Topics

- Why is this important?
- MAP-21
- Data
- Resources
Transportation Planning and Operations
Agency Challenges

- MAP 21 – Decision-making, performance measures, and executive-level awareness

- Declining resources and increasing customer expectations for multimodal mobility, safety, and efficient operation of transportation system

- Operations/Real Time – New data sources, capability to merge with travel demand, analytics, predictive, and integration of sources
Why Do Performance Measurement?

Sound business practice

» We measure performance because it helps us get better at what we do!!!
  • Detect and correct problems in an era of shrinking budgets (projects)
  • Manage, describe, and improve processes (programs)
  • Ongoing evaluations – demonstrating the value of our activities
  • Transparency with decision-makers
  • Better communication with the traveling public
Why do we need Operations Performance Measures?

Sources of Congestion: Over 50% of congestion is directly attributable to large fluctuations in demand (such as special events), poor signal timing, traffic incidents, inclement weather, and work zones.
Travel Time Reliability Measures

- Mean
- Buffer Index
- Misery Index
- Std. Dev.
- Average
- Highest 5%
- Free-Flow
- Planning Time
- Index
- 10%
- 50%
- 90%
- Skew
- Statistic
- Failure Measure

Travel Time (minutes)
What They Tell You

Level 1
- Travel conditions are unreliable (Variable over time)

Level 2
- What's causing unreliable travel (e.g., incidents, weather, work zones)

Level 3
- What aspects of operations, management, and construction need to be improved

Measures

Overall Reliability
- e.g., travel time index

Delay by Source
- e.g., vehicle-hours

Used By

Upper Management
- Public Relations
- Planners

Mid-Management
- Operators
- Planners

Operators
- Field Managers

Activities, Procedures, and Policies

Incident Timeline

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Inci dent Occurs</td>
<td>6:35 a.m.</td>
</tr>
<tr>
<td>Incident Recorded into CAD (Detection)</td>
<td>6:42 a.m.</td>
</tr>
<tr>
<td>Incident Verified</td>
<td>6:47 a.m.</td>
</tr>
<tr>
<td>Personnel Dispatched and Actions Initiated</td>
<td>6:49 a.m.</td>
</tr>
<tr>
<td>Responders Arrive to Scene</td>
<td>6:50-7:00 a.m.</td>
</tr>
<tr>
<td>Incident Cleared and Actions Canceled</td>
<td>7:15 a.m.</td>
</tr>
<tr>
<td>Return to Normal Conditions</td>
<td>8:26 a.m.</td>
</tr>
</tbody>
</table>
ITS is needed to measure and improve safety, congestion, system reliability, and freight movement.

Contains strong language supporting Transportation Systems Management and Operations (TSM&O).

Potential for a large ITS planning effort out of RITA/JPO.

Section 513 requires a comprehensive plan be developed to assess ITS deployment activities across all modes.

Continues funding for the Connected Vehicle Program.

Includes research statements on several Ops and ITS areas.
MAP 21 - Goals

1) Safety

2) Infrastructure Condition

3) Congestion Reduction

4) System Reliability

5) Freight Movement and Economic Vitality

6) Environmental Sustainability

7) Reduced Project Delivery Delays
MAP-21 Mobility Performance Measures Schedule

US DOT Notice of Proposed Rulemaking

US DOT establishes measures

90 day comment period

Effective date of final rule

States set targets

MPOs set targets

Winter Spring 2013 2014 2015 2016 Fall

2013 2014 2015 2016

2013 2014 2015 2016
States and MPOs must integrate performance plans into a performance-based process.
Performance Evaluation

US DOT will establish criteria to evaluate the effectiveness

Progress towards the achievement of targets

Ability of the public to access information

Cost-effectiveness of transportation investments

Public input

Appropriateness of performance targets
AASHTO’s Position: Measures

**System Performance**

- Delay (annual vehicle-hours)
- Reliability Index (80th %ile TTI)
  - 80th Percentile Travel Time/Travel Time at agency specified threshold speed

**Freight System Performance**

- Delay (annual truck-hours)
- Truck Reliability Index (80th %ile TTI)

http://scopm.transportation.org/Pages/default.aspx
Use of Operations Data in Performance Measures

- Transportation system coverage
- Data quality
- Data format/resolution
- Data integration
- Standards/consistency/metadata
  - Backup, recovery, archiving
- Institutional issues
- Resources
Range of FHWA Resources Available

- Integrating Operations, Safety, and Multimodal Planning Workshop
- Traffic Incident Management Peer Exchange and Workshops
- Technical Assistance for Traffic Signal Timing Training
- Work Zone process review team and guidance documents
- Performance Measures Workshop
- Traffic Data Collection and Analysis Peer Exchange
- Operations B/C Workshops
- Outreach for Special Events Peer Training in Charlotte
- Integrating Road Weather Mobile Observations
- Active Traffic Management Workshop
- Rural Incident Management Workshop
- Applying Analysis Tools in Planning for Operations Workshop
FHWA Benefit/Cost Handbook and Tool

- Desk Reference Document
  - Provide comprehensive, one-stop-shopping for B/C information related to

- Companion Operations B/C Decision Support Tool
  - TOPS-BC
## Resources from TRB SHRP 2 Program

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<th>Integrating Business Processes to Improve Travel Time Reliability</th>
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<td>Establishing Monitoring Programs for Mobility and Travel-Time Reliability</td>
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<td>L05</td>
<td>Incorporating Reliability Performance Measures into the Transportation Planning and Programming Processes</td>
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<td>Identification and Evaluation of the Cost-effectiveness of Highway Design Features to Reduce Nonrecurrent Congestion</td>
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<td>Training and Certification of Traffic Incident Responders</td>
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<td>Requirements and Feasibility of a System for Archiving and Disseminating Data from SHRP 2 Reliability and Related Studies</td>
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[http://www.trb.org/StrategicHighwayResearchProgram2SHRP2/Pages/Reliability_159.aspx](http://www.trb.org/StrategicHighwayResearchProgram2SHRP2/Pages/Reliability_159.aspx)