



TRB ANB70: Truck and Bus Safety Committee

2019 Annual Committee Meeting

Wednesday January 16, 2019

8:00 AM – 12:00 PM

Marriott Marquis

Ballroom Salon 14 (M2)

Full Committee Minutes

1. Welcome and Introductions: Bob Scopatz, Chair; All

Bob opened things off, saying this is his first time chairing the annual meeting of this committee.

2. TRB Staff (upon arrival): Bernardo Kleiner

- a. Contribute to the triennial plan.
- b. New poster hall and are still looking into how best to manage it. They expanded the other sessions as well, with some automated technology.
- c. Over 14,000 registered for TRB this year, but with weather and government shutdown the numbers of attendees are uncertain.
- d. Encouraged paper reviews and how critical they are. The comments are very important to the reviews, not so much on the ranking. TRB wants to publish those papers that demonstrate quality research.
- e. Over 6,000 papers and over 500 workshops and poster sessions
- f. Sage is now administering the papers and publications. TRB is now publishing papers electronically, which is speeding up the process tremendously.
- g. Where does the committee fit in with the TRB's strategic triennial plan.
- h. Centennial, hundred year retrospective document. However, the deadline is February 1, 2019.

3. Mid-Year Meeting Summary & Notes: Andrew King & Bob Scopatz

- a. Bob and Andrew both forgot the mid-year meeting notes. NOTE: Andrew provided them after the meeting and they are now uploaded to the committee website.
- b. Briefly discussed a new format for the meetings and the potential for a new structure of the committee that will allow more focus and discussion on actual research.
- c. Joe DeLorenzo also gave an update on the IRT model for identifying safe carriers.
- d. We also discussed ELD data and if we could use it for safety research purposes. Moreover, we discussed how we could use it as a surrogate measure. There are barriers, including regulations and privacy. Need to find a trusted third-party

4. Paper Review Summary and Discussion



- a. 2019 Papers: Caroline Boris took over the paper review management this year. Bob said she did most of the work herself and did a great job.
 - i. 30 papers this year, 11 papers selected for presentation, and 6 for publication
 - ii. Bob recommended people filling out the info on the MyTRB site, including ethnic identity information so that TRB can track the diversity of TRB and if they need to continue to improve their efforts. The other part of that is, if we going to crisis mode toward the end of the review, we know who to reach out too.
 - iii. We try to do things differently from most committees and request the members to choose which papers they would like to review. We ask all members to review at least 3 papers.
 - iv. We often get a lot of papers with high level stats and methodologies. Please review it under your understanding, not as a statistician. Please do not reject a paper review. Review it as a practitioner and we will ask for help from the Statistics committee to deal with the analytic issues.
- b. 2018 Paper Awards: Bob Scopatz, Jerry Krueger, Scott Valentine
 - i. Pick the paper from the preceding year.
 - ii. Joel Ticatch asked if there were any comments on the new method of reviewing the papers. The couple comments given were positive.
 - 1. ANB70's Deborah Freund Paper Award
Paper 18-01305
A First Investigation of Truck Drivers' Preferences and Behaviors Using a Prototype Cooperative Adaptive Cruise Control System
Authors:
Shiyan Yang, California Partners for Advanced Transportation Technology
(Corresponding Author)
Steven Shladover, California Partners for Advanced Transportation Technology
Xiao-Yun Lu, California Partners for Advanced Transportation Technology
Hani Ramezani, University of California, Berkeley
Aravind Kailas, Volvo Group North America
Osman Altan, Federal Highway Administration (FHWA)

5. Committee Membership and Rotation: Bob Scopatz

- a. TRB is attempting to track diversity among TRB members and desires for the various committees to do the same when assigning positions and responsibilities. We have a 25 member committee, but we have some extra slots for young and international members. We will have an updated committee roster for everyone.
- b. Might have some slots open, especially for international members. Bob desires for anyone who is interested to let him know.

6. Committee Strategic Plan: Joel Ticatch & Bob Scopatz

- a. Created last year's annual meeting to discuss the committee's focus and future. We met three times including an extended session this past Sunday. The work will be ongoing.



We are not yet ready to bring forth all the suggestions of the committee. It is possible that we might be able to release those findings later at the mid-year meeting.

- b. However, we have already implemented some of the changes that were discussed in the subcommittee, such as the shorter updates
- c. The subcommittee wants to bring the mission statement in stronger alignment with the committee's true focus. The subcommittee has focused on the overall committee's goals as well as the domain statement to possibly include light vehicles.
- d. Survey the committee's membership on hot topics in the arena of truck and bus safety.
- e. Potentially hosting a workshop to examine the high priority topics within the domain.
- f. Convene podium sessions, beginning next year, as well as convening with other TRB committees
- g. Publish circulars and e-circulars on truck and bus safety research
- h. Inviting papers that focus on high priority issues
- i. Seeking funding with various governmental agencies as well as universities to promulgate the new research focus.
- j. Also focusing on a triennial strategic plan and how we might complete the document.
 - i. Bob asked if any others might be interested in helping with the subcommittee, especially considering the triennial plan.
 - ii. Bob further touched on some of the items that the subcommittee is looking into and further stressed the need to complete our triennial plan. TRB is taking a zero look approach concerning the overall structure of TRB. They want to combine committees that are perhaps less relevant. Thus what can this committee do to be more relevant?
 - iii. Bob encouraged the subcommittee chairs to discuss the issues of their specific domain. Bob encouraged them to convene a meeting with their usual members and attendees and come up with at least three important research needs. Speed is of the essence.

