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Assessing and Addressing the Mobility Needs of an Aging Population

A Research Report from the University of California Institute of Transportation Studies

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16. Abstract The mobility needs of an aging population is one of the most substantial challenges facing California in the coming decades. The number of residents age 65 and older is expected to double between 2012 and 2050, and the number age 85 and above is expected to increase by over 70% between 2010 and 2030. Declines in physical function related to age may reduce mobility options dramatically. A survey of 510 residents age 55 and older in Contra Costa County was conducted to determine mobility patterns and limitations related to age and other factors. Results of the survey indicate that a majority of seniors are car dependent. However, some older adults miss important activities due to mobility limitations associated with increasing age, poorer health, living alone, not having a licensed driver in the household, and having a disability. Mobility options are also limited in some geographic areas and demographic groups. Importantly, older adults want to "age in place." Based on these findings and those in related studies, the travel options and the quality of life for older adults, now and in the future, can be greatly enhanced if efforts are made to develop mobility solutions beyond use of private vehicles. The findings support the recommendations of recent regional plans such as the Coordinated Public Transit–Human Services Transportation Plan (2018), adopted by the Metropolitan Transportation Commission (MTC) of the San Francisco Bay Area, which recommends supporting a range of mobility options centered around shared mobility and accessibility for populations at risk for limited mobility.			
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Assessing and Addressing the Mobility Needs of an Aging Population

UNIVERSITY OF CALIFORNIA INSTITUTE OF TRANSPORTATION STUDIES

April 2019

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Executive Summary

The population of older adults age 65 years and over in the United States is expected to nearly double between 2012 and 2050, from 43.1 million to 83.7 million. By 2030, all of the baby boomers will be over age 65. The oldest old population (age 85+) in California is expected to increase by over 70% between 2010 and 2030. Many older adults in California, who have primarily been auto dependent, will reduce their reliance on personal driving. To plan for these mobility changes and to support healthy aging in California, this project sought to understand various dimensions of mobility needs of older adults in California by considering community transportation, neighborhood characteristics, and household transportation.

The specific objectives of the project are to: 1) describe the travel behavior patterns of older adults by participant and community characteristics, and by personal mobility needs and preferences; 2) examine the potential of transportation systems to support mode mix as mobility needs and abilities change; and 3) assess the potential implications of changes in travel behavior. The research team—with combined expertise in public health, policy, city planning, and transportation disciplines—developed a survey that was administered by telephone May-July 2018 in Contra Costa County to residents 55 years of age and older. While seniors are generally considered to be those over the age of 65, survey participants between the ages of 55 and 64 were included to capture the full range of baby boomers, defined by the Census as those born between 1946 and 1964. Contra Costa County was selected, in part, because of the potential for synergy with existing efforts and the potential for stakeholder engagement by the research team based in the Bay Area. A total of 510 surveys were completed, with nearly 21% conducted via cell phone. Participation by age was as follows: 55-<65 (23%), 65-<75 (44%), 75-<85 (26%), and 85+ (7%). A total of 72% of survey participants were Non-Hispanic White and 24% had a graduate degree.

A majority of participants had a valid driver's license, which declined with increasing age. Driving oneself was the most common mode of transport for a wide range of activities (76-92%). However, there was some variation in mode used by trip purpose. For example, 11% of social activity trips tended to be made by walking, and 14% of work trips tended to be made by public transportation. The average number of weekly trips was 9.3 for those living in households with 2+ licensed drivers, 8.0 for those in households with 1 licensed driver, and 4.3 for those in households with no licensed drivers. Among the survey sample, rideshare was not a common way to travel for regular activities but many reported trying this option and usage declined with age: 55-<65 (57%), 65-<75 (48%), 75-<85 (32%), and 85+ (23%).

Among participants, 7% reported missing an important activity during the previous 6 months due to a lack of transportation. Older age, socioeconomic characteristics, household characteristics, and health were significant factors associated with activities of daily living due to transportation barriers. A total of 7% of respondents reported social isolation (contact with others one time per week or less). Self-rated health status was associated with the frequency of social interactions.

Approximately one-quarter of participants responded that they had not thought much about their future mobility, while half responded that they expected to always drive. Most of the survey participants expressed a desire to age in place and cited accessibility to healthcare as an overwhelming leading factor in the importance of their current neighborhood. Familiarity with neighborhood and accessibility to family and friends tended to be more important with increasing age.

The descriptive results of this survey provide information on the following: (i) aging trends and mobility demands; (ii) consequences of limited mobility; (iii) factors needed to maintain current mobility; (iv) improvements needed to enhance mobility; and (v) the potential for emerging mobility options. This generally healthy, educated sample is car dependent and wants to be able to continue to drive. However, there is decreased mobility with age associated with isolation and reduced activities for daily living. Age friendly neighborhoods that consider health care and accessibility are wanted to maintain mobility. Participants also cite improvements to public transportation and paratransit for improving mobility options. Emerging mobility options, such as transportation network companies, may be an option for newer groups of older adults. The general set of findings support the recommendations of recent regional plans such as the Coordinated Public Transit–Human Services Transportation Plan (2018), adopted by the Metropolitan Transportation Commission (MTC) of the San Francisco Bay Area, which recommends supporting a range of mobility options centered around shared mobility and accessibility to populations at risk for limited mobility.

Introduction

A national shift in demographics is underway. The combined trends of aging baby boomers and longer life spans mean that the population of older adults age 65 and over in the United States will nearly double between 2012 and 2050, from 43.1 million to 83.7 million (Centers for Disease Control and Prevention [CDC], 2013; Ortman, Velkoff, & Hogan, 2014). In California, it is estimated that the age 60+ population will grow to 13.9 million by 2050, representing over 25% of the state population. The oldest old population (age 85+) in California is expected to increase by over 70% between 2010 and 2030 (California State Plan on Aging, 2017-2021).

Historically, in California, the older adult population has been a highly automobile dependent, with many living in neighborhoods where accessibility by other modes of transportation is limited (Wachs, 2001). It is expected that older adults will reduce their reliance on personal driving with age and will eventually stop driving for medical and non-medical reasons (Anstey, Windsor, Luszcz, & Andrews, 2006; Brayne et al., 2000; Campbell, Bush, & Hale, 1993; Choi, Mezuk, & Rebok, 2012; Edwards et al., 2008; Foley, Masaki, Ross, & White, 2000; Freeman, Muñoz, Turano, & West, 2005; Freund & Szinovacz, 2002; Gallo, Rebok, & Lesikar, 1999; Gilhotra, Mitchell, Ivers, & Cumming, 2001; R A Marottoli et al., 1993; Molnar et al., 2013; Ragland, Satariano, & MacLeod, 2004). Unfortunately, this presents a number of consequences that can include reduced activity and impacts on well-being (Chihuri et al., 2016; Deka, 2017; R A Marottoli et al., 2000; Richard A. Marottoli et al., 1997; Ragland, Satariano, & MacLeod, 2005). Declines in age-related physical function not only impact driving cessation (MacLeod, Satariano, & Ragland, 2014), but can also reduce one's ability to walk to access goods and services, and can make using public transportation more difficult (Satariano et al., 2016; Schubert, Liebherr, Kersten, & Haas, 2017).

A critical need for the older adult population is the development of programs and policies to support transportation mobility. It is often assumed that older adults will transition to public transportation when they stop driving, however, this may not be true for the current population (Rosenbloom, 2009). New groups of older adults will have transportation mobility preferences that differ from those of previous older population groups (Rosenbloom & Ståhl, 2002). In addition, emerging shared mobility solutions such as ride-, car-, and bicycle-sharing are changing the options for traveling. New mobility patterns may include multiple alternatives or different choices for different activities (Satariano et al., 2012).

To plan for these mobility changes and to support healthy aging in California, this project sought to understand different dimensions of mobility needs of older adults in California by considering community transportation, neighborhood characteristics, and household transportation. The specific objectives of the project are to: 1) describe the travel behavior patterns of older adults by participant and community characteristics, and by personal mobility needs and preferences; 2) examine the potential of transportation systems to support mode mix as mobility needs and abilities change; and 3) assess the potential implications of changes in travel behavior.

Contra Costa County was selected for this pilot project due to growth projections of older adults, sociodemographic and geographic diversity, potential for synergy with existing policy and programming efforts within the county, and potential for stakeholder engagement. The results of this project can help inform policy and programming activities underway within the San Francisco Bay Area related to coordinated public transit, human services and accessible transportation planning (County, 2018; Meuser, Berg-Weger, Chibnall, Harmon, & Stowe, 2013; Metropolitan Transportation Commission, 2018; Contra Costa Transportation Authority, 2017). The results can also complement similar research efforts recently conducted in southern California (Loukaitou-Sideris et al., 2017; Pinski, Wachs, & Loukaitou-Sideris, 2017).

Methods

Survey Development

To better understand the mobility needs of older adults in California, the research team—with combined expertise in public health, policy, city planning, and transportation disciplines—reviewed relevant surveys to prioritize questions that were: 1) important to older adult mobility; 2) had already been vetted; and 3) would enhance understanding of existing efforts. Current survey questions were compiled and/or developed using the dimensions and references shown in Table 1.

Table 1 Survey Dimensions and References for the Contra Costa County Older Adult Mobility Survey 2018

Dimension	Reference
Individual and household characteristics	California Health Interview Survey
Aging in place	AARP Livable Communities Survey, National Aging in Place Council
Mobility status, patterns, and needs	California Household Travel Survey; UCLA older adult survey (Loukaitou-Sideris et al., 2017)
Driving transition readiness	Assessment of Readiness for Mobility Transition (Meuser et al., 2013); UCLA older adult survey (Loukaitou-Sideris et al., 2017); Fitness-to-Drive Screening (FTDS) Measure (http://fitnesstodrive.phhp.ufl.edu/us/questionnaire.php)
Consequences of reduced mobility	California Health Interview Survey; UCLA older adult survey (Loukaitou-Sideris et al., 2017)
Access and comfort with driving alternatives	UCLA older adult survey (Loukaitou-Sideris et al., 2017)
Knowledge of transportation opportunities in one's community	UCLA older adult survey (Loukaitou-Sideris et al., 2017)

In addition, the research team developed new questions along those dimensions based on findings from the literature.

