SAFETY STUDY

Preliminary Recommendations

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Agenda Item 5

National Capital Region
Transportation Planning Board

Discussion Topics

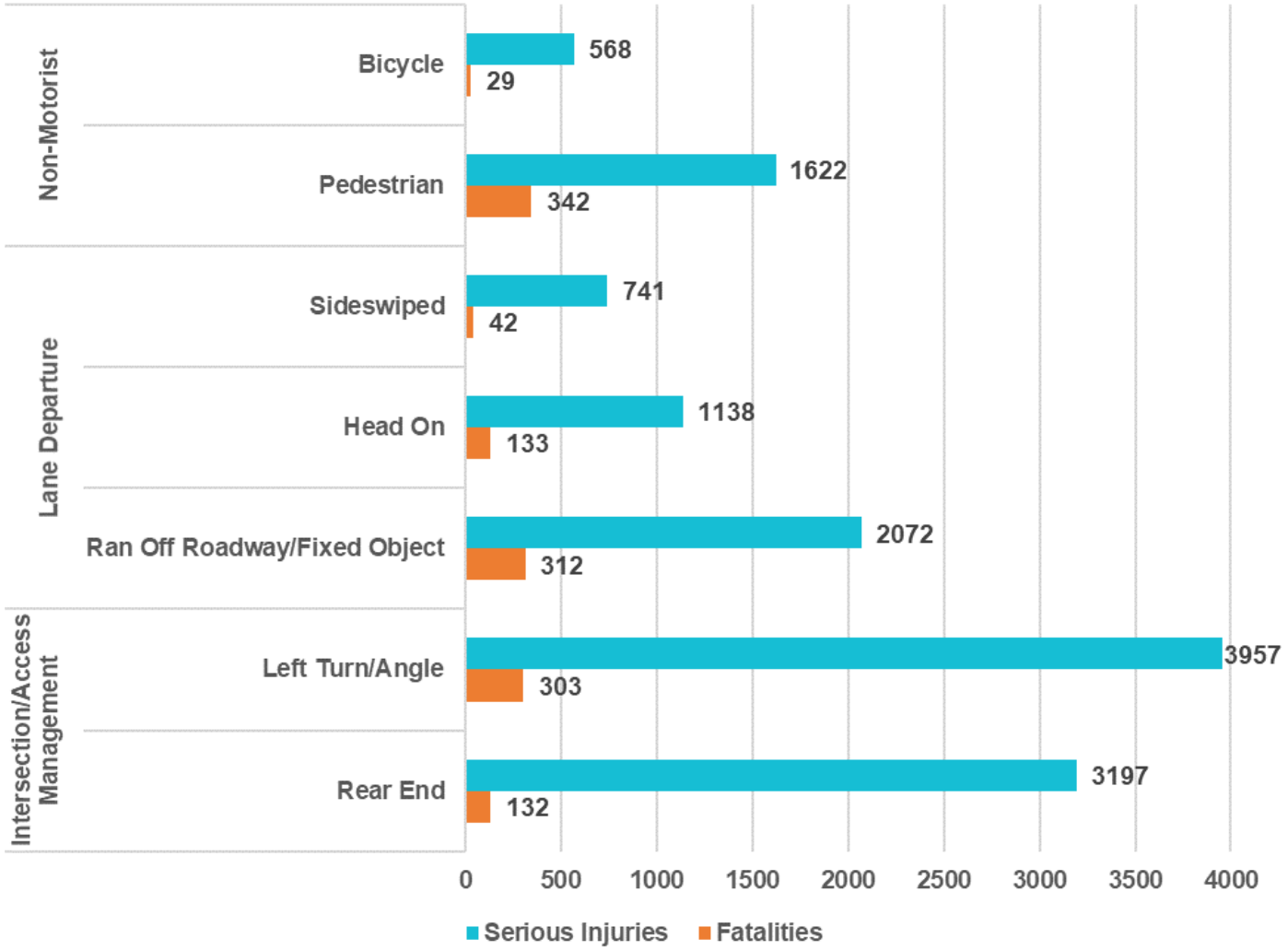
- Study Overview and Crash Data Analyses
- Approach to Developing Recommendations
- Preliminary Countermeasures (Cambridge Systematics)
- Potential Actions for TPB Consideration

