

Performance: What should be measured?

Omar Smadi

CTRE/Iowa State University

July 11th, 2016



Photo: Minnesota Department of Transportation

**11th National Conference on
Transportation Asset Management**

What is Performance?

- The action or process of carrying out or accomplishing an action, task, or function (*Oxford Dictionary*)
- synonyms: carrying out; execution; discharge; accomplishment (*Oxford Dictionary*)





What is Performance Management?

- ▶ FHWA defines Transportation Performance Management as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals.
- ▶ In short, Transportation Performance Management:
 - ▶ Is systematically applied, a regular ongoing process
 - ▶ Provides key information to help decision makers understand the consequences of investment decisions across multiple markets
 - ▶ Improving communications between decision makers, stakeholders and the traveling public.
 - ▶ Ensuring targets and measures are developed in cooperative partnerships and based on data and objective information

What are Performance Measures?

OMB's Program Assessment Rating Tool (PART) – 2002 to 2008

Department of Transportation

Program	Performance Measure	Explanation
Federal Highway Infrastructure	OUTCOME Fatalities per 100 million vehicle-miles of travel (VMT)	The program provides funding and technical assistance to states to construct, maintain, and operate highways. A key performance indicator of the program is the rate of highway fatalities, which is expressed as the number of fatalities per hundred million vehicle miles traveled (VMT). This is a long-term outcome measure that tracks the effectiveness of highway safety program infrastructure improvements. Motor vehicle traffic fatality data are obtained from the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS). The FARS database is a census of roadway fatalities, based on police crash reports and other state data. VMT data are derived from the Highway Performance Monitoring System (HPMS).

MAP-21 and FAST



Congestion
Reduction &
System Reliability



Environmental
Sustainability



Freight Movement
& Economic
Vitality



Infrastructure
Condition



Reduced Project
Delivery Delays



Safety

Why do agencies want good pavements?

- Improve safety
- Economic development
- Provide a good level of service to the users (**less complaints**)
- Minimize user cost (**get in, do it right, and don't come back**)





Why do agencies want good pavements?

- Minimize agency cost (keep good pavements in good condition – preservation)
- Mobility (pavement condition and its impact on operations)
- Access (Fixing existing pavements vs. building new)



Infrastructure Condition (Pavements) – MAP-21

- ▶ IRI
 - ▶ Cracking
 - ▶ Faulting
 - ▶ Rutting
-
- ▶ **How do these measures relate to services agencies provide to the users?**

Performance Measures and Decision Making

- Overall investment level
 - Are we investing enough?



- Investment distribution (among assets and functions)
 - Are we investing in the right asset or function?
 - Bridges vs. pavements or infrastructure vs. safety
- Project select and resource allocation
 - Are we working on the right project?
 - Are we doing the right treatment?

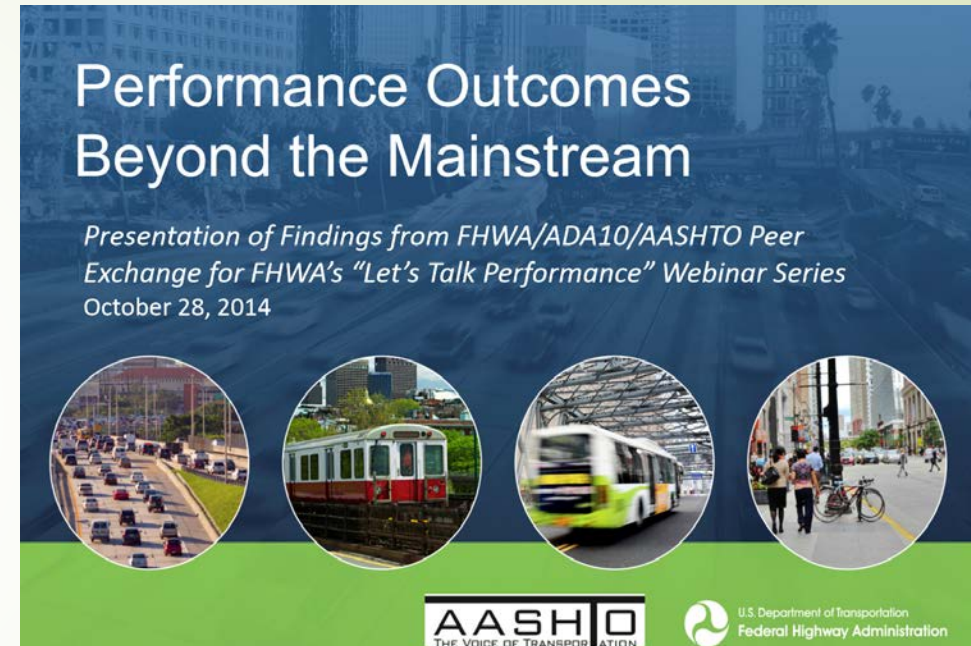
Performance Measures and Decision Making

- ▶ How do we set targets?
 - ▶ Short term vs. long term
 - ▶ Impacts of targets on actual services provided
 - ▶ Impacts of targets on making decisions (budgets and projects)
 - ▶ Impacts of targets on overall organization performance



How to Move Forward?

- TRB Workshop on Next Generation Performance Measures (2015)
- FHWA Turner Fairbank funded a project to develop concepts for next generation performance measures for pavements and how they facilitate asset management (2016) – 4 teams were selected:
 - Amec Foster Wheeler
 - Applied Pavement Technology
 - Fugro Roadware
 - Parsons Brinckerhoff



Focus is on performance measures that assess the relationship between transportation and:

- Accessibility
- Economic Development
- Health



Questions