

97th TRB Annual Meeting
Surrogate Measures of Safety Subcommittee ANB20(3)
<https://sites.google.com/site/surrogatesafety/>
Monday, January 8th, 2018, 10:15 AM - 12:00 PM
Marriott Marquis, Supreme Court (M4)
Chair: Nicolas Saunier

Meeting Minutes

1. Opening remarks - Nicolas Saunier
2. Introduction of participants - all
3. Discussion and approval of the 2017 meeting minutes - all

The minutes were approved unanimously without comments.

4. TRB Annual Meeting update - Bernardo Kleiner (not present)
5. Updates from liaisons with other TRB groups and International Associations
 - 5.1. Highway Safety Performance (ANB25) and Future Directions in Safety Analysis ANB20(1)

John Ivan (University of Connecticut) provided updates for the Future Directions in Safety Analysis subcommittee. There is a need for contribution from other fields. A research needs statement (RNS) on driver adaptation to safety treatments is still being developed, and a new RNS was proposed to incorporate driver behaviour in aggregate crash prediction (which is currently mostly based on road characteristics). There is continued interest on new data sources.

John Ivan also mentioned the second version of the highway safety manual, which needs more practitioner reviewers.

- 5.2. International Co-operation on Theories and Concepts in Traffic Safety (ICTCT)

Aliaksei Lareshyn (Lund University) presented news from the ICTCT. ICTCT has a new steering committee, with an emphasis on improving the quality of the papers presented at the workshops. There will be an extra meeting in Vancouver in March 2018 and the regular meeting will be in Portugal later in October.

- 5.3. SAE committee on Surrogate Measures of Safety

<https://www.sae.org/servlets/works/committeeHome.do?comtID=TEVSMEASURES>

Aliaksei Lareshyn introduced the new SAE committee on surrogate measures of safety (SMoS), created in the fall of 2017. The committee is co-chaired by Nicolas Saunier and Aliaksei Lareshyn. There were already two meetings, on November 15th and just before this subcommittee meeting. The SAE committee goal is to develop standards for SMoS, starting with terms and definitions. It has produced a white paper in October 2017 (<http://papers.sae.org/wp-0005/>).

6. Surrogate measures at the 97th TRB Annual Meeting - synthesis of papers

The chapter on SMoS was prepared by Thomas Hall, Cristhian Lizarazo, and Andrew

Tarko of Purdue University, Matin Nabavi Niaki and Nicolas Saunier of Polytechnique Montreal. Forty-one papers utilizing SMOs were identified.

7. Research updates and presentations

7.1. Naturalistic Driving Studies (NDS) projects sponsored by FHWA

Carol Tan (FHWA) gave an update on the SHRP2 naturalistic driving studies (NDS) (Slides are attached).

John Ivan presented his project on speed and crash risk from NDS data, on the link between speed distributions minutes to seconds before a crash.

7.2. Update on the Video Analytics Towards Vision Zero Partnership

Franz Loewenherz (City of Bellevue) presented an update on the Video Analytics Towards Vision Zero Partnership (slides are attached).

7.3. SSAM and ETFOMM updates (<http://sourceforge.net/projects/etfomm/>)

Li Zhang (New Global Systems) presented an update on two pieces of open source software, ETFOMM and the new version of the SSAM. He presented new indicators, visualization tools and the cloud version of SSAM (slides are attached).

7.4. Update on the European project In-depth Understanding of Accident Causation for Vulnerable Road Users (InDeV) (<http://www.indev-project.eu>)

Aliaksei Lareshyn presented the update (slides are attached).

7.5. Research at Purdue University (added item)

Andrew Tarko briefly presented ongoing research on SMOs at Purdue University. Funded by Indiana DOT, LIDAR, now with cameras, are used to collect road user data. A prototype has been developed. Andrew Tarko wrote a chapter on SMOs in a forthcoming book on road safety to be published in 2018.

8. Discussions in subgroups

- Group 1 (rapporteur: Majed Al Ghandour):

- The group focused on SSAM and the need for improved guidelines.
 - SSAM could report safety measures related to the difference between operating speed and posted speed to determine the severity of crashes.
 - SSAM could include animations showing the conflicts and allow the user to filter outliers (e.g. negative indicator values).
 - SSAM depends on microscopic traffic simulation tools, such as Vissim, paramics, synchro, etc., which need to be calibrated. The impact of the tool on SSAM must be better understood.
 - SSAM may be used to explore the impact of travel time, speed, type of facilities (e.g. arterial, locals), geometry and human factors (e.g. reaction time).
- The new ETFOMM simulation should be compared with other simulation

- tools.
 - Study whether monitoring speed in real time can be used as a SMOs.
- Group 2 (rapporteur: Cristhian Lizarazo):
 - Applications to vulnerable road users
 - Behaviour of pedestrians
 - More applications for practitioners, eg in a workshop
- Group 3 (rapporteur?):
 - need for a manual or a book
 - evolution of driver skills over the next 20-30 years
 - need for tools and methods for rural areas (no traffic cameras)
 - more focus outside of intersections
- Group 4 (rapporteur: Tim de Ceunynck):
 - An interesting approach is machine learning (e.g. neural networks), which can be trained on a dataset of severe and less severe traffic conflicts. The machine learning algorithm learns by itself what the characteristics of such events are. This could partly overcome the discussion of the best measure (on the condition of course that the severe conflicts we feed it are a good surrogate to crashes, which is another tricky discussion). There are different views on whether it is a problem if this approach is “black box”, or whether it should be more of a “hybrid human-machine learning” with a more actively involved human in the loop.
 - When it comes to automated vehicles, the vehicle occupant’s perception of the severity of traffic events will be relevant. Technologically it might be possible to adopt small gaps safely, but we can wonder whether people will accept that. Generally people seem to accept smaller safety margins when they are in control themselves. If larger margins need to be applied to make automated vehicles acceptable for people, the overall traffic flow (or capacity) might get worse instead of improving.
 - There is a need for nailing concepts. We do not necessarily agree on very basic elements such as traffic conflicts and crashes. Before there is agreement on that, it may be difficult to validate SMOs against crashes.
- Group 5 (John Hourdos)
 - Promote the use of vehicle activation data (from already installed loop and radar sensors), which can be used to validate the relationship of SMOs with crashes
 - Need for mesoscopic and macroscopic models for safety (compared to all the work at specific sites) (VicRoads work)
 - Connected and Automated Vehicles provide a new sources of data for SMOs, but are also a challenge as traffic will change, along with the relationship of SMOs with safety
 - Need for central repositories of traffic data, SMOs and crash data to share between jurisdictions to validate SMOs (at reasonable and known cost)

9. Coming conferences, meetings, research opportunities and other matters - all

The XI ICTCT extra Workshop will be held at the University of British Columbia in Vancouver, Canada, on March 8th-9th 2018 on the topic of “Improving the safety of vulnerable road users” – Challenges and Opportunities

(icttvancouver2018.civil.ubc.ca). The call for abstracts is available [here](#). The deadline for submitting abstracts is 15th January 2018.

10. Adjourn