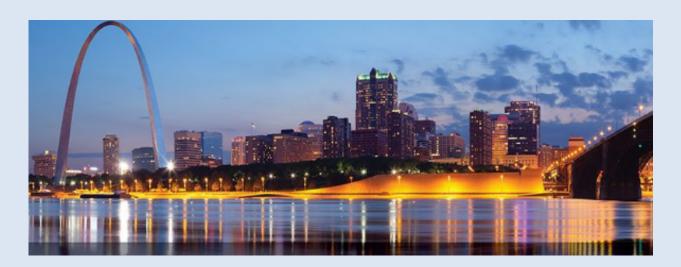
2024 AASHTO Improving Safety with Performance Management Peer Exchange

Sponsored by AASHTO & FHWA



Friday, September 20, 2024 St. Louis, Missouri

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1 Overview

This report summarizes the proceedings of the 2024 Improving Safety with Performance Management Peer Exchange hosted by the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) Transportation Performance Management Technical Service Program (TPM TSP). The peer exchange was held in St. Louis, Missouri, on September 20, 2024. An Improving Safety with Performance Management Peer Exchange Event Page is published on the TPM Portal. This site includes:

- Links to noteworthy practice videos
- Peer exchange purpose and activities
- Peer exchange agenda and pre-event packet
- Links to AASHTO, FHWA, and National Highway Transportation Safety Administration (NHTSA) resources
- Links to relevant archived TPM and Transportation Asset Management (TAM) webinars

1.1 Peer Exchange Purpose

The 2024 AASHTO Improving Safety with Performance Management Peer Exchange was a collaborative forum to share noteworthy practices and lessons learned in applying transportation performance management to achieve better transportation safety performance. The peer exchange brought together State DOTs, FHWA, AASHTO, and other transportation agencies to discuss the latest strategies, tools, and resources for improving safety performance management and reducing transportation-related fatalities and serious injuries.

The peer exchange focused on advancing safety with performance management practices, gaining knowledge of available resources, and discussing the future of safety performance nationally and within transportation agencies. The participants exchanged valuable insights and prioritized current safety performance management needs.

The peer exchange aimed to foster a collaborative environment where participants had an opportunity to engage in open discussions, share noteworthy safety performance management practices, explore innovative solutions to enhance transportation safety, and optimize future investments. Key objectives for the event included:

- Discuss the safety countermeasures and leading indicators to improve safety performance
- Examine ways to incorporate safety considerations early in the scoping and planning of projects
- Advance the state of the safety performance management practices by sharing noteworthy practices and lessons learned
- Gain knowledge of the resources that are available to support the performance management and safety communities and the existing gaps.

1.2 Peer Exchange Format and Summary

The one day peer exchange consisted of four sessions with a panel for speaker presentations and time for questions, as well as various exercises and activities. The meeting concluded with a group exercise where participants voted to rank their priority needs, followed by a wrap-up summary from AASHTO liaison Anna McLaughlin.

Jon Nelson, the State Highway and Traffic Engineer from Missouri DOT, which hosted the peer exchange, opened the event with welcoming remarks. Following this, Anna McLaughlin from AASHTO and Charles Meyer from FHWA provided a welcome from their respective agencies. Lori Richter of Spy Pond Partners, LLC (SPP) then presented an overview of the event's goals and objectives. She was later joined by Hyun-A Park, also from SPP, to lead an icebreaker exercise with the participants.

In "Session A., Insights and Discussion: Safety Survey on Effectively Measuring Safety Performance," Lori Richter presented and discussed the results of the transportation safety survey completed by state transportation agencies before the peer exchange. The survey gathered insights into transportation safety practices, challenges, and opportunities. The session highlighted key trends, common challenges, and best practices. Participants joined small group discussions to share experiences and insights on the results. The session provided a platform for exchanging ideas and learning from the diverse experiences of transportation safety practitioners.

For "Session B. Practice Examples: Noteworthy Safety Performance Management Practices," participants showcased and discussed notable safety performance management practices implemented by their transportation agencies. The pre-recorded presentations focused on collaborative efforts, successful safety initiatives, strategies, and tools that effectively improved safety performance. Participants learned from each other and identified potential safety solutions for their own agencies. Agencies had prepared videos before the peer exchange, and peer exchange participants from some of

these agencies gave a 5-minute executive overview of their practices during the session. Please note that the individuals providing the in-person summaries were not necessarily the same individuals featured in the videos. A highlights reel of the pre-recorded video presentations on noteworthy safety practices was shared to kickoff the session. A complete list of the agency practices, featured video presenters, and peer exchange presenters can be found below. Direct links to the videos are available in Section 4 of this document.

- Utah DOT: Performance Metrics in UDOT's Highway Safety Improvement Program (HSIP) – video features Jeff Lewis with an executive overview presented by Patrick Cowley
- Oklahoma DOT: Mechanisms, Methods, & Measures to Support Safety video and executive overview presented by Tara Cullum
- Indiana DOT: Indiana Safety Performance Management video and executive overview presented by Jeremy Hunter
- Kansas DOT: Noteworthy Safety Practices Driving to Zero video features Vanessa Spartan with an executive overview presented by Mike Moriarty
- Missouri DOT: Safety Assessment for Every Roadway (SAFER) video features Jon Nelson with an executive overview presented by Karen Miller
- Georgia DOT: Systemic Safety Countermeasures & Collaborative Approaches to Improve Safety Outcomes – video features Kelli Roberts and Ron Knezevich
- Michigan DOT: Incorporating Safe System Approach Into Project Planning & Programming – video features Garrett Dawe with an executive overview presented by Brad Sharlow
- Texas DOT: Leveraging Data in Risk and Performance Management for Better Employee Safety Outcomes – video features Monica Aleman-Smoot and Jim Padilla with an executive overview presented by Jim Padilla
- Arizona DOT: Drones Technology in the Arizona Road Safety Assessments
 Program video features David Oldham

The session concluded with a Q&A groupwide discussion about the video presentations.

Then, in "Session C., Breakout Exercise: Applying Safety Performance Measures to Prioritize Projects in Your Agency's Capital Program," participants broke out into groups to conduct a prioritization exercise. They were provided with ten safety projects and associated data for each project. The task was to rank the projects based on performance measures selected by the group. Groups could add data if it was readily available at their agency and identify additional data and measures they wanted for

future project ranking. Once the group prioritization process was complete, the scores were tallied and a discussion with the participants was facilitated where they shared their approaches to the exercise. Next, the group saw the comparison of the peer exchange's combined project rankings to the actual rankings generated by Utah DOT's Highway Safety Improvement Plan Award Logic that was followed by a discussion.

