

**AN EVALUATION OF RESTRICTED LICENSING  
FOR NORTH CAROLINA'S OLDER DRIVERS**

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## CHAPTER 1. INTRODUCTION

Older adults make up a growing percentage of the driving population, both nationally and here in North Carolina. According to U.S. Census estimates, the number of persons ages 65 and older will grow by 20 million, or 60 percent, over the next quarter century. Numbers of older drivers will grow at an even faster rate, as more females and minorities are licensed and as those having licenses maintain them longer. Today, one in eight licensed North Carolina drivers is age 65 or above; by 2030, this number is expected to reach one in five.

While older drivers are involved in relatively small numbers of crashes, their crash rate based on the miles they drive rises sharply after age 70 or 75. Drivers ages 75 and above have a 24 percent higher crash rate than all drivers (Cerrelli, 1998). Their rate of *fatal* crash involvement is even more elevated, due to their greater vulnerability to injury once in a crash.

Driving is a complex task requiring integration of a number of visual, cognitive, and psychomotor skills. Many of the skills needed to operate a motor vehicle safely may be compromised with age or as a consequence of the various medical conditions that often accompany aging. Still, older people, like the rest of the driving population, are overwhelmingly dependent on private vehicles to meet their transportation needs. Data from the 1995 Nationwide Transportation Survey has shown that 90 percent of the trips older adults make are in personal vehicles, and that for nearly two-thirds of these trips, they drive themselves.

Clearly there is a need to allow older adults to continue to drive as long as they can do so safely. Among older persons, the ability to drive and to provide for one's own transportation needs has been linked to overall satisfaction and quality of life. The problem becomes one of balancing personal mobility with personal and public safety.

Restricted licensing may be a potentially useful tool for helping some older adults drive safely longer. While most motor vehicle departments issue restrictive licenses, very few adapt them to the lifestyle and the performance skills of older drivers. Specially tailored restrictions such as daylight driving only, driving within a certain radius of the home, driving only to and from the store or church, etc., are possible. In practice, however, most older drivers either keep their licenses without restrictions or lose them entirely.

### Background

In 1993, the American Association of Retired Persons, or AARP, published a booklet entitled, "Graduated Driver Licensing: Creating Mobility Choices" (AARP, 1993). The booklet was based on a national survey of motor vehicle administrators and law enforcement personnel on licensing policies and practices (Temple, 1992). The AARP defined a graduated license as

"a driver's license that for one reason or another has a restriction attached to it. To operate a motor vehicle holders of such a license must meet some special requirement or must restrict their driving practices in some well-specified fashion" (AARP, 1993).

The report recommended that licensing agencies find ways to make the licensing procedure more personal and less bureaucratic; develop a comprehensive set of uniform restrictions; and implement staff training and public awareness programs highlighting the special needs and concerns of older drivers. The report also recommended that a uniform set of restrictions be adopted as part of the uniform vehicle code (AARP, 1993).

The idea of a graduated license for older drivers was initially proposed by Dr. Patricia Waller and is described in her technical paper on licensing of older drivers for the landmark Transportation Research Board publication, "Transportation in an Aging Society" (TRB, 1988). Dr. Waller writes:

"Possibly the most important modification that should be considered for older drivers is a graduated driving reduction program. Just as there is growing recognition that young beginning drivers should not be introduced into the driving population all at once but rather eased in gradually, it should be recognized that many, if not most, older drivers do not have to be abruptly removed from the driving population. All states have the authority to place restrictions on the driving of any applicant, but traditionally license examiners have been reluctant to impose them. [Medical Advisory Boards] often assume this role, but the major portion of their cases involved alcohol problems. Even so, there is currently some experience with gradually reducing the amount and kinds of driving that older drivers may do.

It is not suggested that restrictions be imposed indiscriminately or in accordance with specific chronological ages. However, it is recommended that clearer guidelines be established for how and when, as well as what kind of, restrictions should be placed on some older applicants. The development and use of more relevant vision tests could be useful in defining and applying appropriate restrictions." (TRB, 1988, p. 86)

For the current study, we have adopted the term "restricted licensing" rather than graduated licensing, primarily to avoid confusion with the graduated licensing policies and programs now being targeted to young beginning drivers. The underlying principle, however, is the same across both populations of drivers: allow driving under conditions that maximize safety while retaining mobility.

## **Project Overview**

The current project had three major objectives:

1. To evaluate existing North Carolina practices in regard to restricted licensing for older drivers and its effects on safety;
2. To determine older drivers' knowledge and attitudes toward restricted licensing; and
3. To obtain input from driver license examiners regarding restricted licenses as a potential tool for helping some older adults drive safely longer.

The results of work carried out in each of these three areas are presented in Chapters 2, 3 and 4, respectively. A final chapter synthesizes the results and makes recommendations for improving current practices to increase older driver mobility and safety.

## CHAPTER 2. CURRENT NORTH CAROLINA PRACTICES AND PROGRAM IMPACT

As an initial task in the project, an analysis of North Carolina driver history and motor vehicle crash data was undertaken to determine (a) the extent to which specialized restrictions (time of day, non-interstate driving, driving only within a certain radius of one's residence, etc.) are currently placed on the licenses of older drivers, and (b) how the crash involvement of these restricted drivers differs from that of unrestricted drivers. All licensed North Carolina drivers ages 65 and older as of December 31, 1999 were included in the analysis.

### Current Practices with Regard to the Issuing of Restricted Licenses

One-fourth (25.3%) of North Carolina's 771,269 licensed drivers ages 65 and older had no restrictions at all placed on their driver's license. An additional 72.6 percent had only one restriction, most often a requirement that they wear corrective lenses while driving. **Only 2.1 percent of the drivers had two or more restrictions on their license.**

Table 1 shows the frequency with which various licensing restrictions appear on the licenses of these older drivers. By far the most frequent restriction is corrective lenses: nearly three-fourths of all older adults in North Carolina are restricted to wearing glasses or contact lenses when driving. Just over one percent of older adults are restricted to either 45 mph speed limit / no interstate highways or daylight driving only. These two restrictions are most often levied as a result of poor performance on the vision test when renewing a license: Snellen acuity scores of 20/60 or 20/70 require restriction to 45 mph or lower speed roadways, while an acuity score of 20/100 requires restriction to 45 mph or lower speed roadways plus daylight driving only. All other restrictions appear very infrequently on older drivers' licenses. The largest category, designated as "other," includes a number of blank codes that the license examiner fills in at the time the restriction is levied. Examples of restrictions that are coded as "other" are left (or right) eye only, portable oxygen tank, electric turn signals, seat cushions, left foot accelerators, etc.

To facilitate analysis of the safety effects of restricted licensing, drivers were grouped into the following six categories:

1. No restrictions
2. Corrective lenses only
3. Corrective lenses + 45 mph / no interstate
4. Corrective lenses + daylight driving only
5. Corrective lenses + 45 mph / no interstate + daylight driving only
6. All other restrictions

The final category, "all other restrictions," includes all of the specially designated restrictions, but does not include restrictions associated with commercial drivers, bus operators, or conditional licenses. These cases were dropped from the final analysis file.

Table 1. Frequency of restrictions on the licenses of North Carolina drivers ages 65+.

License Restriction	Number Drivers	Percent of Total Drivers (N=771,269)
No restriction	195,087	25.29 <sup>1</sup>
Corrective lenses	573,093	74.31
45 mph only, no interstate	9,199	1.19
Daylight driving only, 8 am - 8 pm, etc.	9,216	1.19
Within certain radius of home, etc.	1,049	0.14
Automatic transmission	964	0.12
Accompanied by licensed passenger	746	0.10
Conditional license (e.g., learner's permit)	213	0.03
Power steering	200	0.03
Wheel knob	131	0.02
Hand controls	106	0.01
Other special equipment	85	0.01
No air brakes (CMV)	731	0.09
NC intrastate only (CMV)	289	0.04
School bus only	841	0.11
Other <sup>2</sup>	3,994	0.52

<sup>1</sup> Column totals more than 100% due to some drivers having multiple restrictions.

<sup>2</sup> Includes restriction codes that are unspecified except by the license examiner at time restriction is placed on license.

Table 2 provides information on how the frequency of licensing restrictions varies by driver age and gender. At every age level, males are more likely than females to have no restrictions on their license, and for both males and females the likelihood of a restriction increases with age. Females are more likely to be restricted to corrective lenses only, while males are more likely to have other restrictions, including special equipment and requirements specifically designated by the DMV.

Table 2. Percentage distribution of study population by license restriction status.

License Restriction Group	Males			Females		
	65-74	75-84	85+	65-74	75-84	85+
1 No restriction	36.22 <sup>1</sup>	22.61	11.87	25.17	14.76	8.28
2 Corrective lenses only	62.35	74.36	77.90	74.00	82.70	81.85
3 Corrective lenses + 45 mph/no interstate	0.09	0.40	1.57	0.09	0.37	1.33
4 Corrective lenses + Daylight driving only	0.07	0.39	1.56	0.10	0.53	1.45
5 Corrective + 45 mph/no inter. + Daylight driving only	0.15	0.83	4.50	0.16	0.87	4.46
6 All other restrictions	1.13	1.41	3.41	0.49	0.77	2.62
TOTAL (N)	227,557	119,353	21,117	243,732	134,261	23,314

<sup>1</sup> Column percent.

### Comparison of Crash Experience of Restricted and Unrestricted Drivers

The primary outcome variable for examining the safety implications of restricted licenses was total crash involvements during the three-year period 1997-1999. Table 3 gives the distribution of crashes within each grouping of driver restrictions. Overall, 89.6 percent of the drivers were not involved in any crashes during the three-year study period; 9.3 percent were involved in only one crash, 1.0 percent in two crashes, and 0.2 percent in three or more crashes. However, there were significant differences among the study populations. Drivers who had no restrictions on their licenses or a restriction of corrective lenses only were less likely to be involved in crashes than were drivers who had additional restrictions on their license. The group having the greatest likelihood of crash involvement were those with “all other” restrictions on their license.



Table 3. Percentage distribution of crashes by license restriction status.

