



# Roadway Departure Safety Basics

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Office**

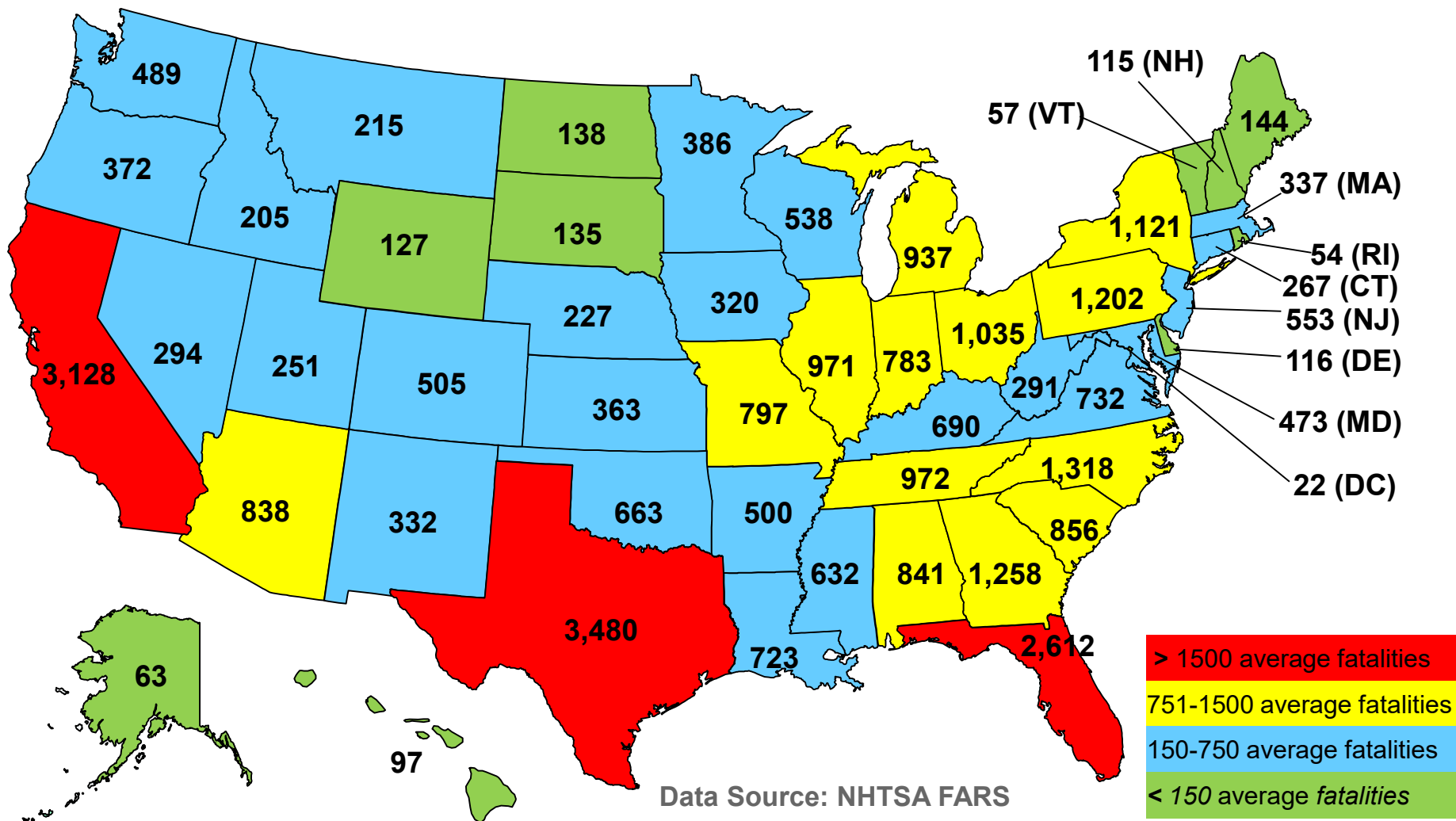
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Director, U.C. Berkeley, Safe  
Transportation Research and**



# Fatalities in the USA

(2013 - 2015 Average)

**National Average – 33,576 Fatalities**




# AASHTO Strategic Plan

## Strategic Objective

Promote highway-related strategies to assist in cutting fatalities by half by 2030 with a vision towards zero fatalities.

