

TRB Safety Performance and Analysis Committee
(ACS20)

User Liaison Subcommittee

Meeting

April 28, 2021

11 am-1 pm EST

Agenda

- **Welcome and Meeting Objectives (5 min)**

Agenda

- **Research and Synthesis Topics Update (15 min)**
 - Overview of process and timeline
 - Research Topic Statements
 - Submitted by the ULSC to ACS20/Doug Harwood by March 25 for consideration by AASHTO (*Priscilla Tobias/Tim Barnett/Joe Marek*)
 - Synthesis Topics
 - Submitted by Feb. 17 deadline (*Jennifer Ogle*)
 - Submitted by the ULSC to ACS20/Doug Harwood by March 25 (*Tariq Shihadah/Mouyid Islam*)

Agenda

Working Groups - Updates and Discussions on Current/On-going ULSC Initiatives (80 min)

- 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 Application of the HSM (*Tim Barnett*)
 - Road Safety Training for Local Agencies (*Cong Chen/Tim Colling*)

Agenda

Other Topics (20 min)

- FHWA Update (Jerry Roche)
- Ideas for new ULSC initiatives
- Collaboration with other ACS20 subcommittees and other TRB committees
- Next ULSC meeting
- ACS20 Midyear Meeting? (Kim/Karen)

Research and Synthesis Topics Update

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Research Topic Statements submitted to ACS20

- Pavement Friction and Safety Performance Integration (*Priscilla*)
- Safety Performance Function for Curves (*Priscilla*)
- 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*)
- Local Network MIRE Data Collection and use for Data Driven Data Analysis (*Joe Marek*)
- 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)

- Transferability of Safety Performance Measures (CMFs, SPFs, and CFs) *(Jennifer Ogle)*

Synthesis Topics

(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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Policy and Legal Aspects Working Group

- Research Topic Statements:
 - Pavement Friction and Safety Performance Integration
 - Safety Performance Functions (SPF) for Curves

Policy and Legal Aspects Working Group

- TRB Webinar
 - *Guidelines for Drafting Liability Neutral Transportation Engineering Documents and Communication Strategies*
- HSM2
 - Glossary of Terms
 - Consideration of Tort Liability Implications

International Safety Research Working Group

- *Jennifer Ogle*

TRB 2022 Workshop

- Background
 - Co-Sponsor with AKD10: Performance Effects of Geometric Design Committee
 - 2019 TRB AM Podium Session: Real World Applications of the HSM
 - 2020 TRB AM Workshop: Use of Safety Performance in Day-to-Day Transportation Decision Making
 - 2021 TRB AM Workshop: Safety Performance Decision Making: Advancing Research Through Implementation

TRB 2022 Workshop

- Focus
 - Advance the research and use of the HSM in transportation decision making
 - Accomplished through case studies and analysis approach sharing
 - Increase the awareness of the latest research and methodology
 - Identification of research needs and gaps

TRB 2022 Workshop

- Keys to success
 - Topics that are emerging as a major need
 - Exploring a gap or question from the practitioner community
 - Involving safety leaders to challenge the questions and offer suggested or recommended approaches
 - Focused break out groups (in person when feasible)

TRB 2022 Workshop

- Specific Focus
 - Crash prediction methods for
 - Intersections
 - Freeways and interchanges
 - Suburban corridor
 - Pedestrian
 - Facility type
 - Access

TRB 2022 Workshop

- 2022 TRB AM Workshop Focus
 - Broad topics
 - Safety performance and emerging policy / concepts
 - Part B Roadway Safety Management
 - Part B Systemic safety analysis
 - Part C Crash prediction research and applications
 - Local roads

TRB 2022 Workshop

- 2022 TRB AM Workshop More Specific Focus
 - Safety performance
 - Safe systems
 - Equity
 - Infrastructure and CAVA
 - Traffic impact studies
 - Communicating safety performance and informing decisions

TRB 2022 Workshop

- 2022 TRB AM Workshop More Specific Focus
 - Crash prediction methods for
 - Alternative intersection designs (e.g. roundabouts, RCUT, J-Turns)
 - Crash severity models
 - Roadside
 - HOV / HOT and part time shoulder use
 - Bikes and pedestrians
 - CMFs
 - Temporal models
 - Work zones

TRB 2022 Workshop

- 2022 TRB AM Workshop Potential Sponsors
 - AKD10: Performance Effects of Geometric Design Committee
 - Others

