

Seniors face serious driving safety and mobility issues.



Older American Drivers and Traffic Safety Culture: A LongROAD Study

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Title

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Introduction

Background

In 1900, people ages 65 years and older comprised only 4% of the population of the United States. By 2000, their share of the population had tripled to 12%, and is predicted to reach 20% by 2050 (Hobbs and Stoops, 2002; United States Census Bureau, 2008). Nearly 75% of today's adults over 65 say they are in good to excellent health (BRFSS, 2012), 42% report they have attended some college (United States Census Bureau, 2011) and the median income is \$33,848 (DeNavas-Walt, et.al, 2013). Older Americans are living active lives in which many still hold careers and participate in community and religious groups; some seniors are even caring for older parents (Bateson, 2013).

According to research by the AAA Foundation for Traffic Safety (2014a), 86% of Americans ages 65 and older still drive, meaning that there are presently approximately 36 million drivers ages 65 and older. If current population projections and licensure rates hold, this number will grow to 48 million by 2020. Drivers ages 65 and older drove an estimated 219 billion miles in the one-year period from May 2008 through April 2009 (Federal Highway Administration, 2011).

As older people remain healthier for longer, driving will undoubtedly continue to play a major role in their ability to stay mobile, independent, and engaged in their community. Hence, there is a need to better understand and delineate the changes that occur in the attitudes and perceptions of older drivers as they continue to age. The majority of previous studies have treated drivers aged 65 and older as a single group. However, "older senior drivers" (e.g., ages 80 and older) might differ in important ways from "younger senior drivers." The purpose of the research reported here was to examine the extent and nature of the variability in driving behaviors and safety-related attitudes among drivers ages 65-69, 70-74, and 75+, using data from the AAA Foundation's annual Traffic Safety Culture Index survey.

Methods

Data

The data analyzed for this study were from the AAA Foundation's annual Traffic Safety Culture Index survey. The survey comprises questions about Americans' attitudes about traffic safety issues, social norms, and self-reported driving-related behaviors. Each year, it is administered online to a sample of U.S. residents aged 16 years and older who were enrolled in GfK's KnowledgePanel®, a nationally-representative sample of members of U.S. households recruited by standard probability-based survey methods (address-based mail and random-digit dial telephone sampling). If a recruited household lacks Internet access, GfK provides an Internet connection and hardware at no cost to the household.

The current study analyzed data from the 2011, 2012, and 2013 Traffic Safety Culture Index surveys, administered June 6 – 28, 2011, September 7 – 24, 2012, and September 18 – October 3, 2013, respectively. Data were weighted to account for differences in individual respondents' probabilities of a person being recruited into KnowledgePanel®, differences in respondents' probabilities of being selected for these specific surveys, and non-response at both stages. Post-stratification weights aligned the demographics of the sample to that of the U.S. population with respect to age, gender, race and ethnicity, education, census region, urban versus rural residence, household size, and household income.

Respondents were asked questions related to the extent that they believed specific driving behaviors of other drivers were a threat to their (the respondent's) personal safety. Response categories were very

serious threat, somewhat serious threat, minor threat, and not a threat; these were dichotomized as very or somewhat serious threat versus minor threat or not a threat.

To assess social norms, respondents were asked whether they considered it to be completely acceptable, somewhat acceptable, somewhat unacceptable, or completely unacceptable for a driver to perform a variety of specific behaviors; these were dichotomized as acceptable versus unacceptable.

In questions related to support for a number of specific traffic safety interventions, respondents were asked whether they would strongly support, somewhat support, somewhat oppose, or strongly oppose each one; these were dichotomized as support versus oppose.

Respondents who reported having driven in the past 30 days were asked how often they had engaged in several specific behaviors; response options were regularly, fairly often, rarely, just once, and never. These data are displayed collapsed into 3 categories for brevity but were data were treated as ordinal and were not dichotomized or otherwise recoded. (These were collapsed into 3 categories for brevity in Table 5; however, analysis was based on all five categories.)

