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Driving concerns among older adults: Associations with driving skill, behaviors, and experiences

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Abstract

Objectives.—The purpose of this investigation was to determine what older adults find most concerning about driving as they age and how these concerns are related to driving skill, behaviors, and experiences.

Methods.—In partnership with the Maryland Motor Vehicle Administration, a sample of 751 older adults ages 65 and older completed an online survey between October 2017 and May 2018. A content analysis was used to code open-ended responses about driver concerns, and multivariate logistic regression models were used to analyze the associations between driving concerns and driving skill, behavior, and experiences.

Results.—Eighty-four percent of participants reported at least one driving concern, with 44% concerned about others' driving, 34% concerned about their own driving, and 24% concerned about driving conditions. The most frequently mentioned driving concerns were other drivers in general, driving at night, visual ability and awareness, and other drivers being aggressive or reckless. Being concerned with their own driving was significantly associated with decreased perceived driving skill and increased odds of experiencing negative driving experiences in the past year. Being concerned about others' driving was associated with increased odds of wearing a seatbelt (AOR = 2.67; 95% CI = 1.02, 7.00), having high perceived driving skills in emergency situations (AOR = 1.56; 95% CI = 1.14, 2.12), and getting in a near crash or collision in the past year (AOR = 1.50; 95% CI = 1.04, 2.18).

Conclusions.—Older adult drivers are frequently concerned about their own driving as well as the driving of others. Implications for future research and health practice are discussed.

Keywords

Driver behavior; old drivers; risk taking; safety

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INTRODUCTION

In 2016, there were almost 7,000 older adults ages 65 and older killed in motor vehicle accidents in the U.S. Over the past decade, total traffic fatalities among older adults has increased by 13% (National Center for Statistics and Analysis 2018), and about half of older drivers involved in car crashes sustain injuries (Classen et al. 2010). There are over 40 million licensed drivers ages 65 and older in the United States (Federal Highway Administration 2017), which has increased 34% over the past decade (National Center for Statistics and Analysis 2018). With the number of older adult drivers increasing every year as the older adult population continues to grow, it is important to better understand the driving circumstances of older adults to decrease driving-related morbidity and mortality over the lifespan.

While licensed older adult drivers tend to drive less than younger drivers (Karali et al. 2016), older adults are more likely to be killed or injured in motor vehicle crashes (Awadzi et al. 2008; Kahane 2013; Rolison et al. 2012). This increased likelihood of traffic-related injury and death may be attributable to age-related decline in visual, physical, and cognitive function, often related to medical conditions or medication use (Dickerson et al. 2017). Karali et al. (2016) found that older drivers, in comparison to younger drivers, report decreased reaction time and more difficulty driving during bad weather and turning their head and body to reverse.

There is also a growing concern regarding the relationship between older adult drivers and other drivers on the road. Between 2007 and 2016, there was an 18% increase in the number of people killed in crashes involving older adult drivers, including the older drivers themselves, passengers in the older drivers' vehicles, occupants of other vehicles, and non-occupants. Additionally, the majority (67%) of crash fatalities involving older drivers involve another vehicle (National Center for Statistics and Analysis 2018). Lombardi et al. (2017) found that older adult drivers were about 20% more likely to be involved in a fatal intersection crash than younger drivers, and by age 85 the fatal intersection crash risk almost doubles. This study also found that older drivers were significantly more likely to be found at fault in fatal intersection crashes than younger drivers. Driving error is typically identified as the main reason for crashes involving older drivers, with the most common errors including inadequate surveillance, misjudgment of vehicle distance or speed, illegal maneuvers, medical events, and daydreaming (Cicchino & McCartt 2015).

There are also high levels of safety practices among older adult drivers. Compared to other age groups, there is a higher prevalence of seatbelt use among the older adult population (Li & Pickrell 2018). Older adults also report trying to avoid in-vehicle distractions while driving, including talking on a cellphone, personal grooming, or reading a road map (Molnar et al. 2013).

As adults age, many start to regulate their driving, and reported confidence and enjoyment of driving declines (Donorfio et al. 2008). Older adult drivers begin to avoid certain driving situations, such as driving during bad weather, at night, on high-traffic roads, and in unfamiliar areas (Molnar & Eby 2008; Molnar et al. 2013; Naumann et al. 2011; Okonkwo

et al. 2008). Donorfio et al. (2008) and Conlon et al. (2017) found that older adults engage in more self-regulation as their health declines. Okonkwo et al. (2008) found that older adult drivers identified at high risk for crashes report greater avoidance of risky driving situations than lower risk drivers.

