

TRB Safety Performance and Analysis Committee
(ACS20)

User Liaison Subcommittee (ULSC)
Update on Activities

ACS20 Midyear Meeting

July 30, 2021

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Agenda

- **User Liaison Subcommittee (ULSC) Vision, Mission and Scope**
- **ULSC Events since TRB 2021**
- **ULSC Working Groups – update on current/on-going activities**
- **New Initiatives**
- **Research and Synthesis Topics Update**

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User Liaison Subcommittee

Vision and Mission

- Vision
 - The actions of the User Liaison subcommittee aim to achieve the institutionalization of the state of the art of quantitative highway safety information into professional practice; to be demonstrated by the widespread understanding and effective application of the fundamentals of highway safety.

- Mission
 - Institutionalization of HSM practice, procedures, and future advances in quantitative highway safety performance by users, including:
 - AASHTO
 - FHWA
 - TRB Committees
 - ITE
 - Local agencies
 - Consultants
 - Universities, Educators and Trainers
 - International users
 - Researchers

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User Liaison Subcommittee - Scope

- The User Liaison subcommittee coordinates the activities of the Safety Performance and Analysis Committee related to the implementation (in terms of understanding and application) of the HSM and other future quantitative analysis methods and procedures approved by the Committee, gathering and disseminating of user feedback, and encouraging policy change to support the institutionalization of safety procedures. The Subcommittee will coordinate our efforts with other subcommittees, with the ACS20 Communication Coordinator, with other TRB Committees, with HSM users, and with the international safety research community.
- The scope of the User Liaison subcommittee includes:
 - Facilitate understanding and application of HSM procedures and other quantitative analysis methods
 - Facilitate training (existing workforce); education (future workforce); technical support; to promote the use / adoption of quantitative safety information practices and procedures; to encourage modification of policies and guidance documents to reflect quantitative highway safety information
 - Gather User Feedback
 - To identify user needs
 - To translate needs into research priorities; tools/software; technical facilitation products
 - To establish a link and a review/response process with AASHTO and our Committee for external generated HSM2 errata

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ULSC Events since TRB 2021

- **February 16:** meeting to identify research topics
 - Submitted synthesis topic
- **March:** participated in and contributed to ACS20 research needs meeting
 - Submitted research topics to Doug Harwood/ACS20
- **April 28:** meeting – update on ULSC activities
- **July 15:** meeting – update on activities; plans to develop/finalize RNS

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ULSC Working Groups

- Permanent Working Groups:
 - Policy and Legal Aspects (*Priscilla Tobias*)
 - International Safety Research (*Jennifer Ogle*)
- Temporary Working Groups:
 - TRB 2022 Workshop (*Kim Kolody*)
 - HSM Website (*Stephen Read*)
 - HSM Part C Tools (*Bonnie Polin/Mike Dimaiuta*)
 - HSM FAQs (*Jake Farnsworth*)
 - Practical Applications of the HSM (*Tim Barnett*)
 - Road Safety Training for Local Agencies (*Cong Chen/Tim Colling*)

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Policy and Legal Aspects

- Liability Neutral Roadway Safety Document
 - Publication: *Guidelines for Drafting Liability Neutral Transportation Engineering Documents and Communication Strategies*
 - Webinar: Joint AASHTO-TRB (Kelly Hardy/Priscilla Tobias)
- HSM2
 - Glossary of Terms
 - Style Guide/Terms of Use
 - Consideration of Tort Liability Implications

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International Safety Research

- Synthesis statement submitted to NCHRP was not approved for this year; now refining the statement of work for future submissions
- Creating a list of international safety meetings and research studies – will share at the 2022 TRB Annual Meeting
- Considering the local agency training materials developed in the past for potential adaptation to suit jurisdictions with very limited data availability
- Planning meeting in the Fall to work on the synthesis statement of work and the local agency training
- Stephen Read suggested approaching SafetyCube (Safety CaUsation, Benefits and Efficiency) funded by the European Commission and completed in 2020; a potential presentation at TRB 2022 Annual Meeting at the ACS20 Main Committee meeting; Jennifer will coordinate with Kim/Karen