Number of moving violations over the last 2 years was coded into the categories: 0, 1, and 2 or more. For crashes, the categories were: 0, 1, 2, and 3 or more. This was done to ensure adequate numbers of observations in all categories, as very few respondents reported more than 2 violations or more than 3 crashes. One observation, in which a respondent reported having zero moving violations but 9 crashes in the past 2 years (18 standard deviations from the mean number of crashes in the full sample), was suspected to have been a coding error and was recoded as missing.

Respondents were coded as living in a metropolitan or non-metro area according to the United States Office of Management and Budget classification of the ZIP code of the respondent's home address.

Statistical Analysis

Respondents were categorized into three age groups: 65-69, 70-74, and 75 and older. For demographic characteristics other than age (Table 1), prevalence of crashes, violations, and injuries (Table 2), attitudes towards driving behaviors (Table 3), support for interventions (Table 4), and engagement in behaviors (Table 5), the frequency of responses was calculated. Chi-squared tests were used to assess whether the distributions of these variables varied significantly by age. The significance of differences in the frequencies of behaviors were assessed using ordinal logistic regression. Multi-variate models were estimated to assess whether any apparently age-related differences persisted after adjusting for other demographic variables besides age.

The sample comprised 1,793 respondents aged 65 years and older; however, the number of valid responses varied by individual survey question, as some respondents refused to answer some questions (refusals were re-coded as missing), several questions were not asked in all three years of the survey, some questions were asked of a random sub-sample of respondents rather than all respondents to avoid imposing excessive respondent burden, and questions regarding recent driving behaviors were only asked of respondents who reported having driven at least once in the 30 days before they completed the survey.

Statements regarding statistical significance are based on an alpha level of 0.05. All analyses were performed using statistical software SAS version 9.4 (SAS Institute Inc., Cary, NC).

Results

The weighted sample had a mean age of 72.8 years with a standard deviation of 6.1 years and ranged from 65 years to 95 years. The sample was weighted to be representative of the population of the United States with regard to sex, race/ethnicity, education level, employment status, household income, metropolitan status, and marital status. The sample's demographic characteristics can be found in Table 1. Drivers 75+ were more likely to be white non-hispanics and less likely to be married or employed. They were also more likely to drive a car as opposed to a van, mini-van, SUV or truck.

Table 1. Demographics of Survey Respondents (N=1793), United States, 2011-2013

	Age (years)					
	Unweighted n (weighted %) [#]					
	65-69		70-74		75+	
Gender						
Male	340	(46)	215	(48)	326	(44)
Female	388	(54)	202	(52)	322	(56)
Race/Ethnicity						
White, non-Hispanic	582	(72)	351	(82)	560	(85)
Black, non-Hispanic	55	(11)	21	(7)	29	(6)
Hispanic	64	(13)	21	(6)	34	(6)
2+ races, non-Hispanic	14	(1)	12	(2)	15	(2)
Other, non-Hispanic	13	(4)	12	(4)	10	(2)
Education						
Less than high school	60	(12)	47	(15)	77	(16)
High school	237	(35)	156	(35)	214	(40)
Some college	148	(20)	74	(17)	122	(15)
Associate or bachelor	162	(19)	91	(20)	139	(18)
Graduate	90	(10)	34	(9)	57	(7)
Professional	31	(4)	15	(5)	39	(5)
Marital Status						
Married/living with partner	509	(65)	305	(75)	372	(55)
Divorced/widowed/separated	182	(30)	98	(21)	256	(42)
Never married	37	(5)	14	(4)	20	(3)
Employment						
Employed	159	(22)	57	(15)	50	(6)
Laid off/seeking employment	12	(2)	8	(2)	3	(1)
Retired	503	(68)	341	(82)	577	(89)
Disabled	35	(5)	8	(1)	10	(2)
Other (not working)	19	(4)	3	(1)	8	(2)
Household Income (\$)						
<30,000	145	(24)	99	(23)	175	(28)
30,000-49,999	153	(22)	90	(21)	167	(22)
50,000-74,999	157	(21)	105	(20)	131	(17)
75,000-99,999	98	(12)	43	(12)	68	(12)
100,000+	175	(22)	80	(25)	107	(21)

