Sign-in Sheet

TRB Safety Performance and Analysis Committee (ACS20)

User Liaison Subcommittee

TRB 2021 Annual Meeting

January 8, 2021

12-1:30 pm EST.

Agenda

Sign-in Sheet

- Welcome and Introductions
- ACS20 Scope and Structure
- User Liaison SC Vision/Mission/Scope
- History and Structure of User Liaison SC
- User Liaison SC Initiatives
- Research Needs Discussion
- FHWA Updates
- Other Items

ACS20 Committee - Scope

- This Committee fosters collection and innovative use of diverse safety data, and the development of new theories and analytical methods to advance the science of safety to meet the needs of future technologies and road users.

- This Committee further promotes the application of these methods and supporting tools, and the institutionalization of science-based methods. In doing so, this Committee supports informed transportation decision-making and improves safety performance on the Nations' roadway infrastructure system, notably by reducing fatalities and injured persons caused by crashes.

ACS20 Committee - Structure

- Co-Chairs: Karen Dixon and Kim Eccles
- Administrative Task Forces
  - Research Statement Development
  - Conferences and Meetings
  - Annual Paper Review
  - Paper Synthesis Report
  - Communications
  - Technical Issues
  - Data Collaboration Task Force
- Subcommittees
  - Pedestrian and Bicycle Safety Analysis (Joint Subcommittee)
  - Rural Road Safety (Joint Subcommittee)
  - Surrogate Safety Measures
  - Safety Analytical Methods
  - **User Liaison**
  - Planning for Connected and Autonomous Vehicle Safety Joint Subcommittee (TBD)

