BEHAVIORAL TRAFFIC SAFETY
COOPERATIVE RESEARCH PROGRAM

2020 ANNUAL REPORT

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The Board's varied activities annually engage about 8,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

Learn more about the Transportation Research Board at www.TRB.org.

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The Behavioral Traffic Safety Cooperative Research Program is sponsored by the Governors Highway Safety Association, funded by the National Highway Traffic Safety Administration, and managed by the Transportation Research Board.

GOVERNORS HIGHWAY SAFETY ASSOCIATION (GHSA)

GHSA is a 501(c)(3) nonprofit representing the state and territorial highway safety offices that implement federal grant programs to address behavioral highway safety issues. Its mission is to provide leadership and advocacy for the states and territories to improve traffic safety, influence national policy, enhance program management, and promote best practices. The goals of GHSA are to (1) promote traffic safety as a national priority; (2) expand and deliver member support services; (3) develop new and strengthen existing partnerships; (4) encourage innovative approaches in the states' safety programs; and (5) ensure sufficient resources to support association services and priorities.

GHSA traces its history back to the Highway Safety Act of 1966, which established the State and Community Highway Safety Grant Program (U.S.C. Title 23, Section 402) and created a unique partnership among federal, state, and local governments and set the foundation for the creation of State Highway Safety Offices. In each state and territory, governors select a representative to administer the program. In 1967, several governors' representatives organized into the National Conference of Governors' Highway Safety Representatives (NCGHSR). The organization incorporated in February 1975 and received nonprofit status in June 1976. In March 1978, the organization transitioned from a conference to an association, becoming NAGHSR. In November 2002, the name was changed to the Governors Highway Safety Association. Learn more about the GHSA at www.ghsa.org.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA)

NHTSA, a part of the U.S. Department of Transportation, is responsible for reducing deaths, injuries, and economic losses resulting from motor vehicle crashes. This is accomplished by setting and enforcing safety performance standards for motor vehicles and motor vehicle equipment, and through grants to state and local governments to enable them to conduct effective local highway safety programs.

NHTSA also conducts research on driver behavior and traffic safety to develop the most efficient and effective means of bringing about safety improvements. Learn more about NHTSA at www.nhtsa.gov.

THE BEHAVIORAL TRAFFIC SAFETY COOPERATIVE RESEARCH PROGRAM

The Behavioral Traffic Safety Cooperative Research Program (BTSCRP) is a forum for coordinated and collaborative research to address issues integral to the Governors Highway Safety Association (GHSA), the National Highway Traffic Safety Administration (NHTSA), and traffic safety professionals at all levels of government and the private sector. BTSCRP provides practical, ready-to-implement solutions to save lives, prevent injuries, and reduce costs of road traffic crashes associated with unsafe behaviors.

HOW IS BTSCRP FUNDED?

Moving Ahead for Progress in the 21st Century (MAP-21), Subsection 402(c) created the National Cooperative Research and Evaluation Program (NCREP). The program was continued in Fixing America's Surface Transportation (FAST) Act. Funding was set at $2,500,000 and is withheld from the Section 402 grant program each federal fiscal year. In October 2017, GHSA entered into an agreement with TRB to manage the program's research activities. The name of the program was changed to the Behavioral Traffic Safety Cooperative Research Program to clarify its purpose and to distinguish it from other TRB research programs.

HOW IS BTSCRP GOVERNED?

The GHSA Executive Board serves as the governing board for the BTSCRP. The Board consists of representatives of the 10 NHTSA regions and appoints the GHSA Research Committee, which monitors and facilitates the activities of BTSCRP. Its ultimate goal is to oversee a quality research program that is committed to addressing research issues facing State Highway Safety Offices and to promote research findings that improve highway safety.

WHERE DO THE RESEARCH IDEAS ORIGINATE?

Anyone can write or contribute to preparing an idea or problem statement in conjunction with a State Highway Safety Office; however, only State Highway Safety Offices, the GHSA Executive Board members, GHSA Research Committees, or NHTSA can submit a problem statement to BTSCRP. Submitters are strongly encouraged to do a literature search before submitting, to ensure the problem has not been solved or is not being studied already. There is an annual request for problem statements posted on www.trb.org/BTSCRP.

WHO SELECTS THE RESEARCH TOPICS?

NHTSA and TRB staff review the submitted research problem statements and provide feedback to the GHSA Executive Board. The GHSA Executive Board gives final approval of the annual research projects. Emphasis is placed on selecting projects that will result in applied research products that highway safety stakeholders will be able to use immediately upon the completion of the research.

