

# DRISI

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

# Research

# Notes

Transportation  
Safety and  
Mobility

MAY 2024

Project Title:  
Highway Safety Manual  
Implementation

Task Number: 2318

Start Date: October 1, 2011

Completion Date: December 31,  
2025

Task Manager:  
Jerry Kwong  
Transportation Engineer (Electrical)  
jkwong@dot.ca.gov

## Highway Safety Manual Implementation

Provide guidance on whether an agency should calibrate the Safety Performance Functions (SPFs) from the Highway Safety Manual (HSM) or develop jurisdiction-specific SPFs.

### WHAT IS THE NEED?

The Highway Safety Manual (HSM) (2010), 1st Edition, was published by American Association of State Highway and Transportation Officials (AASHTO) in 2010. The HSM provides the best factual information and tools in a useful form to facilitate roadway planning, design, operations, and maintenance decisions based on precise consideration of their safety consequences. The primary focus of the HSM is the introduction and development of analytical tools for predicting the impact of transportation project and program decisions on road safety.

The AASHTO Standing Committee on Highway Traffic Safety has established a goal to institutionalize the AASHTO Highway Safety Manual and its associated analytical tools to make data-driven decisions advance the science of safety, and to ultimately reduce fatalities and serious injuries.

### WHAT ARE WE DOING?

This study would conduct research tasks and develop products that would enable States to accelerate their implementation of the HSM. The specific tasks and products would be identified and prioritized by a Technical Working Group consisting of one representative each from participating agencies. Specific tasks may include:

1. Developing a calibration manual to accompany the HSM that provides practical advice and examples on how best to adapt HSM calibration procedures to meet the needs of a particular agency;
2. Developing technical guidance for agencies on developing safety performance functions; and
3. Developing guidance for agencies on assembling and managing the data needed for safety analyses.



DRISI provides solutions and  
knowledge that improves  
California's transportation system

The study would also facilitate Technical Working Group representatives' participation in peer exchanges and other forums through which agencies can exchange information, best practices, lessons learned, and remaining challenges in implementing the HSM appropriately into agencies system planning, project planning and preliminary engineering, design and construction, and operations and maintenance procedures and processes. These exchanges would feed an annual process through which the Technical Working Group identifies and prioritizes future tasks to be conducted under the study.

## WHAT IS OUR GOAL?

The objectives of the study are:

1. To advance ongoing efforts by lead states to implement the Highway Safety Manual, and
2. To expand implementation to all states. This study would be coordinated with other ongoing and planned implementation activities sponsored by AASHTO, Federal Highway Administration, and Transportation Research Board, including National Cooperative Highway Research Program (NCHRP) Project 17-50 "Lead States Initiative for Implementing the Highway Safety Manual." It will also be coordinated with projects that develop content for future editions of the HSM including NCHRP Project 17-45 "Enhanced Safety Prediction Methodology and Analysis Tool for Freeways and Interchanges," NCHRP Project 17-54 "Consideration of Roadside Features in the Highway Safety Manual," and Transportation Pooled-Fund Study TPF-5(099) "Evaluation of Low Cost Safety Improvements."

## WHAT IS THE BENEFIT?

The HSM provides methods to integrate quantitative estimates of crash frequency and severity into planning, project alternatives analysis, and program development and evaluation,

allowing safety to become a meaningful project performance measure. HSM will support states' progress toward federal, state, and local safety goals to reduce fatalities and serious injuries.

As public agencies work toward their safety goals, the quantitative methods in the HSM can be used to evaluate which programs and project improvements are achieving desired results; therefore, agencies can reallocate funds toward those that are having the greatest benefit.

## WHAT IS THE PROGRESS TO DATE?

This task has completed the safety performance functions (SPFs) guidebook for the Highway Safety Manual (HSM). This guidebook is intended to guide whether an agency should calibrate the SPFs from the HSM or develop jurisdiction-specific SPFs. The guidebook discusses the factors that must be considered while making the decision. It will be helpful to practitioners at state and local agencies and researchers.

- Work continued the three main tasks on Advancing Applications of DDSA (Data-Driven Safety Analysis) project.
- A revised first draft of Task 3 is expected by end of March 2024.
- The contractor is finalizing case study examples in the Task 4 communications guide, addressing final comments, and finalizing graphics that will be shown in the guide. FHWA plans to proceed to final review and publication as soon as practicable.