

OREGON TRANSPORTATION SAFETY ACTION PLAN

Chapter 7 – Performance Measures

prepared for

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INTRODUCTION TO PERFORMANCE MEASURES

Purpose of Performance Measures

In order to understand the value of TSAP efforts over time, performance must be measured. Establishing performance measures will provide the information needed to evaluate safety implementation and identify the need for changes to the TSAP in the future.

In transportation, performance measures are defined as, “data about the use, condition, and impact of the transportation system...reported for illustrative purposes to demonstrate progress made toward established targets.”¹

Performance Measures Types

Efficiency and Effectiveness

The National Performance Review definition of performance measure is as follows:

“A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives.”²

Measurements are categorized into two distinct types: efficiency and effectiveness. Efficiency measures are focused on effort and outputs. They track the goings-on of a program, and in traffic safety examples include the following:

- Number of miles of rumble strips installed.
- Number of seat belt violation citations written.
- Number of labor hours of overtime enforcement conducted.
- Number of schools visited last year to promote traffic safety.

¹ MAP-21, Performance Measures, and Performance-Based Funding, http://www.cmap.illinois.gov/about/updates/-/asset_publisher/UIMfSLnFfMB6/content/map-21-performance-measures-and-performance-based-funding

² Performance Measure Fundamentals, FHWA Office of Operations, Washington, DC, 2015. http://www.ops.fhwa.dot.gov/perf_measurement/fundamentals/

The value of efficiency measures is that they are often easy to quantify through real-time tracking or year-end data collection. The limitation, however, is that efficiency measures do not measure the end result directly. For example, installing rumble strips does not guarantee a reduction in crashes, and writing additional seat belt citations does not necessarily improve seat belt use or reduce unbelted crashes. When choosing efficiency measurements, it is important to make a connection from the effort to its ultimate goal.

Effectiveness measures, in contrast, are defined above as “the results of a program activity.” These measures tie more directly to the ultimate goals of reducing fatalities and serious injuries. Examples include:

- Number of traffic fatalities in a given jurisdiction over the past year.
- Seat belt use rate.
- Number of unbelted fatalities.
- Number of marijuana-related fatalities and serious injuries.
- Number of fatal crashes involving unendorsed motorcyclists.

Effectiveness measures are typically of higher value due to their focus on the desired result. However, it is often difficult to acquire information for effectiveness measures in a timely manner. For example, obtaining the number of unbelted occupant-related traffic crashes can take months or years for collection, quality assurance, and archiving. Additionally, it is not always clear if the change in the effectiveness measure was directly connected to outputs. For example, it is not prudent to assume a crash reduction was caused by traffic safety efforts; other factors, including statistical randomness, play a part.

Predictive Measures

In addition to the example measures and attributes discussed above, transportation safety has recently expanded its analysis methods to include predictions of safety based on a variety of data. This method can be used for decision-making throughout the project development process, including: planning, design, construction, operations, and maintenance. Examples include screening potential locations for improvement and choosing alternative roadway designs using data such as traffic volume, roadway geometry, and roadside conditions.

Oregon should continue to work with national researchers and safety advocates to promote development of long-term, predictable safety performance measures and incorporate such measures in future TSAPs as appropriate.

TSAP PERFORMANCE MEASURES

Federal Highway Administration Guidance

The recent 2016 FHWA Final Rule on National Performance Management Measures, established five safety performance measures for Federal-aid highway programs.³ The performance measures are⁴:

1. Number of roadway fatalities
2. Number of roadway serious injuries
3. Roadway fatalities per vehicle miles traveled (i.e., fatality rate)
4. Roadway serious injuries per vehicle miles traveled (i.e., serious injury rate)
5. Combined non-motorized fatalities and non-motorized serious injuries.

Along with these five primary measures, the federal government requires states to track the performance of two categories under these *Special Rules*:

1. **Rural Road Safety.** MAP-21 added the *High Risk Rural Roads (HRRR) Special Rule*. First MAP-21 defined an HRRR as “any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a State in accordance with an updated State strategic highway safety plan.” Second, it establishes a special rule that states, “If the fatality rate on rural roads in a State increases over the most recent 2-year period for which data are available, that State shall be required to obligate in the next fiscal year for projects on high risk rural roads an amount equal to at least 200 percent of the amount of funds the State received for fiscal year 2009 for high risk rural roads.” For the State of Oregon, this equates to approximately \$2.4 million required to be obligated to HRRR safety efforts if the *Special Rule* applies.⁵

³ Federal Register, National Performance Management Measures: Highway Safety Improvement Program Final Rule. 2016. <https://www.federalregister.gov/articles/2016/03/15/2016-05202/national-performance-management-measures-highway-safety-improvement-program>

⁴ Federal Register, National Performance Management Measures: Highway Safety Improvement Program Final Rule. 2016. <https://www.federalregister.gov/articles/2016/03/15/2016-05202/national-performance-management-measures-highway-safety-improvement-program>