The driving behaviors and experiences of older adults have been previously explored, showing that older adults' driving skill and confidence both decline over time. However, there is less information available on what older adults find most concerning about driving as they age and how these concerns are associated with perceived driving skill, driving behaviors, and driving experiences. A better understanding of whether driving concerns are related to actual driving outcomes among older adults, which have been measured previously in other adult populations (Beck et al. 2011), will allow for more informed discussions surrounding driving regulation and cessation during older adulthood.

METHODS

Data Collection and Procedures

In partnership with the Maryland Motor Vehicle Administration (MVA), letters were mailed to 9,000 licensed drivers ages 65 and older inviting them to participate in the study in the fall of 2017. The sampling frame was stratified by gender and Maryland county of residence to assist in generating a geographically representative sample. The invitation letters included a link to take an online survey, with participants needing to meet the following eligibility criteria: 1) age 65 and older; 2) currently residing in the state of Maryland; and 3) have a current driver's license. A second round of invitation letters was sent in the spring of 2018 to another stratified sample of 9,000 older adult drivers. Data collection was open from October 2017 to May 2018.

Informed consent was obtained by each participant prior to study participation. The survey included an eligibility screener and 77 survey questions. Due to a lack of internet access or difficulty with the survey link, 25 participants completed and mailed in a paper copy of the survey. A total of 825 participants completed the survey and submitted usable data. Participants had the option to enter themselves into a raffle to receive a $25 gift card by providing their contact information, and thirty participants were randomly selected to receive the incentive. The methods and procedures used in this study were approved by the Maryland MVA as well as the Institutional Review Board (IRB) at the university where the research was conducted.

Measures

Participants provided information on their gender, race, ethnicity, highest level of education, and employment status. Participants also indicated how frequently they drove (every day, several days a week, once a week or less, only certain times a year, never).

To assess perceived driving skill, participants rated their driving skills in normal situations and their driving skills in emergency situations on a scale from zero (least skilled) to ten (most skilled). Participants also self-rated how they feel they react to risks on the highway from zero (not safely at all) to ten (completely safely). Participants were asked if they made

any changes to their driving in the past year (yes/no), whether they ever felt they should limit or give up their driving (yes/no), and the frequency with which they wear their seatbelt (always, nearly always, sometimes, seldom, never). Participants also indicated if in the past year they had driven after having a few alcoholic drinks, driven when they knew they had too much alcohol to drink, ran a stop sign or red light, received a ticket or citation for a moving violation, had a close call or near crash/collision, were in a minor crash/collision, or were in a major crash/collision (Beck et al. 2011).

Using an open-ended question, participants were asked to indicate their biggest concern about their driving.

Statistical Analyses

Out of the original sample of 825 older adults, 49 participants did not respond to the question about driving concerns and 25 participants provided generic, non-specific responses or responses unrelated to driving (e.g., ‘getting older’). These 74 participants were excluded from analyses, leaving an analytic sample of 751 older adults.

A content analysis was used to code the open-ended responses about driver concerns. First, potential themes were created based on an initial examination of all responses. Using these initial themes, two coders independently reviewed and coded the same set of 30 responses. The coders were in agreement on the coding for 93% of the selected responses, and the team had a discussion on any additional themes that should be added to the final list. After a final list of driving concern themes was decided upon, one member of the research team coded all remaining responses. While participants were asked to provide their biggest concern, many participants (n = 214; 28%) provided more than one concern in their response. All concerns were coded, even if more than one concern was provided. For example, if a participant responded that their biggest concerns were driving at night and getting lost, both of these responses were coded. In addition, if a participant answered that they had no driving concerns, their response was coded as such and they were included in further analyses.

Descriptive statistics (e.g., frequencies, means, and standard deviations) were used to analyze the distributions of all study variables. Driving concerns were recoded as dichotomous variables representing having at least one concern, having a concern about driving conditions, having a concern about their own driving, and having a concern about others’ driving. Multivariate logistic regression models were used to analyze the associations between these driving concern categories and perceived driving skill, driving behaviors, and past-year driving experiences after adjusting for demographic characteristics and driving frequency. In the logistic regression models, participants who had a least one concern were compared to a reference group of those who listed having no concerns about driving. The reference groups for the three other driving concern categories were all other participants in the analytic sample.