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

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

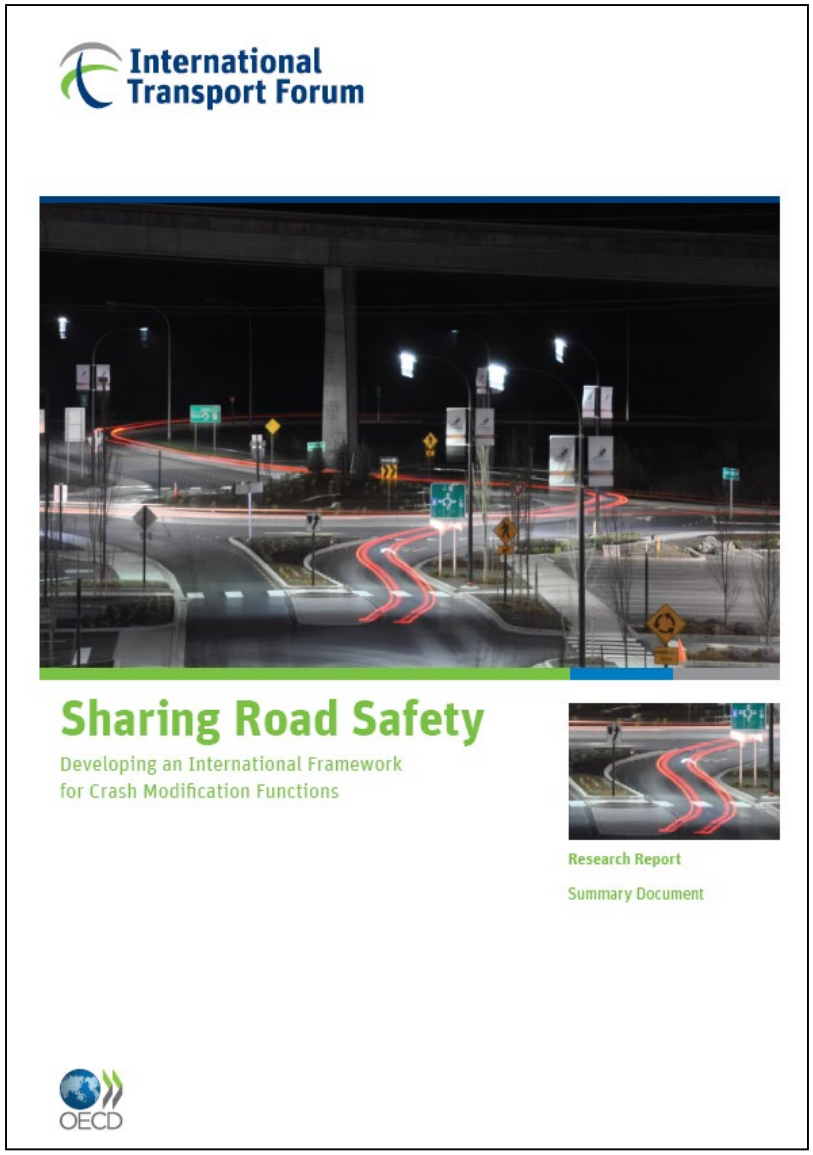
User Liaison Subcommittee – History

- Formed in 2000 (HSM JSC (2000-03), the HSM Task Force (2003-10), and the Highway Safety Performance Committee (ANB25) (2011-20)
- Two other subcommittees incorporated into the ULSC
  - ANB25 International Safety Performance Research Subcommittee (2019)
  - ANB25 Policy and Legal Aspects Subcommittee (2020)
- The ULSC
  - Connects TRB with AASHTO, FHWA, LTAP, etc
  - Has direct contact with HSM users and safety practitioners
  - Membership is broader than the committee itself
  - Provides a natural forum for discussion about the needs of the users, gaps in resources, ideas, and potential future efforts
- Initiatives – past and present
  - Consult the brief document posted with today`s agenda (https://trbacs20.org/index.php/meetings/)

User Liaison Subcommittee – Structure

- Permanent Working Groups
  - International Safety Performance Research
  - Policy and Legal Aspect
- Temporary Working (Task) Groups
  - TRB workshops, including 2021 “Safety Performance Decision-Making: Advancing Research through Implementation”
  - AASHTO HSM website
  - HSM Part C tools
  - HSM FAQs
  - Research Needs Statements

International Safety Performance Research Working Group -- History and Current Activities



Subcommittee concept developed from OECD Report *Sharing Road Safety*

(Nov 2012)

Recommendation 2

- Compose an international group under an existing organization to foster dialog among researchers and practitioners on CMF research with the aim of increasing transferability of CMFs

History

- January 2014 – Formed TRB Joint Subcommittee for International Safety Research (ANB25, ANB20)
- April 2014 (Paris, France) – Co-sponsored TRA Workshop on Transferrability
- June 2015 (Vancouver, BC, Canada) – 5th ISHGD Workshop on transferability of CMFs (High and LMICs)
- January 2017 (Washington,DC, USA) – Workshop 183: Assessing and Transferring Highway Safety Performance Measurement
- January 2020 - Formerly merged with ULSC for both effectiveness and efficiency

Mission

- Advance quantitative safety performance research and adoption of scientific approaches to safety performance through international tech transfer activities

- Topics of interest:
  - Transferring safety performance methods (SPFs, CMFs, etc) – between countries, states, regions
  - Developing materials/training to get safety methods to LMICs
  - Learning from international partners
  - Advocating for international coordination/funding of research in safety
  - Maintaining a source of information on safety data/methods repositories internationally
  - Advancing international research for future safety analysis methods

Research Needs Statements

Synthesis Topics

- Synthesis of Best Practices for Transferability of CMFs/SPFs
- Synthesis of international safety performance resources including opportunities for collaboration/sharing and maintenance plans
- Synthesis of Government Funded, Development Bank, and International Aid programs and their commitment/enforcement of safety assessments in project funding and resulting level of safety improvement

Research Projects

- Cliff's Notes on Top 10 Countermeasures for a particular type of crash or scenario in low data environments.
- Development of guidance manual for local agencies showing progression of adoption of safety performance research with varying levels of data availability (building on local roads training with applications for LMICs)

Upcoming Activities

- Workshop at International Symposium of Highway Geometric Design Amsterdam, Tentatively 2022

- Expand connections and capacity building with international partners including CEDR, TRA, FERHL, IRF, ERF, FIA, among others.

Share Your Safety Performance Activities, Research, and Resources

→ Use your camera to get the link to the Google Form.

- Responses will be compiled and shared with the committee
- You can choose whether to share your contact.
- Submit:
  - New Research Reports
  - International Safety Meetings/Conferences
  - Workshops
  - New Funded Research Projects
  - …

Research Needs – Best Practices for Transferability of SPFs/CMFs

International Transport Forum

International Workshop on Transferability of CMFs
Washington, D.C., 23. January 2011

Summary Notes

Key items from Workshop

- International transferability is key for maximizing/optimizing research efforts globally.
- True benefits can be realized if we are able to transfer scientifically based good practices to developing countries utilizing CMFs.

