Data Collection and Performance Measures

Rocky Mountain West Pavement Preservation Partnership (RMWPPP)
10/20/15

Oregon Department of Transportation

ODOT's Key Performance Measures

This is the pavement one

Oregon Department of Transportation Key Performance Measures
Continuously updated as performance is reported

Policy goal/Key Performance Measure	Previous Reporting period	Current Reporting period	Goal	Goal met (w/in 10%)	Progress Made	Comments
Safety – Engineering, educating, and enforcing a safe transportation system						
Number of traffic fatalities per 100 million vehicle miles traveled (VMT) in Oregon	1.02	.93	.90	✓	Y	Since 1999, Oregon's fatality rates have been consistently below the national average (Currently 1.14)
Number of traffic injuries per 100 million vehicle miles traveled (VMT) in Oregon	108.78	98.38	70	---	Y	A system change in 2011 resulted in an increase of over 15% for injury and property damage data making it into the crash data file.
Percent of traffic fatalities that involved alcohol	37%	41%	35%	---	N	According to 2013 NHTSA statistics, Oregon is #7 in the nation for lowest alcohol-related fatalities.
Percentage of all vehicle occupants using safety belts	98%	98%	97%	✓	⟷	In 2014, Oregon's observed safety belt use rate was reportedly 97.75%. The national average is 87%.
Number of large truck (commercial motor vehicle) at fault crashes per million vehicle miles traveled (VMT) in Oregon	.42	.44	.37	---	N	In 2013, Oregon ranked #1 in the nation, as inspectors placed 13.2 percent of drivers out of service for critical safety violations. The national rate is 5.5 percent. Most truck-at-fault crashes are caused by speeding, tailgating, or changing lanes unsafely.
Number of highway-railroad at grade incidents	9	14	11	---	N	Oregon has been in or near the top 20 states for least number of motor vehicle incidents at public crossings.
Number of train derailments caused by human error, track, or equipment	20	23	25	✓	N	Some increase may be attributed to increased train volumes as the industry recovers from the recession.
Percent of public satisfied with transportation safety	83%	81%	74%	✓	N	For the last three consecutive years, public opinion survey shows that over 80% of Oregon travelers feel safe on our roads.
Employee disabling (time loss) claims rate per 100 ODOT employees	2.1	2.1	1.7	---	⟷	A comprehensive review of operations where workers are near moving equipment is underway. Changes in procedure and training will be implemented in 2015.
Mobility and Economic Vitality – Keeping people and the economy moving						
Hours of travel delay per capita per year in urban areas	24	24	22	✓	⟷	This statistic reflects Portland, Salem & Eugene metropolitan areas.
Average number of transit rides per each elderly and disabled Oregonian annually	19	20	24	---	Y	Increases in the population of older adults continue increase demands.
Number of rail service passengers	215,096	210,901	208,590	✓	N	Since 2004, passenger rail ridership has increased by more than 92,000.
Percent of Oregon communities of 2.5K+ with intercity bus or rail passenger service	94%	95%	95%	✓	⟷	Intercity bus connections remain steady.
Percent of Oregonians who do not commute alone to work during peak hours**	33%	30%	35%	---	N	Education and awareness of alternatives to commuting alone can affect change.
Percent of lane blocking crashes cleared within 90 minutes	80%	81%	100%	---	Y	Clearing lanes is occasionally delayed due to accident investigations. Traffic incidents account for about 25% of the congestion on the highway system.
Preservation – Preserving and maintaining the transportation infrastructure						
Percent of pavement miles rated "fair or better" out of total miles on ODOT highway system	87%	87%	87%	✓	⟷	ODOT's pavement programs resurface less than one-half the need and higher cost projects can't be completed with available funds.
Percent of state highway bridges that are not distressed	78%	78%	78%	✓	⟷	After 2017, bridge conditions will decline exponentially. To maintain current bridge conditions through 2030, funding to state bridges would need to be tripled.
Sustainability – Sustaining the environment and communities						
Number of priority culverts that need work to improve fish passage	190	190	189	✓	⟷	In the next 4 years, approximately 1/2 its annual budget will fund storm water runoff retrofit projects.
Percent of urban state highways with bike lanes and sidewalks	43%	38%	48%	---	N	ODOT is making strategic investments where communities have identified the greatest need.
Percent of ODOT sustainability performance measures maintaining steady or trending positive	93%	93%	90%	✓	⟷	As with most new measures, additional data will be needed over time to better understand facility-level practices and trends.
Stewardship – Maximizing value from transportation investments						
Number of jobs sustained as a result of annual construction expenditures	11,700	10,138	10,600	✓	N	The 2013 model update calculated the 2013 fiscal year jobs impact factor at 10.5 jobs per $1M. The fiscal year 2015 jobs impact factor decreased to 10.1 jobs per $1M, due to inflation.
Percent of projects going to construction phase within 90 days of target date	96%	99%	90%	✓	Y	In 2014 ODOT continued to exceed the 90% goal with 99% being on time.
Percent of projects with construction phase completed within 90 days of original date	76%	88%	80%	✓	Y	2014 results (88%) surpassed the goal of 80% the first time since measurements started.
Percent of original construction authorization spent	106%	100%	99%	✓	Y	On average, overall project construction expenses are within 100% of their original authorization over the last 13 years.
Percent of ODOT contract dollars awarded to Disadvantaged Business Enterprise (DBE) businesses	9.0%	8.7%	16.95%	---	N	The ODOT DBE Program is in the top half of the state reviews (45 to date).
Percent of ODOT customers who are satisfied with services	90%	89.5%	90%	✓	⟷	Variations in results between 2006 and 2012 are not statistically significant and have been near the target of 90%.
DMV Field office wait times (minutes)	16 mins	15 mins	11 mins	---	Y	Increase due to higher volumes and agency staff reductions. ODOT proposes a new measure better reflecting the average customer experience.
DMV Phone queue wait times (seconds)	50 sec	41 sec	45 sec	✓	Y	ODOT continues to focus on providing consistent telephone answer time and cost-effective service from three contact centers.
Vehicle Title transaction turnaround time (days)	23 days	24 days	19 days	---	N	Agency is developing business processes to reduce the title wait time as transaction volumes increase.

