Performance Measures for Pavements

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**Background: Why...**

**MAP-21 / FAST Act**

“...efficient investment of Federal transportation funds...”

“...refocusing on national transportation goals...”

“...increasing the accountability and transparency...”

“...improving project decision making through performance-based planning and programming.”

Source: 23 U.S.C. §150(a)
Background: Why...

MAP-21 / FAST Act

National Goal (2):

“INFRASTRUCTURE CONDITION. – To maintain the highway infrastructure asset system in a state of good repair”

Source: 23 U.S.C. §150(b)(2)
§ 23 CFR 490 Subpart C


Data Requirements 23 U.S.C. 150(c)(3)(A)(iv)


Reporting Mid-Period and End-of-Period Progress toward Targets 23 U.S.C. 150(e)(1)&(3)
## Measures

<table>
<thead>
<tr>
<th>Pavement Condition Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interstate Lane Miles</strong></td>
</tr>
<tr>
<td>% Good</td>
</tr>
<tr>
<td>% Poor</td>
</tr>
</tbody>
</table>

Source: 23 CFR §490.307
Pavement Performance Measurement

Depends on:
• Complete data
• Quality data
• Timely HPMS reporting

Image: Pixabay
Data Needed for National Pavement Measures

Inventory Data:
• NHS extent
• Section length
• Through lanes
• Functional system
• Surface type
• Facility type
• Structure type

Reference: HPMS Field Manual, OMB Control No. 2125-0028, FHWA, December 2016, Chapter 4
Data Needed for National Pavement Measures

Condition Data:

• International Roughness Index (IRI)
• Rutting (flexible pavements only)
• Percent Cracking
• Faulting (rigid pavements only)
• Present Serviceability Rating (PSR) – only where posted speed limit < 40 mph

# Pavement Condition Thresholds

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRI</strong> (inches / mile)</td>
<td>&lt;95</td>
<td>95-170</td>
<td>&gt;170</td>
</tr>
<tr>
<td><strong>Rutting</strong> (inches)</td>
<td>&lt;0.20</td>
<td>0.20-0.40</td>
<td>&gt;0.40</td>
</tr>
<tr>
<td><strong>Faulting</strong> (inches)</td>
<td>&lt;0.10</td>
<td>0.10-0.15</td>
<td>&gt;0.15</td>
</tr>
<tr>
<td><strong>Cracking</strong> (%)</td>
<td>&lt;5</td>
<td>5-20 (asphalt) 5-15 (JCP*) 5-10 (CRCP*)</td>
<td>&gt;20 (asphalt) &gt;15 (JCP*) &gt;10 (CRCP*)</td>
</tr>
<tr>
<td><strong>PSR</strong></td>
<td>≥ 4.0</td>
<td>2.0 &lt; PSR &gt; 4.0</td>
<td>≤ 2.0</td>
</tr>
</tbody>
</table>

Source: 23 CFR §490.313 (b)
Missing, Invalid and/or Unresolved Data

• Excessive missing, invalid and/or unresolved data may result in misrepresenting conditions
  ◦ Examples: invalid codes, mismatched section lengths, values outside allowed ranges

• These are excluded from performance measure calculations:
  ◦ % of lane miles with missing, invalid and/or unresolved data not exceeding 5% of the total
  ◦ Sections with bridges and other pavement types are also excluded from the calculations

Source: 23 CFR §490.313 (b)(4)
Pavement TPM Regulations: Interstate Minimum Condition & Penalty

- A minimum pavement condition for the Interstate System is no more than 5% in Poor condition.
- FHWA will assess this minimum condition annually, using data in the HPMS as of June 15.
- If the minimum condition threshold is not met, the penalty is that the State must obligate a specified percentage of its NHPP and Surface Transportation Program (STP) funds to address Interstate conditions.
- 1st assessment will occur in 2019.

Source: 23 CFR §490.317

Image: Pixabay
Data Quality Management Plan
Minimum Requirements

• Data collection equipment calibration and certification
• Certification process for persons performing manual data collection
• Data quality control measures to be conducted before data collection begins and periodically during the data collection program
• Data sampling, review and checking processes
• Error resolution procedures and data acceptance criteria

Source: 23 CFR §490.319
Target Setting Process: Example Strategy Comparison

Source: Transportation Asset Management Guide, Volume 1; AASHTO
State Performance Report

Number of Fatalities

826 Fatalities

2018 Target

750 Or Fewer Fatalities

The State has implemented numerous countermeasures to reduce median cross over and other run-off-the-road crashes, a major source of fatalities in the State.

Data: Annual Fatal Crashes from FARS; Data are from latest available year.
Resources

Legislation:
FAST Act: https://www.congress.gov/114/bills/hr22/BILLS-114hr22enr.pdf

FHWA TPM Website: https://www.fhwa.dot.gov/tpm/
FAQs: https://www.fhwa.dot.gov/tpm/faq.cfm

FHWA Asset Management Website: https://www.fhwa.dot.gov/asset/
FAQs: https://www.fhwa.dot.gov/asset/guidance/faqs.cfm

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