2010/Strategic Plan/2014



STANDING COMMITTEE ON HIGHWAYS

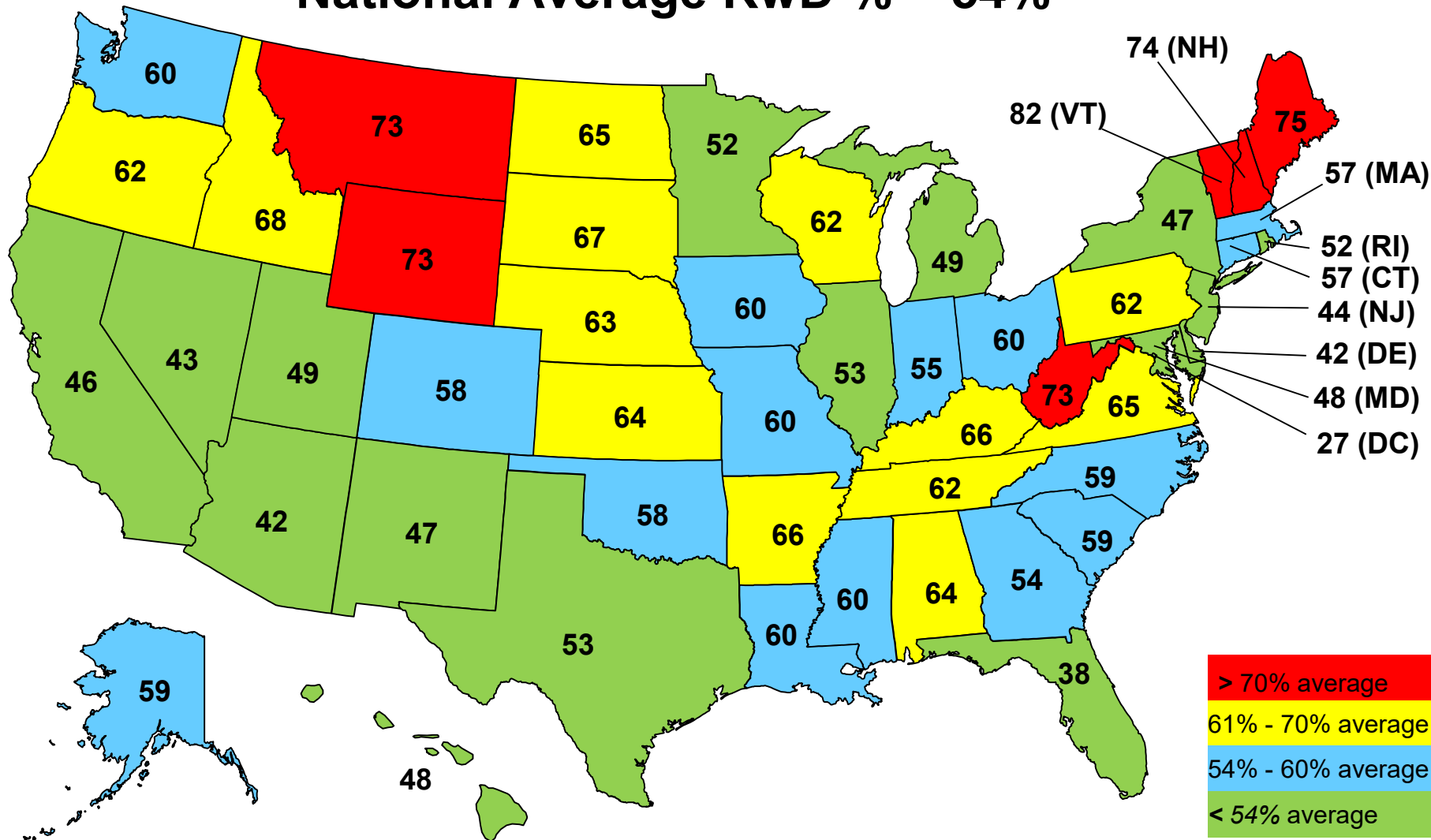
AASHTO  
THE VOICE OF TRANSPORTATION

1-3

# Roadway Departure Fatalities Percent

(2013 - 2015 Average)