Driven in last 30 days					
Yes	669	(89)	391	(93)	571 (87)
No	58	(11)	26	(7)	77 (13)
Metro Status§					
Metro	612	(83)	365	(83)	559 (83)
Non-Metro	116	(17)	52	(17)	89 (17)
Primary Vehicle Type					
Car	437	(64)	259	(67)	416 (72)
Van/Mini-Van	53	(6)	37	(9)	70 (11)
SUV	118	(17)	60	(14)	69 (10)
Truck	78	(12)	43	(9)	32 (6)
Motorcycle	3	(1)	1	(1)	2 (1)

‡ May not add to 100% due to rounding

§ Defined by the US Office of Management and Budget as a geographic entity with a core urban area, population >50,000.

Crashes and Violations

Of all respondents who reported the number of moving violations and crashes over the past two years, 90.8% reported no moving violations and 91.0% had not been involved in a crash in the last two years (Table 2). While drivers 65-69 years old reported more moving violations than the other two age groups ($p < 0.05$), there was no statistically significant difference in crash involvement between the three age groups. Among the entire lifespan of all survey respondents, 31.8% reported knowing a family member or close friend seriously injured in a motor vehicle crash and 13.9% had themselves been seriously injured in a motor vehicle crash.

Table 2. Crashes, violations, and injuries among drivers age 65+, United States, 2011-2013

	Age in years (weighted %)		
	65-69	70-74	75+
Moving violations in last two years*			
0	88.2	92.8	92.6
1	10.4	6.7	7.0
2	1.4	0.6	0.2
3+	0.1	0.0	0.3
Crashes involved in last two years			
0	91.9	92.8	88.7
1	7.0	6.7	9.9
2+	1.1	0.5	1.4
Serious injury in an MVC†	16.0	11.2	13.2
Serious injury/death of a family member or friend in MVC†	33.2	28.8	32.2

* $P \leq 0.05$

† Over respondent's lifespan

Table 3. Proportion of respondents age 65+ who rated driving behaviors shown as unacceptable (N=1793), United States, 2011-2013

	Age in years (weighted %)			X ² p-value
	65-69	70-74	75+	
Speeding				
Residential driving 10+ mph over limit	93.9	97.6	94.9	0.03
Urban driving 10+ mph over limit [†]	88.9	95.2	93.5	0.02
School zone driving 10+ mph over limit [†]	97.5	98.7	99.7	0.01
Freeway driving 15+ mph over limit	85.6	89.8	86.8	0.24
Phone-Related Behaviors				
Talking on hand-held phones while driving	83.7	90.9	89.3	0.01
Talking on hands-free phones while driving	55.9	54.2	62.4	0.08
Texting/e-mailing while driving	99.0	99.3	98.6	0.55
Checking social media while driving	98.6	99.2	99.2	0.68
Impaired Driving Behaviors				
Driving after drinking enough to be impaired	99.0	99.6	99.4	0.64
Driving within an hour of using cannabis [‡]	96.6	99.1	97.7	0.46
Driving after using both cannabis and alcohol [‡]	98.3	100.0	99.6	0.80
Driving while drowsy	99.1	98.9	99.1	0.96
Miscellaneous Behaviors				
Not wearing a seatbelt	90.7	96.5	92.8	0.04
Driving through a light that just became a red	96.8	99.0	97.2	0.03

[†]Question not asked in 2011 survey. For these, n=1275.

[‡] Question asked in 2013 only. For these, n=451.

Attitudes Towards Driving Behaviors

A vast majority of respondents strongly disapproved of all of the unsafe driving behaviors included in the survey. Respondents age 65-69 expressed slightly lower levels of disapproval of several of the behaviors, though, compared with respondents aged 70-74 and 75+.

