

# HSIS

HIGHWAY SAFETY INFORMATION SYSTEM

Many elements go into ensuring the safety of our highways, from program policy decisions to roadway and traffic design. To assist safety analysts, researchers, and others involved in the study of highway safety, the Federal Highway Administration (FHWA) operates and maintains the Highway Safety Information System (HSIS).

HSIS is a roadway-based system that provides quality data on a large number of accident, roadway, and traffic variables. It uses data already being collected by States for managing the highway system and studying highway safety. The data are acquired annually from a select group of States, processed into a common computer format, documented, and prepared for analysis.

HSIS is used in support of the FHWA safety research program and provides input for program policy decisions. HSIS is also available to professionals conducting research under the National Cooperative Highway Research Program, universities, and others studying highway safety.

## HSIS

### Participating States

In 1987, five States were chosen for HSIS: Illinois, Maine, Michigan, Minnesota, and Utah. (Michigan's participation ended in 1997 and Utah's in 2000 due to changes in inventory data collection.) The primary criteria for State selections were the data availability (the range of data variables collected), quantity, and quality.

In 1995, California, North Carolina, and Washington were added to increase the amount of data available and to provide better geographic coverage.

In 2002, Ohio joined HSIS to provide additional curvature and grade inventories. Data from the Charlotte, NC, urban area were added in early 2011.

This relational database contains basic crash files, roadway inventory files, and traffic volume files from these nine States. The database also includes information about highway intersections, interchanges, and curves/grades from some States. Table 1 details the information available from each of the currently participating States.

Table 1. Data files available in participating States.

|                | CA | IL | ME | MN | NC | WA | OH |
|----------------|----|----|----|----|----|----|----|
| Crash          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Roadway        | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Traffic Volume | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Curve/Grade    |    | ✓  |    |    |    | ✓  | ✓  |
| Intersection   | ✓  |    | ✓  | ✓  |    |    |    |
| Interchange    | ✓  | ✓  | ✓  | ✓  |    | ✓  |    |

### Data Format

All of the data files are stored in the relational database formatted files. Data can be extracted in various formats such as Microsoft Excel® and Access®, dBase, ASCII, etc. or converted to SAS format for analysis. Data can be provided via different mediums (CD-ROM, FTP, e-mail, etc.). The data can be requested by filling out an HSIS data request form online at the HSIS Web site.

**Crash files** contain basic accident, vehicle, and occupant information on a case-by-case basis. Typically, this information includes type of accident, types of vehicle, sex and age of occupants, fixed object struck, accident severity, and weather conditions.

**Roadway Inventory files** contain information about roadway cross sections, types of roadway and other roadway characteristics. Data include number of lanes, lane and median width, shoulder width and type, rural or urban designation, and functional classifications.

**Traffic Volume files** list Annual Average Daily Traffic (AADT) data. Additional information on hourly volumes and truck traffic percentages is also available in selected States and/or locations.

**Curve/Grade files** contain horizontal curve and vertical grade information. Data include degree of curve, length of curve, and percent grade.

**Intersection files** include traffic control type, intersection type, signal phasing, and turn lanes at highway intersections.

**Interchange files** include traffic control type, intersection type, signal phasing, and turn lanes at highway intersections.

*All files have been compiled from police-reported accident data on State-maintained highways. Table 2 provides example data characteristics.*

### Safety Data in One Location

HSIS enables users to analyze a large number of safety problems. HSIS can help researchers and analysts identify problems, examine the size and extent of a particular safety problem, and design models that help predict future accidents, given specific roadway and traffic characteristics.

Table 2. Data characteristics for participating States.

|                | First Year Available | Average Crashes per Year | Roadway Mileage |
|----------------|----------------------|--------------------------|-----------------|
| California     | 1991                 | 171,000                  | 15,400          |
| Illinois       | 1985                 | 144,000                  | 17,300          |
| Maine          | 1985                 | 37,000                   | 23,300          |
| Minnesota      | 1985                 | 77,000                   | 57,300          |
| North Carolina | 1991                 | 112,000                  | 64,400          |
| Washington     | 1993                 | 43,000                   | 7,200           |
| Ohio           | 1997                 | 132,000                  | 18,300          |

## Web Site ([www.hsisinfo.org](http://www.hsisinfo.org))

The HSIS Web site contains links to HSIS products such as summary reports, safety analysis tools, and various data request tools as described below. The Web site can be accessed either from <http://www.hsisinfo.org/> or by going to <http://www.fhwa.gov/research> and clicking on the Highway Safety Information System link.

## Guidebooks

Guidebooks are available to help analysts and programmers use HSIS. A guidebook for each State describes the State's data system, displays an alphabetized listing (by file type) of all available variables, defines each category present within each variable and presents notes on the quality of the variable. The guidebooks are available on the HSIS Web site.

## Data Element Tables

HSIS also maintains two data element tables for all the States. The two tables list each State's crash- and roadway-related variables side by side, respectively. These tables enable data requesters to compare the availability of variables between specific States and are accessible through the HSIS Web site.

## HSIS Summary Reports

HSIS is used in a wide variety of research efforts. Significant results from these efforts are documented in HSIS Summary Reports. To obtain copies of these reports, visit the HSIS Web site or call the HSIS Report Center at (202) 493-3464.

## HSIS Laboratory

The HSIS laboratory at the Turner-Fairbank Highway Research Center provides a working environment that enables FHWA and on-site project staff to study and analyze highway safety issues and to provide support for users including the following:

- Research files and support. Staff works with users to define file components and layouts and merges data from crash and other files as needed. Staff also provides on-going support in data interpretation and data merging.
- Fatality Analysis Reporting System (FARS) and National Automotive Sampling System General Estimates System (NASS GES) files and output. In addition to HSIS State data, staff can provide support to users wishing to analyze FARS data and data from NASS GES.
- Support for geographic information system (GIS) tools. Staff provides support for GIS-based safety analysis tools described on the HSIS Web page (e.g., spot intersection analysis, safe routes for walking to school).

For more information about HSIS, contact:

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[www.hsisinfo.org](http://www.hsisinfo.org)

**The Essential Information  
System for Making Informed  
Decisions About Highway Safety**



U.S. Department of Transportation  
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