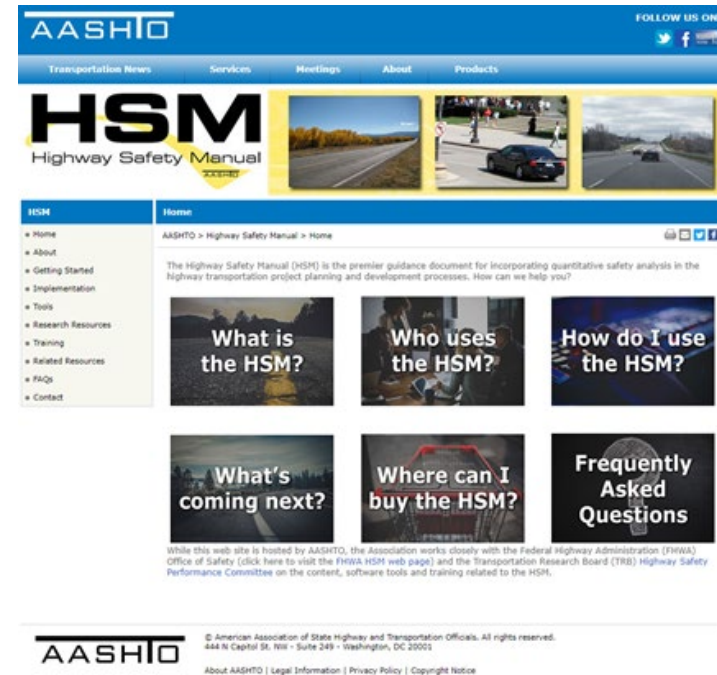
TRB 2022 Workshop

- Next Steps
 - Provide potential case study ideas by May 15, 2021
 - Workshop application due May 28, 2021
 - Program developed by October 1, 2021
 - Planning meeting in mid-May
- Volunteers

HSM Website (...holding pattern)

- Should have HSM2 NCHRP work plan by July 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 your input/ideas:

<https://docs.google.com/document/d/1Hua72zgDVapbzYRIKgE45UuHWOIuQJQll0gvxCBnRY4/e>
[dit](#)



HSM Part C Tools

- Part C tools only as Part B tools is being addressed through webinars / survey via AASHTO and involvement from FHWA and AASHTOWare (NUMETRIC).
- Gap analysis previously done and submitted to AASHTO in June 2020 via Google Doc with the thought this may be done by 17-71A (HSM2 project)
- Part C HSM1 RURAL Excel Tool updated in 2019
- Part C HSM1 Urban/Suburban Excel Tool updated in 2020
- Part C HSM2:
 - 17-71A will not be building tools
 - Intersections, Bicycles and Pedestrians have/will have tools
 - What about crash type and severity models?
 - Will 17-83 (HSM2 training) include tools?
- Began collecting info on **state-developed HSM spreadsheets/tools**, with goal of creating a catalog of HSM-related tools (see below for previous meeting's action items)

HSM Part C Tools (cont.)

- From Discussion at last meeting:
- Is there a need / desire for one set of Part C tools?
 - States have their own tools because some use their own models and not just calibrate HSM models
 - States have their own tools because it is more timely to add features/models into their own than wait for HSM
 - Some states share and help others with the models
 - States have their own because it is more like a “program” than an Excel file
 - Can add in operational performance as well (McTrans) in a program but not the existing Excel files
- Action items / step we should take?
 - 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
 - **Need volunteers!!!**
- As always, ULSC input will help with scoping and liaison with NCHRP, AASHTO etc.

HSM FAQs

- Latest Edition – June 2018
- Minor Updates Needed
 - New information related to HSM2
 - 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>

Practical Applications of HSM (Page 1)

Items Submitted for Research

- 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.

Practical Applications of HSM (Page 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.

ACS20 User Liaison Subcommittee Local Agency Training Work Group

April 28, 2021

Tim Colling, Michigan Tech
Cong Chen, University of South Florida



Decision Making

New Roof
\$10,000

New
Furnace
\$8,000

Replace
Windows
\$5,000

New Siding
\$8,000

New Carpet
\$4,000

Landscape
\$3,000



Live in the house for 20 years

Priority and Value for tasks

- 1) New Roof - Stops damage (same as saves money)
- 2) Furnace – Saves money, reduces risk of failure
- 3) Windows – Saves money
- 4) All the rest – Aesthetic



What if it is a college rental?

- Is new carpet a good idea?
- Do we care about energy efficiency if tenants pay?
- How many windows will get broken each month?
- Is landscaping a value?



Goal of the Task Group?

What problem are we trying to solve?

Unmet Need For Training

Lack of training content?

- Ex. new HSM2 topics don't have training material

Lack of class offerings to locals?

- Demand for classes but no classes offered

Lack of subject matter experts to teach classes?

- Demand and material but no instructor

Lack of awareness of existing materials to offer training?

- People who offer classes don't know the material and training content is available



Goal of the Task Group?

What problem are we trying to solve?

No Demand For Training

Lack of attendance or use of existing training?

- Have classes but no one comes

Lack of local applicability / interest / need for HSM?