Study Location

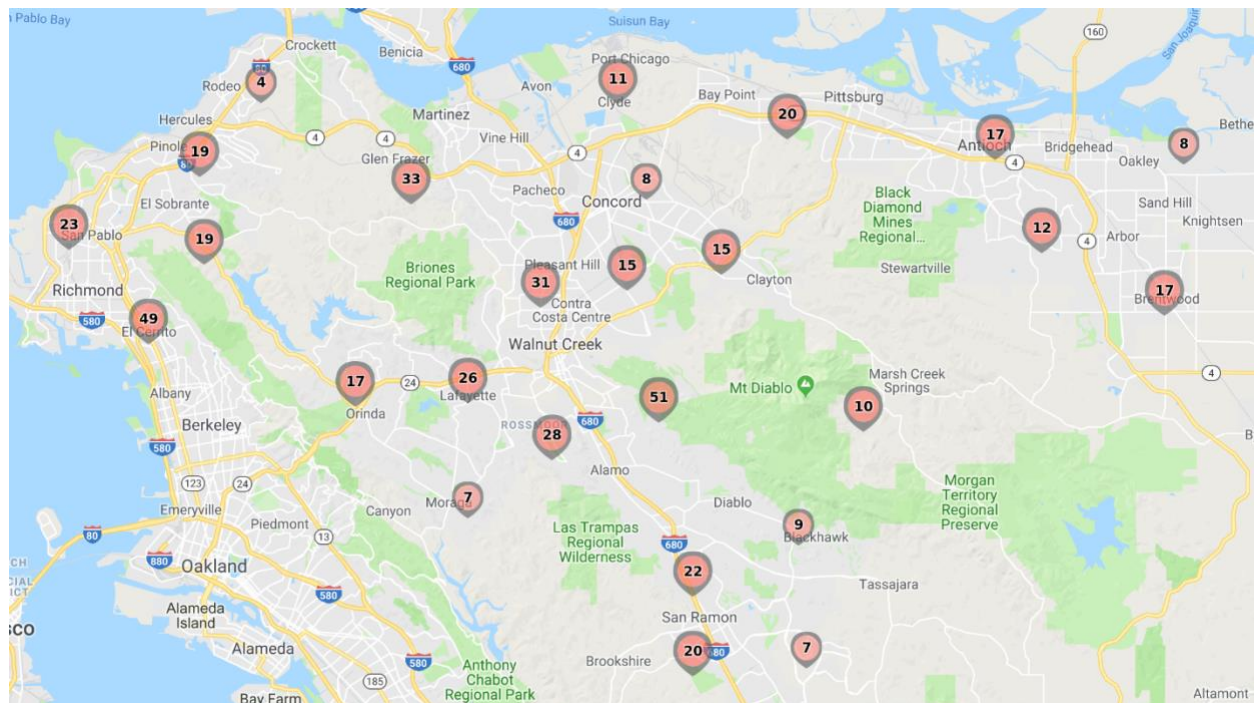
Contra Costa County was selected as the study location due to growth projections of older adults, sociodemographic and geographic diversity, potential for synergy with existing efforts, and potential for stakeholder engagement. A total of 36% of the County is accessible by cell phone only (Ewald and Wasserman, personal communication).

Data Collection Procedures and Sampling Methods

Data were collected using a computer-assisted telephone interviewing system (CATI) between May and July of 2018 with trained bilingual interviewers fluent in both English and Spanish. To qualify for the study, respondents had to be 55 years of age or older and reside in Contra Costa County. While seniors are generally considered to be those over the age of 65, survey participants between the ages of 55 and 64 were included to capture the full range of baby boomers, defined by the Census as those born between 1946 and 1964. The phone survey took approximately 20 minutes and respondents received a \$10 gift card in exchange for their participation.

A total of 510 telephone surveys were completed, of which 20.6% were conducted via cell phone. The majority of surveys were conducted in English (99.4%), while three interviews were conducted in Spanish. Figure 1 shows the cluster distribution of completed surveys within Contra Costa County by geographic area.

Figure 1 Map of Cluster Distribution of Completed Surveys, Contra Costa County Older Adult Mobility Survey 2018



The sample frame was designed for the most representative records, while restricting respondent age and geography within a sample size of 500. The sample used was a combination of random digit dialing sample (RDD), listed household sample and cell phone records. In total, 20,250 records were loaded for the CATI system, of which 16,100 were attempted.

The sample disposition for all records dialed is shown in Table 2. Of all records attempted, 6.0% resulted in completed interviews with eligible respondents, while 47.0% were invalid numbers. A total of 24,623 dialing attempts were made and an average of 48.3 dialing attempts were required to generate one completed survey call.

Table 2 Sample Disposition, Contra Costa County Older Adult Mobility Survey 2018

Response Description	Number	Percent of Valid Sample
Completed survey	510	6.0%
HARD - Refusal at beginning	1431	16.8%
SOFT - Refusal at beginning	175	2.1%
Refusal during interview	19	0.2%
Answering machine no message	5,334	62.5%
Answering machine message left	77	0.9%
Language barrier	29	--
Physically/mentally unable	34	--
Normal busy	43	0.5%
No answer	942	11.0%
Wrong number	43	--
Fax/modem/data line	232	--
Non-working/disconnected number	5,988	--
Not accepting calls at this time	188	--
Business number/no residence	444	--
Does not live in Contra Costa County	135	--
No one in the household is over 55	437	--
Study quota completed	39	-
Total Valid Sample		100.0%
Total attempted	16,100	
Not attempted	4,150	
Total sample	20,250	
Valid sample	8,531	53.0%
Invalid sample	7,569	47.0%

Participant Demographics and Data Weighting

A total of 510 Contra Costa residents age 55 years and over were surveyed, resulting in an overall confidence interval of +/- 4.34, at a confidence level of 95%. Overall, the participation by age and gender are comparable to Census data for Contra Costa County, with a slightly higher number of female respondents in all age groups except for those respondents 85 years of age and over (Table 3).

To adjust for the slight oversampling of female respondents, a set of proportional population weights was calculated, as a fraction of the population percentage based on Census information divided by the respondent percentage based on the survey data using the following formula:

$$W_p = \frac{\text{Percent of Population}}{\text{Percent of Respondents}} = \frac{P_i / P_{total}}{R_i / R_{total}}$$

Table 3 shows the calculated weights per age and gender group applied to the data. In addition to the unweighted counts and the weights, Table 3 also shows the final weighted percentages for male and female respondents by age group, which are closely aligned with the Census data.

Table 3 Gender Distribution by Age Range 55 and Over in Contra Costa County by Census Data, Survey Result Comparison, and Proportional Weight Calculation, Contra Costa County Older Adult Mobility Survey 2018

Age	Census*		Survey		Weights		Weighted Survey	
	Male	Female	Male	Female	Male	Female	Male	Female
55-59 years	48.0%	52.0%	41.7%	58.3%	1.15	0.89	50.0%	50.0%
60-64 years	47.3%	52.7%	40.2%	59.8%	1.18	0.88	47.8%	52.2%
65-69 years	46.5%	53.5%	31.7%	68.3%	1.47	0.78	47.1%	52.9%
70-74 years	46.0%	54.0%	40.2%	59.8%	1.14	0.90	45.9%	54.1%
75-79 years	43.6%	56.4%	36.1%	63.9%	1.21	0.88	43.7%	56.3%
80-84 years	40.1%	59.9%	31.0%	69.0%	1.29	0.87	39.7%	60.3%
85 years and over	34.2%	65.8%	39.5%	60.5%	0.87	1.09	34.2%	65.8%
Total	43.7%	56.3%	36.6%	63.6%			44.8%	55.2%

*Source: Census.gov: Demographic and Housing 2012-2016 American Community Survey 5-Year Estimates

Descriptive Analyses

Weighted summaries were produced using Stata 15 (Stata Corp, College Station, TX) and SAS 9.4 (SAS Institute, Cary, NC). *P*-values were obtained from the Chi-square test for nominal categorical variables or the Mantel Haenszel test for ordinal categorical variables. For many of the survey questions, a small number of participants (<=2%, weighted) did not answer. These may be presented in the summaries but are excluded from tests in which small cell counts would not be valid.

Human Subjects

The study procedures were reviewed by the Office for Protection of Human Subjects at the University of California at Berkeley and were granted an exemption.

Results

Sample Sociodemographic Characteristics

A total of 510 residents age 55 years and over completed the telephone interview. The mean age of survey respondents was 71.3 and the median was 71.0. Table 4 shows summaries of sociodemographic characteristics from the American Community Survey (ACS) for Contra Costa County and from the present survey. The racial/ethnic composition of the survey population age 60+ is fairly similar to 5-year ACS estimates for many groups. White older adults were overrepresented (79.6% vs. an estimated 70.9%) and Asian older adults were underrepresented (6.0% vs. an estimated 15.0%) in this sample compared with the ACS from the Census.

Among the survey sample age 60+, 9.4% of the participants were Hispanic and 56.3% were married. The survey sample is more highly educated (65.6% vs. 39.5% with a bachelor's degree or higher) and more likely to own their home (92.0% vs. 79.6%) compared with the target population. Almost 29% of respondents reported living alone, with differences noted between females and males (33.7% females vs. 22.0% males, not shown).

Table 4 Sociodemographic Characteristics for Contra Costa County Overall, Contra Costa County Age 60+, and the Contra Costa County Older Adult Mobility Survey 2018 Age 60+

Characteristic	Total Population of Contra Costa County (ACS)	Population 60 years and older in Contra Costa County (ACS)	Survey sample age 60 years and older (Weighted)
Race			
White	59.7%	70.9%	79.6%
Black	8.8%	7.8%	7.1%
American Indian and Alaska Native	0.5%	0.5%	2.2%
Asian	15.5%	15.0%	6.0%
Native Hawaiian and other Pacific Islander	0.5%	0.3%	0.2%
Some other race	8.6%	3.3%	2.7%
Two or more races	6.4%	2.2%	2.2%
Ethnicity			
Hispanic or Latino origin	25.1%	11.2%	9.4%
Not Hispanic	74.9%	88.8%	90.6%
Marital Status			
Married	51.7%	59.2%	56.3%
Widowed	5.0%	17.5%	19.7%
Divorced	9.8%	15.5%	12.5%
Separated	2.0%	1.6%	1.0%
Never married	31.4%	6.2%	10.5%

(table continues on next page)

Characteristic	Total Population of Contra Costa County (ACS)	Population 60 years and older in Contra Costa County (ACS)	Survey sample age 60 years and older (Weighted)
Education			
Less than high school	10.9%	10.8%	1.1%
High School graduate, GED, or alternative	18.2%	19.3%	8.2%
Some college or associates degree	30.6%	30.4%	25.1%
Bachelor's degree or higher	40.3%	39.5%	65.6%
Income			
Less than \$10,000	3.9%	3.5%	1.1%
\$10,000 to \$14,999	3.4%	2.8%	1.7%
\$15,000 to \$19,999	3.2%	2.0%	2.3%
\$20,000 to \$29,999	6.4%	4.7%	6.2%
\$30,000 to \$39,999	6.5%	4.7%	7.8%
\$40,000 to \$49,999	6.5%	5.2%	5.7%
\$50,000 to \$59,999	6.5%	5.7%	8.8%
\$60,000 or more	63.6%	71.3%	66.6%
Home ownership			
Own	64.5%	79.6%	92.0%
Rent	35.5%	20.4%	8.0%

NOTE: ACS represents American Community Survey 2012-2016 estimates. These were obtained from the S0102 file where age was already categorized at 60+.

