

# Reliability of Roadway Safety Management Methods

## More Reliable Methods, Better Decision Making



High quality data and reliable analytical methods are the foundation of data-driven decision-making. The Reliability of Roadway Safety Management Methods series is now available and includes four information guides that identify opportunities to employ state-of-the-art (more reliable) methods to support decisions throughout the roadway safety management process. The following information guides cover various components of the roadway safety management processes, including:

- [Network Screening](#)
- [Diagnosis](#)
- [Countermeasure Selection](#)
- [Safety Effectiveness Evaluation](#)

*The guides in this series demonstrate the value of more reliable methods and limitations of traditional (less reliable) methods.*

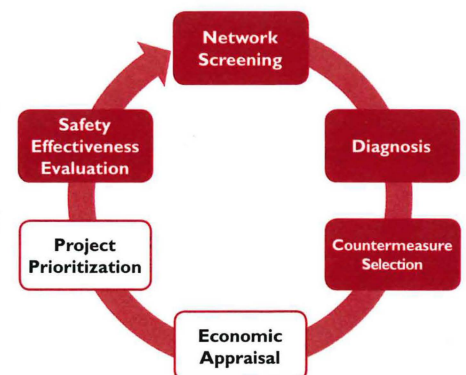
### ■ USER BENEFITS

Each guide provides information to the user toward implementation of more reliable methods for roadway safety management. These guides will help users to:

- Understand the importance of safety management methods and how they relate to the roadway safety management process.
- Understand the strengths and limitations of various safety management methods.
- Understand the value of more reliable safety management methods.
- Select more reliable safety management methods.
- Identify the data requirements to apply more reliable safety management methods.
- Identify tools and resources to support safety management methods.

### ■ ROADWAY SAFETY MANAGEMENT PROCESS

The roadway safety management process is an integral part of the project development process. The results provide information for system planning, project planning, design and construction, and operations and maintenance of a transportation system. The guides in this series focus on identifying opportunities for improving safety management methods through network screening, diagnosis, countermeasure selection, and safety effectiveness evaluation.



## ■ ROADWAY SAFETY MANAGEMENT PROCESS *(continued)*

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The following is a brief summary of the six-step roadway safety management process and opportunities to improve the reliability of underlying methods and resulting decisions.

**Step 1. Network screening** is the process of analyzing the network to identify sites for further investigation. This guide provides a comparison of network screening performance measures. Examples demonstrate the value of applying more reliable measures such as Empirical Bayes to account for potential bias due to regression-to-the-mean, changes in traffic volume, the nonlinear relationship between crash frequency and traffic volume, and differences in crash severity.

**Step 2. Diagnosis** is the process of further investigating sites identified in network screening to identify existing and potential safety issues. Examples highlight the benefits of incorporating more reliable methods such as the Haddon Matrix, test of proportions, and test of time trends.

**Step 3. Countermeasure selection** is the process of assessing ways to address or mitigate the underlying safety issues identified in diagnosis. Examples demonstrate the value of applying more reliable methods to identify targeted, effective, and defensible countermeasures. The Haddon Matrix and crash modification factors help to select targeted countermeasures and assess the range of safety effects for contemplated countermeasures.

**Step 4. Economic appraisal** is the process of comparing the relative costs and benefits of the various alternatives when it is not feasible or practical to implement all potential countermeasures. There is not a separate guide for economic appraisal in the Reliability of Roadway Safety Management Methods series because it involves policy-level decisions such as appropriate crash costs, discount rates, selected economic method, and non-monetary local considerations.

**Step 5. Project prioritization** is the process of developing a portfolio of projects for selection based on available funding in a given fiscal year. There is not a separate guide for project prioritization in the Reliability of Roadway Safety Management Methods series because it involves policy-level decisions such as overall agency goals.

**Step 6. Safety effectiveness evaluation** is the process of estimating the safety impacts of implemented projects, which provides a critical feedback link for future decisions. This guide compares several variations of methods in before-after studies, including simple, linear and non-linear traffic volume correction, comparison group, and Empirical Bayes. Examples demonstrate the value of applying more reliable methods that account for potential bias due to regression-to-the-mean, changes in traffic volume, the nonlinear relationship between crash frequency and traffic volume, and general temporal effects.

## ■ TOOLBOX

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The Reliability of Roadway Safety Management Methods series is available free of charge from the FHWA Roadway Safety Data and Analysis Toolbox. To access the Toolbox, go to <http://safety.fhwa.dot.gov/rsdp/>

## ■ ROADWAY SAFETY DATA CONTACTS

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Stuart Thompson [Stuart.Thompson@dot.gov](mailto:Stuart.Thompson@dot.gov)