Seniors behind the wheel

(And off the road before they cause an accident)

Tag words: Driving; elderly; mental disorders; physiological effects

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Summary

(NBM) As people age, the functions that tend to deteriorate are vision, hearing, reflexes, strength, flexibility, and coordination. While driving, seniors may have difficulty seeing and hearing other vehicles, stopping on command, navigating through intersections safely, or maintaining control of a car. An individual’s chronological age is not an absolute indicator of their driving abilities. Many senior drivers have outstanding driving records. However, if a senior drives beyond their capacity it creates an increase in safety risk and life threatening situations. This conveys the importance to senior drivers on the risks to themselves and other drivers on the road and enacting legislation on the licensing of senior drivers should reduce the number of fatalities and injuries on the road. Our objective is to notify the public on how to identify at risk drivers. Education and awareness will facilitate safe seniors maintain their independence and essentially get the dangerous seniors off the road.

Video Link: http://youtu.be/3XjfyQNP0Bw

Signs of aging, its effects on driving abilities, and current solutions

(NBM) As the population’s life expectancy has increased, one of the most overlooked age related occurrences are car accidents involving elderly drivers. Individuals sixty-five years and older remain driving for many years, as it is a crucial source of independence. Often the elderly will continue to drive well into the aging process. This may create life-threatening situations for the aging driver and other surrounding drivers. The deterioration of structure and function are inescapable consequences of aging, and can occur at any time, whether overnight or over a span of years. There is no specific age, rate, or extent of decline that an individual will age, this will vary greatly among individuals.

Vision

(SE) As one gets older, there are many types of physical limitations for when one drives. Before we get into how they affect driving abilities, it is important to explain what they are and how they are important when getting behind the wheel. Before one receives their first license, the DMV will require a vision test. If one needs glasses to drive, there will be an indication on the
back of one’s license notifying others that corrective lenses are required. When driving, one’s eyes are most important. Not only do they allow one to be aware of all surroundings and other drivers but it enables one to see street signs, lights, and other roadside indications. The ability to be aware of these all encourages safe driving. By looking far ahead, one can take notice of traffic flow, erratic drivers, and construction zones. Looking behind, one can keep an eye on emergency vehicles or aggressive drivers. One’s eyes keep you alert for merging traffic and you can adjust your driving if necessary. Many age related changes in visual acuity and peripheral vision are evident around the age of forty \(^4\). With increasing age, the field of vision tends to decrease, ultimately reducing the amount of visual information available \(^4\).

The most common visual problems associated with aging include cataracts, macular holes, and light sensitivity. If an individual is affected with cataracts or macular degeneration, the risk for driving greatly increases. Cataracts cloud the lens in the eye and decreases vision clarity. They tend to develop in people who are around the age of eighty \(^5\).

Macular degeneration occurs in adults over the age of fifty \(^6\). In this case, the macula is located directly in the center of the retina, which is responsible for highly detailed vision. In both forms (dry and wet) of macular degeneration, the retina becomes detached and causes dark spots in the middle of the visual field. While peripheral vision remains intact, an individual with macular degeneration is unable to see what is directly in their center of view \(^6\). This causes an issue when it comes to driving as this makes it nearly impossible to see what is directly in front of you. When driving, the lack of accurate vision can have an effect on one’s reflexes. If you cannot see other cars initially, when you finally see them, you may have a delayed reaction time, dramatically increasing the chances for an accident.

Sensitivity to light is not as pressing as the previously mentioned conditions; however it puts limits on when an individual can drive. While driving at night or in stormy conditions, headlights from oncoming vehicles can cause an issue for those who have an increased light sensitivity. The bright lights affect what an individual can see and may cause a collision with an unseen car. Because of this, those who have this type of condition are limited to driving in daylight, when headlights are not used.

**Hearing**

(SE) Another major physical attribute that decreases with age is hearing \(^4\). Although hearing loss may occur at any age, the probability of its occurrence increases with increasing age \(^4\). While the eyes focus on the road ahead, the ears serve as a backup. They indicate to an individual their surroundings, areas where they are not directly looking. While driving, occasionally an emergency vehicle will need to pass. Reliance on one’s hearing gives you an indication of what direction the vehicle is coming from. This is important in planning. The law mandates that an individual must pull over and let an emergency vehicle pass if the lights or sirens are on. The
eyes and ears tell an individual where the sound is coming from and where they have room to pull over or switch lanes. With increasing age, the ability to hear decreases and it becomes more difficult to tell which direction the sound is coming from. More importantly, lessened hearing becomes dangerous when drivers use honking as a means of communication. If an individual cannot hear the honking or tell where the sound is coming from, then the risk for having an accident greatly increases.

**Flexibility**

(SE) When tasks become more complex and responses are no longer simple, the performance of older people becomes slower and less accurate. Unfortunately, for most of the population, getting older also causes a decrease in flexibility. It becomes increasingly difficult to turn and look behind when backing up. Relying on a rearview mirror is not the safest option as each mirror has a blind spot. As you get older, it becomes harder and harder to turn all the way around, which increases dependence on rearview mirrors and thus increases the risk of causing an accident.