Speeding. Overwhelming majorities of drivers aged 65 and older disapprove of speeding, whether it be on freeways, in residential areas, in urban areas, or in school zones. Drivers aged 70-74 were more likely than other drivers to disapprove of speeding in residential areas and in urban areas. The difference between the 65-69 year olds and those 75 years old or more was not statistically significant on these measures. Drivers age 70-74 disapproved of speeding in school zones more than 65-69 year olds, but not by a statistically significant margin, though drivers aged 75 and older did. Although the differences were statistically significant, they were not much different in a meaningful way as disapproval for these behaviors was virtually universal across all three age groups.

Cell Phone use. The proportion of older Americans disapproving of texting and e-mailing while driving and checking or posting on social media while driving were nearly 100% and did not vary between the groups. However, while ranging from approximately 84% to 91% disapproval, respondents 70-74 years old and respondents 75 and older were significantly more likely than drivers ages 65-69 to disapprove of drivers talking on hand-held phones. Although the rate of disapproval of talking on hands-free phones while driving use was noticeably higher among the oldest group (62%) than the younger two (56%, 54%), the differences were not statistically significant ($p=.08$).

Impaired Driving. Impaired driving behaviors (driving when one may have had too much to drink, driving one hour after using cannabis, and driving after using both cannabis and alcohol) and driving while drowsy garnered nearly 100% disapproval among those in the study sample. There was no difference between the age groups with regard to their views of impaired driving.

Miscellaneous Behaviors. While more than 90% of respondents in all age groups disapproved of driving without wearing a seatbelt and driving through red lights on purpose when it would have been possible to stop safely, the rate of disapproval was highest among drivers ages 70-74 for both behaviors (Table 3).

Adjustment for other demographic characteristics besides age had little effect on the magnitude or statistical significance of the relationships between any of the above-mentioned variables and age group.

Support for Safety Interventions

The participants were asked about their support for various traffic safety interventions such as traffic cameras, cell phone laws, DWI laws, and older driver license renewal laws (Table 4). Large differences were observed by age, especially when comparing respondents ages 75 and older to the two younger age groups.

Speed Cameras. Using cameras to automatically ticket drivers who speed in residential areas found majority support across all three groups, but the age 75 and older group supported them more than 65-69 year olds and 70-74 year olds. The same pattern was found with speed cameras in urban areas, which found majority support across all three groups, with support again strongest among the oldest respondents. The pattern also held for speed cameras in school zones, although

the only difference that was significant was that between support among those 75 and older and those 65-69 years old. This suggests consistently stronger support among the 75 and older group. The proportion of respondents supporting speed camera ticketing drivers who speed on freeways was below 50% among those between 65 and 74, but nearly 60% among those aged 75 and older. However, the difference was not statistically significant ($p=.08$).

Phone-Related Laws. Support for laws against using cell phones while driving was strong across all age groups, but generally tended to be strongest among the oldest respondents. Laws restricting the use of any and all cell phones generally received the lowest levels of support, while laws restricting only hand-held cell phones were more popular, and laws against text messaging or emailing while driving received virtually universal support across all three age groups.

Red Light Cameras. Although not quite reaching conventional levels of statistical significance, there was a clear pattern of support for using cameras to automatically ticket drivers who run red lights in urban areas, as 66% of respondents ages 65-69, 70% of those ages 70-74, and 75% of those ages 75+ expressed support. Support for using red light cameras on residential streets was similar among drivers ages 65-69 and 70-74, but much higher among drivers ages 75+.

