Theme #14: Safety

Distracted Driving

1. Identify trends and characteristics of distracted driving crashes on rural "non-occupants" (RNS16).
2. Identify the relationship between distracted driving and type of driving environment.

Environment

1. Conduct a comprehensive review of the effectiveness and cost of traditional and advanced systems intended to warn drivers about the presence of large animals near the roadway.
2. Evaluate the potential for reducing vehicle-deer collisions by connecting forage and cover areas on the same side of the roadway.

Funding Rural Safety Improvements

1. Compare state safety project selection processes and identify the effects of project selection criteria and funding levels on safety outcomes.

Geometric Design of Rural Roads – Motor Vehicle Traffic

1. Develop a design guide for 2+1 roads, a cross-section with a total of three lanes (typically 2 lanes on one side of a cable barrier and 1 lane on the other side, with the single and dual-lane sections alternating periodically to provide passing opportunities).
2. Analyze characteristics of injury and fatality run-off-road crashes on low volume roadways (AFB20) (update of NCHP 500 Volume 6).
3. Update guide for reducing collisions on horizontal curves (Update of NCHRP 500 Vol 7).
4. Update guide for addressing unsignalized intersection collisions (Update of NCHRP 500 Vol 5).
5. Update guide for reducing head-on collisions (Update NCHRP 500 Vol 4).
6. Analyze the effectiveness of four-lane to three-lane conversions (also called road diets) in small rural communities.
7. Identify common stakeholder/property owner objections to 4-to-3 lane conversions, complete streets, access management, and similar safety treatments relevant to small towns. Prepare practitioner guidance for addressing frequently-encountered misunderstandings about these treatments.
8. Identify best practices for Road Safety Audits on rural roads.
9. Identify obstacles to wider utilization of the Highway Safety Manual by rural transportation agencies.

10. Develop a simplified, but credible procedure to analyze, select, and implement safety countermeasures on rural roads at a local level.
11. Identify the impacts of diverted traffic on crash rates for rural highways used as construction detours.

Geometric Design of Rural Roads – Motorized Vehicles Not Intended for Highway Use

1. Assess safety impacts of agricultural equipment on rural highways.
2. Identify geometric designs for safe accommodation of agricultural equipment on rural highways.
3. Review data on all types of child injuries and deaths involving on-road operation of tractors and related equipment (including children struck by tractors). Compare state laws regulating on-road operation of farm equipment by young people and whether they are enforced. Determine whether tractor operator training for teens and pre-teens is adequate. Identify and disseminate best practices for preventing tractor-related injuries involving children.
4. Evaluate the effect of paved shoulders (including narrow 4 foot shoulders) on crashes involving slow-moving vehicles such as tractors.
5. Analyze safety impacts of legal and illegal on-road use of All Terrain Vehicles (ATVs), Recreational Off-Road Vehicles (ROVs), and low speed vehicles/neighborhood electric vehicles (NEVs) in rural and small-town environments.
6. Analyze the dynamic stability of ATVs and ROVs and identify geometric design options for safe accommodation of ATVs and ROVs on rural highway rights-of-way, perhaps unpaved paths parallel to the roadway.
7. Analyze single vehicle ATV crashes on rural highways for characteristics and severity.
8. Investigate the extent to which rural children, teens, and young adults use non-highway vehicles such as ATVs, dirt bikes, and snowmobiles for transportation in lieu of cars, including mixed on-and off-road use of these vehicles.

Geometric Design of Rural Roads – Non-Motorized

1. Assess safety impacts of animal-drawn vehicles on rural highways.
2. Identify methods for improving the reporting of crashes involving animal-drawn vehicles to develop consistency amongst the 21 states with Amish and Mennonite populations.
3. Develop a clearer understanding of the dynamics of crashes involving animal-drawn vehicles to help guide countermeasure selection.
4. Analyze the differences between Amish and Old Order Mennonite sects in terms of acceptance of safety technology.

Impaired Driving

1. Develop techniques for changing the safety culture surrounding impaired driving on rural roads to decrease fatalities and serious injuries.
2. Evaluate the effect of ridesourcing/taxi availability on impaired driving crashes in rural areas.

Multi-Modal

1. Standardize the reporting of crashes involving all ground transportation modes to support development of a comprehensive safety management system for rural highways.
2. Evaluate the safety effects of mixed use/shared space on rural roads.
3. Identify noteworthy practices for accommodating all road users on high-speed rural roads.

Roadway Environment

1. Evaluate the impacts of vegetation on rural highway safety and structural integrity.
2. Identify landscaping and roadside properties that increase rural roadside safety.
3. Identify the most-likely road safety impacts of the changing climate for various biomes of the United States.