**Dementia and Alzheimer’s**

(SE) In addition to the many physical limitations that are related to age, there are some specific age-related disabilities that affect the brain. While many of the aging population will experience difficulty with retention of new information and skills, a prevalent age-related change that the majority of older people will undergo is impairment of memory. Although some memory loss occurs with normal aging, severe intellectual impairment, termed dementia is relatively common with at least 15% of the population over the age of 60 will have some form. It commonly affects those who are over the age of 60 and can be caused by a variety of diseases. Dementia typically affects memory, judgment, and overall thinking. Some of the diseases that can cause dementia are Huntington’s disease, HIV/AIDS, and Parkinson’s disease. One of the first symptoms to show is memory loss. A type of dementia that is commonly associated with memory loss is Alzheimer’s disease (AD). Some common symptoms of AD include memory loss, loss of cognitive function, and disturbances in executive functioning. (See Table 1) AD symptoms become more apparent over a gradual period of time. If an elderly individual went on a quick drive to the store, there is a risk that they will not remember where they are going, or even where they are. Getting lost can lead to panic and erratic driving, putting the driver and anyone else on the road in danger.
Table 1. Symptoms of Alzheimer’s and dementia

<table>
<thead>
<tr>
<th>Symptom Description</th>
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<tbody>
<tr>
<td>A. Development of multiple cognitive deficits manifested by both:</td>
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<tr>
<td>1. Memory impairment,</td>
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<tr>
<td>2. One or more of the following disturbances: a) Aphasia, b) apraxia, c) Agnosia, d) Disturbances in executive functioning (i.e. planning, organizing, sequencing, abstracting).</td>
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<tr>
<td>B. Cognitive impairments cause significant impairment in social or occupational functioning.</td>
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<tr>
<td>C. The course is characterized by gradual onset and continuing cognitive decline.</td>
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<tr>
<td>D. The cognitive deficits are not due to: a) Other CNS conditions that cause progressive cognitive deficits, b) Systemic conditions that are known to cause dementia, or c) Substance-induced conditions.</td>
</tr>
<tr>
<td>E. The deficits do not occur exclusively during the course of a delirium.</td>
</tr>
<tr>
<td>F. The disturbance is not better accounted for by another Axis I disorder.</td>
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**Studies**

(NBM) Several case studies discuss the positive relationship between age-related medical conditions and driving incidents. These include Safe Mobility for Senior Citizens, Practice Parameter: Risk of driving and Alzheimer’s disease, Driving and Neurodegenerative Diseases, Traffic safety for the elderly and Driving and Dementia in Ontario: A Quantitative Assessment of the Problem. These case studies present evidence that show an increase in driving accidents with increasing age. Drivers that were once considered safe and conscientious drivers, become dangerous drivers. It’s only a matter of when and where the limitations will prove to be too severe to continue driving.

**Safe Mobility for Senior Citizens/Alzheimer’s and driving ability**

(NBM) The numbers of licensed older people will more than double within the next twenty-five years in the United States. As life expectancy increases, the number of seniors with licenses will increase as well. Currently, it is a difficult task to differentiate groups who are capable older drivers and others that pose extreme hazards on the road. A clear distinction made between older drivers not experiencing driving impairment with those that appear to be impaired and are now a hazard on the road.

(NBM) Older drivers are exposed to more dangers per mile than high mileage drivers. This is primarily because local and back roads have intricate environments that include intersections,
congestion, signs and signals\textsuperscript{10}. The increase in external stimuli requires the driver to process the information quickly and make rapid decisions.

Older drivers accidents are mostly associated with inadvertent actions for instance stepping on the gas instead of the brakes, failing to yield when merging, not responding to stop signs and traffic lights or making unsafe turns\textsuperscript{10}. Behaviors that lead to older driver’s accidents are consistent with slow perception and reaction time and inattentiveness to surroundings\textsuperscript{10}. When an older driver is involved in an accident, the individual is four times more likely to die than a twenty year old involved in an accident of the same intensity\textsuperscript{10}. A high fatality rate is mainly due to the increased frailty of older individuals.

Research from the study suggests that older drivers aware of their physical and functional limitations become more conservative with their driving habits. While older drivers that are unaware of their physical restrictions pose a greater risk to themselves and others when behind the wheel.

For instance, individuals with dementia, and peripheral vision difficulties are naïve to their circumstance and do not self-correct bad driving habits. The study found that 80% of drivers with dementia involved in accidents continued to drive and at least 1/3 would more likely to get into at least one more car accident. The data from this particular study concluded that drivers with cognitive disorders may lack the ability to make good decisions in regards to driving.

