Older Persons In Motor Vehicle Traffic Crashes

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Stories in the general media regarding older drivers have often confused two related concerns: diminished sensory and motor ability of older drivers and the threat that poses to all *versus* the greater vulnerability among older persons to the consequences of motor vehicle crash injuries.

Li *et al*[1] found increased crash risk among older drivers but much greater risk of severe injury and death to the older driver when involved in a crash. They concluded that "fragility" due to age was of "over-riding" importance in explaining the high rate of motor vehicle traffic mortality among older persons. Evans[2] used counts of motor vehicle traffic crashes in which a single driver killed a pedestrian with various denominators to calculate relative rates. He demonstrated that older drivers presented a small increased threat of death to others per mile driven when compared with middle-aged drivers. He also described the much greater risk that older persons experience as occupants and pedestrians, compared with younger persons.

Methods

Data used in the analysis come from several sources: crash reports for the **calendar year (CY)** 2006, completed by police, and managed by the Rhode Island Department of Transportation; hospital **emergency department (ED)** visits during CY2007; and hospital discharges for CY2007. Injured persons are identified and their roles in the crash are defined by the external cause of injury (E-code) reported in the hospital record.

Denominators are drawn from the US Census Population estimates July 1, 2007 and the **Nationwide Personal Transportation Survey (NPTS** 1995). The NPTS 1995 used transportation diaries of participants who were part of a national sample to develop driving, pedestrian, and passenger weights based on mode of transportation, distance, and role reported for the individual trips. Population estimates, licensed driver rolls, and NPTS 1995 were used by both Evans[2] and Li *et al.*[1] The choice of population estimates rather than group-specific number of licensed drivers or estimates of miles driven for the denominator in the calculation of rates leads to different results and affects the relative risk of being in a crash or of being seriously injured or killed.

Results

Of the 77,880 drivers reported in Rhode Island crashes in 2006, 7,625 (10%) were 65 years of age or older. Young people aged 15–24 years made up the largest number of drivers in crashes in any 10-year age group (25%) and had the highest population rate of crash reports in that year. (Figure 1)

According to ED reports in 2007, persons 15-24 years of age make up the highest proportion of motor vehicle injury visits (29%); 5% of these visits are among persons 65+ years of age. Although teens and young adults represent the highest proportion of hospital admissions (23%), 18% of admissions were among older persons. (Figure 2)

When NPTS 1995 national estimates were used as denominators, less reported driving among females results in higher crash rates in every age group, with a small peak among the youngest drivers and a curve that bends sharply upward at age group 75-79 years and climbs to 61.3 crashes per 100 million **vehicle miles traveled (VMT)**, the highest rate of crash reports. This rate, found in females 85+ years of age, is more than double the rate (24.5) crashes per 100 million VMT reported among males in the same age category.

Discussion

Headline stories report older drivers are responsible for deadly crashes, implying that older drivers are a menace. Higher mortality rates for older persons are used to support this contention. Although older drivers are involved in a lower proportion of crashes (10%) than their portion among licensed drivers (15.2%), older drivers are at some increased risk of being involved in a crash when relative exposure is taken into account.[1,2] Fault is not assigned on routinely reported crash data in Rhode Island.

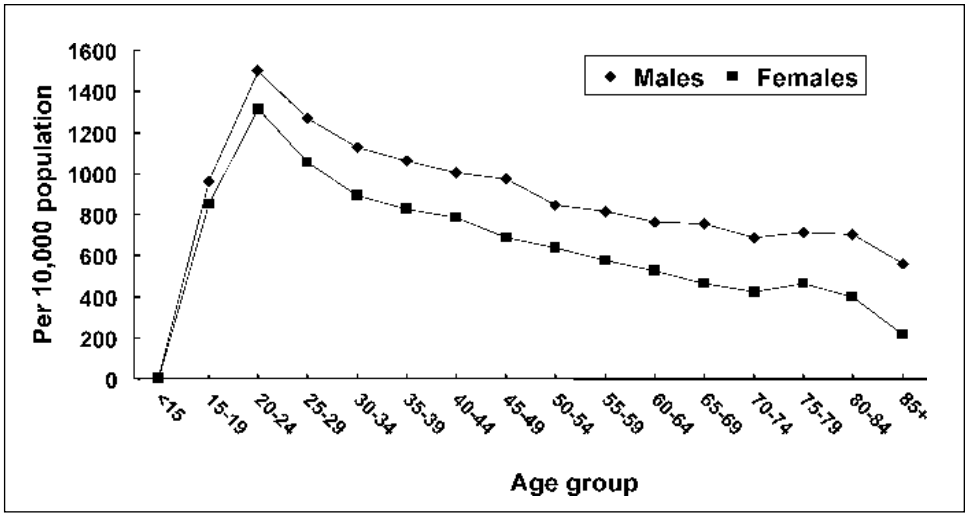

Figure 1. Rates of crash reports per 10,000 population by age group by sex, Rhode Island 2006.

