on age.

People with disabilities are substantially more likely to report problems with using public transportation (Figure 4.2). Twenty-five percent of people with physical disabilities report that difficulty boarding is a major problem, compared to just 3.5% of those with no disability. Only 35% of those with a physical disability answer that difficulty boarding is no problem. Fifty percent of those with physical disabilities think adequate shelter from the weather while waiting is a major problem, compared to 28% of people with no disability. People with disabilities are also more concerned about cost, travel time, going where they need to go, getting information, and inconvenient schedules. Adequate shelter from the weather while waiting, inconvenient schedules, and having a place to sit while waiting are most often cited as a major problem for people with disabilities. Getting information and going where they need to go are also frequently cited as a major or minor problem. All these issues are frequently cited as either a major or minor problem for people with disabilities. Crime is the only problem not reported by at least half of the respondents with a physical disability.

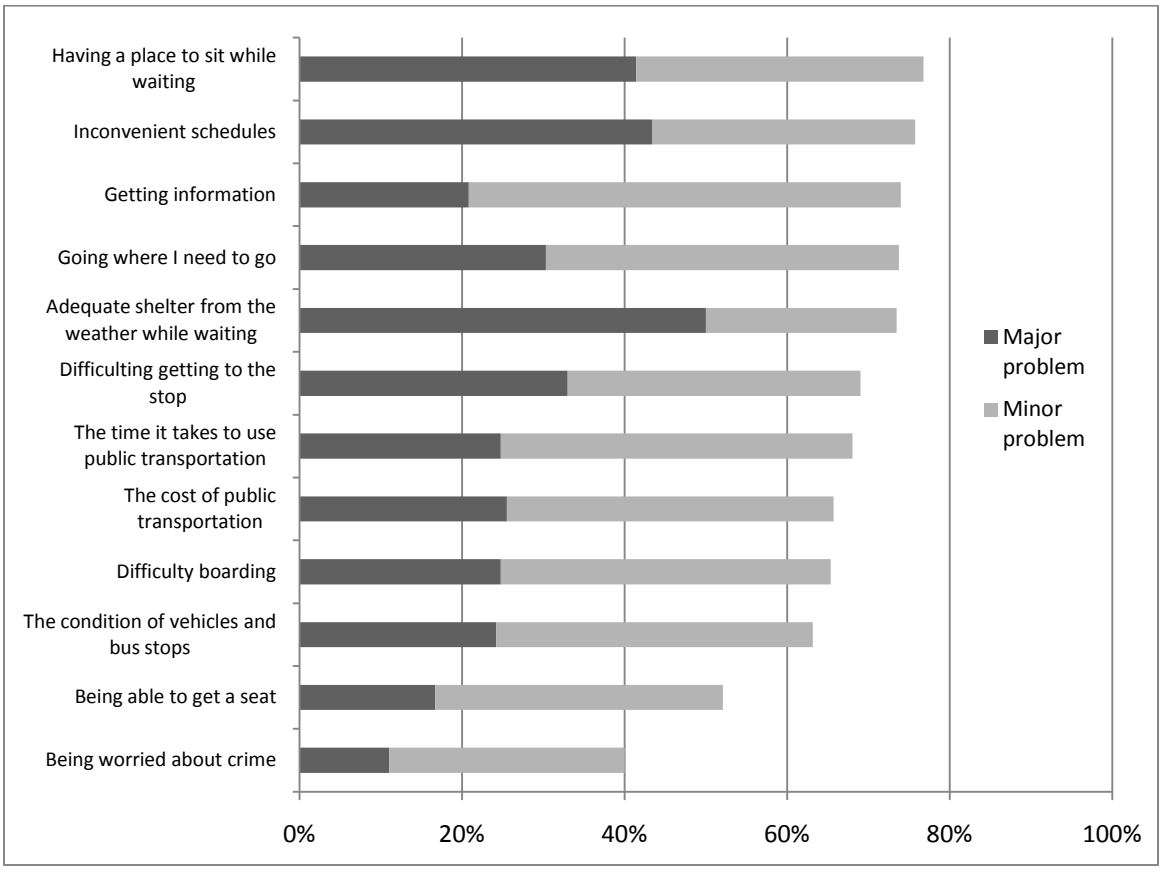

Figure 4.2 Problems Using Public Transportation for People with Disabilities

There are some geographical differences in how respondents reported problems. Overall, those in areas 581, 587, and 580 are more likely to cite a problem, while those in 588 and 584 are less likely. Urban residents are more likely to identify a problem. The deviations between regions and between urban and rural, though, are most often less than 10%. Some of the more notable differences are that having a place to sit while waiting is more of a concern in 587 and less of a concern in 588, going where I need to go is more often a problem (though often a minor problem) in 581 and less of a problem in 588, adequate shelter from the weather while waiting is more of a problem in 581, getting information about fares and inconvenient schedules is less of a concern in 588, inconvenient schedules is also less of a problem in 584 and more of a concern in 587 and 581, and the time it takes to use public transportation is most problematic in 581 and less so in 584 and 588. Urban residents are more likely to be concerned about crime, having a place to sit while waiting, going where I need to go, adequate shelter from the weather while waiting, inconvenient schedules, and travel time. Many of these issues are more pertinent to fixed-route systems than they are for demand response, so it is not surprising that they are more likely to be a problem in urban areas. There are no specific issues identified in the survey that stand out as being a greater problem for rural residents.

4.8 How Often Do You Make a Trip?

One measure of mobility is the frequency with which individuals take different types of trips. The survey asks respondents how often they make a trip for each of the following purposes: medical, pharmacy, social, place of worship, grocery/shopping, eating out, leisure/recreation, volunteering, work, and banking. The results, which are shown in Table 4.5, are interesting but do not provide an obvious answer as to how mobility changes with age. Older adults are found to take more of some trips and fewer of others. They tend to make more medical trips, as do those with disabilities, and more pharmacy trips. This should not be surprising given that demand for these trips likely increases with age. The frequencies of some of the more voluntary trips, on the other hand, decline for the oldest individuals. The number of social trips taken increases for people in their 60s and 70s but then declines somewhat significantly for those over age 80. Eleven percent of those over 80 respond that they never make a social trip, compared to the survey average of 4%. Similarly, the percentage of those who never make leisure or recreation trips increases with age. Trips to places of worship tend to increase with age, but then flatten or decrease slightly after age 80.

Table 4.5 How Often do You Make a Trip?

	Medical					Pharmacy					Social trip					Place of worship				
	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never
	----------%----------					----------%----------					----------%----------					----------%----------				
Total	1	3	6	74	16	1	2	8	73	17	12	31	27	25	4	2	11	59	17	12
Gender																				
Male	1	3	5	75	16	0	1	9	72	18	13	29	27	26	5	2	10	57	18	14
Female	1	4	6	73	16	0	2	8	74	16	11	34	27	24	4	2	11	62	15	10
Age																				
50s	0	5	4	63	29	1	1	7	65	26	9	32	27	27	5	0	7	54	20	19
60s	0	3	4	76	18	0	2	6	77	16	13	33	28	25	1	1	10	58	20	11
70s	1	2	8	81	8	0	1	12	74	12	16	30	24	26	4	5	14	60	13	8
80+	2	4	8	84	3	0	3	9	77	11	8	26	32	22	11	2	12	69	9	7
Disability/Homebound Status																				
Homebound	6	3	12	76	3	3	3	13	71	10	13	9	16	41	22	0	6	45	23	26
Receiving home care	8	8	17	67	0	0	8	8	77	8	0	25	17	50	8	0	0	50	8	42
Physical disability	2	4	8	75	10	0	2	11	70	17	12	24	24	29	10	1	2	52	28	17
Mental disability	0	13	13	63	13	0	0	22	67	11	33	22	22	22	0	0	0	100	0	0
No disability	1	3	5	75	17	1	2	8	73	17	12	33	28	25	3	2	11	60	16	11
Geographic Region: 3-Digit Zip Code																				
580	1	4	9	72	14	1	0	4	83	12	6	31	33	27	4	3	11	60	16	10
581	0	6	4	71	19	0	2	7	73	18	14	38	25	21	2	1	17	46	22	15
582	2	1	5	80	12	1	1	10	75	14	13	36	25	24	2	4	7	67	17	5
583	2	4	4	81	11	2	3	12	70	13	11	26	32	26	5	0	12	62	18	8
584	1	1	7	74	16	0	1	8	82	8	12	29	22	27	10	1	5	64	11	19
585	0	5	6	73	17	1	2	9	70	19	14	28	28	26	3	1	9	61	14	15
586	2	0	8	73	18	1	3	9	60	27	18	25	30	23	4	6	7	67	13	7
587	1	1	5	72	21	0	0	7	68	25	10	39	23	21	7	1	14	52	20	13
588	0	3	6	79	12	0	0	16	79	5	6	31	31	25	8	0	14	54	24	8
Distance from Most Frequent Destinations																				
Less than 1 mile	1	3	3	80	14	1	3	8	74	15	11	25	25	33	8	1	11	59	18	12
1-5 miles	0	4	6	72	18	0	2	8	74	16	16	35	25	21	3	2	10	57	18	13
6-10 miles	1	1	4	73	20	1	1	9	71	18	15	33	23	25	3	2	14	52	21	11
11-20 miles	3	0	8	74	15	1	0	7	79	13	7	41	31	19	3	3	11	69	11	7
More than 20 miles	2	3	9	73	13	1	1	5	69	23	7	23	36	30	4	1	6	61	17	15
Urban vs. Rural																				
Urban	0	4	5	73	18	0	2	7	75	16	16	36	23	21	3	1	14	51	19	14
Small Cities	2	1	8	71	18	1	2	8	78	12	14	32	28	20	6	3	8	62	16	11
Rural	2	2	6	77	13	1	1	10	69	19	7	27	31	29	5	1	8	67	14	10

Table 4.5 (cont.) How Often do You Make a Trip?