Invited Presentations

1. **Comparison of Calibration Methods for Improving the Transferability of Safety Performance Functions** - Xuesong Wang (Tongji), Dongjie Tang (Tongji), Saijun Pei (Tongji)
2. **Transferability of Safety Performance Functions and Hotspot Identification for Freeways of the United States and China** - Mingjie Feng – (Tongji), Xuesong Wang (Tongji), Jaeyoung Lee (UCF), Mohamed Abdel-Aty (UCF)
3. **International Transferability of Macro-Level Safety Performance Functions: A Case Study of the United States and Italy** - Jaeyoung Lee (UCF), Mohamed Abdel-Aty (UCF), Maria Rosaria De Blasiis (Roma Tre), Xuesong Wang (Tongji), Ilaria Mattei (Ferrovie dello Stato Italiano)
4. **Transferability and Calibration of Highway Safety Manual Safety Performance Function for Two Lane Highways in Brazil** - Karla Cristina Rodrigues Silva (Centro Federal de Educação Tecnológica de Minas Gerais), Antonio Clovis Pinto Ferraz (USP)

TRB Workshop 183: Framework for Assessing and Transferring Highway Safety Performance Measurement

- Challenges Associated with Transferring Proven Countermeasures to Low and Middle Income Countries - Jennifer Ogle
- A Framework for HSM Transference to Qatar - Tim Neuman (Pat Hasson)
- Developing Systematic Safety Performance Models in Shanghai, China – Xuesong Wang
- Development of the European Road Safety Decision Support System within the SafetyCube Project - Pete Thomas, Eleonora Papadimitriou
- Application of the PIARC International Road Safety Manual - Patrick Mallejacq
- iRAP and Implementing Safety System Infrastructure - James Bradford

TRB Safety Performance and Analysis Committee (ACS20)

Policy and Legal Aspects Working Group History and Current Activities

- The Subcommittee on Policy and Legal Issues was created when the Highway Safety Performance Committee was established.
  - Scope: Provide policy and legal guidance for use, validation and institutionalization of the quantification of highway safety.
  - Objective: Support the Committee and stakeholders to develop policy, and address legal and risk management issues, and to increase application and institutionalization of the quantification of highway safety performance.
  - This Subcommittee and now, Working Group provides that unique policy/risk management perspective support needed for technical publications that is not present for other Committees addressing technical publications (e.g. Roadside Design Guide).

Policy and Legal Aspects Working Group History and Current Activities (cont'd)

- Activities involved addressing policy, legal and risk management issues related to:
  - Development and implementation of the HSM, as well as the broader context of the quantification of highway safety performance.
  - Providing outreach to stakeholders (e.g., NACE, ITE, AMPO, APA, etc.) on potential issues arising out of the use of quantitative safety assessments and information.
  - Identifying emerging issues.
  - Identifying and developing research needs statements.
  - Review work products upon request to provide input.

User Liaison Subcommittee Initiatives

- TRB Workshops
- HSM Website / HSM Part C Tools
- HSM FAQs
- NCHRP LRD83 Final Report
- New Initiatives:
  - TRB Joint Subcommittee of Rural Road Safety Policy, Programming, and Implementation
  - Others

TRB Workshops

- Background
  - 2019 TRB Annual Meeting podium session, Using the Highway Safety Manual in the Real World
  - 2020 Use of Safety Performance in Day-to-Day Decision-Making Workshop
- Objectives
  - Share practical applications while advancing research
  - Focus on issues and items that do not fit perfectly into HSM1 to generate discussion and advance the science
  - Active participation and engagement
  - Provide platform for the attendees to tell us what they have been struggling with
  - Identified gaps may lead to future research, resource development or training needs
- Workshop Format
  - Presentations on the crash prediction process, decision making using the HSM and new research and available resources for safety analysis and decision making
  - Case study applications and break out discussion on methodology, gaps and research needs
  - Participants will engage with others, learn about HSM applications and grow the practice

2021 TRB Workshop

Safety Performance Decision-Making: Advancing Research Through Implementation

- Sponsored by
  - ACS20: Safety Performance and Analysis
  - AKD10: Performance Effects of Geometric Design

- Planning Team
  - Kim Kolody, Jacobs
  - Mike Dimaiuta, Genex
  - Elizabeth Hilton, FHWA
  - John Nitzel, Jacobs
  - Beth Wemple; HDR
  - Jacob Farnsworth, Kimley-Horn
  - Priscilla Tobias, Arora
  - Kim Eccles, VHB
  - Robert Miles, Utah DOT
  - Dave Petrucci, FHWA
  - Jerry Roche, FHWA
  - Jeffrey Shaw, FHWA
  - Bonnie Polin, MassDOT
  - Stephen Read, VDOT
  - Mouyid Islam, The Center for Urban Transportation Research - University of South Florida
  - Jim Bonneson, Kittleson and Associates, Inc.
  - Darren Torbic, Texas A&M Transportation Institute
  - Karen Dixon, Texas A&M Transportation Institute
  - Kelly Hardy, AASHTO
  - Geni Bahar, NAVIGATS

TRB Safety Performance and Analysis Committee (ACS20)