RESULTS

Sample Characteristics

Participants ranged in age from 65 to 97 years old, with a mean age of 72 years old (see Table 1). The sample was 53% male, 86% white, and 99% non-Hispanic. The majority of participants had completed a Bachelor's degree or higher (64%) and were retired (76%).

Perceived Driving Skill, Driving Behaviors, and Driving Experiences

The majority of participants drove every day (57%) or several days a week (38%). Only a small number of participants never drove (0.3%). As shown in Table 2, 97% of the sample always wore their seatbelt and 23% had made changes to their driving in the past year. Thirty-nine participants (5%) indicated that at some point they had felt that they should limit or give up their driving.

When asked to rate their driving skills on a scale from 0–10, the sample's mean scores for driving skills in normal situations, driving skills in emergency situations, and ability to react safely to risks on the highway were 8.9, 8.2, and 8.5, respectively. Sixty-eight percent of participants ranked their driving skills in normal situations as a 9 or a 10, and 45% ranked their driving skills in emergency situations as a 9 or a 10. For ability to react safely to risks on the highway, 56% ranked their skills as a 9 or a 10.

In the past year, 26% of participants reported driving after having a few alcoholic drinks, and 2% drove when they knew they had had too much to drink. Ten percent of the sample ran a stop sign or a red light, and 8% received a ticket or citation for a moving violation. One-fifth of the sample (20%) had a close call or a near crash/collision, 10% had been in a minor crash/collision, and 14 participants (2%) had been in a major crash/collision in the past year.

Driving Concerns

Twenty-three separate concerns were identified during the coding of participants' open-ended responses, including a code for "no concerns". The most frequently mentioned concerns were other drivers in general (mentioned by 21% of participants), driving at night (17%), visual ability and awareness (15%), and other drivers being aggressive or reckless (10%). Sixteen-percent of participants indicated that they did not have any driving concerns. A full list of concerns and their frequencies can be found in Table 3.

Driving concerns were re-coded into four categories. The first category was whether participants had indicated at least one concern (i.e., had not been coded as "no concerns"). The second category was for concerns about driving conditions, which included the codes for bad weather, traffic, roadway hazards, and driving at night. The third category was for concerns about the participants' own driving, which included driving too fast, driving too slow, reaction time, visual ability/awareness, tickets/citations, being distracted/losing focus, physical discomfort, being sleepy/drowsy, and getting lost/driving in unfamiliar places. The last category was for concerns about other drivers, which included driving too fast, aggressive/reckless, distracted, drinking and driving, crashes/collisions, distance from other

cars, and general concerns (non-specific). Concerns about car trouble and cost of auto insurance were not included in these four categories.

Eighty-four percent of participants (n = 630) had a least one driving concern, 44% (n = 330) were concerned about others' driving, 34% (n = 255) were concerned about their own driving, and 24% (n = 179) were concerned about driving conditions.

Associations Between Driving Concerns, Perceived Driving Skill, and Driving Behaviors

The results of multivariate logistic regression models on the associations between the four categories of driving concerns and perceived driving skill and driving behaviors are shown in Table 4. Having at least one concern about driving, as compared to not having any concerns, was associated with increased odds of making changes to driving in the past year (AOR = 2.48; 95% CI = 1.33, 4.63) and decreased odds of perceived driving skills in normal situations (AOR = 0.30; 95% CI = 0.17, 0.54), perceived driving skills in emergency situations (AOR = 0.44; 95% CI = 0.29, 0.68), and ability to react safely to risks on the highway (AOR = 0.41; 95% CI = 0.26, 0.66).

Participants who were concerned about driving conditions had significantly lower odds of high perceived driving skills in emergency situations (AOR = 0.53; 95% CI = 0.36, 0.76) or their ability to react safely to risks on the highway (AOR = 0.68; 95% CI = 0.48, 0.97). Being concerned about others' driving was significantly associated with increased odds of always wearing a seatbelt (AOR = 2.67; 95% CI = 1.02, 7.00) as well as high perceived driving skills in emergency situations (AOR = 1.56; 95% CI = 1.14, 2.12).