	Grocery/Shopping					Eating out					Leisure/Recreation				
	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never
	----------%----------					----------%----------					----------%----------				
Total	2	39	48	10	1	3	21	32	37	7	7	23	26	36	8
Gender															
Male	3	39	45	11	2	5	25	30	34	6	9	25	25	35	7
Female	2	38	49	10	1	1	19	34	40	7	5	22	26	37	10
Age															
50s	1	42	47	10	0	3	19	33	40	5	4	26	30	36	4
60s	2	41	45	11	1	2	23	35	35	5	8	23	29	35	5
70s	3	38	50	7	2	3	22	30	38	7	7	25	20	36	12
80+	4	28	52	12	4	4	23	27	35	11	6	17	23	39	15
Disability/Homebound Status															
Homebound	0	22	50	22	6	3	9	19	41	28	0	12	9	42	36
Receiving home care	0	23	38	31	8	0	8	25	50	17	0	17	17	42	25
Physical disability	5	29	47	17	3	3	12	24	47	15	5	16	17	41	20
Mental disability	11	22	56	11	0	13	25	38	13	13	0	29	14	43	14
No disability	2	40	48	9	1	3	23	33	36	5	7	25	27	35	6
Geographic Region: 3-Digit Zip Code															
580	1	37	47	13	2		25	25	38	9	5	18	25	41	11
581	1	52	35	10	2	5	22	40	29	5	7	32	23	32	7
582	2	48	41	7	1	4	22	33	36	4	6	26	26	33	8
583	2	33	57	3	5	2	21	25	46	7	5	21	25	39	10
584	4	32	47	16	1	1	17	26	47	9	5	16	30	36	12
585	1	41	51	8	0	2	19	36	40	3	6	24	24	38	7
586	4	34	52	10	0	3	22	33	33	8	14	20	21	37	7
587	4	28	55	11	2	3	26	39	25	7	8	23	35	30	5
588	5	26	54	13	3	3	15	23	54	5	5	23	28	38	5
Distance from Most Frequent Destinations															
Less than 1 mile	1	38	50	8	3	0	20	34	37	8	6	24	24	38	8
1-5 miles	2	47	42	8	1	4	25	32	34	5	10	27	24	33	6
6-10 miles	4	36	48	11	0	3	25	27	41	5	6	20	33	35	5
11-20 miles	4	31	51	12	3	4	21	30	40	4	4	21	30	33	12
More than 20 miles	3	21	61	16	0	3	13	32	44	9	2	16	25	47	10
Urban vs. Rural															
Urban	2	46	42	9	1	3	25	37	30	4	8	30	26	31	6
Small Cities	4	38	52	6	1	4	24	34	30	8	12	20	30	32	6
Rural	2	31	53	12	2	2	16	28	47	8	3	17	24	44	11

Table 4.5 (cont.) How Often do You Make a Trip?

	Volunteer					Work					Bank				
	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never	5-7 days per week	2-4 days per week	Once a week	1-2 days per month	Never
	----------%----------					----------%----------					----------%----------				
Total	2	7	10	34	47	41	12	3	7	38	2	7	22	65	5
Gender															
Male	2	6	9	35	48	43	9	3	9	36	1	7	27	61	4
Female	2	8	12	33	45	40	13	3	5	39	1	6	19	68	5
Age															
50s	1	4	7	34	54	77	11	0	1	11	2	10	28	56	4
60s	3	7	8	34	48	41	10	5	7	38	1	6	22	66	5
70s	2	7	17	36	37	12	14	4	11	59	1	4	23	67	5
80+	3	12	12	27	46	1	11	3	15	71	2	3	11	79	6
Disability/Homebound Status															
Homebound	0	0	0	28	72	10	3	0	3	83	3	3	9	72	13
Receiving home care	0	0	0	20	80	22	0	0	0	78	0	0	17	67	17
Physical disability	1	6	9	23	61	17	8	1	7	67	0	6	18	66	10
Mental disability	0	0	14	29	57	14	0	0	29	57	0	0	14	86	0
No disability	2	7	11	35	45	45	12	3	7	33	2	7	23	64	4
Geographic Region: 3-Digit Zip Code															
580	0	8	10	35	46	40	10	3	4	42	1	2	29	64	4
581	2	8	9	47	34	40	15	3	7	35	1	10	21	63	5
582	5	10	10	31	45	35	12	3	14	37	4	4	18	72	2
583	0	2	6	38	55	31	22	4	8	35	0	10	18	60	12
584	1	1	17	30	51	48	5	7	13	27	3	6	25	63	3
585	4	5	9	31	51	46	8	2	4	40	1	6	23	67	3
586	5	8	15	29	44	50	13	4	1	31	3	9	20	64	4
587	3	10	6	28	53	36	12	2	5	44	1	9	28	56	6
588	0	5	19	32	43	36	17	0	14	33	0	9	24	65	3
Distance from Most Frequent Destinations															
Less than 1 mile	2	8	10	32	48	32	9	5	6	49	1	5	22	69	3
1-5 miles	3	9	12	35	41	46	13	2	6	32	2	9	22	61	5
6-10 miles	2	2	11	39	46	45	16	3	11	25	2	7	30	58	3
11-20 miles	1	6	11	39	43	51	9	6	10	24	1	0	24	69	6
More than 20 miles	1	4	7	29	59	33	10	2	6	49	1	3	16	73	7
Urban vs. Rural															
Urban	3	8	10	36	42	43	12	2	6	37	1	8	26	61	3
Small Cities	4	4	13	29	51	48	11	5	5	32	4	7	22	60	7
Rural	1	6	10	33	50	36	12	4	9	39	1	5	19	70	5

Those with physical disabilities, those who travel longer distances, and those living in rural areas also make fewer social trips. Those in the most urban 581 area are least likely to report that they never make a social trip, while those in the rural 584 area are most likely to never make a social trip.

People with physical disabilities are less likely to visit a place of worship regularly. Distance does not appear to impact these trips for up to 20 miles, but those who travel more than 20 miles are less likely to make these trips. There is a higher percentage of those living in urban areas who never make a trip to a place of worship, but there is also a higher percentage of urban residents who make multiple trips per week.

Grocery and shopping trips do not change significantly with age. Those with physical disabilities, again, tend to make fewer trips. Those traveling shorter distances and those living in urban areas tend make more frequent shopping trips. Close to one half of urban residents make multiple shopping trips per week, compared to one third of rural residents. The same is found for eating out. Rural residents, those traveling longer distances, and those with physical disabilities make fewer trips to restaurants. The percentage of those who never eat out increases with age, but the percentage of those eating out multiple times per week also tends to increase slightly. Leisure and recreations trips also tend to decrease with age and are less frequent among people with disabilities, people who travel longer distances, and rural residents. Fifty-four percent of respondents age 80 or older make less than one trip per week for leisure or recreation, compared to 40% of those in their 50s and 60s. A similar disparity is found between urban and rural residents.

Volunteer trips tend to increase somewhat with age. The results show, again, that people with disabilities and those traveling the longest distances tend to make fewer trips. There are slightly more volunteer trips made in urban areas. As would be expected, work trips decline substantially with age. People with disabilities make fewer work trips. The effect of geography on work trips is not obvious from the results shown in Table 4.5. Trips to the bank also tend to decrease with age and disability and somewhat with travel distance.

4.9 Type of Transportation Used

For all types of trips, the most common mode of transportation, by a very large margin, is to drive yourself, with 88%-93% of respondents indicating they most frequently drive themselves (Table 4.6). Much of the remainder say they get a ride with someone else. Public transportation is very rarely listed as the most frequent form of transportation. Medical trips tend to be slightly more dependent on transit use, but even for those trips, the percentage is small. Public transportation is the most frequently used transportation by 1.8% of respondents for medical trips, 0.8% for pharmacy trips, 0.7% for social trips, 0.5% for trips to place of worship, 0.8% for grocery/shopping trips, 0.1% for eating out, and 0.5% for leisure/recreation trips, volunteer trips, work trips, and bank trips.

Table 4.6 Type of Transportation Most Often Used, by Trip Purpose

	Drive yourself	Ride	Walk	Taxi	Public van or bus
	----------%----------				
Medical	90.8	6.7	0.4	0.2	1.8
Pharmacy	93.2	5.3	0.6	0.2	0.8
Social trip	90.7	8.0	0.5	0.1	0.7
Place of worship	88.0	8.5	3.0	0.0	0.5
Grocery/Shopping	92.7	5.5	1.0	0.0	0.8
Eating out	87.9	11.4	0.4	0.1	0.1
Leisure/Recreation	88.9	8.6	1.8	0.2	0.5
Volunteer	93.4	4.3	1.8	0.0	0.5
Work	92.8	3.5	3.2	0.2	0.5
Bank	91.6	5.8	2.1	0.0	0.5

For each of these trips, a lower percentage of women drive (Table 4.7). Women are more likely than men to ride with someone or use public transportation. For example, 2.8% of women respond they most frequently use transit for medical trips, compared to just 0.5% of men. As the age of the respondents increases, the percentage of those who most frequently drive decreases, while the percentages of those who ride with someone or use public transportation increases. The share of those who most frequently drive for medical trips decreases from 97% of people in their 50s to 73% of those 80 or older, while the shares of those who most frequently ride with someone or use transit increase from 2% to 17% and 0.4% to 8.9%, respectively. Similar trends are found for other types of trips. With approximately 9% of respondents age 80 or older most frequently using transit for medical trips, it is shown that while public transportation is not frequently used by a large segment of the population overall, there are certain population groups and certain trips where it is very valuable. People with disabilities and those who are homebound or receiving home care are also much less likely to drive and more likely to use public transportation, especially for medical trips. The percentage of those frequently using transit is higher in urban areas, and those who travel longer distances tend to be more likely to drive and less likely to use transit.