A study in the article Alzheimer’s and driving ability\textsuperscript{1} determined the rate at which an individual with AD driving skills will depreciate. In a study with 128 subjects, in which 84 subjects had early onset AD symptoms and 44 were healthy subjects that served as the control group,\textsuperscript{1} all 44-control subjects passed the initial on-road driving test, in comparison to the 88% with mild AD. However, after 18 months all 128 subjects had undergone deterioration in their driving skills as determined by an on road exam. However, the 84 AD subjects suffered a much greater loss of deterioration in their driving skills than the control group did\textsuperscript{1}. The AD individuals were deemed as unsafe drivers and failed the on-road driver’s exam approximately after 324 days\textsuperscript{1}. The study conducted suggests that individuals with early onset AD can continue to drive safely for only a brief period of time\textsuperscript{10}.

In Safe Mobility for Senior Citizens\textsuperscript{10}, Mini Mental Status examination tests did not determine an increase of crash risk\textsuperscript{5}. However, a free recall memory test correlated with an increased risk of crashes\textsuperscript{5}. Several studies have demonstrated that demented drivers are unaware of their decline in driving competence. The main concern addressed in the study is in regards to licensing procedures and whether or not the procedures can indicate individuals with driving problems. Many problems of older drivers appear to be associated to inattention. However, there currently is no practical test for driver inattention. The problems of older drivers are far more complex than that which is measured by concise tests\textsuperscript{5}. 
Safe Mobility for Senior Citizens\textsuperscript{10} and Alzheimer’s and driving ability\textsuperscript{1} articles discusses, the importance of the general public, health care professionals, police and licensing agencies in being able to identify high-risk older drivers.

**Practice Parameter: Risk of Driving and Alzheimer’s disease\textsuperscript{11}**

(NBM) A concern that is commonly questioned is “does automobile driving by those with AD pose a significant traffic safety problem?” Richard M. Dubinsky, MD, Anthony C. Stein, PhD and Kelly Lyons, PhD, authors of Practice Parameter\textsuperscript{11} conducted a study that specifically addressed driving and AD by comparing relative rates of crashes and other performance measurements of driving ability.

Many individuals with AD and dementia are capable of driving safely for a period of time. However, once the mental disorder begins to progress and the memory starts to deteriorate, driving skills become undermined. There is clear evidence from the study that indicates there is an increased risk of crashes compared to age-matched controls\textsuperscript{11}. This increased risk is based primarily on crash statistics and performance studies of drivers with AD, and testing components of the driving tasks.

The evidence on driving performance in those with AD supports the following recommendations. Decisions regarding license restrictions for drivers with AD must always comply with state laws and consultation with the aging individual. The AD driver and family should have knowledge on the increased accident rates and performance errors that occur\textsuperscript{11}. Another recommendation is that a qualified examiner evaluates the individual with AD. As the disease exacerbates with time, it is necessary to reassess the severity of the mental disorder and appropriateness of continued driving every six months\textsuperscript{11}.

**Driving and Neurodegenerative Diseases\textsuperscript{12}**

(NBM) The number of older drivers at risk for neurodegenerative disease increases with age. The most prevalent neurodegenerative disorders, Alzheimer’s disease and Parkinson’s disease are characterized by impaired cognition, visual perception, and motor function, lead to greater crash risk\textsuperscript{12}.

The number of senior drivers with neurodegenerative disorders has significantly increased over the years, from 15,000 in 1986 to about 34,000 in 2000 with future projections of a rise\textsuperscript{12}. Driving abilities of an individual with AD will be undermined well within the first three years of diagnosis. As an individual with AD experiences rapid physical limitations and deterioration of driving skills, the probability of a car incident occurring increases.
A neuropathological study on the brain of ninety-eight fatally injured aged drivers determined that 50 percent of drivers within the age range 65-75 had experienced characteristics of AD. In a group of 21 licensed drivers with AD and 18 healthy controls, 29% with AD experienced crashes versus none of the control participants. In a follow up study, during an illegal intersection scenario, 6 of 18 drivers with AD experienced crashes. An intersection is defined as the general area where two or more highways join or cross, including the roadway and roadside facilities for traffic movements within it. Other characteristic of violation patterns includes left turns at intersections, inattention, failure to yield to right-of-way, and failure to obey stop signs and traffic lights.

**Driving and Dementia in Ontario: A Quantitative Assessment of the Problem**

(NBM) It can be assumed that as the population becomes increasingly aged, the occurrence of dementia will rise in parallel. The demographics trends observed can potentially lead to an increase in dangerous drivers. This study calculates a quantitative approximation of the size of the problem that Ontario, Canada will experience within the next twenty-five years. There are several factors that contribute to the actual and projected estimates of the number of drivers with dementia in Ontario. Factors include the population, driving rate, dementia prevalence rates, and the effects of the progression of dementia.

Earliest dementia statistics were acknowledged from 1986 census. The population of individuals aged sixty-five and older increased from one million to 1.5 million in 2000. Over the course of fourteen years the population of people aged 65 and older had increased by half a million. The estimate for senior citizens population in 2028 is projected to be at least 3.25 million. The current driving rates for ages between twenty- through fifty is 90%. The 2028 projected estimated driving rate for individual’s sixty-five and older is 85%.

