

Demographic Differences in Use of Alternate Transportation Among Older Drivers: AAA LongROAD Study

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This research brief examines the types and number of alternate sources of transportation used by healthy, older drivers (Li et al., 2017). Although many older adults still prefer driving, mobility is not limited to owning and operating a car. There are a variety of transportation options, including taxis, buses and ride-sharing companies (Bailey, 2004; Bureau of Transportation Statistics, 2006). This study explores the use of alternate sources of transportation among older drivers, including the type and the number of sources used. This is the first step in determining if using multiple types of transportation may offer more flexibility in getting around and provide reliable transport options (Adler & Rottunda, 2006; Kostyniuk & Shope, 2003). This study found most old drivers (89%) engaged in at least one nondriving form of motorized transportation — most commonly, having ridden as a passenger with a friend or family member (87%). Fifty-seven percent reported having used only one alternate source of transport. Women are more likely than men are to ride as a passenger (90% vs. 83%), whereas men were more likely to ride a train (19% vs 16%) or use a taxi or ride-sharing service (18% vs. 15%).

METHODS

This study uses baseline data from the AAA Foundation's Longitudinal Research on Aging Drivers (LongROAD) study (Li et al., 2017). LongROAD is a multisite (California, Colorado, Maryland, Michigan and New York) prospective cohort study designed to collect data on the medical, behavioral, environmental, technological and vehicular factors influencing driving safety in older adults. Examining the use of alternate sources of transportation beyond driving is also a focus. Participants were ages 65-79 years old, possessed valid driver's licenses, drove at least once per week on average and had no significant cognitive impairment.

The LongROAD study collects both self-reported and objectively measured information on health status and driving behaviors. For this study, we examined variation in use of alternate transportation sources by demographic characteristics. Participants reported using in the past three months alternate transportation sources, such as: buses, trains or subways; special community

transportation; taxis; and getting a ride from friends, family or a volunteer driver. Participants had the option of specifying additional sources of transportation not listed in the response set. These included walking, biking and using ride-sharing services (e.g., Uber or Lyft). For this analysis, use of taxi, Uber and Lyft were combined into one category. Drivers were placed into four groups based on the number of alternate sources of transportation they reported having used in the past three months: no source, one source, two sources, and three or more sources.

This brief describes the types and number of alternate sources of transportation used in the past three months for the full sample and by demographic factors, including age, sex, race, relationship status, employment status and annual household income. Nonparametric tests were used to assess the statistical significance of group differences, including chi-square tests for categorical variables (X^2) and the Cochran-Armitage test for trend (Z).

RESULTS

Forty-one percent of the participants were ages 65-69 years old, 35% were ages 70-74, and 24% were ages 75-79 ($n=2,990$). More than one-half (53%) were female, 87% were Caucasian, 66% were married or living with a partner, 70% were not currently working, and 71% had a household income of \$50,000 or higher (Table 1).

Use of Alternate Sources of Transportation

Most participants (89%) reported using at least one alternate source of transportation in the past three months (Table 2). Fifty-seven percent reported having used just one source, 19% had used two sources, and 13% had used three or more. The most commonly reported alternate source of transportation was having ridden as a passenger with a friend or family member (87%), followed by train/subway (17%) and taxi/ride-sharing service (16%). A small proportion reported having used a public bus (12%), or another source of transportation, such as biking or walking (8%).

Demographic Differences

There was notable demographic variation in the use of alternate sources of transportation and the number of sources used (Table 2). The associations between

demographic factors and number of alternate sources used were statistically significant for age, employment status, marital status, race and annual income. Respondents who were age 75-79, currently working, married or partnered, Caucasian, and who had an annual income greater than \$50,000, reported using fewer sources. Nonuse of alternate sources of transportation was highest among men, single people, people ages 75-79 and those with an annual income of equal or less than \$50,000 per year.