2021 TRB Workshop

Safety Performance Decision-Making: Advancing Research through Implementation

January 22 at 10am EST

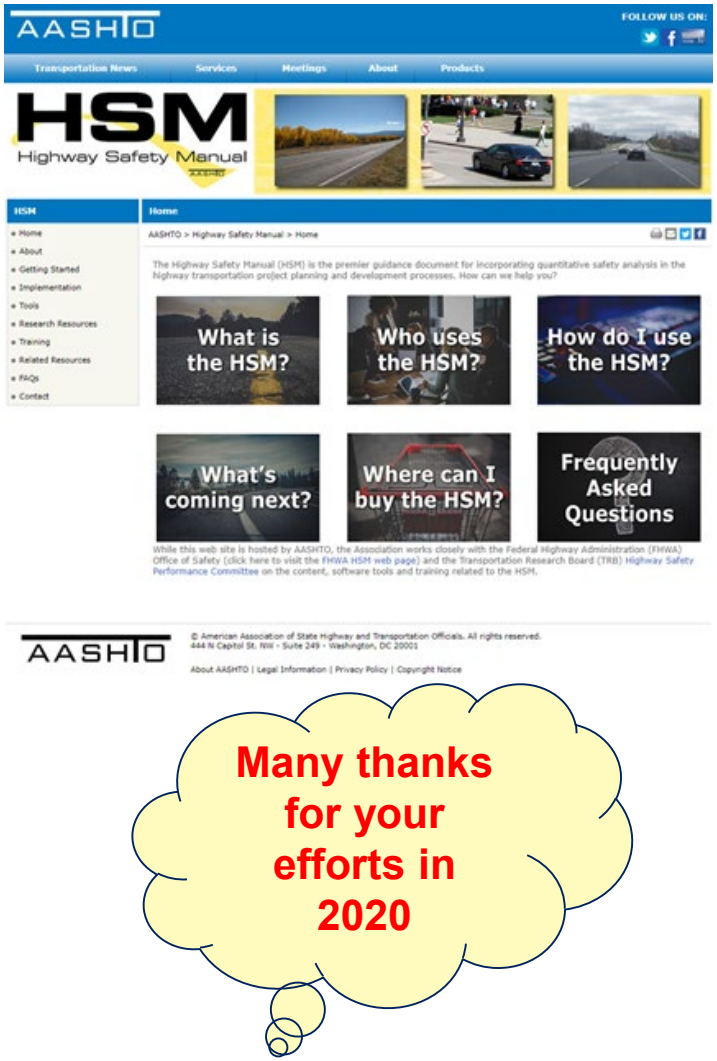
POLL #1

Are you planning to attend the workshop?

HSM Website / HSM Part C Tools

- ULSC short and some mid-term WEB revisions and enhancements finalized in 2020.
  - Home, About, Implementation, Tools, Research, FAQs
- What's coming (HSM2) slides may need refresh with new NCHRP project scoping
- ULSC 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/1Hua72zgDVapbzYRlKgE45UuHWOIuQJQll0gvxCBnRY4/edit



HSM Website / HSM Part C Tools

- HSM1 XLS Tools
  - Rural tools updated in 2019
  - Urban/Sub-Urban tools updated in 2020
- HSM2 New Methods XLS Tools
  - Some new material has tools, e.g., Intersections and Bicycle and Pedestrian
  - Questions remain for others, such as Crash Type and Severity Models
  - Ability of NCHRP 17-83 “Training” project to update and integrate tools is unknown
- ULSC input will help with scoping and liaison with NCHRP, AASHTO etc.

HSM Website / HSM Part C Tools

POLL #2

How often should the HSM Web/Part C Tools Task Group meet each year ?

HSM FAQs

- Latest Edition – June 2018
- Minor Updates Needed
  - New information related to HSM2
  - Changes with CMF Clearinghouse Star Ratings

NCHRP LRD83 Final Report

- Guidelines for Drafting Liability Neutral Transportation Engineering Documents and Communications Strategies
- Presents legal language style and drafting guide.
- Addresses how to avoid concepts and language such as “hazard” that increase potential for agencies to be determined liable for damages and instead use “object” or “feature”.
- Practical resource for developers and reviewers of engineering documents, researchers, practitioners, and those who implement safety projects.