Y Progress since last report N Regression since last report ⟷ Progress remains unchanged since last report

Oregon Department of Transportation

Pavement Condition KPM

Pavement Condition

Pavement condition: Percent of pavement centerline miles rated "fair" or better out of total centerline miles in the state highway system

Our strategy

The goal of the ODOT pavement preservation program is to keep highways in the best condition possible, at the lowest cost, by taking a preventive approach to maintenance. The most cost-effective strategy is to resurface highways while they are still in "fair" or better condition, which extends pavement life at a reduced resurfacing cost.

About the target

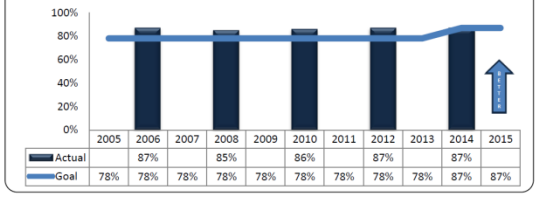
A higher percentage of miles in good condition translates to smoother roads and lower pavement and vehicle repair costs.

Funding allocations to the pavement program are set to maintain pavement conditions at a target of 78 percent "fair" or better over the long term. The legislature increased the target to 87 percent for 2014 and 2015. Currently, pavement conditions are above target but are forecast to drop in the future.

How we are doing and how we compare

The last few years, pavement condition has exceeded the target. However, reduced funding will cause pavement conditions to drop below target in a few years. Our pavement programs resurface less than one-half the need, and higher cost projects can't be completed with available funds. Pavement program funding levels are lower than they have been in a decade, while costs have increased due to inflation. **Pavement funding for 2015-2018 is about $100 million per year short of what's needed to maintain pavement conditions at or above target levels** for the long term. Pavement resurfacing treatments typically last 10 to 20 years but current pavement funding in the next few years only provides for a 40-year average resurfacing interval. As a consequence, pavement conditions are forecast to drop below the target by the end of the decade, impacting safety and mobility. Over time, as road conditions deteriorate, thicker paving and/or complete replacement (eg. reconstruction) will become necessary at a higher cost than what would be required to simply maintain them in fair or better condition. No standardized system exists for classifying the pavement condition of all highways nationwide. Each state uses a unique procedure for classifying pavement defects and assessing structural and functional pavement conditions. However, pavement smoothness, which is one indicator of pavement condition, is collected by all states using standardized procedures. A smoothness comparison between Oregon and our neighboring states of California, Idaho, Washington, and Nevada based on 2012 Highway Statistics data http://www.fhwa.dot.gov/policyinformation/statistics/2012/ shows that Oregon's interstate pavements are in better condition than the surrounding states, while Oregon's remaining arterial and primary highways are mid-pack compared with the neighboring states but better than the nationwide average.