In "Session, D. How Can We Improve Practice?" peer exchange participants were asked to break into small groups and generate ideas for improving safety practices. These ideas were then compiled, categorized and documented on poster boards. Following this discussion, participants were asked to vote on the projects they believed to be most important and beneficial.

Anna McLaughlin led the peer exchange wrap-up, where she summarized the exchange and discussed the next steps.

1.3 Peer Exchange Agenda

Date: Friday, September 20, 2024 (8:00 AM – 3:00 PM ET)

Location: Hyatt Regency at the Arch, St. Louis, Missouri

Introductions

8:00-9:00 AM Welcome, Opening Remarks. *Jon Nelson, Missouri DOT (Host Agency)*

AASHTO Introduction. Anna McLaughlin, AASHTO

FHWA Introduction. Charles Meyer, FHWA

Peer Exchange Overview and Objectives. Lori Richter, Spy Pond Partners, LLC

Icebreaker. Lori Richter & Hyun-A Park, Spy Pond Partners, LLC

A. Insights and Discussion: Safety Survey on Effectively Measuring Safety Performance

In this session, we will present and discuss the results of the transportation safety survey completed by state transportation agencies before the peer exchange. The survey aimed at gathering insights into the current state of transportation safety practices, challenges, and opportunities within transportation agencies. The session

will provide an overview of the survey findings, highlighting key trends, common challenges, and best practices identified by the participating agencies. Attendees will participate in small group discussions to share their experiences and insights on the survey results. This session will serve as a platform for exchanging ideas and learning from the diverse experiences of transportation safety practitioners across different agencies.

9:00 – 9:15	Presentation of survey results
9:15 – 9:45	Small group discussion
9:45 – 10:00	Report outs on agency experiences and insights
10:00 – 10:15	Break

B. Practice Examples: Noteworthy Safety Performance Management Practices

During this session, participants will showcase and discuss noteworthy safety performance management practices implemented by their transportation agencies. Presentations will focus on collaborative efforts to implement successful safety initiatives, strategies, and tools that have effectively improved safety performance. Attendees will have the opportunity to learn from each other and identify potential safety solutions that can be adapted and implemented within their own agencies. Presenters prepared videos of their presentations prior to the peer exchange, and agency attendees will give a 5-minute summary of their practices at the session.

10:15 – 11:30 Session overview & highlights reel

Agency presentations (10:30-11:15)

- Utah DOT. Performance Metrics in UDOT's HSIP Program. Patrick Cowley.
- Oklahoma DOT. *Mechanisms, Methods, & Measures to Support Safety*. Tara Cullum.
- Indiana DOT. Indiana Safety Performance Management. Jeremy Hunter.
- Kansas DOT. Noteworthy Safety Practices Driving to Zero. Mike Moriarty.
- Missouri DOT. Safety Assessment for Every Roadway (SAFER). Karen Miller.
- Georgia DOT. Systemic Safety Countermeasures & Collaborative

Approaches to Improve Safety Outcomes. (No summary provided).

- Michigan DOT. *Incorporating Safe System Approach Into Project Planning & Programming*. Brad Sharlow.
- Texas DOT. Leveraging Data in Risk and Performance Management for Better Employee Safety Outcomes. Jim Padilla.
- Arizona DOT. *Drones Technology in the Arizona Road Safety Assessments Program*. (Unable to attend peer exchange).

11:15 – 11:45	Q&A and Group Discussion
11:45 – 12:00	Introduction of the breakout session that will be held after lunch
12:00 – 1:00	Lunch

C. Breakout Exercise: Applying Safety Performance Measures to Prioritize Projects in Your Agency's Capital Program

Participants will break out into groups to conduct this exercise. They will be provided with a set of eight safety projects and associated data and information for each project. The assignment is to rank the ten projects based on the performance measures selected by the group. The group can add data about each project if that data is easily available at the agency. The group should also identify other data and measures they want in the future to better rank the projects.

Each group will enter their exercise results so that they can automatically be presented at the end of the exercise and a summary view that shows the differing results across groups shared.

1:00 – 1:30	Breakout Exercise
1:30 – 1:50	Group Presentations
1:50 – 2:15	Large Group Discussion

Share summary observations about the exercise and the results.

- What measures were used by everyone?
- What measures were new and worth sharing?
- Describe how the rankings:

- Support the risk mitigation
- o Enhance resilience
- Mitigate impacts on vulnerable road users
- o Enhance equity, accessibility, and other community-based measures
- Was it obvious which projects were better than others? Did the rankings support what the participants felt were the better projects?
- Were there common wishes across the groups for what new data and measures are needed in the future?

D. How Can We Improve Practice?

2:15 – 2:45 Brainstorming and Priority Needs Identification

All participants will be asked to use large sticky notes to suggest ideas for improving practices. These notes will be organized by categories. This will be followed up by a discussion of what people think are the priority needs.

Priority Needs and Peer Exchange Wrap-Up

2:45 – 3:00 Participants will prioritize the safety performance needs. A summary of the peer exchange wrap-up will follow this.