Participants with concerns about their own driving had decreased odds of high perceived driving skills in normal situations (AOR = 0.35; 95% CI = 0.25, 0.49), driving skills in emergency situations (AOR = 0.37; 95% CI = 0.26, 0.52), and ability to react safely to risks on the highway (AOR = 0.36; 95% CI = 0.26, 0.50). They also had increased odds of making past-year changes to their driving (AOR = 1.75; 95% CI = 1.20, 2.54) and had over four times higher odds of feeling that they should limit or giving up their driving when compared to participants without concerns about their own driving (AOR = 4.26; 95% CI = 1.88, 9.66).

Associations Between Driving Concerns and Past-Year Driving Behaviors and Experiences

The results of multivariate logistic regression models on the associations between the four categories of driving concerns and past-year driving behaviors and experiences are shown in Table 5. Having at least one driving concern was significantly associated with an almost three-fold increase in odds of running a stop sign or red light (AOR = 2.78; 95% CI = 1.08, 7.14) or getting in a near crash/collision in the past year (AOR = 2.55; 95% CI = 1.34, 4.86). Having concerns about others' driving was significantly associated with getting in a near crash/collision in the past year (AOR = 1.50; 95% CI = 1.04, 2.18). Being concerned with their own driving was significantly associated with increased odds of running a stop sign or red light (AOR = 2.16; 95% CI = 1.29, 3.63), getting a ticket/citation (AOR = 2.35; 95% CI = 1.34, 4.14), getting in a near crash/collision (AOR = 1.51; 95% CI = 1.03, 2.22), and getting in a crash/collision in the past year (AOR = 1.79; 95% CI = 1.08, 2.94).

DISCUSSION

This study examined the relationships between older adult driving concerns and perceived driving skill, driving behaviors, and driving experiences. Results showed that older adults are most concerned about other drivers on the road. Drivers concerned about other drivers were much more likely to report wearing their seatbelt, perhaps as a way of protecting themselves from potential injury or death in the case of a crash. Consistent with prior studies, older adults in this sample frequently indicated concerns about driving at night (Baldock et al. 2006; Molnar & Eby 2008; Molnar et al. 2013; Naumann et al. 2011; Okonkwo et al. 2008) and their visual ability, awareness, and reaction time (Cantin et al. 2009; Cicchino & McCartt 2015; Karali et al. 2016).

As expected, being concerned about driving conditions or one's own driving was associated with decreased perceived driving skill. However, being concerned about others' driving was associated with increased perceived driving skills in emergency situations. It is encouraging that the older adult drivers in this sample feel that despite their concerns over other drivers engaging in risky driving behavior, they feel confident in their ability to react if they were to be affected by another driver's behavior. This finding might be due to increased vigilance and attention by drivers who are more concerned about the behavior of other drivers.

Past-year driving experiences were associated with being concerned about participants' own driving as well as the driving of others. The older adult drivers in this study may have developed concerns about their driving after running a stop sign or red light, getting a ticket, experiencing a near crash/collision, or getting into a crash/collision. Similarly, experiencing a near crash/collision may have made participants more concerned about other drivers than they had been previously. However, the temporality of these relationships cannot be determined due to the cross-sectional nature of this study but would be an interesting focus of future research.

None of the driving concern categories were associated with driving after having a few drinks or driving after drinking too much. Only a minority of participants reported driving after having too much to drink in the past year, which is consistent with prior research that older adults are the least likely age group to drive under the influence of alcohol (Delker et al. 2016; Hingson & Zha 2009).

There was evidence of driving self-regulation among the older adults in this study. Drivers with concerns about their driving were more likely to make changes to their driving as well as feel they should limit or give up their driving. However, several studies have found a disconnect between driving ability and self-regulation among older drivers. Baldock et al. (2006) found that on-road driving ability was not correlated with driving avoidance among older adults, suggesting inappropriate driving self-regulation. Similarly, MacDonald et al. (2008) found discrepancies between objective and perceived driving abilities of older adults, in that older drivers with functional impairments but a lack of awareness of their deficits reported increased driving comfort and driving frequency than those without these discrepancies. Lastly, a study by Freund et al. (2005) found that as self-rating of driving increased among older adults, so did risk of unsafe driving.

There is a unique opportunity for healthcare professionals to discuss driving regulation with their older adult patients, as physician advice is one of the most common reasons older adults decide that it is time to stop driving (Carr & Ott 2010). However, a qualitative study of clinicians and older adult drivers by Betz et al. (2013) found a lack of communication between clinicians and patients in regards to driving habits. Clinicians report that they do not routinely ask their older patients about driving, citing concern over liability, lack of knowledge, and unfavorable reactions by patients as barriers to these discussions (Bogner et al. 2004; Friedland et al. 2006).

