



FMCSA Safety and Security Accomplishments



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Large Truck Crash Causation Study

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Misinterpreting Crash Causation

- ◆ In 71 percent of fatal 2-vehicle, large truck/other-vehicle crashes, police reported one or more driver factors for the other vehicle, but none for the truck driver (Fatality Analysis Reporting System, NHTSA, 1996)

- ◆ Large truck crash statistics in 2002:
 - 435,000 trucks in all crashes
 - 4,542 trucks in fatal crashes
 - 2,549 in crashes with a passenger vehicle (0.6% of large trucks in crashes)



Defining Crash Causation

- ◆ Rarely a single cause for a crash
- ◆ Driving while fatigued, after consuming alcohol, or too fast for conditions are
 - Dangerous driving behaviors
 - Usually no crash
 - Increased risk of crashes
- ◆ Crash causation: Factors that increase risk of a crash



Coding LTCCS Data

- ◆ Critical Event
 - Makes crash unavoidable

- ◆ Critical Reason for Critical Event
 - Immediate reason for critical event
 - **Not the cause of the crash**

- ◆ Crash-Associated Factors
 - All factors that can be important in crashes
 - Coded when present at crash



Crash Example

◆ The Crash

- Sport utility vehicle (SUV) turns left in front of a large tow truck; tow truck broadsides SUV

◆ Critical Event

- SUV turns in front of tow truck

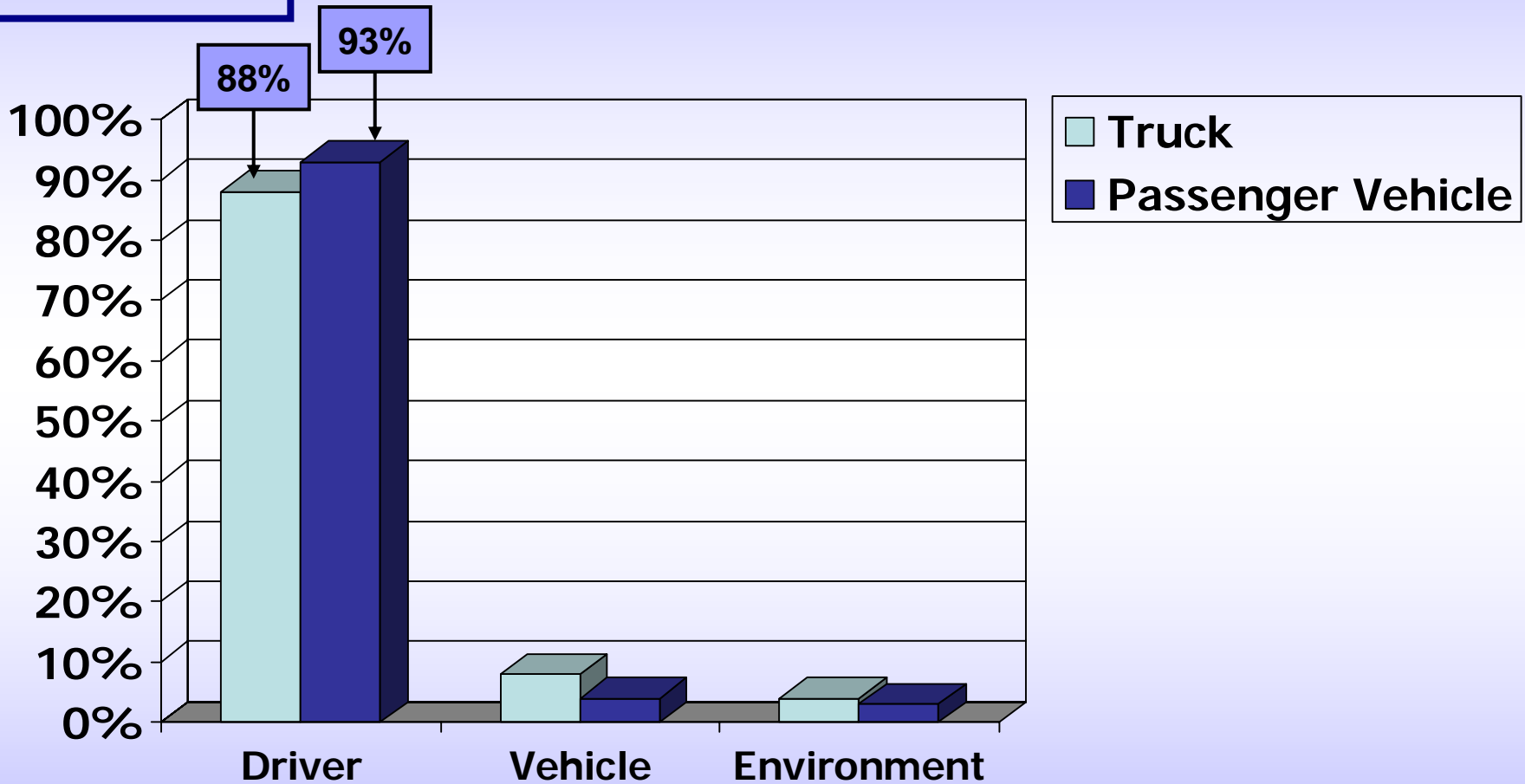
◆ Critical Reason

- SUV driver inattention

◆ Associated Factors

- Alcohol?
- Speeding?
- Evasive action?
- Right-of-way?
- Traffic signals?
- Conversation?
- Weather?
- Light conditions?
- Roadway configuration?

Critical Reasons in One-Truck/ One-Passenger Vehicle Crashes





Associated Factor – Fatigue

- ◆ Drivers in two-vehicle crashes*
 - Large-truck drivers – 7.5%
 - Passenger-vehicle drivers – 14.7%

*Crashes that involve one large truck and one passenger vehicle (car, pickup truck, van, SUV), or three or more vehicles where the first two vehicles that crash are a large truck and a passenger vehicle



Analyzing Fatigue

- ◆ Fatigue linked to Critical Reasons?
 - Driver non-performance
 - Driver recognition errors
 - Driver decision errors
 - Driver performance errors
 - Weather conditions
 - Roadway type
 - Roadway conditions



Analyzing Fatigue

- ◆ Associated factors linked to fatigue?
 - HOS violations
 - Type of motor carrier
 - Pressure from motor carriers
 - Length of trip
 - Hours driving
 - Previous sleep length
 - Recreational activities
 - Age



Summary

Groundbreaking Study

- ◆ Only nationally representative sample study
- ◆ Largest number of crash cases
- ◆ Largest number of data elements collected
- ◆ Researchers at crash scene
- ◆ Sound methodology
- ◆ Endorsed by Congress, NHTSA
- ◆ Data available for alternative analysis