FHWA Proven Safety Countermeasures

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Introduction and Background

- FHWA issued Nine Proven Countermeasures Guidance in 2008
- Many of those countermeasures have been widely applied
- In 2012 the guidance was updated

"While Stores should still be considering the application of all of the countermeasures listed in the 2008 guidance, but not widely applied on a previous basis" – 2012 Countermeasure Guidance

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2012 FHWA Proven Countermeasures

	Focus Areas
1. Delineation and Friction for Horizontal Curves	Roadway Departure
2. Rumble Strips and Stripes on 2-Lane Roads	Roadway Departure
3. Safety Edge	Roadway Departure
~~4. Roundabouts~~	Intersection Corridor
5. Corridor Access Management	Intersection Corridor
6. Signal Backplates with Retroreflective Borders	Intersection Corridor
7. “Road Diet” (Roadway Reconfiguration)	Intersection Corridor
~~8. Pedestrian Hybrid Beacon~~	Pedestrian Safety
9. Medians and Pedestrian Crossing Islands in Urban and Suburban Areas	Pedestrian Safety

Data-Driven Safety Process

"…countermeasure selection should continue to be based on appropriate analytical techniques…"

- 2012 Countermeasure Guidance

Encourage States and local agencies 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 Proven Countermeasures as Viable Options

Roadway Departure Focus Area

Roadway D nagement

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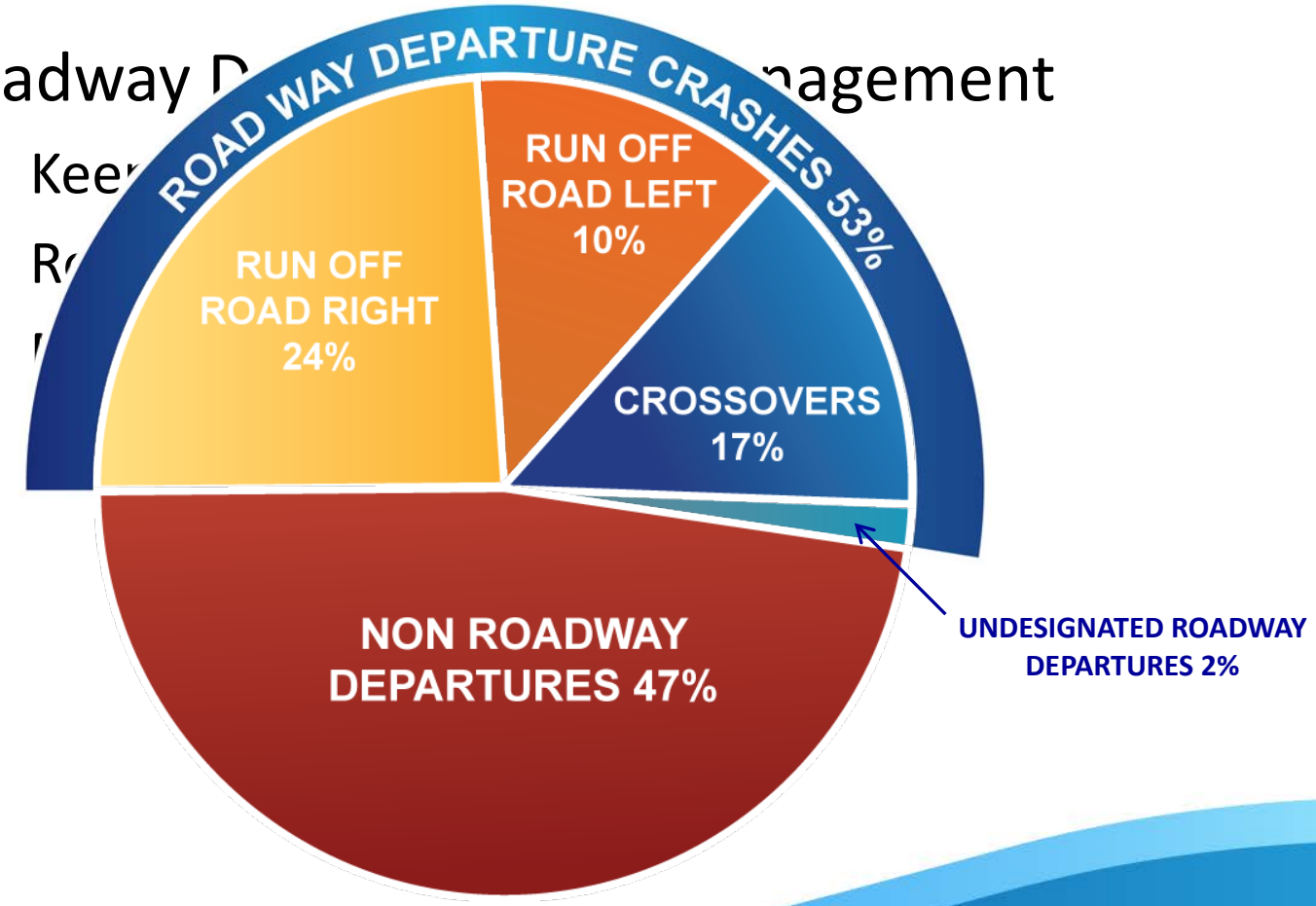