NCHRP LRD83 Final Report (cont'd)

- Consideration of Legal Issues Arising from Publications and Communications
  - Internal vs External
  - Industry Standards
  - Engineering Judgment
- Recommendations for Liability Neutral Documents and Communication Strategies
  - Negligence
  - Protection under 23 USC 409
  - Scheduled Policy Reviews

New Initiatives

TRB Joint Subcommittee of Rural Road Safety Policy, Programming, and Implementation (ACS10 (4))

- Khaled Ksaibati – University of Wyoming – Co-Chair
- Joseph Marek – Clackamas County, Oregon – Co-Chair
- Keith Knapp – Iowa LTAP, Iowa State University – Subcommittee Grandfather and Founder
- PARENT COMMITTEES:
  - ACS10 – Standing Committee on Transportation Safety Management Systems
  - ACS20 – Standing Committee on Safety Performance and Analysis
  - AKD30 – Standing Committee on Low Volume Roads

TRB Joint Subcommittee of Rural Road Safety Policy, Programming, and Implementation

- VISION: Identifying new areas of rural roadway safety research needs and best methods for outreach, dissemination and implementation both within and outside the TRB organizational structure and those tasked with implementation.
- MISSION: The mission of the TRB Joint Subcommittee on Rural Road Safety, Policy, Programming and Implementation (JSCRRS) is to promote and support research ideas related to and assisting with decisions connected to rural roadway safety improvements. This includes planning, operations, education, emergency medical services, enforcement and engineering. General areas of research include development of policies, programming, decision-making, and countermeasure implementation for both paved and unpaved rural roadways.
- GOAL: Provide a focal point/forum within TRB and facilitate research and outreach activities related to improving rural roadway safety through policies, programming, and countermeasure implementation. Act as a liaison and collaborator with other safety related committees and their activities that may be relevant to rural roadways.

Activities and Research Topics

- 2021 TRB Session 1044 – Friday January 22 at 2:00 PM(ET)
  - New Developments in Safety on Low Volume Roads – Panel Discussion
    - Enhanced Rural Roads Safety with Unmanned Aerial Systems
    - Safety and Condition Assessment of LVRs in New Zealand
    - Challenges and Promising Approaches for LVR Network Screening, a Critical Step in the HSIP Programs
    - Application of Emerging Technologies in Road Safety Data Collection
    - Safety Toolkit for Indian Tribes
    - Aerial Inspection of LVR Condition
    - Practical Approach to Safety Problem Identification and Mitigation on County Roads

Activities and Research Topics (cont'd)

- Adding Animal-Vehicle-Collision research topic to our subcommittee in cooperation with ACS20 and AEP70 – Committee on Environmental Analysis and Ecology
- Research Topic Areas for Research Needs Statement Development
  - Model Inventory of Roadway Elements (MIRE) compliant data needs for very low volume roads and unpaved roads
  - Speed limits for unpaved roads
  - Data-driven methods for simplified safety analysis on rural roads – build on publication "Selecting Safety Improvements on High-Risk Rural Roads"
  - New technologies to aid safety on rural roads including work zones

Proposed New Initiatives

- Please send your suggestions to
  - michael.dimaiuta.ctr@dot.gov
  - genibahar@navigats.com
- And ….join us on February 16th at 1 pm EST

Research Needs

- Practical Applications of HSM
- Best Practices for Transferability of SPFs/CMFs
- Policy and Legal Aspects
- Others

Research Needs – Practical Applications of HSM

- System Planning
  - Simplified network screening methods: finding target crash patterns, selection of sites, and prioritizing expenditures.
  - Practices to integrate HSM into policies and design criteria choice for planning alternatives and transportation facility design (e.g., implementation of 17-81 research).
  - Simplified methods for systemic safety countermeasure selection and prioritization.
- Project Planning and Preliminary Engineering
  - Analysis of target crash patterns and frequencies for a project (existing and predicted patterns considering design alternatives).
  - Methods for the selection of the combination of safety countermeasures, i.e., greatest crash reductions, most economical, etc.

Research Needs – Practical Applications of HSM (cont'd)

- Design and Construction
  - Assess impact of design exceptions and modifications during construction.
  - Application of HSM to support implementation of Safe Systems, Practical Solutions/Design, Vision Zero, and other crash reduction/elimination approaches.
  - Guidance on the application of HSM for work zone design.
- Operations and Maintenance
  - Encourage the consideration of HSM methodologies in operations and maintenance:
    - Signal operation and ITS applications.
    - Enforcement operations, roaming service patrols, etc.
    - Weather events, evacuation/alternative routes, etc.

Research Needs – Best Practices for Transferability of SPFs/CMFs

Research Needs - Policy and Legal Aspects

- Vision Zero and Safe Systems and the Liability Implications.
  - This includes performance based or practical design.
  - This often may involve implementing strategies that violate state law, driver expectation, AASHTO Greenbook, MUTCD, etc.
- Synthesis on Treatments to Mitigate Animal Related Rural Road Crashes