Anna McLaughlin. AASHTO

1.4 Peer Exchange Attendees

State Transportation Agencies

Matthew Binaco
Connecticut DOT
matthew.binaco@ct.gov

Travis Brooks
Arkansas DOT
travis.brooks@ardot.gov

Sam Coldiron

Oklahoma DOT scoldiron@odot.org

Alexandria Collins
New Mexico DOT
Alexandria.collins@dot.nm.gov

Robert Cornelius
Washington State DOT
robert.cornelius@wsdot.wa.gov

Patrick Cowley

Utah DOT

patrickcowley@utah.gov

Tara Cullum

Oklahoma DOT

tlcullum@odot.org

Rachel Davis

Colorado DOT

rachel.davis@state.co.us

Korey Donahoo

Nebraska DOT

korey.donahoo@nebraska.gov

Meredith Hill

Maryland DOT

Mhill8@mdot.maryland.gov

Sammy Holcomb

Mississippi DOT

sholcomb@mdot.ms.gov

Ryan Huff

Nebraska DOT

ryan.huff@nebraska.gov

Jeremy Hunter

Indiana DOT

ihunter@indot.in.gov

Kirk Hutchison

Florida DOT

kirk.hutchison@dot.state.fl.us

Robert Innis

Illinois DOT

robert.innis@illinois.gov

Valerie Jimenez

Kansas DOT

valerie.jimenez1@ks.gov

William Johnson

Colorado DOT

will.johnson@state.co.us

Lester King

Connecticut DOT

lester.king@ct.gov

Kwanpyo Ko

South Carolina DOT

kok@scdot.org

Rosa Kozub

New Mexico DOT

rosa.kozub@dot.nm.gov

Jason Lacombe

Louisiana DOT

jason.lacombe@la.gov

Jason Lange

Illinois DOT

jason.lange@illinois.gov

Mark Leiferman

South Dakota DOT

mark.leiferman@state.sd.us

Maaza Mekuria

Hawaii DOT

maaza.c.mekuria@hawaii.gov

Karen Miller

Missouri DOT

karen.miller@modot.mo.gov

William Morgan

Illinois DOT

william.morgan@illinois.gov

Mike Moriarty

Kansas DOT

Michael.Moriarty@ks.gov

Alma Mujkanovic

Georgia DOT

amujkanovic@dot.ga.gov

James Padilla

Texas DOT

jim.padilla@txdot.gov

Kevin Sablan

Idaho DOT

kevin.sablan@itd.idaho.gov

Sutapa Samanta

Maryland DOT

ssamanta@mdot.maryland.gov

Joni Seymour

Oklahoma DOT

jseymour@oktransportation.org

Brad Sharlow

Michigan DOT

sharlowb@michigan.gov

Brian Sheehan

Illinois DOT

brian.sheehan2@illinois.gov

Huiwei Shen

Florida DOT

huiwei.shen@dot.state.fl.us

Mark Wooster

Nevada DOT

mwooster@dot.nv.gov

Other Attendees

Lucille Cawley

FHWA

lucille.cawley@dot.gov

Ayonda Dent

FHWA

ayonda.dent@dot.gov

Anna McLaughlin

AASHTO

amclaughlin@aashto.org

Charles Meyer

FHWA

charles.meyer@dot.gov

Mshadoni Smith-Jackson

FHWA

m.smithjackson@dot.gov

Josh Stott

FHWA

joshua.stott@dot.gov

Facilitators

Hyun-A Park

Spy Pond Partners, LLC

hpark@spypondpartners.com

Lori Richter

Spy Pond Partners, LLC

<u>lrichter@spypondpartners.com</u>

2 Peer Exchange Introduction



2.1 Welcome, Opening Remarks, & Purpose of the Peer Exchange

Jon Nelson, State Highway Safety and Traffic Engineer of Missouri DOT, kicked off the peer exchange by welcoming participants on behalf of the host agency. Anna McLaughlin, Program Director for Transportation Program Management at AASHTO, then welcomed participants on behalf of the Committee on Performance-Based Management (CPBM) and shared the following purpose for the peer exchange:

- Discuss the safety countermeasures and leading indicators to improve safety performance
- Examine ways to incorporate safety considerations early in the scoping and planning of projects
- Advance the state of the safety performance management practices by sharing noteworthy practices and lessons learned

- Gain knowledge of the resources available to support the performance management and safety communities and existing gaps
- Prioritize future safety performance management initiatives for AASHTO and FHWA

Anna indicated that during the peer exchange, participants will:

- Share the key elements of safety performance management, including best practices
- Learn about resources and tools available to state DOTs
- Discuss the ingredients for good safety performance management
- Develop a vision for the future of safety performance management, and
- Prioritize initiatives for future activities FHWA, AASHTO, and Transportation Research Board (TRB) may undertake to continue advancing the practice

Next, Safety Specialist at FHWA's Office of Safety, Charles Meyer, gave a welcome on behalf of FHWA. He explained that the agency is proud to sponsor the peer exchange in cooperation with AASHTO to improve safety outcomes through performance management. Then, Lori Richter, Senior Business Analyst at Spy Pond Partners, LLC, reviewed the peer exchange agenda.

2.2 Icebreaker Exercise

To help participants familiarize themselves with one another and get them thinking about Transportation Performance Management in relation to Safety, an icebreaker exercise was coducted. Here, participants were broken out into small groups and asked to consider the following questions:

- What TPM-related safety improvement do you think has the single best promise for improving safety outcomes?
- Why?
- What needs still exist?

Note that there was no Group 1 for this, or any other breakout exercise. The groups are listed in order of their report outs.

Responses – Shared with the Full Group

Group 8: Charles, Lucille, Josh, Ayonda

- Systematic improvements
- Measuring itself
- Hiring of Toward Zero Deaths/Vision Zero (TZD/VZ) coordinator at agencies
- Education & depending on other stakeholders
- Driver education
 - Manuals including safety and technology topics
 - o Focusing on the more challenging aspects to drivers, such as roundabouts
- Raising Design Standards to a Substantive Safety Level
 - Not just a normative level

Group 2: Meredith, Jeremy, Jean, Karen, Alexander

- Safety Improvements Related to Performance Management:
 - Focus on vulnerable road users (VRUs)
 - Load measures that can "Turn the Curve" (RBA)
 - Tying safe system focus (human-centered approach) to performance metrics
- Needs that still exist
 - Data (technology) challenge is how to make the most of existing data that's collected
 - Inventories
 - Funding for improvements
 - Better predictive analysis

Group 4: Sutapa, Rosa, William, Ryan

- Benefit-Cost Analysis (BCA) related to safety countermeasures
- Highway Safety Improvement Program
 - o Predictive models
 - AASHTO Green Book Improvements (e.g., including traffic measures)

- Expanding post-construction evaluations (they need to be standardized and performed consistently across agencies)
- Creating a more comprehensive policy stance on safety
- Changes to vehicle manufacturing & insurance processes
 - Dynamic vehicle speed limiters, which requires working with vehicle manufacturers
 - Include more vehicle data and telematics, and then working with insurance agencies to share the data
- Focus on decreasing the fun and incentives of speeding

Group 5: Msh, Kevin + others

- Expanding use of rumble strips is the most important priority. This presents the best opportunity for saving lives.
 - Especially on center of roadways to prevent oncoming collisions
- Mitigate run-off-road crashes
 - Adding roundabouts to calm traffic
 - Add signage and warnings of lane narrowing due to added bike lanes
- Emphasize seatbelt use

Group 3: Brad, Patrick, Joni, Tara

- Not a single promise to focus on; even with limitless funding, the human elements mean safety cannot be guaranteed
- Education and awareness internally as well as externally
- Better communicate trends and findings from within the agency to the broader public
- Personal touch approach emphasize personal impact on safety and connect individuals, rather than throwing information
 - "Scared Straight" approach can be powerful for reminding drivers of the dangers of driving, "be comfortable making people uncomfortable"