Enhanced Delineation and Friction for Horizontal Curves

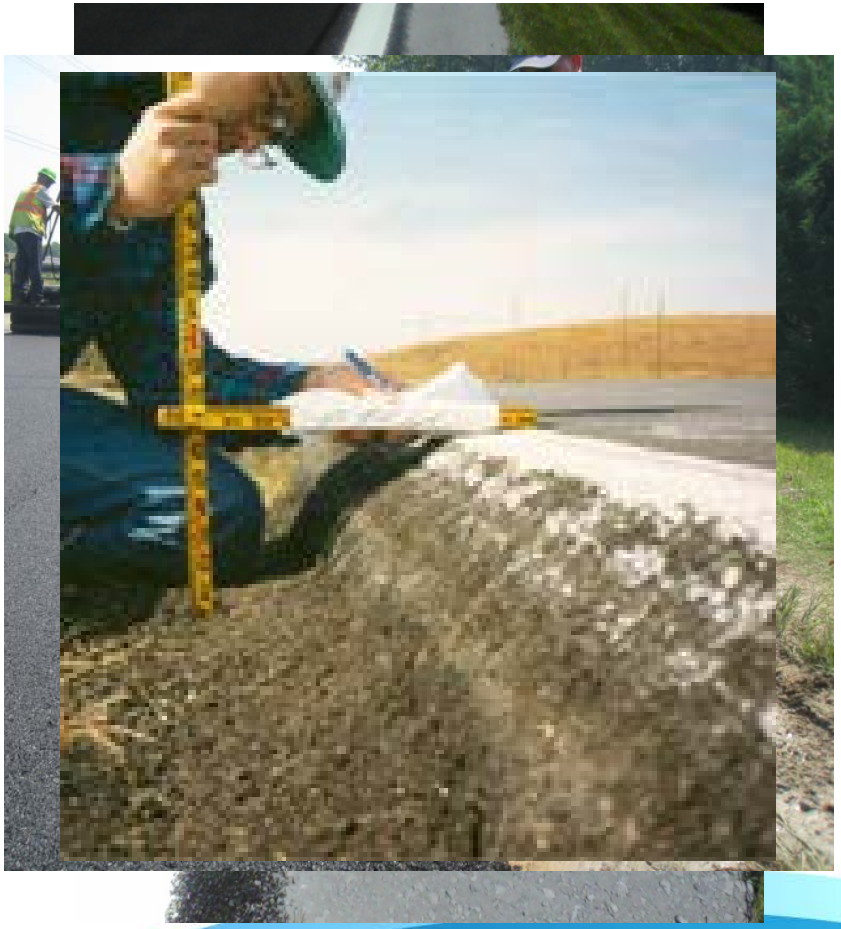
- Low-cost treatment
- Includes signs and markings that help drivers safely negotiate curves or…
- Additional pavement friction to address geometric deficiencies and low friction
- Safety benefits
  - Up to 43% reduction of all fatal crashes

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%

Safety Edge$_{SM}$

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



Intersection-Corridor Focus Area:

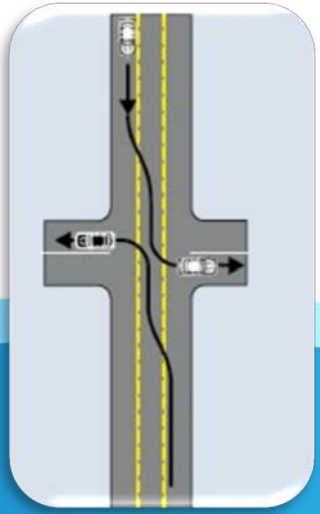
- Corridor Access Management
- Backplates with Retroreflective Borders
- “Road Diet” (Roadway Reconfiguration)
- Roundabouts