Table 4.7 Percentage of Respondents Who Most Frequently Drive or Use Transit, by Trip Purpose

	Medical		Pharmacy		Social rip		Place of worship		Grocery/shopping		Eating out		Leisure/recreation		Volunteer		Work		Bank	
	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit	Drive yourself	Transit
Total	90.8	1.8	93.2	0.8	90.7	0.7	88.0	0.5	92.7	0.8	87.9	0.1	88.9	0.5	93.4	0.5	92.8	0.5	91.6	0.5
Gender																				
Male	94.1	0.5	96.0	0.0	93.9	0.2	92.1	0.0	95.3	0.0	93.2	0.0	93.8	0.0	95.1	0.0	94.5	0.0	93.5	0.0
Female	87.9	2.8	90.9	1.3	87.8	1.0	84.6	0.8	90.3	1.6	83.4	0.2	84.4	0.9	91.6	0.9	91.5	0.9	90.0	0.9
Age																				
50s	97.1	0.4	97.9	0.0	93.1	0.0	91.6	0.0	96.5	0.4	94.3	0.0	93.2	0.0	95.8	0.0	95.3	0.0	95.2	0.0
60s	92.8	1.1	93.0	0.7	92.0	0.3	87.3	0.0	92.3	0.3	87.6	0.0	88.7	0.0	93.2	0.5	90.9	0.9	91.6	0.4
70s	91.2	0.0	93.9	0.0	90.9	0.0	89.4	0.0	91.9	0.0	84.2	0.0	87.9	0.5	93.0	0.0	93.8	0.8	88.7	0.0
80+	73.4	8.9	82.8	3.4	81.4	4.2	79.7	3.1	85.8	4.7	81.2	0.9	80.6	2.9	84.7	3.4	87.2	0.0	89.0	2.8
Disability/Homebound Status																				
Homebound	67.7	12.9	75.9	6.9	59.3	11.1	77.8	0.0	73.3	10.0	77.8	0.0	76.2	0.0	92.9	0.0	91.7	0.0	81.5	3.7
Receiving home care	36.4	27.3	55.6	33.3	50.0	16.7	60.0	10.0	50.0	25.0	60.0	0.0	55.6	22.2	80.0	0.0	50.0	16.7	40.0	20.0
Physical disability	76.1	7.6	87.8	4.4	80.0	2.2	82.4	1.1	88.2	3.2	77.0	0.0	80.0	2.5	94.3	1.9	89.8	4.1	82.4	2.4
Mental disability	75.0	0.0	75.0	0.0	77.8	0.0	87.5	0.0	77.8	0.0	71.4	0.0	80.0	0.0	75.0	0.0	80.0	0.0	85.7	0.0
No disability	93.0	0.9	94.2	0.4	92.1	0.3	88.7	0.4	93.6	0.4	89.1	0.1	89.8	0.3	93.4	0.3	93.0	0.2	92.9	0.1
Geographic Region: 3-Digit Zip Code																				
580	92.6	1.1	92.6	2.1	89.5	1.1	85.9	0.0	92.9	2.0	88.4	0.0	89.0	0.0	92.5	1.5	97.0	0.0	94.6	0.0
581	92.1	4.7	94.5	2.4	89.0	0.8	90.2	1.6	94.0	2.3	84.8	0.0	89.8	0.8	94.5	0.9	91.4	0.0	91.5	0.8
582	90.0	0.9	93.8	0.0	92.7	0.0	88.3	0.0	94.0	0.0	87.3	0.0	86.9	0.0	91.6	0.0	93.8	0.0	89.9	0.0
583	88.9	0.0	94.5	0.0	88.1	0.0	91.4	0.0	94.9	0.0	84.5	0.0	92.9	0.0	97.4	0.0	90.9	2.3	96.7	1.6
584	90.5	2.7	95.9	0.0	90.4	2.7	95.5	0.0	96.2	0.0	91.5	0.0	91.0	0.0	97.9	0.0	91.5	0.0	93.3	1.3
585	91.8	1.2	92.5	0.0	91.6	0.0	86.5	0.0	93.3	0.0	86.9	0.0	89.4	0.6	96.0	0.0	93.6	0.8	91.2	0.0
586	88.4	1.4	88.1	0.0	93.2	0.0	84.9	0.0	85.1	0.0	91.4	0.0	89.1	0.0	96.0	0.0	92.5	0.0	89.7	0.0
587	89.3	0.0	90.8	1.0	86.5	1.9	83.7	1.9	88.1	1.8	86.3	1.0	83.3	2.0	85.5	0.0	90.3	0.0	89.2	0.0
588	94.4	0.0	91.7	0.0	94.7	0.0	88.6	0.0	94.4	0.0	91.2	0.0	88.6	0.0	93.5	0.0	96.4	0.0	88.9	0.0
Distance from Most Frequent Destinations																				
Less than 1 mile	85.3	3.1	90.2	1.5	86.9	1.5	83.7	1.0	90.7	1.0	86.1	0.5	84.4	1.1	91.6	0.0	89.1	0.0	88.7	1.0
1-5 miles	91.5	1.1	93.4	0.5	90.6	0.8	88.5	0.5	91.9	1.0	86.4	0.0	88.1	0.5	92.5	1.1	92.3	0.7	91.2	0.3
6-10 miles	93.9	1.0	96.9	0.0	89.2	0.0	90.4	0.0	96.1	0.0	90.8	0.0	94.9	0.0	96.1	0.0	95.6	1.1	94.8	0.0
11-20 miles	96.0	0.0	97.2	0.0	96.0	0.0	95.8	0.0	97.3	0.0	94.2	0.0	94.2	0.0	96.6	0.0	98.4	0.0	95.8	0.0
More than 20 miles	94.6	0.0	94.2	0.0	92.9	0.0	89.8	0.0	92.3	0.0	91.0	0.0	90.7	0.0	94.6	0.0	92.3	0.0	93.4	0.0
Urban vs. Rural																				
Urban	91.3	2.1	92.7	1.3	89.6	0.8	88.2	1.1	91.9	1.2	84.9	0.2	88.4	1.0	91.7	0.3	92.3	0.3	91.0	0.3
Small Cities	93.9	1.7	93.9	0.9	93.2	0.8	91.9	0.0	94.3	1.6	93.2	0.0	91.0	0.0	95.5	1.1	94.7	1.1	93.4	1.6
Rural	89.5	0.9	92.6	0.0	90.3	0.6	86.2	0.0	92.6	0.0	88.6	0.0	88.1	0.0	95.5	0.0	92.7	0.0	91.6	0.0

4.10 Desire for More Trips

The frequency with which older adults make trips provides some indication of their mobility, but it is just as important to ask if there are desired trips they are unable to make. The survey finds that to varying degrees, there is a desire for more trips. The greatest desire for more trips is for leisure/recreation and social trips. Approximately 12% desire more leisure/recreation trips, 11% desire more social trips, and 8% desire more trips for eating out (Table 4.8). The desire for more trips increases with age for all types of trips, except for work and volunteering. Even though the number of medical and pharmacy trips is found to increase with age, the desire for more of those trips also increases, indicating that while those trips have increased, they have not increased as much as desired. The results from this question more clearly demonstrate some decline in mobility with age.

Table 4.8 Percentage of Respondents Who Desire More Trips, by Trip Purpose

	Medical	Pharmacy	Social trip	Place of worship	Grocery/ shopping	Eating out	Leisure/ recreation	Volunteer	Work	Bank	Beauty/ barber
Total	4.8	2.7	11.2	7.4	5.1	8.4	12.2	3.3	2.8	3.2	4.1
Gender											
Male	4.9	2.2	10.3	6.8	4.2	8.6	12.7	3.4	2.9	2.5	2.3
Female	4.6	3.2	12.1	8.0	6.0	8.0	12.2	3.4	2.8	4.0	5.5
Age											
50s	4.1	3.3	11.1	7.4	6.1	7.8	15.6	4.6	3.7	2.9	3.7
60s	3.4	2.0	9.5	4.5	3.5	7.8	10.3	3.1	2.8	1.4	2.1
70s	4.2	1.9	12.2	7.8	3.9	6.3	11.8	4.1	3.1	3.5	4.0
80+	10.3	5.5	15.1	13.6	9.1	13.9	12.9	0.0	0.0	7.8	9.6
Disability/Homebound Status											
Homebound	31.0	14.3	27.6	29.6	24.1	19.2	23.1	0.0	3.8	14.3	16.7
Receiving home care	16.7	18.2	41.7	33.3	33.3	27.3	27.3	0.0	0.0	22.2	27.3
Physical disability	12.1	5.2	17.0	12.5	9.5	15.2	18.7	4.6	2.4	3.3	6.5
Mental disability	11.1	11.1	33.3	33.3	37.5	28.6	28.6	12.5	0.0	25.0	37.5
No disability	3.2	2.0	10.0	6.3	3.9	7.3	11.1	3.1	2.9	2.6	3.1
Geographic Region: 3-Digit Zip Code											
580	2.1	2.1	9.5	4.3	5.3	5.3	10.5	5.5	3.4	1.1	4.3
581	3.9	3.1	4.7	4.0	3.1	7.9	8.7	2.5	0.0	1.6	1.7
582	5.4	2.8	12.0	7.3	3.7	7.3	13.9	6.5	1.0	4.7	4.8
583	1.6	1.6	13.3	3.3	1.6	11.3	11.5	1.7	3.4	0.0	4.8
584	8.1	4.1	18.6	8.7	4.2	8.8	17.4	0.0	4.4	4.2	2.7
585	2.8	1.7	12.6	7.0	3.4	9.5	14.2	3.6	1.9	2.9	2.4
586	6.0	1.5	7.7	14.7	9.0	7.4	10.4	4.7	1.6	3.1	4.9
587	9.5	3.3	12.9	9.4	9.3	10.6	12.0	3.4	5.9	5.6	9.2
588	5.4	2.8	11.4	11.1	8.3	8.6	14.3	0.0	6.1	5.6	2.8
Distance from Most Frequent Destinations											
Less than 1 mile	4.4	3.0	9.5	7.4	3.5	7.6	10.1	1.6	2.2	5.5	6.1
1-5 miles	4.9	2.9	11.0	6.9	5.2	8.7	12.0	4.1	2.2	1.9	2.8
6-10 miles	4.1	3.2	14.0	9.6	7.4	10.8	12.9	1.1	3.4	3.3	3.3
11-20 miles	1.4	1.4	6.9	7.0	1.4	4.3	13.0	4.3	0.0	1.4	1.4
More than 20 miles	6.4	2.8	14.7	6.6	5.6	9.3	16.7	4.7	6.6	3.7	2.9
Urban vs. Rural											
Urban	4.3	3.0	9.4	6.4	5.3	8.9	10.0	3.4	2.7	3.4	4.5
Small Cities	4.5	0.9	8.5	9.0	5.4	5.5	11.9	2.8	3.0	1.0	1.8
Rural	5.4	2.4	14.1	7.7	4.3	9.0	15.2	3.8	2.3	3.4	4.4

The results also show the substantial difference in mobility for people with disabilities. The desire for more trips increases significantly among people with disabilities and those who are homebound or receiving home care. Rural residents are more likely to desire additional social and leisure/recreation trips.