Group 6: Kwanpyo, Bill, Brian, Jason, Robert, Mark

- Shift focus to highlight successes
 - o Find a positive metric to highlight
 - This can be an effective way to get more attention from the public

- Hotspot analysis
 - o Locate hotspots, identify countermeasures, calculate expected benefit
- Better convey crash data
 - Quantify and analyze roads that exceed expected crashes

Group 7: Alma, Jim, Brian, Huiwei

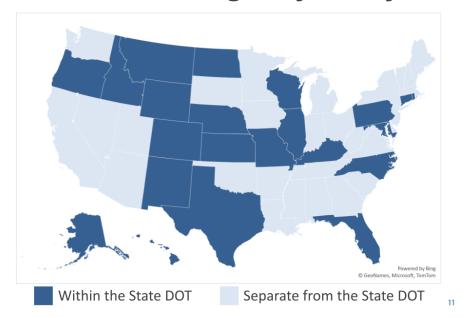
- FHWA proven countermeasures
- Safe systems
- Managing speed reduction of traffic while emergency medical services (EMS) workers are on the roadside
 - o Encouraging traffic to move to the left lane
- Decrease lag between policy changes and actual programming
- Decrease vehicle miles travelled (VMT)
- Design safer vehicles
- Target very bad driver behavior
 - There are often multiple layers of "bad behavior" with drivers, and it's important to separate and individually address them
- Improve work zone management

3 A. Insights and Discussion: Safety Survey on Effectively Measuring Safety Performance Measures

3.1 Review of Safety Survey on Effectively Measuring Safety Performance

To open the first session of the peer exchange, Lori Richter presented the results of the 2024 AASHTO Improving Safety with Performance Management Survey, which had been sent out to respondents one month before the event. She began by providing context on the location of highway safety offices in each state and whether they are within or outside the state DOT.

Location of State Highway Safety Office

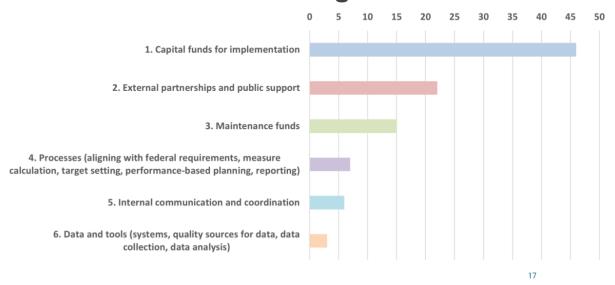


The meta data on the survey was presented - highlighting how all four AASHTO regions were represented in the forty-one individual responses, and the average response time was twelve minutes. She then shared safety trend data reported by respondents: 29 percent claimed that safety was trending down at their agency, 37 percent claimed safety trends were holding steady, and 34 percent stated that safety trends were improving. When asked to evaluate their agency's safety maturity level, 75 percent of respondents believed top have a medium maturity rating. Only 15 percent of respondents indicated their agency has a high level of safety maturity. 10 percent of respondents said their agency has a low level of safety maturity.

She continued the presentation of the survey results by focusing on safety data sources, excluding CRASH data. The most common data source was transportation modes, then population data, followed by economic information, other data (Highway Safety Manual (HSM), health opportunity index, Annual Average Daily Traffic (AADT), and roadway asset data), and then weather data. Less than 5 percent of respondents reported that they do not use any other sources of data for safety.

Then, the top six safety countermeasure implementation challenges was presented, which respondents were asked to rank in order of significance. Capital funds for implementation were deemed the most significant challenge by far, with data and tools ranking as the lowest priority.

Safety Countermeasure Implementation Challenges



Next the qualitative data gathered through the survey was shared followed by a list of the most noteworthy practices used to shape decision-making:

- HSM-based and CBA analyses
- Develop a statewide project prioritization process
 - Virginia DOT's SMART SCALE Program
- Identification and prioritization of high-risk VRU corridors
 - o Integrate socio-economic factors in VRU assessment
 - Kansas DOT developed a VRU Analysis Tool
- Making DOT data publicly available enables external analysis & assists with decision-making
 - Kansas DOT introduced a public-facing dashboard on crash data (Drive to Zero Crash Data Dashboard & Kansas Safety Corridor Pilot Program)
 - Developed story maps that prioritize key crash types in the state and convey the safety benefits of implementing mitigation measures
- Coordinate safety priorities with local leaders, police, safety teams, and other organizations
 - Identifying dangerous intersections and developing strategies to fund safety projects

 Performing intersection control evaluations (ICE) and road safety audits (RSA) for areas with frequent accidents

The following list of the most noteworthy practices relating to safety countermeasures was shared:

Design practices

- Retrofitting intersections with modular, rubberized components to create roundabouts under traffic conditions (saves money and construction time)
- J-turn policies for high-speed expressways
- Developing a build guide to implement countermeasures quickly with semipermanent materials
- Roadway departure mitigation
- Queue trucks for construction
- Rumble strips on two-lane roads
- North Carolina DOT research project: Reasonable Alternatives for Grade Separated Intersection
- Statewide conversions to all-way stop control
- Planning & Strategy Practices
 - Pedestrian safety action plans
 - Safety implementation plans
 - Speed management plans
 - Kansas DOT:
 - Data sharing for decision-making using geospatial tools
 - High visibility campaign aligned with Vision Zero

In the next section of the survey data presentation, the most popular approaches that transportation agencies are taking to address risk and resilience with safety performance management was shared. The table below summarizes the top responses:

How is your Agency Addressing Risk and Resilience through Safety Performance Management?	# of Responses	% of Respondents
Including safety considerations in plans (R&R, SHSP, HSP, VRU, etc.)	36	88%
Prioritizing funding for safety solutions to reduce the likelihood and impact of serious injuries and fatalities	32	78%
Reducing risks for vulnerable users	30	73%
Identifying critical infrastructure for safety improvements	24	59%
None of the above	3	7%

The session concluded with a discussion of the top peer exchange topics that respondents expressed interest in. It was highlighted that over half of respondents indicated a desire to hear lessons learned from agencies with a relatively higher level of safety performance management maturity. Nearly a quarter of respondents expressed an interest in information about resources and tools from the performance management and safety communities. It was clarified that these responses helped shape the peer exchange format, with several video presentations in Session B addressing these topics.