DWI-Related Laws. Support for lowering the legal limit for blood alcohol content (BAC) while driving in the United States from .08 g/dL to .05 g/dL was 61% among senior respondents. While support was highest among those 70-74 years old (67%), there was no statistically significant difference between the age groups (note that this question was only asked in 2013 and thus analysis is based on a much smaller number of responses than other items). Nearly 90% of those surveyed supported requiring alcohol-ignition locks for all drivers convicted of driving while intoxicated including first-time offenders, and this did not vary by age. This support was uniform across the age categories. On the other hand, support for requiring alcohol ignition interlock technology in all new cars did vary by age group, with support being much higher among respondents ages 75 and older than among younger respondents.

License Renewal Laws for Senior Drivers. Laws requiring drivers over 75 to renew their license in person and requiring they pass a medical screen to remain licensed received support from over 70% of respondents across all age groups. In an interesting trend, support for these measures are at their lowest point right before the age specified by these laws (ages 70-74) and at their highest point after (age 75+). However, these differences did not even approach statistical significance.

Other Laws. Support for laws requiring states to publish maps annually with locations of motor vehicle crashes and federal government regulations on in-car technology was consistent across age groups. Support for motorcycle helmet laws increased with age: 86% of drivers ages 65-69, 91% of drivers ages 70-74, and 95% of drivers ages 75 and older expressed support for laws requiring all motorcyclists to wear a helmet.

Despite not reaching statistical significance in simple bivariate comparisons, differences in support for using speed cameras on freeways and using red light cameras in urban areas did vary significantly by age after adjustment for other demographic characteristics besides age. Adjustment for other demographic characteristics did not change the statistical significance of any of the other above-mentioned variables.

Table 4. Support for driving interventions among respondents age 65+, United States, 2011-2013

	Age in years (weighted %)			χ^2 p-value
	65-69	70-74	75+	
Speed Cameras Ticketing: Driving 10+ mph over the speed limit in†‡				
Residential areas	55.8	58.3	70.7	0.02
Urban areas	50.7	50.4	67.2	0.01
School zones	67.1	71.3	82.2	0.01
Freeways	47.9	46.6	59.7	0.08
Phone-Related Laws				
Law against texting/e-mailing while driving	95.3	92.9	97.6	0.01
Law against using hand-held cell phone while driving	83.8	83.2	89.1	0.07
Law against any phone use while driving	65.6	65.4	72.2	0.08
DWI-related laws				
Lower legal BAC limit from .08 to .05	60.1	66.7	59.0	0.58
Requiring new cars to have technologies that prevent them from starting when driver is above legal BAC limit	76.6	77.7	86.5	0.01
Ignition locks for DWI offenders, even after the 1 st time	87.6	88.2	89.1	0.69
Red Light Cameras†‡				
In residential areas	63.6	63.5	84.0	0.0002
In urban areas	66.3	70.1	79.3	0.06
License Renewal Laws for Senior Drivers‡				
In person license renewal at age 75 & older	74.2	72.3	78.6	0.25
Health screening to renew license at age 75 & older	76.8	71.4	77.0	0.37
Other Laws				
Motorcycle helmet laws	85.8	91.4	95.1	0.0004
Requiring states to publish annual maps with locations of crashes	57.0	59.2	58.0	0.86
Regulations on in-car technology‡	55.1	50.4	60.7	0.10

†All respondents answered only 3 of 6 randomly selected questions related to support for camera laws.

‡Question not asked in 2011 survey.

Engagement in Unsafe Behaviors

Unsurprisingly, self-reported internet use and reading and sending of text messages while driving among drivers ages 65+ was extremely rare. Drivers ages 75+ reported significantly lower levels of reading text messages while driving than did the other age groups, and drivers ages 70-74 and 75+ both reported significantly lower levels of actually typing text messages while driving than did drivers ages 65-69. Internet use while driving was virtually non-existent in all three age groups and did not vary significantly by age. Talking on cell phones while driving was much more common: more than half of all drivers ages 65-69 reported having talked on a cell phone while driving at least once in the past 30 days, including 12% who reported having done so fairly often or regularly. Cell phone use while driving was slightly less common among drivers ages 70-74 and significantly less common among drivers ages 75+.