STUDY OVERVIEW & CRASH DATA ANALYSIS

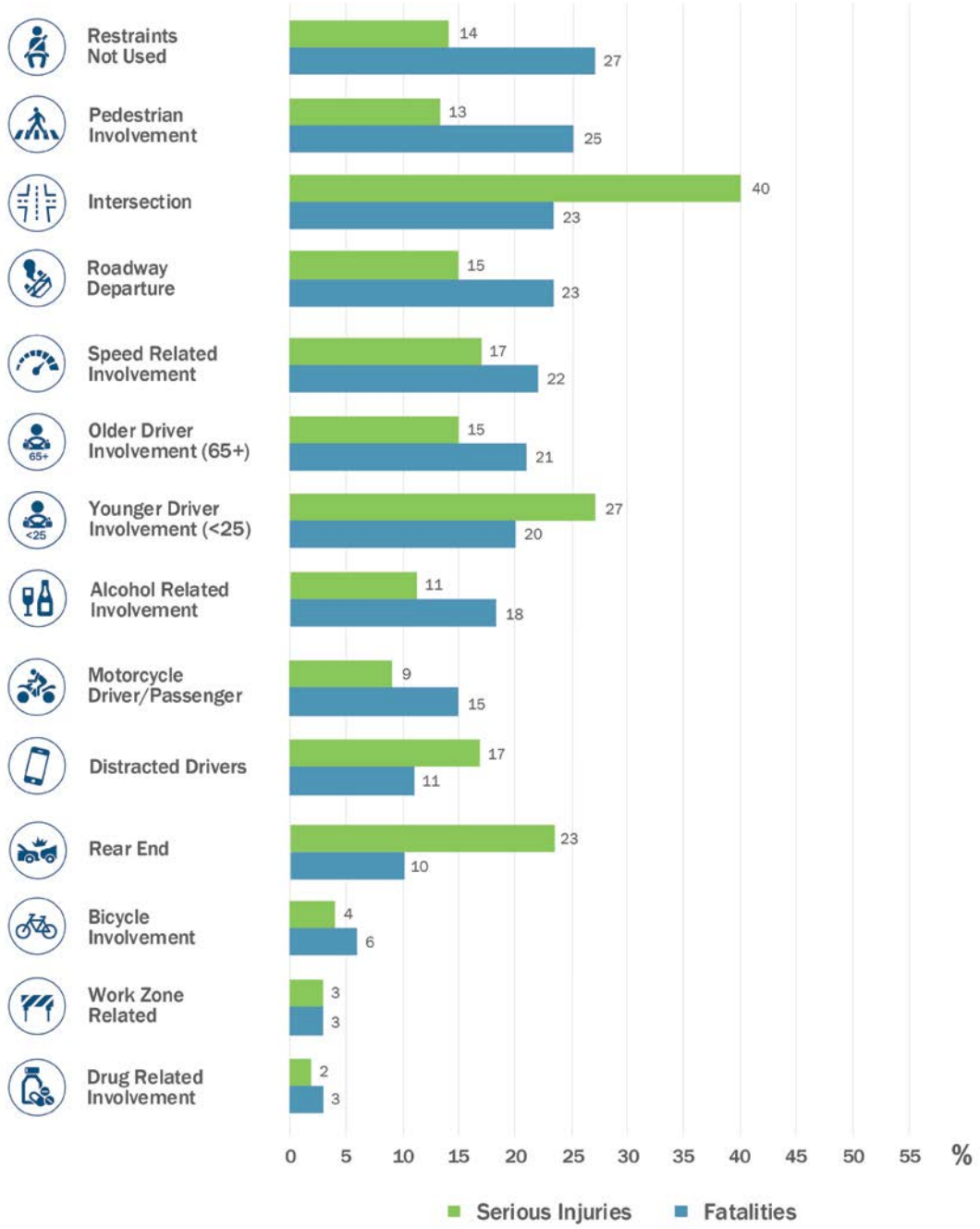
Study Overview

- Objectives
  - to understand the factors contributing to fatal and serious injury crashes in the National Capital Region (NCR);
  - to determine where crashes on the roadway transportation network are over-represented;
  - to identify and recommend proven effective solutions (policy, programmatic, project);
  - to provide the TPB and member jurisdictions specific suggestions to improve safety; and
  - to inform future Transportation Safety Subcommittee and Street Smart efforts.
- Progress to Date
  - Kickoff meeting – June 26, 2019
  - Benchmark Peer Evaluation - complete
  - Collection and Processing of Safety Data – complete
  - Analysis of Safety Data – nearly complete
  - Recommendations – in process
- Project Timeline
  - Original contract through February 2020 – extended through November 2020

