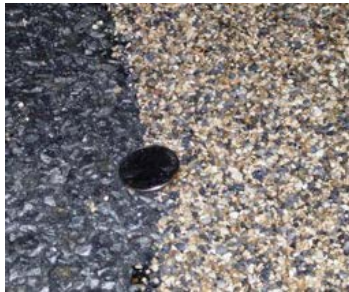




U.S. Department  
of Transportation  
**Federal Highway  
Administration**



**Michael Griffith**  
**Federal Highway Administration**  
**Office of Safety**

**Rural Safety Summit**

# Local & Rural Road Projects

## Types of Technical Assistance

- Training
- Data Collection and Analysis
- Local Road Safety Plans
- Road Safety Audits
- Curve Crash Analysis and Countermeasure Identification



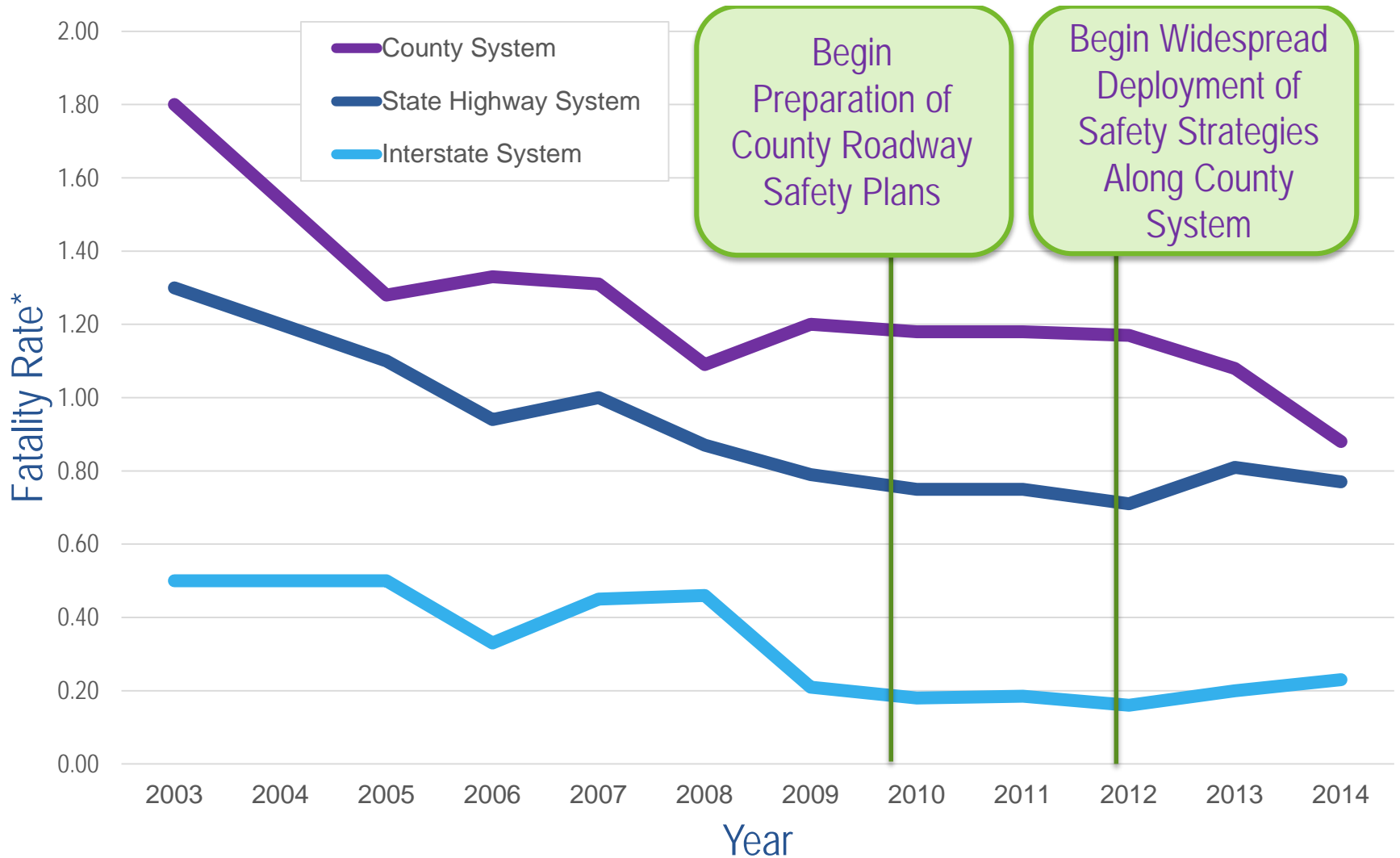
# Local Road Safety Plans (LRSPs)