7. Subcommittee Reports:

- a. Carrier Safety Management: Sharon Newnam
 - i. Two primary issues discussed
 - 1. Contractor Management Safety
 - 2. Chain of Responsibility
 - ii. Two Research papers
 - 1. System dynamic modeling
 - 2. Taxi drivers and fatigue related training
 - iii. The subcommittee was not able to discuss the inclusion driver training into this particular subcommittee. The subcommittee also was not able to discuss its mission statement, but this will be included in the mid-year meeting
- b. Operator Health and Wellness: Erin Mabry
 - i. Three presentations
 - 1. Matt Theise
 - 2. Health intervention research with commercial drivers



3. Driver fatigue and EMS drivers
 - ii. Not a formal list of members and friends for the subcommittees. Erin is going to make a list for updates and presentations.
 - iii. Brenda mentioned that all presentations can be added to the website.
- c. Motorcoach Safety: Charlie Vits
 - i. FMCSA ICR on Systematic maintenance for truck and bus applications
 - ii. The need to have a better understanding of transit and branch out to other committees or taskforces
 - iii. Discussed the subcommittee's role concerning buses and motorcoaches
- d. Data: Andrew Miller
 - i. Subcommittee is to address data availability and data needs to support research
 - ii. Bill Bannister from FMCSA gave an update and insight for the upcoming year including the MMUUC, the A&I data, and effectiveness test.
 - iii. Data need research statements but fell short on time, will have a survey or mid-year meeting
 - iv. Closed on a discussion on naturalistic driving data
 1. Safety Critical Events continues to be a hot topic and could be a good research topic
- e. Technology: Abby Morgan
 - i. Three presenters
 1. Peloton platooning
 2. WYDOT connected vehicle pilot program
 3. Kinetic onboard monitoring from the Fast Dash program
 - ii. Were unable to discuss if low level automation for light vehicles should be included in the purview of the committee
- f. Closing remarks from Bob, who attended all the subcommittees. Bob also discussed the driver training subcommittee. It will either go away or be combined into the carrier safety management subcommittee. Bob encouraged those who are seriously interested in continuing the driver training subcommittee as a standing committee to contact him.

8. Research Coordination/Needs Statements: Nicholas Kehoe

- a. We currently have 27 full research needs statements in TRB's database, but we have an additional 62 research topics organized in 11 focus areas. The hope is to move these into research needs statements or remove them from the list.
- b. Over the past year, we have added one full research needs statements and archived some of the outdated research needs topics. The behavioral side of the cooperative research project was not picked up.
- c. What has been the overall committee's impact on research? This will help the committee's relevancy.
- d. The high priority research program could be a potential funding source. Could some of our research need statements be positioned for high priority funding?



9. Liaison Lightning Round (new feature, top 3 topics for each—summaries available for interested parties)

- a. FMCSA Safety: Steve Smith
 - i. FAST Act progress – completed a number of those including the
 - 1. NAS correlation study
 - 2. Post-accident reporting study
 - 3. MMUCC
 - 4. Pilot program for under-21 drivers
 - 5. CDL skills test delays survey
 - 6. CMV commuting habits
 - 7. Baggage compartments on double-decker motorcoaches
 - 8. Beyond compliance
 - ii. For 2019, FMCSA has dedicated half of their funding research to automotive deployment
- b. FMCSA Regulations: Joe DeLorenzo
 - i. Those related to regulations are not working
 - ii. December 2019 ELD final deadline
 - iii. January 2020 Drug and Alcohol clearinghouse implementation
 - iv. February 2020 ELDT rule implementation. The training provider registry is being worked on now
 - v. ANPRM AV policy
 - vi. Two on-going activities on HOS
 - 1. ANPRM HOS
 - 2. Definition of what is an agriculture commodity
- c. NHTSA: Alrik Svenson
- d. NTSB: Rob Molloy
- e. CVSA: Will Schaefer
 - i. Four enforcement campaigns annually
 - ii. Responding to requests from exemptions from the HOS
 - iii. Working with FMCSA with Automated vehicles concerning enforcement and inspections
 - iv. CVSA has two relatively new committees the “Industry and innovative” and “Crash Data and Investigations” subcommittees.
- f. ATA: Dan Horvath
 - i. HOS
 - ii. ELD implementation
 - iii. CSA
 - iv. Younger drivers
- g. OOIDA: Andrew King
 - i. Jim Johnston
 - ii. AVs
- h. ABA: Brandon Buchanan



10. Hot Topics (new feature! ½ hour each including discussion)

- a. Michael Belzer kicking off a discussion of compensation, hours of work, and detention time.
 - i. Long work hours leads to fatigue and fatigue is associated with safety and health risk.
 - ii. If you pay drivers more, they will work less
- b. Sharon Newnam kicking off a discussion on older HV Drivers
 - i. One of the frequently reported health issues for older drivers is hearing loss.

