A Public Health Perspective to Rural Transportation Safety

Presented by: Laurie Beck, MPH, Centers for Disease Control and Prevention
Today’s Presenter

Laurie Beck, MPH
Centers for Disease Control and Prevention
National Center for Injury Prevention and Control
Goals of this Webinar

Once you have completed this webinar, you will be:

• Familiar with the public health approach to motor vehicle injury prevention, particularly prevention strategies that target road user behaviors.
Learning Outcomes

To achieve the webinar goal, you will learn:

To summarize the public health approach to motor vehicle injury prevention

To identify CDC resources, tools and programs that can support transportation safety efforts in rural communities
To summarize the public health approach to motor vehicle injury prevention.

To identify CDC resources, tools and programs that can support transportation safety efforts in rural communities.
What is the Centers for Disease Control & Prevention (CDC)?

- CDC is the nation’s leading public health agency, dedicated to saving lives and protecting the health of Americans.
  - Headquartered in Atlanta, Georgia
  - Facilities in 10 additional locations in the U.S.
  - Field staff work in all 50 states, DC, Guam, Puerto Rico, the US Virgin Islands, and more than 120 countries
  - More than 12,000 employees in nearly 150 occupations
What does CDC do?

• Detect and respond to new and emerging health threats
• Tackle the biggest health problems causing death and disability for Americans
• Put science and advanced technology into action to prevent disease
• Promote healthy and safe behaviors, communities and environment
• Develop leaders and train the public health workforce, including disease detectives
• Take the health pulse of our nation
Public Health Approach

1. Assess the Problem

2. Identify Causes / Risk & Protective Factors

3. Develop & Evaluate Programs & Policies

4. Implement & Disseminate Effective interventions
CDC Winnable Battles

- Food Safety
- Healthcare Associated Infections
- HIV
- **Motor Vehicle Injury Prevention**
- Nutrition, Physical Activity, Obesity
- Teen Pregnancy
- Tobacco Use
### 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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<td>Short Gestation 4,064</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™.

[Centers for Disease Control and Prevention National Center for Injury Prevention and Control]
# 10 Leading Causes of Injury Deaths by Age Group Highlighting Unintentional Injury Deaths, 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>
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<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>Total</th>
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<td>Unintentional Drowning 996</td>
<td>Unintentional MV Traffic 391</td>
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<td>Undetermined Poisoning 681</td>
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<td>Suicide Poisoning 1,005</td>
<td>Suicide Poisoning 6,883</td>
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<td>Four Tied 12</td>
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<td>Unintentional Struck by or Against 17</td>
<td>Suicide Poisoning 23</td>
<td>Unintentional Fall 217</td>
<td>Unintentional Fall 324</td>
<td>Unintentional Drowning 450</td>
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<td>Unintentional Suffocation 938</td>
<td>Unintentional Drowning 3,602</td>
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</tr>
</tbody>
</table>

THE FULL IMPACT OF MOTOR VEHICLE CRASHES

For every 1 person killed in a motor vehicle crash

8 people were hospitalized

100 people were treated and released from the ED

SOURCE: CDC WISQARS (Web-based Injury Statistics Query and Reporting System), 2012
CDC/Injury Center’s Transportation Safety Team

**Vision**
Keep people safe on the road—every day

**Mission**
To reduce injury and death due to motor vehicle crashes and promote safe travel
Four Pillars of Intervention

- Safer Roads
- Safer Vehicles
- Safer Road Users
- Improved Post Crash Response
Four Pillars of Intervention

- Safer Roads
- Safer Vehicles
- Safer Road Users
- Improved Post Crash Response
Transportation Safety Priority Areas

- Restraints
- Impaired Driving
- Tribes
- Older Adult Mobility
- Data Linkage
To summarize the public health approach to motor vehicle injury prevention

To identify CDC resources, tools and programs that can support transportation safety efforts in rural communities
What do we know about motor vehicle-related injuries and deaths in state, local, and rural communities?
Rural and Urban Differences in Passenger-Vehicle–Occupant Deaths and Seat Belt Use Among Adults — United States, 2014
Rural MMWR – Study Highlights