Crash Types (2013-2017)



Crash Contributing Factors (2013-2017)



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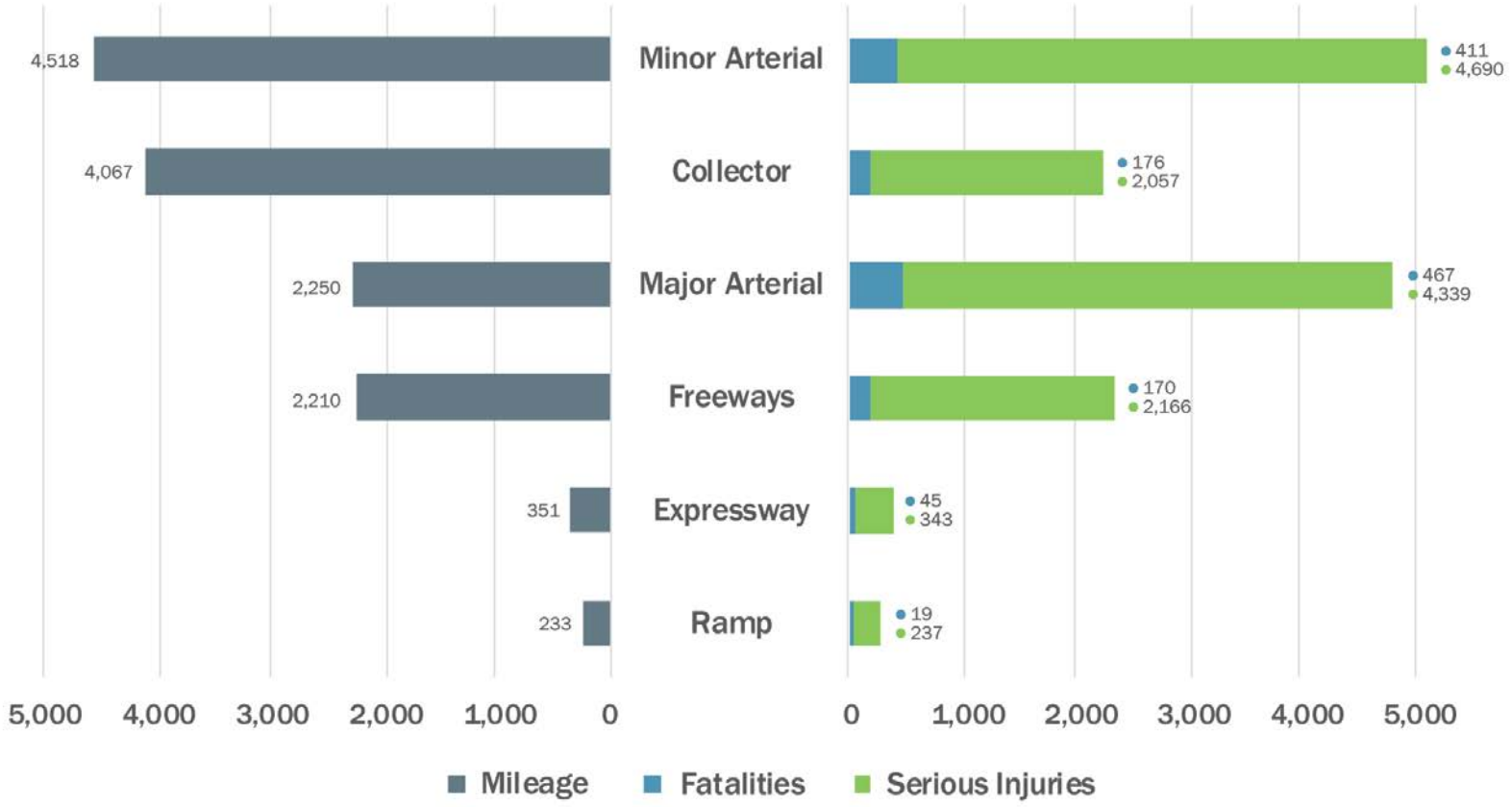
Functional Class (2013-2017)



Priority Areas – Additional Analysis

- Crashes with Pedestrians
- Crashes at or near Intersections
- Crashes along Major Arterials

APPROACH TO DEVELOPING RECOMMENDATIONS

Recommendations Approach

- Start with three questions:

    1. What are those countermeasures that, if we did more of them, would result in fewer people dying or getting injured on our roadways?
        - based on the data analysis;
        - not limited to what typically falls under the purview of an MPO; and
        - are either proven effective, have evidence that they are very likely to be effective, or are good to do based on the expert opinion of the consultant team
    2. What level of government or type of agency is typically responsible for implementing each countermeasure?
    3. What is the potential MPO role for each countermeasure?