Respondents who were male (83% versus 90% for women), single (84% versus 88% for those who are married or partnered), or nonwhite (82% versus 87% for those who are white) were significantly less likely to have ridden as a passenger. Men and those in a relationship were more likely to have used the train/subway or a taxi/ride-sharing service. Whites were also more likely to have used a taxi/ride-share (17%, versus 10% for nonwhites) ($p < 0.05$ for all). Participants who were currently working were more likely to report use of the train/subway and public bus than those who do not currently work (22% versus 16% and 14% versus 11%, respectively). Those with an annual household income of \$50,000 or less were significantly less likely to report use of any of the alternate sources of transportation (9% vs. 15% among those earning $> \$50,000$ annually).

DISCUSSION

The current study, consistent with existing literature, found that there are demographic differences in types and numbers of alternate sources of transportation used by drivers ages 65-79 years (Shen et al., 2017). The most common source of alternate transportation reported by older drivers was riding as a passenger with a friend or family member; this finding is consistent with previous studies (Shen et al., 2017). Women and people in relationships were more likely than men or single people to report having ridden as a passenger. Men were more likely than women to report use of the train/subway or taxi/ride share. Based on these results, locales aiming to promote use of public transport should consider undertaking efforts to increase older adults' familiarity with trains, subways and buses.

Although these findings offer evidence that most older drivers use at least one alternate source of transportation, demographic differences exist between older drivers who reported using multiple alternate sources of transportation. Approximately one-third of participants used mixed modes of nondriving transportation (i.e., two or more alternate sources). Use of mixed-mode transportation was higher among older adults who were: male, currently working for pay, with annual income greater than or equal to \$50,000, white, and married or partnered. Two factors associated with use of alternate transportation modes are prior experiences and attitudes (Kostyniuk & Shope, 2003; Wang & Chen, 2012). Both prior experience and attitudes toward specific sources of transportation (e.g., public bus or subways) are factors associated with confidence in

accessing alternate sources of transportation. Programs such as door-through-door services can improve mobility for older adults by addressing low confidence in using alternate sources of transportation. Door-through-door services or assisted transportation offer graded assistance for older adults from inside their home to inside their destination (Burkhardt & Kerschner, 2007).

For those older adults who need to reduce their driving, the availability of multiple transportation sources offers a way to maintain an active lifestyle, which is essential for maximum health. Another consideration is the potential stigma of certain sources of public transportation (Musselwhite, 2010). For example, Webber (2012)

suggests that individuals may unfortunately believe buses are transportation for riders with no other options: immigrants, minority communities and the poor. To that end, communities and transportation experts may want to consider how to improve access and reduce stigma to alternate sources of transportation while older adults are still actively driving in order to reduce the impact that driving cessation has on poor health, social isolation and overall quality of life. The ability to disaggregate sources of transportation (e.g., ride-sharing, public transportation and private/taxi) and opinions about those sources is the next step to explore alternate sources of transportation among older drivers.

Table 1. Sample Characteristics and Alternate Sources of Transportation Used by Older Adults (65-79 years) in the Past Three Months, AAA LongROAD Study Participants, n=2,990

Characteristic	Number of Participants	Percentage
Age Category		
65-69	1,243	41
70-74	1,037	35
75-79	710	24
Sex		
Male	1,404	47
Female	1,586	53
Race		
White	2,616	87
Nonwhite	374	13
Married/Partnered		
No	986	33
Yes	1,974	66
Currently Working		
No	2,084	70
Yes	904	30
Household Income		
<\$50,000	775	26
>\$50,000	2,109	71

Note. "Any other modes" including public ride assistance programs (e.g., dial-a-ride), biking, walking, having a volunteer driver and other unspecified sources of transportation. Totals may not add up to 2,990 due to missing data.

