TRB Safety Performance and Analysis Committee (ACS20)

User Liaison Subcommittee

Research Ideas
March 11, 2021

International Safety Performance

- **Synthesis on Transferability of Safety Performance Measures (CMFs, SPFs, and CFs)** - *Submitted 2/17/21*

- **Requirements for publishing CMF/SPFs with respect to context (speed, fleet mix, policies and legislation, etc.)** – would help with transferability

- **Top 10 known list of CMFs for various problems** (like run off road, rural intersection angle crashes) typically identified in local areas with limited crash data. This could also be applied to LMICs.

Policy and Legal Aspects

- **Legal implications of the Safe Systems Approach** (coordinate with ACS 10) - How implementing some Safe Systems strategies may violate state law, driver expectation, AASHTO Greenbook, MUTCD, etc. and how can Safe Systems be incorporated into the AASHTO Greenbook, MUTCD, and other guidance documents to advance implementation and minimize liability concerns. Also includes performance based or practical design (synthesis?)

- **Animal Related Crashes and Strategies** - synthesis of laws, practices, and strategies of addressing animal related crashes. This would be an expansion/update of Synthesis 370, which focused on data collection related to animal crashes.

Practical Applications of the HSM

System Planning

- **Simplified network screening methods:** finding target crash patterns, selection of sites, and prioritizing expenditures (synthesis?)

- **Best practices to integrate HSM into agency practices and policies** (design criteria choice for planning alternatives and transportation facility design - e.g., implementation of 17-81 research). How and when to integrate the HSM. (synthesis?)

- **integration of Part C models into ICE / ICE policies that do account for predictive analysis (integrate into safety and design).**

- **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

- **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.**

Data-Driven Methods for Simplified Safety Analysis on Rural Roads

- **MIRE Data Requirements for providing Safety on Unpaved Roads - Methods and procedures for simplified analysis and countermeasure implementation on rural roads** (coordinate with Joint Subcommittee on Rural Road Safety, Planning, Policy and Implementation) - draft RNS written

- **Local Network MIRE Data Collection and use for Data-Driven Safety Analysis**

- **Synthesis of State DOT Efforts to Collect MIRE Compliant Data, Collection Methods and Data Warehousing for Local Agency Roads to Improve Safety on Rural Roads**

Other Research Ideas

- **Road Safety Training for Local Agencies** - provide resources to local agencies to utilize quantitative safety methods, specifically local agency-targeted training

- **New Analytical Techniques for Quantitative Safety Analysis** - such as machine learning techniques, artificial intelligence (AI), big data, crowdsourcing, etc. Existing applications of these techniques, future visions and challenges?

- **HSM integration with Safe Systems, performance-based design, Green Book 8, etc.** (How to integrate Safe Systems into HSM methodologies, performance-based design with Safety and future Green Book 8?)

- **RNS on micromobility, motorcycle safety, incorporating behavior into SPFs, equity in safety**

- **HSM Tools: survey to catalog what is out there, who has what, why they were developed, and wish list of what is wanted**

- **Do states have a prequal process for consultants to perform predictive safety studies? State specific training/RSP required?** (Synthesis)