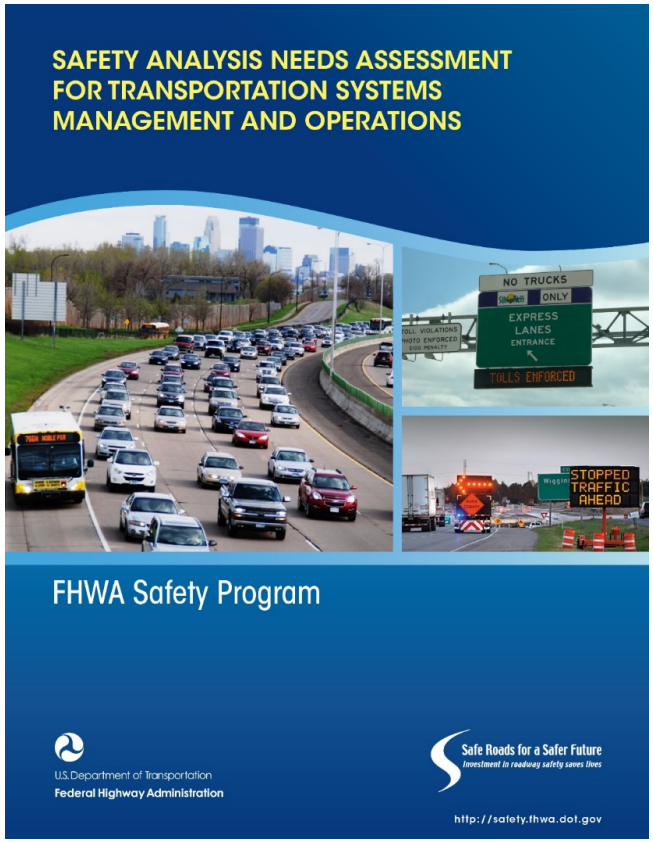
Research Needs

- Please send your suggestions to
  - michael.dimaiuta.ctr@dot.gov
  - genibahar@navigats.com
- And ….join us on February 16th at 1 pm EST

FHWA Updates

- Safety Analysis Needs Assessment for TSMO
- DDSA How-To Guides
- Safety Data and Analysis Case Studies
- Local Road Safety Plan DIY Site
- CMF Clearinghouse Star Rating System Transition

Publication: Safety Analysis Needs Assessment for TSMO



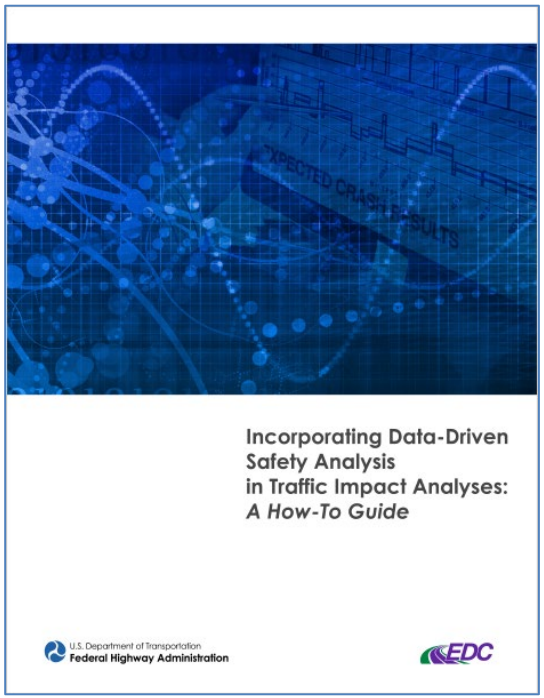
Funded by the HSM Implementation Pooled Fund, TPF-5(255)

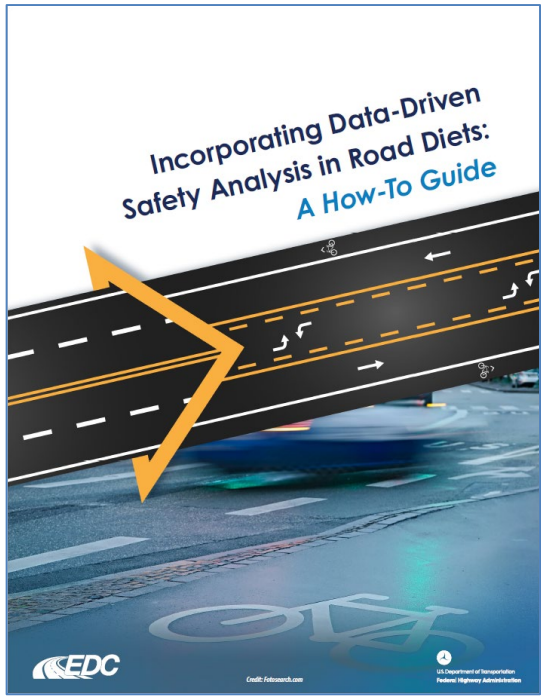
- Characterize current safety performance analysis practice, knowledge, and skills relevant to TSMO strategies
- Identify gaps in existing safety performance analysis approaches and develop associated research needs

