Addressing the Public Health Crisis on our Roads

Moderator:

Garrett Eucalitto, Program Director, NGA

Speakers:

Erin Sauber Schatz, PhD, MPH, Team Lead, Transportation Safety Team, Centers for Disease Control & Prevention

Colonel Matthew Packard, Chief of the Colorado State Patrol

Daniel Chen, VP and GM, Traffic Safety Division, 3M
Public Health and Motor Vehicle Injury Prevention

Erin Sauber-Schatz, PHD, MPH

Team Lead, Transportation Safety Team

National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
Why Motor Vehicle Injury is a Public Health Problem

In the United States:

- Crashes are the leading cause of death in the first three decades of life
- Each year motor vehicle-related injuries send about 3 million people to an emergency department
- 37,800+ deaths on U.S. roads in 2017

SOURCE: WHO Global Status Report on Road Safety, 2015
https://www.cdc.gov/vitalsigns/motor-vehicle-safety
Crash Pyramid 2017

- **Fatal Crashes**: 34,247
- **Injury Crashes**: 1,889,000
- **Property Damage Only Crashes**: 4,530,000
- **Police-Reported Crashes**: 6,452,000
- **Crashes**: ~13,000,000

- **$242 Billion in Economic Cost**
- **$836 Billion in Societal Harm**

37,133 Fatalities
2,746,000 Injuries

NHTSA DOT HS 812 696 – Apr 2019
https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812696
Safer Roads
Safer Vehicles
Safer Road Users
Improved Post Crash Response

Safe System Approach
Road Safety Management
Motor Vehicle Injury Prevention Priority Areas

- Restraints
- Tribes
- Impaired Driving
- Older Adult Mobility
- Data Linkage
Motor Vehicle Injury Prevention Priority Areas

Restraints
47% in 2017

Percent of occupants killed who were not buckled

2,549 more lives saved in 2017 if everyone buckled

https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812691
Impaired Driving
29% in 2017

Percent of fatalities still involving alcohol

N = 10,874 alcohol impaired driving deaths

https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812630
Polysubstance Use
Motor Vehicle Injury Prevention Priority Areas

Older Adult Mobility
Mobility-related deaths are the leading cause of injury death for adults aged 65 years and above.

Mobility Planning Tool
- Targets adults age 60-74
- Plan for mobility changes as you age in the same way that you may plan financially for retirement
- Leverages broad array of partner resources
Motor Vehicle Injury Prevention Priority Areas

Data Linkage
Data Sources

Driver Licenses
LINCS: Linking Information for Nonfatal Crash Surveillance

- Coming soon!
  - [https://www.cdc.gov/motorvehiclesafety/linkage/index.html](https://www.cdc.gov/motorvehiclesafety/linkage/index.html)
What Works
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
MV PICCS Interventions

1. Automated Red-Light Enforcement
2. Automated Speed-Camera Enforcement
3. Alcohol Interlocks
4. Sobriety Checkpoints
5. Saturation Patrols
6. Bicycle Helmet Laws for Children
7. Universal Motorcycle Helmet Laws
8. Primary Enforcement of Seat Belt Laws
9. High-Visibility Enforcement for Seat Belts and Child Restraint and Booster Laws
10. License Plate Impoundment
11. Limits on Diversion and Plea Agreements
12. Vehicle Impoundment
13. In-Person License Renewal
14. Increased Fines for Seat Belt Use
MV PICCS 3.0

Select the interventions you want to analyze, enter a budget, and then hit 'RUN MODEL'.

Select interventions to run
- Alcohol Interlock
- Bicycle Helmet
- Increased Seat Belt Fine
- In Person Revocation
- License Plate Impoundment
- Limits on Distraction
- Motorcycle Helmet
- Primary Enforcement Seat Belt Law
- Red Light Camera
- Saturate Patrol
- Seat Belt Enforcement Campaign
- Sobriety Checkpoints
- Speed Camera
- Vehicle Impoundment

MV PICCS provides results specific to each state. To start your analysis, click on a state from the Map View or Table View tab.

