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## Survey of Older Drivers' Experiences with Florida's Mandatory Vision Re-Screening Law for Licensure

Gerald McGwin Jr., M.S., Ph.D.<sup>1,2,3</sup>, Anne T. McCartt, Ph.D.<sup>4</sup>, Keli A. Braitman, Ph.D.<sup>4</sup>, and Cynthia Owsley, M.S.P.H., Ph.D.<sup>1</sup>

<sup>1</sup>*Department of Ophthalmology, School of Medicine, University of Alabama at Birmingham*

<sup>2</sup>*Department of Epidemiology and International Health, School of Public Health, University of Alabama at Birmingham*

<sup>3</sup>*Section of Trauma, Burns, and Surgical Critical Care, Division of General Surgery, Department of Surgery, School of Medicine, University of Alabama at Birmingham*

<sup>4</sup>*Insurance Institute for Highway Safety, Arlington, Virginia*

### Abstract

**Purpose**—To document the license renewal experiences of Florida drivers ages 80 and older who must pass a visual acuity test when renewing their driver's license.

**Participants**—A random sample of Florida residents ages 80 and older whose driver's licenses were scheduled to expire between January 1, 2004 and June 30, 2005 as identified by the Florida Department of Highway Safety and Motor Vehicles.

**Methods**—Study participants (n=1,242 drivers) were contacted via telephone and completed a survey regarding their experiences with the license renewal process.

**Results**—The majority (80.2%) of those eligible for license renewal reportedly attempted to do so and 88.0% succeeded the first time they tried. A large percentage of drivers (88%) who failed the vision test said they sought treatment, and 77.6% of drivers who reattempted renewal reportedly passed the test. About half of drivers who did not seek renewal said they thought they would fail the vision test. The majority of those choosing not to renew their license (99.5%) reported using transportation alternatives.

**Conclusions**—This Study suggests that the Florida vision screening re-licensure law is not a deterrent to seeking license renewal for the ≥80-year-old population. Furthermore, only a small percentage of Florida drivers ages ≥ 80 years and older reported that they failed the visual acuity screening test and were denied license renewal.

### Keywords

aging; driving; mobility; public policy; visual acuity

## INTRODUCTION

In the U.S. the rate of crash involvement among older drivers aged 70 and over per mile driven is higher than for all other ages except drivers 24 and younger.<sup>1</sup> While the elevated crash rate

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Corresponding Author: Gerald McGwin, Jr., M.S., Ph.D., Department of Ophthalmology, School of Medicine, University of Alabama at Birmingham, 700 S. 18th Street, Suite 609, Birmingham, AL 35294-0009; Phone (205) 325-8117; Fax (205) 325-8692; e-mail mcgwin@uab.edu.

for younger drivers is attributable to inexperience, risky behaviors, and alcohol,<sup>2</sup> older adults' elevated risk for motor vehicle collisions is due to medical conditions causing functional impairments such as visual and cognitive deficits.<sup>3</sup> Older adults' increased risk of injury and death from motor vehicle collision<sup>4, 5</sup> has motivated calls to improve the driver safety for this segment of the population.

Population-based strategies for reducing older driver's crash rate have been pursued by 40 of 50 U.S. states through vision re-screening policies.<sup>6</sup> the goal of such strategies is to identify older drivers who are believed to have an elevated risk of being in a crash because visual acuity falls below a specified level, and then to deny or restrict their licensure. In the U.S. there is not only state-to-state variability in terms of acceptable visual acuity, but there is also widespread variation among states in the mode of renewal that is acceptable (e.g., in-person, mail-in, internet), the length of the renewal periods, and the age groups affected by such laws. It is noteworthy that despite the popularity of such laws, there is no conclusive evidence that vision-screening laws targeting older drivers improve public safety (i.e., reduce motor vehicle collisions).<sup>7-12</sup>

Under Florida law, drivers whose license is expiring have the option to renew their license in person or request an extension by mail or internet. Visual acuity testing is required for everyone who appears in person to renew their license, but not for those who apply for extension. The renewal or extension period is six years for applicants with both a conviction-free record for the prior three years and no license suspensions or revocations for the prior seven years; it is four years for drivers who do not meet these criteria. Extensions are given for only two consecutive cycles. However, effective January 1, 2004, the law changed in one important respect. Applicants for extension who are 80 years or older can continue to extend their license via mail, internet or telephone but with the addition of one important requirement; they are required to submit a certificate from a physician or optometrist showing that they have passed a vision screening within the prior year. The advent of this law meant that, after January 1, 2004, all persons aged 80 and older, regardless of whether they renewed their licenses or applied for an extension, were required to pass the vision test. The vision test is a letter acuity test. the minimum requirement for passing the test are as follows: If the worse eye is better than 20/200, the applicant must have at least 20/70 in the other eye, or with both eyes together. If one eye is 20/200 or worse, the applicant must have at least 20/40 in the other eye and with both eyes together.