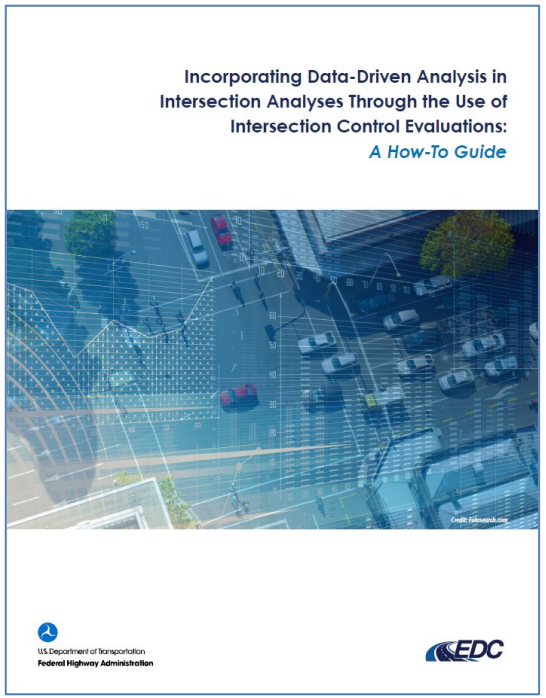
https://safety.fhwa.dot.gov/rsdp/downloads/fhwssa19041.pdf

DDSA How-To Guides

- Traffic Impact Analyses
- Intersection Control Evaluation
- Road Diets
- Horizontal Curves (site-specific)
- Horizontal Curves (systemic)
- Off-peak and Peak Conditions
- Allocating Lane and Shoulder Width

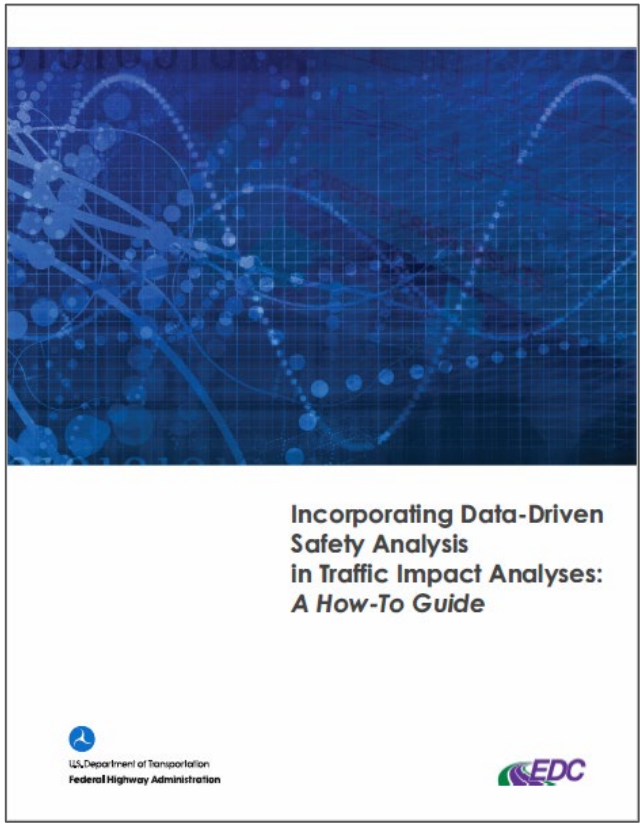






https://safety.fhwa.dot.gov/rsdp/resources.aspx

Guide: Incorporating DDSA in TIAs



https://safety.fhwa.dot.gov/rsdp/downloads/fhwasa19026.pdf

Proposed Development

- Identify the Study Area
- Develop the Site Plan
- **Develop Ingress/Egress Conceptual Plan**
- On-Site/Off-Site Land Use

Existing Conditions

- Document Physical Characteristics
- Collect Traffic Volumes and Non-motorized Data
- **Identify and Obtain Safety Data**
- **Evaluate Pedestrian and Bicycle Accommodations**
- **Summarize Data and Identify Safety Issues**
- Perform Capacity/Queueing Analyses for Existing Conditions