- Twenty-five counties from six states were engaged in first pilot. Currently completing final LRSP plans.
- A second pilot has begun– Sixteen counties from three states. Just completed in-person workshop. Series of webinars will take place in the next few months and another workshop at NACE Conference, April 2019.



Photo credit:  
FHWA

# Local Road Safety Plans - Minnesota Results



# Videos targeting Local Rural and Tribal Practitioners

- Unpaved Road Safety
- Enhanced Delineation on Horizontal Curves
- Speed management
- Systemic Approach for Stop-Controlled Intersections
- Longitudinal pavement markings
- Multi-modal



# Human Factors Primer for Local Agencies

- To provide direction on the use of human factors elements to consider in the design and implementation of safety projects
- To use as a complement to existing roadway design and operations documents



# Unpaved Road Safety

In 2017, 567 Fatal Crashes on Unpaved Roads occurred.

Soliciting for Unpaved Road Pooled Fund Study

<http://www.pooledfund.org/Details/Solicitation/1419>

# Every Day Counts – Round 5

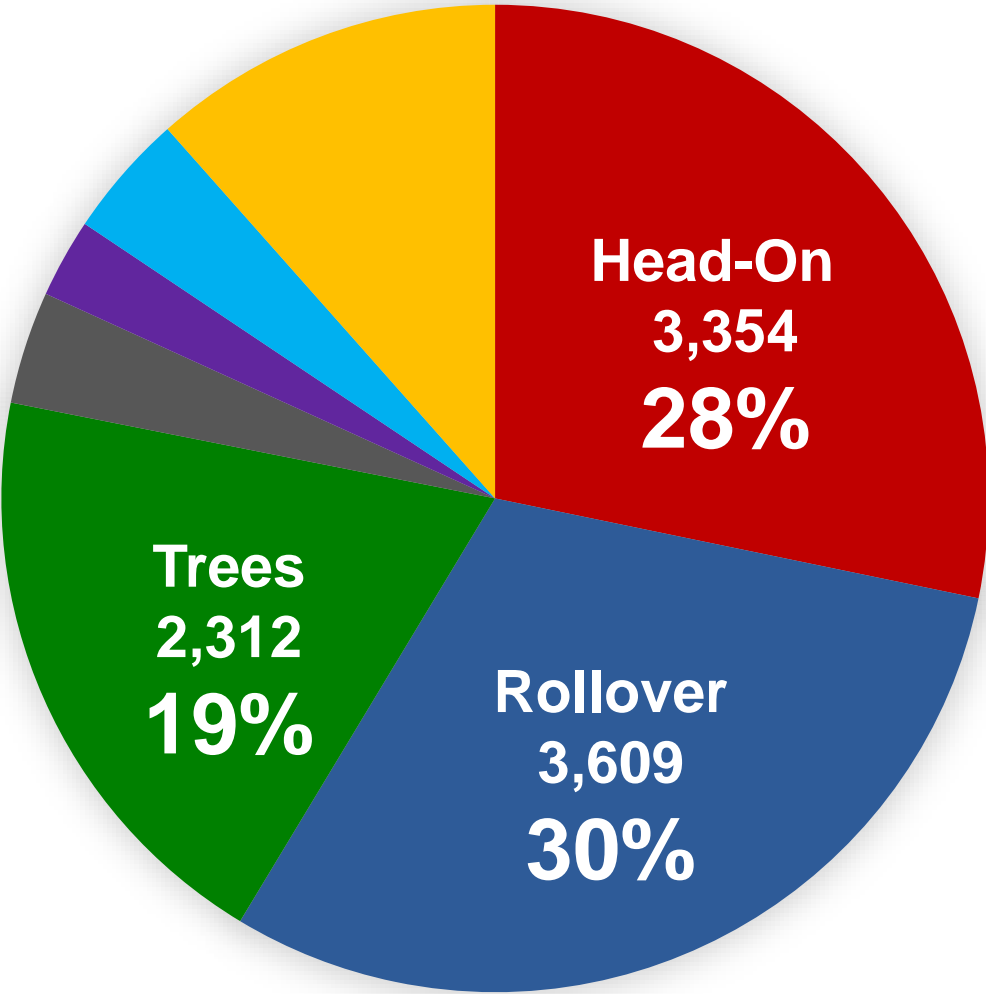
Reducing Rural Roadway Departure Crashes