Approach (continued)

- Develop a set of recommendations for the TPB to consider based on…
  - The answers to the three questions
  - Input from our committees and stakeholders
  - Staff expertise

CAMBRIDGE SYSTEMATICS RECOMMENDATIONS

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Install pedestrian Hybrid Beacon and advanced yield signs, stop markings and signs, high visibility crosswalk markings.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Implement leading pedestrian interval (LPI) at intersections with high turning vehicle volumes to reduce pedestrian-vehicle crashes.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Conduct pedestrian road safety audits in areas with a higher than average pedestrian fatal and serious injury crashes.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and/or facilitation of road safety audits

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Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Lower speeds through implementation of speed enforcement, installation of automated cameras, and road diets that narrow lane width.	Over 3500 pedestrian fatalities and serious injuries between 2013-2017 caused by speeding; third highest contributing factor to fatalities and serious injuries. RSA's are an FHWA Proven Countermeasure. Studies show speeding major factor in severe pedestrian crashes-Countermeasures That Work	Engineering	State and local governments	Support and encouragement

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Evaluate mid-block crossings with higher rates of fatalities and serious injuries (especially those over 10,000 AADT) to determine whether more substantial crossing improvements are needed such as medians, refuge islands, pedestrian hybrid beacon, and rectangular rapid flashing beacons.	Medians and crossing islands are FHWA Proven Countermeasures	Engineering	State and local governments	Support and encouragement
Install pedestrian countdown signals.	An FHWA Evaluation Study cited a 9% reduction in ped crashes and a 12% reductions in rear end crashes	Engineering	State and local governments	Support and encouragement

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Improve geometry of pedestrian and bicycle facilities at signalized intersections with high frequencies of pedestrian and/or bicycle crashes and on routes serving schools or other generators of pedestrian and bicycle traffic.	Walkways are an FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Create pedestrian safety zone program in targeted geographic areas with high occurrence of pedestrian crashes.	Has been used effectively in other states	Engineering	State and local governments	Support and encouragement

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Include pedestrian safety and the risks of impairment for both pedestrians and drivers in alcohol related mass media campaigns	From 2013-17, alcohol impairment a factor in over 1900 pedestrian fatalities and serious injuries; Effectiveness Undetermined – NHTSA Countermeasures That Work	Education	State Highway Safety Offices Non-profit organizations Local governments	Support and encouragement
Develop and implement an elementary school pedestrian training program.	Likely to be Effective – NHTSA Countermeasures That Work	Education	School systems	Unknown

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Continue the regional Street Smart Campaign. Investigate strengthening further by aiding member jurisdictions to engage street teams and other elements of the campaign at more locations throughout the year.	Campaign is currently conducted	Education	TPB	Continue to sponsor and emphasize the campaign. Support additional Street Smart- related activities
Identify areas with high pedestrian fatalities and serious injuries and install lighting at intersection and mid-block crossings to ensure motorists can see pedestrians crossing the road.	Listed as effective in the Pedestrian Safety Guide and Countermeasure Selection System	Engineering	State and local governments	Support and encouragement