Self-reported speeding was relatively common among all three age groups. On freeways, 42-46% reporting having driven 15+ mph over the speed limit at least once in the past 30 days and 7-8% reporting having done so fairly often or regularly, which did not vary significantly by age. Similarly, 41-48% reported having exceeded the speed limit by 10+ mph on a residential street at least once in the past 30 days, with 6-8% reporting having done so fairly often or regularly. While 31-38% of drivers reported having driven through a red light on purpose when they could have stopped safely at least once in the past 30 days, very few (1%) reported having done this fairly often or regularly. While variation by age was not statistically significant for any of these variables, it was interesting and surprising to note that drivers ages 75+ were more likely than drivers in either of the younger age groups to report speeding on residential streets and running red lights.

Most older drivers reported always wearing seatbelt when they drove, however, 18% of drivers ages 65-69, 16% of those ages 70-74, and 25% of drivers ages 75+ reported having driven without wearing a seatbelt at least once in the past 30 days; variation by age was statistically significant, with the oldest drivers the most likely to report this behavior.

The oldest drivers were somewhat more likely to report having driven when they were so tired that they had a hard time keeping their eyes open at least once in the past 30 days (18% reported having done so). While non-significant in the bivariate comparison, drivers ages 75 and older were significantly more likely to report drowsy driving than drivers in the two younger age groups after adjusting for other demographic characteristics.

Perceptions on the Threat of Unsafe Driving

Older drivers tended to have similar views regarding the threat posed to them personally by other drivers' speeding, aggressive driving, and distracted driving behaviors – these were widely regarded as serious threats, and the proportions rating each of these as serious threats did not vary significantly by age (Table 6). Interestingly, the oldest drivers were least likely to regard other drivers running red lights as a serious threat to their personal safety, and this was statistically significant in simple bivariate comparisons; however, it was no longer significant after adjustment for other demographic characteristics.

Table 5. Engagement in unsafe driving behaviors among respondents age 65+ who drove in last 30 days (N=1631), United States, 2011-2013

	Age in years (weighted %)			χ^2 p-value
	65-69	70-74	75+	
Sped by 15 mph or more on a freeway				
Fairly Often/Regularly	7.7	6.5	8.4	0.69
Just Once/Rarely	34.1	35.0	35.8	
Never	58.2	58.5	55.8	
Sped by 10 mph or more in a residential area				
Fairly Often/Regularly	6.0	7.7	7.8	0.10
Just Once/Rarely	34.7	33.8	40.3	
Never	59.4	58.5	51.9	
Read text/e-mail while driving				
Fairly Often/Regularly	0.8	0.8	0.8	0.007
Just Once/Rarely	8.1	5.1	2.4	
Never	91.1	94.1	96.7	
Typed text/e-mail while driving				
Fairly Often/Regularly	0.4	0.3	0.6	0.02
Just Once/Rarely	3.3	1.0	0.9	
Never	96.3	98.7	98.5	
Drove without a seatbelt				
Fairly Often /Regularly	5.7	6.1	5.1	0.04
Just Once/Rarely	12.7	9.7	19.9	
Never	81.6	84.3	75.1	
Drove while drowsy				
Fairly Often/Regularly	1.7	0.7	0.9	0.12
Just Once/Rarely	20.2	22.3	27.6	
Never	78.1	77.0	71.6	
Drove through a red light				
Fairly Often/Regularly	1.1	1.0	0.6	0.13
Just Once/Rarely	29.9	29.9	37.0	
Never	69.0	69.1	62.5	
Talked on a cell phone while driving‡				
Fairly Often/Regularly	12.2	12.1	6.6	<.0001
Just Once/Rarely	39.7	32.4	27.5	
Never	48.1	55.5	65.8	
Used internet while driving§				
Fairly Often/Regularly	0.8	1.8	0.9	0.88
Just Once/Rarely	1.0	0.4	1.5	
Never	98.3	97.9	97.7	

‡ Refers to any type of cell phone, hand-held or hands-free.

