National older driver crash trends

Older Driver Safety Summit
Boston, MA
June 16, 2015

Jessica B. Cicchino
Passenger vehicle driver crash rates
Per mile traveled, by driver age, 2008

Per mile traveled crash rates and fatal crash rates start increasing at about age 70.
Projected population of people 70 and older
In millions, 1980-2050
Percent of population with licenses
By age, 1997-2013
Average passenger vehicle miles driven per year
By driver age, 1995-96 and 2008

- 35-54: 21%
- 70-74: 39%
- 75-79: 60%
- 80+: 51%
'Silver tsunami' of drivers is coming

New Mexico Considers Stricter Regs for Older Drivers

Make elderly driver limits tougher

Police: 100-year-old driver hits 11 near LA school

Debate over senior drivers intensifies in wake of tragic crash

Elderly Drivers Take Toll On American Roads

Fatal crashes involving senior drivers renew debate over licensing, testing requirements
Fatal passenger vehicle crash involvements of drivers age 70 and older

1975-2013
Fatal crashes per 100 million miles traveled
By driver age, 1995-96, 2001-02, 2008

- 1995-06
- 2001-02
- 2008

- 55%
- 49%
- 32%
- 26%

Driver age:
- 16-19
- 20-24
- 25-29
- 30-34
- 35-54
- 55-59
- 60-64
- 65-69
- 70-74
- 75-79
- 80+
Fatal crashes per 100,000 licensed drivers
By driver age, 1997-2013

- 35-54
- 70-74
- 75-79
- 80+

-49%
-45%
-31%
-36%
What has changed more for older drivers: risk of crashing or survivability in a crash?
Passenger vehicle driver deaths per 1,000 crashes
By age, 2009-13

The high death rates for older drivers are predominantly because they are more likely than younger drivers to die from their injuries.
Change in older drivers’ crash risk and death risk from 1995-98 to 2005-08, relative to middle-age drivers
Change in crash risk and death risk of drivers age 75 and older, relative to middle-age drivers, in side and frontal crashes.
Contribution of crash risk and death risk to older drivers’ excess fatality rates relative to middle-aged drivers

By study period

<table>
<thead>
<tr>
<th></th>
<th>70-74</th>
<th>75-79</th>
<th>80+</th>
<th>70-74</th>
<th>75-79</th>
<th>80+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-98</td>
<td></td>
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<tr>
<td>2005-08</td>
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</tr>
</tbody>
</table>

- Crash risk
- Death risk
Summary

- Fatal crash involvements per mile traveled and per licensed driver have declined more among older than middle-age drivers.
- Declines for drivers 75+ due mainly to decreases in crash risk
  - Better health
  - Increased mileage
  - Improvements in roadway design
- Declines in death risk relative to middle-age drivers greater in side impacts
  - Side airbags: evidence they have been more effective for older than other occupants
  - Reduced passenger vehicle incompatibility: older drivers more often drive passenger cars than SUVs or pickups compared with middle-age drivers.
More information and links to our YouTube channel and Twitter feed at iihs.org

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Motor Vehicle Crash Injuries, Massachusetts Drivers Ages 65 and Over

Presentation for Older Driver Safety Summit, Boston, MA
June 16th, 2015
Jeanne Hathaway, MD MPH, Beth Hume, MPH and Holly Hackman, MD MPH
Injury Surveillance Program, MA Department of Public Health
Overview

• Trends, Comparing Age Groups
  - Fatalities
  - Hospital Stays
  - Emergency Department Visits

• MA Residents Ages 65+
  - Annual MV-Driver Injuries
  - Indicators of Injury Severity
  - Costs
  - Geography
  - 5-Year Age Groups
Fatal MV-Driver Injuries¹, Rate per 100,000 Licensed Drivers, MA Residents, 2002-2013

1. Car/truck crash fatalities of Massachusetts drivers occurring in Massachusetts; motorcyclists excluded.

Data Sources:
Deaths – Fatality Analysis Reporting System Query Tool, accessed 5/30/15
Licenses - MA Shelley License Reports, 2002-2013, MA Registry of Motor Vehicles
Hospital Stays for MV-Driver Injuries\textsuperscript{1}, Rate per 10,000 Licensed Drivers, MA Residents, FY2002-2013

1. Hospital stays include hospital discharges and observation stays. Nonfatal injuries only; deaths and transfers were excluded. Does not include motorcycle operator injuries.

Data Sources:
Hospital Stays - MA Inpatient Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
Licenses - MA Shelley License Reports, 2002-2013, MA Registry of Motor Vehicles
ED Visits for MV-Driver Injuries\textsuperscript{1}, Rate per 10,000 Licensed Drivers, MA Residents, FY2002-2013

1. Nonfatal injuries only; deaths were excluded. Does not include motorcycle operator injuries.

Data Sources:
Emergency Department Visits - MA Emergency Department Discharge database, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
Licenses - MA Shelley License Reports, 2002-2013, MA Registry of Motor Vehicles
Annual Burden of MV- Driver Injuries
MA Residents Ages 65+, 2013

Data Sources:
Deaths – Fatality Analysis Reporting System Query Tool, accessed 5/30/15. Data are reported by calendar year.
Nonfatal Injuries - MA Inpatient Hospital Discharge, Outpatient Observation Stay and Emergency Department Discharge databases, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
Fatal and Nonfatal Hospital Stays\textsuperscript{1}, Types of Major MV-Driver Injuries, MA Residents Ages 65+, FY2009-2013 (N = 2,286)

<table>
<thead>
<tr>
<th>Injury Type</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic Brain Injury</td>
<td>21%</td>
</tr>
<tr>
<td>Vertebral/Spinal Cord Injury</td>
<td>23%</td>
</tr>
<tr>
<td>Internal Abdominal Injury</td>
<td>20%</td>
</tr>
<tr>
<td>Rib/Sternum/Pelvis Fracture</td>
<td>40%</td>
</tr>
<tr>
<td>Shoulder/Arm/Hand Fracture</td>
<td>13%</td>
</tr>
<tr>
<td>Leg/Foot Fracture</td>
<td>18%</td>
</tr>
</tbody>
</table>

\textsuperscript{1} Includes fatal and nonfatal hospital discharges and observation stays; transfers between hospitals were excluded. Does not include motorcycle operator injuries.