People may not be able to take as many trips as desired for a number of reasons. One important reason is the lack of transportation. Of those who desire more trips, a significant portion of them indicate that transportation is a limiting factor, ranging from 8% for volunteer trips to 41% for medical trips. Overall, the percentage of those indicating that transportation is a limiting factor ranges from 1.1% for work trips to 5.5% for social trips (Table 4.9). Transportation is more likely to be a limiting factor for older respondents. Of those 80 or older, 14% indicate that transportation is a limiting factor for medical trips. Transportation is also more likely to be a limiting factor for people with disabilities. The percentage of respondents with a physical disability indicating that transportation is a limiting factor ranges from 2.4% for work trips to 14.9% for social trips, which compares to 0.9% to 3.9% for people with no disability, respectively. The percentages are even higher for those with a mental disability and those homebound or receiving homecare.

Table 4.9 Percentage of Respondents for Whom Transportation is a Limiting Factor, by Trip Purpose

	Medical	Pharmacy	Social trip	Place of worship	Grocery/ shopping	Eating out	Leisure/ recreation	Volunteer	Work	Bank	Beauty/ barber
Total	4.5	2.4	5.5	2.8	2.9	3.0	4.6	1.8	1.1	2.2	2.3
Gender											
Male	3.8	1.5	4.6	3.1	2.6	2.3	3.4	1.6	0.8	1.5	1.3
Female	5.1	3.0	6.3	2.4	3.0	3.7	5.7	2.0	1.4	2.9	3.3
Age											
50s	1.6	1.7	2.9	0.8	1.2	1.2	2.1	1.3	0.8	0.8	1.6
60s	3.2	1.8	4.6	1.8	1.8	3.2	3.9	0.7	0.7	1.4	2.6
70s	3.8	1.9	7.7	4.4	3.4	2.9	6.4	3.5	1.5	2.4	2.5
80+	14.0	5.7	9.5	6.6	7.3	7.8	9.8	3.3	1.2	6.6	3.8
Disability/Homebound Status											
Homebound	26.7	10.7	24.0	23.1	21.4	16.0	24.0	0.0	0.0	7.1	10.3
Receiving home care	21.4	23.1	30.8	16.7	16.7	16.7	16.7	10.0	0.0	18.2	15.4
Physical disability	14.3	8.4	14.9	5.5	6.5	12.2	13.3	3.6	2.4	5.7	7.7
Mental disability	22.2	22.2	44.4	22.2	14.3	14.3	14.3	12.5	12.5	12.5	12.5
No disability	2.8	1.4	3.9	1.8	2.0	1.9	3.5	1.5	0.9	1.6	1.5
Geographic Region: 3-Digit Zip Code											
580	3.2	2.2	4.3	2.2	2.2	1.1	4.3	1.1	1.1	0.0	3.3
581	2.3	1.6	1.6	2.4	1.6	2.4	1.6	0.0	0.0	1.6	1.6
582	7.1	4.6	10.3	4.7	5.6	3.6	6.5	3.8	2.9	5.5	4.7
583	1.6	3.3	3.3	0.0	1.6	3.3	6.6	5.1	1.7	0.0	5.0
584	8.3	5.6	10.0	7.4	4.3	2.9	4.3	3.1	3.0	7.2	2.9
585	1.1	0.6	4.6	0.6	1.2	3.0	4.1	0.0	0.0	0.6	0.6
586	8.8	1.5	10.3	3.1	3.0	3.0	4.5	3.1	0.0	1.6	3.2
587	8.4	2.2	5.4	4.3	6.3	5.4	8.9	3.5	2.4	4.4	2.2
588	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Distance from Most Frequent Destinations											
Less than 1 mile	5.8	3.0	4.0	3.5	3.0	3.5	3.6	1.1	0.6	3.5	3.0
1-5 miles	4.0	2.4	6.5	2.2	2.7	2.7	5.5	3.1	1.4	1.6	1.7
6-10 miles	4.3	2.2	3.3	1.1	2.2	3.3	2.2	0.0	0.0	1.1	1.1
11-20 miles	1.3	0.0	2.6	2.6	0.0	2.7	2.7	0.0	1.3	1.3	2.7
More than 20 miles	5.5	2.8	7.4	2.9	3.7	1.9	5.5	1.0	0.9	1.9	0.0
Urban vs. Rural											
Urban	2.8	1.6	3.9	2.1	2.4	2.6	3.4	1.1	0.8	1.8	2.1
Small Cities	6.4	2.8	5.6	1.9	4.5	2.8	3.7	2.8	0.0	1.0	2.8
Rural	5.8	3.0	7.5	3.7	3.0	3.3	6.0	2.5	1.9	3.3	2.8

Rural residents tend to be more likely to respond that transportation is a limiting factor. For medical trips, 5.8% of rural respondents, 6.4% of small city respondents, and 2.8% of urban respondents indicate that transportation is a limiting factor. For social trips, the percentage of respondents indicating that transportation is limiting increases from 3.9% of urban respondents to 7.5% of rural respondents. This trend holds for most types of trips. A higher percentage of respondents in areas 582 (5.4%), 584 (5.4%), and 587 (4.9%) indicate transportation is a limiting factor, while respondents in areas 588 (0.2%), 581 (1.5%), and 585 (1.5%) are least likely to respond that transportation is a limiting factor. Ten percent of respondents in areas 582, 584, and 586 indicate transportation is a limiting factor for social trips, while 9% of those in 586 and 8% of those in 584 and 587 indicate it is a limiting factor for medical trips.

4.11 What is Important for You to Stay in Your Present Neighborhood as You Age?

While only a small percentage of the survey respondents are frequent users of transit, a large portion of them believe that increased access to public transportation is important as they age. Due to decreases in mobility, it may become difficult for some individuals to stay in their present neighborhoods as they grow older. The survey asks respondents to indicate what improvements would be important for them to be able to stay in their neighborhoods. Specifically, the survey asks the importance of each of the following: improved access to public transportation, improved road and sidewalk conditions for pedestrians, more delivery services (e.g., groceries, prescriptions, etc.), more riding alternatives (e.g., community vans, volunteer drivers, carpooling, etc.), and other.

Improved access to public transportation is identified as the most important among these factors (Figure 4.3). Nearly half of the respondents, or 48%, answered that improved access to public transportation is either extremely or very important, and another 31% say it is somewhat important, which leaves just 20% who think it is not very important, or not important at all. The other potential improvements are also considered to be important. In fact, for each of the four potential improvements listed, more than 70% of the respondents indicate it is at least somewhat important.

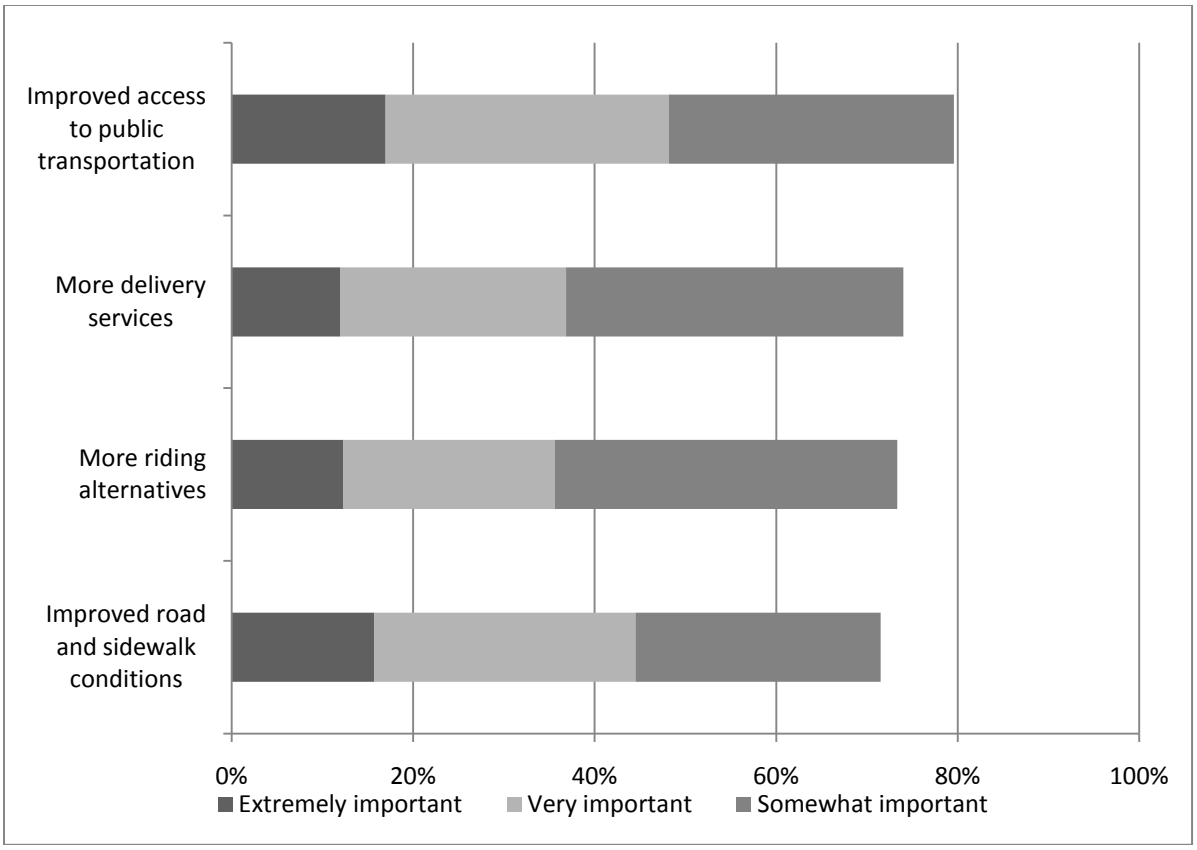

Figure 1.3 Importance of Potential Improvements to Enable Older Adults to Stay in Their Neighborhoods as they Age

