Motorcyclist Advisory Council
Meeting #3 Summary
December 12, 2018

The third meeting of the Motorcyclist Advisory Council (MAC) was held on Wednesday, December 12, 2018 in the Virginia Room at the Federal Highway Administration's (FHWA) National Highway Institute offices in Arlington, VA. The meeting was attended by 26 people, including 9 MAC members, 9 U.S. Department of Transportation staff, 6 members of the public, and 2 contractor staff. The following document provides a summary of the presentations, discussions, and comments received during the meeting.

Morning Session

1. Opening Remarks

Mr. Mike Griffith, Office of Safety (FHWA), opened the meeting at 8:30 am. Mr. Griffith welcomed the MAC members and other attendees on behalf of FHWA. He briefly explained the MAC's purpose is to address infrastructure issues related to motorcycle safety. Mr. Griffith then introduced Dr. Bob Scopatz (VHB).

Dr. Scopatz reviewed the agenda, meeting ground rules, and general housekeeping. He noted time was available for public comments in the afternoon and although individuals were to notify FHWA of their interest prior to the meeting, remaining time would be open for additional commenters. At FHWA's suggestion, during the discussion period following each block of presentations, any remaining time left after the MAC members' questions and comments was designated for members of the audience to ask questions or make comments.

Introductions

Dr. Scopatz led a round of introductions, beginning with the FHWA project team: Mr. Michael Griffith (FHWA) who serves as the Designated Federal Officer (DFO), Dr. Gabe Rousseau (FHWA), Ms. Guan Xu (FHWA), and Ms. Bethany Turner (VHB).

Next, Dr. Scopatz introduced the MAC members. The following individuals make up the MAC:

- Mr. Michael Sayre, MAC Chairperson, American Motorcyclist Association (DC)
- Mr. Joel Provenzano, MAC Vice Chairperson, Florida Department of Transportation (FL)
- Mr. James Baron, American Traffic Safety Services Association (VA)
- Dr. Chanyoung Lee, University of South Florida, Center for Urban Transportation Research (FL)

- Mr. Eric Line, Michigan Department of Transportation (MI)
- Dr. Shane McLaughlin, Virginia Technical Transportation Institute (VA)
- Ms. Jane Lundquist, Texas Department of Transportation (TX)
- Dr. Craig Shankwitz, Western Transportation Institute at Montana State University (MT)
- Ms. Fay Taylor, Ohio Department of Transportation (retired) (OH)

Other meeting attendees included the following individuals:

- Ms. April Canter (Harley-Davidson)
- Ms. Tiffany Cipoletti (MRF)
- Dr. Eric Emery (National Transportation Safety Board [NTSB])
- Mr. Mike Fox (NTSB)
- Ms. Callie Hoyt (Motorcycle Industry Council)
- Dr. Michael Jenkins (Charles River Analytics)
- Mr. Andrew Kelly (MRF)
- Mr. John Marshall (NHTSA)
- Mr. Andy Mergenmeier (FHWA)
- Mr. Yusuf Mohamedshah (FHWA)
- Dr. Bob Scopatz (VHB, facilitator)
- Ms. Carol Tan (FHWA)
- Mr. Dillard Taylor (private attendee)
- Mr. Craig Thor (FHWA)
- Ms. Beth Turner (VHB, facilitator)

2. Presentations

NTSB Safety Report: Select Factors Associated with Causes of Motorcycle Crashes (Eric B. Emery, PhD., NTSB)

Dr. Eric Emery (NTSB) was the first speaker of the meeting. Dr. Emery presented current research results from the Motorcycle Crash Causation Study conducted by FHWA. The study analyzed crash and activity data from National and State sources. Dr. Emery reported 64 percent of multiple-vehicle crashes are attributed to other vehicle drivers, not the motorcycle rider. To address these crashes, shared vehicle-based crash warning and prevention systems need to be designed to detect motorcycles. He also noted Antilock Braking System (ABS) technology and stability control systems could help reduce run-off-the road crashes for motorcycles, which is one of the crash types with the highest fatalities in the MCSS. Following the presentations, the MAC had a roundtable discussion.