WHAT HAPPENS AFTER RESEARCH TOPICS ARE SELECTED?

TRB follows a cooperative research process that it has used successfully for more than 50 years in other programs. First, TRB forms a project panel of individuals with expertise and interest in the topic area. This project panel uses the original problem statement to develop a detailed scope of work that serves as a basis for a Request for Proposal (RFP). The RFP is prepared and posted on www.trb.org/BTSCRP. Those previously expressing interest via the BTSCRP website are notified immediately. The weekly TRB E-Newsletter provides notice for others. Individuals and agencies then respond to the RFP by submitting proposals to do the work. The project panel reviews the proposals and selects the contractor to perform the work. The panel then provides technical guidance, reviews deliverables, and provides general oversight throughout the life of the project.

BTSCRP PROJECTS

BTS-01: GUIDANCE FOR EMPLOYER-BASED BEHAVIORAL TRAFFIC SAFETY PROGRAMS IN THE WORKPLACE

Funds: $350,000

Contractor: Texas A&M Transportation Institute

Overview: Workers may drive motor vehicles as their main job or as incidental to their main jobs, but in either case, traffic crashes are the leading cause of workplace fatalities in the United States. While engineering, enforcement, education, and emergency response efforts have significantly reduced traffic-related fatalities in recent decades, road user behavior remains the most common risk factor associated with traffic crashes.

The objective of this research is to (1) document the components of existing U.S. and international employer-based traffic safety programs for workers who operate motor vehicles for any part of their job duties; (2) use behavioral change theory to identify the essential components of the programs; (3) identify and describe measures of program effectiveness; and (4) develop guidance that incorporates the essential components necessary to plan, implement, and evaluate an employer-based behavioral traffic safety program.

Status: Research underway

BTS-02: GUIDE FOR BEHAVIORAL TRAFFIC SAFETY MESSAGING ON VARIABLE MESSAGE SIGNS

Funds: $350,000

Contractor: Texas A&M Transportation Institute

Overview: Several studies have investigated the usefulness and effectiveness of variable message signs (VMS) safety messages, in particular, how messages influence driver behavior, how attentive the public is to the message, and ways agencies could optimize safety messages on VMS. However, there are several unanswered questions about this practice, including: Which states display behavioral safety messages on VMS? What messages are currently being used? When and where are the messages displayed? What administrative policies and procedures regulate this initiative? And, what are the barriers hampering optimal use of this practice?

The objective of this research is to develop a guide for the use of VMS to deliver behavioral traffic safety announcements. The guide will address issues such as the (1) current state of the practice, both nationally and internationally; (2) administrative policies and procedures to determine the use of safety messages; (3) who, when, where, how, and why of message selection; (4) strategies that could enhance the understanding of various driver groups; (5) differences between rural and urban environments; (6) impacts, both intended and unintended, and effectiveness of traffic safety messaging; (7) barriers to implementation; and (8) recommendations to enhance coordinated traffic safety strategies.

Status: Research underway

BTS-03: EXAMINING THE IMPLICATIONS OF LEGISLATION AND ENFORCEMENT ON ELECTRONIC DEVICE USE WHILE DRIVING

Funds: $350,000

Contractor: Texas A&M Transportation Institute

Overview: Distracted driving is a complex and ever-increasing risk to public safety on roadways. Drivers' use of electronic devices significantly diverts human attention away from the driving task. The law enforcement community faces significant challenges as electronic device use has expanded beyond simply texting or talking, and legislation

regulating electronic device use while driving is inconsistent in content and implementation. There is a need to systematically examine relevant existing legislation and enforcement practice. The objectives of this research are to (1) examine the essential components of current state and provincial legislation used to address distracted driving while using electronic devices; (2) evaluate the benefits and impediments associated with enacting, enforcing, and adjudicating texting and hands-free legislation; and (3) develop model legislation to deter distract driving while using electronic devices.

Status: Completed. To be published as BTSCRP Research Report 1.