11. Additional Business and Announcements

- a. Bob touched briefly on potential session topics for 2020, including workshops and podium sessions, which consist of 3 or 5 presentations. Occasionally, these podium sessions are combined into e-circulars.
- b. We need a champion for both workshops and podium sessions. This needs to be done immediately.
- c. There will be a mid-year meeting in 2019 at NAS in Washington D.C.

12. Adjourn

Attendees

Name	Affiliation	Name	Affiliation
Robert Scopatz	VHB	Matt Camden	VTTI
Nicholas Kehoe	Toxcel, LLC	Sharon Newman	Monash University
Dan Murray	ATRI	Caroline Boris	Atri
Deborah Quackenbush	Virtual Excellence, LLC	Andrew Krum	Virginia Tech Transportation Institute
Emira Rista	Texas A&M	Jonathan Mueller	FMCSA
Joel Ticatch	Kapsch Traffic Com USA, Inc.	Brenda Lantz	NDSU-UGPTI
Peter VanDyne	Liberty Mutual Insurance Company	Guang Chen	NIOSH
Steve Vaughn	HELP, Inc.	Anna Herman	Ccmta
Kun-Feng Wu	National Chiao Tung University	Matt Erim	Amazon
Andrew King	OOIDA	Thomas Fugger	ARB, Inc
Erin (Jessica) Mabry	VTTI	Peter Swan	Penn state harrisburg
Abby Morgan	Kittleson & Associates	Dan Horvath	American Trucking Associations
Sharon Newnam	Monash University	Christian Kuran	University of Stavanger
Charles Vits	IMMI	Jeff Burns	Truck Safety Coalition
Andrew Miller	VTTI	Robin Riessman	UMassSafe
Gene Bergoffen	MaineWay Services	Schaefer William	CVSA
Jonas Brandt	SP technical research institute of Sweden	Peter Kurdock	Advocates for Highway & Auto Safety
Brandon Buchanan	American Bus Association	Chris Flanigan	FMCSA
Jeffrey Burns	Dollar, Burns, and Becker LLC	Daren Hansen	J.J.Keller & Assoc.
Robert DiCristoforo	Advantia Transport Consulting	Brian Sherlock	ATU
Laura Fraade-Blonar	University of Washington	David Fosbroke	NIOSH
Salvador Hernandez	Oregon State University	Ryan Olson	Ohsu



Jeffrey Hickman	VTTI	Yang Shiyan	Seeing Machines
Dave Madsen	OST-R/Volpe Center	Lu Xiao-Yun	PATH, U. C. Berkeley
Juan Martinez	NYC DOT	Mouyid Islam	CUTR, USF
Robert Molloy	NTSB	Pierre Thiffault	Transport Canada
William Schaefer	CVSA	Susan Cohen	Americans For Older Driver Safety
William Sieber	CDC	Bill Bannister	FMCSA
Steven Smith	FMCSA	John McDonough	NISR, Inc.
Alrik Svenson	NHTSA	Jenny Guarino	FMCSA
Brian Taylor	Intelligent Imaging Systems, Inc	Swaroop Dinakar	Crash Safety Research Center
Edward Watt	Alagamated Transit Union (ATU)	Jeffrey Muttart	Crash Safety Research Center
Thomas Weakley	OOIDA	Abhijit Sarkar	VTTI
John Woodrooffe	UMTRI	Tom Der	International Road Dynamics (IRD)
Thomas Yager	FMCSA	Pierro Hirsch	Visage Simulation
Michael Belzer	Wayne State University	Michael Griffith	FHWA
Krueger Gerald	Kruegerergonomicconsultants	Skip Yeakel	Volvo Technology of America
Joe DeLorenzo	FMCSA		

Subcommittee Meetings Minutes

Truck and Bus Operator Health and Wellness Subcommittee, ANB70 (3)

Monday, January 14, 2019 | 8:00 AM- 9:45 AM

Marriott Marquis, Supreme Court (M4)

Jessica Mabry, Virginia Polytechnic Institute and State University, presiding

Attendance: 14 people

Agenda:

Introductions (8-8:05am)

Truck/bus and health related sessions at TRB (8:05-8:10)

Presentations and Discussion (8:10-9:35)

- Dr. Matt Thiese, University of Utah (8:10-8:45)
 - “Psychotropic Medication Use Among Truck Drivers: Unhealthy Trends and Increased Crash Risk”
- Dr. Ryan Olson, Oregon Institute of Occupational Health Sciences (8:45-9:20)
 - “Health Intervention Research with Commercial Drivers”
- Dr. Gerald Krueger (presenting) and Billy E. Rutherford, American Integrated Training Systems, Inc. (9:20-9:35)
 - “Adapting Sleep Hygiene and Fatigue Management for EMS Ambulance Crews”

Group discussion on research needs/open comments (9:35-9:45)

Closing (9:45am)



Presentation

Matt Thiese | University of Utah | Psychotropic Medication Use among Truck Drivers

Matt presented contextual data on the population size and medical conditions among drivers and health risks. There isn't much data on crash risks and little evidence-based prevention work. The big question is "what interventions work in this population?"