3.2 Small Group Discussions & Report Outs Reacting to Survey Data

In the next session participants were asked to organize into small groups to discuss the survey results. Each group was asked to consider the following questions, before returning to the larger group and sharing their findings:

- What insights did you find after reviewing the survey results?
- Did anything surprise you?
- What are your agencies' current safety practices?

Note that there was no Group 1 for this, or any other breakout exercise. The groups are listed in order of report outs.

Responses – Presented to the Full Group



Group 2:

- Data is at the bottom of the list of challenges; DOTs collect a lot of it and claim it's important, but the group feels they need help better integrating it
- External partnerships and public support
 - Context sensitivity
 - o Partnerships with law enforcement, education, healthcare, equity
 - What additional partnerships can be made to make measurable improvements?
 - Land use as it relates to partnerships
 - How can the most positive benefit be derived?
 - o The difference between capital and maintenance funding
 - Can we contract out maintenance or look at (public-private partnerships
 (P3) models to help ensure maintenance is done consistency?

Group 8:

- Safety performance functions:
 - Does this happen for detour routes? (e.g., when a DOT is doing a construction project)
 - o Issues with the public making a shortcut
 - Is that safer?

- Non-National Highway System (NHS) roadways, Global Positioning System (GPS) routes, and the condition is super bad for traffic, especially without warning
- One-third split for increase, decrease, and stable performance was surprising.
 - Most states are medium maturity, according to self-reporting
 - Everyone seems to be doing a good job despite challenges and questions, so the "better than average" group is likely underreported
- Fatality reporting:
 - Get an email summarizing the data and trends
 - Discuss the site and what improvements can be made
- Implementation Challenges:
 - Not surprising that money and funding is a leading issue
 - Public support
 - Possible that people are turned away from the negative connotations of safety data, which makes it difficult to communicate with broader public
 - Unless there is a personal tie to the data, individuals don't pay attention to safety information very well
 - o Group believe they are doing better with coordination

Group 6:

- Funding remains an issue
 - This is a longstanding issue that group members continue to experience at their respective agencies
 - On the positive side of feedback: lots of roundabouts and j-turns are being built – progress being made in Nevada
 - Public engagement and education remain a priority
 - Initiatives underway to help drivers understand challenging roadways, such as roundabouts
 - This also improves public perception of the agency
 - Group interested to hear how differently agencies can categorize and document safety practices (e.g., Some DOTs consider all maintenance projects as safety projects)
 - What counts as a safety concern on roadways? (e.g., are potholes considered major safety hazards because they can cause drivers to swerve?)

- Rural versus urban can also be a dividing line
 - In Kansas, rural roads are considered to have safety improvement when adding one lane
 - Urban roads must have four full lanes to meet same criterion
- Data and Tools
 - Microscopic versus macroscopic data is a challenge; In Nevada there are inconsistencies with the level of detail included in police accident reports
 - Microscopic data should be used to analyze each accident
 - Macroscopic data should be used for planning safety projects
- Group wondered if the 7 percent of respondents who chose "none of the above" are going to improve safety at their agencies

Group 3:

- Insights:
 - Group not surprised to see data listed at the bottom
 Large amounts of data within respective agencies but not always a good use for it
 - o Perhaps making safety funding as important as capacity funding is necessary
 - Group discussed the differences between capacity funding and maintenance funding
- Safety Practices:
 - Brad discussed the Safe System Approach taken at Michigan DOT
 - Other agencies are following this model and working to include safety as a part of department activities

Group 7:

- Group initially surprised by the idea that public support or adoption of new practices can be considered a challenge; after discussion, recognized this is an area that deserves more attention and has hidden complexities
- State context matters when discussing safety What standards or metrics can make it hard to compare safety metrics between states?
- Important to use road safety assets, not simply have them in inventory
- When developing proposals/new projects, safety analysis should always be included

Group 5:

- Surprising seeing the data being listed so low on the list of challenges while funding was so high
- Group felt there is a consistent struggle to implement data their respective agencies collect and analyze
 - Members have systems in place to allocate funding for safety projects
 - Projects typically generated by the state districts, submitted to the central office, which prioritizes them according to availability of funds

Group 4:

- Surprises
 - Funding still considered a big problem, group believes data and systems should have been higher on the list
 - How are DOTs using non-crash data? Do safety outcomes improve over a crash-based-only approach?
 - Surprised to see most DOTs report safety practices getting better or holding steady; group feels these statistics are getting worse
- Practices
 - o Maryland is including non-crash data, but it's still early in adoption process
 - Speed enforcement cameras are being introduced in Colorado; they're working to change the legislation
 - New Mexico is pursuing other legislation changes to clear way for later safety improvements

4 B. Practice Examples: Noteworthy Safety Performance Management Practices

4.1 Video Practice Example Summary Presentations

This session of the peer exchange was a chance to review and discuss the noteworthy safety performance practices outlined in videos produced by various DOTs that were published on the TPM Portal website (https://www.tpm-portal.com/events/improving-safety-with-performance-management-peer-exchange/). Lori summarized the practices into four distinct categories: collaborative efforts with partners, strategic initiatives to drive safety outcomes, data & information tools and systems, and safety projects. Next, she played the "Improving Safety with Performance Management Peer Exchange Highlights Reel" (https://youtu.be/mUQX0_e4_kc), which contained an abbreviated compilation of the DOT video presentations to help remind participants of these practice examples they were asked to watch before attending the peer exchange. Following this, peer exchange participants from some of these agencies gave a short summary-presentation of their agency's noteworthy practice:

- 1. Performance Metrics in UDOT's HSIP Program (https://youtu.be/le_ix3aSUEM)
 - a. Description: Jeff Lewis of Utah DOT presents on their Performance Metrics in the agency's HSIP Program (Traffic and Safety).
 - b. Video presenter: Jeff Lewis jefflewis@utah.gov
 - c. Peer exchange presenter: Patrick Cowley patrickcowley@utah.gov
- Mechanisms, Methods, & Measures to Support Safety (https://youtu.be/ESTaH1aSyMY)
 - a. Description: Tara L Cullum, Oklahoma DOT Deputy Chief Innovation Officer, presents on Oklahoma's safety performance measures.
 - b. Video and peer exchange presenter: Tara Cullum tcullum@odot.org
- 3. Indiana Safety Performance Management (https://youtu.be/juzLw4Q7KX0)
 - Description: Jeremy Hunter, P.E., Managing Director of Asset Management, Indiana DOT presents on their Safety Performance Management Program.
 Improving Safety with Performance Management Peer Exchange
 - b. Video and peer exchange presenter: Jeremy Hunter jhunter@indot.in.gov
- 4. Noteworthy Safety Practices Driving to Zero (https://youtu.be/yLUtfRX87Ms)
 - a. Description: Vanessa Spartan, AICP, RSP Kansas DOT, Chief of Transportation Safety, presents on Kansas' Drive To Zero.