Other research has shown that older adult drivers support routine questioning of driving habits by health professionals as a way to normalize the topic of driving cessation (Betz et al. 2013), but that this communication should occur over time rather than abruptly (Betz et al. 2016). Vision-care providers seem to display more confidence in their abilities to determine whether an older adult can still drive safely. Leinberger et al. (2013) found that almost two-thirds of vision-care providers routinely ask their older adult patients about driving, and almost 90% feel that counseling older patients on driving is their responsibility. However, vision care providers have similar concerns as other health professionals, citing concerns related to damaging the physician-patient relationship and breaching patient confidentiality.

The results of this study must be interpreted in the context of its limitations. While the sample was proportionately similar to the population of Maryland in terms of gender and county of residence, the sample was predominantly non-Hispanic white and well-educated. Future research should aim to replicate the study in more geographically and racially diverse samples of older adults. This research also relied on self-report measures of driving behavior and experiences, which are subject to bias. Perceived driving skill may not be an accurate representation of actual driving ability, and future research should use more reliable measures of older adult driving when possible. Additionally, the study relied on content analysis to determine driver concerns, which is subject to validity and reliability issues related to multiple coders, category selection, and content misinterpretation (Maier 2017).

Older adult drivers are concerned about driving conditions, their own driving ability, and the driving behaviors of other drivers, and these concerns appear to be associated with decreased perceived driving skill and negative driving experiences. Increased guidance and support should be provided to the older adult driver population to assist in addressing these concerns as well as opening the door for discussions regarding driving self-regulation and cessation. Future research should continue to explore the relationship between driving concerns and behavior among older adults, with an emphasis on group differences between older adult subpopulations and additional factors that may play a role in driving experiences, including health, social, and behavioral factors.

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Table 1.

Sample characteristics (n = 751)

	Mean ± SD
Age	72.2 ± 6.0
	***n* (Column %)**
Gender	
Male	392 (52.8)
Female	350 (47.2)
Race	
White/Caucasian	635 (85.9)
Black/African-American	85 (11.5)
Asian/Pacific Islander	11 (1.5)
Native American	2 (0.3)
Other	6 (0.8)
Ethnicity	
Hispanic/Latino/Spanish	8 (1.1)
Non-Hispanic/Latino/Spanish	730 (98.9)
Highest level of education	
High school or less	65 (8.8)
Trade school/certificate program	16 (2.2)
Some college	131 (17.7)
Associate's degree	58 (7.8)
Bachelor's degree	183 (24.7)
Graduate degree	289 (38.9)
Employment status	
Full-time	90 (12.2)
Part-time	75 (10.1)
Retired	560 (75.7)
Other	15 (2.0)

Note. All available data were included in analyses.

Table 2.

Perceived driving skill, driving behaviors, and driving experiences among older adults (n = 751)

	***n* (Column %)**
Seatbelt use	
Always	724 (96.7)
Nearly always	16 (2.1)
Sometimes	4 (0.5)
Seldom	2 (0.3)
Never	3 (0.4)
Past-year changes to driving	
Yes	169 (22.5)
No	582 (77.5)
Feel that they should limit/give up driving	
Yes	39 (5.2)
No	711 (94.8)
Past-year driving behaviors and experiences	
Driven after having a few alcoholic drinks	196 (26.1)
Driven when you knew you had too much alcohol to drink	12 (1.6)
Ran a stop sign or red light	72 (9.6)
Received a ticket or citation for a moving violation	60 (8.0)
Had a close call or near crash/collision	152 (20.3)
Been in a minor crash/collision	74 (9.9)
Been in a major crash/collision	14 (1.9)
	Mean ± SD
Perceived driving skill	
Driving skills in normal situations (0–10)	8.9 ± 1.1
Driving skills in emergency situations (0–10)	8.2 ± 1.5
React safely to risks on the highway (0–10)	8.5 ± 1.4

Note. All available data were included in analyses.

Table 3.