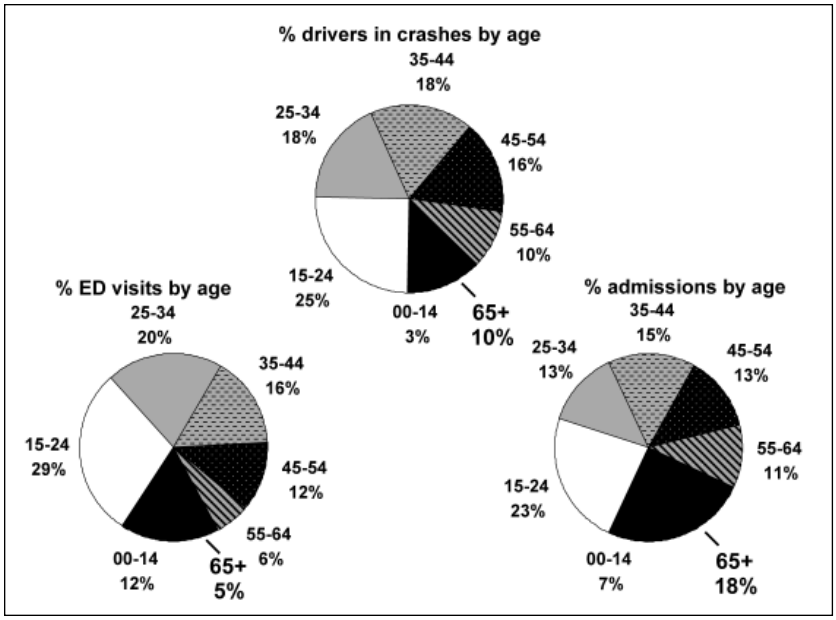

Figure 2. Three pie charts depicting the percentage distribution of (Pie 1) drivers in crashes, (Pie 2) Persons with motor vehicle crash injuries in Emergency department visits and (Pie 3) Persons admitted with motor vehicle crash injuries. Note. 2006 Crash reports and 2007 hospital data. % 65+ drivers in crashes; % 65+ persons in ED; % 65+ persons in HDD

The fact that a much smaller percentage of crash injury ED visits are among older persons (5%) suggests that these drivers are usually involved in minor crashes and are not injured. When older persons are injured, they are much more likely to be admitted (18%), a marker for severity of the injuries. In the three-year period 2006-2008, older persons also made up 18% of Rhode Island traffic fatalities.

Rates calculated using NPTS 1995 denominators paint a different picture than do the population rates. It is useful to recognize the very high rate of crashes for older females per mile traveled. The number of events for any subgroup is the best measure of that group's contribution to the burden of injury. Population rates, based on Census counts and intercensal estimates provide a basis of comparison between subpopulations while controlling for the different number of subgroup members.

The **National Highway Traffic Safety Administration** (**NHTSA**) reports that older drivers in fatal crashes are much more likely to be struck than to strike. As vehicle drivers and as pedestrians, older persons in fatal crashes are the adult group least likely to be under the influence of alcohol at the time of the crash.[3] Most drivers do modify their driving behavior for safety, with lower speeds and decreased driving especially at night. Evidence for this is the small number of late night crashes involving older drivers.[4]

At present, the number of older persons behind the wheel is decreasing in Rhode Island due to aging of smaller birth cohorts of the 1930s and 1940s. Baby boomers will enter this age group beginning in 2011 as persons born in 1946 turn 65 and their younger brothers and sisters will continue to enlarge the category. Legislators and regulators must plan for the safety of this growing group. Primary care providers and specialists such as ophthalmologists, cardiologists, and neurologists should include a conversation about driving in their contacts with older persons. Helpful articles on driving risk in older persons are available from NHTSA website, www.nhtsa.dot.gov. Click "Traffic Safety" and find "Older Drivers" under "Browse Topics".

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Disclosure of Financial Interests

The authors and their spouses/significant others have no financial interests to disclose.