- b. Video presenter: Vanessa Spartan vanessa.spartan@ks.gov
- c. Peer exchange presenter: Mike Moriarty michael.moriarty@ks.gov
- 5. Safety Assessment for Every Roadway (https://youtu.be/-HRnCRbN1E8)
 - a. Description: Jon Nelson, a Missouri DOT's State Highway Safety and Traffic Engineer, presents on MODOT's SAFER program.
 - b. Video presenter: Jon Nelson <u>jonathan.nelson@modot.mo.gov</u>
 - c. Peer exchange presenter: Karen Miller <u>karen.miller@modot.mo.gov</u>
- Systemic Safety Countermeasures and Collaborative Approaches at GDOT (https://youtu.be/usz-2gdEHbE)
 - a. Description: Kelli Roberts, P.E., State Safety Program Manager and Ron Knezevich, P.E., State Safety Engineering Supervisor present on Georgia DOT's systemic safety countermeasures and collaborative approach to safety.
 - b. Video presenter: Kelli Roberts and Ron Knezevich keroberts@dot.ga.gov
- 7. Incorporating Safe System Approach into Project Planning & Programming (https://youtu.be/MLzU6c4lcSI)
 - a. Description: Garrett Dawe, P.E., Engineer of Traffic & Safety of Michigan DOT presents on their Safe System approach.
 - b. Video presenter: Garret Dawe daweg@michigan.gov
 - c. Peer exchange presenter: Bradley Sharlow sharlowb@michigan.gov
- 8. Leveraging Data in Risk and Performance Management for Better Employee Safety Outcomes (https://youtu.be/nKdYD-t8QAE)
 - a. Description: Texas DOT's Monica Aleman-Smoot, Lead Enterprise Risk Prevention and Management Program and Jim Padilla, Lead Transportation Performance Management Program, present on how Texas is "Leveraging Data in Risk and Performance Management for Better Employee Safety Outcomes".
 - b. Video presenters: Monica Aleman-Smoot monica.alemansmoot@txdot.gov and Jim Padilla jim.padilla@txdot.gov
 - c. Peer exchange presenter: Jim Padilla jim.padilla@txdot.gov
- 9. Drones Technology in the Arizona Road Safety Assessments Program (https://youtu.be/v5bly2k8upU)
 - Daniel Oldham, P.E., Ph.D. Arizona DOT Strategic Highway Safety Plan (SHSP)/RSA Engineering Specialist, presents on Arizona DOT's use of drones in conducting an RSA.

b. Video presenter: Daniel Oldham - doldham@azdot.gov



4.2 Post-Presentation Q&A Discussion

After the video highlights concluded, there was a question and answer (Q&A) session where participants could reflect on the featured practices and share their insights. The session was kicked off by asking which videos resonated with the participants.

- Rosa Kozub of New Mexico DOT: Wanted to know more about the SAFER framework used at Missouri DOT. She thought they provided useful questions to consider as NMDOT develops a universal scoping form.
- Valerie Jimenez of Kansas DOT: Wanted to connect with Texas DOT on how to implement employee safety standards data. Kansas DOT is currently in the process of developing a Power BI dashboard and wants further guidance on how to use the data they've collected.
- Patrick Cowley of Utah DOT: Was inspired by Indiana's use of report card data as he felt agency employees can get "confused on key performance indicators (KPIs)" and how their work is tied to reducing safety.
- Brian Sheehan of Illinois DOT: Asked Oklahoma DOT to clarify how they fund paved shoulder projects. Are they using a systematic or targeted approach to where they build?
 - Tara Cullum of Oklahoma DOT: The agency combines programming shoulder construction projects eight years in advance (targeting roads with the highest number of fatalities) with adding shoulders with regular maintenance and preservation projects. The Oklahoma DOT only paves 4

- feet of the shoulder, with the other 4 feet typically being other, less expensive materials.
- Sam Coldiron of Oklahoma DOT: Likes the format of 50 percent paved shoulder with 50 percent non-paved. This provides convenience and safety for drivers without making them overconfident and encouraging speeding.

Jeremy Hunter (Indiana DOT) was asked about the source of the telematic data they use.

 Jeremy Hunter of Indiana DOT: Telematic data is sourced from third-party vendor data. INDOT has agreements with the original equipment manufacturers (OEMs) to acquire the data the same way insurance companies do. This is a possibility for other DOTs.

Next, the participants were asked about the approach to making cultural changes around driver habits. How can the peer exchange community address this more directly?

- Charles Meyer of FHWA: Credited Missouri DOT's SAFER program as intersectional. The culture change comes when safety is included in all departments, projects, and decisions, not as a separate factor.
 - Karen Miller of Missouri DOT: The shift came for Missouri DOT when everyone was able to step back and realize that safety was previously an afterthought that employees were too busy to fully factor in. Now it is one of the first topics discussed in relation to every project.
- Huiwei Shen of Florida DOT: Several years ago, a former transportation secretary launched an initiative called "Vital View," with safety as a top priority. The state has long embraced the "Target Zero" approach to reducing fatalities. During that time, Florida, being decentralized, collaborated with districts to prioritize key safety projects, which influenced how projects were programmed. The Strategic Intermodal System (SIS) is a critical part of the state's infrastructure as it's used to prioritize projects, with safety being a major factor for over 20 years. During the annual program planning workshop, safety and system preservation are prioritized before discretionary capacity projects. Although the state still faces high fatality numbers, safety is a serious consideration integrated into all aspects of transportation planning. The focus has now shifted from engineering solutions to behavioral campaigns aimed at improving driver behavior.

5 C. Breakout Exercise: Applying Safety Performance Measures to Prioritize Projects in Your Agency's Capital Program

The art of good prioritization lies in the ability to balance competing objectives and align them across performance programs. What are the relationships between safety and other performance objectives, such as asset condition, mobility, and air quality? How do you prioritize when there are competing, and sometimes conflicting, needs? How do you ensure alignment across an agency's entire performance management program? In a small group exercise, each team was asked to apply safety performance measures to prioritize the sample agency's capital program within a constrained budget, and then explain the reasoning behind their choices. Participants were encouraged to review all resources provided to contextualize the projects and take note of which metrics they rely on in their group rankings.