§ Question not asked in 2011 survey.

Table 6. Proportion of respondents aged 65+ who rated item shown as a very or somewhat serious threat to their own personal safety (N=1793), United States, 2011-2013

	Age in years (weighted %)			χ^2 p-value
	65-69	70-74	75+	
Aggressive driving	90.7	92.8	92.2	0.55
Drivers talking on cell phones	94.5	94.3	91.6	0.21
People driving after alcohol use	92.3	93.6	90.0	0.21
Texting/e-mailing while driving	96.2	96.8	94.7	0.35
Speeding on freeways	78.3	81.8	83.2	0.17
Speeding in residential areas	83.0	85.7	81.7	0.39
Running red lights	87.0	88.3	81.9	0.04
Sleepy drivers	80.1	80.3	76.6	0.41
Drivers checking/updating social media	97.0	98.1	96.0	0.35
Large trucks	56.5	50.0	55.9	0.38

Discussion

The results show that older people, especially those aged 75 and older, are supportive of elements of a positive traffic safety culture. There is both strong disapproval of negative driving behaviors and strong support for interventions that would correct these behaviors. In addition, they show low levels of participation in many of the same behaviors that they express disapproval of. It is particularly noteworthy that more than 7 in 10 seniors support both mandating in-person license renewals and medical screenings for those drivers over the age of 75, a figure boosted by high levels of support among respondents over age 75. Although one could argue that seniors might overestimate their ability to pass a medical screening, the fact that so many are willing to accept more stringent driver license renewal requirements suggests that traffic safety is an important value among this group.

The results indicate that while the youngest of the older population examined here—those ages 65-69—are quite similar to those ages 70-74 and 75+ with respect to their attitudes, opinions, and self-reported driving behaviors, there are also some noteworthy differences that may have important implications for traffic safety research and programs. In particular, the results highlight a difference in opinion between the youngest group of older drivers and the oldest group regarding speeding. The youngest group is more likely to speed and to find it an acceptable behavior, and they are much less likely to support speed cameras. They also showed very different views on issues related to cell phone use, which may be a related to age-related differences in familiarity and comfort with cell phones, acceptance of multi-tasking while driving in general, or lifestyle-related differences in demands for being able to communicate at all times.

Since in almost all cases the relationships between age and the outcomes analyzed remained when adjusted for other demographic characteristics including gender, race, education, marital status, income, job status, type of car driven, and metropolitan status, there is a higher degree of confidence that age is an important factor in these relationships. However, there were other demographic factors that were

independently related to the outcomes, which could be a topic for future work. For example, differences were observed in the responses of men versus women to many of the questions about attitudes and perceptions towards both driving behaviors and interventions. Sex is a particularly relevant demographic characteristic among older people because of wide disparities that have been observed in driving cessation between men and women (Choi, et.al, 2012). However, analysis adjusting for sex showed that it was not a confounder of the relationships found between age and the outcomes in this study.

There were many topics on which survey responses were only weakly related or completely unrelated to age among the population aged 65+. However, that may not be best explained by saying that all seniors are the same, but rather that age in general is not a factor that shapes opinions on those issues among seniors. Therefore, the absence of differences should not be interpreted as evidence that older drivers should all be treated as one collective group. As a whole, the findings show that “older” drivers, defined as those aged 65 and older, should not be treated as one unified group in traffic safety research. Despite many physiological and demographic similarities between the 65-69 year olds, 70-74 year olds, and those 75 and older, it is evident that attitudes and behaviors differ with respect to age on many dimensions that are important to improving traffic safety.