# Rural Roadway Departure Fatalities

by Most Harmful Event



# All public roads approach is needed

State Roads = 55% of Rural Rwd fatalities

Local Roads= 45% of Rural Rwd fatalities

# Systemic Safety Improvements

## Systemic

- Based on Risk
- Correlated with particular severe crash types

An improvement that is widely implemented based on high-risk roadway features that are correlated with particular severe crash types.



<http://safety.fhwa.dot.gov/systemic/index.htm>

## Roadway Departure Objectives

1<sup>st</sup> - Keep vehicles on the road



2<sup>nd</sup> - Reduce the potential for crashes



3<sup>rd</sup> - Minimize the severity

# 1<sup>st</sup> - Keep vehicles on the road

Improved curve delineation

Friction treatments in curves and other spot locations

Edge line, shoulder & center line rumble strips.



## 2<sup>nd</sup> - Reduce the potential for crashes

SafetyEdge<sup>SM</sup>

Maintained clear zones

Traversable roadside slopes



Photo credit: FHWA

# 3<sup>rd</sup> - Minimize the severity

## Breakaway Features

- Signs and luminaire supports
- Utility poles

## Barriers to shield obstacles including:

- Trees and shrubbery
- Other fixed objects
- Slopes





## Version 3.0 of Proven Safety Countermeasures (PSC*i*)

1. Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections
2. Reduced Left-Turn Conflict Intersections
3. Roadside Design Improvements at Curves
4. Leading Pedestrian Intervals
5. Local Road Safety Plans
6. USLIMITS2



## PSCi – Intersections



Left- and Right-Turn Lanes at Two-Way Stop-Controlled Intersections



Backplates with Retroreflective Borders



Corridor Access Management



Yellow Change Interval



Roundabouts



Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections



Reduced Left-Turn Conflict Intersections

## New PSCi – Intersections

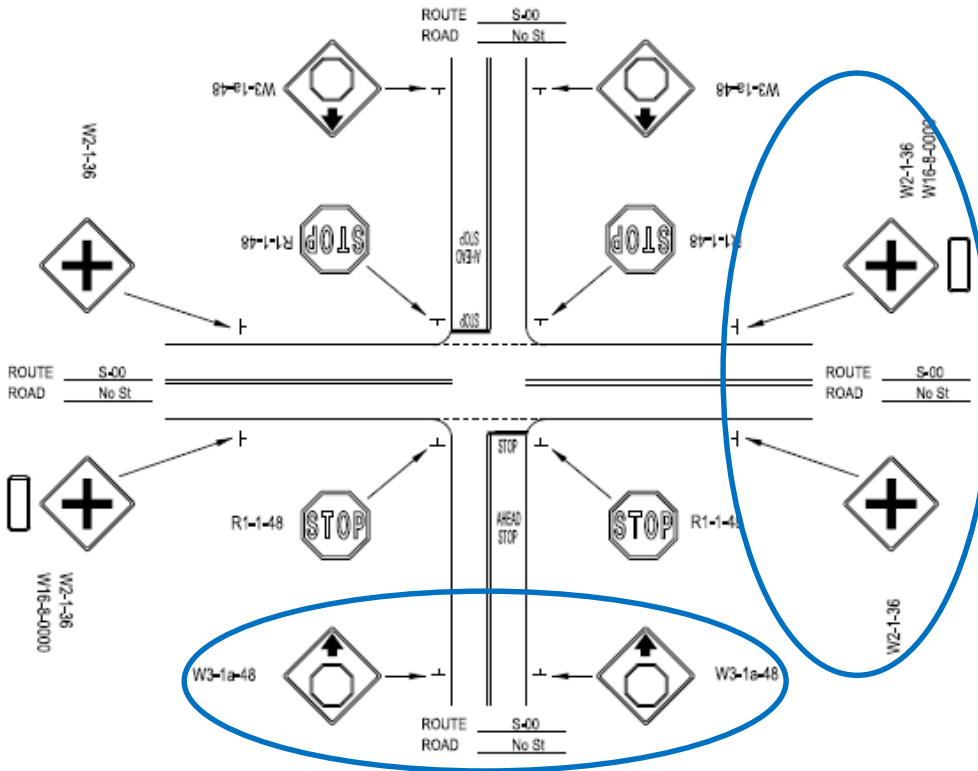
### Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections

- Mostly signing & pavement marking enhancements.
- Strategy relies on cost economy and treatment saturation.



**Average  
Benefit/Cost  
Ratio  
12:1**

# Systemic Approach for Stop Intersections



## Recommended CMFs from FHWA-HRT-17-086

	Total	Fatal & Injury	Rear End	Right Angle	Nighttime
CMF	0.917	<b>0.899</b>	0.933	0.941	0.853

## New PSCi – Intersections

### Reduced Left-Turn Conflict Intersections (MUT and RCUT)

- Geometric designs that alter how left-turn movements occur.
- Simplify and reduce or modify conflicts related to turning.
- Proven safety and operational benefits.

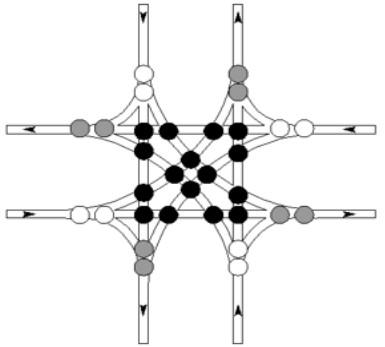
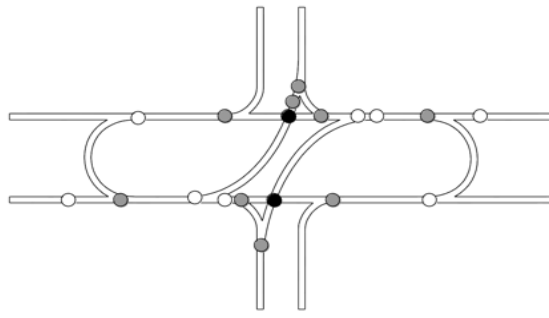


Source: FHWA



Source: FHWA

# Restricted Crossing U-Turn

Vehicle-Vehicle Conflict Points	<u>Conventional</u>	<u>RCUT</u>
<ul style="list-style-type: none"> <li>● Crossing</li> <li>● Merging</li> <li>○ Diverging</li> </ul>		
Crossing	16	2
Merging	8	6
Diverging	8	6
Total	32	14

Sources: FHWA-SA-14-069, FHWA-SA-14-070

## RCUT Safety Performance

54% decrease F&I Crashes.

35% decrease All Crashes.



Source: Wisconsin DOT

## PSCi – Roadway Departure



Longitudinal Rumble Strips  
and Stripes along Two-Lane  
Highways



Median Barrier



SafetyEdge<sup>SM</sup>



Enhanced Delineation and  
Friction for Horizontal  
Curves



Roadside Design  
Improvements at Curves

### SafetyEdge<sup>SM</sup> CMFs

Drop-Off	0.655
ROR	0.790
Head-on	0.813
F+I	0.892
Total	0.989



## New PSCi – Roadway Departure

### Roadside Design Improvements at Curves

Increase clear zone at curves.

