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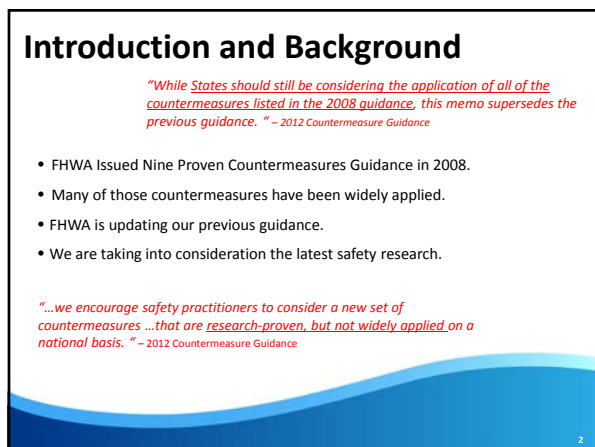
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## Data-Driven Safety Process

“...countermeasure selection should continue to be based on appropriate analytical techniques...”

- 2012 Countermeasure Guidance

Encourage States to Use Analytical Site-Specific Approaches (such as the Highway Safety Manual) and Systemic Planning Approaches to Make Safety Investment Decisions

- Conduct Appropriate Analysis of Quality Safety Data
- Use Evidence-Based Framework for Decision-Making
- Use the CMF Clearinghouse to Choose Appropriate Countermeasures
- Consider the Nine Countermeasures as Viable Options

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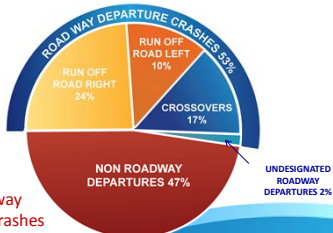
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## Addressing the **Roadway Departure** Focus Area

- Longitudinal Rumble Strips and Stripes on 2-Lane Roads
- Enhanced Delineation and Friction for Horizontal Curves
- Safety Edge<sub>SM</sub>



Roadway Departure Risk Management

1. Keep Vehicles on Roadway
2. Reduce Likelihood of Crashes
3. Minimize Severity

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## Enhanced Delineation and Friction for Horizontal Curves

- Low-cost treatments
- Includes signs and markings that help drivers safely negotiate curves or...
- Additional pavement friction to address geometric deficiencies



Safety Impacts:

- Vary based on application
- Up to 43% reduction of all fatal crashes

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## Longitudinal Rumble Strips and Stripes on 2-Lane Roads

- Alerts drivers with sound and vibration when vehicles cross the edge or center line.
- Reduction of Severe Crashes:
  - Rural Edge, Run Off Road: 36%
  - Rural Center, Head-ons: 44%
  - Urban Center, Head-ons: 64%



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## Safety Edge<sub>SM</sub>

- Consolidating the pavement edge into 30° shape during paving to provide stability for vehicles recovering from a roadway departure
- 6% reduction of total crashes
- B/C range: 4 to 63
- Implement as a standard practice for paving and resurfacing projects



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## Addressing the Intersection Focus Area:

- Roundabouts
- Corridor Access Management
- Backplates with Retroreflective Borders
- “Road Diet” (Roadway Reconfiguration)
- Pedestrian Hybrid Beacon



*“There are approximately 300,000 signalized intersections in the United States. About 1/3 of all intersection fatalities occur at these locations; resulting in roughly 2,300 people killed in a single year.”*

*– Roundabouts Fact Sheet*



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## Roundabouts

- Modern designs are safer and more efficient than old circles and rotaries
- Can reduce crashes resulting in injury or fatality by nearly 80%<sup>1</sup>
- Should be considered as part of corridor or intersection improvement projects
- Highly adaptable, proven in both low-speed urban and high-speed rural environments



<sup>1</sup> AASHTO Highway Safety Manual, Chapter 14

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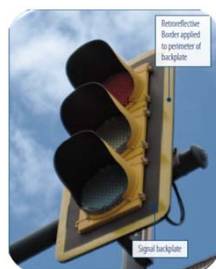
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## Backplates with Retroreflective Borders