Pavement Condition - Percent of miles rated 'fair' or better out of total miles on ODOT highway system



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Actual		87%		85%		86%		87%		87%	
Goal	78%	78%	78%	78%	78%	78%	78%	78%	78%	87%	87%

Fact

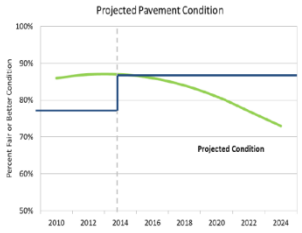
Our pavement programs resurface less than one-half the need, and higher cost projects can't be completed with available funds.

Mar 2015

Pavement Condition, cont.

Factors affecting results and what needs to be done

Lower than anticipated federal revenues may result in major funding reductions to the Preservation program, which is the primary program for resurfacing work. Other factors impacting the program are standards, mobility, and access management requirements. Often, paving work is conducted in conjunction with other enhancements which can impact project costs and timelines. The funding shortfall is most acute in urban areas. We took several steps to help offset some of the declines, including use of more low-cost chip seal treatments, and implementing a 1R paving (pave only) program which focuses preservation investments in the pavement surface when only minor deterioration exists.



About the data

Pavement conditions are measured via a combination of automated equipment and visual assessment. Rigorous checks are made on the data to ensure integrity. Conditions are measured and reported every two years on even numbered years. Our Pavement Condition Report provides detailed pavement condition data and statistical summaries across various parts of the highway system and is available online at http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/pms_reports.shtml.

Contact information

Cole Mullis
ODOT Highway Division, Construction Section, Pavement Services Unit
503-986-3115

Data source

ODOT Highway Division, Pavement Services Unit

Percent "Fair" or Better ⟺ 100% minus Percent "Poor"