5. ANALYZING SURVEY DATA WITH LOGIT MODEL

While the descriptive statistics detailed in the previous section provide some interesting observations, a more in depth statistical analysis can estimate the significance of these relationships. To that end, a logit model is developed and estimated.

5.1 Model

A logit model can be used when the dependent variable is qualitative in nature. Such a model is often used to estimate the relationship between binary or ordinal responses and a set of explanatory variables. The responses to this study's survey questions are qualitative variables with either two possible responses or up to five possible responses along a scale. For example, the response to the question "Do you believe there are adequate transportation options for people in your community?" is either "yes" or "no." To analyze factors that may influence how a respondent answers this question, a binary logit model is developed where the dependent variable is set up as a 0-1 dummy variable, equal to 1 for those answering yes and 0 for those answering no. A number of yes/no survey questions can be analyzed in this manner.

For some questions, however, there are more than two choice categories. For example, there are five possible responses to the question "How informed are you about transportation services in your community?" ranging from "Not at all informed" to "Extremely informed." For a variable such as this, where respondents answer a question along a scale, there is a natural order to the choice categories. Therefore, the variable can be defined such that it equals 1, 2, 3, 4, or 5 if the respondent answers "Not at all informed," "Not very informed," "Somewhat informed," "Very informed," or "Extremely informed," respectively. The ordered logit model is used for this case.

A total of 77 different equations are estimated. Appendix B shows the survey questions that are used as the dependent variable for each equation and how that variable is measured. A binary logit model is estimated for those equations where the dependent variable is binary, and an ordered logit model is used for those with dependent variables that have more than two possible responses and are ordered. The independent, or explanatory, variables, which are the demographic and geographic characteristics of the individual, are the same for each equation. Specifically, the explanatory variables are gender, age, disability, travel distance, geographic area, and whether urban or rural. These variables are detailed in Table 5.1.

Table 5.1 Independent Variables for the Logit Model

Variable	Definition
Female	1 if individual is female, 0 if male
Age	Age of individual
Disability	1 if individual has a physical or mental disability or is homebound or receiving homecare, 0 otherwise
Distance	1-5 scale based on travel distance to most frequent destinations as follows: 1 if less than 1 mile, 2 if 1-5 miles, 3 if 6-10 miles, 4 if 11-20 miles, and 5 if more than 20 miles
Zip580	1 if individual lives in 3-digit zip code 580, 0 otherwise
Zip581	1 if individual lives in 3-digit zip code 581, 0 otherwise
Zip582	1 if individual lives in 3-digit zip code 582, 0 otherwise
Zip583	1 if individual lives in 3-digit zip code 583, 0 otherwise
Zip584	1 if individual lives in 3-digit zip code 584, 0 otherwise
Zip585	1 if individual lives in 3-digit zip code 585, 0 otherwise
Zip586	1 if individual lives in 3-digit zip code 586, 0 otherwise
Zip587	1 if individual lives in 3-digit zip code 587, 0 otherwise
Urban	1 if individual lives in urban area, 0 otherwise
Rural	1 if individual lives in rural area, 0 otherwise

Note: To avoid multicollinearity, dummy variables for male gender, zip code 588, and small cities are not included. These are the references.

The predicted value of the dependent variable in the binary logit model can be interpreted as the probability of the individual answering yes to the survey question given the values of the explanatory variables. Suppose *Y* is the binary response to the survey question, *X* is a vector of explanatory variables, and β' is a vector of parameters associated with *X*, then the logit model states the following:

$$\text{Prob}(Y = 1) = \frac{e^{\beta' X}}{1 + e^{\beta' X}}$$

Suppose p = prob (Y=1|X), then estimated logit model is as follows:

$$logit(p) \equiv \log\left(\frac{p}{1-p}\right) = \alpha + \beta' X$$

where α is the intercept parameter.

The ordered logit model is estimated using a proportional odds model (POM). This is the most popular model for ordinal logistic regression (Gameroff 2005). The POM models several cumulative logits. For example, if the ordinal outcome has four levels (1, 2, 3, and 4), three logits will be estimated, one for each of the following cut points: 1 vs. 2,3,4; 1,2, vs. 3,4; and 1,2,3 vs. 4 (Gameroff 2005). This model assumes the odds of a response below a given response level are constant regardless of which level is chosen. For the POM model to be valid, this assumption must be tested. The standard test is the Score Test for Proportional Odds Assumption. This test was conducted for each of the ordered logit models.

5.2 Results

The results from the models are converted to odds ratios. The odds ratio is a way of comparing whether the probability of an event is the same for two groups of people. The odds of an event happening is equal to the probability of it happening divided by the probability of it not happening. An odds ratio is calculated by dividing the odds in group 1 by the odds in group 2. An odds ratio of 1 indicates the event is equally probable for the two groups, while an odds ratio greater (less) than 1 indicates the event is more (less) likely among the first group.

The odds ratios for the statistically significant variables from the binary logit models are shown in Table 5.2. If the odds ratio is greater than 1 for a group of people (e.g., females, people with disabilities, urban residents, rural residents) it indicates the probability of answering yes to the question is greater. Since age is measured in years and distance by a 1-5 scale, the odds ratio for these variables is the estimated change in the odds of answering yes with a one unit increase in the variable

Many of the equations that estimate who most frequently uses transit could not be estimated, so they are not shown in Table 5.2. There are a very small number of respondents who indicate they most frequently use transit, so the models were difficult to estimate, and the algorithms in all but two cases (medical and social trips) would not converge. The groups of people most likely to use transit are likely to be similar to those that are least likely to drive themselves.

Table 5.2 Estimated Odds Ratios for the Binary Logit Models

	Female	Age	Disability	Distance	Urban	Rural
Believe there are adequate transportation options		1.013*	0.631**	0.797**		0.569**
Transit serves everyone	1.411**				2.560**	
Currently drive	0.227**	0.919**	0.195**			
Avoid driving during						
Winter	3.076**	1.049**	2.936**			
Rain	3.375**	1.076**	2.728**			
Dark out	2.468**	1.055**	2.419**		2.077*	1.733*
Never	0.423**	0.957**	0.445**	1.154**		
Drive yourself most frequently for:						
Medical trips	0.347**	0.931**	0.315**	1.279**		
Pharmacy trips	0.340**	0.953**	0.401**			
Social trips	0.466**	0.977*	0.367**	1.200*		
Place of worship trips	0.520**	0.976**	0.606**	1.290**		0.377**
Grocery/shopping trips	0.415**	0.958**	0.420**		0.315*	
Eating out trips	0.354**	0.961**	0.459**		0.363*	
Leisure/recreation trips	0.350**	0.962**	0.440**	1.255**		
Volunteer trips	0.495**	0.954**				
Work trips	0.593*	0.969*	0.589*			
Bank trips	0.596*	0.975*	0.379**			
Use transit most frequently for:						
Medical trips	8.260**	1.115**	3.759**			
Social trips		1.140**	3.943**			
Desire more:						
Medical trips		1.036*	3.091**			
Pharmacy trips			2.618**			
Social trips			2.039**			
Place of worship trips		1.030**	2.541**			
Grocery/shopping trips		1.033*	3.119**	1.300*		
Eating out trips		1.029**	2.041**			
Leisure/recreation trips			1.738**			
Volunteer trips						
Work trips				1.525**		
Bank trips	2.171*	1.052**	2.285**			
Beauty/barber trips	3.114**	1.047**	3.724**		9.045*	
Transportation is limiting factor for:						
Medical trips		1.072**	3.623**		0.362*	
Pharmacy trips			4.497**			
Social trips		1.042**	3.031**			
Place of worship trips		1.057**	3.771**			
Grocery/shopping trips		1.076**	3.792**			
Eating out trips		1.052**	3.861**			
Leisure/recreation trips		1.053**	2.857**			
Volunteer trips		1.052*				
Work trips						
Bank trips		1.067**	2.873**			
Beauty/barber trips	3.530*		2.965**			

*Notes significance at 10%, ** at 5%.

The results show that gender, age, and disability have significant impacts on travel behavior, beliefs about transportation, and desire for more travel. Geographic characteristics are occasionally significant. Females and people with disabilities are significantly less likely than men or people without disabilities to drive themselves, regardless of the trip type, and are more likely to avoid driving during certain conditions. As age increases, individuals are less likely to drive, more likely to avoid driving during certain conditions, more likely to use transit, more likely to desire more trips, more likely to find transportation a limiting factor, and also, somewhat surprisingly, more likely to believe there are adequate transportation options. People living farther from their travel destinations are less likely to believe there are adequate transportation options, less likely to avoid driving during certain circumstances, often more likely to drive themselves, and more likely to desire more shopping or work trips. People in urban areas and women are more likely to believe that transit serves everyone. These results are discussed in more detail in section 6.