License Restriction Group	Total Crashes, 1997-1999				TOTAL
	0	1	2	3+	
1 No restriction	89.5 <sup>1</sup>	9.3	1.0	0.2	25.4 <sup>2</sup>
2 Corrective lenses only	89.7	9.2	1.0	0.2	72.5
3 Corrective lenses + 45 mph/no interstate	86.6	10.9	2.1	0.4	0.3
4 Corrective lenses + Daylight driving only	87.8	10.6	1.3	0.4	0.3
5 Corrective + 45 mph/no inter. + Daylight	87.3	10.9	1.5	0.4	0.6
6 All other restrictions	85.7	11.6	2.1	0.6	1.0
TOTAL	89.6 <sup>1</sup>	9.3	1.0	0.2	100

<sup>1</sup> Row percent.

<sup>2</sup> Column percent.

Figure 1 contains information on the *average number of crashes* per licensed driver over the three-year study period within each of the six restriction categories and by driver gender and age. For both males and females, drivers in groups 1 and 2 (no restrictions or corrective lenses only) have the lowest crash rates, with little variability among the age groups. For males, 65-74 year-olds have the highest crash rates except in group 6 (all other restrictions), where those ages 85 and above have higher rates. For females, those 85 and older with driving restrictions consistently have lower average crash rates than their 75-84 year-old counterparts. Reduced driving exposure for the oldest female drivers may be a factor in these results.

Since driver age and gender are associated with both restriction status and crash involvement, it was necessary to control for their effects when examining the crash experience of restricted versus unrestricted drivers. This was done by developing categorical models for predicting crash involvement that incorporated age and gender along with driving restriction. In addition, a variable for population density was also included in the model to adjust for possible urban/rural differences among license examiners in imposing restrictions. For example, if examiners working at larger offices in urban areas are more likely to impose driving restrictions, and crashes occur more often in urban than in rural areas, this alone could explain any increase in crash rates for restricted drivers. The three levels of population density (based on county of residence) were low (<100,000 population), medium (100,000-300,000 population), and high (> 300,000 population).

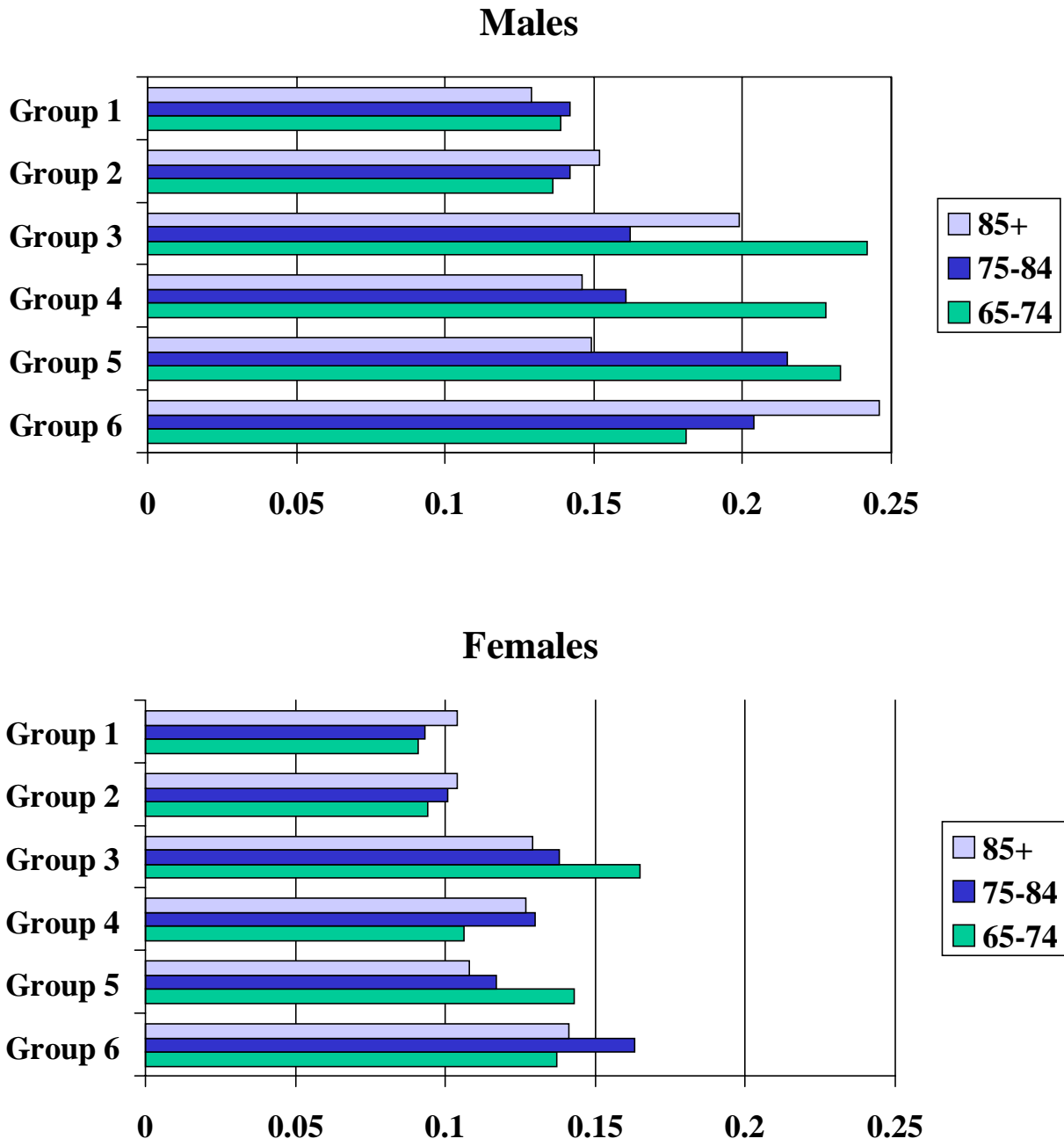


Figure 1. Average crashes per licensed driver during 1997-1999, by license restriction group, gender and age.

The final model is shown in Table 4. As expected, age, gender and population density are all significant predictors of crash involvement. For these variables, the negative parameter estimates shown in the first column of the table indicate lower crash rates than for the designated comparison population. Thus, 75-84 year-olds have a lower crash rate than those ages 85 and above, and 65-74 year-olds have a still lower crash rate; females have a lower crash rate than males; and persons licensed in lower density counties have lower crash rates than those licensed in higher density counties. The model also shows, however, that even after controlling for all of these effects, restriction status remains a significant predictor of crash involvement. Compared to drivers with no restrictions, drivers with only vision restrictions are not at increased risk of crashing (p-value=.244). However, drivers with additional restrictions on their license *are* at increased risk. The highest risks are associated with drivers with “other” restrictions and drivers restricted to corrective lenses + 45 mph/no interstate driving. In a separate model where “all other restrictions” was set as the comparison population, these latter two subpopulations did not differ significantly.

Table 4. Categorical model for predicting crash involvement based on driver’s license restriction, gender, age and population density.

Model Parameters	Parameter Estimate	Standard Error	Chi Square	P-value
Age 65-74	-.0828	.0142	33.87	<.0001
Age 75-84	-.0357	.0146	5.98	.0145
Age 85+ (comparison)	--	--	--	--
Female	-.3821	.0068	3191.30	<.0001
Male (comparison)	--	--	--	--
Low population density	-.4089	.0088	2140.86	<.0001
Medium population density	-.2082	.0092	513.91	<.0001
High population density (comparison)	--	--	--	--
No restrictions (comparison)	--	--	--	--
Corrective lenses only	.0091	.0078	1.36	.2440
Corrective lenses + 45 mph/no interstate	.3133	.0553	32.16	<.0001
Corrective lenses + Daylight driving only	.1998	.0566	12.46	<.0004
Corrective + 45 mph/no inter. + Daylight	.2327	.0379	37.76	<.0001
All other restrictions	.3706	.0276	180.38	<.0001

### Summary Comments

The results of these analyses indicate that older North Carolina drivers who have restrictions other than corrective lenses on their licenses are at increased risk of crash involvement. However, the overall impact on safety is small, because relatively few drivers are

restricted. The average three-year crash rate of unrestricted drivers in Groups 1-2 is .117, compared to .165 for drivers in restriction Groups 3-6. Subtracting the two yields an “excess” crash rate of .048. Multiplying this excess crash rate by the number of drivers with added restrictions (N=16,953) produces an estimate of 821 additional crashes over the three-year study period, or an average of 274 crashes per year.

Additional information is needed to determine whether license restrictions have any positive impact on older driver safety and mobility. In particular, more detailed information is needed on the nature of the restriction and why it was levied. How severely impaired are drivers with added restrictions? Would they show an even greater crash risk if their license had not been restricted? What percentage of the drivers would have had to stop driving altogether if restricted licenses had not been an option? Are there subpopulations of older drivers, perhaps those with less serious impairments, that might benefit more from restricted licenses? Are there specific restrictions that are more effective than others? Further study is needed to address these important questions.

### **CHAPTER 3. KNOWLEDGE AND ATTITUDES OF OLDER ADULTS REGARDING RESTRICTED LICENSES**

To learn what North Carolina seniors know and feel about restricted licensing, a sample of licensed drivers ages 65 and older was contacted for a brief telephone survey. Four different samples of 300 names each were generated from the North Carolina driver history file:

- Drivers ages 65-74 with no license restriction other than corrective lenses;
- Drivers ages 65-74 with one or more license restrictions other than corrective lenses;
- Drivers ages 75 and above with no license restriction other than corrective lenses;
- Drivers ages 75 and above with one or more license restrictions other than corrective lenses.

The samples were confined to persons who had renewed their driver's license within the past six months. This was done to increase the likelihood of a correct address, so that a telephone number could be located using available Internet resources (e.g., Yahoo People Search, whitepages.com). Telephone numbers were identified for 74 percent of this original sample of 1200 names. Only these individuals were retained in the interview pool.

Prior to contacting potential participants for a telephone interview, they were sent a letter explaining the survey and encouraging their cooperation (see a copy of the letter in Appendix A). A team of four telephone interviewers, along with a member of the project staff, was responsible for conducting the interviews. Calls were made during the day as well as in the evening and on weekends. Up to eight attempts were made to reach each potential participant.

Interviews generally lasted 5-10 minutes, although some cases could take substantially longer depending on the person's ability to hear and to understand the questions, their desire to talk about their driving experiences, etc. Appendix A contains a copy of the survey, along with a sample cover sheet used in tracking attempts to reach participants. Survey topics included the following:

- Knowledge of specific restrictions that can be placed on a driver's license;
- Knowledge of restrictions placed on their own license;
- Whether they agreed that such restrictions were appropriate for them;
- Whether the restrictions made it harder for them to meet their transportation needs;
- Whether they complied with their restrictions;
- Whether they voluntarily restricted their own driving in other ways;
- Whether they had any physical limitations that made driving difficult;
- Their opinions about the potential value of restricted licenses for older drivers.