While a majority in the sample had a valid driver's license (not shown; 94.3% of males and 92.9% of females), this declined with age ($p < 0.01$ for trend). A total of 16% of those age 85+ did not have a valid driver's license. Approximately 98% of the overall sample had access to a motor vehicle, and 61% of the sample had two or more licensed drivers in the household, while only 2.6% (n=13) had no licensed drivers in the household.

Mobility Patterns

Participants were asked about common activities in the past week and the mode of transport for these activities (Table 5). Shopping (grocery, 2.2 trips, and other shopping, 1.3 trips) and social activities (1.8 trips) were the most frequent trips per person. The overwhelming majority (75.0 to 89.9%) mode of transportation for these and other trip activities was "drive yourself." However, "others drive you" (distinct from rideshare or taxi), "public transport" and "walking" were well utilized for certain trip purposes (bicycle and rideshare were also used, but at much smaller percentages than the top four mode choices). For example, 11.2% of participants reported walking in the past week to social activities, approximately 6.0% reported walking to cultural and/or volunteer activities, and 8.6% reported walking for self-care or recreational activities. A total of 5.8% reported using public transit for doctor's appointments, 9.0% used it for cultural activities and 13.5% used public transit for work.

Table 5 Past Week Trips per Participant and Mode of Travel, by Trip Purpose, Contra Costa County Older Adult Mobility Survey 2018

Trip Purpose	Mean # trips	Mode of Travel for Activity							
		Drive yourself	Others drive you	Public transport	Walk	Bicycle	Taxi	Ride-share	Special transport
Grocery shopping	2.2	89.9	10.7	1.3	3.8	1.2	0.0	0.6	0.4
Other shopping	1.3	91.6	7.9	1.5	2.3	1.1	0.0	0.4	0.0
Doctor appointments	0.5	82.1	12.4	5.8	1.4	0.0	0.0	1.9	1.6
Pharmacy	0.4	81.0	13.8	0.8	3.2	1.2	0.0	0.0	0.0
Places of worship	0.6	80.1	13.2	0.8	5.5	0.5	0.0	0.0	0.6
Social activities	1.8	83.2	13.8	3.4	11.2	1.0	0.0	0.5	0.0
Cultural activities	0.4	75.6	13.7	9.0	6.0	0.7	0.0	0.6	0.0
Work	0.9	87.1	3.7	13.5	2.5	3.9	0.0	0.0	0.9
Volunteer activities	0.6	86.0	7.3	3.8	6.1	0.6	0.0	0.9	0.6
Self-care or recreational activities	1.1	86.2	6.7	1.5	8.6	1.4	0.0	0.5	0.0

While rideshare was not a frequent mode choice, there was some use reported by respondents for several activities during the previous week, most notably for doctor appointments. Approximately 45% of respondents indicated that they had previously used rideshare services (not shown). Rideshare usage did not vary by gender, but did significantly vary by age ($p < 0.0001$): 57% (age 55-<65), 48% (age 65-<75), 32% (age 75-<85), and 23% (age 85+ report). Of the 55% of respondents who had not used rideshare previously, 67.5% reported that they did not have a need for it or that they still drove. That reason was the most prevalent across all age groups and genders.

A majority of survey respondents (86.8%) have used public transportation (bus and/or BART) in the community. Use of public transportation varied significantly with age (not shown). Of those who had not previously used public transportation (13.2%), the primary reasons given for not using public transportation were “Don’t need to/have other options” (n=42) and “Not convenient” (n=23). Finally, in response to the open-ended question about ways to improve mobility, 166 participants provided comments. Among those participants the suggestions regarding public transportation included: 1) closer stops and added bus lines (20.4%); 2) general lack of public transit (17.2%); 3) better parking at BART (9.7%); 4) cleaner, safer, and extended routes and times for BART (8.6%); 5) reduction of cost of public transit (6.0%); and 6) better communication/information dissemination of public transit services (4.6%).

Special transportation services, such as paratransit and/or non-emergency medical transport, were utilized by approximately 10% of the survey respondents (not shown). Among those in poor health, 34% use paratransit and/or non-emergency medical transport (not shown). For trips within the past week, 1.6% of respondents used special transportation services for

doctor’s appointments (Table 5). The vast majority of respondents who did not utilize these services indicated that they did not need them or had other options (96.5%). This could be related to the general good health of the survey sample, and/or the high level of private vehicle use reported by respondents. Other reasons given by a small sample (6%) of respondents for not using these services were: inconvenient/a hassle to use, a lack of awareness of services, and not knowing how to use the services. However, in response to an open-ended question about improving mobility in the community, 27 respondents suggested better paratransit or personalized transport options.

Analyses of trip frequencies found that those age 80 and over had taken fewer trips in the past week than older adults age 55-79 (see Table 6). Those without a valid driver’s license and those who lived alone also reported fewer trips. The average number of trips in the past week increased as the number of licensed drivers in the household increased.

Table 6 Average Number of Trips in Past Week, by Age and Demographics, Contra Costa County Older Adult Mobility Survey 2018

	N	Average Number of Trips in past week
Age Category		
55 to 59	24	8.7
60 to 64	92	8.7
65 to 69	104	8.8
70 to 74	122	9.2
75 to 79	72	9.4
80 to 84	58	7.6
85 and over	38	7.5
Has a valid driver's license		
Yes	477	8.9
No	33	5.6
Lives Alone		
Yes	148	7.8
No	362	9.1
Number of licensed drivers in household		
0	13	4.3
1	189	8.0
2 or more	306	9.3

Driving Limitations

Respondents who were current drivers were asked if they avoided any of the following driving situations:

- Rush hour/heavy traffic
- Interstate/highway
- Driving in the rain
- Night-time driving
- Left hand turns against traffic

Approximately 81% of the 475 respondents who answered this question reported avoidance of driving in one or more of these situations. A significantly higher percentage of females than males reporting avoidance of driving in one or more of these situations, with the greatest differences between females and males being avoidance of night-time driving, driving in the rain, and highway driving (Table 7). Avoidance of driving situations also varied by age, with respondents in older age groups reporting more avoidance across all of the listed situations (not shown). Finally, respondents who reported using some type of mobility device (cane, walker or wheelchair) also reported avoidance of certain driving situations: rush hour traffic, highway driving, driving in the rain (not shown). A relationship was also observed between avoiding highway driving and self-reported health rating (not shown).

Table 7 Avoidance of Driving Situations by Gender, Contra Costa County Older Adult Mobility Survey 2018 (N=475)

Situation	Male	Female
Rush hour/heavy traffic	72.1%	73.7%
Interstate/highway driving	14.6%	24.9%
Driving in the rain	14.9%	28.3%
Night-time driving	21.7%	44.9%
Left hand turns against traffic	11.7%	17.5%
None	22.2%	16.5%

Consequences of Reduced Mobility

Among all of the participants, 7% reported missing an activity important for daily living (e.g., medical care, grocery shopping) in the previous six months due to lack of transportation. Significant differences among several demographic characteristics are important to note (Table 8):

- There was a trend towards aging older adults missing an activity due to lack of transportation.
- Those with a household income of \$40,000 or less were much more likely to miss an activity than those with higher household income. (Note: over 20% of respondents declined to report their incomes).
- Lower educational status was also associated with missing activities.

- Those who were separated/divorced, widowed, or never married were more likely to miss an activity than those who were married or living with a partner.
- Those who had access to a motor vehicle but did not have a driver’s license were more likely to miss an activity than those with a license and access to a vehicle.
- Those with no licensed drivers in the household were also significantly more likely to miss an activity.
- Missing an activity was inversely and strongly related to reported health.
- Those who had a disability or chronic illness that was a barrier to driving were also significantly more likely to miss an activity due to lack of transportation.

Table 8 Missed Activity/Doctor’s Appointment/Shopping in Previous Six Months due to Lack of Transportation, Contra Costa County Older Adult Mobility Survey 2018 (N=510)

Characteristic	N	Yes (7%) Weighted %	No (93%) Weighted %	P
Age				<0.05
55-<65	116	2.5	97.5	
65-<75	225	8.4	91.6	
75-<85	130	7.1	92.9	
85 +	38	13.1	86.9	
Sex				0.61
Male	227	6.5	93.6	
Female	282	7.6	92.4	
Race/ethnicity				0.26
White Non-Hispanic	367	6.6	93.4	
Black Non-Hispanic	36	15.9	84.1	
Asian Non-Hispanic	26	6.1	93.9	
Hispanic	47	4.3	95.7	
Multi/Other	26	9.9	90.1	
Unknown	8	0.0	100.0	
Income				0.09
<=\$20,000	20	19.3	80.7	
\$20,001-\$40,000	56	13.9	86.1	
\$40,001-\$60,000	58	6.1	93.9	
\$60,001-\$80,000	55	3.0	97.0	
\$80,001-\$100,000	48	5.4	94.6	
\$100,001-\$135,000	61	3.6	96.5	
>\$135,000	102	8.8	91.2	
Unknown	109	5.1	94.9	

(table continues on next page)