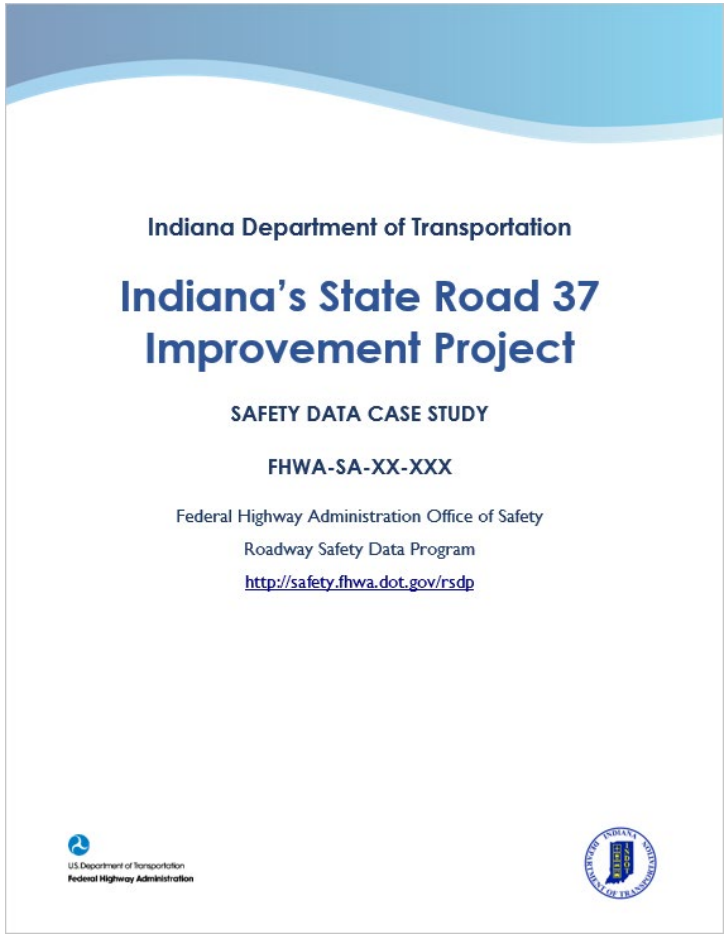
Projected Growth

- Background Traffic Forecasting
- On-Site and Off-Site Development Traffic Forecasting
- Build and No-Build Conditions Total Traffic

Traffic Analysis

- **Develop Preliminary Alternatives**
- Evaluate Site Access
- Perform Capacity/Queueing Analysis
- Traffic Control/Geometric Consideration
- **Perform Safety Analysis of Each Preliminary Alternative**
- **Compare Alternatives and Make Recommendations**

Safety Data and Analysis Case Studies



- At least 12 case studies will be applications of HSM related analysis
- Case Study Template provided by User Liaison Subcommittee
- ~ 30 potential case studies submitted
- Various applications, methods, tools, and facility types
- HSM Implementation Pooled Fund Members ranked and prioritized potential case studies

Local Road Safety Plan DIY Site

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

CMF Clearinghouse Star Rating Transition

- The current star rating system has been in use since the inception of CMF Clearinghouse in 2009
- NCHRP 17-72 recently developed an updated rating system for CMFs with the purpose of updating the rating/inclusion process for the 2nd Edition of the Highway Safety Manual
- We have been working on updating the CMF Clearinghouse rating system to be consistent with the NCHRP 17-72 rating scheme

CRASH MODIFICATION FACTORS CLEARINGHOUSE

NCHRP 17-72 Rating Procedure

- The rating system developed by NCHRP 17-72 is much more detailed and provides scores for different factors including sample size, study design, methodology, and statistical significance
- A separate rating criteria has been developed for Before/After, Cross-Sectional, Meta-Analysis, and Meta-Regression studies (detailed scoring criteria is available at http://cmfclearinghouse.org/changes.cfm)
- Overall Procedure
  - Points are assigned based on multiple factors
    - Levels within factors and points for each level
  - Total score calculated by adding the points; maximum possible score is 150

Changes to Current CMF Star Ratings

- The conversion scale leads to many CMFs being rated differently from their current ratings
  - 52.12% of the CMFs would maintain their current star ratings
  - 16.16% of CMFs currently rated 3 Stars or better would be rated 2 Stars or lower

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

Transition

- The expected launch date of the new rating system is February 15, 2021
- CMF Clearinghouse users will be notified a day before and on the day of transition via the mailing list.
  - If you have not already subscribed to our mailing list, consider doing so by signing up on the CMF Clearinghouse homepage (http://www.cmfclearinghouse.org/)
- Two webinars will be conducted (aimed at practitioners and researchers) towards the end of February to help Clearinghouse users get accustomed to the new rating system

Other Items

- Please send your suggestions to
  - michael.dimaiuta.ctr@dot.gov
  - genibahar@navigats.com
- And ….join us on February 16th at 1 pm EST

User Liaison Subcommittee Post-TRB Meeting

February 16, 2021 at 1pm EST

Zoom link in the agenda

https://bit.ly/acs20ulsc

POLL #3

Do you plan to attend the ULSC post-TRB meeting?

Thank you!

ENJOY TRB 2021!

HAPPY AND HEALTHY NEW YEAR!