• As rurality increases
  – PVO* death rates among adults increase
  – Proportion of PVOs 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:**
  – Higher self-reported seat belt use
  – Lower PVO death rates in each census region except for the South

*PVO = Passenger-vehicle occupant

Full report available at: https://www.cdc.gov/mmwr/volumes/66/ss/ss6617a1.htm?s_cid=ss6617a1_w
Figure 1. Passenger-vehicle–occupant age-adjusted death rates per 100,000 population, among adults (18+ years), by region, FARS, 2014
Figure 2. Self-reported seat belt use among adults (18+ years), by type of state seat belt enforcement, US, BRFSS, 2014
What do we know about motor vehicle-related injuries and deaths in state, local, and rural communities?

Surveillance Tools for Practitioners
WISQARS™ (Web-based Injury Statistics Query and Reporting System)

Injury Prevention & Control

Data and Statistics (WISQARS)

Overview

Fatal Injury Data

Nonfatal Injury Data

Violent Deaths (NVDRS)

Funded Programs, Activities and Research

Press Room

Social Media

Publications

CDC’s WISQARS™ (Web-based Injury Statistics Query and Reporting System) is an interactive, online database that provides fatal and nonfatal injury, violent death, and cost of injury data from a variety of trusted sources. Researchers, the media, public health professionals, and the public can use WISQARS™ data to learn more about the public health and economic burden associated with unintentional and violence-related injury in the United States.
**WISQARS™ (Web-based Injury Statistics Query and Reporting System)**

- Fatal deaths from all causes (National Vital Statistics System, NVSS)
  - Available at national, state, & (sometimes) county level
  - Available by rural/urban status
- Non-fatal injuries treated in emergency departments (National Electronic Injury Surveillance System – All Injury Program, NEISS-AIP)
  - Available at national level only
- Cost estimates for fatal & non-fatal injuries
  - Available at national, regional, and state level
### 2015, United States

**Unintentional MV Traffic Deaths and Rates per 100,000**

*All Races, Both Sexes, All Ages*

ICD-10 Codes: V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9),
V60-V69 (.4-.9), V70-V79 (.4-.9), V81.1 V82.1 V83-V86 (.0-.3),
V20-V28 (.3-.9), V29 (.4-.9), V12-V14 (.3-.9), V19 (.4-.6),
V02-V04 (.1-.9), V09.2, V80 (.3-.5), V87(.0-.8), V89.2

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<th>2013 Urbanization (Collapsed) Classification</th>
<th>Number of Deaths</th>
<th>Population</th>
<th>Crude Rate</th>
<th>Age-Adjusted Rate**</th>
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</thead>
<tbody>
<tr>
<td>Metro Areas</td>
<td>27,321</td>
<td>275,252,217</td>
<td>9.93</td>
<td>9.59</td>
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<td>Non-metro Areas</td>
<td>8,840</td>
<td>46,166,603</td>
<td>19.15</td>
<td>18.87</td>
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<td><strong>Total</strong></td>
<td><strong>36,161</strong></td>
<td><strong>321,418,820</strong></td>
<td><strong>11.25</strong></td>
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</tbody>
</table>
2008-2014, United States
Age-adjusted Death Rates per 100,000 Population
Motor Vehicle, Traffic, Unintentional, All Races, All Ethnicities, Both Sexes, All Ages
Annualized Age-adjusted Rate for United States: 10.88
2008-2014, Montana
Death Rates per 100,000 Population
Motor Vehicle, Traffic, All Intents, All Races, All Ethnicities, Both Sexes, All Ages
Annualized Crude Rate for Montana: 20.00

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.
2008-2014, Montana
Death Rates per 100,000 Population
All Injury, All Intents, All Races, All Ethnicities, Both Sexes, All Ages
Annualized Crude Rate for Montana: 88.74

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: NCES National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates.
Behavioral Risk Factor Surveillance System (BRFSS)

- Health-related telephone survey
- Administered every year to adults 18+ years
- Completes more than 400,000 interviews each year
- Collects state data regarding residents
- Health-related risk behaviors, chronic health conditions, and use of preventive services
- Collects data on alcohol-impaired driving and seat belt use every two years
Prevalence Data & Data Analysis Tools

Find city and county data collected through the Selected Metropolitan/Micropolitan Area Risk Trends (SMART) project, the Web Enabled Analysis Tool (WEAT), interactive maps, and other resources provided through BRFSS.

