Rural Transportation: What Role Does Safety Play?

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CDC
Why CDC?

CDC known for its ground-breaking work on epidemics like smallpox, Ebola virus, pandemic flu, and Zika.

An Epidemic on Wheels

A few years ago, I led a U.S. delegation to Bangkok for a high-level meeting on aviation safety. At the end of the meeting, the Thai transportation minister brought up an issue that had not been on our agenda.

“What I really need to talk with you about is road safety,” he said. “This is such a huge problem for us.”

Last year, 965 people lost their lives in air crashes around the world. But more than 3,000 people will die on the world’s highways today. More than 1.2 million people die each year from road traffic injuries, a toll comparable to the number of people killed by malaria or tuberculosis. For every death there are at least 20 serious injuries. This is an epidemic in every sense of the word.

to climb through the middle of the century. It took the United States about 40 years to reverse a trend of increasing traffic deaths. It took time for us to build safer roads and require safer cars, and for safer behavior to evolve on the part of drivers and other road users. We are still losing 43,000 lives in the United States every year, but we have learned many painful lessons.

The best-performing nations in terms of highway safety, such as Sweden, the Netherlands and Australia, are adopting a “safe systems” approach that is similar to the philosophy governing aviation safety. These nations are showing that road deaths are preventable through sustained political commitment to the safe transportation systems and adequate investment.
Ten Great Public Health Achievements – US, 1900-2000

- Vaccination
- Safer Workplaces
- Control of Infectious Diseases
- Declines in HD and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Advances in Family planning
- Floridation of Drinking water
- Tobacco Hazard Awareness
- Motor Vehicle Safety
### Motor Vehicle Crash Deaths: 1977-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural Deaths</th>
<th>Rural %</th>
<th>Urban Deaths</th>
<th>Urban %</th>
<th>Total Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>28,463</td>
<td>59%</td>
<td>19,296</td>
<td>40%</td>
<td>47,878</td>
</tr>
<tr>
<td>1978</td>
<td>30,018</td>
<td>60%</td>
<td>19,863</td>
<td>39%</td>
<td>50,331</td>
</tr>
<tr>
<td>2013</td>
<td>17,740</td>
<td>54%</td>
<td>15,119</td>
<td>46%</td>
<td>32,894</td>
</tr>
<tr>
<td>2014</td>
<td>16,710</td>
<td>51%</td>
<td>15,487</td>
<td>47%</td>
<td>32,675</td>
</tr>
</tbody>
</table>

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### 10 Leading Causes of Death by Age Group, United States – 2014

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
<th>Age Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Congenital Anomalies</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>Short Gestation</td>
<td>1-4</td>
</tr>
<tr>
<td>3</td>
<td>Maternal Pregnancy Comp.</td>
<td>5-9</td>
</tr>
<tr>
<td>4</td>
<td>SIDS</td>
<td>10-14</td>
</tr>
<tr>
<td>5</td>
<td>Unintentional Injury</td>
<td>15-24</td>
</tr>
<tr>
<td>6</td>
<td>Placenta Cord. Membranes</td>
<td>25-34</td>
</tr>
<tr>
<td>7</td>
<td>Bacterial Sepsis</td>
<td>35-44</td>
</tr>
<tr>
<td>8</td>
<td>Respiratory Distress</td>
<td>45-54</td>
</tr>
<tr>
<td>9</td>
<td>Circulatory System Disease</td>
<td>55-64</td>
</tr>
<tr>
<td>10</td>
<td>Neonatal Hemorrhage</td>
<td>65+</td>
</tr>
</tbody>
</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™.
Intersection of Transport and Public Health

Transport
• Roads
• Vehicles
• Licensing
• Enforcement
• Mobility/Safety
• Industry/economy

Public Health
• Population health
• Illness/injury
• Health care
• Prevention
• EMS services
• Rehabilitation

Road Safety
Public Health Role in Road Traffic Injury Prevention

- **Epidemiology**
  Monitor road deaths & injuries

- **Education & Training**
  Inform Health & Transport Agencies

- **Prevention**
  Identify & implement “best practices”

- **Acute Care**
  Improve EMS and trauma care
1. Define the problem

**Epidemiology**

- 19% live in rural areas, yet…
  - 30% of miles traveled & 55% of crash deaths occur there
- Death rate 2.5 times higher in rural vs. urban areas
- 40% of rural fatalities are in rollover crashes
- EMS response times are 50% longer in rural areas
- 16% of crash deaths in rural areas occur at intersections vs. 31% in urban areas
- Safety belt use among front seat occupants; 83% in rural areas, 86% in urban areas

Source: IIHS, 2014; NHTSA, 2014
Motor Vehicle Traffic Fatalities, by Year and Area, 2004–2013

Figure 2 presents the fatality rates per 100 million vehicle miles traveled (VMT) by location (rural, urban, and overall) in the most recent 10-year period for which data is available:

- The fatality rate in rural areas decreased 20 percent from 2.36 in 2004 to 1.88 in 2013.
- The fatality rate in urban areas decreased 22 percent from 0.93 in 2004 to 0.73 in 2013.
- In 2013, the fatality rate was 2.6 times higher in rural areas than in urban areas (1.88 and 0.73, respectively).