Most of the health conditions drivers have are treated with medication. There are concerns about drug interactions. For opioids, there is roughly a 2x increase in crash risk. There are no validated tests to determine safety for driving. For benzodiazepines, risk is about 1.3-2.2x increased. The poly drug combination of opioids and benzodiazepines is the focus of the research. Use of psychotropic medications has been rising over years, and prevalence roughly tripled by 2010 (and beyond) compared to 2005. Use of prescribed stimulants prevalence bounced around. It was very high in 2009, 2010 and 2011 compared to the 2005 base year. For benzodiazepine use, 2012 prevalence is 4.61x the 2005 baseline. Opioid use in 2012 is 4.61x the prevalence in 2005. In all areas, female drivers are more likely users than males. The trend for opioids is particularly alarming because the rate, projected out to 2018 was over 9x baseline. Older drivers are also more likely to be users.

Comparing truck drivers to the general population, Matt used the National Health and Nutrition Survey (NHANES) data. Matched age range and picked currently employed respondents for a comparison. Controlled for age, gender, and BMI. For medication use, stimulants and benzo use are higher and diverging for truck drivers versus the NHANES population.

Further study: What is the relationship to crash frequency, turnover, and overall workers compensation claims (not just crash related). Look at updated trends, and ultimately plan interventions to reduce impairing medication use.

Discussion: this was from one company—are the drivers all doing similar types of driving or using similar equipment. Matt said that there is a wide variety of truck types. The workers compensation claims would vary across those different types. Matt has the detailed data on truck types, miles driven, and other variables that can be examined.

Is it all self-reported medication use and do you think there would be motivation to under-report. Yes and yes.

Ryan Olson | OHSU

Health Intervention Research with Commercial Drivers

Mostly focused on body-weight management interventions.

Obesity among truck drivers is about 2x in the US...true in other countries even those with lower rates of obesity in general, it's about 2x. Annual health care costs are about \$1000 higher for obese workers, and obesity+injury lead to 80% greater costs. Diabetes and sleep apnea also seem to double the crash risk. Professional drivers are generally at lower risk for crashes, but the crashes are much more costly per event. It requires integrated, multi-level interventions to really impact. Body weight research is scarce, but the companies are doing a lot that isn't making it into peer reviewed literature. In their studies, they



found meaningful differences among clusters of drivers, the most salient are exercise and sleep (duration and quality). The specific interventions were successful in increasing fruits and vegetables in the diet and improving sleep duration. New directions are to research and focus on avoiding weight gain in the first year(s) of commercial driving through onboarding interventions (pre-service training and a sequence of three challenges during the probationary period).

Other work: the cab environment focused on sleep and fatigue. Looking at advanced cab features alone and in combination with behavioral sleep programs.

Take home points: there’s too little of this research. Potential sponsors are NIH, NIOSH, FMCSA. It’s expensive to track commercial drivers. The outcomes look to be less dramatic than in similar people working in an office environment.

Discussion: hard-braking as a performance measure—Ryan said it makes the most sense in monotonous conditions. It is not a perfect measure. There’s a risk that drivers increase danger by NOT braking hard. There are other seat technologies (used more in Europe) that might be even better. Finally, there are some very important airflow concerns including some sucking up of exhaust gases and pushing them at the drivers—getting more fresh air into the cabin would be a good thing to study.

Do you have a sense of what the supervisors were doing to encourage/support the drivers? No—they recorded what drivers’ agreement was with the item “My supervisor prioritizes my health.”

There have been some interactions with FMCSA on these issues. They have contacted Pierre in Canada about this.

Jerry Krueger | American Integrated Training Systems

Driver fatigue in ambulance drivers. Jerry presented a series of slides used in training in interactive sessions. Problems include working too many hours; insufficient sleep; arriving tired and sleep deprived; multiple runs; shift problems; not well informed about sleep deprivation; and physical fitness is extremely variable. There are many fatigue management programs by federal, state, and associations. There are organizational responsibilities to educate (on fitness for duty); provide a safe/quiet area for sleeping; policy and procedures that permit naps; equipment that reduce job fatigue. There are also individual responsibilities to report fit for duty. Determining if someone is “fit for duty” is difficult. These crews have a very long shift cycle. Crew sleeping facilities vary widely. There are lots of very old fire stations that lack adequate sleeping areas.

Discussion: where do these people commute to/from when they work these super-long shifts? Could be very far – two hour commutes are common and there are well-known cases of these folks having fatigue-related crashes on the way home after their shifts. It’s common across the entire transportation industry.

Attendees

Name	Affiliation	Name	Affiliation
Bob Scopatz	VHB	Matt Erim	Amazon
Erin mabry	Vtti	Christian Kuran	University of Stavanger, Norway
Matt thiese	U of utah	Caroline boris	Atri
Ryan olson	Ohsu	Pierre Thiffault	Transport Canada



Pete VanDyne	Liberty Mutual	Sharon Newnam	Monash University
Brian Sherlock	ATU	Nithin Agarwal	University of Florida
Russell Bateman	ATU	Stephan A Parker	TRB

Carrier Safety Management Subcommittee, ANB70 (1)

Monday, January 14, 2019 | 10:15 AM- 12:00 PM

Marriott Marquis, Marquis Ballroom Salon 16 (M2)