Table 5 provides information on the disposition status of persons contacted to participate in the survey. Letters were mailed to a total of 825 potential participants. (Due to a higher than expected survey completion rate, not everyone originally identified was sent a letter.) Interviews were completed with 610 of these 825 persons, for an overall response rate of 73.9 percent. The survey cooperation rate, defined as the number of participants divided by the number of participants plus refusals (i.e.,  $610 / (610 + 40)$ ), was 93.9 percent.

Table 5. Survey completion status.

Completion Status	Number	Percent
Completed Interview	610	73.9
Unable to contact (incorrect #, # not in service, etc.)	69	8.4
Not contacted after 8+ attempts	39	4.7
Refused	40	4.9
Unable to participate due to health reasons (illness, deafness, etc.)	35	4.2
Died	12	1.5
Ineligible (<65)	7	0.9
Other (not contacted by end of survey period, moved out of state, etc.)	13	1.6
<b>TOTAL</b>	<b>825</b>	<b>100.1</b>

The following sections highlight key findings from the survey. Results are generally differentiated between those participants who either had no restrictions on their license or a restriction of corrective lenses only (“Unrestricted Drivers”), and those who had one or more additional restrictions on their license (“Restricted Drivers”). Age and gender differences are also explored.

### **Knowledge of Driving Restrictions in General**

When asked whether they knew of restrictions, other than corrective lenses, that people might have on their driver’s license, two-thirds (66.3 percent) of the unrestricted respondents were unable to identify another restriction (see Table 6). The restriction that was identified most frequently was that of daytime driving only (20.1% of the unrestricted respondents), followed by 45 mph / no interstate driving (4.5%) and driving within a certain radius of home or to certain destinations (each about four percent). Not surprisingly, drivers who had a restriction other than corrective lenses on their license were much more likely to produce a response; in fact, many of them answered this question by describing their own restrictions. Even so, nearly 39 percent were unable to describe a restriction other than corrective lenses. Taken together, these results reveal that older adults have very limited knowledge about the range of restrictions that can be placed on someone’s driving privilege.

Table 6. Knowledge of driving restrictions (other than corrective lenses) by restriction status of participants.

Driving Restriction	Unrestricted Drivers (N=309)	Restricted Drivers (N=301)	P-value <sup>1</sup>
None / Don't know of any	66.3 <sup>2</sup>	38.9	<.0001
Daytime driving only, etc.	20.1	42.2	<.0001
45 mph, no interstate, etc.	4.5	9.9	<.0001
Within certain radius of home, etc.	4.2	7.6	.0720
Certain destinations (work, church, etc.)	3.9	2.0	.1678
Adaptive equipment (knobs, cushions, pedal extensions, etc.)	1.3	1.7	.7073
Mirrors (inside or outside)	0.0	0.3	.3106
Power brakes, steering	0.0	1.0	.0785
Automatic transmission	0.0	2.0	.0126
Hearing aid	1.0	0.7	.6747
Accompanying passenger	0.0	0.0	----
Other restriction	10.4	4.3	.0043

<sup>1</sup> Based on chi-square for two-way tables of restriction by license status.

<sup>2</sup> Percent of drivers identifying. Column totals more than 100% due to multiple responses from some participants.

### Knowledge of Their Own Driving Restrictions

After asking participants about driving restrictions in general, we asked them to tell us what restrictions, if any, they had on their own license. These self-reported restrictions were then compared to information available from the North Carolina driver history files. Table 7 presents the results of these comparisons. Four possibilities are shown:

- (1) Neither the DMV nor the participant reports a restriction (DMV - / Survey -);
- (2) Both the DMV and the participant report a restriction (DMV + / Survey +);
- (3) The DMV reports a restriction but the participant does not (DMV + / Survey -); and
- (4) The DMV does not report a restriction but the participant does (DMV - / Survey +).

In addition, column (5) of the table shows the percentage of cases that a participant self-reported a restriction identified on the DMV file. This was calculated by dividing the number of cases in column 2 by the sum of the cases in columns 2 and 3 (e.g., for corrective lenses, 321 / (321 + 169) = 65.5 percent).

Table 7 Participants' self-reported versus DMV-reported driver license restrictions.

Restriction	(1) DMV - Survey -	(2) DMV + Survey +	(3) DMV + Survey -	(4) DMV - Survey +	(5) % Self Report <sup>1</sup>
No restriction	72 (11.9) <sup>2</sup>	428 (70.5)	103 (17.0)	4 (0.7)	80.6
Corrective lenses	111 (18.2)	321 (52.6)	169 (27.7)	9 (1.5)	65.5
Daytime driving only, etc.	462 (75.5)	89 (14.6)	47 (7.7)	12 (2.0)	65.4
45 mph, no interstate, etc.	445 (73.0)	112 (18.4)	49 (8.0)	4 (0.9)	69.6
Within certain radius of home or to certain destinations (work, church, etc.)	562 (92.1)	17 (2.8)	23 (3.8)	8 (1.3)	42.5
Adaptive equipment (knobs, cushions, pedal extensions, etc.)	<i>(Cannot differentiate DMV codes)</i>				
Mirrors (inside or outside)	594 (97.4)	2 (0.3)	14 (2.3)	0 (0.0)	12.5
Power brakes, steering	601 (98.5)	3 (0.5)	6 (1.0)	0 (0.0)	33.3
Automatic transmission	594 (97.4)	6 (42.9)	8 (1.3)	2 (0.3)	42.9
Accompanying passenger	581 (95.3)	0 (0.0)	29 (4.8)	0 (0.0)	0.0

<sup>1</sup> Column 2 total divided by sum of columns 2 and 3.

<sup>2</sup> Row percent.

As might be expected from the Chapter 2 analysis, many of the restrictions were rarely reported, either by the DMV or the survey participants. Among those reported the most often, there was only moderate agreement between what was reported on the DMV files and what the survey participants self-reported. Survey participants were most likely to corroborate DMV records with regard to corrective lenses, daytime driving only, and 45 mph/no interstate restrictions. In each of these cases, approximately two-thirds (65 - 70 percent) of the survey participants reported a restriction identified on the DMV files. Other restrictions were much less likely to be self-reported. Although small sample sizes make it difficult to draw conclusions from these results, they suggest that many older adults may not be aware of special restrictions placed on their driver's license.



## Attitudes Toward Restrictions

Participants who self-reported at least one restriction other than corrective lenses were asked whether they felt the restriction was appropriate, or right, for them, and whether it had made it harder for them to meet their transportation needs. Of the 121 survey participants who had reported a restriction other than corrective lenses, two-thirds (67%) agreed that the restriction was appropriate, while 22 percent felt it was inappropriate (see Figure 2). The remaining either gave a mixed response (for example, if they had more than one restriction) or were uncertain. When asked whether the restriction(s) had made it harder for them to meet their transportation needs, 69 percent said it had not, while 29 percent said that it had (see Figure 3). Males were

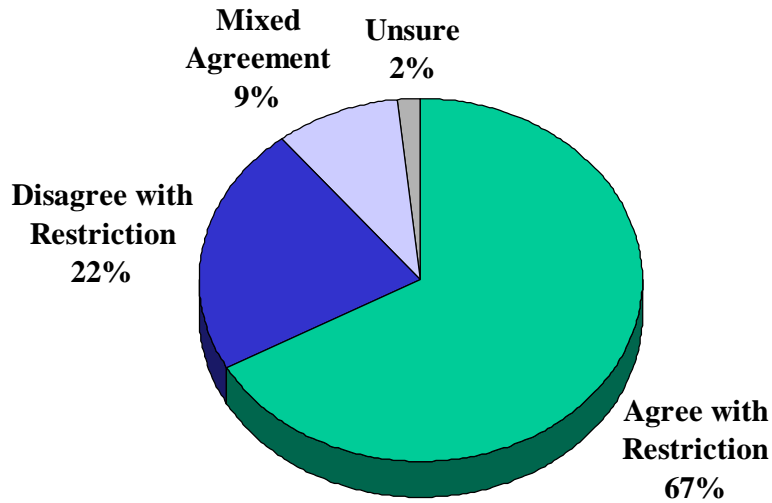


Figure 2. Response to question, "Do you agree that the restriction is right, or appropriate, for you?"

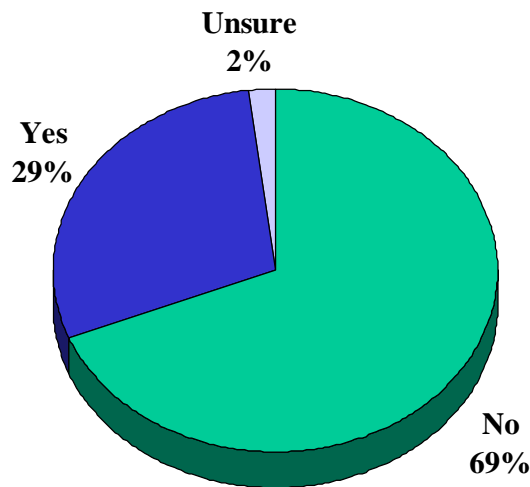


Figure 3. Response to question, "Does having this restriction(s) make it harder for you to meet your transportation needs?"

more likely than females to feel that their restriction was inappropriate (31.3% versus 11.1%,  $p=.02$ ), and were also more likely to say that having the restrictions made it harder for them to meet their transportation needs (39.0% versus 18.4%,  $p=.02$ ). These differences may relate to the greater likelihood of “specialized” restrictions being placed on the licenses of male drivers.

Respondents who reported a restriction other than corrective lenses were also asked whether they complied with the restriction(s) placed on their license. These results are shown in Figure 4. The majority of respondents (83.5%) said that they always complied with the restrictions on their license, and 12 percent said that they usually complied. Only one respondent said that he seldom or never complied with his restriction. There were no significant differences in likelihood of compliance by age, although males were less likely than females to say that they always complied (77.3% versus 94.3%,  $p=.01$ ).