With the implementation of this policy, a number of concerns potentially emerge that could threaten the transportation mobility of the  $\geq 80$  year old population in Florida. First, screening at re-licensure for those  $\geq 80$  years old might actually deter them from seeking to renew their license, out of fear that they will fail. Second, because of the relatively high prevalence of eye disease in this age group,<sup>13</sup> there is a concern that a substantial percentage will fail the vision screening test and consequently have their primary means of mobility eliminated. Currently there are no data that documents whether these concerns have validity or not, nor is their information available about the attitudes those older adults actually affected by the law have about the law. To address these issues a telephone survey among Florida drivers ages 80 and older who were eligible for license renewal and, therefore, subject to the new law was conducted. They were asked whether they attempted to renew their licenses, about their experience and results of the renewal attempt, and about their attitudes regarding the law.

## MATERIALS AND METHODS

### Study Subjects

The population for this study was individuals ages 80 and older with valid Florida driver's licenses that were scheduled to expire (unless renewed) between January 1, 2004 and June 30,

2005 (N = 181,899). A list of these individuals was obtained from the Florida Department of Highway Safety and Motor or Vehicles (FDHSMV). A direct marketing company (Pinpoint Technology, Tustin, CA) provided addresses and telephone numbers for a random sample of persons aged 80 and older as of January 1, 2004. Of the 55,000 records in this random sample, 30,872 (56.1%) could be matched to FDHSMV records on the basis of name and address. These persons were sent a letter explaining that a project staff member would telephone them within the next few weeks to carry out a survey on driving. The Institutional Review Board of the University of Alabama at Birmingham approved the study. This study complied with the tenets of the Declaration of Helsinki.

Though the objective was to complete a telephone interview with 1,100 individuals, a larger number of individuals was randomly selected (N=3,977) because, based on previous work, it was anticipated that approximately 25% of the telephone numbers would be incorrect or disconnected, 50% of those contacted would refuse to participate, and 25% would be otherwise unreachable. Ultimately between June and November 2005 telephone interviews were completed for 1,242 of the 3,977 who were mailed letters (31.2%). The median time between the scheduled license expiration date and interview was 6 months with a minimum of 3 months and a maximum of 21 months; 93.5% of participants were interviewed within 1 year of their scheduled license expiration date. Of those who were mailed letters but for whom a telephone interview was not completed (N=2,735), 1,418 (51.8%) individuals were contacted yet refused to participate, 764 (27.9%) were not reachable at the telephone number provided despite five attempts at various times of the day/week, the telephone numbers for 429 (15.7%) individuals were either disconnected or incorrect, and 124 (4.5%) individuals were deceased.

### Telephone Survey

In addition to standard demographic information (e.g., age, gender, race), the telephone survey collected information regarding the presence of common chronic medical conditions among older adults (e.g., diabetes, heart disease, cancer). Cognitive status was assessed by the Orientation-Memory-Concentration (OMC) test<sup>14</sup>, a 6-item screening test suitable for telephone administration whose items are weighted and summed; scores can range from 0 to 28 with higher scores indicating greater impairment. Information about driving habits was obtained by asking about current driving status, estimated weekly mileage, and the use and availability of transportation options other than driving their own vehicle. Information regarding the license renewal process was also obtained including whether they attempted to renew their license and if not, why not; who administered their vision test and whether they passed; and for those that did not pass, whether they visited a physician or optometrist in order to determine if their vision could be improved. There were also three items addressing their attitudes towards the new licensure law, which were presented as statements (“The new vision screening law unfairly targets older drivers”, “The new vision screening law is a way for the state to improve driver safety”, and “There are more important driving issues than the vision of older drivers”). Participants were asked to indicate whether they “strongly agree”, “somewhat agree”, “somewhat disagree”, “strongly disagree”, or have “no opinion” with respect to each statement.

### Statistical Analysis

Descriptive statistics were used to present the demographic, health, and driving characteristics of the study participants. Chi-square and t-tests were used to compare these same characteristics among those who sought license renewal and passed, those who sought renewal and failed, and those who did not seek renewal. P-values < 0.05 (two-sided test) were considered statistically significant.