Motor Vehicle Crash Death Rates in 2015

- The darker the shade, the higher the traffic crash fatality rate per 100,000 people in that state.
# Reducing Alcohol-Impaired Driving

<table>
<thead>
<tr>
<th>Intervention</th>
<th>CPSTF Finding</th>
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<tr>
<td>0.08% Blood Alcohol Concentration (BAC) Laws</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td></td>
<td>August 2000</td>
</tr>
<tr>
<td>Ignition Interlocks</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td></td>
<td>April 2006</td>
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<tr>
<td>Lower BAC Laws for Young or Inexperienced Drivers</td>
<td>Recommended (sufficient evidence)</td>
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<tr>
<td></td>
<td>June 2000</td>
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<tr>
<td>Maintaining Current Minimum Legal Drinking Age (MLDA) Laws</td>
<td>Recommended (strong evidence)</td>
</tr>
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<td></td>
<td>August 2000</td>
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<tr>
<td>Mass Media Campaigns</td>
<td>Recommended (strong evidence)</td>
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<td>June 2002</td>
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<tr>
<td>Multicomponent Interventions with Community Mobilization</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td></td>
<td>June 2005</td>
</tr>
<tr>
<td>Publicized Sobriety Checkpoint Programs</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td></td>
<td>August 2012</td>
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</tbody>
</table>

NHTSA’s Countermeasures That Work

- Alcohol- and Drug-Impaired Driving
- Seat Belts and Child Restraints
- Speeding and Speed Management
- Distracted and Drowsy Driving
- Motorcycle Safety
- Young Drivers
- Older Drivers
- Pedestrian Safety
- Bicycle Safety

We Know What Works: Immediate Impact

▪ Restraint use
  – Primary enforcement seat belt laws covering occupants in all seating positions
  – Car seats and booster seats for motor vehicle passengers through at least age 8 years

▪ Alcohol-impaired driving
  – Publicized sobriety checkpoints
  – Ignition interlocks for all convicted offenders
  – Having lower blood alcohol concentration limits
  – Maintaining and enforcing the minimum legal drinking age of 21

▪ Speed Management
State-Based Fact Sheets
Being updated!

- Restraints  [https://www.cdc.gov/motorvehiclesafety/seatbelts/states.html](https://www.cdc.gov/motorvehiclesafety/seatbelts/states.html)

- Alcohol-impaired driving  [https://www.cdc.gov/motorvehiclesafety/impaired_driving/states.html](https://www.cdc.gov/motorvehiclesafety/impaired_driving/states.html)

- Costs of motor vehicle crash deaths  [https://www.cdc.gov/motorvehiclesafety/statecosts/index.html](https://www.cdc.gov/motorvehiclesafety/statecosts/index.html)
CDC and NGA Partnership

- Data Linkage Learning Labs
  - Annapolis and Salt Lake City 2018
- MV PICCS Update
  - February 2018
- NGA Road Map for States
  - February 2018
- Impaired Driving Summit
  - Ohio 2019
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.
Extra Slides
<table>
<thead>
<tr>
<th>Rank</th>
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<th>10-14</th>
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<th>25-34</th>
<th>35-44</th>
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<th>55-64</th>
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<th>Total</th>
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<td>Unintentional Injury 1,267</td>
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<td>Short Gestation 3,749</td>
<td>Congenital Anomalies 424</td>
<td>Malignant Neoplasms 418</td>
<td>Suicide 517</td>
<td>Suicide 6,252</td>
<td>Suicide 7,946</td>
<td>Malignant Neoplasms 10,000</td>
<td>Heart Disease 32,658</td>
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<td>Maternal Pregnancy Comp. 1,432</td>
<td>Malignant Neoplasms 325</td>
<td>Congenital Anomalies 188</td>
<td>Malignant Neoplasms 437</td>
<td>Homicide 4,905</td>
<td>Homicide 5,486</td>
<td>Heart Disease 10,401</td>
<td>Unintentional Injury 24,461</td>
<td>Chronic Low Respiratory Disease 136,139</td>
<td>Unintentional Injury 189,936</td>
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<td>SIDS 1,303</td>
<td>Homicide 303</td>
<td>Homicide 154</td>
<td>Congenital Anomalies 191</td>
<td>Malignant Neoplasms 1,374</td>
<td>Heart Disease 3,681</td>
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<td>Suicide 8,501</td>
<td>Chronic Low Respiratory Disease 18,957</td>
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<td>Unintentional Injury 1,317</td>
<td>Heart Disease 127</td>
<td>Heart Disease 75</td>
<td>Homicide 178</td>
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<td>Cerebrovascular 140,383</td>
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<td>Placenta Cord Membranes 643</td>
<td>Influenza &amp; Pneumonia 104</td>
<td>Influenza &amp; Pneumonia 62</td>
<td>Heart Disease 104</td>
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<td>Bacterial Sepsis 682</td>
<td>Cerebrovascular 66</td>
<td>Chronic Low Respiratory Disease 59</td>
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<td>Cerebrovascular 41</td>
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<td>Influenza &amp; Pneumonia 62</td>
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<td>Respiratory Disease 440</td>
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<td>Septicemia 33</td>
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<td>HIV 513</td>
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<td>Neonatal Hemorrhage 379</td>
<td>Perinatal Period 42</td>
<td>Benign Neoplasms 31</td>
<td>Benign Neoplasms 31</td>
<td>Complicated Pregnancy 188</td>
<td>Complicated Pregnancy 512</td>
<td>HIV 831</td>
<td>Homicide 2,725</td>
<td>Nephritis 5,671</td>
<td>Parkinson’s Disease 31,177</td>
<td>Suicide 47,173</td>
</tr>
</tbody>
</table>