National Average Rwd % = 54%

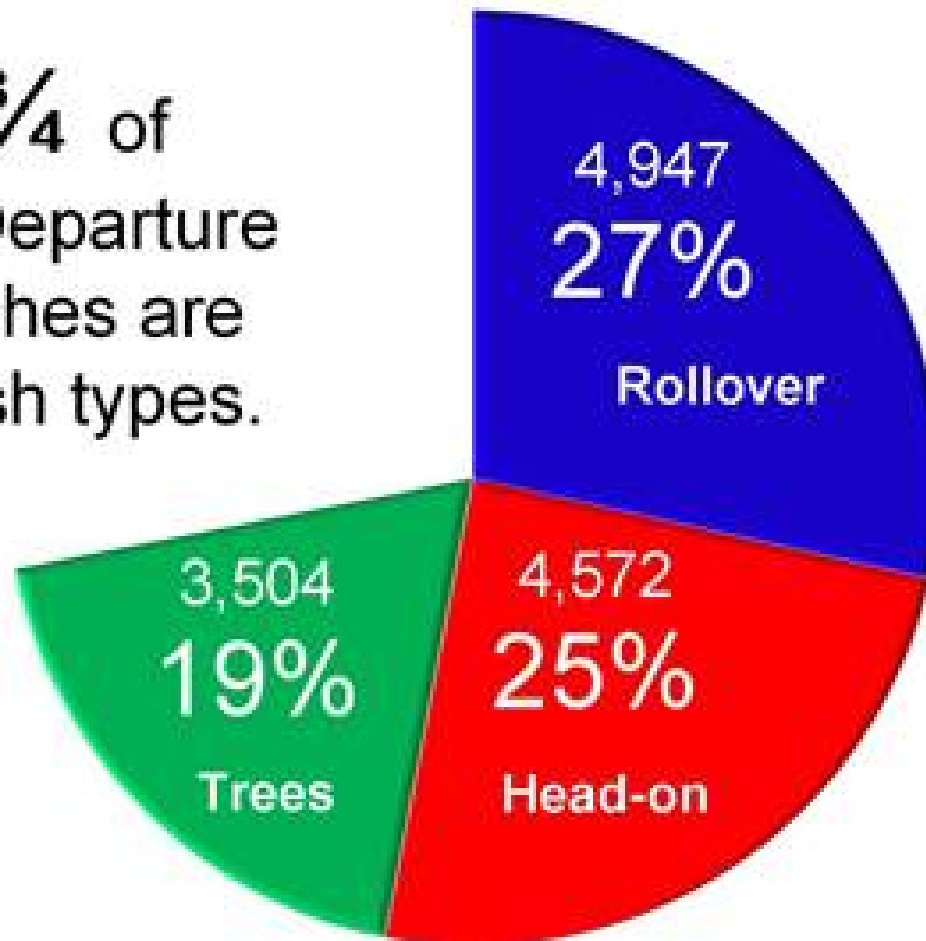




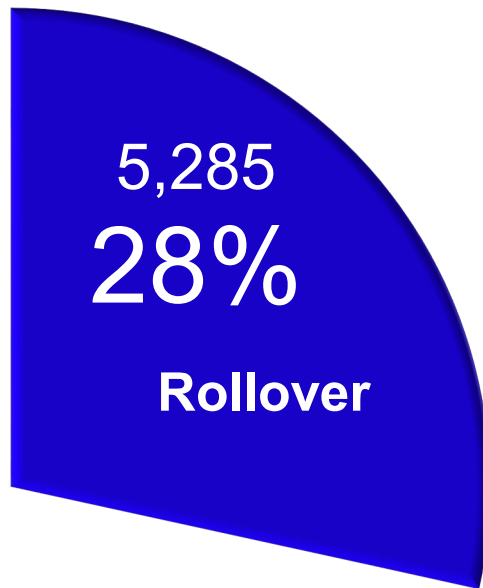
# FHWA Roadway Departure Strategic Plan

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