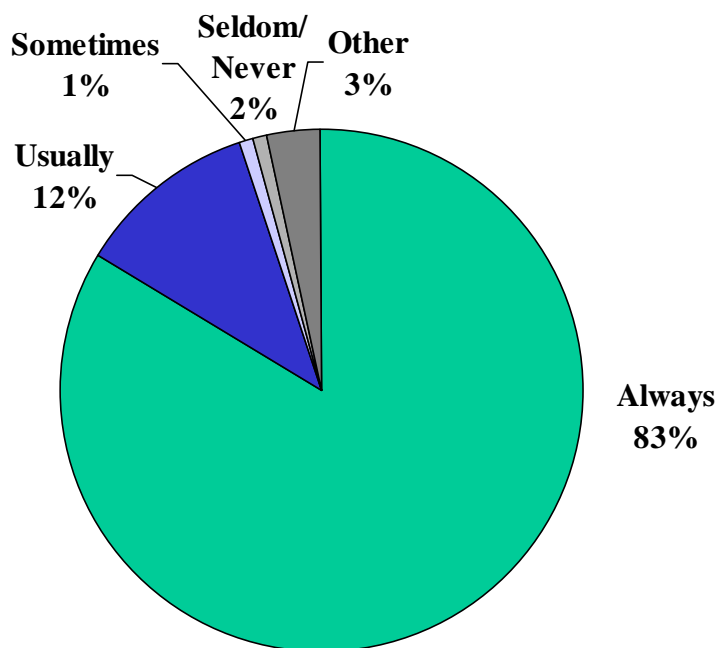
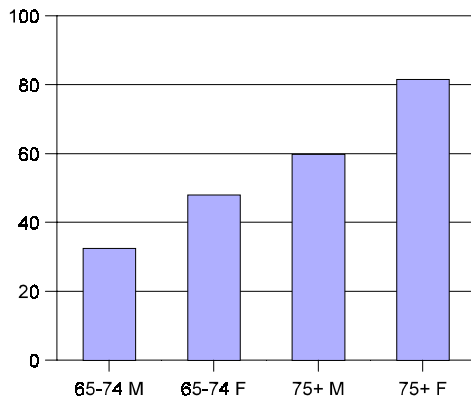


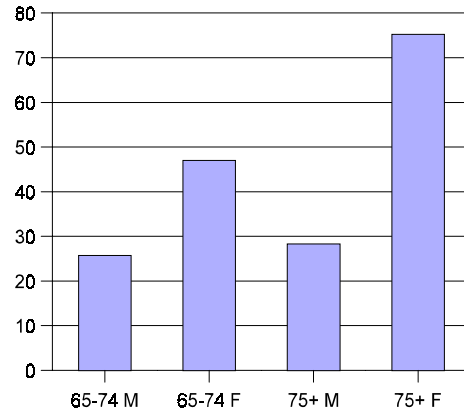
Figure 4. Extent comply with self-reported restrictions other than corrective lenses placed on driver’s license.

### Voluntary Driving Restrictions

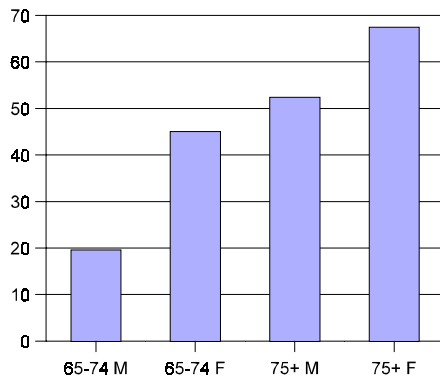
In addition to restrictions that might be placed on one’s license by the DMV, survey participants were asked if they voluntarily restricted their driving in other ways. Responses varied significantly by age and gender. Results for eight different situations are summarized in Figure 5. Overall, respondents were most likely to report that they avoided driving at nighttime and on long trips. They were least likely to report avoiding driving alone or making left turns at intersections without left turn arrows. All except avoiding driving alone were significantly associated with both age and gender. In almost all cases, older females were the most likely to voluntarily self-restrict their driving.



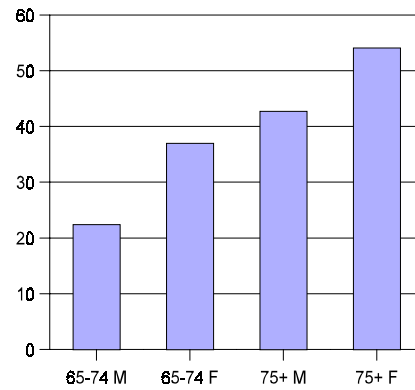
3a. Avoid nighttime driving



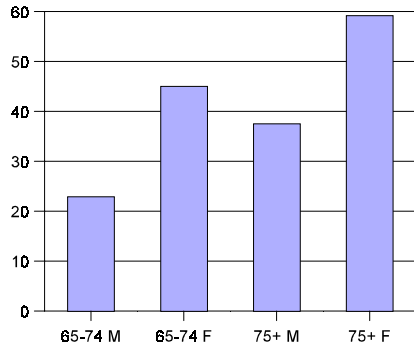
3b. Avoid long trips



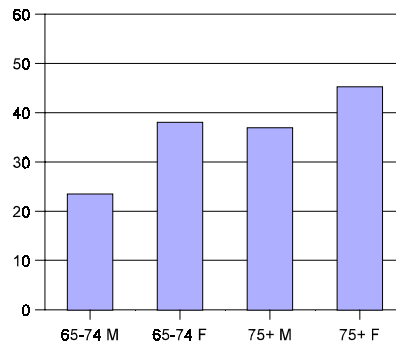
3c. Avoid high speed roads



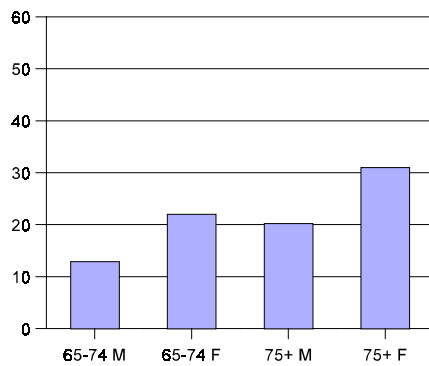
3d. Avoid heavy traffic



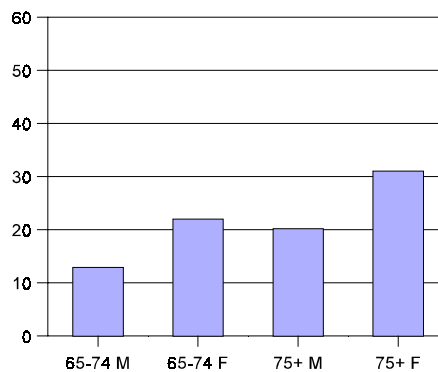
3e. Avoid unfamiliar roads



3f. Avoid driving in rain



3g. Avoid unprotected left turns



3h. Avoid driving alone

Figure 5. Self-reported driving restrictions by age and gender.

## Physical Limitations Affecting Driving

To provide insight into whether our sample of older adults might benefit from additional licensing restrictions, participants were asked whether they had any physical limitations that made it difficult for them to drive. For those who said that they did, a followup question asked about the nature of the difficulty. Responses were somewhat inconsistent, in that some persons reported they had a physical limitation, but then when questioned about it further said that it did not affect their ability to drive. The results in Table 6 are crosstabulated by whether the respondent had a restriction other than vision on their license (according to the driver history file used to generate the original survey samples).

Table 6. Percent of drivers reporting physical limitations that might affect their driving.

Driving Restriction	Unrestricted Drivers (N=309)	Restricted Drivers (N=301)	P-value <sup>1</sup>
Vision	3.2 <sup>2</sup>	17.3	<.0001
Hearing	0.7	0.7	N.S.
Stiffness in neck, etc.	0.0	0.3	N.S.
Weakness, stiffness in arms or legs	2.3	4.0	N.S.
Slow reactions	0.3	0.3	N.S.
Problems concentrating, making decisions, etc.	0.3	0.0	N.S.
Dizziness	0.7	0.0	N.S.
Diabetes	0.3	0.7	N.S.
Heart problems	0.3	0.7	N.S.
Nerves	0.0	0.0	--
Medication problems	0.3	0.0	N.S.
Stroke	0.7	5.0	.0011
Parkinson's disease	0.3	0.3	N.S.
Seizures, fainting, etc.	0.3	0.3	N.S.
Arthritis	1.0	0.7	N.S.
Other	1.3	3.3	N.S.

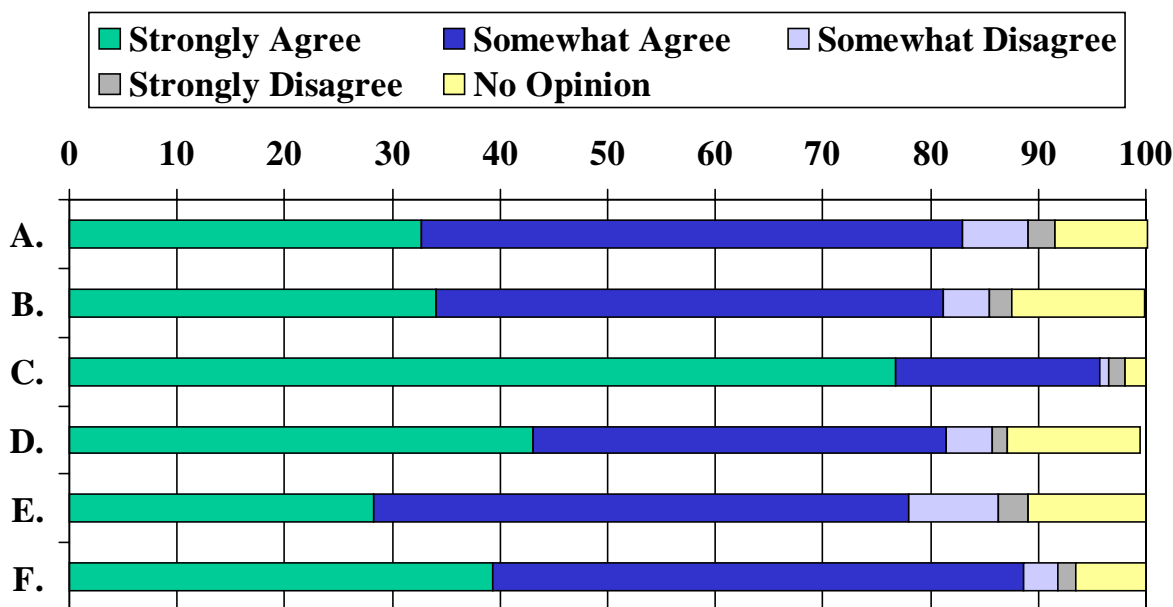
<sup>1</sup> Based on chi-square for two-way tables of restriction by license status.

