SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

# Reliability Data and Analysis Tools (L02/L05/L07/L08/C11)

***A suite of tools to help transportation planners and engineers improve monitoring and analysis of data to achieve more consistent, predictable highway travel***

## Challenge

Motorists continue to experience increasing levels of congestion on America's roadways. More than half of all congestion is due to unexpected or nonrecurring delays, caused by crashes, work zone construction, special events, or other factors. Inconsistent travel conditions are frustrating, cost travelers time and money, and put motorists and traffic incident responders at greater risk.

Reliability promotes the quality and consistency of travel times encountered by people as they go about their daily lives. To improve travel-time reliability, transportation agencies need data monitoring, analysis, and planning tools to understand fluctuations in traffic and to identify effective strategies to reduce the variable and uncertain travel times caused by recurring and nonrecurring congestion. Traditionally, analysis tools have focused on average conditions and not the range of travel times and how they vary over time in response to various traffic, roadway, and weather conditions.

## Solution

### The Bundle: Reliability Data and Analysis Tools (L02/L05/L07/L08/C11)

SHRP2 has developed a bundle of products to help agencies address travel-time reliability as part of a logical path of improvement from data to decisions:

**DATA COLLECTION**

- Guide to Establish Monitoring Programs for Travel-Time Reliability (L02)

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**ANALYSIS**

- Reliability by Design (L07)
- Incorporating Travel-Time Reliability into the Highway Capacity Manual (L08)
- Tools for Assessing Wider Economic Benefits of Transportation (C11)

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**BETTER DECISIONS**

- Handbook for Incorporating Reliability Performance Measures into Transportation Planning and Programming (L05)

These products enable agencies to include reliability in their assessment of transportation alternatives so they set of benefits in their decisions.

### Data Collection

#### Guide to Establish Monitoring Programs for Travel-Time Reliability (L02)

This guide provides agencies with methods for designing programs to monitor travel-time reliability and helps them establish a baseline of system data to help identify current performance and areas for improvement. It serves as a guidebook for designing, building, operating, and maintaining these systems and addresses freeways, toll roads, and urban arterials, providing direction on technical, analytical, economic, and institutional implementation issues.

### Analysis

With improved data, agencies are better equipped to analyze current conditions and the effects of various design and operational treatments intended to improve reliability.

### *What is the Reliability Data and Analysis Tools bundle?*

*SHRP2 has developed a bundle of products to help agencies address travel-time reliability as part of a logical path of improvement from data to decisions:*

*Guide to Establish Monitoring Programs for Travel-Time Reliability (L02)*

*Reliability by Design (L07)*

*Incorporating Travel-Time Reliability into the Highway Capacity Manual (L08)*

*Tools for Assessing Wider Economic Benefits of Transportation (C11)*

*Handbook for Incorporating Reliability Performance Measures into Transportation Planning and Programming (L05)*

**RELIABILITY**

*Continued on next page.*

**Products from the Reliability SHRP2 focus area help transportation organizations improve travel reliability by reducing congestion through incident reduction, management, response, and mitigation.**

**Visit: www.fhwa.dot.gov/GoSHRP2**
**Learn more about products, case studies, and implementation assistance.**

### Reliability by Design (L07)

This is a spreadsheet-based treatment analysis tool and design guidebook that helps agencies estimate the effectiveness and comparative economic benefits of design treatments at specific locations. The tool can predict benefits of a wide range of treatments and strategies so that reliability and nonrecurrent congestion considerations can become more integral to the planning and design process.

### Incorporating Travel-Time Reliability into the Highway Capacity Manual (L08)

This is a new analytical procedure which enables planners and engineers to estimate travel-time reliability performance measures on major freeways and urban arterials in a corridor.

### Tools for Assessing Wider Economic Benefits of Transportation (C11)

Another SHRP2 Solution related to the Reliability bundle includes the product, Tools for Assessing Wider Economic Benefits of Transportation (C11). This product, developed under the Capacity focus area, offers a suite of spreadsheet-based analysis tools that will provide the range of reasonable economic impact expectations for a proposed highway project. One of the economic analysis tools in this suite focuses on Reliability and was tested with the other Reliability Data and Analysis Tools during pilots at several sites.

### Better Decisions

### Handbook for Incorporating Reliability Performance Measures into Transportation Planning and Programming (L05)

This handbook provides an overview of procedural and technical approaches for State DOTs and MPOs to integrate mobility and reliability performance measures and strategies into transportation planning and programming processes. These approaches enable agencies to include reliability in their decisions about which transportation investments to select. This product will be integrated into the Collaborative Decision-Making Framework web-based tool being developed as a part of the SHRP2 Solutions Capacity Project known as PlanWorks.

## Benefits

These tools help transportation agencies better identify and implement strategies to reduce the variability and uncertainty of travel times for commuters and other travelers as well as the freight industry. State and local transportation agencies, shippers and receivers, business owners, and commuters all benefit from this suite of products.

## How can you learn more?

Visit: www.fhwa.dot.gov/GoSHRP2

- Additional product information
- Information about how this product is being used in the field
- Contact information for peers who are familiar with this product
- Links to research reports

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### Save Lives

Reducing reliability related delays will result in fewer incident-related crashes.

### Save Money

Investments in reliability improvements have benefit-cost ratios ranging from 5:1 to 30:1 due to reduced traffic delays and improved safety. Less variability in travel time means less time has to be planned for trips. Improved reliability supports efficient freight movement.

### Save Time

Tools lead to reduced traffic congestion and traveler delay. Preventive measures mitigate problems before serious delays and bottlenecks occur.

### About SHRP2 Implementation

The second Strategic Highway Research Program (SHRP2) is a partnership of the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). TRB completed the research, and now FHWA and AASHTO are jointly implementing the resulting SHRP2 Solutions that will help the transportation community enhance productivity, boost efficiency, increase safety, and improve the reliability of the Nation's highway system.