A National Perspective on Passenger Vehicle Occupant Safety and Seat Belt Use in Rural Areas

Laurie Beck, MPH
Epidemiologist
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

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*affiliation at time of report
Background
# 10 Leading Causes of Death by Age Group, United States - 2015

<table>
<thead>
<tr>
<th>Rank</th>
<th>&lt;1</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>Total</th>
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<tbody>
<tr>
<td>1</td>
<td>Congenital Anomalies 4,828</td>
<td>Unintentional Injury 1,238</td>
<td>Unintentional Injury 798</td>
<td>Unintentional Injury 763</td>
<td>Unintentional Injury 1,014</td>
<td>Unintentional Injury 10,700</td>
<td>Malignant Neoplasms 43,054</td>
<td>Malignant Neoplasms 116,122</td>
<td>Heart Disease 987,133</td>
<td>Heart Disease 633,842</td>
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<td>2</td>
<td>Short Oclusion 4,684</td>
<td>Congenital Anomalies 418</td>
<td>Malignant Neoplasms 437</td>
<td>Malignant Neoplasms 428</td>
<td>Suicide 5,491</td>
<td>Suicide 6,347</td>
<td>Malignant Neoplasms 10,909</td>
<td>Heart Disease 34,248</td>
<td>Heart Disease 76,872</td>
<td>Malignant Neoplasms 419,389</td>
<td>Malignant Neoplasms 595,030</td>
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<td>3</td>
<td>SIDS 1,568</td>
<td>Homocide 360</td>
<td>Congenital Anomalies 181</td>
<td>Suicide 409</td>
<td>Unintentional Injury 4,733</td>
<td>Unintentional Injury 4,883</td>
<td>Unintentional Injury 25,499</td>
<td>Unintentional Injury 15,683</td>
<td>Chronic Low, Respiratory Disease 131,804</td>
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<td>4</td>
<td>Maternal Pregnancy Comp. 1,522</td>
<td>Malignant Neoplasms 314</td>
<td>Homocide 150</td>
<td>Homocide 158</td>
<td>Malignant Neoplasms 1,469</td>
<td>Malignant Neoplasms 3,704</td>
<td>Suicide 6,030</td>
<td>Liver Disease 8,874</td>
<td>Chronic Low, Respiratory Disease 17,457</td>
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<td>Unintentional Injury 1,294</td>
<td>Heart Disease 147</td>
<td>Heart Disease 85</td>
<td>Congenital Anomalies 150</td>
<td>Heart Disease 907</td>
<td>Heart Disease 3,250</td>
<td>Homocide 2,096</td>
<td>Suicide 8,761</td>
<td>Diabetes Mellitus 14,156</td>
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<td>Pneumonia Cerebrovascular 910</td>
<td>Influenza &amp; Pneumonia 86</td>
<td>Chronic Low, Respiratory Disease 83</td>
<td>Heart Disease 125</td>
<td>Congenital Anomalies 280</td>
<td>Liver Disease 844</td>
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<td>Diabetes Mellitus 8,212</td>
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<td>Bacterial Sepsis 539</td>
<td>Septiemia 54</td>
<td>Influenza &amp; Pneumonia 44</td>
<td>Chronic Low, Respiratory Disease 93</td>
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<td>Diabetes Mellitus 708</td>
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<td>Respiratory Distress 462</td>
<td>Pneumonia 50</td>
<td>Cardiovascular 42</td>
<td>Cardiovascular 42</td>
<td>Diabetes Mellitus 190</td>
<td>Cardiovascular 576</td>
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<td>Influenza &amp; Pneumonia 48,774</td>
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<td>Glottic Ectopic 428</td>
<td>Cardiac 42</td>
<td>Influenza &amp; Pneumonia 39</td>
<td>Chronic Low, Respiratory Disease 39</td>
<td>Septiemia 2,342</td>
<td>Septiemia 7,574</td>
<td>Nephritis 41,589</td>
<td>Nephritis 49,959</td>
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<td>Neoplastic Mononichiasis 406</td>
<td>Chronic Low, Respiratory Disease 31</td>
<td>Two-Tec Endotracheal Septiemia 33</td>
<td>Cardiovascular 106</td>
<td>Congenital Anomalies 443</td>
<td>Septiemia 829</td>
<td>Nephritis 2,124</td>
<td>Nephritis 4,152</td>
<td>Septiemia 56,811</td>
<td>Septiemia 64,883</td>
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</table>

Data Source: National Vital Statistics System, National Center for Health Statistics, CDC
Produced by: National Center for Injury Prevention and Control, CDC using WISQARS™.
THE FULL IMPACT OF MOTOR VEHICLE CRASHES

For every 1 person killed in a motor vehicle crash

8 people were hospitalized

99 people were treated and released from emergency departments

SOURCE: CDC WISQARS (Web-based Injury Statistics Query and Reporting System) and NHTSA (National Highway Traffic Safety Administration) FARS (Fatality Analysis Reporting System), 2015
Importance of Seat Belts

- In the U.S., 2/3 of all crash deaths are among passenger vehicle occupants.

