Roadway Departure Safety Basics

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Fatalities in the USA
(2013 - 2015 Average)

National Average – 33,576 Fatalities

Data Source: NHTSA FARS
AASHTO Strategic Plan

Strategic Objective
Promote highway-related strategies to assist in cutting fatalities by half by 2030 with a vision towards zero fatalities.
Roadway Departure Fatalities Percent
(2013 - 2015 Average)

National Average RwD % = 54%

> 70% average
61% - 70% average
54% - 60% average
< 54% average
FHWA Roadway Departure Strategic Plan

Roadway Departure Fatalities by Most Harmful Event (FARS 2012-2014)

Nearly $\frac{3}{4}$ of Roadway Departure Fatal Crashes are from 3 crash types.

- **Rollover**: 4,947 (27%)
- **Head-on**: 4,572 (25%)
- **Trees**: 3,504 (19%)
Overturn Crashes

5,285
28%
Rollover

Rural Areas, 76%

≥ 50 MPH, 72%

Curves, 43%

Source: FARS 2010-2013
Opposite Direction Crashes

- Undivided, 83%
- Rural, 70%
- ≥ 50 MPH, 70%
- Curves, 31%
- Wet/Icy, 23%

Source: FARS 2010-2013

NCHRP Report 500, Volume 6
Reported that only 4.2% of head-ons involved a passing vehicle.
Fixed Object Fatal Crashes

Trees, Shrubs: 3,508
Signs, Poles, Signals: 876
Other Fixed Object: 967
Barriers: 1,180
Roadside Topography: 748

Trees are 48% of Fixed Object Fatalities

Source: FARS 2010-2013
Trees are 48% of Fixed Object Fatalities

- Rural, 67%
- Urban, 33%
- ≥ 50 MPH, 51%
- ≤ 45 MPH, 49%
- Curves, 46%

3,508 19% Trees

Source: FARS 2010-2013
So, why do drivers leave the road?

- Roadway Condition
- Collision Avoidance
- Vehicle Component Failure
- Driver Error
Crashes Caused by Various Factors: Systems Approach

- Roadway: 34%
- Vehicle: 12%
- Driver: 93%

Human is weakest link in this system, so we must design around human needs.

Example of a RwD Crash Map

• Look at Fatal Crashes plotted in rural San Diego County California over five years (2012 through 2016)
• Can you see a place that needs to be treated?
San Diego RD Fatal Collision Mapping for 2012
[Roadway Departure-Rural: non_state_highway]
San Diego RD Fatal Collision Mapping for 2013
[Roadway Departure-Rural: non_state_highway]
San Diego RD Fatal Collision Mapping for 2015
[Roadway Departure-Rural: non_state_highway]
San Diego RD Fatal Collision Mapping for 2016
[Roadway Departure-Rural: non_state_highway]
fatal crash locations are random
fatal crash types are predictable
Characteristics of Crashes

- Determine similarities along a roadway or corridor:
  - Geometry (e.g., straight vs. curves)
  - Speed (e.g., 35 mph vs. 60 mph)
  - Environment (e.g., trees, shade, clear zone)
  - ADT (e.g., 400 vs. 3,700)
  - Vehicle type (e.g., trucks, cars, motorcycles, bicyclists, pedestrians)
- Systemic: Applying throughout or system-wide coverage

- Consider applying proven countermeasures:
  - Rumble Strips
  - Signage
  - High Friction Surface Treatments
  - Enf./Ed.

- Proactive vs. Reactive
Questions and Discussion