The overall dementia prevalence rate for those aged sixty-five years and over in 2000 was 8.7%. This rate increases as a greater proportion of the population lives longer. In 2000, the estimated number of individuals with dementia will have increased to nearly 70,000, which accounts for a 70% increase since 1986. The projection for 2028 will be over 150,000 individuals with dementia driving in Ontario (See Table 1).

To project the number of individuals with dementia given in tables one and two, one can multiply the number of drivers with dementia aged over 65 years by average community rate per year. In the tables listed below, this illustrates actual and forward projections of the number of senior drivers with dementia.

At the time of the study, 30% of the subjects had at least one accident after onset of dementia symptoms. Even after diagnosis, 30% of drivers continued to drive an average of four years subsequent to diagnosis of dementia. The study concluded that a maximum rate of 75% of
drivers with dementia continue to drive (Table 1). Table 2 presents similar data to table 1, with the only exception being population and driving data for persons aged 80 years and over instead of 65 years and over.

A rising significant dilemma is the increase in the number of drivers with dementia on the road, ultimately creating hazardous situations on local roads and highways. Drivers with dementia are two to five times more likely to get into an accident than an individual without neurodegenerative disease. The projections (Table 1 and Table 2) implicate a steady increase in the number of drivers who are dangerous by reason of dementia. The data makes it apparent that it is necessary to assess older drivers. When considering the number of potential accident victims, it is evident this is a public health concern.

### Table 1 Population and driving data for persons aged 65 years and over

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Drivers (%)</th>
<th>Drivers (n)</th>
<th>Community dementia rate (%)</th>
<th>Community dementia cases (n)</th>
<th>Maximum drivers with dementia (n)</th>
<th>Best estimate of drivers with dementia (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>953 900</td>
<td>50.0⁹</td>
<td>496 950</td>
<td>4.0</td>
<td>39 756</td>
<td>19 678</td>
<td>14 909</td>
</tr>
<tr>
<td>1992</td>
<td>1 237 616</td>
<td>58.0⁸</td>
<td>717 817⁷</td>
<td>4.1</td>
<td>50 123</td>
<td>29 071</td>
<td>21 803</td>
</tr>
<tr>
<td>1994</td>
<td>1 307 484</td>
<td>59.9</td>
<td>783 101⁷</td>
<td>4.1</td>
<td>53 607</td>
<td>32 110</td>
<td>24 083</td>
</tr>
<tr>
<td>1998</td>
<td>1 450 724</td>
<td>65.8</td>
<td>954 211⁷</td>
<td>4.3</td>
<td>62 091</td>
<td>40 856</td>
<td>30 642</td>
</tr>
<tr>
<td>1999</td>
<td>1 481 002</td>
<td>57.0</td>
<td>992 049⁷</td>
<td>4.4</td>
<td>64 424</td>
<td>43 164</td>
<td>32 373</td>
</tr>
<tr>
<td>2000</td>
<td>1 543 598</td>
<td>66.5</td>
<td>1 026 177⁷</td>
<td>4.4</td>
<td>66 381</td>
<td>45 473</td>
<td>34 105</td>
</tr>
<tr>
<td>2028</td>
<td>3 237 370⁸</td>
<td>85.0⁸</td>
<td>2 428 028⁸</td>
<td>4.8</td>
<td>153 775</td>
<td>130 709</td>
<td>98 032</td>
</tr>
</tbody>
</table>

³Estimates; ⁴All of Column C x Column F; ⁵75% of Column G


### Table 2 Population and driving data for persons aged 80 years and over

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Drivers (%)</th>
<th>Drivers (n)</th>
<th>Community dementia rate (%)</th>
<th>Community dementia cases (n)</th>
<th>Maximum drivers with dementia (n)</th>
<th>Best estimate of drivers with dementia (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>259 529</td>
<td>25.0⁹</td>
<td>64 882</td>
<td>12.42</td>
<td>32 244</td>
<td>80 616</td>
<td>60 464</td>
</tr>
<tr>
<td>1994</td>
<td>283 031</td>
<td>27.5</td>
<td>77 849</td>
<td>12.32</td>
<td>37 765</td>
<td>10 365</td>
<td>77 889</td>
</tr>
<tr>
<td>1998</td>
<td>306 133</td>
<td>40.7</td>
<td>124 481</td>
<td>12.38</td>
<td>40 476</td>
<td>16 474</td>
<td>12 356</td>
</tr>
<tr>
<td>1999</td>
<td>324 072</td>
<td>41.8</td>
<td>135 293</td>
<td>12.44</td>
<td>42 065</td>
<td>17 583</td>
<td>13 187</td>
</tr>
<tr>
<td>2000</td>
<td>335 660</td>
<td>45.7</td>
<td>153 345</td>
<td>12.43</td>
<td>44 248</td>
<td>20 221</td>
<td>15 165</td>
</tr>
<tr>
<td>2028</td>
<td>812 800⁷</td>
<td>75.0⁸</td>
<td>609 800</td>
<td>13.3</td>
<td>108 182</td>
<td>81 137</td>
<td>60 863</td>
</tr>
</tbody>
</table>

³Estimates; ⁴All of Column C x Column F; ⁵75% of Column G

Note that Table 2 is simply a duplication of Table 1, using only data from the group aged 80 years and over.