A theme of previous AAA Foundation research on traffic safety culture has been that drivers wish for others to, “do as I say, not as I do” (AAAFTS, 2014b). While to somewhat lesser of a degree than among the general population, the same pattern was observed here as well among senior drivers. For example, while more than 95% of all respondents said speeding in excess of 10 mph over the speed limit on residential streets was unacceptable, more than 40% reported having done so in the past 30 days, including 6-8% who reported doing this fairly often or regularly. And in spite of the fact that nearly all respondents found red light running unacceptable, 1 in 3 respondents reported that they had run a red light in the past month on an occasion on which they admitted that they could have stopped safely. This shows that the older drivers’ own personal driving behavior does not in all cases measure up to the standard to which they would like to hold others. This has important implications in the quest for safer roads. It demonstrates that changing opinions is not enough to change behavior and make our roads safer.

However, it is possible that the rise of driver assistance technologies that warn drivers about issues such as lane deviation and being too close to another car will help prevent senior drivers from being involved in crashes. Previous research has found that a person giving driving directions and help to older drivers reduces the rate at which they commit errors, which the researchers noted suggests efficacy for navigation systems in the cars of older drivers (Wood, et.al, 2009).

These findings have implications for those who those who want to make driving safer. They show that older Americans, particularly those over age 75, are important allies in their mission. Considering the projected growth in this population in the coming years, traffic safety advocates are sure to find more and more success. That of course assumes that age leads to a change in attitudes. If those drivers aged 65-69 do not change with age and are representative of enduring attitudes of Baby Boomers, the older drivers of ten to twenty years from now may differ in important ways from those on the road today. That being said, this analysis demonstrates that there are some unsafe driving behaviors that still have a high level of acceptance, even among seniors, which suggests more education is needed.

Limitations and Future Work

The large size of the sample of senior drivers analyzed for the current study made it possible to detect even small differences between age groups; however, this resulted in even some trivially small differences still being statistically significant. For example, 97.5% of respondents aged 65-69, 98.7% of respondents

aged 70-74, and 99.7% of respondents aged 75+ reported that they consider it unacceptable to drive 10 mph over the speed limit in a school zone. While these differences were statistically significant ($P=.01$), owing primarily to the large sample size, there clearly are not important age-related differences among seniors in attitudes about speeding in school zones—virtually all of them rate this as unacceptable.

Conversely, there were some unexpected results that, while not statistically significant, may warrant at some further attention. For example, the finding that drivers ages 75+ were more likely to report running red lights than respondents in either of the other two age groups (38% vs. 31%) was unexpected. This was not stastically significant ($P=.13$) and may simply be due to random sampling variability, or it may be that the oldest drivers were simply more honest in reporting their own behavior (i.e., that the younger seniors did this even more but did not want to admit it). However, if this pattern of older drivers being more likely to run red lights is observed in future studies as well, it may warrant increased attention. Although not believed to be related to red-light running, previous AAA Foundation research has shown that crash rates of older drivers begin to increase at around age 75 (Tefft, 2012).

A key limitation is the fact that because this is a survey, all answers are self-reported. Respondents may be uncomfortable expressing approval of or admitting engagement in unsafe driving behaviors. They may also be hesitant to express opposition to traffic regulations. It is even possible that this could vary by age cohort, which would have impacted the results. The first part may be especially true because respondents were asked about how they believe others feel about negative driving behaviors before they were asked how they themselves felt. In fact, analysis showed a strong relationship between what respondents thought “most other people” felt regarding driving behaviors and their own opinions about those same behaviors. In addition, future work may want to focus on further stratification of those aged 65 and above, particularly among the group aged 75 and older. This group contains a range of ages upwards of 25 years and is a time of great change, particularly in the rate of licensure and number of miles driven per year. Such stratification was not practical in the current study due to a limited number of survey respondents older than 80 and very few older than 85. A key question that this research cannot answer is whether 65-69 year olds are always different from those 75 or older or it is a generational difference. After all, many of the 65-69 year olds in this sample are Baby Boomers, while none of those 75 and older are. This is a potential topic for future work.

Future work should also compare these older respondents to respondents under 65 to better understand what makes older respondents unique. This research is currently in progress at the AAA Foundation for Traffic Safety. It will be conducted and presented in a similar manner to this analysis.

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