Biggest driving concerns of older adults (n = 751)

	n **(Column %)**
No concerns	121 (16.1)
Other drivers: General (non-specific)	156 (20.8)
Driving at night	124 (16.5)
Visual ability/awareness	113 (15.0)
Other drivers: Aggressive/reckless	78 (10.4)
Reaction time	65 (8.7)
Other drivers: Distracted	61 (8.1)
Other drivers: Driving too fast	42 (5.6)
Crashes/collisions	37 (4.9)
Bad weather	35 (4.7)
Traffic	29 (3.9)
Being distracted/losing focus	24 (3.2)
Driving too fast	23 (3.1)
Distance from other cars	20 (2.7)
Getting lost/driving in unfamiliar places	17 (2.3)
Roadway hazards	16 (2.1)
Being sleepy/drowsy	15 (2.0)
Driving too slow	10 (1.3)
Physical discomfort	9 (1.2)
Car trouble	9 (1.2)
Other drivers: Drinking and driving	7 (0.9)
Tickets/citations	4 (0.5)
Cost of auto insurance	3 (0.4)

Note. All available data were included in analyses. Ns represent the number of participants who listed that particular concern. Concerns are not mutually exclusive- although participants were asked to note their biggest concern, many listed more than one and were counted more than once.

Table 4.

Results of multivariate logistic regression models on the relationships between driving concerns and perceived driving skill and driving behaviors

	Perceived Driving Skill and Driving Behaviors					
	Always wears seatbelt	**Made past-year driving changes**	**Feels that they should limit/give up driving**	**High perceived driving skills in normal situations**	**High perceived driving skills in emergency situations**	**High perceived driving skill in reacting safely to risks on highway**
	AOR (95% CI)	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*
Had at least one concern	1.20 (0.41, 3.48)	2.48 (1.33, 4.63) **	-	0.30 (0.17, 0.54) **	0.44 (0.29, 0.68) **	0.41 (0.26, 0.66) **
Concerned about driving conditions	0.49 (0.20, 1.17)	1.05 (0.69, 1.59)	1.27 (0.53, 3.05)	0.72 (0.50, 1.05)	0.53 (0.36, 0.76) **	0.68 (0.48, 0.97) *
Concerned about my driving	0.45 (0.19, 1.05)	1.75 (1.20, 2.54) **	4.26 (1.88, 9.66) **	0.35 (0.25, 0.49) **	0.37 (0.26, 0.52) **	0.36 (0.26, 0.50) **
Concerned about others' driving	2.67 (1.02, 7.00) *	1.18 (0.82, 1.69)	0.91 (0.42, 1.99)	1.30 (0.93, 1.82)	1.56 (1.14, 2.12) **	1.34 (0.98, 1.83)

* $p < 0.05$;

** $p < 0.01$

Note. All available data were included in analyses.

AOR= Adjusted Odds Ratio. Adjusted estimates control for demographic characteristics and driving frequency.

Participants were considered to have high perceived driving skill if they rated themselves as a 9 or a 10 on a 0–10 scale.

All $n = 39$ participants who felt they should limit or give up their driving had at least one concern about driving, and a logistic regression model for this relationship could not be completed.

Table 5.

Results of multivariate logistic regression models on the relationships between driving concerns and past-year driving behaviors and experiences

	Past-Year Driving Behaviors and Experiences					
	Drove after having a few drinks	**Drove after drinking too much**	**Ran a stop sign/ red light**	**Got a ticket/citation**	**Near crash/collision**	**Crash/collision**
	AOR (95% CI)	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*	*AOR (95% CI)*
Had at least one concern	1.47 (0.87, 2.48)	0.92 (0.18, 4.74)	2.78 (1.08, 7.14) *	1.87 (0.72, 4.87)	2.55 (1.34, 4.86) **	1.34 (0.66, 2.70)
Concerned about driving conditions	0.96 (0.63, 1.45)	1.47 (0.40, 5.45)	1.35 (0.76, 2.40)	0.69 (0.34, 1.38)	1.03 (0.66, 1.59)	1.44 (0.83, 2.49)
Concerned about my driving	1.30 (0.89, 1.88)	1.73 (0.51, 5.92)	2.16 (1.29, 3.63) **	2.35 (1.34, 4.14) **	1.51 (1.03, 2.22) *	1.79 (1.08, 2.94) *
Concerned about others' driving	1.03 (0.72, 1.47)	0.36 (0.09, 1.49)	0.73 (0.43, 1.23)	0.60 (0.33, 1.08)	1.50 (1.04, 2.18) *	0.82 (0.50, 1.35)

* $p < 0.05$;

** $p < 0.01$

Note. All available data were included in analyses.

AOR= Adjusted Odds Ratio. Adjusted estimates control for demographic characteristics and driving frequency.

Getting in a crash/collision includes both minor and major crashes and collisions.