<sup>2</sup> Percent of drivers self-reporting.

With the exception of vision, respondents rarely self-reported any physical limitations that made driving difficult for them. Vision was cited by 10 (3.2%) of the unrestricted drivers, and 52 (17.3%) of the restricted drivers. The higher number of cases among restricted drivers is to be expected, since the most frequent restrictions (daylight only, 45 mph or lower speed roadways, etc.) are tied to vision test results at licensing. The only two other categories mentioned by more than one or two respondents were problems in the arms or legs (2.3% of unrestricted drivers and 4.0% of restricted drivers), and stroke (0.7% of unrestricted drivers and 5.0% of restricted drivers). Both conditions were more frequently mentioned by restricted drivers, suggesting they may already be the basis for the current restriction on their license. There is no evidence from these results that drivers with medical problems are not being restricted when needed.

### Opinions About Restricted Licensing

A final section of the questionnaire sought information on seniors' opinions and attitudes with regard to restricted licensing. Respondents were asked whether they agreed or disagreed with six different statements. Results are summarized in Figure 6. Since opinions did not differ significantly by age, gender, or by the presence of restrictions on one's driving license, responses are shown for the overall sample of respondents.



- A. Restricted licenses would help some drivers ages 65 and older.
- B. More information needs to be made available to drivers about restricted licenses.
- C. I would rather have a restricted license than no license at all.
- D. Restricted licenses are a good idea, because not everyone who needs to restrict their driving does so on their own.
- E. Most adults ages 65 and older would comply with any restrictions on their driver's license.
- F. A restricted license is something most older adults would accept, if it made them safer drivers.

Figure 6. Survey respondents' opinions about restricted licenses.

Perhaps not surprisingly, the statement receiving the greatest agreement was statement C, “I would rather have a restricted license than no license at all”: 77 percent of respondents strongly agreed, and an additional 19 percent somewhat agreed with this statement. In general, respondents seemed to feel that restricted licenses were a good idea that most older drivers would support, and abide by, but that more information on the topic needed to be made available.

### **Summary Comments**

The high participation rate (nearly 94 percent) by both restricted and unrestricted drivers underscores the importance of driving to North Carolina’s older adult population. However, restricted licensing is not a topic that is well understood by this age group. Even though half of the participants were specifically identified because they had special restrictions on their driver’s license, relatively few could identify any restrictions other than corrective lenses. There was also substantial disagreement between DMV-reported and self-reported restrictions. Nevertheless, the survey participants generally supported the idea of restricted licenses, and the vast majority of those who had restrictions said that they always complied with them.

On a side note, a number of the participants who had had a restriction placed on their license for medical reasons expressed frustration at not being able to get the restriction removed once their medical problem had been taken care of, even with the support of their physician. Even though we only heard the viewpoint of the participant in these situations, it suggests that additional information and education are needed to enable older adults to feel comfortable with restricted licensing and to be more accepting of it.

## **CHAPTER 4. OPINIONS OF LICENSE EXAMINERS REGARDING RESTRICTED LICENCING**

A final project task involved surveying driver license examiners to obtain their perspectives on restricted licenses for older drivers. This was accomplished via a brief mail survey sent to all head license examiners in the state. Appendix B contains a copy of the survey, along with the cover letter that accompanied it. The survey was reviewed and approved by Mr. Wayne Hurder, Director of Driver License Certification with the N.C. Division of Motor Vehicles. Mr. Hurder's office also provided mailing labels for distributing the survey to the driver's license offices.

Surveys were mailed to a total of 92 offices. Responses were obtained from 38 offices, for an overall response rate of 41 percent. Although this response rate was lower than desired, a decision was made not to pursue a higher rate through follow-up mailings because of the time and costs involved and also because there was considerable consistency across the responses already received. Responses also represented a cross-section of larger and smaller offices from all regions of the state.

Most of the questions on the survey were open-ended and were analyzed by keying in the full responses and then going back and reviewing all responses to a particular question concurrently to identify patterns and trends. The results below highlight key findings in each of the main topic areas.

### **Examiner Qualifications**

An initial question on the survey asked if examiners felt they were adequately trained to assess the driving abilities of older adults applying for routine renewal of their license. Only five (13.2%) of the 38 respondents said that they did not feel adequately trained. However, 15 respondents had suggestions for additional training that would be beneficial. Information on medical conditions and medications was most often mentioned:

- "Crash courses" on common medical problems for the elderly -- eye diseases. A more definite and clear-cut way to check reaction to different circumstances (reaction time).
- Medical training for dementia.
- Medical conditions that affect declining functioning ability.
- Medical training on progressive diseases and medications that affect reaction, agility, etc.
- Knowing more about the medication being taken such as the positive and negative effects.
- Some training in completing medical reports so as to be helpful to the panel of medical doctors that review these reports.

Two examiners wanted more training in road testing older drivers, and one noted that the road test was inherently inconsistent due to differences in traffic conditions across sites. This examiner suggested that because of the danger factor in road testing older adults in high traffic areas, more training of examiners was needed. Another suggestion was to make greater use of simulators for testing all age drivers.

Comments offered by examiners who did not feel a need for added training included the following:

- Experience is the key. I don't think there is any training to teach you about older drivers.
- [Because of the volume of work] some older drivers aren't checked as they should be. Maybe a road test isn't conducted because the line is out the door, but more examiners would take care of that.
- We have had older drivers contest us not renewing their license, and they have a hearing where the license is then renewed. But no test was given, including no road test. DMV should support us in the field.

Regardless of their feelings regarding current qualifications and training for assessing older drivers, the respondents unanimously agreed that *all* examiners should be trained to assess older drivers, rather than relying on one or two specially trained examiners in each office.

### **Identifying Drivers for Restrictions**

Respondents were asked what, in addition to poor performance on vision tests, triggered identification of a driver for potential license restrictions. Although the exact wording of the responses varied, they overwhelmingly centered around the person's physical and mental presentation. Sample responses included the following:

- Physical condition, how well they can walk and get around.
- General appearance, mobility, communication.
- Shakiness, difficulty walking, confusion, severe shortness of breath, hearing difficulties.
- Physical impairments, confusion, poor memory, reaction time, etc.
- Physical and mental. Whether they seem alert when they come in or do they seem confused.

Other triggers receiving mention were specific medical conditions (stroke, heart problems, diabetes, etc.) that might be self-reported by the applicant, and performance on both the road signs test and on-road driving test.



Examiners were also asked about any specific reasons that an older adult might be restricted to drive (a) only within a certain radius of their home, (b) in-state only, and (c) accompanied by a licensed driver. With regard to driving only with a certain radius of home, the examiners cited the usual combination of visual, physical, and mental impairments. However, road test performance was specifically noted by one-third of the respondents. Sample comments include:

- Disoriented on road test due to being in unfamiliar surroundings, or doctors' comments on health.
- Based on the road test performance.
- Depends on their road test, they are usually safer on roads they are familiar with.
- The control of the vehicle, stopping, starting, use of brakes, vision, awareness of traffic situations.
- Customer conducts road test with fair performance and is safe driving in their surrounding church, store, etc.

With regard to in-state driving only, several respondents noted that they did not use this restriction, or that the restriction was applied only by the Medical Review Board and/or only to commercial driver's license holders. There was no single reason that stood out as justification for applying this restriction to the licenses of older adults.

Similarly, with regard to requiring accompaniment by another licensed driver, although a few of the responses suggested this might be considered on a special case basis, the majority of respondents viewed such restrictions only as part of the overall system of issuing limited permit licenses for people learning to drive. Example responses:

- Only if permit is issued, not for driver's license.
- Except for evaluation or instruction, there is no reason for a person to have this type of restriction permanently.
- When they don't know how to drive.
- If they haven't driven in a while and need to relearn aspects of driving. This restriction should expire after a certain amount of time.
- Only if license has expired over a year and they get a permit.

Two responses, however, suggested that such a restriction might be seen as a way of helping older license holders continue to drive safely longer:

- If they cannot pass the road test after a specified number of tries they could be issued a permit in order to give them the privilege to at least be considered a “delicensing” process.
- If person has not driven in a while. Some people feel a comfort when someone is with them.

### **Road Testing Older Drivers**

Examiners were asked to estimate the percentage of older drivers coming to their office for routine renewal of their license who were road tested, and to again identify those factors likely to precipitate a road test. Responses to the first question ranged from two percent to 50 percent, with the largest number of examiners estimating that 10 percent of older adults were road tested. Many examiners left this question blank, or stated that they did not know.

Factors triggering a road test were very similar to those that triggered consideration for a restricted license, and included physical impairments, mental alertness, medical conditions, and other health problems. The individual’s physical appearance and ability to move about was noted by almost all of the respondents, perhaps because it is one of the first signs that can be observed:

- Poor physical condition -- difficulty walking, weakness, mental confusion, loss of use of arm or leg, deafness, etc.
- Difficulty in walking, limitation of motion, very slow moving.
- Observing person walk -- if they need assistance.
- Stumbling, excessive shakiness, repetition in talking, signs of Alzheimer’s disease.

One examiner had this to say about road testing of seniors:

“This being a retirement area, we have decided by ourselves to recheck drivers that are 80 or older. That means to take a little extra time with them, just to make sure everything is as it should be. We also conduct a driving test. It’s important to check alertness and mobility.

This examiner also recommended that a law be passed setting a mandatory age for road testing.

### **Usefulness of Restricted Licenses**

Examiners were asked whether in their opinion restricted licensing could be a useful tool for helping some older adults continue to drive safely longer, and the reasons why or why not. There were basically 30 positive responses and six negative responses. Examples of positive responses include the following:

- Mostly in rural areas where congestion is very light. Helps keep independence to go to church, doctors, grocery store.
- Having a license is important to older adults. Restriction is a good way to make them feel better but at the same time keep them and everyone else safer.
- Some older drivers can get along just fine with limited or restricted driving privileges.
- Restrictions are an alternative to failure. Highway safety is a must and restrictions enable drivers to adapt to a situation instead of being turned down.
- Loss of license is a traumatic experience to older drivers.
- Yes - especially daylight, no interstate, and 45 mph limit is helpful.