Data Sources:
Hospital Stays - MA Inpatient Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
Hospitalizations for MV-Driver Injuries¹, Discharge Disposition, MA Residents Ages 65+, FY2013 (N = 408)

1. Hospital discharges only; all discharge dispositions included. “Other” category includes transfers and left AMA. Motorcycle operator injuries are excluded.

Data Source: MA Inpatient Hospital Discharge database, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
### Hospital Charges\(^1\) Associated with Injuries to MA Drivers Ages 65+, FY2013

<table>
<thead>
<tr>
<th>Type Visit</th>
<th>Number of Visits</th>
<th>Median Charge</th>
<th>Total Hospital Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED Visit</td>
<td>2,944</td>
<td>$1,731</td>
<td>$7,814,794</td>
</tr>
<tr>
<td>Observation Stay</td>
<td>71</td>
<td>$10,851</td>
<td>$888,746</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>408</td>
<td>$23,530</td>
<td>$19,794,866</td>
</tr>
<tr>
<td>Total</td>
<td>3,423</td>
<td>-----</td>
<td>$28,498,406</td>
</tr>
</tbody>
</table>

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1. Charges are from MA acute care hospitals only. All discharge dispositions are included. Hospital charges represent charges billed by the hospital rather than actual costs or amount paid.  

**Data Sources:**  
MA Inpatient Hospital Discharge, Outpatient Observation Stay and Emergency Department Discharge databases, MA Center for Health Information and Analysis. Data are compiled and reported by fiscal year.
License Rates\(^1\) (MA) and Vehicle Miles Travelled\(^2\) (US), Drivers Ages 65+

1. Licenses include active licenses of any class (MA 2013).
2. Average annual vehicle miles travelled (VMT) per driver in age group (2009 NHTS).

Data Sources:
- Vehicle Miles Travelled – 2009 National Household Travel Survey
- Population (2013) - Missouri Census Data Center, Population Estimates by Age Query
Hospital Stays for MV-Driver Injuries\(^1\), Rates per 10,000 Licensed Drivers\(^2\),
MA Residents Ages 65+, FY2013 (N = 446)

1. Nonfatal injuries only; deaths and transfers were excluded. Does not include motorcycle operator injuries.
2. Licenses include active licenses of any class; 2013 data.

Data Sources:
Hospital Stays - MA Inpatient Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
Licenses - MA Shelley License Report 2013, MA Registry of Motor Vehicles
Hospital Stays for MV-Driver Injuries\(^1\), Rates per 10,000 Licensed Drivers\(^2\) and 100 Million VMT\(^3\), MA Residents Ages 65+, FY2013 (N = 446)

1. Nonfatal injuries only; deaths and transfers were excluded. Does not include motorcycle operator injuries.
2. Licenses include active licenses of any class; 2013 data.
3. Based on average annual vehicle miles travelled (VMT) per driver times the number of licensed MA drivers in age group.

Data Sources: Hospital Stays - MA Inpatient Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.

Licenses - MA Shelley License Report 2013, MA Registry of Motor Vehicles

Vehicle Miles Travelled – 2009 National Household Travel Survey
ED Visits for MV-Driver Injuries\textsuperscript{1}, Rates per 10,000 Licensed Drivers\textsuperscript{2},
MA Residents Ages 65+, FY2013 (N = 2,931)

1. Nonfatal injuries only; deaths were excluded. Does not include motorcycle operator injuries.
2. Licenses include active licenses of any class.

Data Sources:
Emergency Department Visits - MA Emergency Department Discharge database, MA Center for Health Information and Analysis.
Data are compiled and presented by fiscal year.
Licenses - MA Shelley License Report 2013, MA Registry of Motor Vehicles
ED Visits for MV-Driver Injuries\(^1\),
Rates per 10,000 Licensed Drivers\(^2\) and 100 Million VMT\(^3\),
MA Residents Ages 65+, FY2013 (N = 2,931)

\(^1\) Nonfatal injuries only; deaths were excluded. Does not include motorcycle operator injuries.
\(^2\) Licenses include active licenses of any class.
\(^3\) Based on average annual vehicle miles travelled (VMT) per driver times the number of licensed MA drivers in age group.

Data Sources:
- Emergency Department Visits - MA Emergency Department Discharge database, MA Center for Health Information and Analysis. Data are compiled and presented by fiscal year.
- Licenses - MA Shelley License Report 2013, MA Registry of Motor Vehicles
- Vehicle Miles Travelled – 2009 National Household Travel Survey
Questions?

Resources:
Injury Surveillance Program
MA Department of Public Health
www.mass.gov/dph/isp

Injury Prevention and Control Program
MA Department of Public Health
www.ma.gov/dph/injury

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