Characteristic	N	Yes (7%) Weighted %	No (93%) Weighted %	P
Education				<0.05
<=High School	47	6.1	93.9	
Some college/Vocational/AA/AS	130	14.3	85.8	
BA/BS degree/Some grad school	162	3.5	96.5	
MA/MS degree	119	6.3	93.7	
PhD or equivalent	50	3.0	97.0	
Unknown	1	0.0	100.0	
Marital status				<0.01
Married/Living w/partner	302	3.7	96.3	
Separated/Divorced	66	14.9	85.1	
Widowed	97	10.9	89.1	
Never married	41	10.8	89.2	
Unknown		0.0	100.0	
MV access and license status				<0.001
MV access, license	467	4.9	95.1	
MV access, no license	43	30.7	69.3	
Home ownership				0.06
Own	464	6.7	93.3	
Rent	39	7.4	92.6	
Unknown	7	30.4	69.6	
Number of licensed drivers in home				<0.01
0	13	48.0	52.0	
1	185	8.9	91.1	
2	245	3.3	96.7	
3+	65	8.1	91.9	
Unknown	2	0.0	100.0	
Number of other people living in home				<0.05
0	147	9.1	91.0	
1	277	5.6	94.4	
2	78	7.3	92.7	
3	4	0.0	100.0	
Unknown	5	34.4	65.6	
Health				<0.01
Excellent	145	1.8	98.2	
Very good	171	7.8	92.3	
Good	129	7.0	93.0	
Fair/Poor	63	17.7	82.3	
Unknown	2	0.0	100.0	

(table continues on next page)

Characteristic	N	Yes (7%) Weighted %	No (93%) Weighted %	P
Has disability, handicap, or chronic disease that limits ability to drive				<0.001
Yes, fully limits driving	6	17.9	82.1	
Yes, somewhat limits driving	39	14.3	85.7	
No	431	3.8	96.2	
Unknown	33	38.6	61.4	

NOTES: Weighted. P-values were obtained from the Chi-square test for nominal categorical variables or the Mantel Haenszel test for ordinal categorical variables. For many questions a small number of participants (<=2%, weighted) did not answer. These may be presented in the summaries but are excluded from the tests.

Survey respondents who missed an activity in the previous six months were asked “What are the barriers to obtaining transportation for these activities?” (Table 9). Rides and car access were the most common reasons provided. Answers reflected both temporary obstacles (e.g., spouse out of town, car being repaired) and more permanent barriers (do not drive). In addition, participants reported health reasons for not being able to travel (n=5) and as part of the challenge of obtaining transportation (n=5) (e.g., could not handle wheelchair). One participant who no longer drove reported not having anyone to ask for a ride. Issues with public transportation and other ride services were also cited as primary and secondary reasons for missing an activity, for example:

- “Can’t drive on freeway” ... “Can’t go certain places like the beach... because public transport does not go there.”*
- “BART is 10 miles away so you have to drive or walk a long way”*
- “Cost and availability of the buses”*
- “The bus system doesn’t go where I need it to go. And my car was dead.”*

Table 9 Summary of Barriers to Obtaining Transportation for Missed Activities, Contra Costa County Older Adult Mobility Survey 2018

	Total reported	Reported by unlicensed individual
Core reason		
Person who provides rides was not available/could not get a ride/ ride cancelled	10	5
Car access/car was in use	9	0
Health	5	1
Doesn’t drive/limits driving	4	2
Public transit: distance, schedule, or cost	3	2
Not being in familiar location	1	0
Phone wasn’t working	1	1
No one to ask	1	1
Paratransit late	1	1

(table continues on next page)

	Total reported	Reported by unlicensed individual
Other factors		
Health or physical limitation	5	2
No public transportation at origin and/or destination	3	0
Expense of taxi/public transit/rideshare	3	1
Didn't want to ask for ride	3	0
Need someone to watch spouse/needed spouse	2	0
Did not know options	2	2
Difficult to schedule appointments	1	1
Nighttime	1	0

NOTES: This was an open-ended question that was asked of people who reported yes to missing an activity or doctor's appointment, or not shopping in the past 6 months because there was no way to get there. Responses could include multiple reasons and conditions. Core reasons were categorized as what they stated first, unweighted, without examining.

When asked about the frequency of in-person interactions with friends, family or neighbors, a total of 45% of participants reported at least daily social interaction, 41% reported interactions a few times per week, and 7% reported interactions one time per week or less, defined in this analysis as social isolation. Preliminary analysis found no significant patterns by age, race/ethnicity, marital status, income, home ownership status, number of licensed drivers in household, or living alone. Men and those with lower educational attainment tended to report less frequent social interactions ($p < 0.05$). Self-rated health status was strongly and inversely associated with social isolation ($p < 0.0001$). There was a clear pattern between health and social isolation with just over 30% of those in fair/poor health socializing less than weekly (Table 10).

Table 10 In-Person Interactions with Friends/Family/Neighbors, Contra Costa County Older Adult Mobility Survey 2018

Characteristic	N	Once a day or more	A few times a week	Once a week or less	P
Age					0.94
55-<65	116	46.0	40.1	13.9	
65-<75	219	47.7	38.8	13.5	
75-<85	130	45.5	44.1	10.4	
85 +	37	38.2	53.5	8.2	
Sex					<0.05
Male	223	39.2	46.6	14.2	
Female	279	51.5	37.5	11.0	

(table continues on next page)

Characteristic	N	Once a day or more	A few times a week	Once a week or less	P
Race/ethnicity					0.49
White Non-Hispanic	363	47.4	41.5	11.1	
Black Non-Hispanic	34	42.7	45.5	11.8	
Asian Non-Hispanic	26	48.5	48.4	3.1	
Hispanic	47	42.2	36.4	21.4	
Multi/Other	26	37.5	41.0	21.6	
Unknown	6	39.8	36.0	24.2	
Income					0.17
<=\$20,000	20	47.7	26.1	26.2	
\$20,001-\$40,000	55	49.9	36.8	13.4	
\$40,001-\$60,000	55	37.3	46.4	16.4	
\$60,001-\$80,000	55	46.9	39.6	13.5	
\$80,001-\$100,000	48	44.5	40.2	15.3	
\$100,001-\$135,000	61	40.6	52.2	7.2	
>\$135,000	101	50.7	41.8	7.6	
Unknown	106	47.3	39.6	13.1	
Education					<0.05
<=High School	45	45.3	40.5	14.2	
Some college/ Vocational/AA/AS	126	39.8	41.8	18.3	
BA/BS degree/ Some grad school	162	40.9	49.4	9.8	
MA/MS degree	118	56.2	33.3	10.5	
PhD or equivalent	50	56.3	34.3	9.5	
Unknown	1	0.0	100.0	0.0	
Marital status					0.19
Married/Living w/partner	296	45.3	41.6	13.0	
Separated/Divorced	66	50.4	34.3	15.3	
Widowed	96	50.6	43.0	6.4	
Never married	40	30.6	52.7	16.7	
Unknown	3	74.6	0.0	25.4	
MV access and license status					<0.05
MV access, license	459	47.4	40.7	11.9	
MV access but no license	43	31.1	50.2	18.7	
Home ownership					0.82
Own	458	45.8	42.6	11.6	
Rent	38	51.4	28.7	19.9	
Unknown	5	33.0	39.3	27.7	

(table continues on next page)

Characteristic	N	Once a day or more	A few times a week	Once a week or less	P
Number of licensed drivers in home					0.79
0	13	49.2	17.3	33.5	
1	183	41.6	48.7	9.7	
2	241	49.3	38.7	12.0	
3+	63	44.3	37.8	17.9	
Unknown	2	100.0	0.0	0.0	
Lives alone					0.89
Yes	145	43.7	45.6	10.7	
No	352	47.1	39.8	13.1	
Unknown	5	39.0	43.8	17.2	
Health					<0.001
Excellent	140	60.7	36.5	2.9	
Very good	171	45.2	42.7	12.1	
Good	127	35.1	49.9	15.0	
Fair/Poor	61	37.8	31.9	30.4	
Unknown	2	39.8	60.2	0.0	

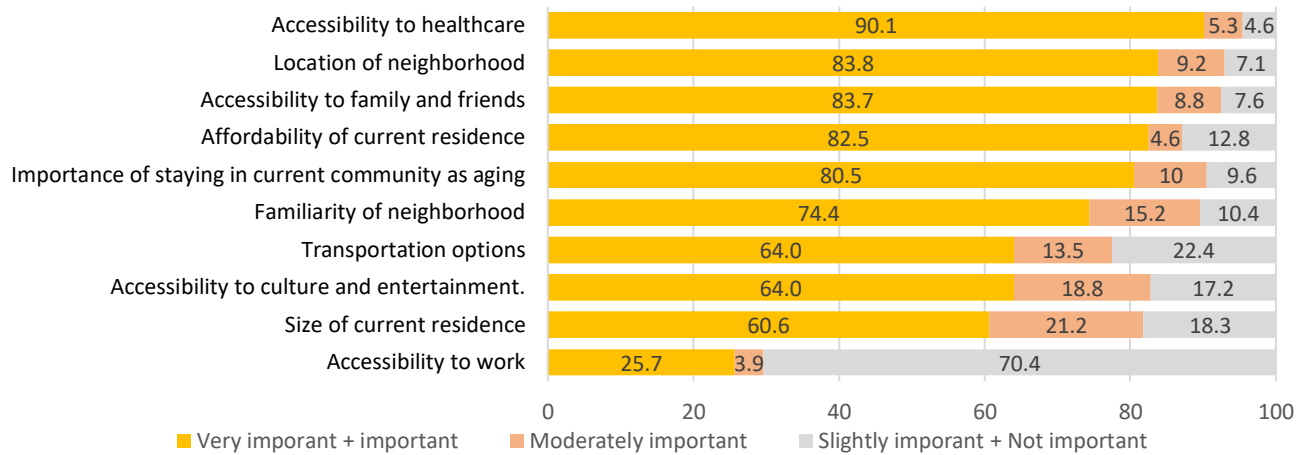
NOTES: Weighted. Excludes 1.5% who did not answer this question. P-values were obtained from the Chi-square test for nominal categorical variables or the Mantel Haenszel test for ordinal categorical variables. For many questions a small number of participants (<=2%, weighted) did not answer. These may be presented in the summaries but are excluded from the tests.

Needs and Preferences

Participants were asked questions about their mobility transition readiness (not shown). A majority (70%) of respondents felt strongly that a loss of mobility was very isolating and depressing. Approximately 55% agreed that they did not like to ask others for a ride. Over 61% had thought about their future mobility before being asked about it for this survey. There was no significant difference in the level of agreement with these statements by increasing age ($p=0.91, 0.30, 0.27$, respectively; excludes missing). Approximately 50% of respondents agreed that they expected to always drive and level of agreement tended to decrease with increasing age ($p<0.01$). Nearly 36% of respondents age 85+ expected to always drive.