The discussion was open to the public. No comments were received.

BARRACUDA: Enabling Safer Riding Decisions via Technology (Michael Jenkins, Ph.D., Charles River Analytics)

Dr. Michael Jenkins (Charles River Analytics) presented on enabling safer riding decisions via technology, which is -funded through the USDOT Small Business Innovation Research program. Dr. Jenkins and his team are evaluating over 50 hazards to motorcyclists and how they could be mitigated through visual, haptic, and audio alerts. The team is using rider reporting (crowd sourcing) information, DSRC radio communications, computer vision (on-bike camera-based detection), and motorcycle telemetry (on-bike detection) to identify hazards. Initial findings suggest computer vision and on-board equipment like a GoPro can identify hazards, but present issues determining the distance from a hazard. Data collection is ongoing, and his team is implementing revisions as needed and will be pushing for commercialization via strategic partnerships. Following the presentations, the MAC had a roundtable discussion.

Dr. McLaughlin asked Dr. Jenkins if his team is using four-wheeled vehicles to help detect vehicle-to-infrastructure (V2I). Dr. Jenkins replied they have mostly been working with motorcycles.

Dr. Shankwitz asked Dr. Jenkins if the on-board cell phone could screen vehicles to detect a swerving method of surrounding vehicles to show if there was a pothole or hazard. Dr. Jenkins replied his team does not want to show the entire ride, they are looking to display information like speed and location, although it may be possible to set thresholds that only show hazards. Dr. Jenkins also added working with normal crowd sourcing has been an issue because it is tough to get people to buy in and provide data when they are not getting anything in return.

Dr. Shankwitz followed up and noted users may be more inclined to provide data if it had a way to show police officer/speed-trap locations. Dr. Jenkins replied that this was not possible since the project is FHWA funded and the purpose is to identify potential hazards, not show riders where not to speed. Dr. Jenkins also noted that their product may not take riders the shortest route, but rather the safest route.

Dr. Shankwitz asked how gravel and sand are detected. While there is no prototype, Dr. Jenkins explained his team have theorized calculated vibration frequency, so the device will alert you of a hazard when there is a change in vibration. This hypothesis is based on similar work with unmanned ground vehicles and terrain type sensing.

The discussion was open to the public. No comments were received.

3. Presentations

CUTR Florida Study on Curves (Chanyoung Lee, Ph.D., University of South Florida)

Dr. Chanyoung Lee (University of South Florida) gave a presentation on motorcycle safety improvement with dynamic speed feedback signs (DSFS) on horizontal curves. Dr. Lee and his team compared motorcycle crashes before and after implementing DSFS and found that DSFS for curves were not able to detect the motorcycles until the motorcycle is essentially parallel with the sign. Dr. Lee and his team noted that the sample size for their study was too small, so a further study is needed, as well as updates to the distance between DSFS and the curve to provide better reaction time. Following the presentations, the MAC had a roundtable discussion.

A MAC member commented that quantifying the benefit for motorcycles (which are only 1 percent of roadway users) in conjunction with benefit for vehicles to determine cost benefit analysis would help show the benefit to cars and improve the cost benefit ratio.

Mr. Line asked Dr. Lee if the DSFS sign is in the Manual on Uniform Traffic Control Devices (MUTCD). Dr. Lee replied the MUTCD does not have specific guidance on where the DSFS signs need to be placed.

The discussion was open to the public. No comments were received.

Friction Measurement (microtexture and macrotexture) and Pavement Treatments (Andy Mergenmeier, FHWA Resource Center)

Mr. Mergenmeier (FHWA) presented on network-level friction testing for 60 locations that received High Friction Surface Treatments (HFSTs) in Kentucky and shared updates on FHWA's ongoing pavement friction management study. Mr. Mergenmeier shared Kentucky locations that received HFST saw a total average crash reduction of 87 percent, a 98-percent crash reduction for ramps, and an 82-percent reduction for curves. He then provided updates to the ongoing FHWA study, where FHWA has assisted four States in development and demonstrating Pavement Friction Management Programs to obtain data, define friction demand categories, and set investigatory levels of fiction/texture. At this point, FHWA has collected data on some locations and created definitions for macrotexture and microtexture; protocols for network-level macrotexture measurement will be delivered in 2019. Following the presentations, the MAC had a roundtable discussion.