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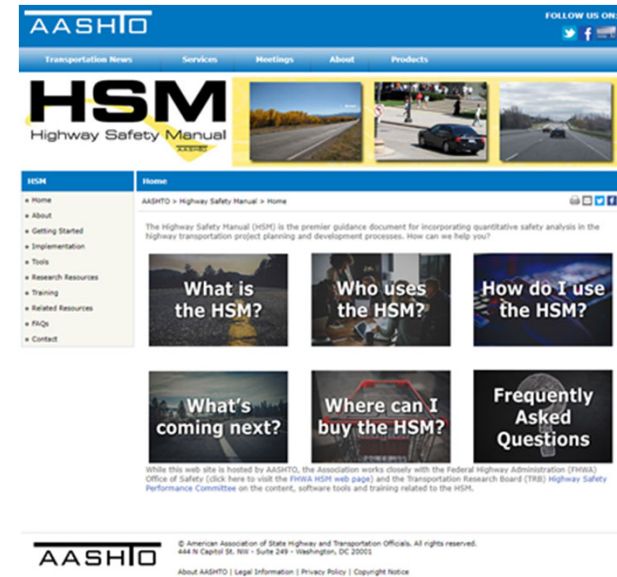
TRB 2022 Workshop Planning

▶ **Making Safe System a Reality: Planning to Implementation**

- ▶ The Safe System (SS) approach is critical for saving lives.
- ▶ This will explore SS using real-world applications and breakout discussions to define SS for all users, discuss barriers (e.g. data, measures, equity, funding, legal implications) and opportunities for SS coordination (e.g. HSM, Greenbook) and implementation, share lessons learned, and identify research needs.
- ▶ This builds on a series that has engaged 500+ agency leaders, practitioners and academics and aligns with Committee Strategic Plans.

HSM Website (...holding pattern)

- Were waiting for HSM2 NCHRP work plan with chapter and research inclusion decided. Decision on request for additional funds and/or timeline for difficult chapters will follow.
- What's coming (HSM2) slides may need refresh with new work plan
- ULSC continued support and input:
 - Input on redesign for HSM2
 - Ideas for “restarting” the User Discussion Forum (www.hsmforum.org)
 - Google sheet to facilitate input/ideas: <https://docs.google.com/document/d/1Hua72zgDVapbzYRIKgE45UuHWOluQJQll0gvxCBnRY4/edit>



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HSM Part C Tools

- Gap analysis previously done and submitted to AASHTO in June 2020 via Google Doc
- Part C HSM2:
 - 17-71A will not be building tools
 - Intersections (17-68), Bicycles and Pedestrians (17-84) have/will have tools
 - What about crash type and severity models?
 - Will 17-83 (HSM2 training) include tools?
- ULSC began collecting info on **state-developed HSM spreadsheets/tools**, with goal of creating a catalog of HSM-related tools

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HSM Part C Tools (cont.)

- Action items / steps considered:
 - Complete catalog of what is out there by surveying states
 - Survey States:
 - what people use,
 - why people build their own,
 - what they want to add
- Derek Troyer suggested that we collaborate with AASHTO Data and Performance Measures group and AASHTO Publication group who are also looking to attain an updated list of existing tools for Part B.
 - A joint survey (ULSC and AASHTO), prior to TRB 2022 Annual Meeting would be ideal, so we can discuss at TRB 2022

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HSM FAQs

- Latest Edition – June 2018
- Minor Updates Needed
 - New information related to HSM2
 - Once plans for HSM2 are solidified, the FAQs will be modified to reflect the recent developments
 - Changes with CMF Clearinghouse Star Ratings



HSM	FAQs
<ul style="list-style-type: none"> • Home • About • Getting Started • Implementation • Tools • Research Resources 	<p>AASHTO > Highway Safety Manual > FAQs 🖨️ 📧 🐦 📘</p> <p>These Frequently Asked Questions (FAQs) are based on the knowledge and experience of the developers and practitioners of the Highway Safety Manual, as well as various publications and websites, including the Highway Safety Manual discussion forum, the Federal Highway Administration's Crash Modification Factor Clearinghouse, and more. FAQs are sourced from the Highway Safety Manual Frequently Asked Questions compendium, developed by the Transportation Research Board – Highway Safety Performance Committee's (ANB25) User Liaison and Technology Facilitation Subcommittee. A PDF of the latest version of this document (June, 2018) can be found here.</p>

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Practical Application of HSM (1)

Research Topics submitted and considered by AASHTO Committee on Safety

- Developing Safety Performance Functions and Crash Modification Factors for Weather Related Crashes
- Developing Safety Performance Functions and Crash Modification Factors for Light, Medium, and Heavy Rail and Roadway Interfaces

Items for Possible Synthesis:

System Planning

- Simplified network screening methods: finding target crash patterns, selection of sites, and prioritizing expenditures.