- Retroreflective strip added around the border of a signal backplate
- Documented 15% reduction in crashes of all types and severities at urban signalized intersections<sup>1</sup>
- Consider as standard treatment for new and modernized signal projects, or as a systemic retrofit safety improvement



<sup>1</sup> CMF Clearinghouse

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## Corridor Access Management

- Involves the design, implementation and control of entry and exit points along a roadway
- Reducing access points along urban/suburban corridor can reduce injury and fatal crashes by about 25%<sup>1</sup>
- May be considered as a component of general corridor improvements or as its own project



<sup>1</sup> AASHTO Highway Safety Manual, Chapter 14

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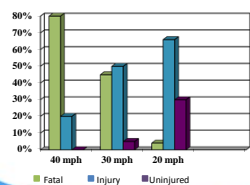
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## Addressing the Pedestrian

### Safety Focus Area

- Medians and Pedestrian Crossing Islands in Urban and Suburban Areas
- Pedestrian Hybrid Beacon
- “Road Diet” (Roadway Reconfiguration)



#### Pedestrian Safety Facts:

- Pedestrians represent over 12% of Highway Fatalities.
- Midblock locations account for over 70% of pedestrian fatalities.
- Over 80% of pedestrian fatalities hit by vehicles traveling at 40 mph or faster will die, while less than 10% die when hit at 20 mph or less.

13

## Pedestrian Hybrid Beacon

- Pedestrian-activated beacon located on the roadside or on mast arms over major approaches to an intersection.
- Follow guidance in MUTCD Chapter 4F.



Safety results:  
69% reduction in pedestrian crashes  
29% reduction in total crashes

14

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

- *Median* is between opposing lanes of traffic, excluding turn lanes (can be paint or concrete).
- Islands can be placed at intersections or midblock locations to separate crossing pedestrians from motor vehicles.
- Use in curbed sections of multi-lane roadways in urban areas with vehicular-pedestrian conflicts and med/high travel speeds.



Safety results:  
46% reduction in pedestrian crashes  
39% reduction in total crashes

15

## "Road Diet" (Roadway Reconfiguration)

- Conversion of four-lane undivided roadway into three lanes with two through-lanes and a center two way left turn.
- Best on Roadways with ADT of 20,000 or less.

Safety results:

29% reduction in all roadway crashes



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## Fact Sheets and Further Information

FHWA website:

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



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## Contacts for Further Information

Please Contact your FHWA Division Office; or,

Intersection Countermeasures:

Jeffrey Shaw, [jeffrey.shaw@dot.gov](mailto:jeffrey.shaw@dot.gov), (708) 283-3524.

Roadway Departure Countermeasures:

Cathy Satterfield, [cathy.satterfield@dot.gov](mailto:cathy.satterfield@dot.gov), (708) 283-3552.

Pedestrian Countermeasures:

Tamara Redmon, [tamara.redmon@dot.gov](mailto:tamara.redmon@dot.gov), 202-366-4077.

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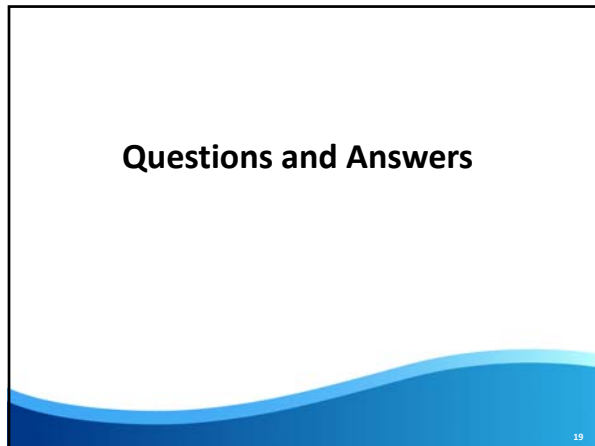
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