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 the video



Transportation Performance Management Travel Time Reliability and Freight Reliability Performance Measures

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TPM requirements for coordination among State Departments of Transportation, Metropolitan Planning Organizations, and operators of public transportation



Topics Covered in Video

- What the travel time reliability measures are
- What the travel time reliability performance measures assess
- Insight into how the measures were established

Statutes & Regulations

- 23 CFR 490.101
- 23 CFR 490.503(a)(1)
- 23 CFR 490.507
- 23 CFR 490.603
- 23 CFR 490.607

The Transportation Performance Management Topic Videos series, produced by the Federal Highway Administration (FHWA), provides State Departments of Transportation, Metropolitan Planning Organizations, operators of public transportation, and other interested parties guidance for implementing Transportation Performance Management (TPM).

National performance measures are a central part of Transportation Performance Management, or TPM. Of these measures, three national travel time reliability performance measures assess performance of the National Highway System and freight movement on the Interstate System. To help explain why these travel time reliability performance measures were established, this video covers:

- What the travel time reliability measures are;
- What the travel time reliability performance measures assess; and
- Insight into how the measures were established.

What Are the Travel Time Reliability Performance Measures?

There are three national performance measures for travel time reliability. They are:

- Interstate Travel Time Reliability;
- Non-Interstate National Highway System (NHS) Travel Time Reliability; and
- Truck Travel Time Reliability Index for the Interstate System, or TTTR Index.

What Performance Measures Assess

A formal definition for travel time reliability is the consistency or predictability in travel times, as measured from day to day, and/or across different times of the day. Travel time reliability is significant to many transportation system users, whether they are vehicle drivers, transit riders, freight shippers, or even air travelers. Personal and business travelers value reliability because it allows them to accurately plan their trip times and departures and arrivals.

For these reasons, the first measure, Interstate Travel Time Reliability, and the second measure, Non-Interstate NHS Travel Time Reliability, assess the percent of the person-miles traveled that are reliable.

Shippers and freight carriers also require predictable travel times. Manufacturers rely on “just-in-time” and “lean manufacturing” practices to maximize efficiency.

This requires time-certain delivery targets to provide the right material, at the right time in the production cycle. If a truck can't make a delivery to a manufacturer or supplier due to unexpected traffic delays, this can have a costly ripple effect on production. Other common shipments that require a high degree of on-time performance include expedited/high-value shipments, perishable products, and cargo that needs to be transferred to another mode. For that reason, the third measure, the Truck Travel Time Reliability Index for the Interstate System, assesses freight reliability.

Let's look at the Interstate and Non-Interstate NHS Travel Time Reliability measures. They assess person-miles traveled instead of vehicle-miles traveled because that better accounts for the movement of people by factoring in the number of people in a vehicle using occupancy factors. The occupancy factors are based on national survey results and traffic volume data. Occupancy considerations also make the measures more sensitive to congestion in areas where more people travel. The FHWA believes this is an appropriate way to measure the reliable movement of people to make investment decisions.



The performance measure related to freight movement on the Interstate uses truck speed and travel time reliability data to calculate the Truck Travel Time Reliability Index for the Interstate System. This measure can be used to identify and quantify major freight truck bottlenecks along Interstate highways. Freight bottleneck locations routinely experience recurring congestion and backups because traffic volumes exceed highway capacity. Bottlenecks are estimated to account for about 40 percent of vehicle hours of delay and therefore are important in assessing factors that influence reliability.

Insight into why these measures were selected

In developing the measures, FHWA determined the Interstate and Non-Interstate NHS Travel Time Reliability Measures should include both urban and non-urban areas. In developing the measures, FHWA learned that outside of urban areas, these measures capture rural road reliability problems that spike as a result of weather events, special events, tourist attractions, and so forth, especially on weekends. In fact, FHWA learned that on both urban and rural segments of the Non-Interstate NHS roadway, weekend travel times resulted in reliability measures that were increased by 5 percent to 7 percent over measures derived solely from weekday travel times.



In finalizing the freight reliability performance measure, a few ideas did not advance. For example, based on feedback during the rulemaking process, FHWA evaluated a freight performance measure for "Percent of the Interstate System Mileage Uncongested" and ultimately determined that changing that proposed measure to consider the factors expressed through comments would be complicated and overly burdensome to implement. Therefore, FHWA made the Truck Travel Time Reliability (or TTTR) Index the only freight-specific national performance measure.



FHWA also evaluated the impact of weighting the measure by truck volumes on segments of roadway, but ultimately did not do so. This measure only applies to the Interstate System, which plays a key role in interstate commerce. If the measure were applied to a range of roadway functional classifications, instead of just the Interstate System, then weighting the measure for truck volume would be more important in determining which roadways serve as major freight routes. FHWA concluded that the measure would only be applied to the Interstate System and that it's important to provide for reliable travel times across the Interstate System, regardless of the level of use by trucks on a single segment of the Interstate System.

For additional information on how to implement the three national travel time reliability performance measures, contact your local FHWA Division Office and visit www.fhwa.dot.gov/tpm.

For a more detailed discussion on how these performance measures were established and evaluated with stakeholder input, please review the summary and discussion of comments in the final rule. Links to all the TPM related rulemakings are at www.fhwa.dot.gov/tpm/rule.cfm

Working together, we can provide strategies to improve our nation and people's lives through great transportation planning.

Additional Resources

Extend your learning through more detailed resources and through interactive learning methods.

TPM Training:

<https://www.fhwa.dot.gov/tpm/resources/training.cfm>

TPM Website:

<http://www.fhwa.dot.gov/tpm/about/index.cfm>

General Portal for FHWA Resources:

<https://www.fhwa.dot.gov/research/library/>

National Highway Institute (NHI) Course Catalogue on Transportation Performance Management:

https://www.nhi.fhwa.dot.gov/downloads/catalog/transportation-performance-management_all-delivery-types_sorted-by-title.pdf

Other References on Final Rule

Final Rule Discussion, Section 490.509(A) through (E)—Data Requirement for the Reliability Measures, <https://www.federalregister.gov/d/2017-00681/p-694>

Final Rule Response to Comments; <https://www.federalregister.gov/d/2017-00681/p-549>; FHWA, An Initial Assessment of Freight Bottlenecks on Highways

Final Rule Response to Comments; NHPP Reliability (VC3);

<https://www.federalregister.gov/d/2017-00681/p-528>

Final Rule Response to Comments; Weighting by Truck Volume (VD1);

<https://www.federalregister.gov/d/2017-00681/p-541>

Final Rule Response to Comments; Weighting by Truck Volume (VD4);

<https://www.federalregister.gov/d/2017-00681/p-562>

<https://www.federalregister.gov/documents/2017/01/18/2017-00681/national-performance-management-measures-assessing-performance-of-the-national-highway-system>

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The content of this document is not a substitute for information obtained from State departments of transportation, appropriate FHWA Division Offices, and applicable laws. Scenarios have been simplified for emphasis and do not necessarily reflect the actual range of requirements applicable to the scenario or this topic.

This document was created under contract number DTFH61-13-D-0004 by the Federal Highway Administration, U.S. Department of Transportation, and is offered to the public to heighten and focus awareness of Federal-aid requirements within the local public agencies community and reinforces the importance of the necessary policies, procedures, and practices. This companion resource contains the script content for the video production of the same name.