Traffic Safety for Elderly Drivers

(NBM) The National Highway Traffic Safety Administration releases annual fact reports, which include traffic safety facts on the older population. The latest published from NHTSA found the following 2010 statistics.

In 2010, approximately 40.4 million people the equivalent to 13% of the total US population were age 65 and older. Based on the latest data available 16% of older drivers make up all licensed drivers, equivalence to thirty-four million older drivers. In 2010, 5,484 individuals ages 65 and older were killed in car accidents and 189,000 were injured. Among the older population, the fatality rate for age group 85 and older was 19:100,000; this was higher than any other age group. Data in the table below show the involvement of older drivers in fatal accidents. The driver involvement rate per 100,000 populations among older male drivers was 27,280 in age group 85 and older, and 8,850 older female drivers.

![Involvement Rates for Older Drivers in Fatal Crashes by Age Group and Sex, 2010](image)

(NBM) The following table provides data for subgroups in fatal involvement in accidents by driver ages and fatalities. In 2010, the U.S. total driver involvement in fatal traffic crashes was 44,440. Senior drivers age 65 and older accounted for 5,560 of the total number involved in fatal accidents. The states with the greatest number of fatal traffic accidents for age groups 35-59, 55-69 and 75-79 were Pennsylvania, California, Florida and Texas.
Why should we “buckle down” on the elderly?

(SE) Over the past couple of years, car accidents have become one of the leading causes of death. Driving is one of the most physically and mentally challenging activities that apply to a wide range of individuals. It applies to all races and ages ranging from as young as sixteen to older than eighty. In order to drive, one must have quick reflexes, the ability to check for traffic in all directions, and stay alert at all times. For the majority of the population, this is not much of...
an issue. However, as the body ages, one’s reflexes, flexibility, and alertness decline. One realizes one cannot move as quick as one used to, cars seem to appear out of nowhere, and it becomes difficult to see the surroundings around the car. This increases the risk to the individual and other drivers when they drive, even if it is a quick trip to the post office. Driving becomes a way of life, especially when one lives in suburban or rural areas. A car becomes one’s legs and it is nearly impossible to get anywhere without one. Because of this, it becomes extremely difficult to draw the line when one can and cannot drive. This critical time point of when one should realize that they are no longer fit to drive is a huge issue. Our purpose of bringing this problem to light is to emphasize how dangerous it is for the elderly over a certain age to drive and what risks it poses to other drivers on the road. Our aim is to encourage active involvement with the elderly that have this issue and hopefully to promote safer driving conditions. As a result of this, we believe that most age-related accidents can be reduced.

**Current solutions**

**Education opportunities**

(SE) Other than the first required driving written exam and road test, there are not many regulations after one receives their license. Unless one moves to a different state where the driving rules may be different, a road test is not required. Additionally, one does not have to sit in another classroom-guided instruction for learning general driving rules and regulations. Until one reaches a certain age, there are not many opportunities to brush up on knowledge of driving. Once one reaches about sixty years or over, a defensive driving course is available, which refreshes the memory on every aspect of driving (e.g. how to sit properly/adjust the seat, when to merge, situations when you have to yield, etc). This is beneficial because it evaluates the current knowledge on driving conditions and may introduce new laws that have appeared since the last driving test.

**AAAseniors.com**

(SE) AAAseniors.com is a website run by triple A. On this website, they provide the option to take a self-evaluation test composed of 15 questions. At the end of the test, one may be able to see how their driving habits are and if it might be a problem. They also give helpful tips in understanding the types of physical changes that the body might undergo as age progresses.

**Current legislation on senior driving**

(SE) Currently, legislation that applies to seniors driving is very limited. Each state has its own licensing and license renewal criteria for drivers. This topic is not focused on very often, which is a problem as these issues increase the risks of having motor vehicle accidents. Specifically, New Jersey has no set laws regarding elderly drivers. According to a journal review for the
state of California on age-related disabilities that impair driving, not many states have set laws that apply specifically to license renewals to individuals over a certain age. The National Highway Traffic Safety Administration mention that only a few states have different laws associated with age and license renewal. For example, most states require vision tests starting as young as age forty up until age eighty. However, not all states require knowledge tests. Knowledge tests are important because they review general driving etiquette such as when to yield or how to merge with traffic. Knowing the correct information that all drivers are supposed to learn before they get behind the wheel will greatly ensure smoother driving conditions and decrease careless and “aggressive” driving.

 Generally, physical tests are not performed on individuals unless there is glaring evidence that they may have a driving disability. Only in the District of Columbia is there a speed reaction test and medical examination at the age of seventy. As stated from above, the natural degradation of hearing and eyesight are not as obvious as other driving disabilities, however they are some of the most important physical attributes.

Some states don’t even require in-person license renewals over a certain age. California, Alaska, and Arizona give the option to individuals under the age of seventy to mail in a renewal form. One specific state, Oregon, has very loose regulations when it comes to mail renewal. Oregon allows for mail in renewal every other cycle with no age limit or driving record requirement. This means that an individual who has gotten into multiple accidents and at the age of 80 years old can still qualify for a non-in person license renewal. Over the span of eight years, a lot of physical abilities can degrade and people can get away with it because of the specific regulations of the state they live in.