Respondents were asked a series of questions designed to assess the importance of “aging in place.” The CDC definition is the ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level.” Over 80% of respondents rated it very important or important to stay in their community as they age, and this importance increased significantly with age. Only 6.5% rated it as not important. Respondents were also asked when deciding to remain in their current residence to rate the importance of various factors related to the ability to live in one’s own home and community safely, independently, and comfortably (Figure 2). All of the factors received high ratings of importance, and level of rated importance tended to increase with increasing age for familiarity with neighborhood ($p<0.05$) and accessibility to family and friends ($p<0.05$), and to decrease with age for accessibility to work ($p<0.0001$). Accessibility to healthcare was a leading important factor (90.1%).

Figure 2 Residence Factors, Contra Costa County Older Adult Mobility Survey 2018 (N=510)



Survey respondents were then asked how important it was to have specific physical features and programming that support aging in place available in their community (Table 11). All of the features received a combined very important + important rating over 70% except for a driver’s education/refresher course. This was also the only feature to receive a “not important” rating over 10% (18.2% of respondents).

Table 11 Importance of Community Features, Contra Costa County Older Adult Mobility Survey 2018 (N=510)

Community Features	Very Important	Important	Moderately Important	Slightly Important	Not Important
Well-lit, safe streets and intersections for all users	67.4%	24.6%	5.1%	1.3%	1.6%
Well-maintained and safe parks that are within walking distance of your home	37.2%	35.4%	12.3%	5.4%	9.7%
Sidewalks in good condition, free from obstruction	64.5%	22.5%	5.9%	2.4%	4.6%
Separate pathways for bicyclists and pedestrians	40.1%	29.9%	15.2%	5.1%	9.8%
Easy to read traffic signs	62.3%	27.7%	5.6%	0.5%	3.9%
Public transportation that is reliable, accessible and convenient and safe	56.9%	25.5%	6.3%	2.8%	8.5%
Public transportation that is affordable	50.4%	26.8%	10.2%	3.8%	8.8%

(table continues on next page)

Community Features	Very Important	Important	Moderately Important	Slightly Important	Not Important
Public transportation stops/areas that are safe, well-lit and shaded	51.1%	29.0%	7.8%	3.1%	9.0%
Special transportation services for older adults and people with disabilities	57.7%	25.7%	8.1%	2.8%	5.7%
Enforced speed limits	49.5%	30.1%	11.6%	3.9%	5.0%
Public parking spaces and areas to park	54.2%	34.6%	5.0%	2.3%	3.9%
Public parking that is affordable	51.7%	30.6%	7.5%	2.1%	8.1%
Audio/visual pedestrian crossing	43.7%	27.0%	15.5%	3.9%	9.9%
Driver's education/refresher	24.3%	28.1%	22.9%	6.6%	18.2%

Discussion

The *Assessing and Addressing the Mobility Needs of an Aging Population* project conducted a survey to examine the mobility patterns, needs and preferences of 510 older adults in Contra Costa County and the existing or potential consequences of reduced mobility. Descriptive analyses of the survey data provided information on the following: (i) aging trends and mobility demands; (ii) consequences of limited mobility; (iii) factors to maintain current mobility; (iv) improvements needed to enhance mobility; and (v) the potential for emerging mobility options.

Aging trends and mobility demands

Overall, the survey respondents are long-time residents of Contra Costa County and want to “age in place.” They mostly travel by motor vehicle, either driving or as a passenger. However, walking is the next highest mode for certain trip purposes. A majority of the respondents have used public transportation, and just under half have used rideshare services, though infrequently. Younger older adults are more familiar with and utilize these services.

While the survey sample was generally healthy, half of all participants had not considered that driving might not always be a transportation option. A majority of participants had a valid driver's license but this declined with increasing age. Future analyses of the survey data can assist in understanding the mobility preferences we might expect in the near future by age group.

Consequences

Participants living in households with no drivers reported half as many trips for activities compared with those living in households with drivers. Not having a driver's license was also associated with both missing an important daily living activity and making fewer trips. In addition, those who reported being in fair or poor health were more likely to have recently missed an activity important for daily living, had less social interaction, and made fewer trips overall in the previous week. This has implications for policies and programs. Future analyses of the survey data will examine missed appointments and social isolation in greater detail.

Maintaining, improving, and emerging options

The results of the present study suggest that age friendly neighborhoods that consider health care and accessibility are desired for sustained mobility. Participants also cite improvements to public transportation and paratransit for improving mobility options. Future analyses of the survey data will examine improvement requests and aging in place needs by sociodemographic and neighborhood characteristics.

While it is not possible to change the travel behavior of all travelers, or the travel behavior for all trips, this research can help providers of programs and services to learn more about where mode shift/mix *is* possible. This can be accomplished by examining the types of trips older adults feel are feasible to make by using alternative transportation options other than independent driving, and which programs or policies could help support that shift. For example, travel training programs have proven to be effective in increasing education and willingness among older adults to try alternative modes of travel (Babka, Cooper, & Ragland, 2010).

Emerging mobility options, such as transportation network companies may be an option for newer groups of older adults. While approximately 45% of all respondents indicated that they had previously used rideshare services, including nearly a quarter of those over the age of 85, it was used for less than 1% of all recent trips. Of the 55% of respondents who had not used rideshare previously, 67.5% reported that they did not have a need for it or that they still drove. Some use may indicate the potential for younger older adults to consider this as a mobility option in the future. Future analyses of the survey data will include use and reasons for not using in more detail.

Limitations and Future Work

Less than 12% of the survey population age 65+ reported being in poor/fair health, while 27.8% of the age 65+ population in Contra Costa County reported poor/fair health (California Health Interview Survey 2014). Many of the older adults in the survey sample also had a valid driver's license—94% age 75+ (compared with 61% of Californians age 75+ who have a driver's license, according to the CA Plan on Aging 2013). In addition, 24% of participants had a graduate degree. Subsequent efforts should include conducting focus groups with lower socioeconomic populations in Contra Costa County. Future analyses of the survey data will include examining travel patterns in further detail by license and driving status, age, health and socioeconomic characteristics. Results from southern California indicate that there are differences in number of trips and in walking and transit use rates by location—inner-city, outer inner-city—among low income older adults. These relationships were explained by accessibility and density (Pinski et al., 2017). Future research using this survey sample could include examining additional land use information for travel and aging in place preferences. While the current survey has not focused on geographic areas or demographic groups (other than age and gender), supplementary analyses show mobility options are also limited in some geographic areas and demographic groups, a very important focus for future study (Doggett, 2018).

Policy and Program Implications

Transportation services are often optimized for times when travel demand is high (e.g., commute hours). However, access to affordable, convenient transportation is an essential resource for older adults to maintain their independence, health, and well-being.

Understanding the individual and trip characteristics of older adults can help service providers identify where there are geographic, temporal, and/or trip purpose gaps in current systems or where population inequities may exist. In addition, the data on the needs and preferences and missed trips gathered in this survey can help program and service providers plan for a future of safe and independent mobility for older adults, across multiple modes of travel. The findings of this and related studies provide support for recent efforts of transportation agencies to address mobility issues of older adults and others with mobility issues. One example is the Coordinated Public Transit–Human Services Transportation Plan (2018), adopted by the Metropolitan Transportation Commission (MTC) of the San Francisco Bay Area. The plan examines the question: “How can MTC and its partners provide mobility options for seniors, people with disabilities, veterans, and people with low incomes that are also cost efficient for the region?” and then provides a comprehensive assessment of mobility needs for those populations in the Bay Area. Its recommendations include supporting a range of options centered around shared mobility and accessibility to populations at risk for limited mobility. This plan serves as a model that other agencies can emulate when planning for an aging population with unique transportation needs and challenges.

References

- Anstey, K. J., Windsor, T. D., Luszcz, M. A., & Andrews, G. R. (2006). Predicting Driving Cessation over 5 Years in Older Adults: Psychological Well-Being and Cognitive Competence Are Stronger Predictors than Physical Health. *Journal of the American Geriatrics Society*, 54(1), 121–126. <http://doi.org/10.1111/j.1532-5415.2005.00471.x>
- Babka, R., Cooper, J. F., & Ragland, D. R. (2010). Removing Barriers for Seniors at Transit Stops and Stations and the Potential for Transit Ridership Growth. Retrieved from <https://merritt.cdlib.org/d/ark:%252F13030%252Fm57s9sr8/1/producer%252FUCB-ITS-PRR-2010-31.pdf>
- Brayne, C., Dufouil, C., Ahmed, A., Dening, T. R., Chi, L. Y., McGee, M., & Huppert, F. A. (2000). Very old drivers: findings from a population cohort of people aged 84 and over. *International Journal of Epidemiology*, 29(4), 704–7. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10922348>
- Campbell, M. K., Bush, T. L., & Hale, W. E. (1993). Medical conditions associated with driving cessation in community-dwelling, ambulatory elders. *Journal of Gerontology*, 48(4), S230–4. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8315247>
- Centers for Disease Control and Prevention (CDC). (2013). *The State of Aging and Health in America 2013*. Retrieved from www.cdc.gov/aging.
- Chihuri, S., Mielenz, T. J., Dimaggio, C. J., Betz, M. E., Diguseppi, C., Jones, V. C., & Li, G. (2016). Driving cessation and health outcomes in older adults. *Journal of the American Geriatrics Society*, 64(2), 332–341. <http://doi.org/10.1111/jgs.13931>
- Choi, M., Mezuk, B., & Rebok, G. W. (2012). Voluntary and Involuntary Driving Cessation in Later Life. *Journal of Gerontological Social Work*, 55(4), 367–376. <http://doi.org/10.1080/01634372.2011.642473>
- Contra Costa Transportation Authority (2017). Accessible Transportation Strategic (ATS) Plan. FY 2018-19 Caltrans Sustainable Transportation Planning Sustainable Communities Grant Application. Walnut Creek, CA.
- County, C. C. (2018). *Caltrans Sustainable Transportation Planning Sustainable Communities Grant Application*.
- Deka, D. (2017). The effect of mobility loss and car ownership on the feeling of depression, happiness, and loneliness. *Journal of Transport & Health*, 4, 99–107. <http://doi.org/10.1016/J.JTH.2016.11.005>
- Doggett, S. (2018) Transportation Deficiency in Contra Costa County. Master's Thesis, UC Berkeley. <https://www.ocf.berkeley.edu/~sarahdoggett/work-samples/professional-report-capstone-project/>
- Edwards, J. D., Ross, L. A., Ackerman, M. L., Small, B. J., Ball, K. K., Bradley, S., & Dodson, J. E. (2008). Longitudinal predictors of driving cessation among older adults from the ACTIVE clinical trial. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 63(1), P6-12. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/18332196>