Project Planning and Preliminary Engineering

- Analysis of target crash patterns and frequencies for a project (existing and predicted patterns considering design alternatives). What is the impact of the design? Will there be an increase/decrease in crashes and of what type? Is there a positive reduction in crashes? How to consider safety versus operational improvements?

Design and Construction

- Application of HSM to support implementation of Safe Systems, Practical Solutions/Design, Vision Zero, and other crash reduction/elimination approaches.

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Practical Application of HSM (2)

Items for Possible FHWA or another Agency Developing:

System Planning

- Practices to integrate HSM into policies and design criteria choice for planning alternatives and transportation facility design (e.g., application/implementation of 17-81 Safety Planning research).
- Simplified methods for systemic safety countermeasure selection and prioritization.

Project Planning and Preliminary Engineering

- Methods for the selection of the combination of safety countermeasures, i.e., greatest crash reductions, most economical, etc.

Design and Construction

- Assess impact of design exceptions and modifications during construction.
- Guidance on the application of HSM in work zone designs. Follow-on to work performed under NCHRP Project 17-61, *Estimating the Safety Effects of Work Zone Characteristics and Countermeasures: A Guidebook*. May be design or operations guide on using the HSM in Work Zone Layouts/Designs.

Operations and Maintenance

- Consideration of HSM methodologies in operations and maintenance (some CMFs exist, but how best to apply both SPFs and CMFs to operations and maintenance activities):
 - Signal operation and ITS applications.
 - Enforcement operations, roaming service patrols, etc.

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Practical Application of the HSM

- Even though part of the items listed could be covered under a RNS, several items could still be pursued as Synthesis or other works:
 - Simplified network screening methods
 - Practices to integrated HSM
 - Analysis of target crash patterns and frequencies for a project
 - Methods for the selection of the combination of safety countermeasures
 - Application of HSM for work zone design

Summary of items posted on:

<https://alabama.box.com/s/4usubomn4kro9rr0fb0opbhvt85xgzer>

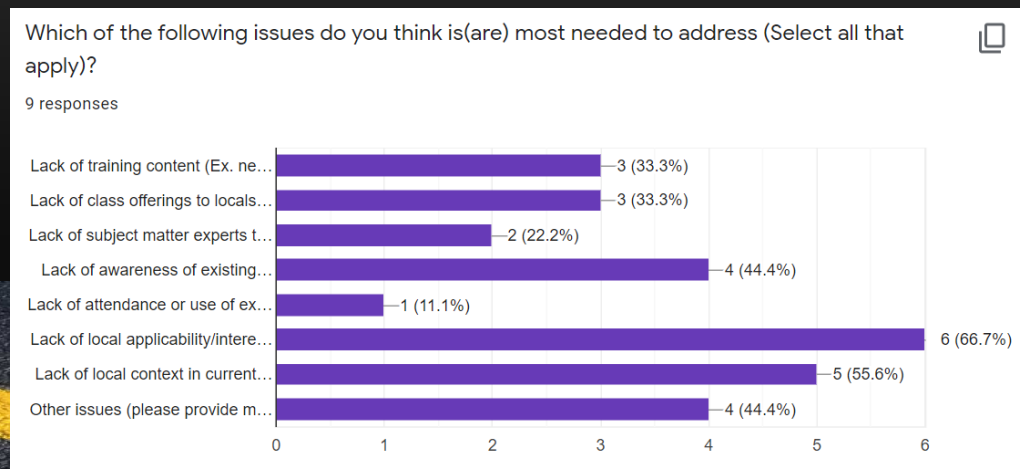
For editing access, please email: tebarnett1@ua.edu

Local Agency Training

Did survey/poll during April ULSC meeting - primarily to give vision to what the sub-committee was trying to do and to better define the problem

Response:

- Is local training a “supply” or a “demand” problem? >> results showed quite a range of ideas and did not help in identifying exactly how to proceed.



Current Direction

Trying to identify demand vs supply using national metrics

Supply

- NHI training reports
- TC3 training reports
- LTAP center reports

Demand

- FHWA national local agency needs survey
- Possible LTAP survey (rather save this for root causes)
- Made Inquiry to FHWA CLAS on data that they have
- In the process of gathering data to establish supply and demand before proceeding

New Initiatives

- **HSM User Discussion Forum** (Stephen Read/Bonnie Polin)
- **HSM Glossary of Terms/Style Guide** (Derek Troyer)

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HSM User Discussion Forum

- “Options to Replace the HSM User Discussion Forum” memo recently prepared by contractor to AASHTO
 - Moderated Forum
 - Technical Blog and Digest
 - Simplified FAQ
 - Topical Digest Email and Newsletter
- ULSC will review memo and provide input