Pedestrian Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Develop and implement school focused pedestrian strategies building on the work done in the Safe Routes to Schools program.		Engineering Education Enforcement		Support and encouragement
Evaluate double-right turns at intersections to determine if removal of one right-turn lane is warranted.		Engineering	State and local governments	Support and encouragement
Implement audible pedestrian crossing signals where appropriate.		Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Replace intersections that have high numbers of fatalities and serious injuries with roundabouts, a circular intersection configuration with channelized approaches and a center island that results in lower speeds and fewer conflict points, wherever feasible.	Roundabouts are an FHWA Proven Countermeasures	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Utilize multiphase signal operation at signalized intersections with a high frequency of angle crashes involving left turning and opposing through vehicles as well as rear-end and sideswipe crashes. A properly timed protected left turn phase (left turn only green light) can reduce rear-end and sideswipe crashes.	Angle/left turn and rear end crashes are the top collision types at intersections in our region	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Increase change intervals (when the traffic lights change) at signalized intersections with a high frequency of crashes that may be caused by change interval lengths that are too short including rear-end crashes and crashes between vehicles continuing through the intersection after one phase has ended and the vehicles entering the intersection on the following phase.	Rear end crashes are the second highest collision type at intersections in our region	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Improve left-turn channelization (providing definite paths for vehicles to follow) at signalized intersections where crashes related to left-turn movements are an issue.	Dedicated left and right turns lanes are a FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Improve right-turn channelization at signalized intersections with a high frequency of rear-end collisions.	Rear end collisions a major crash cause in our region.	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Install LED heads and reflective backplates (reflective borders around traffic lights that make them more visible) in locations with high numbers of signalized intersection fatal and serious injury crashes.	Reflective backplates are a FHWA proven countermeasure	Engineering	State and local governments	Support and encouragement
Restrict access to properties using driveway closures or turn restrictions that are near signalized intersections with high crash frequencies related to driveways.	Corridor Access Management including driveway closures, consolidation or relocation is an FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Restrict or eliminate turning maneuvers (including right turns on red) or employ signal coordination at signalized intersections with a high frequency of crashes related to turning maneuvers.		Engineering	State and local governments	Support and encouragement
Improve signage at unsignalized intersections by ensuring foliage does not block the sign, the lettering is still reflective, and the sign is located where it can be seen by motorists.	Systemic Application of Low-Cost Countermeasures - FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Add reflective material to sign posts at unsignalized intersections.	Systemic Application of Low-Cost Countermeasures - FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Install LED-enhanced stop signs at unsignalized intersections where there are a higher than average number of fatal and serious injury crashes.	Systemic Application of Low-Cost Countermeasures - FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Implement high friction treatment at intersections that have a high number of rear-end crashes.	FHWA Proven Countermeasures	Engineering	State and local governments	Support and encouragement

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Provide public information, education, and training for older drivers on risks associated with signalized intersections such as red-light running, speeding, not yielding to pedestrians, and difficulty judging speed and distance of approaching vehicles when making left turns.	Left turns at intersection are a major cause of crashes involving older adults. Aging impacts ability to judge time and distance. Older Drivers fifth highest contributing factor to fatal and serious injury crashes.)	Education	State Highway Safety Offices, State and local Departments of Transportation	Support and encouragement Potential for sponsoring or supporting a public information campaign

Intersection Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Increase automated enforcement at intersections including speed on green, stop-light camera, blocking the box, etc.	Automated camera enforcement is an . FHWA Proven Countermeasure.	Engineering	State and local governments	Support and encouragement
Implement left-turn traffic calming (left turn hardening) to reduce left turn speeds and enforcing safe turning behavior at intersections that show a pattern of pedestrian-related left turn crashes and intersection geometry that facilitates high speeds	Has been used effectively in other states, including New York. New York reports as much as a 20 percent reduction in pedestrian injuries	Engineering	State and local governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Implement roadside design improvements such as clear zones, slope flattening, and adding or widening shoulders to improve ability for drivers to safely recover if they leave the travel lane.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Implement enhanced delineation treatments can alert drivers in advance of the curve including pavement markings; post-mounted delineation; larger signs and signs with enhanced retroreflectivity; and dynamic advance curve warning signs and sequential curve signs.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Implement improvements including installation of cable barriers, guardrails, and concrete barriers to reduce the severity of roadway departure crashes.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Identify areas in the region that could benefit from traffic calming including road diets that reduce the number of traffic lanes and planting trees that encourage reduced speeds.	Road Diets are a FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Install high friction surface treatment (HFST) in locations where the available pavement friction is not adequate to support operating speeds a sharp curve, inadequate cross-slope design, wet conditions, polished roadway surfaces, or driving speeds in excess of the curve advisory speed.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Install longitudinal rumble strips and stripes in locations where run-off-the-road crashes are high.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Install the Safety Edge to eliminate the vertical drop-off at the pavement edge, allowing drifting vehicles to return to the pavement safely. It has minimal effect on asphalt pavement project cost with the potential to improve pavement life.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement
Implement improvements to reduce the severity of roadway departure crashes including installation of cable barriers, guardrails, and concrete barriers.	FHWA Proven Countermeasure	Engineering	State and local governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Develop a regional Safety Checklist or template as a tool for local jurisdictions to use during planning and project identification efforts		Engineering, Education, Enforcement,	MPO	Develop a regional safe roads policy template like what has been done for complete streets and green streets
Conduct education enforcement campaign focused on distracted driving (D.R.I.V.E, Texting and Driving Initiative).	Distracted driving is the eighth highest contributing factor to fatal and serious injury crashes.	Education	State and local police departments	Potential for sponsoring or supporting a public information campaign or enforcement activations