5.1 Project Prioritization Exercise: Group Presentations



Each group was asked to select and rank the projects given a budget constraint of \$8 million. The results of the exercise are summarized in the table below, with rank 1 being highest priority:

Table 4-A. Prioritization Breakout Exercise – Group Rankings

Project:	Group 2	Triple Threat 3	Fantastic 4	Group 5	Group 6	Avg. Rank	Percent Selected
A	5	6	6	6	4	5.4	100 %
В	1	3	7	4	7	4.4	100 %
С	2	4	1	3	1	2.2	100% %
D	4	2	5	2	3	3.2	100 %
E	6	1	3	1	6	3.4	100 %
F	7	7	4	7	5	6	100 %
G	8	8	8			8	60 %
Н	3	5	2	5	2	3.4	100 %

Rank Scale:

1	2	3	4	5	6	7	8

Group 2:

- As a general approach, the group estimated the benefit-cost ratio (BCR) by comparing the funding requirements to the estimated impact.
 - Project G was easy to rank last due to its high cost for a small amount of roadway.
 - Project B impacted hundreds of miles of road for a relatively low cost, so that was instantly the top priority.
- The next highest priority was considering vulnerable road users (VRUs).
 - \circ Project C and H were closest tied to targeting VRUs, so they were ranked 2^{nd} and 3^{rd} , respectively.
- With the top candidates set, the group then tried to strategically optimize the remaining budget for projects E and F.
- The group considered dividing the cost by the anticipated change in crashes to try and normalize the projects, but that metric was ultimately discounted in favor of prioritizing VRUs.

Group 3 (Triple Threat):

- The cost to benefit ratio of project G was impossible to justify, so that was ranked last.
- The group prioritized the number of fatal and serious accidents mitigated.
 - Therefore, Project E was ranked 1st, followed by Project D, as 2nd, Project B as 3rd, and Project C as 4th.
- The group expressed a desire to collect ADT and VMT data to add depth to the crash data. With the given information, they worked from the number of accidents.

Group 4 (Fantastic 4):

- The primary goal was following and meeting the priorities set by the sample DOT.
 - Elements like prioritizing VRUs and addressing roadway departures were valued.
 - Considered the length of project and district distribution although these did not impact the rankings.
 - Also valued the BCR to prioritize rankings.
- Project G was considered too expensive and ranked last.

Group 5:

- VRUs were listed as an objective, so that was considered.
- Chose to rank Project E over Project D because it had more failures and would provide greater benefit while remaining in-budget.
- Project G was easy to rank last because of the cost, and lack of benefit to VRUs.

Group 6:

- The group considered using a weighted method for the priorities but deemed it too complex given the exercise constraints.
- The main metrics used to evaluate the projects were:
 - Cost benefit ratio
 - Reduction in fatal crashes

5.2 Combined Group Prioritization Results and Summary

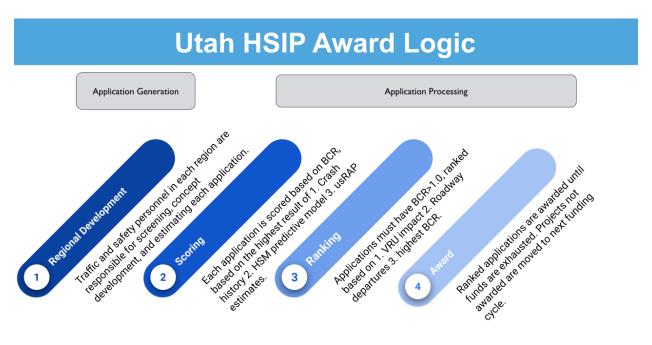
The exercise involved prioritizing among a hypothetical set of eight projects, each with a budget and specific performance outcomes.

Rank	Project	Description	Cost	Performance Outcomes
1	С	Improve corridor lighting along 0.72 mile stretch of urban arterial	\$1,001,000	0.72 miles of lighting will be upgraded with anticipated reduction in nighttime fatal crashes by 0.13 per year and reduction of total crashes by 2.46 per year
2	D	Enhance curve warning signs and curve delineation along a 36 mile stretch of mountainous, rural two-lane highway	\$650,000	36 miles of enhanced curve delineation with anticipated reduction of crashes on curves of 0.1 fatal crashes per year and 8.45 total crashes per year.
3 (Draw)	E	Enhanced curve delineation, dynamic curve warning systems, radar feedback signs along 9.5 miles or rural, mountainous highway	\$2,637,000	9.5 miles of enhanced curve delineation, curve warning systems, and radar feedback signs, with anticipated reduction of crashes on curves of 0.5 fatal crashes per year and 7.44 total crashes per year.
	Н	Provide or improve street lighting to provide better visibility for pedestrians and bicyclists along 2 mile stretch of urban highway	\$1,149,000	Project will enhance lighting over 2-mile stretch and is anticipated to reduce 0.29 fatal crashes per year
5	В	Upgrade signing and pavement messages on hundreds of miles of rural and urban highway (mostly interstate freeway)	\$850,000	Signing and messages will be upgraded to the current standards to mitigate for Wrong Way Drivers (mostly on rural interstates). Estimated annual reduction of 0.64 fatal crashes per year and 2.94 total crashes.
6	F	Overlay roadway and install shoulder and centerline rumble strips along 1.2 miles of rural highway	\$946,000	Mitigate run-off road left and run-off road right crashes with anticipated reduction of fatal crashes by 0.04 per year.
7	А	Install raised median along a 0.22 mile stretch of urban highway.	\$680,000	Mitigate run-off road to the left and midblock angle crashes with anticipated reduction of fatal crashes expected to be 0.06 per year and reduction of serious injury crashes by 0.15 per year. Anticipated reduction of 6.79 total crashes per year.

Rank	Project	Description	Cost	Performance Outcomes
8	(-)	Reconstruct southbound I-15 off ramp at Provo Center Street (urban area)	\$3,000,000	Reduction in front-rear and single vehicle crashes expected to be 8.96 per year

An averaged ranking of the projects across all groups was presented. It was noted how some groups prioritized according to legislative priorities, while others focused on the benefit of the project.

5.3 Utah DOT Prioritization Process Using Identical Projects



Patrick Cowley of Utah DOT revealed the projects used for the exercise were real examples from his agency. He continued to explain the prioritization approach used to rank projects within the agency.

Patrick explained that data is used to generate a prioritization ranking before the ranking is filtered according to policy decisions. For example, he emphasized that UDOT is committed to spending at least 15 percent of HSIP funding to address VRUs, demonstrating this is the agency's top priority. The second biggest consideration is for reducing run-off-road-crashes before projects are submitted to the general prioritization process outlined below:

It begins with application generation.

