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Work-Zone Traffic Performance Measures

tech transfer summary

This project synthesized current work-zone performance measures into a toolbox that details the resources available and also provides current information and ideas on what other state agencies are doing to report performance to the public.

Background

The Federal Highway Administration (FHWA) 2004 Work Zone Safety and Mobility Rule applies to all state and local government agencies that receive federal-aid highway funding after October 12, 2007. This rule was an update to the former regulation (23 CFR 630 Subpart J) to address more-current issues affecting safety and mobility in work zones.

In addition, Moving Ahead for Progress in the 21st Century (MAP-21) emphasizes performance monitoring and performance-based decision-making in order to provide the most efficient investment of transportation funds. MAP-21 focuses on several areas relevant to work zones including safety, congestion reduction, and reduced project delivery delays.

Although more focus is placed on performance measures, many agencies are in early stages of selecting and implementing work zone performance measures.

Project Objectives

The main objective of this research was to identify and summarize how agencies collect, analyze, and report different work-zone traffic-performance measures, which include exposure, mobility, and safety measures. The researchers also examined communicating performance to the public.

Methodology

After conducting and documenting the results of an in-depth literature review to identify effective safety and mobility performance measures and data and reporting needs, the team conducted a survey of seven states surrounding Iowa, as well as Iowa, to provide the most up-to-date information.

These are some of the safety measures that were addressed:

- Crashes (may be stratified by crash type, severity, contributing circumstance)
- Speed
- Work-zone inspection
- Emergency management services
- Surrogate measures

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RESEARCH PROJECT TITLE
Work-Zone Traffic Performance Measures

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These are some of the mobility measures that were addressed:

- Queue
- Delay
- Capacity
- Speed
- User measures
- User measures involving work-zone incidents
- Work-zone incidents rating

For communicating with the public, the following were examined:

- Missouri DOT TRACKER
- Virginia DOT DASHBOARD
- Washington State DOT Gray Notebook
- Wisconsin DOT MAPSS

The team synthesized the knowledge gathered into the toolbox titled *Synthesis of Work-Zone Performance Measures* on this project.

Key Findings

The selection of which work zones to monitor, the metrics selected, and the frequency of monitoring depends on federal and agency rules and agency and stakeholder needs and priorities. Again, three different types of performance measures are exposure, safety, and mobility or traffic operation measures.

Exposure measures, which include measures such as volume or hours of operation, are used to normalize safety or mobility performance measures to a common denominator so that performance measures can be compared among facilities. For instance, crashes per hour of work-zone operation provide an indication of both number of crashes and amount of time the work zone was present.

Perhaps one of the first steps in collecting data for work-zone performance measures is to collect data that the agency already has. These data can include traffic counts, speed captures, and various other information. Usually, these data can be found in traffic management centers (TMCs) and traveler information systems.

Ways to collect data for work-zone performance measures include both permanent and temporary evaluation systems and devices, traffic management systems, public surveys, and external sources (Margiotta et al. 2006).

Effective technologies for collecting mobility data (Chau 2012)

Technology	Data Collection Uses
Automatic license plate recognition	Travel times, speeds, vehicle classification
Bluetooth	Travel times, speeds
Magnetic sensor	Travel times, speeds
Microwave radar	Volume, length of vehicles, speeds, vehicle headway
Cellular phone	Speeds, traffic times
Global positioning system	Speeds, traffic times

Implementation Readiness and Benefits

The Iowa Department of Transportation (DOT) is working actively to integrate work-zone performance measures into their standard procedures. They are currently involved in research into other state work-zone performance ventures.

The *Synthesis of Work-Zone Performance Measures* that was developed through this research provides up-to-date information and knowledge to help state departments of transportation (DOTs), as well as counties and cities, to better address reporting of work-zone performance. The toolbox also details the resources available on the topic and provides current information and ideas on what other state agencies are doing to report performance to the public.

In essence, the toolbox outlines the different measures that some states are pursuing, options for data collection, and examples of communicating performance to the public. The final section of the document addresses future research needs.

References

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