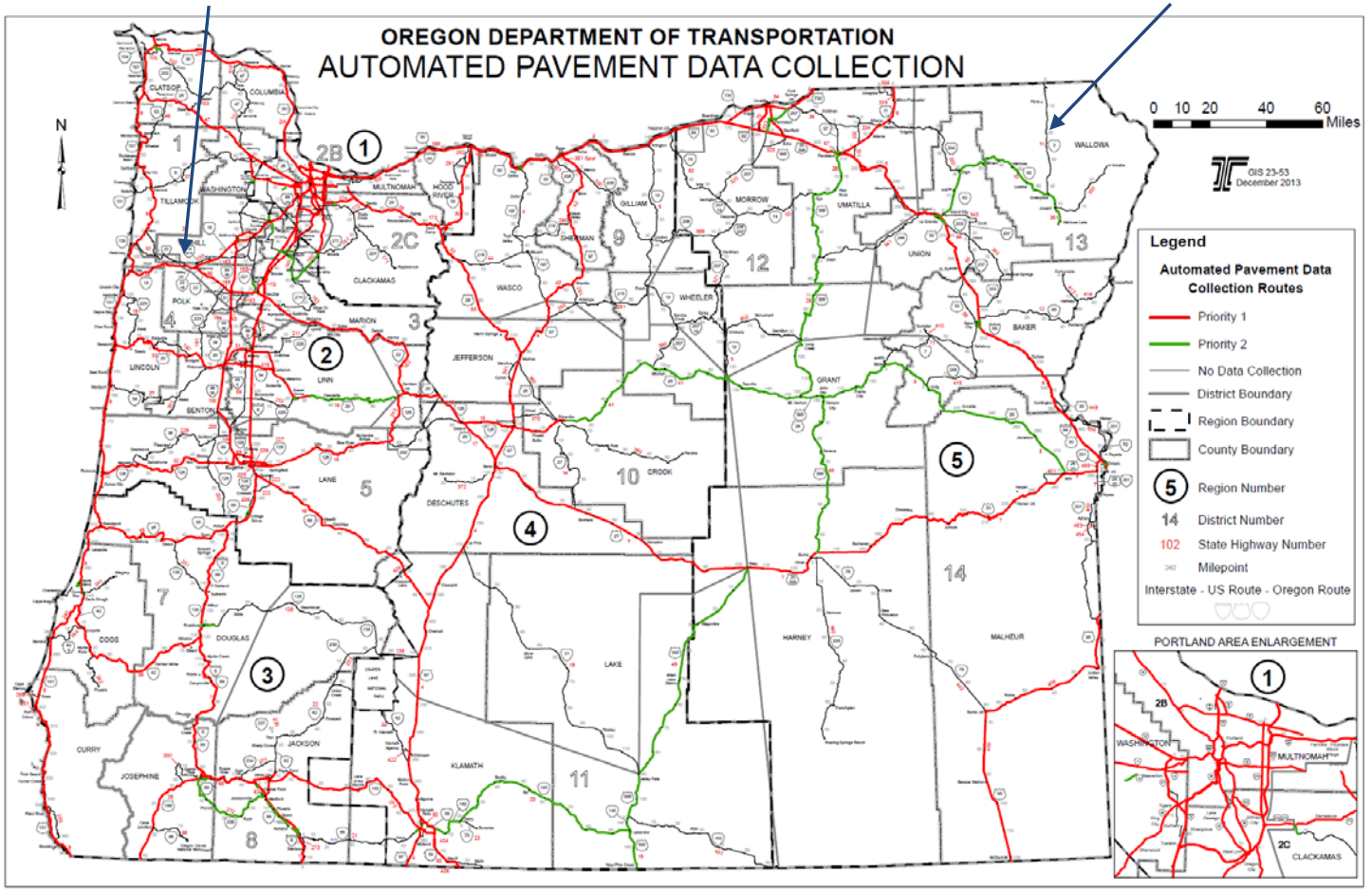
Oregon Department of Transportation

How we collect condition

AUTOMATED

2 year cycle

WINDSHIELD



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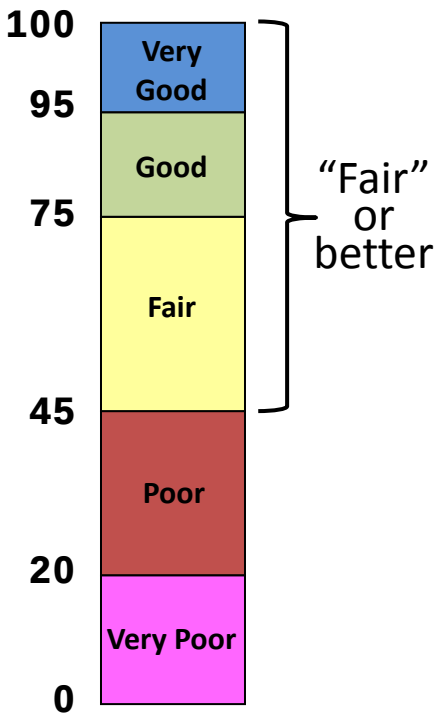
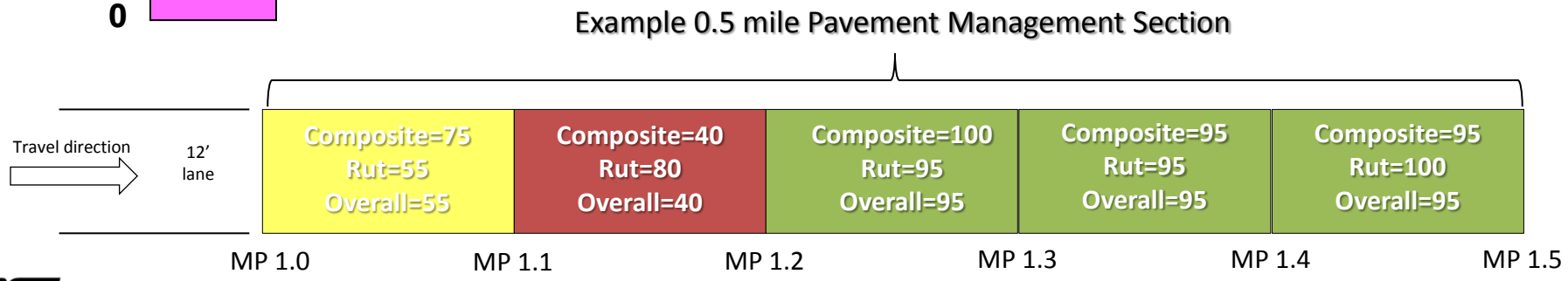
Condition Index



