Executive Summary

The American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM) provides safety knowledge and tools in a useful form to facilitate improved decision making based on safety performance. While other HSM initiatives have focused on examples of HSM implementation and results of analyses, AASHTO and the Federal Highway Administration (FHWA) sponsored a domestic scan to identify leading practices in the use of the HSM for planning, design, and operations.

The objectives of the scan were to:

■ Evaluate the processes, job aids/tools, workforce training, and manner in which state transportation agencies have implemented and integrated the HSM into performance-based processes in planning, design, and operations

■ Learn the practices of state transportation agencies that have most comprehensively implemented the HSM since its publication in 2010

■ Disseminate information about leading practices in use of the HSM in planning, design, and operations to other state and local transportation agencies to help them reduce traffic fatalities and serious injuries on all public roads and make informed decisions to reduce project and operating costs

The scope of this scan extends beyond simply focusing on the implementation of analysis procedures described in the HSM and addresses, more broadly, the implementation of performance-based, advanced safety analyses to facilitate improved decision making.

The scan focused on the practices of state transportation agencies that have most comprehensively implemented and integrated the HSM and performance-based, advanced safety analyses in planning, design, and operations in seven areas of interest:

■ Status/Policy

■ Training

■ Technical Functions

■ Data

■ Cultural

■ Information Dissemination

■ Achieving Performance

Ten state transportation agencies, considered leaders in HSM implementation, participated in the scan:

■ Alabama Department of Transportation (ALDOT)

■ Florida Department of Transportation (FDOT)

■ Illinois Department of Transportation (IDOT)

■ Louisiana Department of Transportation and Development (LADOTD)

- Maine Department of Transportation (MaineDOT)

- Michigan Department of Transportation (MDOT)

- Missouri Department of Transportation (MoDOT)

- Ohio Department of Transportation (ODOT)

- Virginia Department of Transportation (VDOT)

- Washington State Department of Transportation (WSDOT)

This report is intended to help state transportation agencies that have not yet begun to implement the HSM, are beginning to implement the HSM, or are looking to further enhance the implementation of the HSM within their agencies. Most of the recommended actions are also applicable to local transportation agencies and metropolitan planning organizations (MPOs) in similar situations regarding HSM implementation. The following actions, aligned with the seven areas of interest established at the outset of the scan, are recommended for state transportation agencies to help implement and integrate HSM and performance-based, advanced safety analysis procedures (PBASAPs) within their agencies:

Status/Policy

- An HSM champion is needed to advocate and seek support to incorporate HSM methods and PBASAPs within each of the programs and departments in the agency. The champion should communicate a vision, purpose, and need for HSM implementation within the agency.

- Executives and upper management should be provided training to understand the value of reliable and accurate data, the need for data integration, and quantitative safety analysis both within and outside of the safety program. The training may garner support and prioritization of agency policies regarding data collection and maintenance and PBASAPs.

- Agencies should consider developing an HSM implementation plan and/or an HSM implementation team to guide the direction of HSM implementation within their agency.

- Agencies should support their staff's participation on AASHTO and Transportation Research Board (TRB) committees and subcommittees that oversee the research and implementation of the HSM and PBASAPs. Through their participation on these committees and subcommittees, staff will better understand the importance of reliable and accurate data, training needs, and limitations and applications of various methods and procedures, and be better prepared to implement research results.

- Agencies should adopt the Toward Zero Deaths National Strategy on Highway Safety or other zero-based traffic safety initiatives, if they have not already done so, because it provides a platform for implementing and integrating HSM methods and PBASAPs within agencies.

- Agencies should identify incremental steps to implement certain aspects or applications of the HSM within their agencies and, over time, look to more fully integrate HSM procedures within their policies and programs throughout departments. Such steps could be incorporated into an HSM implementation plan (see the third item in this list).

- Agencies should develop executive orders, policies, procedures, and guidance documents to facilitate the implementation of HSM methods. Such policies and guidance should address the tort liability implications of using the term "safety" in planning, programming, and project development; align

project purpose and needs statements with safety evaluation, analysis, and diagnosis activities; and put into place agreements with oversight agencies (e.g., stewardship agreement).

Training

Agencies should develop a robust HSM training program that:

- Provides various levels and types of HSM training for target audiences.

- Demonstrates tools that can be used to implement HSM procedures and instructs users on how to properly use the tools to analyze safety and interpret the results.

- Addresses the type of data used in the HSM, such as site characteristics, traffic volume and crash data; presents PBASAPs; and demonstrates how users can access their agency's data for analyses.

- Uses a variety of training methods such as in-person sessions, webinars, and web-based tutorials that users can access on an as-needed basis.

- Is updated regularly to incorporate new material and address gaps in knowledge related to application of HSM procedures for planning, programming, and project development.

- Uses in-house staff to deliver training to increase trust and acceptance and provide support following training.

Technical Function

- Agencies should provide guidance on the recommended level of safety analysis expected for projects based on the purpose and need statement, the type and level of funding, the level of complexity, and other criteria to increase consistency among projects.

- Agencies should put processes in place to better understand project scope, definition, and design approach and incorporate safety performance quantification at the earliest stage of planning, programming, and project development so it can be effectively utilized and project delays are minimized.

- Agencies should recognize the value of evaluation, analysis, and diagnosis of safety performance needs across the various disciplines that have a responsibility for safety performance and decision making.

- Agencies should evaluate existing tools and commercially available software that apply HSM methods and PBASAPs and select or develop tools to meet their needs, making it easier for personnel to understand, implement, and apply HSM methods and PBASAPs as part of their job responsibilities.

- Agencies should consider supplementing their traditional, crash-based safety management approach with a systemic approach to address crash types that are widely dispersed across the highway network and are not well suited for remedy using a traditional, crash-based safety management approach.

- State transportation agencies should work with local agencies and MPOs to provide prioritized lists of sites with potential for safety improvement based on advanced safety analyses and reliable performance measures and assist them in developing their own local road safety plans.

Data

- Agencies should develop short-term and long-term visions for acquiring and using safety data. First, they should identify ways to use already available data to achieve early implementation of HSM methods and PBASAPs. Next, they should identify incremental steps for collecting additional data and integrating it into HSM methods and PBASAPs.

- Agencies should develop a safety data business plan to guide their safety data management practices.

- Agencies should establish and enforce data governance policies that address data needs in each business area.

Cultural

- Agencies should use HSM training programs and marketing material to educate their staff concerning the difference between nominal and substantive safety and the limitations associated with using crash rate as the primary measure of safety performance.

- Agencies should seek approaches and opportunities to achieve a cultural shift to institute performance-based processes within their respective agencies. Changes in culture can be driven by:

  ○ Establishing executive orders and policy directives that provide the foundation for integrating performance-based processes throughout the agencies' various programs and departments.

  ○ Implementing a process for leading change.

  ○ Establishing an HSM implementation team and/or plan.

  ○ Making safety analyses simpler and more accessible to internal and external staff.

Information Dissemination

- Agencies should use a variety of approaches (e.g., top-down, bottom-up, and peer-to-peer) to communicate internally to implement HSM methods and PBASAPs.

- When communicating safety analysis results to external stakeholders, agencies should use simple language; present information using visual aids such as maps; target the discussion to the specific audience; avoid discussing crash costs; and discuss all aspects of the project, including safety, operations, design, environment, and context.

- Staff whose primary responsibility is safety should periodically meet with their agency's legal counsel to understand liability concerns associated with HSM methods and PBASAPs.

Achieving Performance

- Agencies should set clear goals and objectives for HSM implementation and establish measures for tracking the success of their HSM implementation.