## RESULTS

Table 1 presents the demographic characteristics of the study participants and non-participants as well as characteristics of the study population. The average age of participants was approximately 85 years, which was slightly but significantly younger than those who refused ( $p < 0.0001$ ) and other non-participants ( $p = 0.0021$ ). Participants were also younger (by one-year on average) than the study population of Florida drivers 80 and older eligible for license renewal between January 2004 and June 2005 ( $p < 0.0001$ ). The majority of participants were female (59.9%); this was larger than both those who refused ( $p = 0.025$ ) and other non-participants ( $p = 0.001$ ) as well as the general population ( $p < 0.0001$ ). A similar pattern was observed for race wherein the majority of participants were white, and the proportion was higher for this group relative to those who refused ( $p = 0.001$ ) and other non-participants ( $p = 0.025$ ) as well as the general population ( $p < 0.0001$ ).

Despite the fact that all study participants, according to the Florida Department of Highway Safety and Motor or Vehicles, were scheduled for license renewal between January 2004 and June 2005, some (14.4%) reported that this was not the case or that they did not know (Table 2). This group of participants had higher scores on the OMC test by about one point (indicating greater impairment) compared to those who were aware that their license was scheduled for renewal (3.56 vs. 2.36,  $p < 0.0001$ ). Among those who indicated that their license had been due for renewal, 19.8% reported that they did not attempt renewal. Slightly more than half (51.2%) of those who chose not to seek renewal did so because they believed that they could not pass the vision test; other frequently mentioned reasons included medical problems (43.5%), not needing a vehicle (31.6%), and not being a safe driver (18.2%). For those who sought renewal, the majority (73.6%) had their vision tested at the licensing offices, and 23.8% had an ophthalmologist or optometrist perform the vision test. The majority (88.1%) of participants seeking renewal reported that they passed the test on the first attempt. Of those tested by an ophthalmologist or optometrist, 93.0% passed compared to 89.0% among those tested at the licensing offices. For those who did not pass, initially most (88.1%) sought treatment to improve their vision and, of those, 77.6% were subsequently able to pass the vision test. Ultimately 93.3% of those who sought license renewal were able to do so. Among all who said they were eligible to renew, 74.9% did so.

Table 3 presents demographic health, and transportation characteristics according to those who sought and did or did not pass their initial vision test. Compared to those who sought renewal and initially passed, those who sought renewal and initially failed were similar in all respects except they reported significantly more medical conditions, an indicator of overall health status, and were more likely to report using other forms of transportation. Those who did not seek renewal at all were significantly older, more likely to be female and widowed, and less likely to live in a residential home (vs. retirement community or apartment) compared to those who were able to renew their license. There were no differences with respect to race. Those who did not seek renewal also had significantly higher scores on the OMC test (suggesting more impairment) and reported significantly more chronic medical conditions. They were also significantly more likely to report the use of transportation alternatives. Of the 55 persons who failed the vision test even on the second try after seeking treatment, 18 of these persons reported not using other forms of transportation, which represented 2% of the study sample.

The majority of participants did not feel that the vision screening law unfairly targeted older drivers (Figure 1A). The majority also thought that the law was a way to improve driver safety (Figure 1B). However, most also thought that there were more important driving-related issues than the vision of older drivers (Figure 1C).

## DISCUSSION

These results suggest that the new Florida law mandating vision screening for the  $\geq 80$  year old population is not a major deterrent to their seeking re-licensure. After the passage of a law in Florida requiring a vision test for all drivers aged  $\geq 80$  years old, four out of five drivers in this age group whose licenses were up for renewal sought license renewal. It is unknown whether these “renewal-seeking” percentages are similar to those before the new law took effect because relevant data from the Florida Department of Highway Safety and Motor Vehicles are unavailable. However, it is clear that the new law has not inhibited a large segment of the  $\geq 80$ -year old population in Florida from seeking renewal, which was the fear of some senior advocates. Furthermore, the vast majority of  $\geq 80$ -year-old drivers surveyed expressed agreement that the law is an appropriate way for the state to improve driver safety and disagreed that it unfairly targets older drivers.