Those who felt negatively toward restricted licenses noted that (1) a restricted license can not make or cause an older adult to drive safely, (2) older adults will disobey the restriction and drive “at anytime with or without a license,” and (3) older adults find it hard to improve or change their driving habits. One examiner also commented that he was “not sure that a universal restriction was the answer, since some 90-year-olds are better drivers than 45-year-olds,” and that examiners should therefore be encouraged to do more testing.

When asked specifically if they or their staff ever “tailored” restrictions to an individual driver, the majority indicated that they did this, but many also noted that this was most often handled by the Medical Review Board. Sample positive comments include the following:

- I always ask if the number of miles I am thinking about will cover what the customer’s needs are.
- Enough miles can be added to get them to the doctor, but no night driving unless their vision meets the requirements.
- I try to talk to the person to learn as much as I can to make the right decision.
- We look at each applicant as to their special needs.
- Each person has different needs and circumstances, but our main priority is highway safety.

Eleven respondents commented on the Medical Review Board’s role in the process. Selective examples include the following:

- Yes, but those types of restrictions are normally placed on a license by the medical section of DMV.
- The medical section of the DMV would have to tailor it or remove it.

- We can tailor some restrictions unless put on there by the medical section; then only they can remove or change it.

When asked if they saw a need for such “tailoring” of restrictions, there were 24 positive responses which echo the positive responses highlighted above. Many examiners saw the tailoring of license restrictions as a way of balancing an individual’s unique needs with the broader needs of public safety. As expressed by one respondent,

- Keeping highway safety in mind, a mileage restriction might be necessary, and a 3-5 mile radius may allow some drivers to safely get to church, store, etc. Each case is individual and what would be a good restriction for one client might not be right for the next.

However, there were 11 respondents who did not agree that specially tailored license restrictions were needed. Safety was a major consideration for these examiners. Many felt that if a person was not capable of driving in all situations, they should not be driving at all:

- No, because the safety of that person and the safety of others on the road is a major priority.
- If a person does well enough to renew a license, it should be unrestricted unless a visual impairment determines otherwise.
- The safety of the public needs to be considered, not just a way to keep a person’s license in their pocket.
- If a person is not safe to drive 20 miles away from home, they are not safe to drive right around their home.

A final question in this section asked if there were any additional restrictions not typically used that might be helpful to some older drivers. The majority of examiners felt that the existing restrictions were adequate. However, several either commented on new approaches to making use of existing restrictions, or came up with new restrictions altogether. In the former category were the following suggestions:

- Daylight driving only should be an option for some drivers even though their vision is not poor enough to warrant that restriction.
- Most of the restrictions we already have are fair, but some of the radius of homes could be determined by the examiners [as opposed to Medical Review Board].
- We should use what we have more aggressively. We should be able to add restrictions without fear from upper management or lawsuits from the public.
- Issue a learner permit until they can take a driving course.

- Suitable driving radius of home during certain hours is usually all they ask for or want.

Suggestions for “new” restrictions included no driving on weekends; special tags or signs placed on vehicles to warn others that the driver may be driving slower than the posted limit, etc.; the ability to restrict from busy roadways other than interstates; and mandatory outside mirrors on both sides of the vehicle.

### **Expanded DMV Services**

Two final questions sought feedback regarding a potential expanded role for the DMV in providing assistance to older adults who are no longer capable of driving, as well as providing education and training to those drivers needing it. Regarding assistance to those who have lost their license, examiners were asked, “Is your office able to provide any assistance (e.g., information on alternative transportation, a contact person within the community, counseling) to individuals once a decision is made not to renew their license?” Nine examiners answered “yes” to this question and 13 answered “no”; the rest either did not respond or did not provide a specific yes or no answer. Those who responded affirmatively generally noted that they advised their customers about services available through the county or community and about various public transportation options. One noted that they discussed a variety of transportation options, including assistance from family members as well as church members. Another noted that although they did not talk directly with older adults who had lost their license, they did talk with any family members who had brought them into the office. Generally, however, examiners were only able to provide limited assistance and referral information.

Examiners who gave a negative response to the question of providing assistance to non-renewals generally noted that there were other sources for this information within the community or county. However, one respondent admitted to not knowing what was available in his community.

Although a number of examiners expressed a need for making alternative transportation information available to seniors, most did not feel this was a service that the DMV should provide. A lack of resources and manpower was cited by several respondents, even though the question was caveated by the statement, “assuming money and resources could be made available.” Most examiners, however, simply felt that this was a service better provided by others:

- There are other organizations that provide these services. I don’t think DMV money should be used for this. We need more examiners to take care of the workload we have now.
- This is not DMV’s purpose. This could be handled by local groups or other agencies, churches, etc.
- The responsibility of DMV is to promote safe driving and issue driver’s licenses when customers meet requirements.

- Most customers have family, friends, or church members to assist them or they know they can call for public transportation.
- This is something the driver and family should work out.

Those who saw a potential role for the DMV were more likely to comment on the value of such a service. There were also some suggestions for how needed information could be made available:

- This is a very hard time for some seniors. If they can be shown that there are options to remain independent, they will have an easier time.
- If some type of public transportation is available, some literature about the service would be good.
- It would be costly, but very helpful. The individual counties could work with the state to provide this information for us to distribute.
- It would offer hope for individuals.
- It would be great to be able to hand a person a pamphlet on transportation alternatives, especially in a small town. We have no buses and few taxis.
- I do not think DMV should use monies, but it would be nice if the county that offers these services provided information that we could give to a customer.

A final question sought feedback on whether the DMV should provide education or training (including behind-the-wheel instruction) to older adults, “assuming that money and resources could be made available.” A large majority of the respondents again were opposed to this idea, believing that providing such a service was outside of the DMV’s responsibility and best addressed by others -- either local governments or the private sector. Lack of resources was also an issue raised by some examiners:

- Older drivers need to be responsible for seeking training if they feel they need it.
- Whenever DMV has enough money to hire enough examiners and pay them what they should make and provide enough supplies to work with, then if we have a surplus of money we can talk about these other things. Until then, we don’t need to spread ourselves anymore thin than we already are.
- This is something that could be done in the private sector with DMV approval.
- Driving schools are offered to the public. Will a person who has been driving for 50 years take such a class? I don’t think so.
- Need more staff members to accomplish this, but could work.

- I feel that other training such as “When to stop driving” and “What to do after you stop driving” would be helpful.
- We have DMV driver improvement classes and AARP driver clinics. Leave the driver examiners to do their job.

A few of those who felt that older driver education and training was an area where the DMV *should* become more involved were able to make suggestions for how such a program might work:

- It would be very helpful for examiners to go to meetings where older citizens are and explain what options are available to them.
- Just as schools provide Driver Ed training to students, a similar school could be provided for older adults, especially those who have never driven and now find the courage to try.
- Classroom training at public libraries.
- It would probably have to be done through the driver training section. Many [older drivers] would benefit from this program.
- If DMV could provide the education and behind-the-wheel training, I think it would be very helpful to the drivers.
- I think education to all age drivers is needed. Refresher courses for [traffic law violators] could be helpful.

## **Summary Comments**

Although no firm conclusions can be drawn from this relatively small sample of 38 head license examiners, most of the examiners viewed restricted licensing as a potentially useful tool for helping some older adults drive safely longer. The examiners also indicated that they felt competent to assess the driving abilities of older adults and to impose needed restrictions, except in cases where medical conditions might require more thorough review by the state’s Medical Review Board. There was some suggestion that license examiners and Medical Review Board staff might benefit from increased coordination and sharing of information.

Examiners were much more divided on the issue of expanding DMV services to provide greater assistance to drivers in need of driver education, on-road training, or help with alternative transportation. The dividing point was not whether this was needed or a good idea, but rather whether it was DMV’s role to provide such assistance, especially given the limited personnel and resources currently available. Examiners felt that their primary responsibility was to provide for public safety rather than to ensure mobility among the elderly.

## CHAPTER 5. SUMMARY AND CONCLUSIONS

Three separate tasks were carried out to evaluate the potential usefulness of restricted licensing as a tool for helping some older adults continue to drive safely longer. The first task involved an analysis of North Carolina driver history and motor vehicle crash data to determine the frequency that restrictions are placed on the licenses of older drivers, and how the crash experience of restricted drivers differs from that of unrestricted drivers. The second task involved a survey of licensed drivers ages 65 and older to learn what they knew and felt about restricted licensing. A final project task utilized a mail survey to obtain the input of driver license examiners on the topic. Key findings from each of these activities are highlighted below.

### Current Practice

- Only 2.1 percent of North Carolina's licensed drivers ages 65 and above have a restriction other than corrective lenses on their driver's license.
- The most frequent restrictions (other than corrective lenses) are 45 mph/no interstate and daylight driving only. These two restrictions each appear on the licenses of 1.2 percent of older drivers. Both are tied to vision test performance at license renewal.
- All other restrictions appear on *one-tenth of one percent or fewer* licenses. These include many restrictions that could be beneficial to older adults, such as driving only within a certain radius of home, outside mirrors, wheel knobs, or other special equipment.
- The frequency of restrictions increases with age, and within all age groups men are more likely than women to have specialized restrictions not based on vision test performance.

### Safety of Restricted Drivers

- Drivers with restrictions other than corrective lenses have higher crash rates than drivers with no restrictions or corrective lenses only; the differences remain statistically significant after adjustment for age, gender, and population density.
- North Carolina drivers with added license restrictions are involved in an additional 274 crashes each year compared to unrestricted drivers.

### What Seniors Know and Feel

- Many seniors are unaware of the availability of driving restrictions other than corrective lenses; and many are either unaware -- or unwilling to acknowledge -- restrictions placed on their own license.



- One-third of the drivers who admitted to having a restriction other than corrective lenses disagreed with their restriction and/or felt it made it harder for them to meet their transportation needs. Males were especially likely to feel this way. Regardless of their feelings, eight out of ten drivers claimed that they always complied with their restrictions.
- Many seniors voluntarily restrict their driving to reduce crash risk: over half say that they avoid nighttime driving, high speed roadways, driving in heavy traffic or on unfamiliar roadways, and driving on long trips or in bad weather. Older females are the most likely to self-restrict.
- Eight out of ten older drivers agreed that restricted licenses might help some older drivers and was something most older drivers would comply with and accept. However, they also felt that more information needed to be made available regarding restricted licenses.