“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

Corridor Access Management

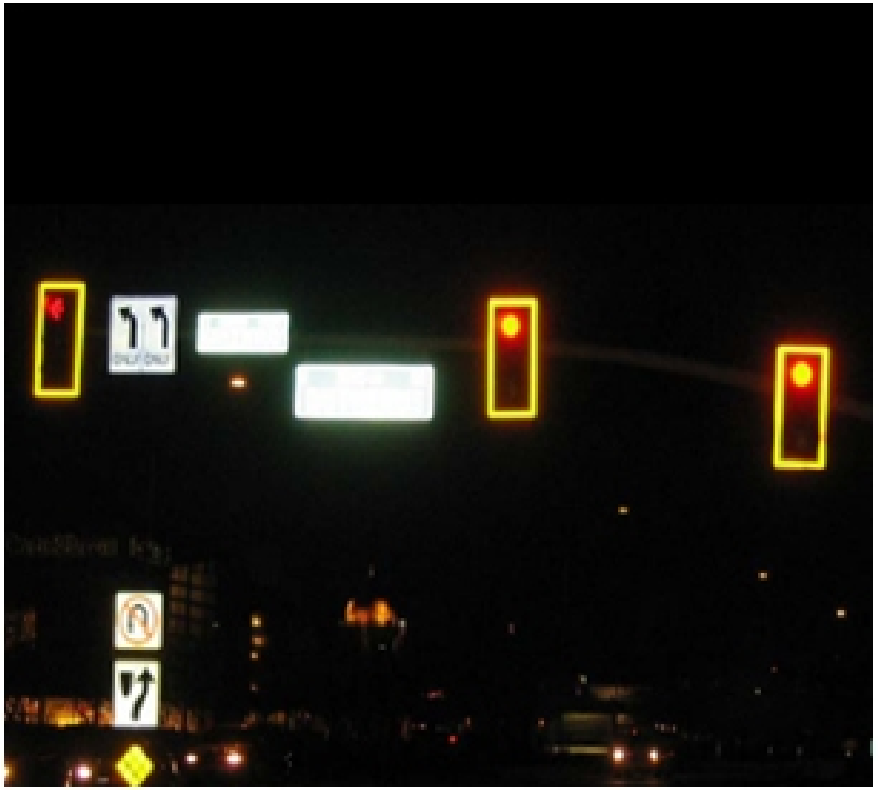
- Involves the design, implementation and control of entry and exit points along a roadway
- Reducing access points along urban/suburban corridor can reduce injury and fatal crashes by about 25%[1]
- May be considered as a component of general corridor improvements or as its own project



1. *AASHTO Highway Safety Manual, Chapter 14*

Backplates with Retroreflective Borders

- Retroreflective strip added



as a systemic retrofit safety improvement

1. *CMF Clearinghouse*

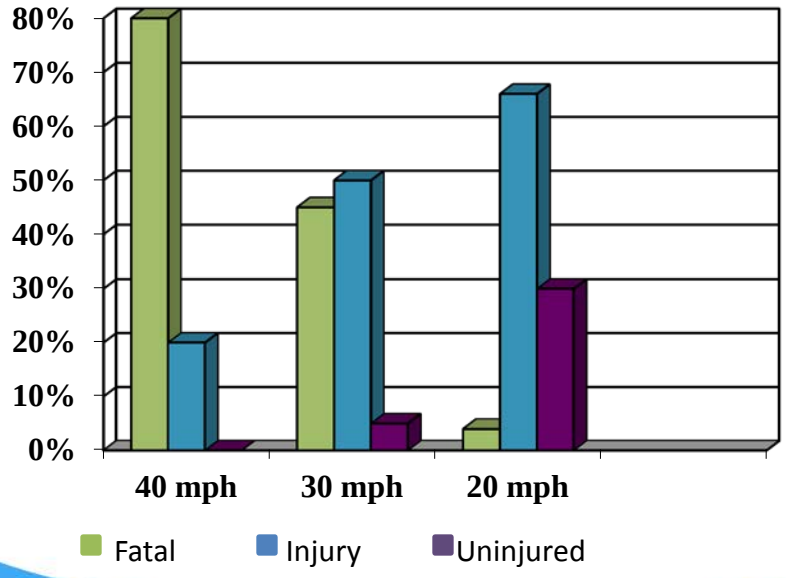
“Road Diet” (Roadway Reconfiguration)

- 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

Pedestrian Safety Focus Area

- Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



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.

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

Fact Sheets and Further Information

FHWA website:
http://safety.fhwa.dot.gov/provencountermeasures

Questions and Answers