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



# Overturn Crashes



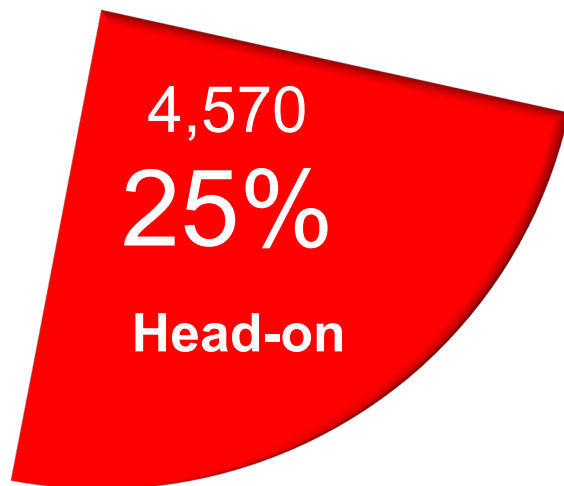
Rural  
Areas, 76%

$\geq 50$  MPH,  
72%

Curves,  
43%

Source: FARS 2010-2013

# Opposite Direction Crashes



Undivided,  
83%

Rural, 70%

≥ 50 MPH,  
70%

Curves,  
31%

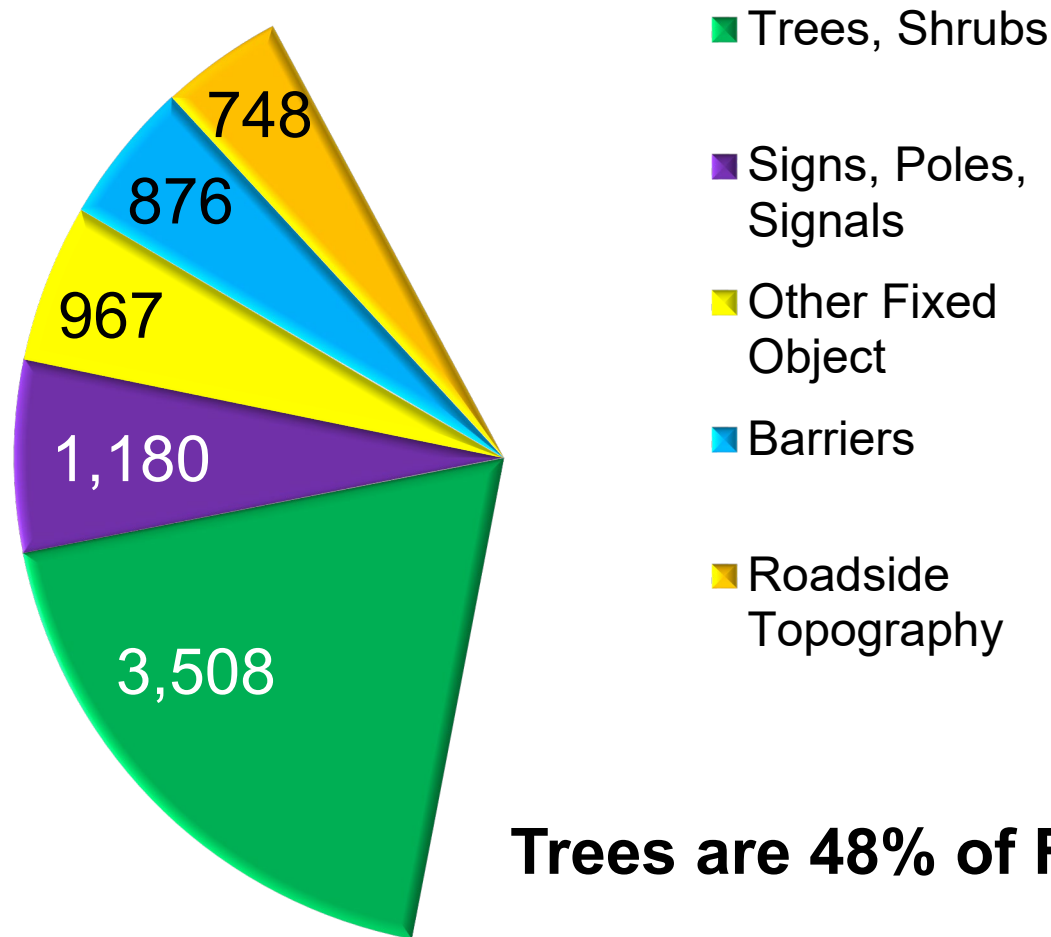
Wet/Icy,  
23%

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

Source: FARS 2010-2013



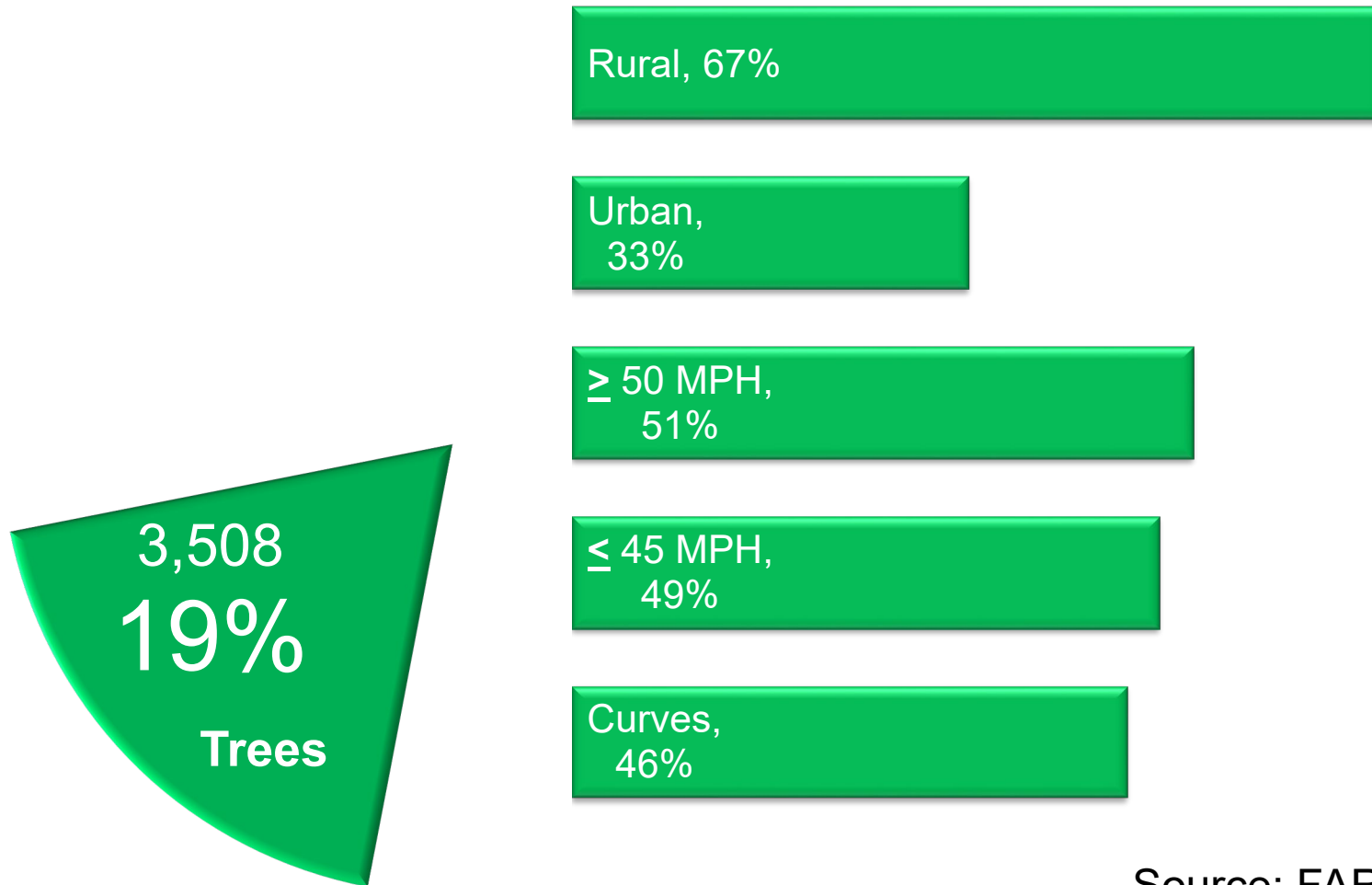