The regional 3-digit zip code variables are largely insignificant, indicating responses do not vary significantly by geographical region, and so those results are not shown here in the interest of space. The few significant results will be discussed in section 6.6.

Using the results from this model, the predicted probability that transportation would be a limiting factor for medical trips is graphed in Figure 5.1. The figure clearly shows that this probability increases with age and is higher for people with disabilities and those in non-urban areas. Given that the probability of having a disability increases with age, the likelihood of transportation being a limiting factor increases with age even more than what the figure depicts. Figure 5.2 shows the predicted probability for transportation being a limiting factor for social trips. In this case, there is no difference between urban and non-urban areas.

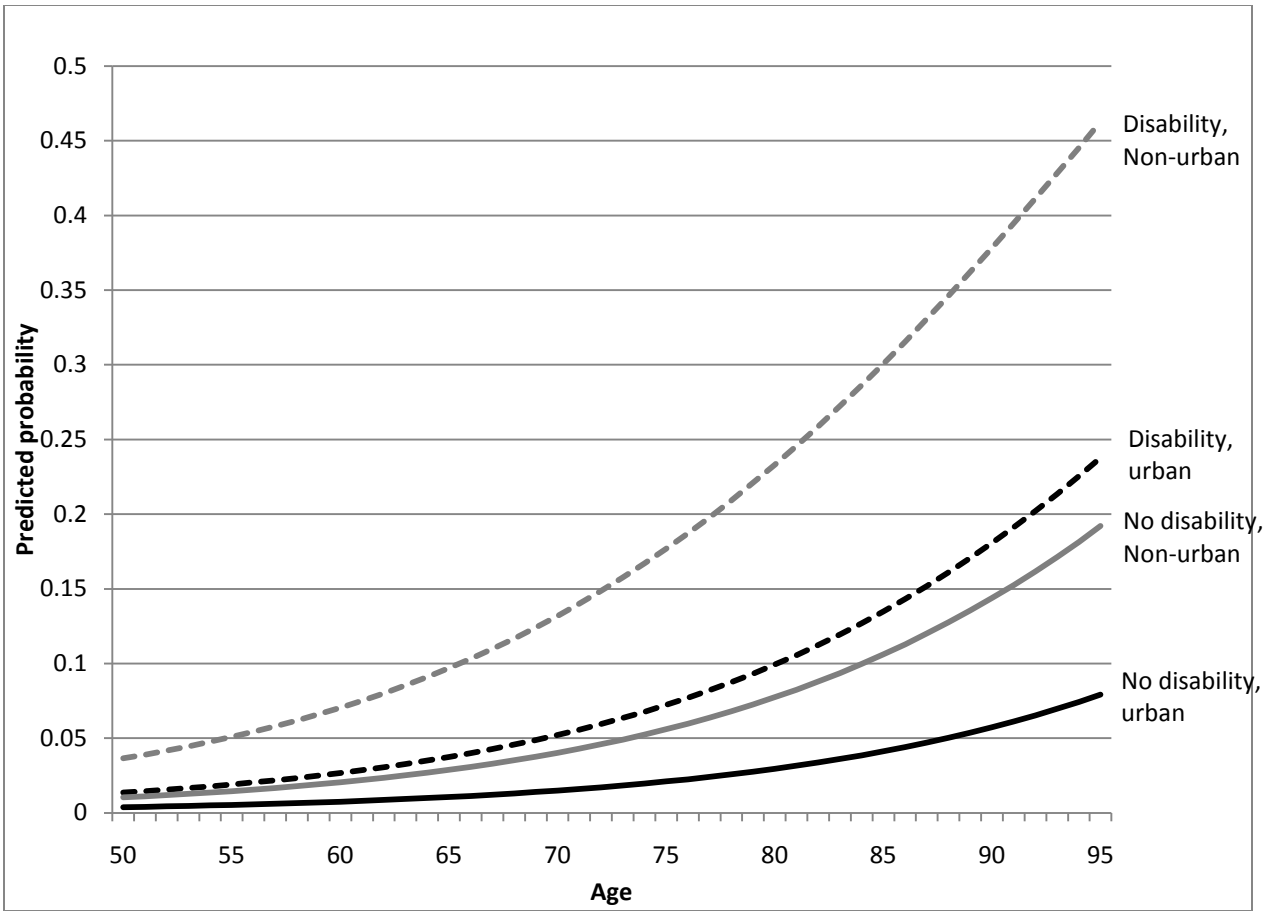

Figure 2.1 Predicted Probability of Transportation being a Limiting Factor for Medical Trips, by Age, Disability, and Geography

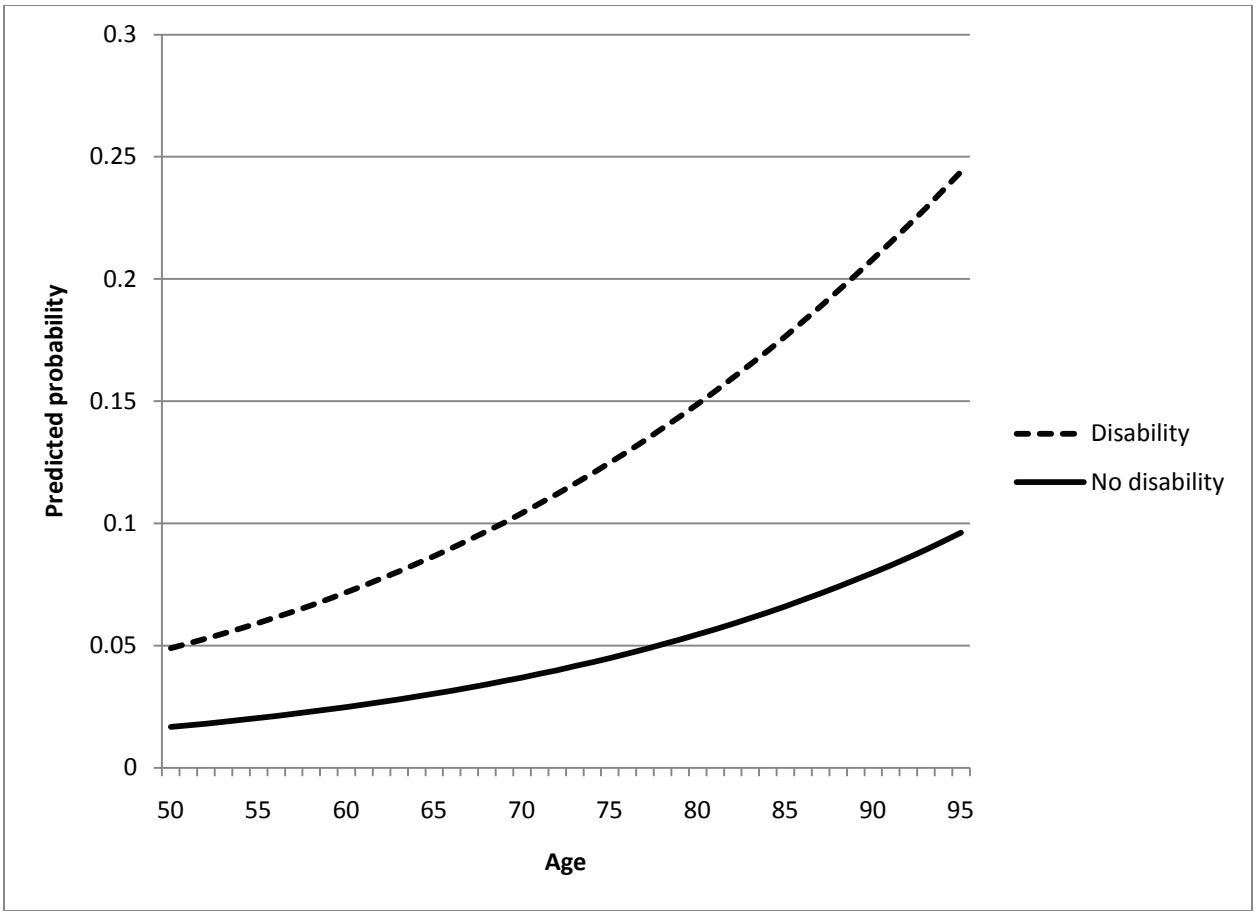

Figure 5.2 Predicted Probability of Transportation being a Limiting Factor for Social Trips, by Age and Disability

The results from the ordered logit model are shown in Table 5.3. Again, the results for the 3-digit zip code areas are not shown in the interest of space, but the few significant results are discussed in section 6.6. The Score Test for Proportional Odds Assumption indicate the proportional odds model is not valid for many of the attempted equations, so they could not be estimated. The results shown in Table 5.3 are for those where the POM is found to be valid, including estimates for trip frequency for some of the trip types and estimates for problems with using public transportation. The impact of disability is significant. Trip frequencies decrease for those with disabilities, while problems with using public transportation increase significantly. In some cases, gender, age, distance, and geographic characteristics also influence trip frequency and problems with transit. These results are discussed in more detail in the following section.

Table 5.3 Estimated Odds Ratios for the Ordered Logit Models

	Female	Age	Disability	Distance	Urban	Rural
Trip frequency						
Pharmacy trips		1.033**		0.907*		
Place of worship trips		1.038**	0.505**			
Eating out trips			0.520**			
Volunteer trips		1.024**	0.523**	0.877**		
Problems with using public transportation						
Difficulty boarding	1.531**	1.030**	4.640**			
Being able to get a seat		1.021**	3.696**			
Being worried about crime	1.414**	1.017**	1.953**		2.284**	
The cost of public transportation			2.736**			0.629*
Going where I need to go			2.196**			
Adequate shelter from the weather while waiting			2.487**		1.954**	
Getting information about fares, routes, and schedules			2.151**			
Inconvenient schedules		0.989*	2.407**		1.429*	
Condition of vehicles and bus stops			2.417**			
The time it takes		0.986**	2.348**			
Difficulty getting to the stop			2.951**		1.802**	

*Notes significance at 10%, ** at 5%.