### **Opinions of License Examiners**

- Although license examiners generally felt adequately trained to assess older drivers, nearly half expressed interest in additional training, mostly pertaining to medical conditions and medications affecting older adults.
- In identifying drivers for potential restrictions or for road testing, examiners said that they most often relied on an overall judgement of the individual's physical and mental fitness.
- Restrictions other than those tied to vision test performance (i.e., 45 mph/no interstate and daylight driving only) are often set by the state Medical Review Board, and cannot be lifted or modified by individual examiners. Some examiners expressed frustration in the system and wanted greater input in the process.
- Most examiners felt that the current range of restrictions was adequate, but some also noted that they could be more widely used.
- Most examiners agreed that restricted licensing could be a potentially useful tool for helping some older adults continue to drive and to maintain independence. However, a minority were opposed to restricted licensing because they felt that it was not in the interests of safety. A view expressed by several examiners was that individuals not capable of driving in all situations should not be driving at all.
- Although examiners recognized a need for assisting older adults, either by providing education or training to those able to continue driving or by offering information and counseling regarding transportation alternatives to those who must stop, most felt that current work demands were too great for them to provide such services and that there were other available resources for older people and their families to draw upon.

## Conclusions and Recommendations

The results of this research suggest that few older drivers in the state are reaping the potential safety benefits of restricted licensing. Only two percent of North Carolina drivers age 65 and above have a restriction other than corrective lenses on their driver's license, and the vast majority of these are mandatory restrictions resulting from poor performance on vision tests. Although drivers with restrictions other than corrective lenses were found to have elevated crash rates, the reason for the higher rates could not be determined from the available data. There was some indication that many of the specialized restrictions are being placed by the state's Medical Review Board and not by license examiners in the field. If so, these drivers may have certain medical conditions and problems that increase their crash risk, thus masking any potential safety benefits of restricted licensing.

While licensing restrictions are a common outcome for drivers referred to the state Medical Review Board, ideally they would be applied on a more proactive basis by license examiners looking for ways to help those persons (regardless of age) with less severe functional impairments continue driving, but under conditions that minimize their crash risk. In setting these limitations, the examiner has the ability to draw both from road test results as well as input gleaned from talking and interacting with the driver. In this way, restrictions can be tailored to best satisfy the dual needs of personal mobility and public safety.

License examiners who responded to our mail survey generally supported the concept of restricted licensing, as well as other activities such as education and counseling to help older drivers and non-drivers address their transportation needs. However, it is clear that additional resources are needed, and that local governments (e.g., area agencies on aging) and the private sector (e.g., driving schools) also have important roles to play.

For their part, older adults also supported the idea of restricted licensing, but there is a need for increased education directed at both the general public (what is restricted licensing and how can it be useful to older drivers?) and to the specific individuals affected (what restrictions have been placed on my license and why was this done?). Education is critical to increasing public understanding and support for restricted licensing.

Drawing from the data analysis, the survey of restricted and unrestricted drivers, and the survey of license examiners, the following recommendations are offered:

- Increased education and training of driver license examiners to improve their ability to identify persons with decreased functional abilities that may affect their driving, including information on medical conditions and medications common among the elderly.
- Improved communication between licensing administrators and the state Medical Review Board, so that their efforts better complement each other.
- Clarification of the specific restrictions that examiners can place on driver's licenses and the conditions that might warrant such restrictions. Greater flexibility in dealing with individual cases.

- More extensive use of road testing and one-on-one counseling to assist in the placement of appropriate licensing restrictions.
- Partnering with local government agencies and with the private sector to help provide information and support to older adults in need of transportation alternatives.
- More community outreach to educate the driving public about the needs and concerns of older drivers, and ways these can be addressed. This might take the form of informational brochures, hotline numbers, a speaker's bureau, newspaper articles, etc.
- To the extent possible, increased DMV personnel and resources to allow more individualized attention to be given to older drivers applying for license renewal, including more frequent road testing and counseling about their driving.
- Creating partnerships within the medical community and the private sector to offer more comprehensive assessments and training of drivers with special needs.
- Exploring the use of driving simulators as potentially useful and cost effective tools for providing more comprehensive and accurate driving evaluations.
- Promotion of self-assessment and, where warranted, self-regulation as actions drivers themselves can take to lower their crash risk.
- On-going evaluation of the impact of restricted licensing on personal mobility and safety, including a large-scale case-control study of restricted and unrestricted drivers, as well as individual case studies followed over time.

The number of older drivers will increase dramatically over the next several decades. Most older adults are safe drivers, in part because they drive fewer miles and under safer conditions. Nevertheless, medical conditions and declining functional abilities contribute to higher crash risks, especially for those over the age of 75. Restricted licensing is one approach to lowering this crash risk. It accomplishes this by more carefully matching an individual's license to their ability to operate a motor vehicle safely. The option of restricted licensing is not new. However, if it is to serve a useful role in helping to balance older adult safety and mobility, it must be presented within a larger context of older driver education, evaluation and training. Only then can its potential be realized.

## REFERENCES

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Temple, LL. Graduated licensing; policies and practices. Unpublished paper prepared for the American Association of Retired Persons, Washington, D.C., 1992.

Waller PA. Renewal licensing of older drivers. In *Transportation in an Aging Society: Improving Mobility and Safety for Older Persons*, Volume 2, pages 72-100. Washington, D.C., Transportation Research Board, National Research Council, 1988.

**APPENDIX A**

**TELEPHONE SURVEY OF LICENSED DRIVERS**

Date

Mrs. John Smith  
100 Chapel Hill Street  
Chapel Hill, NC 27514

Dear Mrs. Smith:

The University of North Carolina Highway Safety Research Center is studying ways to help older adults continue to drive safely longer. We are especially interested in how driver licensing might be improved to provide more options for the older driver. For example, some older adults who do not qualify for a full license could still meet many of their transportation needs if given a restricted license that allowed them to drive only under certain conditions, such as during the daytime or on familiar roads close to home.

We would like to talk directly with older adults to learn their opinions about some of these issues. Your name was randomly selected from a list of licensed drivers in the state. We hope to call you some time during the next few days for a brief telephone interview. The interview should take less than 10 minutes of your time. The person calling will be either Stephanie Reid, Jackie Collura, or Cassandra Brown, all employees of the UNC Highway Safety Research Center.

Your responses to our questions will be entirely confidential. We will not be using anyone's names when reporting the results of the study. The study is being funded by the North Carolina Governor's Highway Safety Program.

Your participation is voluntary. However, we hope that you do choose to participate when called. If you have questions or concerns about the study, I can be reached at 1-800-672-4527 Monday-Friday, from 8:30 a.m. until 5:30 p.m.

Thank you very much. We look forward to talking with you.

Sincerely,

Jane Stutts, Ph.D.  
Project Director

**ID Number:**

**Name:**

**Address:**

**City / State / Zip:**

**Phone Number:** \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

Date Consent Letter Mailed: \_\_\_ / \_\_\_ / \_\_\_

**Telephone Contact Record**

	Date	Time	Interviewer	Response
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

**Interview Completion Status:**

1. \_\_\_ yes
2. \_\_\_ yes, partial
3. \_\_\_ no, refused
4. \_\_\_ no, not a household (business)
5. \_\_\_ no, not a working telephone number (not in service, can't complete, etc.)
6. \_\_\_ no, language barrier
7. \_\_\_ no, physically unable to be interviewed (injured, sick, hearing, etc.)
8. \_\_\_ no, max attempts
10. \_\_\_ no, other (describe) : \_\_\_\_\_

Date Interviewed: \_\_\_ / \_\_\_ / \_\_\_ By: (2=Stacy, 3= Steph, 4= Jackie, 5=Maria, 6=Cassie) \_\_\_\_\_

I have obtained the subject's informed consent and agree to keep all information from this interview confidential.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
(Signature of Interviewer) (Date)

**Survey on Restricted Licenses for Older Drivers**

Hello. My name is \_\_\_\_\_. I'm calling from the Highway Safety Research Center at the University of North Carolina. May I speak with \_\_\_\_\_, please?

*If the person is on the phone, or comes to the phone, continue. If not, ask for a time to call back, and/or another phone number if available.*

We are conducting a research study on licensing options for drivers ages 65 and older. The study is being conducted for the NC Governor's Highway Safety Program. You should have received a letter from us recently about the study. Do you remember receiving the letter?

*If yes, then proceed.*

We would like to ask you a few questions to help us with the study. It should only take about 5 minutes of your time. May I go ahead and ask you the questions now?

*If yes, continue with questions. If no, try to schedule a time to call back.*

*If no, explain that*

"The letter contained information about the study, and let you know that we hoped to be calling you in a few days. Your name was randomly selected from a list of licensed drivers in the state, and we would like to ask you a few questions. Your participation is voluntary, and we will not be using any names when reporting the results of our study. The questions should take only about 5 minutes of your time. Could I go ahead and ask them now?"