PREVALENCE AND TRENDS DATA
Using the Prevalence and Trends Data Tools, users may produce charts for individual states or the nation by health topic. Users may select specific years or request multiple year data. The Prevalence and Trend Data Tools will produce line graphs for multiple years and bar charts for single years for each selected indicator.

SMART: CITY AND COUNTY DATA
Selected Metropolitan/Micropolitan Area Risk Trends (SMART) is an ongoing project that uses BRFSS data to produce some local area estimates. Counties and Metropolitan/Micropolitan Areas (MMSAs) were selected for SMART if there were 500 or more respondents BRFSS combined landline and cell phone data for any year.
Prevalence of having driven after drinking too much (self-reported), BRFSS, 2014

Response: Have driven after having too much to drink

Age-adjusted Prevalence (%)
- 1.4 - 2.8
- 2.9 - 3.4
- 3.5 - 4.0
- 4.1 - 9.8
- Data unavailable

Quantile
Legend Settings
Youth Risk Behavior Surveillance System (YRBSS)

- School-based survey
  - Administered every other year
  - Anonymous, self-administered
  - National, State, territorial, tribal, and local surveys

- Monitors priority risk behaviors, including transportation topics
  - Rode with a driver who had been drinking alcohol
  - Drove after drinking alcohol
  - Texted or e-mailed while driving a car or other vehicle
  - Seat belt use
  - Bicycle helmet use
2015 Seat Belt Use by US High School Students Riding as Passengers*, by Type of Seat Belt Law, 32 States

National Average (61%)
Primary Seat Belt Law
Secondary Seat Belt Law
Secondary Law with Teen Driver Primary Provision

* Percentage of students who always wear a seat belt when riding in a car as passengers.
** NH does not have a seat belt law for adults, but their child passenger safety law has a primary enforcement seat belt provision for drivers and passengers <18 years.

What can we do about motor vehicle-related injuries and deaths?

Fortunately, a wide range of evidence-based interventions are available
What can we do about motor vehicle-related injuries and deaths?

MV PICCS (Motor Vehicle Prioritizing Interventions and Cost Calculator for States)
How Does MV PICCS Work?

• 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
States Can Choose Among Many Options

- Many interventions are implemented at state level

- States must prioritize options

- To prioritize, states can use information about the costs and benefits of each option
MV PICCS Includes
14 Evidence-based Interventions

- Red light camera automated enforcement
- Speed camera automated enforcement
- Alcohol interlocks
- Sobriety checkpoints
- Saturation patrols
MV PICCS Includes
14 Evidence-based Interventions

- Bicycle helmet laws for children
- Motorcycle helmet use laws
- High-visibility enforcement for seat belts and child restraint/booster laws
- Primary enforcement seat belt laws
MV PICCS Includes
14 Evidence-based Interventions

- Vehicle impoundment
- License plate impoundment
- Limits on diversion and plea agreements
MV PICCS Includes
14 Evidence-based Interventions

• Increased seat belt fines
• In-person license renewal for adults aged 70+
Cost and Benefit Calculations

• Calculates the expected:
  – **Costs:** Monetary costs of implementation as well as costs paid by individuals to states
  – **Benefits:** Number of injuries prevented and lives saved
  – **Benefits:** Monetized value of injuries prevented and lives saved

• Data sources:
  – **Costs:** Published articles and reports, interviews with state officials and safety experts
  – **Benefits:** Peer-reviewed articles and reports that use reduction in deaths as the basis for evaluating effectiveness
MV PICCS Provides Two Types of Analysis for States

**Basic Cost Effectiveness Analysis**
- Prioritized list of interventions based on individual cost-effectiveness ratios

**Portfolio Analysis**
- Optimized set of interventions that accounts for non-additive effects of related interventions
## MV PICCS Example

### Kentucky Basic Cost-Effectiveness Analysis

(Interdependencies Ignored)