6. SUMMARIZING IMPACTS OF DEMOGRAPHIC AND GEOGRAPHIC CHARACTERISTICS

6.1 Gender

The survey summary statistics and the results from the logit models show that in some ways there is little or no difference between men and women with regards to their travel behavior and opinions on transportation, but in other areas there is clearly a difference. There is little or no difference between men and women regarding their level of satisfaction with their transportation options, the number of trips they take, or their desire for more trips. On the other hand, although both men and women are most likely to drive, women are less likely than men to drive for all types of trips, more likely to ride with someone else or take transit, and more likely to avoid driving during certain circumstances. The odds of driving yourself for any trip decreases by 40-65% if you are a woman. The odds of taking transit for medical trips also increase substantially for women. Women are also more likely than men to believe that transit is for everyone. In most cases, there is little difference between women and men with regard to problems with using public transportation, with two exceptions: women are more likely to have difficulty boarding and more likely to be worried about crime.

6.2 Age

Age has a significant impact on transportation opinions and mobility. Although many older adults continue to drive, the logit models show that for all types of trips, driving decreases with age. For almost all trip types, the model finds that transportation is more likely to be a limiting factor as age increases. Older adults are more likely to desire more trips, avoid driving during certain conditions, and use transit. Perhaps surprisingly, however, the likelihood that one believes there is adequate transportation options available increases somewhat with age. Older respondents to the survey are also slightly more likely to be informed of their transportation options.

The model shows that older individuals are more likely to have problems boarding, being able to get a seat, and being worried about crime, but they are less likely to be concerned with inconvenient schedules and the time it takes to ride transit. The results also show that the frequencies of some types of trips actually do increase with age, such as pharmacy trips, place of worship trips, and volunteer trips. Older individuals tend to take more of some types of trips and less of others.

The impact of age on mobility is especially important in North Dakota, given the changing demographics of the state. Due to the large baby boom generation (those born between 1946 and 1964), the state's population will age significantly in the coming years. Estimates show that the percentage of the state population age 65 or older will increase from 15% in 2005 to 23% by 2020, which would be nearly 150,000 people (Rathge 2007). Rathge (2007) contends the shift in the state's elderly population will occur rapidly and has the capability to be unanticipated, as previous shifts in the population have been much more gradual.

6.3 Disability

While age and gender tend to have impacts on travel behavior and opinions, having a disability is often the most important individual characteristic influencing travel behavior, mobility, and problems with transportation. The results consistently show that people with disabilities are less likely than others to drive themselves, more likely to avoid driving during certain conditions, more likely to use transit, more likely to desire more trips of nearly all types, more likely to say that transportation is a limiting factor for

their ability to make trips, and more likely to report problems with using public transportation. In many cases, the magnitude of these effects is significant. For each of the potential problems with transit listed in the survey, the logit model shows that people with disabilities are significantly more likely to have a problem, with the odds of such a problem increasing by a factor of 2 to as high as 4.6. The model also shows decreases in trips rates for some types of trips among people with disabilities, and people with disabilities are less likely than others (odds ratio 0.63) of believing there are adequate transportation options available.

An aging population could also mean an increase in the number of people with disabilities, as the two are related. Physical disability is a major adverse health outcome associated with aging (Fried and Guralnik 1997). Although disability is not an inevitable consequence of aging, recent estimates from the Census (Brault 2008) are that 52% of Americans age 65 or older have some level of disability, and 37% have a severe disability. For those aged 80 or older, 71% are found to have some level of disability, and 56% have a severe disability. For comparison, the disability rate for all ages is 19% having some level of disability and 12% having a severe disability. The percentage of respondents that report having a disability in this survey is lower than the nationwide Census estimates, possibly due to respondents having a narrower definition of disability, but the disability rate is found to increase with age. Overall, 17% of respondents (in a survey of people age 50 or older) report either having a physical disability (11%), having a mental disability (1%), being homebound (4%), or receiving homecare (1%). This percentage increases from 12% of those in their 50s to 27% of those aged 80 or older.

6.4 Travel Distance

Travel distance also has some impact on mobility and travel behavior. People who must travel longer distances to their most frequent destinations are less likely than others to believe there are adequate transportation options available, as shown in the logit model. In many cases they are more likely to drive themselves than those traveling shorter distances, possibly due to there being fewer alternative options. In a few instances, the model finds that those traveling farther distances took fewer trips (pharmacy trips and volunteer trips) and desired more trips (grocery/shopping trips, work trips).

6.5 Urban vs. Rural

There are also some differences between urban and rural areas. Rural respondents are found to be less likely to think they have adequate transportation options, and people in urban areas are more likely to believe that transit serves everyone. People in urban areas are more likely to report some types of problems with using public transportation, including being worried about crime, not having adequate shelter from weather while waiting, inconvenient schedules, and difficulty getting to the stop. With regard to trip frequency and desire for more trips, there is little or no difference between urban and rural areas. The survey results suggest, however, that rural residents take fewer and desire more social and leisure/recreation trips. Urban residents are also more likely to use transit.

An aging population may also have greater implications for mobility in rural areas, as the rural population tends to be older. In 2000, 20% of the state's rural county residents were age 65 or older, compared to 13% of those in urban counties (Rathge 2007). As the baby boom population ages, these percentages will increase in both rural and urban areas, but the highest percentages of older adults will continue to be in rural counties, as shown by Rathge (2007). Rathge (2007) suggests that the age differential between urban and rural areas can be explained largely by the age-selective nature of migration. The most mobile residents tend to be young adults, and the percentage of the population of those aged 20-34 in urban counties is nearly twice that of those in rural counties.

6.6 Geographic Region

The results do not tend to vary significantly by region of the state. Travel distance and community size tend to be more important geographic characteristics. There are a few instances, however, where results vary by region. The logit model results show that those living in three-digit zip code areas 584, 586, and 588 are less likely than others to think there are adequate transportation options in their community. The survey also indicates that those in area 583 are the most satisfied with their transportation options.

While the survey indicates that those in area 588 are the least likely to be satisfied with their transportation options, they were also among the least likely to cite a specific problem with public transportation. Overall, those in areas 580, 581, and 587 are more likely to have a problem with transit, according to both the survey data and the logit results. The results from the logit model confirm many of the observations previously made. Those in area 581 are most likely to have a problem with the time transit takes, followed by those in areas 587, 583, and 585. Getting information is more likely to be a problem in areas 580, 581, 586, and 587. Adequate shelter from weather while waiting is of greater concern in area 581, while those in area 580 are more likely than others to have a problem with transit not going where they need to go.

7. CONCLUSIONS

The survey shows that most AARP members in North Dakota continue to drive, even those over age 80, and they are more satisfied than dissatisfied with their transportation options. Public transportation is rarely listed as the most frequent mode of transportation, but for certain segments of the population and for certain trips, transit is very valuable. Furthermore, while only a small percentage of the survey respondents are frequent users of transit, about 80% of respondents say that increased access to transit is either very important or somewhat important as they age. They also consider improved road and sidewalk conditions for pedestrians, more delivery services, and more riding alternatives to be important.

Specific problems with public transportation most often cited include adequate shelter from the weather while waiting and inconvenient schedules. The time it takes to use public transportation is also frequently mentioned as a minor problem, though it is not often cited as a major problem. The next greatest problems were being able to get where they needed to go, having a place to sit while waiting, and getting information about fares, routes, and schedules.

The study shows that age has a significant impact on transportation opinions and mobility. Although many older adults continue to drive, the logit models show that for all types of trips, driving decreases with age, and transportation is more likely to be a limiting factor as age increases. Older adults are more likely to desire more trips, avoid driving during certain conditions, and use transit. These findings are significant given the changing demographics in the state. The aging baby boom generation will lead to substantial increases in the population of older adults.

Also important is the transportation needs of those with disabilities. The results consistently show that people with disabilities are less likely than others to drive themselves, more likely to avoid driving during certain conditions, more likely to use transit, more likely to desire more trips of nearly all types, more likely to say that transportation is a limiting factor for their ability to make trips, and more likely to report problems with using public transportation. In many cases, the magnitude of these effects is significant. An aging population could also mean an increase in the number of people with disabilities.

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APPENDIX A. AARP SURVEY QUESTIONS OF NORTH DAKOTA MEMBERS

Transportation

16. How informed are you about transportation services in your community?

%	
7	Extremely informed
23	Very informed
43	Somewhat informed
18	Not very informed
7	Not at all informed
3	No answer

17. Do you believe there are adequate transportation options for people in your community?

%	
45	Yes
22	No
30	Not sure
3	No answer

18. Do you currently drive?

%	
95	Yes
3	No (*Skip to question 20*)
<1	Not sure (*Skip to question 20*)
1	No answer (*Skip to question 12*)

19. Do you avoid driving during any of the following times? *(Check ALL that apply)N = 992*

%	
13	During the winter
6	When it is raining
23	When it is dark outside
6	Other: _____
61	I do not avoid driving
1	Not sure
8	No answer

20. For each of the following activities, a) indicate how often you make a trip, and b) mark the type of transportation you most frequently use. Each activity must have two responses.