BTS-04: TRACKING STATE TRAFFIC CITATION AND ADJUDICATION OUTCOMES

Funds: $350,000

Contractor: Virginia Tech Transportation Institute

Overview: State Highway Safety Offices and State Traffic Records Coordinating Committees have reported challenges with accessing and analyzing citation and adjudication information. Most states have undergone comprehensive traffic records assessments, including assessment of citation and adjudication data systems; however, this information is not central or shared among states. The objective of this research is to develop methodology that enables and facilitates tracking of cases from citation/arrest to final disposition. The research will (1) examine and document state traffic adjudication/disposition efforts that (a) identify current practices in all states for tracking cases from citation/arrest to final disposition (including driver history); (b) identify commonalities and differences in state practices; (c) describe current challenges and gaps in data collection, quality, tracking, and sharing; (2) suggest methods for data sharing, permissions, and accessibility; and (3) develop a toolkit of innovative strategies to facilitate communication between State Highway Safety Offices and adjudication countermeasures.

Status: Research underway

BTS-06: MPO AND SHSO COORDINATION ON BEHAVIORAL TRAFFIC SAFETY

Funds: $350,000

Contractor: Cambridge Systematics

Overview: Behavioral traffic safety could be greatly enhanced by increased engagement between Metropolitan Planning Organizations (MPOs) and State Highway Safety Offices (SHSOs). The latter have a strong understanding of the regional transportation network, the capability to obtain and analyze local crash data, potentially the means and skills to develop transportation safety plans, and connections to local decision makers who can fund and implement investments. SHSOs administer grant funding provided by the National Highway Traffic Safety Administration to fund effective behavioral safety countermeasures to reduce collisions. Since a large proportion of traffic crashes result from human error, progress toward reducing the frequency and severity of traffic crashes could be better achieved if MPOs and SHSOs initiate steps to work together on regional and local safety needs. The objective of this research is to develop guidance for MPOs and SHSOs to improve coordination on local and regional behavioral safety efforts to reduce the frequency and severity of traffic crashes. The guidance will describe the mutual benefits of enhanced coordination on local and regional traffic safety behavioral issues, introduce best practices, and develop scalable processes and tools to develop a framework for engaging MPOs to work in collaboration with SHSOs.

Status: Research underway

BTS-07/NCHRP 17-91: ASSESSING THE IMPACTS OF CONNECTED, AUTOMATED, AND AUTONOMOUS VEHICLES ON THE FUTURE OF TRANSPORTATION SAFETY

Funds: $765,000 (jointly funded by BTSCRP and the National Cooperative Highway Research Program)

Contractor: Booz Allen Hamilton

Overview: Acknowledging that the move to autonomous and connected vehicles is relatively minor today, the impacts on the design and operational criteria of the roadways of tomorrow will be substantial. As these new vehicles

are introduced, they will have to operate alongside a legacy fleet that lack their safety and operational capabilities. The driver behavioral safety issues will be challenging. The objective of this research is to review and document existing and anticipated future changes to the vehicle fleet, develop an outline of how these changes will likely affect safety performance over time, and what potential changes to design and operational criteria could be developed to maximize the potential benefits. The research will be used to develop a framework and strategic approach for the safety profession to consider in developing and implementing new design criteria and operational approaches that consider these technological advances.

Status: Research underway

BTS-08: NATURALISTIC DRIVING STUDY DATABASE TO IMPROVE TEEN DRIVING SAFETY: PHASE 1 PROOF OF CONCEPT

Funds: $75,000

Contractor: TransAnalytics

Overview: The risk of motor vehicle crashes is higher among 16- to 19-year-olds than any other age group. Furthermore, per mile driven, teen drivers ages 16–19 are nearly three times more likely than drivers aged 20 and older to be in a fatal crash. The recently completed Strategic Highway Research Program 2 (SHRP2) Naturalistic Driving Study (NDS) offers a robust database of 3,100 study participants ages 16–98, recruited from six states. Vehicles were instrumented with a data acquisition system that included accelerometers, cameras, GPS, forward radar, and vehicle network connections. Almost 500 drivers aged 16–19 (and over 650 drivers aged 20–24) were studied. The NDS offers an opportunity to conduct in-depth analyses of teen driver behavior, with known roadway characteristics, weather, and time of day. The objective of this research is to develop a research agenda for teen driver behavioral safety countermeasures using the SHRP2 NDS data.

Status: Completed

BTS-09: INFLUENCE OF INFRASTRUCTURE DESIGN ON DISTRACTED DRIVING

Funds: $250,000

Contractor: Iowa State University

Overview: Whether because of habitual behaviors or immediate deliberate decision-making, drivers often engage in risky behaviors that shift attention away from the primary tasks of driving, increasing the likelihood of crashes. Features of the external world through which the person is driving can strongly influence the occurrence of distracted driving. Built structures are some of the important features in this world, and research is needed to determine the relationships between the presence, absence, location, or design of different built structures and the occurrence of distracted driving. The objective of this research is to develop and test a conceptual safety framework for evaluating the association between distracted driver behaviors and roadway and roadside infrastructure.