Our results also suggest that the visual acuity test is not removing large numbers of  $\geq 80$ -year-old drivers from the road because they failed the visual acuity screening. Fewer than 1 in 10 drivers who sought to renew their driver’s license failed to do so because they did not meet the vision requirement. The proportion potentially affected by the vision requirement may be higher when factoring in those drivers who stated that they did not seek renewal because they believed they would fail the vision test. It is also important to point out that it is unknown whether those who were removed from the road as a consequence of impaired visual acuity were, in fact, risks to themselves and other road users. An assumption underlying Florida’s vision re-screening requirement is that there is an association between visual acuity and motor vehicle collision risk; however, the literature regarding this relationship has been equivocal.<sup>15</sup> While several studies have demonstrated an increased risk of crash involvement associated with impaired visual acuity, many others have not. Moreover, the significant associations that have been reported are small in magnitude suggesting that visual acuity as a screening tool for driver safety is not well motivated from a scientific standpoint.

The most common reasons the older drivers in our survey cited for not seeking license renewal were concerns regarding visual or medical impairments. This is not surprising given a sizable body of literature suggesting that individuals with such impairments are more likely to self-regulate their driving.<sup>16–20</sup> However, it is unknown whether these specific individuals are truly high risk drivers and thus such extreme self-regulation (i.e., driving cessation) may be an over-reaction. Clearly a lack of confidence in one’s driving skills should not be ignored. Yet in a society wherein the automobile is an important source of mobility and independence, the benefits of self-regulation should be weighed against the consequences. Results also suggested that the majority of those drivers who did not seek renewal were older, women, and widowed, which underscores concerns for the transportation mobility of persons with these demographic characteristics.

A frequent concern surrounding laws affecting the licensure of older drivers is the associated impact on their mobility. Research indicates that the personal automobile is the preferred method of transportation for older adults and that few plan ahead for transportation alternatives for a time when they can no longer drive themselves<sup>21–23</sup>. The loss of independence associated with driving cessation can have a greater impact than simply a loss of mobility. It has been demonstrated that loss of driving privileges is associated with depression,<sup>24–26</sup> a condition which may lead to other adverse health outcomes. Lack of transportation has been cited as a reason for the under-utilization of health care services among the elderly.<sup>27</sup> The current study found that for those who chose not to renew their license, transportation alternatives were reportedly being utilized with the majority relying upon family and friends. Our survey did not address how well their personal mobility needs were being met, an issue for further study.

Adequate visual acuity is required for many everyday tasks beyond driving, including reading, object recognition, orientation, and ambulatory mobility. Since the vast majority of Americans are drivers and seek to remain licensed as long as it is possible to do so, one possible public health benefit of Florida's license renewal law is an increase in visual screening in a segment of the population at high risk for a wide range of ocular conditions. As discussed earlier, although the impact of Florida's vision re-screening law on driver safety per se remains to be determined, visual acuity screening of this older adult population can serve as an impetus for those with impaired vision to seek treatment for potential eye diseases and for the reversal of vision impairment, with the latter being particularly relevant if they desire to maintain a valid drivers license. In fact we found that the majority of those persons who failed the vision screening did indeed report that they sought treatment to improve their vision.

Strengths of this study include that this is the first systematic effort to understand the impact of mandatory vision re-screening laws on older drivers' license renewal behaviors in the U.S. The study sample of  $\geq 80$ -year-old drivers was derived from the entire population of this age demographic residing in the state of Florida. Study results should also be interpreted in light of limitations. First, in absolute terms the response rate was relatively low. Yet it is important to emphasize that our response rate is highly similar to those of well-designed telephone surveys focused on the older adult population including the Behavioral Risk Factor or Surveillance System.<sup>28-30</sup> A second limitation is the use of self-reported information regarding license renewal. This study used self-reported information on license renewal since the Florida Department of Highway Safety and Motor Vehicles was unable to make official data available for use in this study. While it is possible that some individuals inadvertently or otherwise did not accurately portray their license renewal experience, there is no reason to suspect that this would have been pervasive. The letter to participants made it clear that the study was not sponsored by the State of Florida and that individual information would be kept confidential, which was reinforced by the telephone interviewer. Furthermore, the vast majority of respondents (99%) had mental status scores in the non-demented range on the OCM test suggesting that cognitive impairment did not play a significant role in the quality of survey responses. However, it is possible that participants and non-participants did differ with respect to cognitive impairment, the latter group possibly having a higher prevalence of dementia. Thus, the external validity of our results could be called into question. A third potential limitation is that participants were not interviewed on the date their license expired, and for those who attempted renewal, not on the date they attempted to do so. Thus, it is possible that certain demographic (e.g., marital status) and health characteristics (e.g., number of medical conditions) could have changed by the time they were interviewed. However, the median time from license expiration to interview was 6 months and over 90% were interviewed within 1 year of their license expiration date; thus, the magnitude of any changes is likely to be small.