- Foley, D. J., Masaki, K. H., Ross, G. W., & White, L. R. (2000). Driving cessation in older men with incident dementia. *Journal of the American Geriatrics Society*, 48(8), 928–30. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10968296>
- Freeman, E. E., Muñoz, B., Turano, K. A., & West, S. K. (2005). Measures of visual function and time to driving cessation in older adults. *Optometry and Vision Science : Official Publication of the American Academy of Optometry*, 82(8), 765–73. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16127343>
- Freund, B., & Szinovacz, M. (2002). Effects of Cognition on Driving Involvement Among the Oldest Old. *The Gerontologist*, 42(5), 621–633. <http://doi.org/10.1093/geront/42.5.621>
- Gallo, J. J., Rebok, G. W., & Lesikar, S. E. (1999). The driving habits of adults aged 60 years and older. *Journal of the American Geriatrics Society*, 47(3), 335–41. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10078897>
- Gilhotra, J. S., Mitchell, P., Ivers, R., & Cumming, R. G. (2001). Impaired vision and other factors associated with driving cessation in the elderly: the Blue Mountains Eye Study. *Clinical & Experimental Ophthalmology*, 29(3), 104–7. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11446445>
- Loukaitou-Sideris, A., Brozen, M., Levy-Storms, L., Marshall Watai, L., Pinsky, M., & Wachs, M. (2017). *Conversations about mobility with older inner-city adults in Los Angeles*.
- MacLeod, K. E., Satariano, W. A., & Ragland, D. R. (2014). The Impact of Health Problems on Driving Status among Older Adults. *Journal of Transport & Health*, 1(2), 86–94. <http://doi.org/10.1016/j.jth.2014.03.001>
- Marottoli, R. A., de Leon, C. F. M., Glass, T. A., Williams, C. S., Cooney, L. M., Berkman, L. F., & Tinetti, M. E. (1997). Driving Cessation and Increased Depressive Symptoms: Prospective Evidence from the New Haven EPESE. *Journal of the American Geriatrics Society*, 45(2), 202–206. <http://doi.org/10.1111/j.1532-5415.1997.tb04508.x>
- Marottoli, R. A., de Leon CFM, Glass, T. A., Williams, C. S., Cooney, L. M., & Berkman, L. F. (2000). Consequences of driving cessation: decreased out-of-home activity levels. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 55(6), S334-40. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11078110>
- Marottoli, R. A., Ostfeld, A. M., Merrill, S. S., Perlman, G. D., Foley, D. J., & Cooney, L. M. (1993). Driving cessation and changes in mileage driven among elderly individuals. *Journal of Gerontology*, 48(5), S255-60. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8366274>
- Metropolitan Transportation Commission (2018). Coordinated Public Transit – Human Services Transportation Plan. February 2018. San Francisco, CA. https://mtc.ca.gov/sites/default/files/MTC_Coordinated_Plan.pdf

- Meuser, T. M., Berg-Weger, M., Chibnall, J. T., Harmon, A. C., & Stowe, J. D. (2013). Assessment of Readiness for Mobility Transition (ARMT). *Journal of Applied Gerontology, 32*(4), 484–507. <http://doi.org/10.1177/0733464811425914>
- Molnar, L. J., Eby, D. W., Charlton, J. L., Langford, J., Koppel, S., Marshall, S., & Man-Son-Hing, M. (2013). Reprint of “driving avoidance by older adults: Is it always self-regulation?” *Accident Analysis and Prevention, 61*, 272–280. <http://doi.org/10.1016/j.aap.2013.07.004>
- Ortman, J. M., Velkoff, V. a., & Hogan, H. (2014). An aging nation: The older population in the United States. *Economics and Statistics Administration, US Department of Commerce, 1964*, 1–28. <http://doi.org/10.1016/j.jaging.2004.02.002>
- Pinski, M., Wachs, M., & Loukaitou-Sideris, A. (2017). *Older Adult Travel Behavior Analysis*.
- Ragland, D. R., Satariano, W. A., & MacLeod, K. E. (2004). Reasons given by older people for limitation or avoidance of driving. *The Gerontologist, 44*(2), 237–44. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15075420>
- Ragland, D. R., Satariano, W. A., & MacLeod, K. E. (2005). Driving cessation and increased depressive symptoms. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 60*(3), 399–403. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15860482>
- Rosenbloom, S. (2009). Meeting Transportation Needs in an Aging-Friendly Community. *Journal of the American Society on Aging, 33*(2), 33–43.
- Rosenbloom, S., & Ståhl, A. (2002). *Automobility among the Elderly. The Convergence of Environmental, Safety, Mobility and Community Design Issues*. Retrieved from http://www.ejtir.tudelft.nl/issues/2002_03-04/pdf/2002_03-04_03.pdf
- Satariano, W. A., Guralnik, J. M., Jackson, R. J., Marottoli, R. A., Phelan, E. A., & Prohaska, T. R. (2012). Mobility and aging: new directions for public health action. *American Journal of Public Health, 102*(8), 1508–15. <http://doi.org/10.2105/AJPH.2011.300631>
- Satariano, W. A., Kealey, M., Hubbard, A., Kurtovich, E., Ivey, S. L., Bayles, C. M., ... Prohaska, T. R. (2016). Mobility Disability in Older Adults: At the Intersection of People and Places. *The Gerontologist, 56*(3), 525–534. <http://doi.org/10.1093/geront/gnu094>
- Schubert, P., Liebherr, M., Kersten, S., & Haas, C. T. (2017). Biomechanical demand analysis of older passengers in a standing position during bus transport. *Journal of Transport & Health, 4*, 226–236. <http://doi.org/10.1016/J.JTH.2016.12.002>
- Wachs, M. (2001). *Mobility, Travel and Aging in California*. (need link)

Appendix - Survey

Hi, my name is _____ from E&W Research Consultants and I am calling on behalf of UC Berkeley to conduct a survey to identify transportation needs of seniors and also to identify solutions to meet these needs, both societally and individually.

This survey will take about 20 minutes over the phone and you will receive a \$10 gift card as a token of our appreciation.

All your answers are confidential and you may choose not to answer any question.

Hola, me llamo _____, soy de E&W Research Consultants y estoy llamando a nombre de la UC Berkeley para realizar una encuesta para identificar necesidades de transportación para adultos mayores y también para identificar soluciones para cumplir con estas necesidades, tanto viviendo en sociedad como de manera individual. Esta encuesta tomará aproximadamente 20 minutos por teléfono y usted recibirá una tarjeta de regalo de \$10.00 como muestra de nuestro aprecio.

INT1. May I ask you two questions to see if you qualify?

¿Puedo hacerte dos preguntas para ver si reúnes los requisitos?

1. Yes
2. No, this is a bad time (set CB)
98. Don't know (TERM)
99. Refused (TERM)

CELL1. Before we begin, for safety reasons, have I reached you on a cell phone?

¿Estoy llamando a usted a su teléfono celular?

1. Yes
2. No [GO TO AGE]
99. REFUSED [TERM]

CELL2. Can you safely speak on your cell phone right now?

¿Es un buen momento para que hable en su teléfono celular o prefiere que le llame después a un número telefónico distinto?

1. Yes
2. No - schedule callback
99. (REFUSED) [TERM]

AGE. To check if you qualify - how old were you on your last birthday?

Para verificar si califica, ¿qué edad tenía en su último cumpleaños?

- ____ (must be older than 59)
998. Don't know (TERM)
 999. Refused (TERM)

Skip to ZIP if AGE > 55

AGE_2. Is there anyone in your household age 60 or over?

¿Hay alguien en su hogar de 60 años o más?

1. Yes [Write down contact information]
2. No (TERM2)
 98. Don't know (TERM)
 99. Refused (TERM)

Alternate Participant: May I speak with (Alternate Participant)?

1. Yes
2. No, no available right now –SET CB
 98. Don't know
 99. Refused

If (ans = 1) go back to Intro and begin survey again.

If (ans = 98 or 99) skip to TERM

ZIP: Are you currently living in Contra Costa County?

¿Actualmente vives en el condado de Contra Costa?

1. Yes
2. No (TERM2)
 98. Don't know (TERM)
 99. Refused (TERM)

Q1. Great, you qualify for the study. As I said, this will take only 20 minutes and we will send you a \$10 gift card for your time and this call may be monitored for quality purposes. Let's start with the first question. How long have you lived at your current address?

1. Less than 5 years.
2. 5-10 years.
3. More than 10 years.
 98. Don't know
 99. Refused

Genial, usted califica para el estudio. Como lo mencioné, esto solo tomará 20 minutos y le pagaremos \$10 por su tiempo y esta llamada puede ser monitoreada para propósitos de calidad. Comencemos con la primera pregunta. ¿Cuánto tiempo lleva viviendo en su domicilio actual?

1. Menos de 5 años
2. 5-10 años
3. Mas de 10 años
- 98.[Don't know]
- 99.[Refused]

Q2. Do you own or rent your home, or do you have some other type of living arrangement, such as living with a family member or friend?

1. Own
2. Rent
97. Other, specify
98. Don't know
99. Refused

¿Es usted el propietario de su hogar o renta, o cuenta con algún otro tipo de acuerdo de vivienda, como el vivir con un familiar o amigo?

1. Propia casa
2. Casa de alquiler

Q3. Besides yourself, do you have any of the following people living in your household?

[SELECT ALL THAT APPLY]

1. Your partner
2. Child/children under 18
3. Child/children 18 and older
4. Child/children away at school that you support
5. Parents
6. Other adult relatives or friends
96. No, I live alone
98. Don't know
99. Refused

Además de usted, ¿cualquiera de los siguientes vive en su hogar?

1. Tu compañero
2. Niños / niños menores de 18 años
3. Niños / niños de 18 años en adelante
4. Niño / niños lejos en la escuela que usted apoya
5. Padres
6. Otros familiares o amigos adultos
96. No, vivo solo

Q4. Do you have a valid driver's license?