- Distress based (not IRI)
- 0 to 100 scale
- Each 0.1 mile:
  - Compute composite score = (cracking, patching, raveling, etc.)
  - Compute rutting score
  - whichever is lower sets condition for that 0.1 mile
- Weighted average across entire pavement management section (typically 1 to 10 miles)
- Aggregated section score and length used for %"Fair" or better mileage calculation



Aggregated Overall Score = 76 (Good)

So, count as 0.5 miles of "fair" or better

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Differences from MAP-21

- MAP-21 requires annual interstate collection
- MAP-21 includes IRI in the measure
- MAP-21 *definition* of and *calculation* of %cracking is different
- MAP-21 doesn't care about crack severity
- MAP-21 doesn't include patching, potholes, raveling, etc.
- MAP-21 thresholds are different
- MAP-21 uses rigid 0.1 mile boundaries that don't break at pavement type changes or bridges
- MAP-21 counts 0.1 mile segments with missing data as "poor"
- MAP-21 aggregates at the network level, not at the section level
- MAP-21 includes all NHS roads regardless of jurisdiction, does not include non-NHS state roads
- MAP-21 rounds to the nearest 0.1%
- MAP-21 uses lane miles

Will the Public Understand?

		ODOT	MAP-21
Interstate	%Good	71.0	37.3
	%Poor	1.6	2.9
Non-Interstate NHS	%Good	65.3	27.1
	%Poor	14.2	2.3

- 2014 data
- State highways only (off system NHS not included)

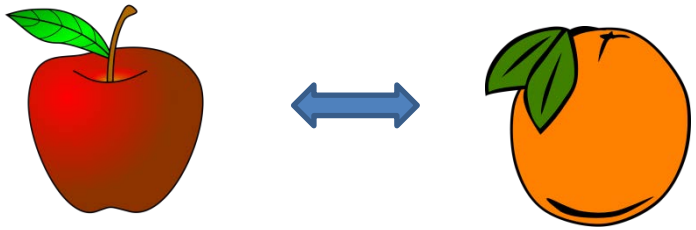
<u>ODOT Report</u>

86% of Oregon's state highway pavements are "fair" or better

<u>MAP-21 Report</u>

2.9% of Oregon Interstate is "poor"

2.3% of Oregon Non-Interstate NHS is "poor"



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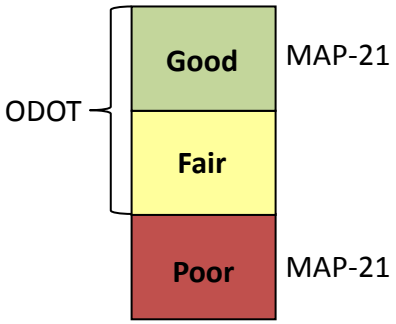
How does Pavement Preservation affect the measures?



Treatment	ODOT's Measure	MAP-21's Measure
Crack Seal	Short Term: No change Long Term: Slows decline	Little to none May make worse if rater couldn't see the cracks before
Seal Coat	Short Term: Little to none Long Term: Slows decline	May increase %Good
Pave	Improve	Improve
PCC Patching	Will improve, as long as patches hold and no new distresses appear	JCP – improve CRCP – still considered as cracking
PCC Diamond Grinding	Will improve, since mostly we use for rut mitigation on CRCP	Will not improve if it was just a faulting issue (no cracking issue)

What's Missing?

A Cost Effectiveness Measure

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ODOT Rulemaking Comments

- “The NPRM pavement performance measures are relatively insensitive to pavement performance parameters actually used to cost-effectively manage pavement networks for local routes.”

- “One of the problems with the pavement performance measures as they are currently written is that they discourage proven, cost effective, pavement preservation techniques such as crack sealing or surface seals. For example, a crack seal or chip seal won’t improve IRI or rutting, and may only provide a temporary reduction in cracking percent if the sealed cracks are visible through the chip seal. Pavement preservation treatments will provide significant life extension to road segments rated as fair, without having an impact on the percent good or percent poor performance measures currently defined. Under pressure to meet performance targets, an agency may instead opt for paving roads in a “worst first” approach and ignore the necessary pavement preservation techniques that cost effectively extend life of fair roads.”

Why do we collect and report data?

A. Accountability to system users (taxpayers)
B. Monitor system health and trends
C. Make more informed decisions around pavement investments
D. Monitor effects of pavement design, materials, or policy decisions
E. Because the feds require us to
F. All of the above (Correct answer!)