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Target education to low seat belt use groups based on factors including gender, age, and ethnicity.	Failure to wear seat belts is a factor in 27% of our region's fatal crashes.	Education	State Highway Safety Offices	Potential for sponsoring or supporting a public information campaign or enforcement activations
Conduct a study to determine the safety needs of older adults in the region and coordinate internally and externally to provide information on transportation alternatives other than driving.		Education	TPB	Consider coordinating with ongoing transportation alternatives work activities at TPB and other agencies

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Determine penalties for distracted driving in MD, DC, and VA, support legislative classification of distracted driving as a "moving violation" and decide if changes are needed.		Education		Review current statutes in member states for informational (not lobbying) purposes
Evaluate incident response times to determine if additional TIMS training and/or other resources are needed.	TIMS training is widely conducted throughout the region and recommended by the Federal government	Emergency Medical Services	State governments	Support and encouragement

Major Arterials Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Develop incident response plans for interstates and arterials throughout the region.	Federal recommendation	Emergency Medical Services	State governments	Support and encouragement

Young Drivers Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Conduct well-publicized enforcement programs aimed at young drivers.	Seat belt enforcement programs and primary seat belt laws are proven countermeasures – Countermeasures That Work.	Education	State Highway Safety Offices, state and local law enforcement	Potential for sponsoring or supporting enforcement activations
Conduct multi-component community programs to address underage drinking including licensing actions for underage alcohol violations, zero tolerance enforcement, and vendor compliance checks for age 21 enforcement.	NCHRP 622, Effectiveness of Behavioral Highway Safety Countermeasures, indicates these measures are likely to be effective.	Education	State Highway Safety Offices	Support and encouragement

Young Drivers Recommendations

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
Implement server training programs to enable servers to identify underage and prevent overserving	Effective countermeasure – Countermeasures That Work	Education	State HSOs, community groups, bars and restaurants	Support and encouragement

Occupant Protection Recommendation

Countermeasure	Justification	4E	Who Can Implement	Potential MPO Role
State primary enforcement seat belt laws	NHTSA Countermeasures That Work	Enforcement	State Legislatures	Information provision

POTENTIAL ACTIONS FOR TPB CONSIDERATION

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Preliminary Recommendations

Category	Preliminary Recommendations
Programs	• **Develop a Regional Safety Program modeled on the Transportation Land Use Connections (TLC program)** • Support additional "Street Smart-like" activities with street teams and Virtual Reality car for member jurisdictions • Support or encourage alternative transportation programs like Sober Ride
Collaboration	• Facilitate/conduct regional safety peer exchanges and/or training programs
Technical Support	• Assist jurisdictions with crash data analysis • Provide consultant services to facilitate local road safety audits

Draft for Committee Review

Preliminary Recommendations

Category	Preliminary Recommendations
Policies	• Develop a regional roadway safety policy similar to our Complete Streets and Green Streets policies • Encourage member jurisdictions to adopt Vision Zero policies • Encourage member jurisdictions to develop local roadway safety plans • Encourage the provision of late-night transit options
Campaigns	• Support or sponsor a regional "safest driver" contest (along the lines of what San Antonio did in 2018) • Support or conduct a distracted driving campaign modeled after Missouri's phone down, buckle up contest
Enforcement	• Support more sobriety checkpoints • Support increased enforcement of DUI, distracted driving, speeding, and seat belt laws

Draft for Committee Review

Preliminary Recommendations

Category	Preliminary Recommendations
Legislative / Judicial	• Encourage adoption of primary seat belt legislation in each member state • Encourage more widespread use of ignition interlock devices for impaired driving offenders • Encourage increased DUI testing

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