- Seat belts reduce the risk of serious injury or death in a crash by half.
Study Description
Study Purpose

- **Outcomes**
  - Passenger vehicle occupant (PVO) death rates
  - Proportion of PVOs who were unrestrained at time of fatal crash
  - Self-reported seat belt use

- **Study questions**
  1. How do these outcomes differ across rural & urban areas?
  2. In rural & urban areas, how do these outcomes vary by type of state seat belt law (primary/secondary)?
USDA 2013 Rural-Urban Continuum Codes (RUCCs)

- We collapsed 9 county-level RUCC codes into 6 categories:
  - Level 1 (most urban): county in metro area with ≥1M population
  - Level 6 (most rural): county in nonmetro area, with no urban population or urban population <2,500

Source: USDA, Economic Research Service using data from the U.S. Census Bureau.
State Seat Belt Enforcement Type, 2014

Source: Insurance Institute for Highway Safety
Key Findings
Death Rates Increase With Increasing Rurality

Figure 1. PVO age-adjusted death rates per 100,000 population, among adults, by region, US, FARS, 2014

PVO = Passenger Vehicle Occupant
FARS = Fatality Analysis Reporting System
Death Rates Increase With Increasing Rurality

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Rural-urban designation and metropolitan status

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Death Rates Increase With Increasing Rurality

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Death rate per 100,000

Rural-urban designation and metropolitan status

Northeast  South  Midwest  West

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Unrestrained Deaths Increase With Increasing Rurality

Figure 6. Percentage of PVOs who were unrestrained at time of fatal crash, among adults, US, FARS 2014
Seat Belt Use Decreases With Increasing Rurality

Figure 7. Self-reported seat belt use among adults aged ≥18 years, US, BRFSS 2014
Study Highlights

- As rurality increases
  - Passenger vehicle occupant (PVO) death rates among adults increase
  - Proportion of PVOs killed who were unrestrained at time of fatal crash increases
  - Self-reported seat belt use decreases

- Primary seat belt enforcement laws are effective, even in the most rural areas
Conclusions

- Improving seat belt use remains a critical strategy to reduce crash-related deaths in the United States, especially in rural areas.

- States and communities can consider using evidence-based interventions to reduce rural-urban disparities in seat belt use and passenger vehicle occupant death rates.
CDC Resources For State, Local, and Tribal Communities
MV PICCS (Motor Vehicle Prioritizing Interventions and Cost Calculator for States)

- Helps state decision makers prioritize and select from a suite of 14 evidence-based interventions
- Selected interventions based on
  - Type
  - Effectiveness
  - State role in implementation
  - Current use
- To prioritize, states can use information about costs and benefits of each option
- Available at: https://www.cdc.gov/motorvehiclesafety/calculator
State-Based Fact Sheets

- Restraints
  https://www.cdc.gov/motorvehiclesafety/seatbelts/states.html

- Alcohol-impaired driving
  https://www.cdc.gov/motorvehiclesafety/impaired_driving/states.html

- Costs of motor vehicle crash deaths
  https://www.cdc.gov/motorvehiclesafety/statecosts/index.html
Tribal Road Safety

- Tribal Communities Toolkit
  [https://www.cdc.gov/motorvehiclesafety/native/toolkit.html](https://www.cdc.gov/motorvehiclesafety/native/toolkit.html)

- Best Practices Guide
  [https://www.cdc.gov/motorvehiclesafety/native/best_practices_guide.html](https://www.cdc.gov/motorvehiclesafety/native/best_practices_guide.html)
Injury Center Funded Programs

- Core State Violence and Injury Prevention Program (Core SVIPP)
  [https://www.cdc.gov/injury/stateprograms/](https://www.cdc.gov/injury/stateprograms/)

- Injury Control Research Centers (ICRC)
  [https://www.cdc.gov/injury/erpo/icrc/](https://www.cdc.gov/injury/erpo/icrc/)
Additional CDC and Other Resources

- CDC Injury Center  [https://www.cdc.gov/injury/](https://www.cdc.gov/injury/)


- CDC Rural Health  [https://www.cdc.gov/ruralhealth/](https://www.cdc.gov/ruralhealth/)

- Federal Office of Rural Health Policy (FORHP) Rural Transportation Toolkit  [https://www.ruralhealthinfo.org/community-health/transportation](https://www.ruralhealthinfo.org/community-health/transportation)
Thank you

Contact:
Laurie Beck, LDF8@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.