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- Regional development includes traffic and safety personnel in each region screening, developing project concepts, and estimating each application.
- Next, applications are processed.
 - It starts with scoring based on BCR, using the result of 1 of three methodologies:
 - Crash history
 - HSM predictive model
 - usRAP estimates
 - Then, the projects are ranked. To move forward, applications must have a BCR of at least 1.0.
 - The first priority is projects with a vulnerable road user impact
 - Followed by projects involving roadway departures
 - Then projects with the highest BCR
 - Ranked projects are awarded (as part of the 3-year program cycle) until the funds are exhausted. The rest of the projects are moved to the next funding cycle. They may be advanced sooner, if possible.

The actual UDOT prioritization rankings were then shared with the group:

Exercise Letter	Description	BCR	UDOT Rank
В	Upgrade signing and pavement messages on hundreds of miles of rural and urban highway (mostly interstate freeway).	20.18	1
С	Improve corridor lighting along 0.72 mile stretch of urban arterial.	20.18	1*
D	Enhance curve warning signs and curve delineation along a 36 mile stretch of mountainous, rural two-lane highway.	18.89	3

Exercise Letter	Description	BCR	UDOT Rank
н	Provide or improve street lighting to provide better visibility for pedestrians and bicyclists along 2 mile stretch of urban highway.	14.83	4
А	Install raised median along a 0.22 mile stretch of urban highway.	10.70	5
E	Enhanced curve delineation, dynamic curve warning systems, radar feedback signs along 9.5 miles or rural, mountainous highway.	8.24	6
G	Reconstruct southbound I-15 off ramp at Provo Center Street (urban area).	7.52	7
F	Overlay roadway and install shoulder and centerline rumble strips along 1.2 miles of rural highway.	1.58	21

6 D. How Can We Improve Practice?

6.1 Exercise Summary – Priority Needs?

The primary focus of the practice presentations in the videos was on individual agencies – but how can safety practices be collectively shaped/advanced for all? There are mechanisms to fund federal research (e.g., AASHTO, TRB) – so what needs to happen at the national level to advance practice? What can be done to share and extend current practices? What research and actions should be funded and taken?

The goal of this session was to focus on what is needed to have a well-aligned prioritization and selection processes that improves safety outcomes with performance management. In the first part of this session, participants broke out in small groups to generate a list of ideas for how to improve safety through the practice of performance management within transportation agencies. Guiding questions included: What is your vision for safety outcomes in the future? How do we get there? What will it take?

These ideas were then presented to the whole group and documented into the following groups: Mode Shift, Knowledge Management (KM) Around Safety, Research, Legislation/Policy, Technology & Proven Safety Countermeasures, and System Prioritization. A complete list of ideas was generated and put up on posters around the

room. Participants were then asked to place a series of stick-on dots next to the top projects they wanted to prioritize going forward. Green dots represented the most positively impactful projects, red dots symbolized the most urgent projects to undertake, and yellow/blue dots were used for general votes. Each participant had four votes to allocate to the best ideas. The table below shows a list of proposed ideas in descending order of total votes.

Prioritization Voting for Future Safety Activities

			Vo	ites	
Category	List of Proposed Improvements	Urgent	Biggest Positive Impact	Regular	Total
Mode Shift	Events - targeted peer-to- peer exchanges - Focus on changing culture of safety	0	0	12	12
KM Around Safety	After action assessments - guidancetTools	0	5	2	7
Research	Artificial Intelligence (AI) - use for targeted Searches of Safety guidelines	0	0	7	7
Policy/Legislation	Enhance federal safety legislation on "Big 3": - Impaired driving - Safety belts - Distracted driving	1	0	2	3
System Prioritization	Use of telematics data - Readily available with many smartphones & smartwatches	0	2	1	3

		Votes				
Category	List of Proposed Improvements	Urgent	Biggest Positive Impact	Regular	Total	
System Prioritization	Automated incident detection	0	3	0	3	
Technology & Proven Safety Countermeasures	Active transportation data (e.g., near misses data)	0	1	1	2	
Research	Evaluate Safety tools & initiatives	1	0	0	1	
System Prioritization	Emphasize performance-based planning & programming (PBPP) Communication - Emphasis on changing culture around safety	1	0	0	1	
System Prioritization	Automated speed enforcement -Promote safety for collective, not individuals	0	0	1	1	
Research	Better leverage/index existing safety data	0	0	0	0	
Research	Pictorial relationships -Organization -Responsibilities	0	0	0	0	
Mode Shift	Measures - non-traditional metrics (e.g., roadway Characteristics) - Aim to get better at predicting crash data	0	0	0	0	

		Votes				
Category	List of Proposed Improvements	Urgent	Biggest Positive Impact	Regular	Total	
Mode Shift	Measures - Freight safety metrics	0	0	0	0	
System Prioritization	Driver refresher training - Including first aid training	0	0	0	0	

A prioritized list of recommendations was presented using the ones with the greatest number of votes (dots).

7 Concluding Summary of Peer Exchange

7.1 Closing Remarks

Anna McLaughlin of AASHTO gave the final presentation which summarized the takeaways from the peer exchange:

- The Safety Survey Data presented at the beginning of the meeting will continue to be referenced and relevant to safety discussions.
 - o Used for AASHTO capability building for CPBM and the Safety Committee
- Video practice examples shared during Session B. will be stored and made readily available for reference in the future on the Transportation Performance Management Portal (https://www.tpm-portal.com/).
- Thanks to Patrick Cowley and Jeff Lewis from Utah DOT for allowing the peer exchange to use their project prioritization system as the basis for Session C.
- The prioritized list of improvements to safety generated in Session D. will help AASHTO CPBM, FHWA, and the TPM TSP develop and improve safety performance management capabilities.

Anna closed out the presentation by thanking all participants and contributors for helping to make this peer exchange possible. She encouraged all state agencies that are interested in future collaborations to join AASHTO's TPM TSP.

7.2 Next Steps for Improving Safety Practices

- Consider attending the AASHTO Safety Summit on October 15-17 in Houston, TX - https://web.cvent.com/event/a435d1cc-41c5-40af-afc1-06f92b29eceb/websitePage:33bb36ed-69a1-42a4-85e6-6b25fb660a71
- Stay tuned to the next TPM webinar which will summarize many of the findings from this peer exchange. Register here: https://www.tpm-portal.com/events/tpm-webinar-24/