Overall, there are no set regulations that are utilized universally throughout the United States or Canada. Generally, most states have some sort of legislation when it comes to renewing a license, but age and requirements vary. Some states require in-person renewals and vision or knowledge tests, yet others accept a mail-in renewal and do not acknowledge any past driving history or medical conditions.

Silver Alert System

The bill establishes an emergency “Silver Alert System” in which law enforcement can broadcast regional or statewide alerts for missing seniors and/or other adults with cognitive disorders. The ordinance is specific in the search of seniors aged 65 and older. The emergency system transmits messages that notify the public of a missing elderly person.

Specific criteria must be met in order for the state police to declare an actual emergency alert. The elderly person may be in danger of death or serious bodily injury; and sufficient information available to indicate that an emergency alert would assist in locating the individual. The alerts
are to provide information concerning how members of the public who have information relating to the missing elderly person may contact the state police or appropriate law enforcement agency.

**Reaching out to state legislators and spreading awareness**

(SE) As listed above, our main issue focuses on the dangers that elderly drivers pose while on the road. Every day on the news, we see pictures and coverage of horrific multiple car accidents. However, we don’t see very much coverage, if any, on small trivial accidents. This is understandable, as it proves to be a waste of time and resources. Every day, many minor accidents occur. In some situations, elderly drivers cause these accidents. But what if you can try to prevent these accidents from occurring? In New Jersey, aggressive driving has also become an issue on the roadways. If you come across an aggressive driver, you can call or text the number #77. #77 is similar to 9-1-1. The states Alaska, Arizona, California, Connecticut, Delaware, Georgia, Hawaii, Indiana, Michigan, Minnesota, New York, North Dakota, Oregon, South Dakota, U.S Virgin Islands, Washington, and Wisconsin only use 9-1-1 in highway emergency situations. For the unlisted states there is more than one highway emergency assistance number and the numbers vary depending on the state. The emergency number #77 is only used in New Jersey, Maryland and also Virginia. When you call #77, you will be transferred to a dispatcher where you disclose your location and provide the highway in which the incident you are reporting occurred, the color, type of car, and plate number of the individual being reported. #77 is convenient because it frees up the amount of calls dialed to 9-1-1 and focuses on a very specific, yet common type of issue. The previous information provided on the highway emergency assistance #77 is the most recent data that we could trace. Even though our data is not the most recent, we are certain that the #77 is still utilized in for emergency highway situations. In order to gain the latest statistics on#77 from the past two or three years, we contacted the New Jersey State Police Department. In our search, we discovered that any calls made to this number were treated as dispatch numbers and distributed among the appropriate jurisdictions. Once distributed, the calls were received as a 9-1-1 emergency, resulting in no recent statistics.

According to an article written by Dave Goldberg in 2001, over 28,000 calls have been made to the #77 number, with almost 1,000 arrests. Within North Brunswick Township (NJ), more than 100 calls were made regarding aggressive drivers in 2000. This article was written over ten years ago, and at that time, the numbers are seemingly low. Now, in 2012, we want to believe that those numbers have increased. There are currently more aggressive drivers and we hope that the #77 number is being utilized, to help maintain the safety of our roadways. Although #77 is focused on mainly aggressive drivers, but it can also be utilized for erratic drivers. The elderly can fall under this category and we would like to encourage the use of this number to report inconsistent elderly drivers.
Some common signs that can qualify as erratic driving are failure to drive in proper lanes, failure to stop, and traffic signal violations. This has prompted us to create a PSA. We wanted to promote a greater public awareness and as a community, we can all work to lower the amount of motor vehicle accidents regarding unfit elderly drivers. While #77 is a good number to inform the authorities of an aggressive or erratic driver, we wanted to get to the root of the issue, which was the elderly being unaware of the physical changes that occur while they age as well as minor, yet important, rules that may have been forgotten over years of driving habit. Our public service announcement encourages drivers to take a defensive driving course through aarp.com. This course will cover all major physical changes as well as the most important rules to follow to promote safe driving. We have sent a link to our public service announcement to news shows on all the major networks such as 20/20 (ABC), 60 Minutes (CBS), and Dateline (NBC), in hopes that they will contribute an episode to this issue.

In addition to creating a public service announcement, we have also reached out to our state legislators. There are very few universal laws regarding driving regulations for the elderly. The few laws and restrictions that are in existence in regards to senior driving vary from each state. In New Jersey, there are no set laws regarding license renewals for the elderly, which can prove to be dangerous. Many elderly individuals refuse to relinquish their license, even long after they are no longer fit to drive because they lose their last form of independence. While this may be difficult, we want to make sure that they are not harming themselves or other by getting behind the wheel. In order to fix this, we have contacted Governor Chris Christie, informing him of this issue and possible solutions to the legislative system regarding license renewals. We have also contacted senators within many Districts of the New Jersey legislative system that contribute to committees Human Services and Senior Citizens, Transportation and also Law and Public Safety. The committees are relevant to our issue of senior drivers behind the wheel. Hopefully, by contacting individuals that are involved with committees of similar interest, a solution to the issue can be obtained.