Source: NHTSA “Rural/Urban Comparison” - 2013
2. Identify Risk & Protective Factors

- Drink-driving
- Excessive speed
- Not using motorcycle helmets
- Not using seat-belts
- Not using child restraints
- Fatigue

Road traffic injuries
Percentages of crashes due to fatigue as a function of hours of driving

- % Of crashes due to fatigue (all hours over 12 combined)
- Polynomial

SOURCE: FHWA & NIOSH
3. Develop & Test Interventions

- Increasing Seat Belt Use
- Reducing Alcohol-impaired driving
- Reducing Vehicle Speed
- Improving Pedestrian environments
- Wearing Bicycle and Motorcycle Helmets
- Improving Licensing
- Increasing Enforcement
- Building safer roads
CDC Research Findings

• .08 BAC law saves 400-600 lives
• Motorcyclists have highest death rate per vehicle mile traveled
• Bike helmets reduce head injury by 85%
• 123 million episodes of drunk driving each year…but only 1.4 million arrests
• 1/3 of adult pedestrians killed have been drinking
• Driver education increases teen fatalities
Rural Prevention Strategies

- Rumble strips reduce run-off-road crashes by 40%
- Roundabouts may reduce intersection crashes by 75%
- Alcohol Checkpoints reduce fatalities by 9-20%
- Ignition interlocks reduce re-arrests by 40%
- Primary SB laws reduce fatal injuries by 8%
- Motorcycle Helmets cut fatals 40%; injuries 70%
- Child Safety Seat Laws reduce fatalities by 35%
- Graduated Driver Licensing (35% fatal reduction)
16 Year old drivers with passengers and Crashes (per 10,000 trips)

- Driver Age 16-17
- Driver Age 18-19
- Driver Age 30-59

Crashes

- 0 Passenger
- 1 Passenger
- 2 Passengers
- 3+ Passengers
4. Disseminate for Widespread Adoption

CDC Systematic reviews of evidence

- Reducing alcohol impaired driving
- Increasing Safety Belt Use
- Increasing Child Safety Seat Use

AJPM, November 2001
2010–2014 Unintentional Injury Deaths
US, AI/AN, all ages, both sexes

N=9,139

- MV Traffic: 36%
- Poisoning: 32%
- Falls: 10%
- Natural Env.: 4%
- Drowning: 4%
- Suffocation: 3%
- Fire/burn: 3%
- Unspecified: 2.0%
Motor Vehicle Death Rates by Race

Source: CDC WISQARS 2016; www.cdc.gov/ncipc/wisqars
2004-2010, United States
Death Rates per 100,000 Population
Motor Vehicle, Overall, Unintentional, American Indian, All Ethnicities, Both Sexes, All Ages
Annualized Crude Rate for United States: 19.72

Reports for All Ages include those of unknown age.
* Rates based on 20 or fewer deaths may be unstable. States with these rates are cross-hatched in the map (see legend above). Such rates have an asterisk.
WYOMING

2004-2010, Wyoming
Death Rates per 100,000 Population
Motor Vehicle, Overall, Unintentional, American Indian, All Ethnicities, Both Sexes, All Ages
Annualized Crude Rate for Wyoming: 72.16

Source: CDC WISQARS interactive data mapping

Reports for All Ages include those of unknown age.
*Rates based on 20 or fewer deaths may be unstable. These rates are suppressed for counties (see legend above); such rates in the title have an asterisk.

Produced by: the Statistics, Programming & Economics Branch, National Center for Injury Prevention & Control, CDC
Data Sources: NCHS National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates.
CDC Tribal Motor Vehicle Injury Prevention Program

- **Purpose:** Implement tailored evidence-based strategies
  - Reduce alcohol impaired driving, increase child safety seat use, and increase safety belt use

- **2010-2014, eight tribes funded**
  - Results – increased restraint use and decreased injuries and fatalities

- **CDC Tribal Road Safety web page**
  (https://www.cdc.gov/motorvehiclesafety/native/)
CDC Partnership with Federal Highway Administration (FHWA)

- Tribal Safety Circuit Rider Program (TTAP)
  - Provide injury prevention technical assistance to tribes in TTAP centers
  - Partners: Western (139), Southern Plains (44), and Northern Plains (24) TTAP Regions
Motor Vehicle Toolkit

- Find it on CDC’s Tribal Road Safety Website
- Toolkit for Restraint use and DUI prevention
  - Fact sheets
  - Posters
  - Video
Tribal MV Best Practices Guide

Guide for Tribes
- Successful MV programs
- Lessons learned
- Case examples

Contributors:
- CDC Tribal Motor Vehicle Injury Prevention Program
- IHS Tribal Injury Prevention Cooperative Agreement
- BIA Indian Highway Safety Program
Public health will be there to help rural road safety …

• Improve and expand injury surveillance
• Uncover new emerging transportation injuries
• Conduct & support translational research
• Develop & test new interventions
• Evaluate existing prevention efforts
• Balance safety with mobility
• Strengthen partnerships
For more information please contact Centers for Disease Control and Prevention

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E-mail: cdcinfo@cdc.gov    Web: www.cdc.gov

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.