Table 2. Number and Types of Alternate Sources of Transportation Used by Older Adults (65-79 years) in the Past Three Months (%), by Demographic Characteristics, AAA LongROAD Study Participants n=2,990 (100%)

Characteristic	Number Used					Types Used ^a			
	None	1	2	≥3	Z test (p value)	Passenger	Train/ Subway	Taxi/ Ride Share	Public Bus
Total	320(11)	1696(57)	571(19)	403(13)		2594(87)	516(17)	492(16)	355(12)
Age									
65-69	124(10)	671(54)	249(20)	199(16)	-4.08	1094(88)	249(20) [†]	211(17)*	174(14)*
70-74	104 (10)	591(57)	197(19)	145(14)	(<0.001)	902(87)	207(20)	197(19)	124(12)
75-79	92 (13)	426(60)	128(18)	64(9)		611(86)	78(11)	92(13)	64(9)
Sex									
Male	197(14)	716(51)	281(20)	211(15)	-0.59	1165(83) [†]	267(19)*	253(18)*	183(13)
Female	127(8)	983(62)	301(19)	190(12)	(0.553)	1427(90)	254(16)	238(15)	174(11)
Currently Working									
No	229(11)	1230(59)	375(18)	250(12)	4.40	1813(87)	333(16)*	313(15)	229(11)*
Yes	100(11)	453(50)	199(22)	154(17)	(<0.001)	788(87)	199(22)	181(20)	127(14)
Married/Partnered									
No	128(13)	572(58)	177(18)	108(11)	4.40	828(84)*	148(15)*	128(13)*	118(12)
Yes	178(9)	1105(56)	395(20)	296(15)	(<0.001)	1737(88)	355(18)	355(18)	237(12)
Race									
White	262(10)	1491(57)	497(19)	366(14)	-2.24	2276(87)*	445(17)	445(17)*	314(12)
Nonwhite	56(15)	209(56)	67(18)	41(11)	(0.025)	307(82)	60(16)	37(10)	49(13)
Household Income									
<\$50,000	116(15)	504(65)	109(14)	47(6)	9.86	628(81) [†]	70(9) [†]	39(5) [†]	70(9)*
>\$50,000	190(9)	1139(54)	443(21)	337(16)	(<0.001)	1877(89)	422(20)	422(20)	274(13)

Note: Eight percent (n=231) reported having used another source of transportation, such as biking or walking.

^a Chi-square tests were used to assess variation in use of each source by demographic characteristics

* p<0.05

[†] p<0.00

REFERENCES

Adler, G., Rottunda, S., 2006. Older adults' perspectives on driving cessation. *J. Aging Stud.* 20,227-235. <https://doi.org/10.1016/j.jaging.2005.09.003>

Bailey, L. (2004, April). Aging Americans: Stranded without Options. Retrieved February 6, 2018, from http://www.apta.com/resources/reportsandpublications/Documents/aging_stranded.pdf

Bureau of Transportation Statistics. (2006, May). Findings from the National Household Travel Survey. In *America On the Go*. Retrieved December 15, 2017, from https://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/america_on_the_go/long_distance_transportation_patterns/pdf/entire.pdf

Burkhardt, J., & Kerschner, H. (2007). Door-through-door transportation: the final frontier. *Transportation Research Record: Journal of the Transportation Research Board*, (2013), 62-70.

Kostyniuk, L. P., & Shope, J. T. (2003). Driving and alternatives: Older drivers in Michigan. *Journal of Safety Research*, 34(4), 407-414.

Li, G., Eby, D. W., Santos, R., Mielenz, T. J., Molnar, L. J., Strogatz, D., ... & Pitts, S. I. (2017). Longitudinal Research on Aging Drivers (LongROAD): study design and methods. *Injury Epidemiology*, 4(1), 22.

Musselwhite, C. (2010). The role of education and training in helping older people to travel after the cessation of driving. *International Journal of Education and Ageing*, 1(2), 197-212.

Shen, S., Koech, W., Feng, J., Rice, T. M., & Zhu, M. (2017). A cross-sectional study of travel patterns of older adults in the USA during 2015: implications for mobility and traffic safety. *BMJ open*, 7(8), e015780.

Wang, T., & Chen, C. (2012). Attitudes, mode switching behavior, and the built environment: A longitudinal study in the Puget Sound Region. *Transportation research part A: policy and practice*, 46(10), 1594-1607.

Webber, R. (2012, July 23). The bus stigma: Why it exists, and should we care? Retrieved from <https://www.ssti.us/2012/07/the-bus-stigma-why-it-exists-and-should-we-care/>

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