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<thead>
<tr>
<th>Candidate Intervention</th>
<th>Currently Implemented</th>
<th>Cost-Effectiveness Ratio</th>
<th>Intervention Name</th>
<th>Benefit $/year</th>
<th>Cost $/year</th>
<th>Cumulative Cost $/year</th>
<th># of Fatalities Reduced</th>
<th># of Injuries Reduced</th>
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<td>19.78</td>
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<td>117.31</td>
<td>Seat Belt Enforcement Campaign</td>
<td>103,178,000</td>
<td>880,000</td>
<td>115,000</td>
<td>32</td>
<td>3357</td>
</tr>
<tr>
<td>□</td>
<td></td>
<td>20.04</td>
<td>In Person Renewal</td>
<td>25,055,000</td>
<td>962,000</td>
<td>115,000</td>
<td>8</td>
<td>709</td>
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<tr>
<td>□</td>
<td>✓</td>
<td>94.24</td>
<td>Primary Enforcement Seat Belt Law</td>
<td>133,749,000</td>
<td>1,419,000</td>
<td>115,000</td>
<td>41</td>
<td>4352</td>
</tr>
<tr>
<td>□</td>
<td>✓</td>
<td>30.62</td>
<td>Sobriety Checkpoints</td>
<td>52,498,000</td>
<td>1,714,000</td>
<td>115,000</td>
<td>18</td>
<td>1599</td>
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<tr>
<td>□</td>
<td></td>
<td>19.7</td>
<td>Vehicle Impoundment</td>
<td>55,248,000</td>
<td>2,805,000</td>
<td>115,000</td>
<td>29</td>
<td>1045</td>
</tr>
<tr>
<td>□</td>
<td></td>
<td>19.86</td>
<td>Saturation Patrols</td>
<td>75,677,000</td>
<td>3,810,000</td>
<td>115,000</td>
<td>40</td>
<td>1431</td>
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<tr>
<td>□</td>
<td>✓</td>
<td>3.89</td>
<td>Limits on Diversion</td>
<td>19,991,000</td>
<td>5,145,000</td>
<td>115,000</td>
<td>10</td>
<td>378</td>
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</tbody>
</table>

### Summary Results of the Interventions Chosen

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>115,000</td>
<td>$ per year</td>
</tr>
<tr>
<td>Total Benefit</td>
<td>43,617,000</td>
<td>$ per year</td>
</tr>
<tr>
<td>Total # of Fatalities Reduced</td>
<td>23</td>
<td>units</td>
</tr>
<tr>
<td>Total # of Injuries Reduced</td>
<td>825</td>
<td>units</td>
</tr>
</tbody>
</table>

Annual implementation budget available $150,000
What can we do about motor vehicle-related injuries and deaths?

Informing Practice with Lay-Friendly Materials: State-Based Fact Sheets
What Works

The strategies in this section are effective for reducing or preventing drunk driving. They are recommended by The Guide to Community Preventive Services and/or have been demonstrated to be effective in reviews by the National Highway Traffic Safety Administration. Different strategies may require different resources for implementation or have different levels of impact. Find strategies that are right for your state.

Strategies to reduce or prevent drunk driving

- **Drunk driving laws** make it illegal nationwide to drive with a BAC at or above 0.08%. For people under 21, “zero tolerance” laws make it illegal to drive with any measurable amount of alcohol in their system. These laws, along with laws that maintain the minimum legal drinking age at 21, are in place in all 50 states and the District of Columbia, and have had a clear effect on highway safety, saving tens of thousands of lives since their implementation.

- **Sobriety checkpoints** allow police to briefly stop vehicles at specific, highly visible locations to see if the driver is impaired. Police may stop all or a certain portion of drivers. Breath tests may be given if police have a reason to suspect the driver is intoxicated.

- **Ignition interlocks** installed in cars measure alcohol on the driver’s breath. Interlocks keep the car from starting if the driver has a BAC above a certain level, usually 0.02%. They’re used for people convicted of drunk driving and are highly effective at preventing repeat offenses while installed. Mandating interlocks for all offenders, including first-time offenders, will have the greatest impact.
What can we do about motor vehicle injuries and deaths?

