

These HSIP processes are discussed in the HSIP Manual, which provides information on topics ranging from core safety concepts to detailed discussions of technical methods for data-driven safety planning. Whether you are a new safety professional or have been working in the safety field for a number of years, the HSIP Manual is a comprehensive highway reference for State and local transportation safety practitioners working on HSIPs and developing a program of highway safety improvement projects.

The HSIP Manual is available online at <http://safety.fhwa.dot.gov/hsip>. Copies of the HSIP Manual can be requested from FHWA's report center at: [report.center@dot.gov](mailto:report.center@dot.gov).

A two-day instructor-led workshop introduces procedures and techniques for:

- Analyzing data to identify sites for safety improvement;
- Conducting engineering studies and identifying countermeasures;
- Prioritizing projects; and
- Evaluating the safety effects of projects and programs.

A series of HSIP-related web-based training courses also are available to supplement the HSIP Manual:

- HSIP Overview;
- HSIP Project Identification;
- HSIP Project Evaluation;
- SHSP Development; and
- SHSP Implementation.

Course participants might include State and local transportation professionals in the areas of data collection and analysis, safety management processes, and planning and project management.

All training courses are available through the National Highway Institute. For more information, visit their web site at <http://nhi.fhwa.dot.gov> or go to <http://safety.fhwa.dot.gov/hsip/resources/#training>. For additional information related to the HSIP, contact:

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# Highway Safety Improvement Program

## Procedures and Tools



*The Focus  
is Results*

## HIGHWAY SAFETY IMPROVEMENT PROGRAM

Motor vehicle crashes place millions of people at risk for death or injury, disproportionately affect the young, and are the leading cause of lost years of productive life. One way to prevent these crashes is by identifying locations with high crash rates or identifying crash patterns on specific roadway types and making safety improvements.

The purpose of the Highway Safety Improvement Program (HSIP) is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on Tribal land.

The Highway Safety Improvement Program (HSIP) provides funding to make these critical improvements. With a focus on results, the program emphasizes a data-driven, strategic approach to reducing highway deaths and injuries through the implementation of highway safety improvement projects.

The HSIP consists of the following components:

- **Strategic Highway Safety Plan (SHSP)**—A statewide coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads.
- **Railway-Highway Crossing Program**—A long-established program that provides funding for the elimination of hazards at railway-highway crossings.
- **Highway safety improvement projects**—A program of highway safety improvement projects that are consistent with the State's SHSP, target an identified safety problem using a data-driven process, and contribute to a reduction in fatalities and serious injuries. A comprehensive program should include both spot and systemic safety improvements.

This brochure focuses on the highway safety improvement projects and the available procedures and tools that support and advance these efforts.

The program of highway safety improvement projects is generated using a roadway safety management process administered at the State, regional, or local level. The roadway safety management process involves four basic steps—analyze the data, identify appropriate countermeasures, prioritize and select projects, and evaluate results.

## STEP 1: ANALYZE DATA

Data provide evidence that a safety improvement is needed. Crash data is the most common safety data source; however, agencies also use other data sources, including, but not limited to, roadway data, traffic volume, citation/adjudication data, or information from law enforcement and emergency medical services.

The data are analyzed to identify:

- 1) Crash patterns that can be addressed with systemic safety improvements or countermeasures that can be applied on roadways that share a common safety problem.
- 2) Sites with potential for safety improvement.

This process helps agencies visualize, examine, explain, and predict the occurrence of motor vehicle crashes. The SHSP uses a data-driven approach to identify the State's most serious transportation safety issues, and the findings of the SHSP data analysis may be a good starting point to guide the problem identification process. For example, if intersection safety is an emphasis area in the State SHSP, HSIP planners can obtain the data that already has been collected to identify intersections with potential for safety improvement based on crash experience, or further refine the data analysis to identify locations with high-risk roadway characteristics that demonstrate the potential for future crashes.

An example of this approach is how the Thurston County, Washington Public Works Department selected roadway departure on horizontal curves as a focus crash type. The approach provided Thurston County with a proactive, data-driven, and defensible approach to identifying curves for improvement prior to a severe crash occurring, rather than reacting after an incident has occurred.

## STEP 2: IDENTIFY POTENTIAL COUNTERMEASURES

Once potential sites have been identified, the next step involves selecting the right countermeasure that will improve safety. To select appropriate countermeasures:

- Identify the factors that contributed to the crash, such as the design of the roadway, problems with the vehicle, the behavior of the road user, and any environmental elements;
- Conduct engineering studies and road safety audits (RSA) that will further explain the nature and extent of the safety problem through data analysis and an assessment of field conditions or hazards; and
- Assess the effectiveness of potential countermeasures by reviewing the research or examining the strategies and countermeasures in the SHSP.

Consideration should also be given to other road safety solutions beyond engineering countermeasures that can help improve safety, such as high-visibility enforcement or public outreach and education. The New Hampshire Department of Transportation used HSIP funding to form the New Hampshire Driving Toward Zero (DTZ) Coalition and the development of a DTZ program. DTZ includes a web site, media materials, a pledge, a memory wall, and information for the public on driving smart. Information is available at <http://nhdtz.com/>.



## STEP 3: PRIORITIZE AND SELECT PROJECTS

It is not possible to implement every project due to limited resources. Consequently, agencies must prioritize projects based on the overall cost of the countermeasure, its expected effectiveness, and estimated service life.

The purpose of the prioritization process is to ensure that the maximum safety benefit (i.e., lives saved) will be obtained for the amount of funds invested. All countermeasures are not created equal particularly when it comes to cost. For instance, the Department of Transportation has identified a site experiencing a high number of run-off-the road crashes. After reviewing the data and conducting a RSA, the major problem is a tight curve on the roadway. Two effective approaches are considered: one would be to straighten the roadway and eliminate the curve and another is to install curve warning signs and rumble strips to alert motorists to the hazard. A comparison of cost and benefits reveals the second option can achieve the greatest safety benefit for the least cost.

## STEP 4: DETERMINE EFFECTIVENESS— EVALUATE!

The ultimate measure of success for any roadway safety management program is a reduction in fatalities and serious injuries. It is important for agencies to know whether their HSIP meets this ultimate test and evaluation is the tool which transforms guesswork into certainty. The benefits of evaluation go beyond determining the effectiveness of an individual countermeasure. Evaluation also can be used to determine the effectiveness of a single project or a group of projects, or to determine the effectiveness of an entire program. Evaluation ensures HSIP resources are used effectively, corrects deficiencies in the current program, and can be used to leverage additional resources.