Activity	A. How often Respond for each activity						B. Type of Transportation Respond for each activity					
	5-7 days per week	2-4 days per week	Once a Week	1-2 days per month	Never	No Answer	Drive Yourself	Ride (Family or Friend)	Walk	Taxi	Public Van or Bus	No Answer
	%	%	%	%	%	%	%	%	%	%	%	%
Medical	1	3	5	62	14	16	79	6	<1	<1	1	14
Pharmacy	<1	1	7	64	15	12	80	4	<1	<1	1	14
Social trip	11	28	24	22	4	11	80	7	<1	<1	1	12
Place of worship	2	9	52	15	11	11	75	7	3	--	<1	15
Grocery/ Shopping	2	36	44	9	1	7	84	5	1	--	1	9
Eating out	3	19	30	34	6	9	77	10	<1	<1	<1	13
Leisure/ Recreation	6	21	24	32	7	10	75	7	2	<1	<1	16
Volunteer	2	5	9	29	40	16	59	3	1	--	<1	37
Work	35	9	2	5	39	19	61	2	2	<1	<1	34
Bank	1	6	20	56	4	13	79	5	2	--	<1	14
Other (Specify) _____	1	1	2	3	4	89	16	<1	<1	--	<1	83

21. Now for those same activities, please indicate a) if you desire more trips and b) is transportation a limiting factor in making these desired trips? Each activity must have two responses.

Activity	A. Desire More Trips Respond to each			B. Is Transportation a Limiting Factor? Respond to each		
	Yes	No	No Answer	Yes	No	No Answer
	%	%	%	%	%	%
Medical	4	83	13	4	82	14
Pharmacy	2	83	15	2	82	16
Social trip	9	76	15	4	80	16
Place of worship	6	79	15	2	81	17
Grocery/Shopping	4	81	15	2	82	16
Eating out	7	78	15	2	81	16
Leisure/Recreation	10	74	16	4	80	17
Volunteer	3	79	18	1	80	19
Work	2	78	20	1	79	20
Bank	3	81	17	2	82	16
Beauty/Barber	3	79	17	2	81	18
Other (Specify)_____	1	31	68	<1	34	66

22. Approximately how many miles do you live from your most frequent travel destinations (e.g. grocery, pharmacy, neighbor, etc.)?

%	
22	Less than 1 mile
41	1 – 5 miles
10	6 – 10 miles
8	11 – 20 mile
12	More than 20 miles
1	Not sure
7	No answer

23. How satisfied are you with the transportation options available in your community?

%	
26	Very satisfied
20	Somewhat satisfied
21	Neither satisfied nor dissatisfied
4	Somewhat dissatisfied
3	Very dissatisfied
20	Not sure
6	No answer

24. For you to stay in your present neighborhood as you age, how important is each of the following?

		Extremely Important %	Very Important %	Somewhat Important %	Not Very Important %	Not Important At All %	No Answer %
a.	Improved access to public transportation	16	29	29	13	6	8
b.	Improved road and sidewalk conditions for pedestrians	14	26	25	16	10	10
c.	More delivery services (e.g., groceries, prescriptions, etc.)	11	23	34	16	8	8
d.	More riding alternatives (e.g., community vans, volunteer drivers, carpooling, etc.)	11	21	34	17	7	10
e.	Other (please specify) _____	2	1	2	2	5	87

25. If you use or were to use public transportation, how much of a problem is each of the following?

		Major Problem %	Minor Problem %	Not a Problem %	No Answer %
a.	Difficulty boarding	5	18	65	12
b.	Being able to get to a seat	3	16	68	13
c.	Being worried about crime	4	22	63	11
d.	The cost of public transportation	8	31	50	11
e.	Having a place to sit while waiting	15	32	41	12
f.	Going where I need to go	14	33	41	12
g.	Adequate shelter from the weather while waiting	24	31	33	12
h.	Getting information about fares, routes, and schedules	12	34	41	13
i.	Inconvenient schedules, such as no weekend or evening services	23	34	31	12
j.	The condition of public transportation vehicles and bus stops	11	28	48	13
k.	The time it takes to use public transportation, such as, numerous stops, and transferring	11	39	38	12
l.	Difficulty getting to the stop, such as distance, no or poor sidewalks, high curbs, or roads to cross	13	28	46	13

26. In your view, who do you think public transportation serves? (*Check ALL that apply*)

%	
47	It serves the elderly
45	It serves people with disabilities
41	It serves low-income people
72	It serves everyone in the community
6	No answer

About You

The following questions are for classification purposes only and will be kept entirely confidential.

D1. Are you male or female?

%	
43	Male
54	Female
3	No answer

D2. What is your age as of your last birthday? _____ (in years)

%	
29	50-59
41	60-74
25	75+
5	No answer

D6. Which of the following best describes your current employment status?

%	
30	Employed full-time
11	Employed part-time
3	Self-employed full-time
4	Self employed part-time
42	Retired and not working
3	Not in the workforce for some other reason
1	Unemployed, but looking for work
6	No answer

D8. Which of the following describes you? (*Check ALL that apply*)

%	
4	Homebound
1	Receiving homecare
11	Have a physical disability
1	Have a mentally disability
83	None of the above
3	No answer

D9. What is your 5-digit Zip Code? (WRITE IN YOUR ZIP CODE.) __ __ __ __ __

APPENDIX B. DEPENDENT VARIABLES IN THE LOGIT MODEL

Survey question whose response is used as a dependent variable	Type
How informed are you about transportation services in your community?	Ordered (1-5)
Do you believe there are adequate transportation options for people in your community?	Binary (0-1)
In your view, do you think public transportation serves everyone in the community?	Binary (0-1)
Do you currently drive?	Binary (0-1)
Do you avoid driving during the winter?	Binary (0-1)
Do you avoid driving when it is raining?	Binary (0-1)
Do you avoid driving when it is dark out?	Binary (0-1)
Do you avoid driving during any times?	Binary (0-1)
How often do you make a medical trip?	Ordered (1-5)
How often do you make a pharmacy trip?	Ordered (1-5)
How often do you make a social trip?	Ordered (1-5)
How often do you make a place of worship trip?	Ordered (1-5)
How often do you make a grocery/shopping trip?	Ordered (1-5)
How often do you make a eating out trip?	Ordered (1-5)
How often do you make a leisure/recreation trip?	Ordered (1-5)
How often do you make a volunteer trip?	Ordered (1-5)
How often do you make a work trip?	Ordered (1-5)
How often do you make a bank trip?	Ordered (1-5)
Do you drive yourself most frequently for medical trips?	Binary (0-1)
Do you drive yourself most frequently for pharmacy trips?	Binary (0-1)
Do you drive yourself most frequently for social trips?	Binary (0-1)
Do you drive yourself most frequently for place of worship trips?	Binary (0-1)
Do you drive yourself most frequently for grocery/shopping trips?	Binary (0-1)
Do you drive yourself most frequently for eating out trips?	Binary (0-1)
Do you drive yourself most frequently for leisure/recreation trips?	Binary (0-1)
Do you drive yourself most frequently for volunteer trips?	Binary (0-1)
Do you drive yourself most frequently for work trips?	Binary (0-1)
Do you drive yourself most frequently for bank trips?	Binary (0-1)
Do you use transit most frequently for medical trips?	Binary (0-1)
Do you use transit most frequently for pharmacy trips?	Binary (0-1)
Do you use transit most frequently for social trips?	Binary (0-1)
Do you use transit most frequently for place of worship trips?	Binary (0-1)
Do you use transit most frequently for grocery/shopping trips?	Binary (0-1)
Do you use transit most frequently for eating out trips?	Binary (0-1)
Do you use transit most frequently for leisure/recreation trips?	Binary (0-1)
Do you use transit most frequently for volunteer trips?	Binary (0-1)
Do you use transit most frequently for work trips?	Binary (0-1)
Do you use transit most frequently for bank trips?	Binary (0-1)
Do you desire more medical trips?	Binary (0-1)
Do you desire more pharmacy trips?	Binary (0-1)
Do you desire more social trips?	Binary (0-1)
Do you desire more place of worship trips?	Binary (0-1)
Do you desire more grocery/shopping trips?	Binary (0-1)
Do you desire more eating out trips?	Binary (0-1)
Do you desire more leisure/recreation trips?	Binary (0-1)
Do you desire more volunteer trips?	Binary (0-1)
Do you desire more work trips?	Binary (0-1)

Do you desire more bank trips?	Binary (0-1)
Do you desire more beauty/barber trips?	Binary (0-1)
Is transportation a limiting factor for medical trips?	Binary (0-1)
Is transportation a limiting factor for pharmacy trips?	Binary (0-1)
Is transportation a limiting factor for social trips?	Binary (0-1)
Is transportation a limiting factor for place of worship trips?	Binary (0-1)
Is transportation a limiting factor for grocery/shopping trips?	Binary (0-1)
Is transportation a limiting factor for eating out trips?	Binary (0-1)
Is transportation a limiting factor for leisure/recreation trips?	Binary (0-1)
Is transportation a limiting factor for volunteer trips?	Binary (0-1)
Is transportation a limiting factor for work trips?	Binary (0-1)
Is transportation a limiting factor for bank trips?	Binary (0-1)
Is transportation a limiting factor for beauty/barber trips?	Binary (0-1)
How satisfied are you with the transportation options available in your community?	Ordered (1-5)
For you to stay in your present neighborhood as you age, how important is improved access to public transportation?	Ordered (1-5)
For you to stay in your present neighborhood as you age, how important is improved road and sidewalk conditions for pedestrians?	Ordered (1-5)
For you to stay in your present neighborhood as you age, how important is more delivery services?	Ordered (1-5)
For you to stay in your present neighborhood as you age, how important is more riding alternatives?	Ordered (1-5)
If you use or were to use public transportation, how much of a problem is: Difficulty boarding	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Being able to get a seat	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Being worried about crime	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: The cost of public transportation	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Having a place to sit while waiting	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Going where I need to go	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Adequate shelter from the weather while waiting	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Getting information about fares, routes, and schedules	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Inconvenient schedules, such as no weekend or evening services	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: The condition of public transportation vehicles and bus stops	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: The time it takes to use public transportation, such as numerous stops and transferring	Ordered (1-3)
If you use or were to use public transportation, how much of a problem is: Difficulty getting to the stop, such as distance, no or poor sidewalks, high curbs, or roads to cross	Ordered (1-3)

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