**Letter to Governor and Senators (recipients of letter listed below)**

Dear Governor Chris Christie, (NJ)
Dear Senator Jim Whelan, (District #2)
Dear Assemblyman John F. Amodeo, (District #2)
Dear Senator Donald Norcross, (District #5)
Dear Senator James W. Holzapfel, (District#10)
Dear Senator Linda R. Greenstein, (District #14)
Dear Senator Christopher “Kip” Bateman, (District #16)
Dear Senator Nicholas J. Sacco, (District #32)

I am currently a student at Rutgers University, New Brunswick New Jersey. I am in a course that has assigned a project that focuses on an issue and designing an appropriate solution for said issue. I am sending this letter because the issue I chose, psychological effects of aging on
driving, is highly relevant to the committees in which you are involved, Law and Public Safety and Transportation.

The purpose of this letter is to bring attention the dangers that seniors pose on the road. As life expectancy continues to increase, there is an increasing number of seniors on the road as well, which makes driving safety an increasingly important concern in geriatric care, as many functions tend to depreciate i.e. vision, hearing, reflexes, strength, flexibility, and coordination. The changes in physical, sensory, motor, and cognitive skills complicate life's daily tasks. When driving, it can be a challenge to see and hear other vehicles, stop on command, navigate through intersections safely, or maintain control of a car. As seniors age, there is a greater risk of their involvement in a fatal collision per mile driven.

I have learned about many individuals’ experiences behind the wheel. For instance, one of the most dangerous interactions I learned of was when a friend of mine was at an intersection and the senior in front of her put her car in reverse and backed up into her car. Everyday accidents of this magnitude, if not worse, are occurring. It is important that drivers are aware and educated on dangerous driving habits. Many individuals do not know what actions to take when they are involved in or witness an elderly driver engaging in hazardous behaviors.

The first solution to the issue is education and promoting awareness. By educating drivers on how to be effective defensive drivers, the drivers will automatically recognize key signs that another vehicle may pose a threat to themselves or others. Containing this knowledge will equip drivers to respond appropriately in emergency situations.

I came across information emergency hotline #77. The emergency hotline #77 is currently utilized to report aggressive and erratic driving on main highways. Many seniors exhibit erratic behaviors when driving due to age–related behavior including, an individual driving much slower than the speed limit, or the individual’s lack of ability to adhere to simple traffic regulations, stopping on command, navigating safely through intersections, and maintaining control of the car. As a solution to increase safety, the emergency hotline #77 should not only be utilized for aggressive and erratic drivers, but dangerous senior drivers as well. By raising awareness on the dangers seniors pose behind the wheel and promoting the emergency hotline #77, it is possible to prevent accidents among the senior population.

I did not come across many laws that are currently implemented in the state of New Jersey in regards to senior driving. This research had raised many concerns about the license renewal and hear/vision screening processes. Another possible solution to this issue is to adopt the state of Illinois laws on license renewal for Senior Drivers. Illinois law states that drivers can renew their licenses every 4 years between ages 69 and 80; up to the age of 86, can renew for 2 years; after 87 years the license needs to be renewed annually. Illinois drivers who are under 74 years can opt for the Safe Driver Renewal. Drivers who are 74 years of age or older at the time their current driver license expires are generally required to renew their license in person at a local VSD office. All drivers have to take a vision test (see below). All drivers will be asked to take a written knowledge test every 8 years, unless they have no traffic violations. If your driving
records indicate an accident, then you will need to pass a written and/or driving test. Drivers over 75 years have to take a road test at the time of renewal.

I am writing to urge your support in this matter that requires attention. With a more proactive approach, the state of New Jersey can significantly reduce the number of age-related accidents and promote safer driving conditions. The solutions I place emphasis on are implementing and adopting laws similar to Illinois and also promoting the use of the emergency hotline #77. If the legislative system can implement a law and successfully promote awareness of the emergency hotline #77, it can prevent most age-related accidents. The goal of these solutions is not to take away seniors’ independence but to ensure that senior will live a long as long and healthy of life as possible. I hope my suggestions create a balance between public safety and respecting each individual’s driving abilities will be taken into consideration.

If you wish to contact me in regards to this issue, feel free to contact me through information listed below or my email nmackeyb@gmail.com. Thank you for your time.

Sincerely,

NB Mackey
150 Preakness Circle
Branchburg, New Jersey

Response received in regards to our Service Project Solution Letter

We did not receive feedback on any of our service project letter that we distributed several senators throughout New Jersey Districts. The following paragraph is an automated message that we received from the Governor in response to our service project letter.

Thank you for contacting me.

As Governor, I welcome input from those throughout the Garden State and beyond who are eager to share with me their thoughts, concerns, questions, and ideas. My staff and I will endeavor to be as responsive as possible to the many people using this electronic means of communication, as well as to those who, through letters and phone calls, contact my office. Again, I appreciate your taking the time to write to me.