Tribal Motor Vehicle Injury Prevention
CDC Tribal Motor Vehicle Injury Prevention Program (TMVIPP), 2010-2014

- 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 through evidence-based interventions
  - CDC Tribal Road Safety web page
  [https://www.cdc.gov/motorvehiclesafety/native/](https://www.cdc.gov/motorvehiclesafety/native/)
Roadway to Safer Tribal Communities Toolkit

- Toolkit for restraint use and alcohol-impaired driving prevention
- Fact sheets
- Posters
- Video

• Guide for Tribes
  – Successful MV programs
  – Lessons learned
  – Case examples

• Contributors:
  – CDC Tribal Motor Vehicle Injury Prevention Program
  – IHS* Tribal Injury Prevention Cooperative Agreement Program
  – BIA* Indian Highway Safety Program

*IHS=Indian Health Service. BIA=Bureau of Indian Affairs
What else is CDC doing about injuries and deaths from motor vehicle crashes and other causes?

Injury Center Funded Programs
• Funding and technical assistance to 23 state health departments to implement, evaluate, and disseminate strategies that address the most pressing injury and violence issues
Core SVIPP Funding Map
Regional Network Collaborating Organization (RNCO) & National Peer Learning Teams (NPLT)

NPLT Focus Areas

- None
- Child Abuse and Neglect
- Intimate Partner and Sexual Violence Prevention
- Motor Vehicle Crash Injury Death
- Systems Approach
- Traumatic Brain Injury
• CDC funds 10 academic research centers
• 3 core functions
  – Research: how to prevent injuries and violence
  – Outreach: work with states & communities to put research findings into action
  – Training: training next generation of injury prevention researchers and public health professionals
CDC-Funded Injury Control Research Centers, 1987-2017

- Past funded ICRCs
- Current funded ICRCs
List of Resources

• CDC Motor Vehicle Safety  
  https://www.cdc.gov/motorvehiclesafety/  
  – MV PICCS  https://wwwn.cdc.gov/MVIP/  
  – State 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  https://www.cdc.gov/motorvehiclesafety/native/  
    • Tribal Communities Toolkit  
      https://www.cdc.gov/motorvehiclesafety/native/toolkit.html  
    • Best Practices Guide  
      https://www.cdc.gov/motorvehiclesafety/native/best_practices_guide.html
List of Resources (2)

- 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/)
  - MMWR report on rural transportation safety [https://www.cdc.gov/mmwr/volumes/66/ss/ss6617a1.htm?s_cid=ss6617a1_w](https://www.cdc.gov/mmwr/volumes/66/ss/ss6617a1.htm?s_cid=ss6617a1_w)
- BRFSS Data & Data Analysis Tools [https://www.cdc.gov/brfss/data_tools.htm](https://www.cdc.gov/brfss/data_tools.htm)
CDC MMWR Rural Health Series

Insights from the CDC MMWR Rural Health Series Webinars

This webinar series highlights studies featured in the CDC MMWR Rural Health Series and rural programs funded by the Federal Office of Rural Health Policy (FORHP) that are working to address rural health disparities:

Stay tuned for announcement about November 15, 2017 webinar on 3 injury-related MMWR Rural Health reports from CDC:

• Transportation safety
• Opioids
• Suicide

https://www.ruralhealthinfo.org/resources/cdc-mmwr-rural-health
The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Learning Outcomes

In this webinar, you have learned:

To summarize the public health approach to motor vehicle injury prevention

To identify CDC resources, tools and programs that can support transportation safety efforts in rural communities
Let us be your trusted “safety sidekick”
to make road travel safer!
Upcoming 2017 Webinars

• Achieving Safety Results by Addressing Behavioral Issues
  November 15, 2017 11:00 AM-12:30 PM Mountain

• The Culture of the Swedish Vision Zero
  December 12, 2017 9:00 – 10:30 AM Mountain

Archived Webinars

Access the webinar archives
Training Videos

Introduction to Road Safety Culture

Introduction to Tribal Road Safety Audits

Watch these videos
Contact Information

If you have any questions related to this presentation, please contact:

Laurie Beck - ldf8@cdc.gov

Or contact the National Center for Rural Road Safety Help Desk at:

(844) 330-2200 or info@ruralsafetycenter.org

http://ruralsafetycenter.org/