- Contents in classes are not relevant to locals

Lack of local context in current training?

- Have content and demand but not relevant for local



Goal of the Task Group?

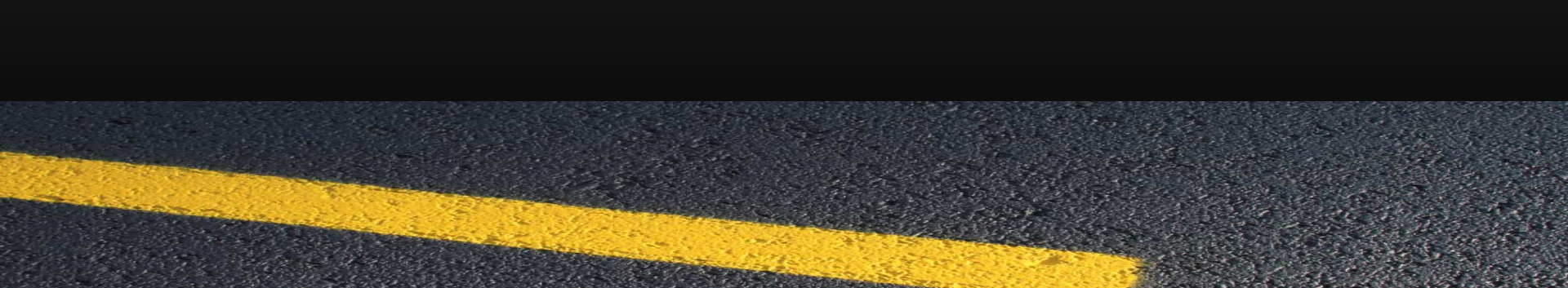
What problem are we trying to solve?

Other problems?

It is time to vote on these issues. Please vote through the following link.

https://docs.google.com/forms/d/e/1FAIpQLSdqvAXdCWFEaF0HRDAE-TFui0JKM7yFJrb_klU8ceJpisSqYw/viewform?usp=pp_url





FHWA Update

Jerry Roche, PE
Office of Safety
jerry.roche@dot.gov

CMF Clearinghouse Rating Criteria Updated

TRB
2021

The CMF Clearinghouse transitioned to the CMF rating criteria developed as part of the NCHRP 17-72 project for the 2nd edition of the Highway Safety Manual on February 15, 2021.

Converting NCHRP 17-72 Ratings to Star Rating

NCHRP 17-72 Rating Score	Star Rating in CMF Clearinghouse
135-150	5 star
110-134	4 star
75-109	3 star
35-74	2 star
0-34	1 star

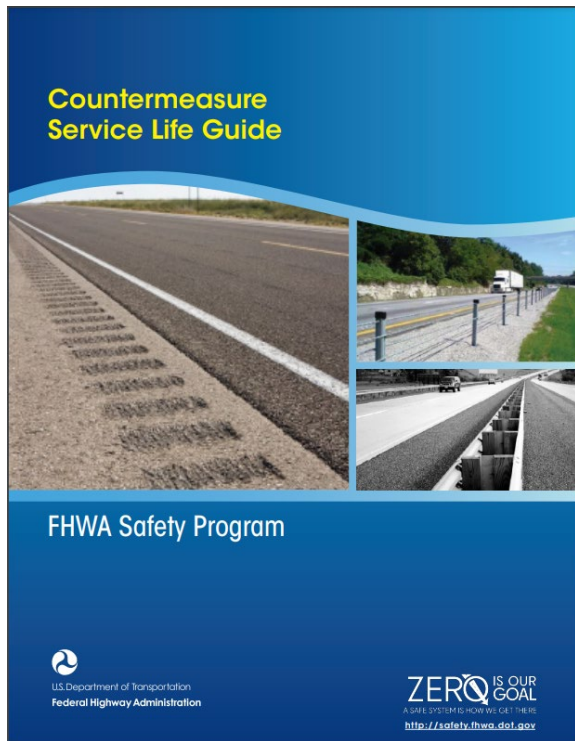
Changes to Current CMF Star Ratings

NCHRP 17-72 Rating Score	5 Star	4 Star	3 Star	2 Star	1 Star
1 Star (0-34)	3	21	116	341	215
2 Star (34-74)	1	89	639	666	59
3 Star (75-109)	67	485	1903	264	25
4 Star (110-134)	91	954	988	11	4
5 Star (135-150)	137	210	56	0	0