⁵ Highway Safety Improvement Program MAP-21 High Risk Rural Roads Guidance, Federal Highway Administration Office of Safety, Washington, DC, December 27, 2012. <http://www.fhwa.dot.gov/map21/guidance/guidehrrr.cfm>

2. **Older Drivers and Pedestrians Safety.** The legislation defines Older Drivers and Pedestrians as “drivers and pedestrians 65 year of age and older.” The *Older Drivers and Pedestrians Special Rule* applies if the rate of traffic fatalities and serious injuries for these road users increases during the most recent 2-year period for which data are available. If it does apply, a state “shall be required to include...strategies to address the increase in those rates.” Additional details for calculating this combined crash rate and determining applicability are available in FHWA guidance.⁶

Oregon Traffic Safety Performance Plan and NHTSA Performance Measures

The Oregon Traffic Safety Performance Plan identifies the following performance measures, which satisfy the NHTSA performance measure requirements⁷.

1. Fatalities
2. Serious Traffic Injuries
3. Fatalities/100M VMT
4. Rural Road Fatalities/100M VMT
5. Urban Road Fatalities/100M VMT
6. Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions
7. Alcohol Impaired Driving Fatalities Involving a Driver or Motorcycle Operator with a BAC of .08 and Above
8. Speed-related Fatalities
9. Motorcyclist Fatalities
10. Unhelmeted Motorcyclist Fatalities
11. Drivers Age 20 or Younger in Fatal Crashes
12. Pedestrian Fatalities
13. Bicyclist Fatalities
14. Statewide Observed Seat Belt Use, Passenger Vehicles, Front Seat Outboard Occupants

Based on this, the Oregon TSAP performance measures (consistent with NHTSA and FHWA requirements) are shown in Table 1.

⁶ MAP-21 Section 148: Older Drivers and Pedestrians Special Rule Interim Guidance, Federal Highway Administration Office of Safety, Washington, DC, October 1, 2012.
<http://www.fhwa.dot.gov/map21/guidance/guideolder.cfm>

⁷ Oregon Traffic Safety Performance Plan, Fiscal Year 2016, Federal Version Report, Page 11

Table 1. NHTSA and FHWA Safety Performance Measures

Performance Measure	Performance Measure Required by NHTSA ⁸	Required by FHWA in Performance Measures Final Rule
1. Fatalities	X	X
2. Fatalities/100M VMT	X	X
3. Serious Injuries	X	X
4. Serious Injuries/100M VMT		X
5. Non-motorized Fatalities + Serious Injuries		X
6. Rural Road Fatalities/100M VMT	X	
7. Urban Road Fatalities/100M V	X	
8. Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions	X	
9. Alcohol Impaired Driving Fatalities Involving a Driver or Motorcycle Operator with a BAC of .08 and Above	X	
10. Speed-related Fatalities	X	
11. Motorcyclist Fatalities	X	
12. Unhelmeted Motorcyclist Fatalities	X	
13. Drivers Age 20 or Younger in Fatal Crashes	X	
14. Pedestrian Fatalities	X	
15. Bicyclist Fatalities	X	
16. Statewide Observed Seat Belt Use, Passenger Vehicles, Front Seat Outboard Occupants	X	
Special Rules		
Rural Road Safety		X
Older Driver and Pedestrian Safety		X

⁸ "Traffic Safety Performance Measures for State and Federal Agencies," National Highway Traffic Safety Administration, DOT HS 811 025, Washington, DC, 2008. Available at <http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811025.pdf>

PERFORMANCE TARGETS

Requirements

Each of the five FHWA safety performance measures is required to have an annual target. The targets are based on a five-year rolling average and are applicable to all roads regardless of ownership or functional classification.

The number of fatalities, rate of fatalities, and number of serious injuries are also performance measures in the OTSPP meeting NHTSA requirements. The federal rules require that these performance measures (#1, #2, #3 above) have identical targets in the state SHSP and Highway Safety Plan. Further, it identifies the Strategic Highway Safety Plan (the TSAP in Oregon) as the venue for coordination of these common measures. Reporting of results for these various performance measures is accomplished in the HSIP annual report for FHWA and the OTSPP and Annual Report for NHTSA.

Once established, states will have to demonstrate progress toward meeting the targets in the appropriate annual reports. For safety, progress is made when four of five targets are met or performance is better than the prior year. If targets are not met or progress is not made, states will be required to spend all of the HSIP funds only for highway safety improvement projects, and submit an HSIP implementation plan.

The federal rule also requires MPOs to establish performance targets. MPOs can use the state established targets or establish targets specifically for the planning area. Similar to the state targets, the targets are applicable to all public roads in the MPO. States and MPO will coordinate their targets.

TSAP Targets

- Forthcoming based on PAC discussions.