# Fixed Object Fatal Crashes



**Trees are 48% of Fixed Object Fatalities**

Source: FARS 2010-2013

# Tree Crashes



Source: FARS 2010-2013

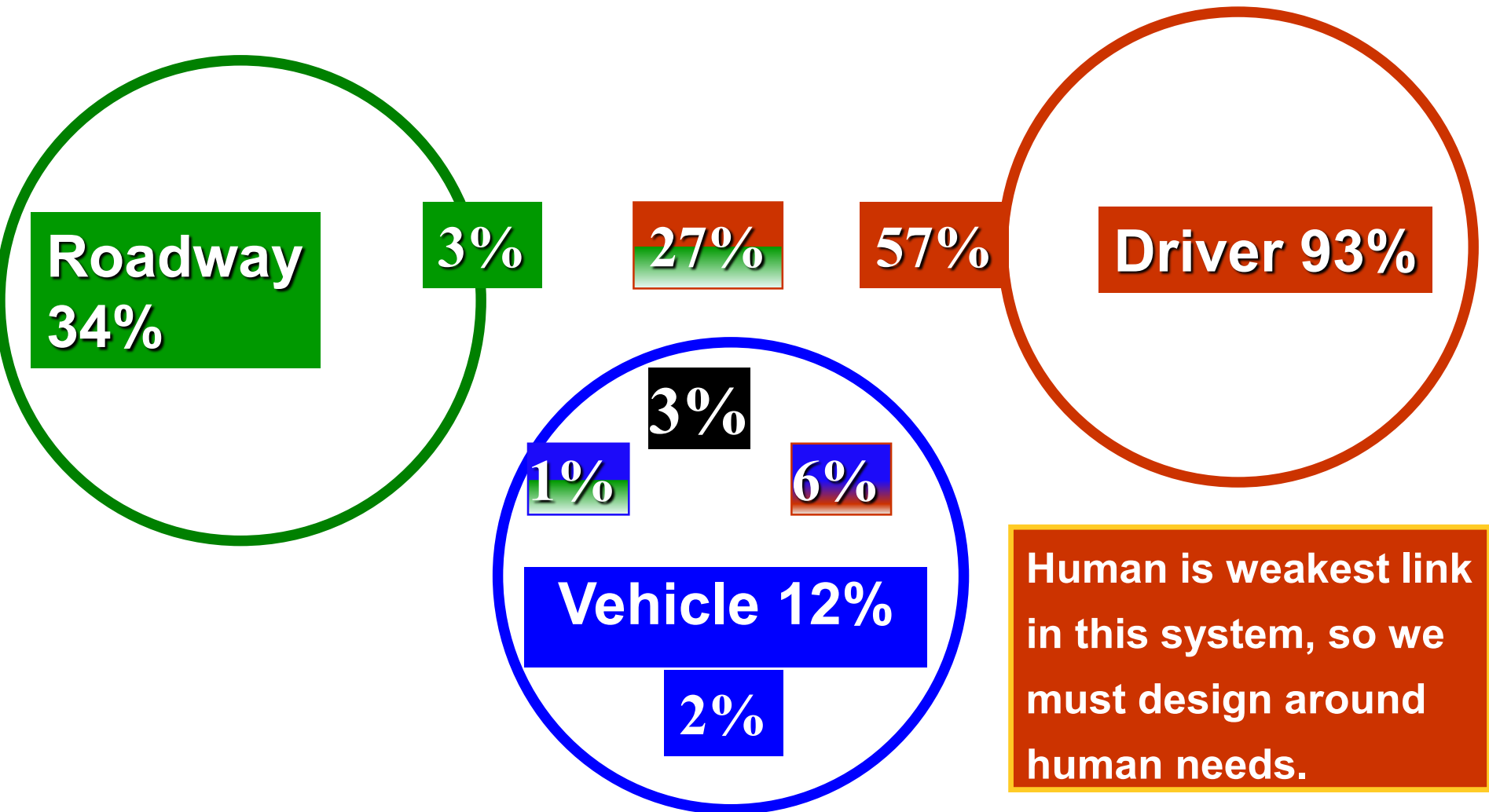
**Trees are 48% of Fixed Object Fatalities**