Sharon Newnam, Monash University, presiding

Review of minutes from mid-year meeting

- Contractor safety management emerged as an issue for carrier safety management. It was stated that is often difficult to align the safety goals of the employees to those of the supervisor and company for contractors of companies. This is a major challenge in being able to manage the behavior of the driver, beyond compliance. From a State DOT perspective, they all use contract drivers/operators for many jobs, including snow removal. Mike Belzer said that there are differences based on where you fit in as a direct contractor versus layers down in the chain of sub-contractors. It is illegal to make employees into subcontractors, but it is very common. The ability to enforce on-site safety rules depends a lot on whether the employees need jobs or not. In Norway, the high-performing companies build a safety culture and anchor it in the local community and even the local dialect. When contractors come in, they may be outside of that culture. Peter VanDyne stated that light vehicles are causing more losses than the large vehicle operations.
1. Chain of responsibility legislation in road safety management. There are challenges in Australia—it follows a systems-based approach and sets responsibilities at various levels of the operation, but it's difficult to enforce for some actors in the system, such as those within the supply chain. Recent changes in legislation have led to an increase in prosecutions at various levels of the system in Australia. Mike Belzer said that in the US, fewer than 10% of active truck drivers are represented by a union, as opposed to 70% forty years ago. The situation is different in Less-than-truckload (LTL) operations. There's also some states with joint and several responsibility that can hit the 1% responsible defendant with the entire bill, while in the next state over, that entity would owe nothing.

2. Research Papers

Yorghos Apostolopoulos and Michael Lemke, Texas A&M and University of Houston-downtown

Presentation: This presentation discussed a new approach to conceptualising large truck roadway safety. Yorghos presented background information on extent of the problem in truck driver safety and this discussion was followed by an introduction to viewing truck driver safety from a systems perspective. Yorghos discussed the importance of exploring the interactions of driver, vehicle, environment as well as the impact of policies of government and industry that interact with the traditional driver-centric factors. The premise of the argument was that the trucking industry is a complex system that that different



methodologies are needed to optimize prevention efforts. Mike Lemke discussed a simulation modeling technique known as System Dynamics Modeling (SDM). Mike also presented application of the SDM approach to long-haul trucking.

Discussion: The discussion that followed related to previous efforts designed to capture system-level factors in crash causation. Ron Knipling stated that The Large Truck Crash Causation Study (LTCCS) reports the proximal cause *and* a variety of other potential causes (classified into categories like driver, vehicle, environment, policy, etc.).

Bob Scopatz stated that he liked the approach because it brings in a view of the interactions among factors in a way that we normally don't have. He stated that it was also good because the approach included things (like policy) that aren't normally considered in the crash prediction modeling. Bob said that the approach could allow the inclusion of factors as expressed in the Haddon Matrix, and go beyond it to the interactions among these factors.

Sharon said that she liked the modelling technique because it also has a way to look at things relevant to the Chain of Responsibility. The Haddon Matrix is treated linearly and we can benefit from using SDM to look at the complex relationships.

Mike Belzer said that it can also help understand data needs where there are gaps in knowledge. Mike also stated that the LTCCS was developed without theory. That was a problem. The SDM approach using the LTCCS might be hampered by what's missing from the LTCCS, but that's okay because the SDM can point to where there are missing and relevant data.

Peter VanDyne said that the technique would be a great technique to show how management strategies, such as driver training, isn't going to solve all safety problems within organisations. Other factors in the system need to be considered like "enforcing the policies".

Cammie Chaumont Menendez, NIOSH

Presentation: This presentation focus on Taxi Drivers and Fatigue-Related Driving. This research surveyed drivers in Houston and Los Angeles using a random-systematic selection process. The research asked about job tenure and ownership status, job demands, passenger violence, motor vehicle collisions, safety equipment and training, safety climate, road safety behaviors, and socio-demographics. In Houston, several variables were associated with driving while tired. In Los Angeles, only three variables were associated with driving while tired. The 8 versus 3 variables in the two cities may be down to how the taxi industry works and the government controls work (e.g., Los Angeles is a closed market but Houston is comparatively unregulated).

Cammie's newly funded study aims to develop and evaluate fatigue management for taxi drivers nationwide and tested in San Francisco. The training is being developed now. It is modular and modeled after training produced by NIOSH. It covers 9 major topics related to sleep, fatigue, health issues, personal strategies, work practices, shift work, and more. The training will be interactive to the extent possible and will include video snippets and knowledge checks. Links to further information on fatigue will be included. The training is intended to be relevant to App-based ride services.



Discussion: Deborah Quackenbush asked if the work is ongoing and whether it is limited to Houston and Los Angeles. Cammie replied that the new study is focused on San Francisco, but the training is intended to be rolled out to any English-speaking country and the rest of the US.

Bob Scopatz asked if the survey research is likely to be repeated with the ride-share company drivers. Cammie replied that it is challenging to partner in research with TNCs as they are not necessarily interested in collaborating with the government. A lot of the research does apply to those drivers as many of them work for a taxi company and Uber or Lyft.

3. Mission statement

Sharon suggested that, due to time constraints, that discussion on the mission statement for the subcommittee be delayed to the mid-year meeting.