- Recommended by AASHTO RDG.
- Proven to reduce crashes.

Improve traversability.

- Adding or widening shoulders in curves.
- Flatter slopes at curves than in tangent sections.

Reconsider when to install barrier

- Reduce severity.



## New PSCi – Crosscutting Strategies

### Local Road Safety Plans

- Developing an LRSP is an effective strategy to improve local road safety.
- Local roads experience 3X the fatality rate of the Interstate Highway System.





# <http://safety.fhwa.dot.gov/provencountermeasures>

- 1-pager marketing flyers.
- Slides from webinar and link to recorded session.
- Links to additional FHWA resources for each item.

### PROVEN SAFETY COUNTERMEASURES

#### Corridor Access Management

Corridor management refers to the design, implementation, and control of any and all public-private roadway. This includes infrastructure such as other roads, and driveway that cross adjacent property. The corridor access management program is a comprehensive approach to the design, construction, and maintenance of the roadway and its associated infrastructure. It includes the design and construction of the roadway and its associated infrastructure, as well as the management of the roadway and its associated infrastructure.

The following are some of the benefits of Corridor Access Management:

- Increased safety
- Reduced congestion
- Improved roadway condition
- Increased revenue
- Improved roadway condition
- Increased revenue

**SAFETY BENEFITS:**

- **5-23%** Reduction in total crashes along 1-lane rural roads
- **25-31%** Reduction in injury and total crashes along urban arterials

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>

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#### Roadside Design Improvements at Curves

Roadside design improvements at curves are a critical component of roadway safety. These improvements include measures such as widening shoulders, installing guardrails, and improving drainage. These measures help to reduce the risk of crashes and improve the overall safety of the roadway.

**SAFETY BENEFITS:**

- **27%** of all fatal crashes at curve
- **80%** of all fatal crashes at curve are preventable

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>

### PROVEN SAFETY COUNTERMEASURES

#### Local Road Safety Plans

Local road safety plans (LRSPs) provide a framework for the design, implementation, and maintenance of roadway safety programs. These plans are developed by local governments and are tailored to the specific needs and conditions of their local roadways.

**THE LRSP DEVELOPMENT PROCESS:**

1. Leadership
2. Assessment
3. Strategy
4. Implementation
5. Evaluation and Update

**Local road safety plans (LRSPs) provide:**

- A framework for the design, implementation, and maintenance of roadway safety programs
- Tailored to the specific needs and conditions of local roadways
- A process for the design, implementation, and maintenance of roadway safety programs
- Tailored to the specific needs and conditions of local roadways

**Local road safety plans (LRSPs) provide:**

- A framework for the design, implementation, and maintenance of roadway safety programs
- Tailored to the specific needs and conditions of local roadways

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#### Medians and Pedestrian Crossing Islands in Urban and Suburban Areas

Medians and pedestrian crossing islands are important safety features for urban and suburban roadways. These features help to reduce the risk of crashes and improve the overall safety of the roadway.

**SAFETY BENEFITS:**

- **46%** Reduction in pedestrian crashes
- **56%** Reduction in pedestrian crashes

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>

### PROVEN SAFETY COUNTERMEASURES

#### SafetyEdge™

SafetyEdge™ is a technology that helps to reduce the risk of crashes and improve the overall safety of the roadway. It is a type of edge treatment that is designed to be more forgiving than traditional edge treatments.

**SAFETY BENEFIT:**

- **11%** Reduction in fatal and injury crashes

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>

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#### USLIMITS2

USLIMITS2 is a software tool that helps to determine the appropriate speed limit for a roadway. It is based on a variety of factors, including roadway characteristics, traffic volume, and crash history.

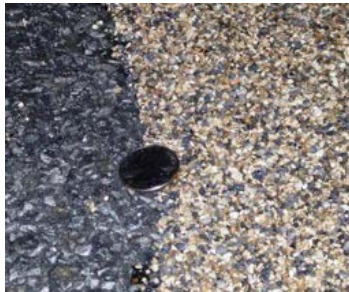
**SAFETY BENEFIT:**

- **50%** Reduction in crashes

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>



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**THANK YOU!**