# 10 Leading Causes of Injury Deaths by Age Group Highlighting
Unintentional Injury Deaths, United States - 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>&lt;1</th>
<th>1-4</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Unintentional MV Traffic: 90</td>
<td>Homicide Unspecified: 129</td>
<td>Unintentional Drowning: 64</td>
<td>Suicide Firearms: 4,391</td>
<td>Homicide Firearm: 4,594</td>
<td>Suicide Firearms: 3,937</td>
<td>Suicide Firearm: 4,219</td>
<td>Suicide Fall: 5,996</td>
<td>Suicide Unspecified: 36,338</td>
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<tr>
<td>4</td>
<td>Homicide Other Spec., Classifiable: 78</td>
<td>Unintentional Suffocation: 82</td>
<td>Suicide Suffocation: 126</td>
<td>Suicide Firearms: 4,391</td>
<td>Suicide Firearms: 4,594</td>
<td>Suicide Suffocation: 2,562</td>
<td>Suicide Suffocation: 2,294</td>
<td>Suicide Suffocation: 2,760</td>
<td>Suicide Unspecified: 23,886</td>
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<td></td>
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<tr>
<td>5</td>
<td>Undetermined Suffocation: 56</td>
<td>Unintentional Drowning: 95</td>
<td>Suicide Suffocation: 110</td>
<td>Suicide Suffocation: 2,959</td>
<td>Suicide Suffocation: 3,458</td>
<td>Suicide Suffocation: 3,603</td>
<td>Suicide Suffocation: 1,604</td>
<td>Suicide Suffocation: 1,631</td>
<td>Suicide Suffocation: 3,820</td>
<td>Suicide Firearm: 14,542</td>
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<td>6</td>
<td>Unintentional Drowning: 43</td>
<td>Suicide Suffocation: 85</td>
<td>Unintentional Drowning: 15</td>
<td>Suicide Suffocation: 2,831</td>
<td>Suicide Suffocation: 3,603</td>
<td>Suicide Suffocation: 2,959</td>
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<td>Unintentional Unspecified: 37</td>
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<tr>
<td>8</td>
<td>Homicide Suffocation: 26</td>
<td>Suicide Drowning: 19</td>
<td>Suicide Suffocation: 39</td>
<td>Suicide Suffocation: 280</td>
<td>Suicide Suffocation: 2,831</td>
<td>Suicide Suffocation: 1,604</td>
<td>Suicide Suffocation: 1,631</td>
<td>Suicide Suffocation: 3,820</td>
<td>Suicide Firearm: 14,542</td>
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<td></td>
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<tr>
<td>9</td>
<td>Unintentional Natural/Environment: 34</td>
<td>Suicide Suffocation: 14</td>
<td>Suicide Suffocation: 39</td>
<td>Suicide Suffocation: 280</td>
<td>Suicide Suffocation: 2,831</td>
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About Us

The Colorado State Patrol, founded in 1935 is now responsible for patrolling 8,400 miles of highway and 57,000 miles of country roads.

There are approximately 830 sworn troopers and a total of 1,230 members supporting the mission of the Colorado State Patrol.

In 2018, 5.39B VMT travelled and 632 lives lost on Colorado’s roadways.

Presentation Agenda

Colorado Highlights
The Legalization of Marijuana
Legalization Strategy Challenges
Drug Recognition Expert Program
Colorado State Patrol Overall Summary

- Crash Causal Factors
  - Lane Violations
  - Speeding
  - Inattentive driving
  - Impairment
- Enforcement Philosophy
  - The CSP focuses on what we know through data analysis (when, where, how, etc.)
  - Public education
  - Community Engagement
- Traffic Safety as a Community Priority
  - Lack of consistent enforcement
  - Local law enforcement have conflicting priorities
  - Prosecutorial/judicial discretion creates differences
- Acknowledgement of Traffic Risk
  - *The public is more worried about the destination than the journey...*

Colorado Fatalities

- 2018 – 632
- 2017 – 648
- 2016 - 609
Legalization Strategy Challenges

The legalization of marijuana has presented multiple challenges for Colorado law enforcement.