Attendees

Name	Affiliation	Name	Affiliation
Bob Scopatz	VHB	Christian Kuran	University of Stavanger Norway
Guangzhou Chen	Niosh	Mouyid islam	University of south Florida
David Fosbroke	NIOSH	Chris Flanigan	FMCSA
Deborah Quackenbush	Virtual Excellence, LLC	Andrew King	OOIDA
Brenda Lantz	NDSU-UGPTI	Ron Knipling	Safety for the Long Haul Inc
Gene Bergoffen	MaineWay Services	Michael Lemke	University of Houston-Downtown
Pete VanDyne	Liberty Mutual	Yorghos Apostolopoulos	Texas A&M University
Mike Belzer	Wayne State University	William Schaefer	Commercial Vehicle Safety Alliance
Matt Erim	Amazon		

Motorcoach Safety Subcommittee, ANB70 (2)

Monday, January 14, 2019 | 1:30 PM- 3:15 PM

Marriott Marquis, Marquis Ballroom Salon 16 (M2)

Charles Vits, IMMI, presiding

Welcome and Introductions.

Attending: Charles Vits (Chair), Bob Scopatz (ANB 70 Chair), Pete VanDyne, Andrew Krum, Deborah Quackenbush, Gene Bergoffen, Robin Riessman

Minutes of Last Meeting

Minutes from 2018 subcommittee meeting were distributed and reviewed.

Meeting Discussions:

1. Charlie noted that last year this committee discussed the strategic plan for the full ANB70 and that it would be looking at the subcommittees to see if they were doing the right things and what else needed to be done to align them with needs of the parent committee.



Expanding the scope of the subcommittee about to include limousines and others lighter commercial vehicles was also discussed last year and that it remains a topic of the Truck and Bus Strategic Planning Committee. Joel Ticatch is leading this strategic planning effort.

A main purpose of this year's meeting was to determine what the subcommittee goals and if it should continue.

2. Andrew Krum of VTTI reported on a project he's working with FMCSA in cooperation with the American ABA. The ABA has a maintenance council and a safety council.

The project aims to examine maintenance requirements first by defining what a "systematic maintenance program" is. This is an FMCSA requirement, but it's not well described requiring review and definition.

Andrew could not share results yet, but the methodology is to look at maintenance violations for all commercial carriers (trucks and buses) and then tried to relate violations to crashes. This was just to look at the issues of whether or not maintenance at the carrier, and maintenance of the specific vehicles, was related to safety. The study did not use data for safety scoring. Data was categorized into 27 violation groups and 5 different carrier size groups. Data was then examined for predictive relationships to crashes. Categories were split by single unit truck, multi-unit truck, and motorcoaches.

VTTI is also supposed to do a survey and that requires an OMB review for the paperwork reduction act. One output will be to look at high-performing carriers to see what they are doing with respect to a formal program, training, etc. In addition, VTTI will examine at what small and medium sized carriers are doing for maintenance programs regardless of whether or not they are high performers. The goal is to see what is going on at those smaller carriers and make some recommendations.

3. The subcommittee also discussed if it should be figuring out what is going on in transit. AP050 is the bus transit systems committee. This committee is comprised of planners focused on ridership. They do not have a safety subcommittee.
4. The Truck and Bus Committee strategic plan and resulting subcommittee structure was discussed. The Driver Training subcommittee no longer meets and the Carrier Safety Management subcommittee agreed as a group that they would take on training under their domain.
5. Automation is the big hot topic now. Will it be that way in the future in regards to Motor Coach? What kind of driving training do we need for people sitting in an SAE level 4 or 5 commercial vehicle?

Research Needs Statements

No Activity in 2018



2019 Activity, Opportunities, Meetings

No discussion

Meeting Adjournment

Attendees

Name	Affiliation
Bob Scopatz	VHB
Pete VanDyne	Liberty Mutual
Andrew Krum	Virginia Tech Transportation Institute
Charlie Vits	IMMI
Deborah Quackenbush	Virtual Xcellence, LLC
Gene Bergoffen	Mainway
Robin riessman	UMassSafe

Truck and Bus Data Subcommittee, ANB70 (4)

Tuesday, January 15, 2019 | 1:30 PM- 3:15 PM

Marriott Marquis, Marquis Ballroom Salon 16 (M2)

Andrew Miller, Virginia Polytechnic Institute and State University, presiding

1. Welcome and Introductions

Andrew Miller opened the meeting and the attendees introduced themselves

2. FMCSA Analysis Division Update

Bill Bannister provided information on FMCSA ongoing and upcoming research projects. Below are the notes from Bill:

2018 Accomplishments:

- a) In keeping with the recommendation of the Police Accident Reporting Advisory Committee for FMCSA to expand its crash data collection to include all MMUCC data elements, the FMCSA Technical Review Board approved the Enterprise Project Management Review documentation necessary for FMCSA IT systems to accept new MMUCC data standards. This is the first step in developing the requirements for changes that will be required in SAFETYNET and MCMIS to capture more data on crashes involving large trucks and buses.
- b) The High Priority Grant Program funded five State Safety Data Quality projects in 2018: two in Georgia and one each in Virginia, Washington, D.C., and the U.S. Virgin Islands. These grants totaled \$1,232,290.85.
- c) In December, the Data Quality Program implemented updates for the State Safety Data Quality (SSDQ) Performance Measures, including a new accuracy measure and revisions to existing ones intended to make more use of current data. The new features allow States to drill down into the data to investigate more specific problem areas. The new features were made available to the States for several months to allow feedback and practice before going live.