Ms. Lundquist asked Mr. Mergenmeier if testing had been done only with "flat-bottom" vehicle tires and if there been any testing using the "round-bottom" motorcycle tires on the Next Generation Concrete Surfaces (NGCS). Mr. Mergenmeier replied that he was unaware of any testing with motorcycle tires.

Dr. Shankwitz asked if Mr. Mergenmeier and his team collect specific data on the skidding (from the trailer test sample). Mr. Mergenmeier replied that they do measure side force friction, but they do not measure longitudinal friction. As a follow-up, Dr. Shankwitz asked if there were optimal patterns for the grooving (spacing width or groove width) for noise control. Mr. Mergenmeier replied different textures create different pavement noises.

Dr. McLaughlin asked if the spots that were investigated are based on crash rates and is there any vehicle-to-infrastructure (V2I) to help crash safety locations. Dr. Shankwitz replied ABS indicates low friction, and this can be detected with V2I.

Mr. Provenzano asked if there has been any friction testing on an open milled surface. Mr. Mergenmeier said this has not been done, but Georgia Tech has done some macro-friction measurements.

Mr. Griffith stated that HFST has been a safety innovation within FHWA's Everyday Counts initiative as a safety treatment, but not specifically for motorcyclists.

Mr. Sayre asked Mr. Mergenmeier if testing of HFST was occurring at intersections. Mr. Mergenmeier replied the testing has been primarily at curves but has been done at some intersections. Intersections are damaged more due to braking and accelerating.

Dr. Shankwitz concluded the roundtable discussion by noting that half the States do some level of network friction testing annually. Mr. Mergenmeier shared they use the locked wheel trailer, which cost $250,000, with a water tank, which is required to do the testing. The size of the tank determines the number of miles of the skid test. The real cost of the testing is how many people are on the team, because the operational costs are much more than the equipment costs.

The discussion was open to the public. No comments were received.

Break for Lunch

Afternoon Session

4. Discussion of MAC Work

The afternoon session was dedicated to MAC members' open discussion on topics of interest and projects. The following is a synthesis of the open discussion topics.

Surveying the State of Motorcycle Safety

Dr. Shankwitz initiated the conversation on a proposed survey to better understand the state of motorcycle safety. As presented at MAC #2, Dr. Shankwitz previously conducted a review of all State Strategic Highway Safety Plans. He noted that of the States with motorcycle emphasis areas, efforts were limited almost entirely to behavioral strategies (e.g., surveys and public service announcements on speed) rather than infrastructure-related strategies. He proposed the MAC conduct a survey of State traffic engineers to better understand why motorcycle crashes were occurring.

The MAC discussed the feasibility of the survey and other points for consideration for implementing the survey. First, the group decided the State Safety Engineers would be most familiar with the State's Strategic Highway Safety Plan and motorcycle issues. Dr. Scopatz stated that AASHTO has a master list of contacts and Mr. Sayre volunteered to contact the organization for assistance. Additional potential respondents may include Safety Engineers, Maintenance Engineers, and ITS Engineers.

MAC members posed the following topic areas to include in a survey of State motorcycle representatives:

- How does the State provide staff to support motorcycle-safety related issues?
- How many motorcycle routes are in the State?
- Does the State have mandatory rider education?
- What shoulder treatments/ maintenance procedures does the State use to improve motorcycle safety?
- How would the State use a motorcycle design vehicle?
- How does the State use the NCHRP 500 series for motorcycle in roadway design practice?
- What would the State like to see included in the updated NCHRP 500 related to Motorcycle V2I/V2X?

Additionally, the MAC considered the appropriateness of questions about low-volume, high crash risk roads. Prior to developing the survey, Dr. Rousseau suggested MAC members review TRB's National Cooperative Highway Research Program (NCHRP) Program *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan: A Guide for Assessing Collisions involving Motorcycles* (http://www.trb.org/Publications/Public/Blurbs/A_Guide_for_Addressing_Collisions_Involving_Motorc_160626.aspx). The document contains a section on infrastructure issues specific to

motorcycles and could act as the basis for the survey questions. MAC members can use this information to further refine the proposed questions.