¿Cuenta con una licencia de conductor válida?

1. Yes
2. No
98. Don't know
99. Refused

If Q4 > 1, skip to Q6

Q5. Do you have access to a motor vehicle to drive yourself places?

¿Tiene acceso a un vehículo de motor para conducirlo a diferentes lugares?

1. Yes
2. No

- 98. Don't know
- 99. Refused

Q6. And how many licensed drivers are in your household, including yourself (if licensed)?
¿Y cuántos conductores con licencia hay en su hogar, incluyéndose a usted (si cuenta con licencia)?

[Open-ended]

- 98. Don't know
- 99. Refused

Q7. Now, we would like to ask you some questions on community livability. How important is it for you to remain in your current community as you age? Would you say.....

- 1. Very important
- 2. Important
- 3. Moderately important
- 4. Slightly important
- 5. Not important
- 98. Don't know
- 99. Refused

Ahora, nos gustaría hacerle algunas preguntas sobre la habitabilidad de la comunidad. ¿Qué tan importante es para usted el permanecer en su comunidad actual a medida que envejece? Diría que...

- 1. Muy importante
- 2. Importante
- 3. Moderadamente importante
- 4. Ligeramente importante
- 5. No importante

Q8. How important are each of the following factors when deciding to remain in your current residence? I will read you a list of factors, and you can tell me if they are...

- 1. Very important
- 2. important
- 3. Moderately important
- 4. Slightly important
- 5. Not important
- 98. Don't know
- 99. Refused

¿Qué tan importantes son cada uno de los siguientes factores al decidir permanecer en su residencia actual? Le leeré una lista de factores y me puede decir si son...

- 1. Muy importante
- 2. Importante
- 3. Moderadamente importante
- 4. Ligeramente importante

5. No importante

[RANDOMIZE]

Q8a. Location of neighborhood

Ubicación del vecindario

Q8b. Familiarity of neighborhood

Familiaridad con el vecindario

Q8c. Size of current residence

Tamaño de la residencia actual

Q8d. Affordability of current residence

Economía de la residencia actual

Q8e. Accessibility to family and friends

Accesibilidad para familiares y amigos

Q8f. Accessibility to work

Accesibilidad al trabajo

Q8g. Accessibility to healthcare

Accesibilidad a cuidados de la salud

Q8h. Accessibility to culture and entertainment.

Accesibilidad a cultura y entretenimiento

Q8i. Transportation options

Opciones de transportación

Q9. If you were to consider moving, which type of location would you be looking at?

[READ ANSWER OPTIONS]

1. A location within your current community
2. A location nearby your current community
3. A location in a community not nearby, but still in California
4. A location outside of California
98. Don't know
99. Refused

Si estuviera considerando mudarse, ¿qué tipo de ubicación buscaría?

1. Dentro de la comunidad
2. En una comunidad cercana
3. Una comunidad no cercana pero dentro de California
4. Fuera de California

Q10a. Now I will ask you about common activities and how you travel to them. In the last week, how many times did you go <insert list member>?

1. Grocery shopping
2. Other shopping
3. Doctor appointments
4. Pharmacy
5. Places of worship

6. Social activities e.g. social organizations, centers, visit family or friends
7. Cultural activities
8. Work
9. Volunteer activities
10. Self-care, such as hair salons, barber shops or recreational activities

Ahora le voy preguntar sobre actividades comunes y cómo se desplaza a las mismas. En la última semana, ¿cuántas veces fue a...

1. Comprar víveres
2. Hacer otras compras
3. Citas con el doctor
4. La farmacia
5. Lugares de adoración
6. Actividades sociales, por ejemplo, organizaciones sociales, centros, visitar familiares o amigos
Actividades culturales
7. Trabajo
8. Actividades como voluntario(a)
9. Cuidado personal, como estéticas, barberías o actividades recreativas

Answer options:

___ (number of times)

98. Don't know

99. Refused

If answer to any question from 10 1 – 10 10 is > 0, ask 10b for each destination, else skip to Q11

Q10b. How did you get there?

[READ ANSWER OPTIONS. SELECT ALL THAT APPLY]

1. Drive yourself
2. Have others drive you
3. Public transport
4. Walk
5. Bicycle
6. Taxi/cab
7. Ride-share service like Lyft or Uber
8. Use a special transportation service such as one for older adults or persons with disabilities
 97. Other, specify:
 98. Don't know
 99. Refused

¿Cómo llegó allí?

1. Condujo usted mismo(a)

2. Alguien más lo(a) llevó en auto
3. Transporte público
4. Caminando
5. En bicicleta
6. En taxi
7. Servicio de viaje compartido como Lyft o Uber
8. Usó un servicio de transporte especial como los que dan servicio a adultos mayores o a personas con discapacidades

Q11. How important do you think it is to have each of the following in your community? I will read you a list of factors and you can tell me whether it is very important, important, moderately important, slightly important or not important.

[Randomize]

- a. Well-lit, safe streets and intersections for all users (pedestrians, bicyclists, drivers)
- b. Well-maintained and safe parks that are within walking distance of your home
- c. Sidewalks that are in good condition, free from obstruction and are safe for pedestrian use and accessible for wheelchairs or other assistive mobility devices
- d. Separate pathways for bicyclists and pedestrians
- e. Easy to read traffic signs
- f. Public transportation that is reliable, accessible, convenient and safe
- g. Public transportation that is affordable
- h. Public transportation stops/areas that are safe, well-lit and shaded
- i. Special transportation services for older adults and people with disabilities
- j. Enforced speed limits
- k. Public parking spaces and areas to park
- l. Public parking that is affordable
- m. Audio/visual pedestrian crossing
- n. Driver's education/refresher course

1. Very important
2. Important
3. Moderately important
4. Slightly important
5. Not important
98. Don't know
99. Refused

¿Qué tan importante considera que es tener cada uno de los siguientes en su comunidad? Le voy a leer una lista de factores y me puede decir si es muy importante, importante, moderadamente importante, ligeramente importante o nada importante.

- a. Calles e intersecciones seguras y bien iluminadas para todos los usuarios (peatones, bicicletas, conductores)

- b. Parques seguros y con buen mantenimiento que estén a una distancia cercana caminando desde su hogar
- c. Banquetas en buenas condiciones, libres de obstrucciones y que son seguras para el uso por peatones y accesibles para sillas de ruedas u otros dispositivos de asistencia móvil
- d. Caminos separados para ciclistas y peatones
- e. Señalamientos de tránsito fáciles de leer
- f. Transporte público que sea confiable, accesible, conveniente y seguro
- g. Transporte público que sea asequible (económico)
- h. Áreas/paradas de transporte público que sean seguras y estén bien iluminadas
- i. Servicios de transportación especial para adultos mayores y personas con discapacidades
- j. Límites de velocidad que se apliquen
- k. Áreas y espacios de estacionamiento público
- l. Estacionamiento público que sea asequible (económico)
- m. Cruces peatonales audiovisuales
- n. Cursos de educación/actualización para conductores

Skip to Q15 if Q4 >1

Q12. Now I'm going to ask you some questions about your ability to get around your community independently. Do you avoid any of the following driving situations?

[READ ANSWER OPTIONS. SELECT ALL THAT APPLY]

- 1. Rush hour/heavy traffic
- 2. Interstate/highway driving
- 3. Driving in the rain
- 4. Night-time driving
- 5. Left hand turns against traffic
- 97. Other, specify:
- 96. None
- 98. Don't know
- 99. Refused

Ahora le voy a hacer algunas preguntas sobre su capacidad para moverse en su comunidad de manera independiente. ¿Evita cualquiera de las siguientes situaciones de conducción?

- 1. Horas pico/tráfico pesado
- 2. Conducir en autopistas/interestatales
- 3. Conducir bajo lluvia
- 4. Conducir de noche
- 5. Vueltas a la izquierda contra el tránsito

Q14. Does any disability, handicap, or chronic disease limit your ability to drive at all?

- 1. Yes, fully limits driving
- 2. Yes, somewhat limits driving

3. No
98. Don't know
99. Refused

¿Alguna discapacidad, incapacidad o enfermedad crónica limita su capacidad para conducir de alguna manera?

1. Sí, limita completamente mi conducción
2. Sí, limita un poco mi conducción
3. No

Q15. Do you currently use a mobility device, such as a cane, walker or wheelchair to help you get around? [Select all that apply]

1. Yes, cane
2. Yes, walker
3. Yes, wheelchair
4. No mobility device
98. Don't know
99. Refused

¿Usa actualmente un dispositivo de movilidad, como un bastón, andadera o silla de ruedas para ayudarlo(a) a moverse?

1. Sí, bastón
2. Sí, andador
3. Sí, silla de ruedas
4. Sin dispositivo de movilidad

Q16. On a scale of 1 to 5, with 1 being 'Strongly disagree' and 5 being 'Strongly agree', please tell me your level of agreement with the following four statements:

[RANDOMIZE]

- a) A loss of mobility is very isolating and depressing
 - b) I do not like to ask people for a ride
 - c) I have not thought much about my future mobility before today
 - d) I always expect to drive
1. Strongly disagree
 2. Somewhat disagree
 3. Neither agree nor disagree
 4. Somewhat agree
 5. Strongly agree
 98. Don't know
 99. Refused

En una escala del 1 al 5, siendo 1 "Bastante en desacuerdo" y siendo 5 "Bastante de acuerdo", por favor dígame qué tan de acuerdo está con las siguientes tres afirmaciones:

- a) La pérdida de movilidad aísla mucho y deprime
- b) No me gusta pedirle a alguien más que me lleve

- c) Antes de hoy no había pensado mucho sobre mi movilidad en un futuro
- d) Siempre espero conducir
 - 1. Bastante en desacuerdo
 - 2. Algo en desacuerdo
 - 3. Ni de acuerdo ni en desacuerdo
 - 4. Parcialmente de acuerdo
 - 5. Bastante de acuerdo

Q17. During the past 6 months, have you missed an activity or doctor’s appointment, or not gone shopping, because you did not have a way to get there?

Durante los últimos 6 meses, ¿se ha perdido de alguna actividad o cita con el doctor, o no ha ido de compras, debido a que no tenía algún medio para poder ir?

- 1. Yes
- 2. No
- 98. Don’t know
- 99. Refused

If Q17 = 2, 98 or 99, skip to Q18

Q17a. What are the barriers to obtaining transportation for these activities?