Safety Culture/Behavioral Safety

1. Identify shared individual and societal level risk and protective factors and evidence-informed strategies that will impact both motor vehicle outcomes and other areas of violence and injury.
2. Identify techniques for measuring the effectiveness of behavioral campaigns targeted toward rural road users.
3. Identify best practices to address risky driving behaviors and innovative techniques for influencing behaviors that contribute to reduce rural crash risks.
4. Document public perceptions and attitudes of transportation safety in rural area
5. Evaluate culturally how rural areas are approaching cell phones and seat belts.
6. Identify strategies for keeping drivers alert when “zoning out” or fatigued.
7. Identify strategies for changing public attitudes toward rumble strips and gradually increasing acceptance.
8. Evaluate the impact of human factors in decision making when traveling on rural roads and develop skill guidelines for driving on rural roads with unique characteristics.
9. Assess safety culture in rural areas compared to non-rural areas.
10. Identify effects of early (age 14 or 14.5) driver licensing on crash rates, safety culture, and long-term driving performance (approximately 8 mainly agricultural states issue limited licenses to 14 or 14.5 year olds).
11. Identify relationships between the scale/scope of behavioral road safety campaigns and their effectiveness in reducing fatalities and serious injuries.

Safety Data and Safety Management

1. Identify and evaluate differences in heavy truck crash outcomes in urban and rural areas.
2. Develop nationwide rural highway speed profiles.
3. Develop a synthesis of practice describing methods for visualizing and integrating roadway, traffic, and crash data for motorized and non-motorized crashes.

4. Develop a synthesis of practice on the use of tools for identifying high-risk rural road segments, such as the United States Road Assessment Program (usRAP) and state-specific online crash mapping tools.
5. Develop rural-specific highway safety performance measures.
6. Identify the role of defective vehicle equipment (bad brakes, bald tires, etc.) in rural crashes and determine whether crashes are less prevalent in jurisdictions with strict vehicle safety inspection programs.
7. Create guidance for how to be proactive when rural data is not available and identify strategies for acceptance of qualitative data in rural safety studies.
8. Identify strategies to use rural crash information reported to 911 but not resulting in a formal crash report.
9. Identify strategies for interagency partnerships to develop safety data management systems and standardization of data collection across jurisdictional boundaries.
10. Analyze how to resolve rural data errors in the NHTSA Fatal Accident Reporting System (FARS).
11. Evaluate systemic safety treatments: effectiveness of combining multiple improvements, relationships to facility type and existing geometrics.
12. Review the prevalence of livestock-involved crashes in rangeland and identify relevant countermeasures.
13. Evaluate the effectiveness of wildlife crossings for the prevention of various types of rural vehicle-animal collisions.
14. Identify methods for estimating unreported rural crashes based on hospital admissions data.
15. Investigate the use of Unmanned Aerial Systems (UAS or "drones") to collect photographs for crash investigation and reporting.

Safety Education

1. Create a road safety essentials guide for non-technical county officials.
2. Create a road safety essentials guide for non-technical small-town officials.
3. Document the characteristics of successful rural road safety public information campaigns.
4. Conduct market research to identify safety education techniques that resonate with high-risk rural drivers and identify relevant media channels.

Safety Planning

1. Identify what a safe systems approach looks like for a rural area to incorporate multiple sectors and better serve rural communities and keep them safe.
2. Identify methods for developing the technical capacity to conduct road safety audits as a routine element of roadway planning, design, and operations for tribal and non-tribal transportation agencies.
3. Document best practices for state transportation department collaborations with county/local traffic safety commissions and grassroots roadway safety organizations.

Seat Belts

1. Identify strategies to increase seatbelt use in rural populations
2. Evaluate the most appropriate method for mounting a child passenger safety seat in an animal-drawn vehicle.

Signaling, Signing and Marking

1. Evaluate simplified centerline marking (Canadian-style single solid yellow line) for low-volume two-lane paved rural highways (RNS7).
2. Create a low-cost active warning system for rural railroad crossings.
3. Since automated vehicles cannot hear train horns, develop a system for reliable electronic transmission of train presence information to automated vehicles approaching rural railroad crossings.
4. Evaluate if sign sheeting is too bright in some cases.
5. Evaluate systemic implementation of signing treatments for cost-effectiveness of various levels of retro-reflectivity and proportion of safety to retro-reflectivity.
6. Evaluate the effectiveness and value of combining rumble strips with wider shoulders.
7. Develop signing and marking guidance for isolated locations where drivers would not expect to encounter high pedestrian volumes on high-speed rural highways.
8. Evaluate the effectiveness of extra-wide (5 to 8 inch) pavement markings for rural roadways.
9. Develop ready-to-use procurement specifications and application diagrams for frequently-used traffic safety devices.

Speed

1. Identify innovative speed management techniques for existing rural roads.
2. Identify transition-zone speed management techniques to calm traffic approaching rural communities and other reduced-speed areas on rural highways.
3. Evaluate the effectiveness (if used more widely) of red, on-pavement speed markings for traffic calming treatment at entrance to small communities.

Tribal

1. Evaluate the feasibility of developing a shared intertribal crash reporting system to address tribal member privacy concerns while providing non-personally-identifiable crash records to state agencies.
2. Create a data integration system to assist tribes with integrating their transportation data with other state transportation and law enforcement data.
3. Create a template for tribal use which includes the traffic safety codes for tribal counts.
4. Identify strategies for tribes to work on the “Road to Zero” concept, evaluate the continued disparity in high crash rates, and identify solutions.