# So, why do drivers leave the road?

- **Roadway Condition**
- **Collision Avoidance**
- **Vehicle Component Failure**
- **Driver Error**

# Crashes Caused by Various Factors: Systems Approach



FROM: Lum & Reagan, Public Roads Magazine,  
Winter 1995, "Interactive Highway Safety Design Module"

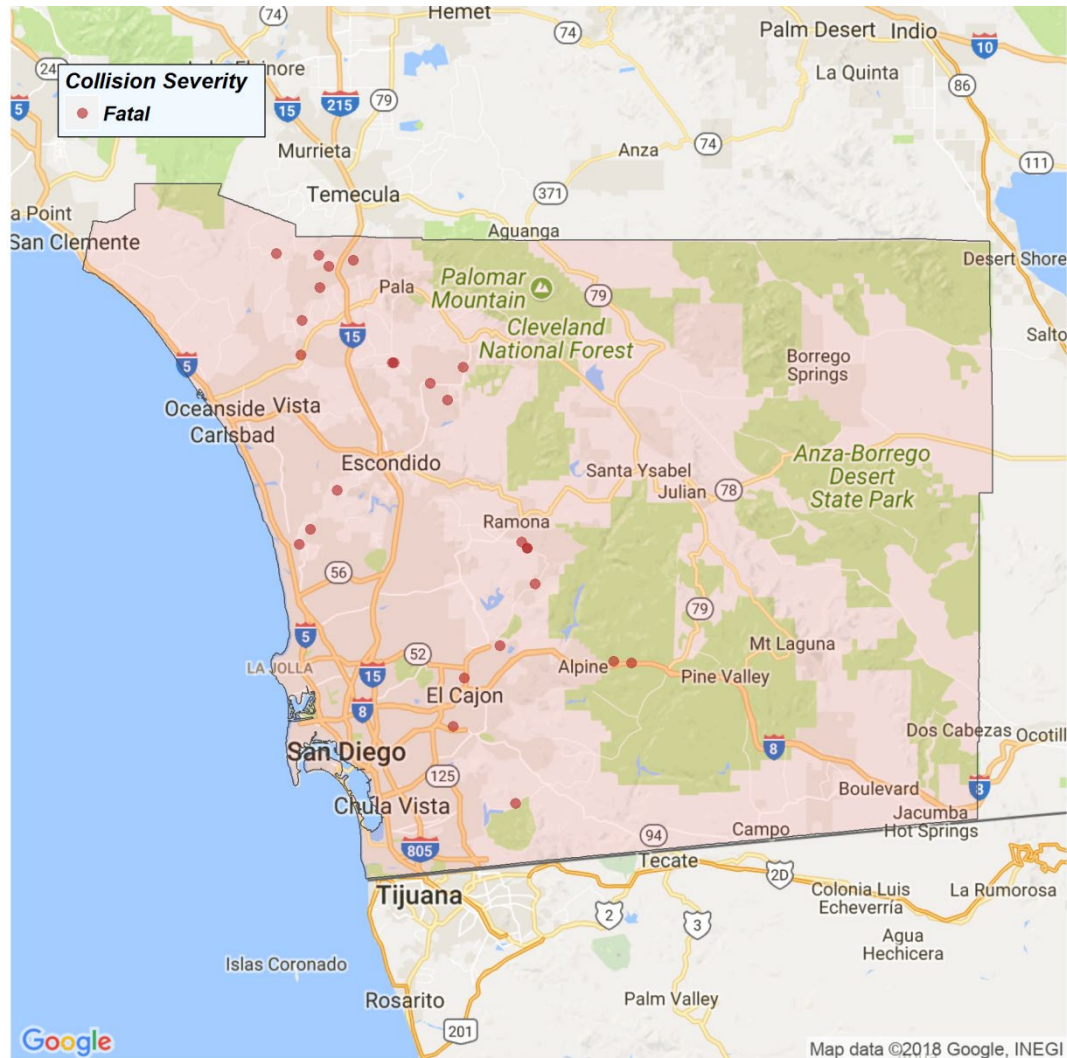
# Example of a RwD Crash Map

- 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 2013

[Roadway Departure-Rural: non\_state\_highway]



25 fatal roadway departure collisions for year 2013  
[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 Countermeasures

- 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