**Cultural Tolerance**
- Alcohol impairment is socially unacceptable when driving, however, drug impairment does not share the same sentiment.
- Public education campaign is a necessary component – fact based not agenda driven and bias free.
- Understanding the increase in poly substance use and the effects on traffic safety.

**Data Collection**
- Lacked good data to add to the conversation on how legalization has impacted impaired driving and traffic safety.
- Can not compare now vs. then.
- Small sample experiential blood testing on adjudicated cases, 72% positive for additional substance.

**Testing & Enforcement**
- Improving toxicology processes.
- Struggle with data collection, proactive strategy development.
- Scientific determination of impairment levels (marijuana).
Drivers Testing Positive for Cannabinoids, 2013-18

Source: Colorado Department of Transportation, Data Intelligence Group, Toxicology Data (2019).
Note: Numbers are based on toxicology results where at least one driver was tested for drugs after a crash. See Table 1 for number and percent of drivers tested each year. The presence of a cannabinoid does not necessarily indicate recent use of marijuana or impairment.
DRE & ARIDE Programs

• Early in Legalization
  • Lack of education in law enforcement and judicial system
  • Lack of confidence in detection and prosecution of an impaired driver

• Advancement of ARIDE training
  • All troopers trained
  • More troopers certified as DRE’s
  • Impaired driving is having a more significant role with basic and continuing education
  • Arrests have been increasing over the years
    • Why? More impaired drivers or LE is better trained?

• Court System Needs
  • Focused effort to train judiciary and prosecution on process for detection and statutory framework.
    • Two choices (per se level of impairment based on active substance or leave law open that a trained officer can articulate level of impairment).
    • Colorado’s third option - chose presumptive inference, challenge
  • Per se problems - science doesn’t agree on impairment threshold, substances are different
COLONEL MATTHEW C. PACKARD
CHIEF, COLORADO STATE PATROL

MATTHEW.PACKARD@STATE.CO.US
Addressing the Public Health Crisis on our Roads

Dan Chen
Vice President and General Manager
3M Transportation Safety Division

August 28, 2019
Engineering Approaches

High performance technologies for cost effective safety improvements

Brighter Traffic Signs

Studies have found that where more-visible signs are installed, crash numbers have fallen

25% to 46%

In three to six years¹

Visible Road Markings

Brighter road markings resulted in crash reductions of up to

28% | 25%

Dry conditions² Wet reflective markings in wet conditions³

Fluorescent Devices

Regardless of available light, highly-conspicuous fluorescent materials are recognized at

Greater Distances

With more accurate color perception³

¹Ripley, D.A., Howard R. Green Company, ITE A804H313, 2005
²Texas A&M Transportation Institute, 2014; U.S. DOT/FHWA, 2015
³Texas A&M Transportation Institute, TX-00/2962-S, Evaluation of Fluorescent Orange Signs, 2000
Cost Effective Safety Improvements at Work

Colorado DOT Lane Delineation
- Increasing lane delineation in daylight hours
- Increase skip lines from 4” to 6”
- Move away from traditional contrast PMs to “shadow” PMs
- Lower life cycle costs

South Carolina Intersection Safety Program
- FHWA Focus State Program to address intersection safety
- 2000 intersections; $6,200 average cost per intersection
- FHWA and SC calculated a 16 to 1 cost benefit ratio

MassDot RPM and other markings to all weather solutions
- Replacement of raised pavement markers with all weather tape and elements
- Move to 4”x2 ft tape skips and all weather elements for edge lines
- Reduced life cycle cost of markings
Transportation Trends
The future of road safety

Connected-Automated Vehicles

Urban Mobility
Thank you
Addressing the Public Health Crisis on our Roads

Moderator:
- Garrett Eucalitto, Program Director, NGA

Speakers:
- Erin Sauber Schatz, PhD, MPH, Team Lead, Transportation Safety Team, Centers for Disease Control & Prevention
- Colonel Matthew Packard, Chief of the Colorado State Patrol
- Daniel Chen, VP and GM, Traffic Safety Division, 3M

#WeTheStates