Florida's mandatory vision re-screening law for drivers  $\geq 80$  years old was enacted as an effort to improve driver safety in the state (i.e., reducing motor vehicle collisions). However, it remains unknown as to whether the law has this effect, an issue for further research. Previous research on the impact of vision re-screening policies on driver safety in the older adult population has not provided a clear answer.<sup>7-12</sup> Epidemiologic studies using ecologic designs compared states with re-screening laws to states without these laws, reporting that the fatality rate for older drivers was lower in states that have re-screening law.<sup>8,9,12</sup> However, because ecologic studies are based upon population-level rather than individual-level data, the results from such studies must be interpreted with caution and cannot be considered definitive. In addition, these studies did not separate out the effect of visual acuity re-screening from in-person renewal, and thus it is unknown to what extent the lower fatality rate was due to visual acuity testing itself. A more recent study<sup>10</sup> found that when vision re-screening was evaluated as an independent contribution, it had no impact on fatality rates in adults age  $\geq 65$  years. A

study that evaluates whether those drivers who are unable to renew their licenses as the result of re-screening laws are truly high-risk would be a valuable contribution to the literature.

In summary, this study suggests that the Florida vision screening re-licensure law is not a deterrent to seeking license renewal for the  $\geq 80$ -year-old population. Furthermore, the proportion of Florida drivers ages 80 and older who reportedly sought license renewal yet are prevented from licensure because they fail the visual acuity screening test is low. From a mobility perspective the majority of those who choose not to renew their driver's license report that they have access to transportation alternatives.

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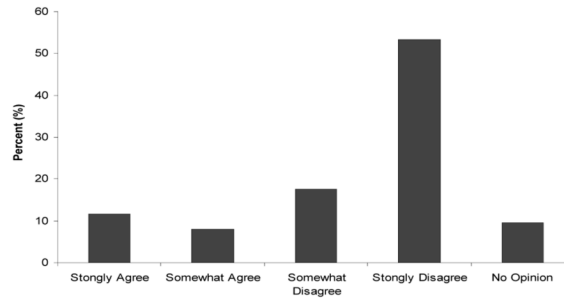
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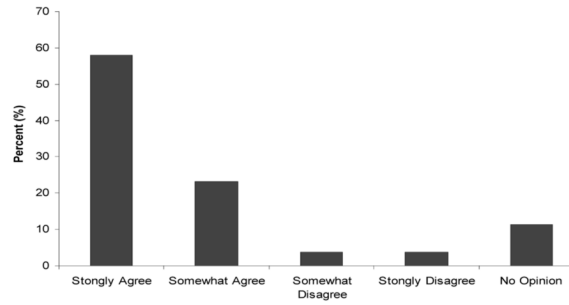
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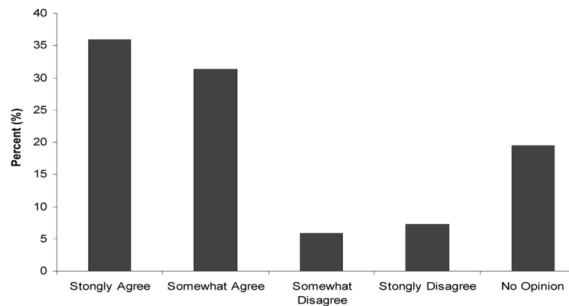




*The new vision screening law unfairly targets older drivers.*



*The new vision screening law is a way for the state to improve driver safety.*



*There are more important driving issues than the vision of older drivers.*

**Figure 1.**  
a – c. Opinions regarding vision screening law for older drivers

**Table 1**

Demographic characteristics of the study participants, study non-participants, and study population.

	<b>Participants (N=1,242)</b>	<b>Refused (N=1,418)</b>	<b>Group Others<sup>*</sup> (N=1,317)</b>	<b>Study Population<sup>†</sup> (N=181,886)</b>
<b>Age, mean (sd)</b>	84.7 (3.9)	85.5 (4.3)	85.2 (4.3)	85.6 (4.4)
<b>Female, %</b>	59.9	55.4	50.2	55.0
<b>White, %</b>	97.3	94.4	95.5	94.7

\* Deceased, disconnected number, wrong number, and otherwise not able to successfully contact.

