A Safe System Approach: In the Real World
A Rural Perspective

Presented by: Jaime Sullivan, Director, National Center for Rural Road Safety
Key Takeaways for Today

- Identify the importance of safety culture in applying the Safe System Approach
- View the 5 Safe System elements from a rural perspective
- List examples and resources being used in rural areas

Graphic Source: FHWA
Importance of Safety Culture in Applying the Safe System Approach

Traffic Safety Culture is our foundation.

The Safe System Approach is our framework.

Zero is our goal.

Graphic Source: ARA
Linking Organizational Safety Culture to SSA

Organizational Safety Culture

the shared beliefs (including values, assumptions, etc.) of an organization which affect behaviors related to safety.

Safe System Principles

1. Death & serious injury is unacceptable
2. Humans make mistakes
3. Humans are vulnerable
4. Responsibility is shared
5. Safety is proactive
6. Redundancy is crucial

Graphic Source: FHWA
SSA: A Holistic Approach to include in all Processes

Rural Perspective

- Systemic Safety Analysis
- Road Safety Audits
- Local Road Safety Plans
- Safety Coalitions

Graphics Source: FHWA

https://www.youtube.com/watch?v=1Gtz0qjPx0M

https://safety.fhwa.dot.gov/LRSPDIY/
Safe Road User Element
A Rural Perspective

• Variety of road users
  • Bicyclists and pedestrians
  • Horse and buggies
  • Agricultural equipment
  • Motorcycles
  • Tourists unfamiliar with the area
  • Aging population

• Different perceptions/safety mindset

Photo Source: Jaime Sullivan, WTI
Safe Road User Element
Rural Resources & Examples

https://findmedriving.com/


https://wtsc.wa.gov/programs-priorities/tribes/

https://ruralsafetycenter.org/resources/list/guidance-on-growing-traffic-safety-culture/
Safe Vehicle Element
A Rural Perspective & Examples

• Personal vehicles
  • Drivers 70 and older tend to drive older, smaller vehicles not equipped with important safety features (IIHS)

• Leveraging connected and automated vehicle (CAV) technology to improve safety
  • WY connected vehicle pilot
  • CO autonomous traffic mobile attenuator truck
  • MO real-time digital warning system on motorist assist vehicles

<table>
<thead>
<tr>
<th>Active Safety</th>
<th>Passive Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces the chance of a crash occurring</td>
<td>Protective systems for when crashes occur</td>
</tr>
<tr>
<td>• Lane departure warnings</td>
<td>• Seatbelts</td>
</tr>
<tr>
<td>• Lane keeping assist</td>
<td>• Airbags</td>
</tr>
<tr>
<td>• Forward collision warnings</td>
<td>• Crumple zones</td>
</tr>
<tr>
<td>• Autonomous emergency braking</td>
<td>• Collapsible steering column</td>
</tr>
<tr>
<td>• Pedestrian detection</td>
<td></td>
</tr>
<tr>
<td>• Backup camera</td>
<td></td>
</tr>
<tr>
<td>• Antilock brakes</td>
<td></td>
</tr>
<tr>
<td>• Electronic stability control</td>
<td></td>
</tr>
</tbody>
</table>

Graphic Source: FHWA
Safe Speed Element
A Rural Perspective

• Not about universally reducing speeds

• Designing to meet user expectancies
  • Self-explaining roads
  • Self-enforcing roads

• Matching speed appropriate to the road conditions that exist
  • Vulnerable road users
  • Curves
  • Tourist areas
  • Weather

Some roads are engineered to accommodate higher speeds …

… and others not.
Safe Speed Element
Rural Resources & Examples

Speed Feedback Signs

Roundabouts

Variable Speed Limits

Photo Sources: Neil Hetherington, WTI (left), Jaime Sullivan, WTI (Center), and FHWA (right)
Safe Road Element
A Rural Perspective

Photo Sources: Neil Hetherington and Jaime Sullivan, WTI
“Safe Roads” is a continuum – not an absolute

• The aim is to design and operate roads to continuously approach toward creating a Safe System by implementing features appropriate for the intended and actual road use and speed environment

• Examples include:
  • Minimizing instances of conflict (for all users)
  • Forgiving roadway and roadsides relative to the speed environment

Source: FHWA
Safe Road Element
Rural Resources & Examples

**Keep vehicles in their lane**
- Improve curve delineation
- Friction treatments in curves and other spot locations
- Edge line, shoulder & center line rumble strips

**Reduce the potential for crashes**
- SafetyEdge™
  - Maintained clear zones
  - Traversable roadside slopes

**Minimize crash severity**
- Breakaway Features
  - Signs & Luminaire Supports
  - Utility Poles
- Barriers to Shield Obstacles
  - Trees and Shrubbery
  - Other Fixed Objects
  - Slopes

[https://safety.fhwa.dot.gov/FoRR RwD/RwDPocketGuide.pdf](https://safety.fhwa.dot.gov/FoRR RwD/RwDPocketGuide.pdf)

Driving FoRRwD to a Safe System ([https://youtu.be/rpXxLSbmtUO](https://youtu.be/rpXxLSbmtUO))

Graphic Sources: FHWA
Post-Crash Care Element
A Rural Perspective & Resources

- Golden hour
- Identification and notification of crash
- Large geographic regions
- Regionalizing hospitals

Vital post-crash actions include:

First responders | Medical care | Crash investigation | Traffic incident management | Justice

Graphic Source: FHWA (post-crash)

https://ruralsafetycenter.org/resources/rural-its-toolkit/
Redundancy is Crucial

The “Swiss Cheese Model” of redundancy creates layers of protection

Death and serious injuries only happen when all layers fail

Post-crash care
Safe roads
Safe speeds
Safe vehicles
Safe road users

Adapted from James Reason’s model for analyzing accident causation

Image Source: FHWA
Resources to Explore on Your Safe System Journey

National Center for Rural Road Safety
www.ruralsafetycenter.org

Road to Zero

Toward Zero Deaths & Traffic Safety Culture
https://www.towardzerodeaths.org/traffic-safety-culture/

Vision Zero Network
https://visionzeronetwork.org/

Center for Health and Safety Culture
https://chsculture.org/

FHWA’s Safe System Materials
https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

ITE’s Safe System Material
https://www.ite.org/technical-resources/topics/safe-systems/

Road to Zero’s Double Down on What Works Page
https://www.nsc.org/road/resources/road-to-zero/doubling-down-on-what-works

FHWA Proven Safety Countermeasures
https://safety.fhwa.dot.gov/provencountermeasures/

NHTSA’s Countermeasure that Work
https://rosap.ntl.bts.gov/view/dot/57466

FoRRRwd
https://safety.fhwa.dot.gov/FoRRRwd/

LRSP DIY Site
https://safety.fhwa.dot.gov/LRSPDIY/

Rural Opportunities to Use Transportation for Economic Success (ROUTES)
https://www.transportation.gov/rural
Contact Information

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

Jaime Sullivan at Jaime.sullivan2@montana.edu

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

(406) 994-7368 or info@ruralsafetycenter.org

http://ruralsafetycenter.org/
Please evaluate this presentation using the Lifesavers Conference Mobile App

SELECT SESSIONS ICON

SELECT APPLICABLE TRACK

SELECT APPLICABLE WORKSHOP

CLICK SESSION EVALUATION BUTTON (OR) CLIPBOARD ICON