<http://www.cmfclearinghouse.org/>

Countermeasure Service Life Guide

TRB
2021

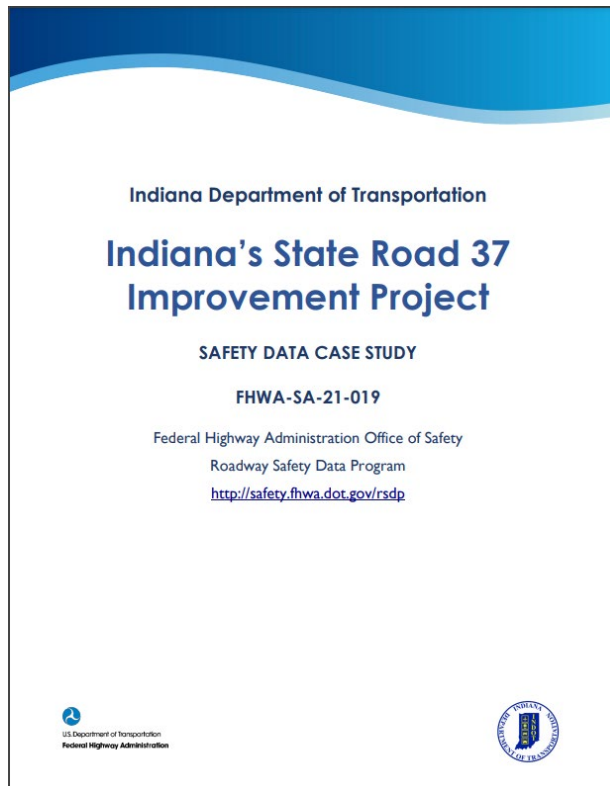


- to help practitioners make consistent, data-driven decisions for evaluating and ranking safety countermeasures through the use of prescribed countermeasure service lives
- provides recommended service lives for a wide range of countermeasures implemented with Highway Safety Improvement Program funding
- demonstrates the benefits to standardizing countermeasure service life application within an agency
- provides background information on factors that can impact countermeasure service life and analytical considerations when conducting benefit-cost analysis for multiple countermeasures or alternatives with differing service life.
[http://safety.fhwa.dot.gov/hsip/docs/FHWA-SA-21-021_Countermeasure Serv Life Guide.pdf](http://safety.fhwa.dot.gov/hsip/docs/FHWA-SA-21-021_Countermeasure_Serv_Life_Guide.pdf)

Selecting Projects and Strategies to Meet Safety Performance Targets

- **Outlines opportunities throughout the safety management process to maximize lives saved and injuries prevented**
- **Proposes two new methods: BCA (KA) and Countermeasure Score**
- **Testing of new approaches with two states under way**
- **Anticipated Completion: June 2021**

Safety Data and Analysis Case Studies



Partially Funded by the HSM
Implementation Pooled Fund, TPF-5(255)

- 18 total case studies with 12 focused on HSM related applications
- Case Study Template provided by User Liaison Subcommittee ACS20(1)
- ~ 30 potential case studies submitted
- MO, KY, IN, SC now posted
- Various applications, methods, tools, and facility types

https://safety.fhwa.dot.gov/rsdp/safety_casestudies.aspx

Proven Safety Countermeasures



- Updating existing and adding **NEW** countermeasures!
- Adding a tool to help filter countermeasures by focus area, crash type, problem identified, and area type
- Anticipated: Summer 2021

<https://safety.fhwa.dot.gov/provencountermeasures/>

Local Road Safety Plan DIY Site

The screenshot displays the homepage of the Local Road Safety Plan (LRSP) DIY website. On the left, a vertical banner features a road illustration with a car, a tree, and a sign, alongside the text "LOCAL ROAD SAFETY PLANS: Your Map to Safer Roadways". At the top, five green navigation buttons are arranged horizontally: "Step 1 Identify Stakeholders", "Step 2 Use Safety Data", "Step 3 Choose Proven Solutions", "Step 4 Implement Solutions", and "Finish Line". Below these, a welcome message reads: "Welcome to the local road safety plan do-it-yourself website! We are so happy you are here. On this site, you'll find everything you need to make plan that fits your community and gets people home safely. Watch the video below to learn how to use the site and build your plan. If you need help contact us anytime." A dark blue button labeled "How to Use This Site" is positioned above a video player. The video player shows a video titled "LRSP DIY: Introduction" with a play button and the text "LOCAL ROAD SAFETY PLANS: Your Map to Safer Roadways" and "INTRODUCTION". To the right of the video, a section titled "SCROLL DOWN FOR MORE VIDEOS" contains two yellow buttons: "Welcome - FHWA Leadership" and "Local Road Safety Plans Overview". Below the video, a "Tools and Resources" section includes a yellow arrow icon and three links: "Guides & Training", "LRSP Examples", and "LRSP Sites". The bottom right corner features the U.S. Department of Transportation Federal Highway Administration logo.

<https://safety.fhwa.dot.gov/LRSPDIY/>

Other Topics

- Ideas for new ULSC initiatives
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Thank you!