- d) We published the 2018 edition of the Pocket Guide to Large Truck and Bus Statistics; copies are available while they last at the FMCSA booth. We also released the final version of the 2016 Large Truck and Bus Crash Facts, a compilation of 2016 fatal and non-fatal crash statistics.
- e) We published the results of the 2016 Drug and Alcohol Testing Survey of CDL drivers. The random drug positive usage rate in 2016 was 0.7%, and the random alcohol positive usage rate was 0.03%.
- f) We published the 2014 Carrier Intervention Effectiveness Model results which measures the estimated outcomes of the FMCSA CSA program. The Model estimated that the combination of warning letters, offsite investigations, onsite focused investigations, and onsite comprehensive investigations prevented 5,811 crashes and 3,316 injuries, and saved 168 lives.
- g) The Analysis Division conducted a review of nine States that have developed, or are working to develop, active crash prediction tools. This review of existing State models is an early step toward understanding the feasibility and technical requirements for developing a national large truck and bus crash prediction model.

2019 Projects:

- h) We will continue developing the requirement documentation for revising FMCSA IT systems to accommodate an expanded MMUCC-based crash dataset. We will also begin developing a requirements analysis of what changes the States would need to revise their crash data collection and reporting systems and processes to report the set of MMUCC5 data elements.
- i) We will partner with the Commercial Vehicle Safety Alliance to offer training to state partners who report inspection and crash records to support FMCSA and state safety programs. The event will take place on Jan. 29-31, 2019, in San Antonio, Texas, and will provide attendees with the skill-set and expertise to use FMCSA's software systems efficiently and effectively.
- j) In response to a GAO recommendation, we have conducted a data collection from our Federal Safety Investigators on the time, travel and expenses incurred when conducting the different type of investigations. The results will be analyzed to produce updated cost estimates for each intervention type.
- k) We are also responding to another GAO recommendation to develop effectiveness measures for each type of safety intervention. These measures will be based on a modification of the CIEM methodology.
- l) This Spring we will deploy a new module on Analysis and Information (A&I) Online that provides public access to compiled statistics from the motor carrier registration Census File. The display will utilize a Tableau data visualization dashboard with filters that allow the user to slice and dice the data to focus on specific industry components.
- m) In 2019, we will publish the 2019 edition of the Pocket Guide, the 2017 Large Truck and Bus Crash Facts, the results of the 2017 Drug and Alcohol Survey, the 2015 and 2016 CIEM reports, and other analytical reports.
- n) We will conduct an analysis of motor carrier recidivism based on the CIEM methodology. We will vary the timeframes post-intervention to determine when/if the carriers crash rates return to their pre-intervention levels.



3. Product status update/subcommittee outputs

The ANB70 Truck and Bus committee had discussed the opportunity to re-scope the committee to include issues regarding other occupational drivers beyond truck and bus. The Data subcommittee can support this effort by identifying available databases or additional Research Needs Statements (RNS).

a) Data sources/resources

Publically available data for research needs is available and aggregated on the following website:

<https://www.ugpti.org/trb/truckandbus/subcommittees/datasources.php>

Data on occupational drivers outside Truck and Bus are limited, and any known publically accessible databases can be added. Additional feedback on existing or new sources are welcome.

The subcommittee noted a few possible databases/survey efforts to add:

- National Health and Nutrition Examination Survey (NHANES)
- Safety Highway Research Program Phase 2 (SHRP2)
- Electronic Logging Device (ELD) Data
- Survey of Occupational Injuries and Illnesses (SOII)
- National Occupational Mortality Surveillance (NOMS)
- Fatalities in the Oil and Gas Extraction Industry (FOG)

b) Research Needs Statements

There are a number of RNS available on a number of topics that branch across the Truck and Bus Committee and subcommittees.

A high priority for the committee is to identify the top three areas of data needs. This list will be created and provided to the main committee. A survey will be sent to the subcommittee attendees to assess the data priorities.

4. Open forum on research needs and questions

The High Priority Grant Program was identified as a potential avenue for funding for universities or others based on eligibility in order to conduct research.

5. Naturalistic data utility discussion

- a) Andrew Miller, Virginia Tech Transportation Institute

Discussed advancements made with naturalistic data, including:

- Incorporation of roadway attribute or environmental data
- Machine Vision on driver performance or external factors
- Autonomous vehicle algorithm testing
- Multilevel modeling of driver/fleet characteristics and behaviors
- Other data matching



b) Ron Knipling, Safety for the Long Haul Inc.

Discussed mixed-SCE role from naturalistic data in the crash triangle

Imposed the following questions:

- *Does the method qualify as empirical science?*
- *Is the method based on a sound, proven theory?*
- *Are Mixed-SCEs similar to harmful crash populations?*

c) Discussion

Different crash types are differentially avoidable. Commonly, naturalistic data examines at what rate different risky behaviors and/or safety events translate into crashes. Some research could be conducted examining how one could calibrate SCEs for use in crash risk.