¿Cuáles son las barreras para conseguir transporte para estas actividades?

[Open-ended, record verbatim]

Q18. About how often do you interact in-person with your friends, family, or neighbors in your community?

- 1. Once a day or more
- 2. A few times a week
- 3. Once a week
- 4. A few times a month
- 5. Less than once a month
- 96. Never
- 98. Don’t know
- 99. Refused

¿Con qué frecuencia interactúa en persona con sus amigos, familiares o vecinos en su comunidad?

- 1. Una vez al día o más
- 2. Algunas veces a la semana
- 3. Una vez por semana
- 4. Algunas veces al mes
- 5. Menos de una vez al mes
- 96. Nunca

Q19. Have you ever used a rideshare service such as Lyft or Uber?

¿Alguna vez ha usado un servicio de viaje compartido como Lyft o Uber?

1. Yes
2. No
98. Don't know
99. Refused

If Q19= 1, 98, 99 skip to Q21

Q20. Why haven't you ever used a rideshare service? [DO NOT READ, SELECT ALL]

1. Don't have a smartphone
2. I don't even know what that is
3. Concerned about personal security/safety (stranger driving them)
4. I don't know how to download and set up the app/service
5. Concerned about data security (my information being saved on the phone)
6. Most of the cars can't handle my wheelchair or walker
7. Too expensive/Can't afford it
97. Other, specify:
98. Don't know
99. Refused

¿Por qué nunca ha usado un servicio de viaje compartido?

1. No cuenta con un Smartphone
2. Ni siquiera sé qué es eso
3. Me preocupa la seguridad personal (un desconocido conduciendo para ellos)
4. No sé como descargar y configurar la app/el servicio
5. Me preocupa la seguridad de la información (guardar mi información se guarda en el teléfono)
6. La mayoría de los autos no pueden manejar mi silla de ruedas o andadera
7. Es muy caro/no lo puedo pagar

Q21. Have you used public transportation services available to you in your community such as bus service or BART?

¿Ha usado los servicios de transporte público disponibles para usted en su comunidad como el servicio de autobuses o BART?

1. Yes
2. No
98. Don't know
99. Refused

If Q21= 1, 98, 99 skip to Q23

Q22. What are the barriers to using public transportation? [DO NOT READ, SELECT ALL]

1. Don't want to

2. Don't need to/have other options
3. Concerned about personal safety/security
4. I don't know how to figure out how to get to/from where I want to go
5. Not convenient
6. Harder with my wheelchair/walker
7. Too expensive/Can't afford it
97. Other, specify:
98. Don't know
99. Refused

¿Cuáles son las barreras al usar el transporte público?

1. No quiero usarlo
2. No necesito usarlo/tengo otras opciones
3. Me preocupa mi seguridad personal
4. No sé cómo ir a o regresarme de donde quiero ir
5. No es conveniente
6. Es más difícil con mi silla de ruedas/andadera
7. Es muy caro/no lo puedo pagar

Q23 Have you used special transportation services available to you in your community such as non-emergency medical transport/paratransit?

¿Ha usado servicios de transporte especial disponible en su comunidad como transporte médico no de emergencia/paratransito?

1. Yes
2. No
98. Don't know
99. Refused

If Q23= 1, 98 or 99 skip to Q25

Q24. What is the main reason for not using them? [DO NOT READ, SELECT ALL]

1. Don't want to
2. Don't need to/have other options
3. Concerned about personal safety/security
4. Not aware of them
5. Inconvenient/a hassle to use
6. Not sure how to make use of them
97. Other, specify:
98. Don't know
99. Refused

¿Cuál es la razón principal por la que no los usa?

1. No quiero usarlos
2. No los necesito/tengo otras opciones

3. Me preocupa mi seguridad personal
4. No los conocía
5. Inconveniente/problemático para usar
6. No estoy seguro(a) cómo usarlos

Q25. Is there anything that we haven't talked about that you think would help you improve your ability to get around in your community?

¿Hay algo de lo que no hayamos platicado que considere ayudaría a mejorar su capacidad para moverse en su comunidad?

[Open-ended, record verbatim]

We are almost done. To finish, I am just going to ask you a few questions about yourself.
Casi terminamos. Por último, solo le voy a hacer unas pocas preguntas sobre usted.

Q26. What is your gender-identity? Are you...

1. Male
2. Female
3. Transgender
4. Genderqueer, neither exclusively male nor female
98. Don't know
99. Refused

¿Cuál es tu identidad de género? Eres tú....

1. Hombre
2. Mujer
3. Transgénero
4. Genderqueer, ni exclusivamente masculino ni femenino

Q27. Do you think of yourself as.....

1. Heterosexual or Straight
2. Homosexual or Gay or Lesbian
3. Bisexual
4. Something else
98. Don't know
99. Refused

Usted se considera:

1. Heterosexual
2. Gay o lesbiana
3. Bisexual
4. Algo más

Q28 Are you of Hispanic, Spanish, Latino origin or descent?

¿Eres de ascendencia o ascendencia hispana, española o latina?

1. Yes

2. No
98. Don't know
99. Refused

Q29. Which of the following groups best describes your family of origin? (SELECT ALL)

1. Native American
2. Other Pacific Islander
3. American Indian
4. Alaska Native
5. Asian
6. Black/African American
7. White
8. Two or more races
97. Other, specify:
98. Don't know
99. Refused

¿Cuál de estos grupos describe mejor a su familia de origen?

1. Nativo americano
2. Otro isleño del Pacífico
3. Indio americano
4. Nativo de Alaska
5. Asian
6. Negro o afroamericano
7. Asiático o Asiático-Americano
8. Dos o más carreras

Q30. What is your current marital status?

1. Married
2. Not married, living with partner
3. Separated
4. Divorced
5. Widowed
6. Never married
98. Don't know
99. Refused

¿Cuál es su estado civil actual? Eres tú:

1. Casado
2. No casado, viviendo con un compañero
3. Separado
4. Divorciado
5. Viudo
6. Soltero (nunca casado)

Q31. What is the highest grade of education you have completed and received credit for?

1. Grades 1-8
2. Grades 9-11
3. Grade 12 (high school)
4. Some college
5. Vocational school
6. AA/AS degree (Associate degree)
7. BA/BS degree (Bachelors' degree)
8. Some graduate school
9. MA/MS degree (Masters' degree)
10. PhD or equivalent
96. No formal education
98. Don't know
99. Refused

¿Cuál es el grado de estudios más alto que haya completado y acreditado?

1. Grados 1-8
2. Grados 9-11
3. Grado 12 (escuela secundaria)
4. Alguna educación superior
5. Escuela vocacional
6. AA/AS degree (Associate degree)
7. BA/BS degree (Bachelors' degree)
8. Algunos estudios de posgrado
9. MA/MS degree (Masters' degree)
10. PhD o equivalente
96. Educación no formal

Q32 Which of the following best describes your current employment status?

1. Employed or self-employed full time
2. Employed or self-employed part time
3. Unemployed and looking for full or part-time work
4. Unemployed and not looking for work
5. Retired—not looking for work
6. Not in the labor force for other reasons (e.g. health or disability)
97. Other, specify:
98. Don't know
99. Refused

¿Cuál de las siguientes describe mejor su estatus de empleo actual?

1. Empleado o empleado independiente de tiempo completo
2. Empleado o empleado independiente a medio tiempo
3. Desempleado y buscando trabajo a tiempo completo o medio tiempo
4. Desempleado sin buscar trabajo

5. Retirado sin buscar trabajo

6. No es parte de la fuerza laboral por otras razones (por ejemplo, salud o discapacidad)

Q33. In general, when compared to most people your age, how would you rate your health?

1. Excellent
2. Very good
3. Good
4. Fair
5. Poor
98. Don't know
99. Refused

En general, ¿comparado con la mayoría de la gente de su edad, ¿cómo calificaría su salud?

1. Excelente
2. Muy bien
3. Bien
4. Justa
5. Pobre

Q33. Now I'm going to read you a range of household incomes. We do not want to know your exact income. We want to know which of the following groups your total household income came closest to last year. Just tell me to stop when I get to the group that best describes your total household income before taxes last year. Was it...

1. Less than \$10,000
2. \$10,001 to \$15,000
3. \$15,001 to \$20,000
4. \$20,001 to \$30,000
5. \$30,001 to \$40,000
6. \$40,001 to \$50,000
7. \$50,001 to \$60,000
8. \$60,001 to \$70,000
9. \$70,001 to \$80,000
10. \$80,001 to \$90,000
11. \$90,001 to \$100,000
12. \$100,001 to \$135,000
13. Greater than \$135,000
98. Don't know
99. Refused

Ahora le voy a leer una variedad de ingresos familiares. No queremos saber sus ingresos exactos. Queremos saber cuál de los siguientes grupos obtuvo el ingreso total de su hogar más cercano al año pasado. Solo dígame que pare cuando llegue al grupo que mejor describe el ingreso total de su hogar antes de impuestos en 2017. Fue:

Q34. Finally, to help us better understand the environment you live in, can you please tell me your zip code:

Finalmente, para ayudarnos a comprender mejor el entorno en el que vives,
¿Puedes decirme tu código postal?

[Open-ended]

- 98. Don't know
- 99. Refused

FUTURE STUDIES

Would you be interested in participating in a future component of this project?

¿Estaría interesado en participar en un componente futuro de este proyecto?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

If Future Studies > 1, skip to THANK

FUTURE CONTACT

Can we email or call you again for a future component of this project?

¿Podemos enviarle un correo electrónico o llamarlo nuevamente para un componente futuro de este proyecto?

- 1. Yes, Email me (enter email address)
- 2. Yes, Call me (Enter phone number)
- 98. Don't know
- 99. Refused

THANK

And those are all the questions I have. Thank you so much for participating in the survey.

Now, would you like an ELECTRONIC \$10 AMAZON gift card, or would you prefer to receive a MAILED \$10 TARGET gift card?

Y esas son todas las preguntas que tengo. Muchas gracias por participar en la encuesta. Ahora, ¿le gustaría una tarjeta de regalo electrónica de \$ 10 AMAZON, o preferiría recibir una tarjeta de regalo TARGET de \$ 10 POR CORREO?

Email:

Mail gift card, address:

Refused gift card

END

Thank you for your time today.

TERM – refusal information TERM2 – no one is age range in HH/does not live in Contra Costa County