

Performance Measures for Pavements

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U.S. Department of Transportation
Federal Highway Administration

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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

Performance Measures 23 U.S.C. 150(c)(3)(A)(ii)

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

Minimum Standard for Interstate Pavements 23 U.S.C.
150(c)(3)(A)(iii)

Data Quality Management Plan 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

| Pavement Condition Measures | |
|------------------------------------|--|
| Interstate Lane Miles | Non-Interstate NHS Lane Miles |
| % Good | % Good |
| % Poor | % Poor |

Source: 23 CFR §490.307

Pavement Performance Measurement

Depends on:

- Complete data
- Quality data
- Timely HPMS reporting

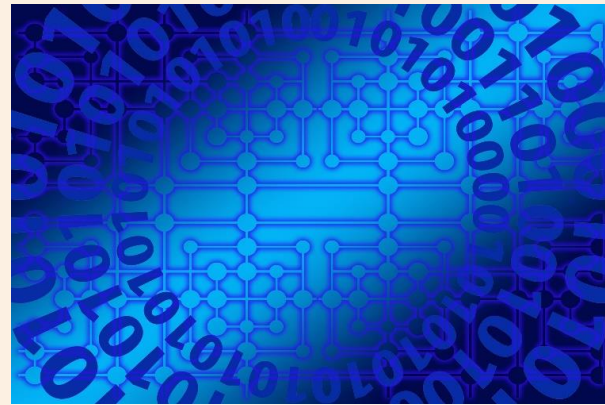


Image: Pixabay

Data Needed for National Pavement Measures

Inventory Data:

- NHS extent
- Section length
- Through lanes
- Functional system
- Surface type
- Facility type
- Structure type



Images: Pixabay

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

Reference: 23 CFR 490.309 and 311, HPMS Field Manual

Pavement Condition Thresholds

| | Good | Fair | Poor |
|------------------------|------------|---|--|
| IRI (inches / mile) | <95 | 95-170 | >170 |
| Rutting (inches) | <0.20 | 0.20-0.40 | >0.40 |
| Faulting (inches) | <0.10 | 0.10-0.15 | >0.15 |
| Cracking (%) | <5 | 5-20 (asphalt) 5-15 (JCP*) 5-10 (CRCP*) | >20 (asphalt) >15 (JCP*) >10 (CRCP*) |
| PSR | ≥ 4.0 | $2.0 < \text{PSR} < 4.0$ | ≤ 2.0 |

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

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

| June | | | | | | |
|------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | |

Image: Pixabay

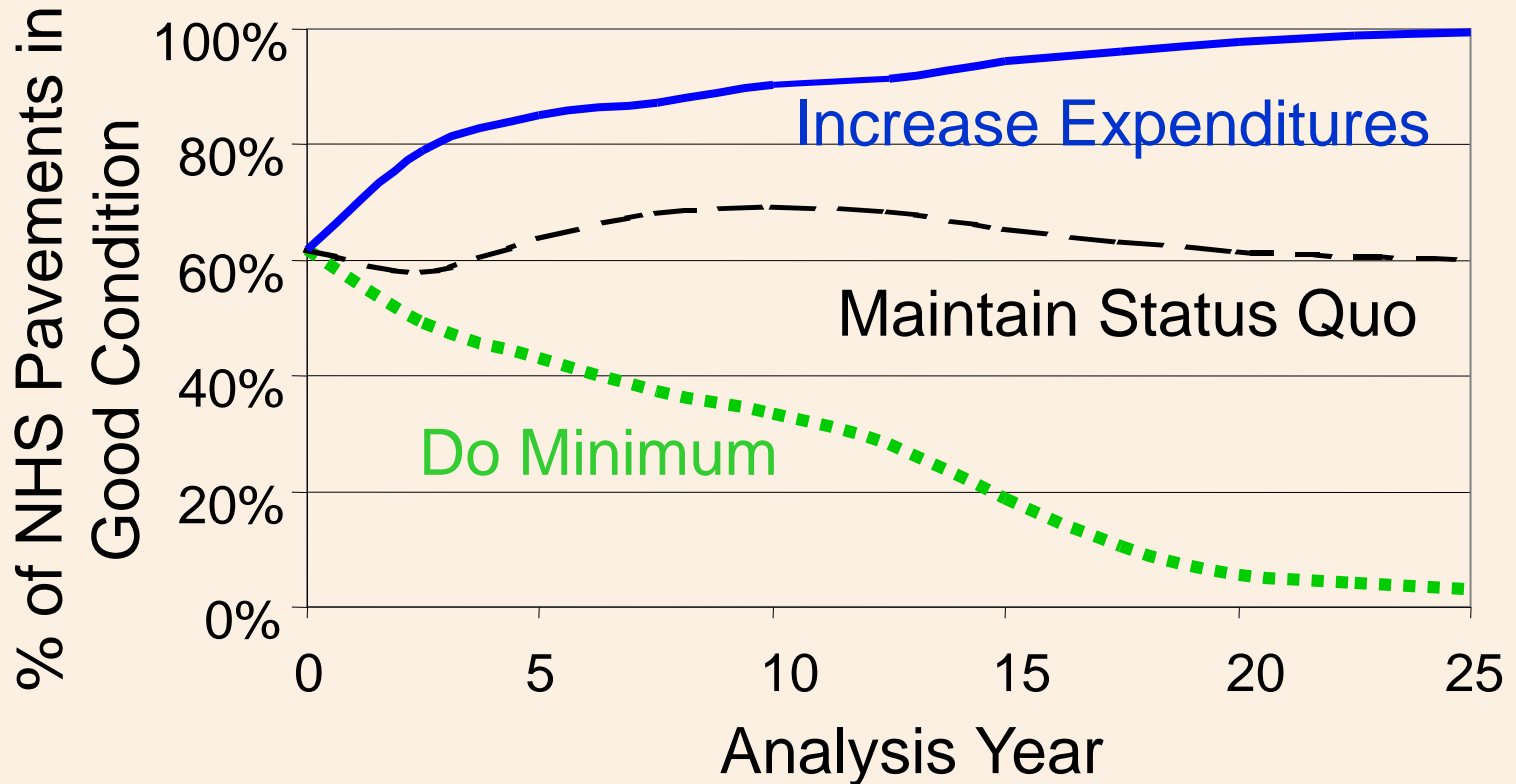
Source: 23 CFR §490.317

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

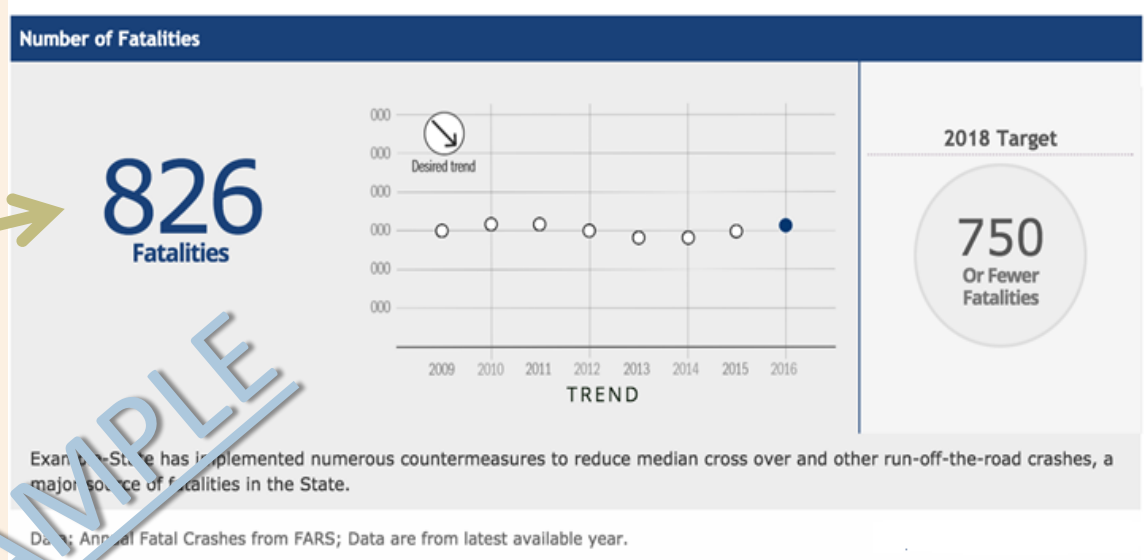
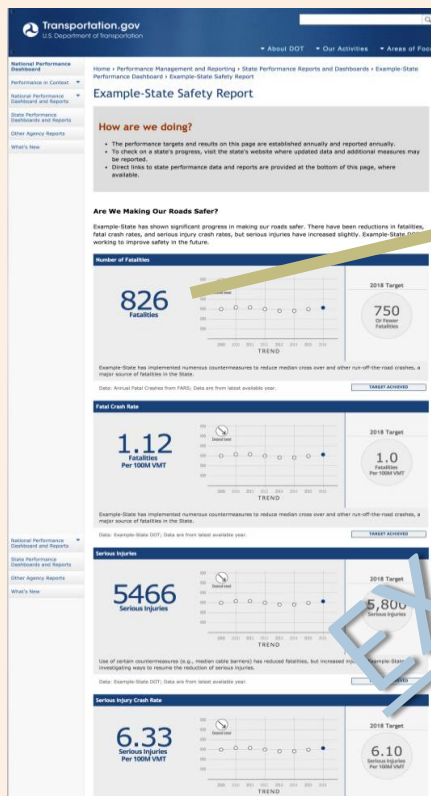
Source: 23 CFR §490.319

Target Setting Process: Example Strategy Comparison



Source: *Transportation Asset Management Guide, Volume 1*; AASHTO

State Performance Report



EXAMPLE

Resources

Legislation:

MAP-21: <https://www.congress.gov/bill/112th-congress/house-bill/4348/text>

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

PM2 Rule: <https://www.regulations.gov/document?D=FHWA-2013-0053-0198>

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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