



Performance Measures Matter

Using Data to Plan and Evaluate Your Program

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What are Good Performance Measures?

- Quantifiable
- Reliable and valid
- Change in response to changes in the real world
- Can calculate the baseline
- Can set reasonable, quantitative targets
- Measure things we can impact
- Point to problems *and* potential solutions



Basics (published national data, 2014)

■ Large trucks* and buses** together:

- 11,777,983 registered
- 3,025,656,000 (three billion) VMT
- Fatality rate = 0.138 per 100 million VMT
- 0.31 fatalities per registered vehicle

■ Large Trucks* only:

- 10,905,956 registered
- 279,132,000 (300 million) VMT
- Fatality rate: 1.40 per 100 million VMT
- .36 fatalities per registered vehicle

*GVWR > 10,000 lbs

** seating for 9 occupants or more

■ Passenger cars:

- 240,155,238 registered
- 2,710,556,000 (2.7 billion) miles traveled
- Fatality rate = 1.05 per 100 million VMT
- 0.118 fatalities per registered vehicle



CMV Safety-Related Measurements

- Crash frequency and rate
- Crash locations and their attributes
- Over-representation (higher than expected)
- Contributing factors of people, vehicles, and environment

PLUS

- Data Quality:
 - Timeliness
 - Accuracy
 - Completeness
 - Uniformity
 - Integration
 - Accessibility

5 Required Safety Performance Measures

FAST Act & *FHWA* rulemaking say States must report:

- Fatalities (frequency count)
- Fatal rate (fatalities/VMT)
- Serious Injuries (frequency count...MMUCC 4th edition)
- Serious Injury Rate (serious injuries/VMT)
- Sum of Non-motorized (Fatalities + Serious Injuries)

- Does this strictly apply to CMV safety? Yes. No. We are part of the counts regardless. We should be part of target setting.
- May contribute to local (MPO-level) plans too!

Going Beyond Basic Requirements

- The goal is to improve safety.
- Analytic goal is *identify opportunities**
- The CVSP is an opportunity to:
 - Identify problems in detail (who, what, when, where, why)
 - Suggest solutions (what can we do?)
 - Allocate and focus resources (how efficient can we be?)
- Performance measures provide justification

*Philosophical musings: We don't want just a list of *problems!*
We want the list that ties to things we know we can improve!

CMV Crashes are Special

- Under-represented in fatalities and injuries per VMT
- Over-represented in fatalities per registered vehicle
- They are much more serious and costly (on average) than passenger-vehicle-only crashes
- They have a much greater impact on traffic, take longer to clear, require more on-site resources, and cost more.
- Infrastructure damage is more extensive in CMV crashes
- Crash location factors are “different” in CMV crashes
- Mistakes by the non-commercial driver are a concern

Steps to Performance Measurement (it's not easy, but it is simple)

1. Decide what to measure
2. Identify data needs
3. Gather data
4. Analyze data (calculate the measurements)
5. Calculate the baseline
6. Set targets
7. Make decisions (countermeasures)
8. Evaluate impact
9. Revise and refine

Keys to Success

- Cooperate in defining performance measures
- Cooperate in data governance, standards setting
- Use the best analytic resources available
- Look to measure the things you can impact
- Insist on meaningful measures and baselines
- Set reasonable targets
- Document the impact of safety efforts
- Repeat what works

Crash Characteristics Analysis

- Helps us go beyond the basic, top-level analyses
- Looking for contributing factors and crash types
- Examples:
 - Single-vehicle crashes are about 20% of CMV crashes at any level of severity. Fataals are 1/3 run-off-road; 1/3 pedestrian
 - Roadway location types in serious crashes: the pattern differs for single-vehicle and multi-vehicle crashes
 - Time-of-day and day-of-week distribution for serious crashes
 - Crash-involved CMV driver history of violations and crashes
 - Motor carrier history of OOS violations and crashes
 - Contributions of the other drivers in multi-vehicle crashes

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