Sincerely yours,

Chris Christie
Governor

References


**Appendix**

**Letters to the Editor**

The letters to the editor were sent to magazines that are well respected and utilized in older communities. The magazines of AARP and Senior Living have not yet responded to our letters.

To Whom It May Concern:
My name is NBrittiny Mackey I am a student at Rutgers University. Currently enrolled in a course that has assigned a project that focuses on an issue and designing an appropriate solution for said issue. The current issue proposed for my project is the psychological effects of aging on driving.

It is impossible to escape the undeniable signs we experience, as we get older. As people age, the functions that tend to depreciate are vision, hearing, reflexes, strength, flexibility, and coordination. The changes in physical, sensory, motor, and cognitive skills complicate life's daily tasks. When driving it can be a challenge to see and hear other vehicles, stop on command, navigate through intersections safely, or maintain control of a car. Once a driver’s behavior has become unsafe and a concern this ultimately leads to one big life-changing question “When is time to give up the keys?”

The US driving laws aim to distinguish a balance between public safety and respecting an individual’s health and driving abilities. However after much research, it is evident that there is no standard law that mandates a driver to relinquish their license at a set age. There is also no law that explicitly states police officers have the authority to confiscate a person’s license. A variety of options can apply due to the special renewal provision of older drivers. This includes license renewal, revocation or suspension, restriction or shortening of the renewal cycle.

After discovering, there isn’t an implemented uniform law that determines exactly when an individual has reached the age and condition where it is no longer safe to continue driving. There are multitude of solutions and recommendations that can be made in support of older drivers. The main solution is public education and awareness on the signs of unsafe driving. Each year millions of cellular phones are used roadside to assist in emergency and life threatening situations. Now if you recognize any signs or think a driver poses a hazard on the road. Just dial the number #77. With hopes of promoting the number #77 to also identify unsafe senior drivers as well as erratic and aggressive drivers.

Educating and mainstreaming the issue is the best solution. If possible running an article on the matter would facilitate our efforts in reducing the number of hazardous drivers on the road. AARP magazine can facilitate promote awareness on the issue of seniors behind the wheel. There are several ways in which the magazine can promote awareness on senior driving. For instance each article should contain questionnaires, checklists of unsafe behaviors and key signs to be aware of.

We also wrote a similar letter to Governor Chris Christie in hopes the legislative system will tackle this issue and implement laws that proceed towards changes. If you wish to contact me in regards to this issue, please feel free to email me at nancybma@eden.rutgers.edu. Thank you for your time and consideration.
Sincerely,

NB Mackey

To Whom It May Concern:

My name is Stephanie Eng and I am currently a senior studying at Rutgers University in New Brunswick, NJ. I am writing to you in hopes of raising awareness of the issue with the physiological effects of aging on driving abilities. In current times, we mostly look at drinking while under the influence of alcohol and texting while driving to be a major cause in most motor vehicle accidents. While these do make up a large portion, it is important to address the issue of aging and driving. As we get older, aging takes a toll on our bodies. Our eyesight, hearing, reflexes, and flexibility are compromised. These particular abilities are essential when driving, as they keep us alert and aware of our surroundings. Even though these issues may be considered, there is still the problem of promoting awareness. In the event where an individual notices that an elderly driver is driving much slower than the speed limit or have the inability to adhere to traffic signals, it is also equally important that they know how to report such an incident. Currently in New Jersey, by calling the number #77, you are reporting aggressive or erratic driving. Calling #77 immediately notifies the dispatcher what you are calling for and allows 9-1-1 to be used only in emergencies.

This relationship between aging and driving may seem to be common sense, however we don’t realize how dangerous it can be to drive when our senses are weakened. Currently, New Jersey has no special restrictions to drivers over a certain age, which compelled me to look into this issue. Some states have extremely lax legislation, which gives way to more dangerous driving conditions. For example, Oregon only requires an in-person renewal every eight years, with no age limit or required vision and road test. A person who is sixty-five years old may be fit to drive. However in eight years, significant vision loss, hearing loss, and an increase to light sensitivity might become an issue, posing a risk to the driver as well as other drivers on the road. Other states have more stringent laws when it comes to license renewals. Vision tests are mandatory, as well as road tests and frequent in-person renewals. I believe that it is important that we address these issues with driving regulations to promote safer roads.

AARP magazine is a well-respected publication that can help promote awareness of the issue of elderly driving. In each issue, a few questionnaires or surveys to help self-determine if it is time for you to hand over the keys may help decrease the amount of age related accidents. In addition, tips on how to approach a family member when you believe they are no longer fit to drive may also be very beneficial, as this is a common problem among all families. With a more proactive plan, we can significantly decrease the dangers of unfit drivers on the road and promote safer driving conditions. If you wish to contact me more on this issue, please feel free to email me at
steph369@eden.rutgers.edu. I hope you will consider my suggestions. Thank you for your time and consideration.

Sincerely,

Stephanie Eng