Other MAC Projects

In addition to the survey, the MAC discussed several topics of interest or importance. First, the group felt it is important to raise motorcycle awareness of motorcycle issues to State Highway officials. Mr. Provenzano observed there are offices at the local, State, and Federal levels dedicated to bicycle and pedestrian issues but not motorcycle safety. Transportation agencies have limited exposure to or understanding of motorcycle issues, which limits their work on the topic. Similarly, AASHTO develops guides for specific transportation topics but has not yet produced one for motorcycles and the NCHRP 500 series provides general guidance. Therefore, there is a need for motorcycle safety specific task forces or specific guidance. The MAC can make the recommendation to FHWA to develop specific guidance, task forces, or guide books. As a next step, MAC members will contact AASHTO to arrange a meeting to discuss the concept.

The MAC also presented several infrastructure-related issues to explore. They would like to research existing studies on using motorcycles or motorcycle-type tires to assess the impact of milled, grooved, or grounded surfaces on rider control. They also noted even small deviations in pavement across lanes can create dangerous situations for riders and therefore, the MAC is interested in exploring standards for uneven pavement and how motorcycles are considered in those standards. Other design standards of interest are roadside rails and barriers. The MAC is also interested in published requirements for pavement conditions, smoothness, and other similar topics.

Motorcycles are a very small percentage of the overall vehicle fleet, so issues may not garner as much attention from typical transportation agency efforts. The MAC suggested technology solutions to improve overall safety for all users and address human factors issues (e.g., driver awareness). Vehicle-to-vehicle (V2V) and V2I systems could provide drivers with important safety information. Roadside crews could use tablet-based technologies to set up work zone areas according to design standards. That MAC will continue to explore these topics, as well as available road condition reporting systems.

The MAC also discussed non-infrastructure related issues. The motorcycle community might have to “choose safety over freedom.” The discussion centered around the notion that motorcyclists want to be treated like any other road user, but simultaneously want to have their special concerns addressed. The label of “vulnerable road users” may imply that motorcycles should be restricted in some way.

5. Discussion on MAC Progress, Goals, and Final Product

To further discuss the topics explored during the meeting, the MAC is going to self-organize a series of preparatory-work group monthly calls. The purpose of the first meeting will be to assign roles and responsibilities and establish a plan for developing and implementing the survey. The MAC will

also discuss plans for the final report and recommendations to FHWA. Mr. Griffith said the report can be as short as a "letter report" (e.g., 5 pages of a formal letter from the MAC to the DOT).

Ms. Taylor briefly discussed the topic of using candidate roadway sections as examples for the recommendations. She said that Ohio Department of Transportation provided her information on one State highway with low annual average daily traffic (AADT) but high number of crashes. The roadway is of interest due to the poor safety record, but the low volume is unlikely to trigger improvements. This location could be a good case study for a Road Safety Audit or to provide context for MAC recommendations.

FHWA encouraged the MAC to develop recommendations that are practical and consider the feasibility of implementation by local, State, and Federal agencies. For example, manufacturers are responsible for testing modifications to roadside hardware. Therefore, any MAC recommendations on roadside barriers would not be implemented by FHWA but by manufacturer(s).

6. Public Comment

Time was designated for public comment. The Federal Register announcement required commenters to send an email prior to the meeting to reserve time to speak; however, at FHWA's direction, any person present who wished to speak was allowed to take the floor.

No comments were received at the time of the meeting. Written comments can be submitted to MAC-FHWA@dot.gov for consideration.

7. Next Steps

The next MAC meeting will take place virtually in June 2019. Similar to the June 2018 meeting, it is expected to last approximately one-half day. Mr. Griffith announced that the MAC charter is extended to October 2020. Current membership appointments end July 2019 but Mr. Griffith is working on renewing the memberships through the end of the charter.

Mr. Sayre thanked everyone for their participation.

Adjourn ***4:30 p.m.***