<sup>†</sup> Florida drivers ages 80 and older scheduled for license renewal between Jan. 1, 2004 and June 30, 2005.

**Table 2**

Licensure renewal characteristics of study participants.

	%	N
License scheduled to expire since 1/1/2004		
Yes	84.7	1052
No	14.4	190
Attempt renewal, % no (n) <sup>*</sup>	19.8	208
Reason for non-renewal <sup>†††</sup>		
Knew could not pass vision test	51.4	107
Medical problems	43.8	91
Don't need car	31.7	66
Not safe	18.3	38
Driving is expensive	5.3	11
Family does not want me to drive	4.3	9
Driving is unpleasant	4.3	9
Slow reactions	2.4	5
Recommended not to drive	1.9	4
Someone else drives me	1.4	3
Accidents	1.0	2
Vision test administered by whom, % (n) <sup>‡</sup>		
Driver's license office	73.5	620
Ophthalmologist or optometrist	23.8	201
Family doctor	0.2	2
Unknown	2.5	21
Vision adequate to initially pass test, % yes (n) <sup>‡</sup>	88.0	743
Seek treatment to improve vision, % yes (n) <sup>¶</sup>	88.1	89
Able to pass test after seeking treatment, % yes (n) <sup>**</sup>	77.6	45

\* Among those who indicated their license was due for renewal

† Among those who did not attempt license renewal.

‡ Among those who attempted license renewal.

¶ Among those who did not pass vision test.

\*\* Among those who sought treatment and re-attempted license renewal (n=58).

†† Responses sum to more than 100% as multiple responses required.

**Table 3**

Demographic, health and transportation characteristics among study participants who did and did not attempt license renewal.

	Sought License Renewal and Passed Initial Test (N=743)	Sought License Renewal and Failed Initial Test (N=100)	License Renewal		p-value / p-value <sup>†‡</sup>
			Did Not Seek License Renewal (N=209)		
Age (years), mean (sd)	84.1 (3.7)	83.9 (3.3)	86.4 (4.3)		0.66 / <0.0001
Gender, % (n)					0.14 / <0.0001
Male	43.1 (320)	51.0 (51)	26.8 (56)		
Female	56.9 (423)	49.0 (49)	73.2 (153)		
Race, % (n)					0.58 / 0.24
White	96.1 (714)	98.0 (98)	94.7 (198)		
Black	2.0 (15)	1.0 (1)	4.3 (9)		
Other	1.9 (14)	1.0 (1)	1.0 (2)		
Marital status, % (n)					0.70 / <0.0001
Widowed	57.8 (428)	64.0 (64)	71.2 (148)		
Married	34.4 (255)	29.0 (29)	17.8 (37)		
Divorced	4.2 (31)	3.0 (3)	2.9 (6)		
Single	2.8 (21)	3.0 (3)	7.2 (15)		
Other	1.1 (8)	1.0 (1)	1.4(3)		
Type of residence, % (n)					0.92 / <0.0001
Residential home	80.1 (593)	81.0 (81)	62.1 (128)		
Retirement community	12.4 (92)	13.0 (13)	24.8 (51)		
Apartment	7.4 (55)	6.0 (6)	13.1 (27)		
Cognitive score, mean (sd)	2.2 (2.0)	2.2 (1.8)	3.1 (2.7)		0.88 / <0.0001
No. chronic medical conditions, mean (sd)	4.0 (2.0)	4.6 (1.9)	5.4 (2.6)		0.0018 / <0.0001
Use other forms of transportation, % (n)					0.0002 / <0.0001
No	66.1 (491)	47.0 (47)	0.5 (1)		
Yes	33.9 (252)	53.0 (53)	99.5 (208)		
Get rides from family and friends*	81.4 (205)	88.7 (47)	81.3 (169)		0.24 / 0.98
Use public transportation	6.8 (17)	5.7 (3)	13.9 (29)		0.77 / 0.01
Take taxis	3.6 (9)	7.6 (4)	14.9 (31)		0.19 / <0.0001
Use community shuttle buses	5.6 (14)	5.7 (3)	14.9 (31)		0.98 / 0.0008
Other	11.5 (29)	11.3 (6)	7.2 (15)		0.97 / 0.15

<sup>†</sup> For the comparison of those who sought renewal and initially passed vs. those who sought renewal and initially failed.

<sup>‡</sup> For the comparison of those who sought renewal and initially passed vs. those who did not seek renewal.

\* Responses sum to more than 100% as multiple responses required.