Attendees

Name	Affiliation	Name	Affiliation
Bob Scopatz	VHB	Jenny Guarino	USDOT FMCSA
Dennis Halachoff	AHD60	Bill Bannjister	USDOT FMCSA
Robin Riessman	UMassSafe	Anna herman	Ccmta
William Schaefer	CVSA	Brenda Lantz	
Ron Knipling	Safety for the Long Haul Inc	Richard Hanowski	VTTI
Matt Camden	VTTI	Caroline Boris	ATRI
Daren Hansen	JJKeller	Max ziyadi	SmartDrive Systems
Pete VanDyne	Liberty Mutual	Deborah Quackenbush	Virtual Excellence
Christian Kuran	University of Stavanger		

Truck and Bus Technology Subcommittee, ANB70 (6)

Tuesday, January 15, 2019 | 3:45 PM- 5:30 PM

Marriott Marquis, Marquis Ballroom Salon 16 (M2)

Abby Morgan, Kittelson & Associates, Inc. (KAI), presiding

Topic	Presenter	Time Allotted
✓ Introductions	All	3:45 – 4:00 pm
✓ Private Industry Update: Peloton Platooning Pilot	Richard Bishop, Bishop Consulting	4:00 – 4:20 pm
✓ Public Agency Update: Wyoming DOT CV Pilot Deployment update on winter testing preliminary observations	Deepak Gopalakrishna, ICF	4:20 – 4:40 pm
✓ Research Update: FAST DASH, Evaluation 2: Driver Monitoring	Andrew Krum, VTTI	4:40 – 5:00 pm
☐ Discussion on Subcommittee Role:	All	5:00 – 5:30 pm



- 1) What is our committee's role regarding high-occupancy, low-speed automated vehicles?
- 2) What is our committee's role in supporting research on the design of platooning or automated vehicle pilot studies to support future rulemakings on driver hours of service?

We had an exciting meeting filled with new information sharing from our three speakers.

PRIVATE INDUSTRY UPDATE: Richard Bishop (Bishop Consulting) presented an overview of truck platooning pilot testing, focusing on the recent pilot testing by Peloton. To date, all of the commercial platooning testing has focused on SAE Level 1 automation (longitudinal control only).

Steve Boyd (CEO of Peloton) was also present, and he shared some thoughts on the challenges of platooning in the U.S. compared to Europe, which has smaller fleets, lower speeds, and shorter distances in their commercial service. These differences may lead a manufacturer like Daimler Trucks to focus on automation, rather than platooning.

PAPER TOPIC: Pierre Thiffault (Transport Canada) suggested a potential paper idea to study the impacts of adaptive cruise control or platooning on driver fatigue.

PUBLIC AGENCY UPDATE: Deepak Gopalakrishna (ICF) presented an update on the USDOT-funded Wyoming Connected Vehicle (CV) Pilot Deployment. In Wyoming, they are deployment CV applications in commercial trucks and snow plows that are focused on improving safety in extreme weather and work zones. He explained the challenges the Wyoming deployment experienced because the CV applications have been developed for passenger cars, so they needed to make adjustments to make the systems work for heavy trucks.

RESEARCH UPDATE: Andrew Krum (VTTI) presented an update on the FMCSA's Advanced System Testing utilizing a Data Acquisition System on the Highways (FAST DASH). He shared results from the evaluation of the kinematic-only onboard monitoring system. The study gave drivers warnings if they traveled over the speed limit or drove without their seatbelt. The results indicated that the number of speeding warnings received initially dropped when the warnings began, but they steadily increased again over time. In contrast, the seatbelt warnings dropped and stayed low.

We did not get to our extra discussion items on the future subcommittee role in new technology, so we will try to address these topics in future meetings.

Other Information

We conducted a survey of subcommittee members in 2018 to identify topics to discuss at the Annual Meeting and at future meetings. The following topics were raised in addition to the agenda item topics. We will try to incorporate these topics into our future meetings or possibly in a webinar.

- **Voluntary Safety Standards**: AVs face the issue of voluntary performance standards and performance measures for vehicle control technologies such as automatic emergency braking (AEB) and automatic emergency steering (AES), which are important for safe AV operation. Given the contents of NHTSA's AV 3.0, how could TRB contribute to the national discussion about the use of voluntary standards, most of which do not include any pass/fail criteria? On what basis will safe vehicle operation be defined quantitatively?



- Roadside Inspections: For commercial autonomous vehicles, how will FMCSA and the States be able to do roadside inspections if NHTSA has no performance standards or pass/fail criteria for critical safety systems? The NHTSA/FMCSA connection will be disrupted since FMCSA can't require a CV to be equipped with a specific safety system or specify a certain level of performance if NHTSA doesn't require it.
- ECBS: Electronically controlled braking systems (ECBS) on air braked vehicles retain the pneumatic brake actuation at the wheel ends but use electronic signals to control the operation of the relay valves that control the air pressure to brake chamber at each wheel. This technology is likely to be needed for semi-autonomous and autonomous driving situations, including platooning.

Attendees

Name	Affiliation	Name	Affiliation
Richard Bishop	Bishop consulting	Andrew King	OOIDA
Stephen Boyd	Peloton Technology	Andrew Krum	VTTI
Matt Camden	VTTI	Brenda Lantz	NDSU-UGPTI
Susan Cohen	Americans For Older Driver Safety	Andrew Miller	VTTI
Alex Epstein	USDOT Volpe Center	Deborah Quackenbush	Virtual Excellence
Matt Erim	Amazon	Bob Scopatz	VHB
Chris Flanigan	FMCSA	Pierre Thiffault	Transport Canada
Deepak Gopalakrishna	ICF	Pete VanDyne	Liberty Mutual
Daren Hansen	JJKeller	Charles Vits	IMMI
Mouyid Islam	CUTR, USF	Skip Yeakel	Volvo Technology of America