*If yes, continue. If no, try to schedule a time to call back.*

*Note: If the person would like another copy of the letter to be sent to them, ask for their mailing address and tell them that we will get a copy of the letter to them in the mail tomorrow and call them back next week.*

1.	<p>For this survey, we are interested in getting opinions from persons age 65 or older who either have, or have had, a driver's license.          First, can you tell me whether you are age 65 or older?          And do you now have, or have you had, a driver's license?</p> <p><i>If 3 or 4, say "I'm sorry, for this survey we are only supposed to talk with drivers (or with persons age 65+). But thank you very much for your willingness to help us" and terminate call.</i></p>	<p>1. 65+, current license          2. 65+, former license          3. 65+, never license (end)          4. Less than 65 (end)          5. Refuse (end)</p>
2.	<p>How often do you drive? Do you drive: (read categories):</p>	<p>1. Every day, or almost          2. Several times a week          3. Once or twice a week          4. Less than once a week          5. Never          6. Unsure/Refused</p>



3.	<p>We are primarily interested in the topic of restricted licenses -- how much you know about them, and what your feelings are about them. These would be licenses that still let you drive, but with certain restrictions or requirements. One very common restriction is the wearing of eye glasses, or other corrective lenses whenever you drive. Are you aware of other restrictions that people might have on their driving license? <i>(Do not read. Circle all mentioned. If unsure or other, describe below.)</i></p>	<ol style="list-style-type: none"> <li>3. Daylight, 9-5, etc.</li> <li>4. 45 mph, no freeway</li> <li>5. Certain area/radius home</li> <li>6. Certain destinations (work, church, store)</li> <li>7. Adaptive equipment: knobs, cushions, brake pedal extension, etc.</li> <li>8. Mirrors (inside or out)</li> <li>9. Power brakes, steering</li> <li>10. Hearing aid</li> <li>11. Someone accompany</li> <li>12. Automatic transmission</li> <li><b>18. Other (describe to left)</b></li> <li>19. Unsure / Don't know</li> <li>20. Refused</li> </ol>
4.	<p>And do you have any restrictions placed on your own license? <i>(Do not read. Circle all mentioned)</i></p> <p><i>(Note: If they don't know, don't direct them to look at their license, since the fact that they don't know, or think differently than what the DMV records show, is important information. We will have the DMV information as part of their file.)</i></p> <p>If respond 1, 2, 19, or 20, skip to Question #7</p>	<ol style="list-style-type: none"> <li><b>1. None</b></li> <li><b>2. Corrective lenses</b></li> <li>3. Daylight, 9-5, etc.</li> <li>4. 45 mph, no freeway</li> <li>5. Certain area/radius home</li> <li>6. Certain destinations (work, church, store)</li> <li>7. Adaptive equipment knobs, cushions, brake pedal extension, etc.</li> <li>8. Mirrors (inside or out)</li> <li>9. Power brakes, steering</li> <li>10. Hearing aid</li> <li>11. Someone accompany</li> <li>12. Automatic transmission</li> <li><b>18. Other (describe to left)</b></li> <li><b>19. Unsure / Don't know</b></li> <li><b>20. Refused</b></li> </ol>
5a.	<p>Can you tell me whether or not you think the restriction(s) placed on your license is(are) appropriate, or right, for you?</p>	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. Mixed (if multiple rest.)</li> <li>4. Unsure / Don't know</li> <li>5. Refused</li> </ol>
5b.	<p>Do you feel that having this(these) restriction(s) on your license makes it harder for you to meet your transportation needs?</p>	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. Unsure / Don't know</li> </ol>

6.	<p>We do not have any good information on whether or not drivers follow the restrictions placed on their license. Could you please tell me if you (<i>read categories 1-4</i>)</p> <p><i>Note: If person seems uncomfortable answering this question, you may want to remind them that any information they provide us is completely confidential, and that no individual names will be used in reporting the results of the study.</i></p>	<ol style="list-style-type: none"> <li>1. Always comply with your restriction(s)</li> <li>2. Usually comply</li> <li>3. Sometimes comply</li> <li>4. Seldom or never comply</li> <li>5. Mixed (if multiple rest.)</li> <li>6. Unsure / Don't know</li> <li>7. Refused</li> </ol>																																				
7.	<p>Some seniors restrict their driving themselves, regardless of what is on their license. For example, they may choose not to drive at night, on freeways, or on busy roadways, because they don't feel comfortable driving under those conditions. Would you please tell me whether you restrict your driving in any of the following ways.</p> <p>Do you. . .</p> <ol style="list-style-type: none"> <li>a. Avoid driving at nighttime?</li> <li>b. Avoid driving in heavy traffic?</li> <li>c. Avoid making left turns at intersections without left turn arrows</li> <li>d. Avoid driving alone?</li> <li>e. Avoid driving on freeways or other high speed roads?</li> <li>f. Avoid driving on unfamiliar roads?</li> <li>g. Avoid driving on long trips?</li> <li>h. Avoid driving in the rain?</li> </ol>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 33%; text-align: center;">1</th> <th style="width: 33%; text-align: center;">2</th> <th style="width: 33%; text-align: center;">3</th> </tr> </thead> <tbody> <tr> <td>7a.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7b.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7c.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7d.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7e.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7f.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7g.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> <tr> <td>7h.</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> <td style="text-align: center;">DK</td> </tr> </tbody> </table>		1	2	3	7a.	Yes	No	DK	7b.	Yes	No	DK	7c.	Yes	No	DK	7d.	Yes	No	DK	7e.	Yes	No	DK	7f.	Yes	No	DK	7g.	Yes	No	DK	7h.	Yes	No	DK
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7e.	Yes	No	DK																																			
7f.	Yes	No	DK																																			
7g.	Yes	No	DK																																			
7h.	Yes	No	DK																																			
8a.	<p>Do you have any physical limitations that make it difficult for you to drive?</p> <p>If no, <i>skip to Question #9</i></p>	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. Unsure / Don't know</li> </ol>																																				
8b.	<p>What are these? (<i>Circle all mentioned. Use space below to describe anything that does not fit into a category or that you are unsure about which category it belongs in.</i>)</p>	<ol style="list-style-type: none"> <li>1. Vision</li> <li>2. Hearing</li> <li>3. Neck problems</li> <li>4. Arm/leg problems</li> <li>5. Slow reacting</li> <li>6. Problems concentrating, making decisions, etc.</li> <li>7. Dizziness, etc.</li> <li>8. Diabetes</li> <li>9. Heart problems</li> <li>10. Nerves, nervousness</li> <li>11. Medication problems</li> <li>12. Stroke</li> <li>13. Parkinson, tremors, etc.</li> <li>14. Seizures, fainting, etc.</li> <li>15. Arthritis (general)</li> <li>19. Other (describe)</li> <li>20. Unsure / DK / Refused</li> </ol>																																				

9.	<p>Please tell me how much you agree or disagree with the following statements about restricted licenses. Again, these would be special licenses that still let you drive, but that place certain restrictions on when or where you drive, or that require special equipment in your car. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each statement. (<i>Read categories as needed after each statement.</i>)</p>	
9a.	Restricted licenses would help some drivers age 65 and older.	<p>1      2      3      4      5  Strong Some Some Strong DK  Agree Agree Disag Disag</p>
9b.	More information needs to be made available to drivers about restricted licenses.	<p>Strong Some Some Strong DK  Agree Agree Disag Disag</p>
9c.	I would rather have a restricted license than no license at all.	<p>Strong Some Some Strong DK  Agree Agree Disag Disag</p>
9d.	Restricted licenses are a good idea, because not everyone who needs to restrict their driving does so on their own.	<p>Strong Some Some Strong DK  Agree Agree Disag Disag</p>
9e.	Most adults ages 65 and older would comply with any restrictions on their driver's license.	<p>Strong Some Some Strong DK  Agree Agree Disag Disag</p>
9f.	A restricted license is something most older adults would accept, if it made them safer drivers.	<p>Strong Some Some Strong DK  Agree Agree Disag Disag</p>

**CLOSING**

That's all the questions I have. Is there anything else that you would like to comment on, anything you feel is important for senior drivers that I should include in my report to the Governor's Highway Safety Program?  
(*Write any comments below.*)

**9** Check here if requests copy of survey results.

**APPENDIX B**

**MAIL SURVEY OF DRIVER LICENSE EXAMINERS**

September 29, 2000

Dear Senior Examiner:

The University of North Carolina Highway Safety Research Center is studying ways to improve the safety of our state's growing older driver population. We are especially interested in the role the DMV can play in helping older adults with declining functional abilities transition from drivers to non-drivers. One way of doing this *may* be to gradually restrict the situations and conditions under which older adults with diminishing capabilities drive. Just as our young beginning drivers must now go through a period of graduated licensing, it might become the norm for older drivers to progress through a period of graduated *delicensing*.

Over the past several months, we have been telephoning drivers ages 65 and older to learn their feelings about restricted licensing. We have asked them whether they are aware of any restrictions currently placed on their license, whether they agree with and abide by these restrictions, and whether they feel the restrictions have made it difficult for them to meet their transportation needs.

We would now like to hear your thoughts on this topic. Please take a few minutes to complete the enclosed survey. Your responses will be confidential -- all results will be summarized, and no individuals will be named or otherwise identified in our final report.

The survey has been reviewed and approved by Wayne Hurder, Director of Driver License Certification. We are excited about working with the DMV to improve the safety of our older drivers, and welcome your input in this process. If you have any questions or comments about the survey, please feel free to call me at 1-800-672-4527, or directly at 919-962-8717.

Sincerely,

Jane Stutts, Ph.D.  
Project Director

*This questionnaire is to be completed by the senior license examiner, or by an examiner in the office familiar with procedures typically followed in the licensing of older adults, ages 65 and above. We sincerely appreciate you sharing your experience and expertise on this topic.*

1. How many examiners are employed at this office?    \_\_\_\_ full time    \_\_\_\_ part time
2. Do you feel that your examiners are adequately trained to assess the driving abilities of older adults who come for routine renewal of their license?    \_\_\_\_ yes    \_\_\_\_ no

What kinds of additional training would be useful to you?

3. Would you prefer that all examiners be trained to assess older drivers, or that one or two examiners be specially trained for this task?

\_\_\_\_ all examiners    \_\_\_\_ one or two specially trained examiners

4. Other than poor performance on vision tests, what triggers identification of a driver for potential licensing restrictions?

5. For what reasons might an older adult be restricted to drive

a. Only within a certain radius of their home:

b. In-state only:

c. Accompanied by a licensed driver:

6. Approximately what percentage of drivers ages 65+ who apply for routine renewal of their license are road tested?    \_\_\_\_\_ percent

What triggers identification of an older driver for road testing?

7. In your opinion, can restricted licenses be a useful tool to help some older adults continue to drive safely longer? Why or why not?
  
8. Does your staff ever “tailor” restrictions to the individual driver? For example, expanding a 10-miles-from-home restriction to 12 miles, if that is the distance to the individual’s doctor, or allowing some evening driving if it enables that person to attend church services?
  
9. Do you see a need for such “tailoring” of restrictions? Why or why not?
  
10. Are there any additional restrictions not typically used that you feel might be helpful to some older drivers?
  
11. Is your office able to provide any assistance (e.g., information on alternative transportation, a contact person within the community, counseling) to individuals once a decision is made not to renew their license?

Is this a service you feel the DMV should provide (assuming money and resources could be made available)? Why or why not?

12. Again, assuming money and resources could be made available, do you feel the DMV should help in providing education or training (including behind-the-wheel) to older adults? Why or why not? Any ideas for how this might work?

Name (optional): \_\_\_\_\_ City or town (optional): \_\_\_\_\_

THANK YOU VERY MUCH FOR RESPONDING.  
PLEASE RETURN THE QUESTIONNAIRE USING THE ENCLOSED ENVELOPE.