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HSM Glossary of Terms/Style Guide

- NCHRP 17-71A is developing a glossary of terms and a style guide, aiming to have a consistent way in presenting our work across states and other jurisdictions; as well as for future HSM editions and other research publications.
- Derek Troyer requested TRB members to contribute to the work as there may be additional terms that need to be added
- To be finalized when 17-71A is completed – the contractor will develop it before chapters are written and will maintain during the project
- After the completion of the project, AASHTO may ask the ULSC to maintain it
- The ULSC Policy and Legal Aspects working group would have a role to play throughout the development as well as later on – Priscilla Tobias will coordinate with AASHTO and NCHRP 17-71A, and we will look to create a small group of volunteers (researchers represented) so that it goes beyond HSM2

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Research and Synthesis Topics

- **February:** ULSC “post-TRB” meeting to identify research topics
 - Breakouts/discussions – by ULSC working groups; current initiatives; new ideas
- **February:** submittal of one synthesis topic
- **March:** submittal of 6 research topics to ACS20 for consideration by AASHTO COS
- **June:** feedback from AASHTO COS – rankings
- **July:** ULSC meeting – discussion of topics
- **July – August:** develop full RNS

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Research Topic Statements submitted by ULSC

- Practical Approaches to Quantifying Safe System Concepts
(Bonnie Polin)
- Pavement Friction and Safety Performance Integration *(Priscilla)*
- Safety Performance Function for Curves *(Priscilla)*
- Practical Applications of the HSM *(Tim Barnett)*
- Developing SPFs and CMFs for Weather Related Crashes *(Tim Barnett)*
- Developing SPFs and CMFs for Light, Medium, and Heavy Rail and Roadway Interfaces *(Tim Barnett)*

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Safe System

- **Practical Approaches to Quantifying Safe System Concepts**
 - AASHTO Safety Committee Ranked 1st out of 30
 - Quantification of safety effects of safe system applications; how the HSM methods are applied with safe system

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Roadway Segments

- **Safety Performance Functions (SPF) for Curves**
 - AASHTO Safety Committee Ranked 3rd out of 30
 - How can curves be considered without piecemealing different processes?
 - Consider rural vs urban, speed, and other variations of curves?

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Roadway Segments

- **Pavement Friction and Safety Performance Integration**
 - AASHTO Safety Committee Ranked 8th out of 30
 - Strong support for linkage of safety and asset management.
 - Safe Systems application linked to pavement condition.
 - Guidance on Data Collection and Frequency would be beneficial.

An NCHRP proj. currently looking to integrate pavement friction with safety; the vision is to have this new project build onto the current NCHRP project; develop a set of recommendations for jurisdiction to integrate with asset management procedures, and safe system

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Practical Applications of the HSM

- 2-RNS were ranked by AASHTO COS high enough to move forward:
 - Practical Application of the HSM (ranked 15th of 30)
 - Retitled to: ***Applications Guide to the Highway Safety Manual***
 - Similar document was developed for HSM1 under NCHRP 17-50
 - Safety Performance Functions and Crash Modification Factors for Weather Related Crashes (ranked 19th of 30)
- Link:
<https://alabama.box.com/s/4usubomn4kro9rr0fb0opbhvt85xgzer>
For editing access, please email: tebarnett1@ua.edu

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Research Topic Statements developed/submitted by others

- **Effects of Roadway Geometric Design, Posted Speed Limit, and Operating Speed on Safety Performance for High-Speed Rural Highways and Freeways** – *RNS under development by AKD10; seeking support from ACS20*
- **Local Network MIRE Data Collection and use for Data Driven Data Analysis** (*Rural Roads JSC*)
- **Modernizing the Network Screening Process using Machine Language (ML) and Artificial Intelligence (AI)** - *submitted via ACS20 Analytical Methods SC*

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Synthesis Topics

- **Submitted before Feb. 17 deadline (not selected)**
 - Transferability of Safety Performance Measures (CMFs, SPFs, and CFs) (*Jennifer Ogle*)
- **Submitted after Feb. 17 deadline**
 - Assessment of Participatory Budgeting to Achieve Equitable Traffic Safety Outcomes (*Tariq Shihadah*)
 - A Synthesis on Artificial Intelligence (AI) Applications in Quantitative Roadway Safety Analysis (*Mohamad Banihashemi/Mouyid Islam*) - submitted via ACS20 Analytical Methods SC

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Thank you!

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