Status: Research underway

BTS-10: E-SCOOTER SAFETY ISSUES AND SOLUTIONS

Funds: $490,000

Contractor: University of North Carolina Highway Safety Research Center

Photo by MusicFox/Unsplash.

Overview: Research is needed for state and local agencies, and industry partners, to help manage the safety risks of e-scooters more effectively and efficiently. Knowing when and where risky behaviors may occur could inform injury prevention approaches, including education, training, enforcement, policy, and changes to the built environment. The objective of this research is to identify emerging behavioral safety issues arising from the expanding use of e-scooters, both rental and privately owned, and develop comprehensive guidance to help affected agencies plan for and mitigate related safety problems. The guidance

should include tools, policy alternatives, educational materials, institutional requirements, and other relevant techniques to mitigate if not eliminate identified risks.

Status: Research underway

BTS-11: ENSURING CHILD SAFETY IN FOR-HIRE RIDESHARE VEHICLES

Funds: $350,000

Contractor: Johns Hopkins Bloomberg School of Public Health

Photo by Al Soot/Unsplash.

Overview: In the United States, rideshare vehicle use offered by services such as Lyft and Uber, has increased dramatically in the last three years. According to the Pew Research Center, in late 2015, only 15% of those surveyed said they had used these services (one-third had never heard of ridesharing); by the end of 2018, 36% had used such services and only 3% had never heard of them. Rideshare use in urban and suburban areas seems certain to grow at a rapid pace. One issue that has received little attention is the transportation of children in rideshare vehicles, particularly child safety seat installation and use. Car seats, especially for toddlers and small children, can be bulky, heavy, and challenging to handle outside of the vehicle. Inside vehicles, the options for correct installation can be as varied as the combination of vehicles and car seats available, and multiple additional children adds to the complexity. Initial surveys that examined the issue suggest widespread regulatory inconsistency on child seat use and confusion on the part of parents and drivers. The objective of this research is to identify and prioritize the types of interventions needed to improve child passenger safety given the increasing shift to rideshare vehicles. The research should include analysis of current use, including challenges and decision-making factors, projected shifts to rideshare trips with car seat-aged children, as well as a scan of mandatory child restraint laws applicable to shared ride vehicles across the United States, leading to model regulations and outreach materials for parents and drivers of rideshare vehicles.

Status: Research underway

BTS-12: STATE PRACTICES PROMOTING OLDER DRIVER SAFETY

Funds: $300,000

Contractor: Cambridge Systematics

Overview: The most recent figures from the U.S. Census Bureau indicate that as of July 2015, there were 47.8 million people age 65 and older in the United States. That represents 14% of the total population. By 2060, that number is projected to more than double to 98.2 million, which will represent nearly one in four people living in the United States, and 20 million will be 85 or older. While older adults tend to practice safe driving behaviors, the effects of aging have a profound impact on their driving ability. What makes it difficult for highway safety countermeasures is that there is no specific date or time when any of these effects occur and to what degree someone can be affected. Aging impacts people differently, but the fact remains that older drivers represent 19% of all licensed drivers and accounted for 18% of the fatalities. The objective of this research is to determine what states are doing to promote older driver safety, the State Highway Safety Offices' (SHSOs') current roles and levels of involvement in supporting older driver safety programs, the challenges SHSOs are facing in this area, best practices, and what can be done to meet the safety needs of the 65 and older driver population.

Status: Research underway

BTS-13: COMMUNICATING SAFE BEHAVIOR PRACTICES TO VULNERABLE ROAD USERS

Funds: $500,000

Contractor: Virginia Tech Transportation Institute

Overview: In 2017, vulnerable road users (pedestrians, bicyclists, and motorcyclists) accounted for 11,932 (32%) of the traffic fatalities in the United States. The diversity of these users complicates the design and implementation of

effective programs for communicating safe behavior practices. For pedestrian facilities, 20% were 65 or older, 18% were 14 or younger, 75% occurred during darkness, 80% occurred in urban areas, and 70% were males. Over the years, there have been numerous public communications campaigns designed to curtail high-risk behaviors in these populations, but given the growing number of fatalities, it is time to enhance our understanding of how behavioral safety messages are received by the target populations and what messages or marketing strategies are most effective at altering unsafe behaviors. For all three groups, an audience segmentation approach could present a significant opportunity to improve the impact of behavioral safety interventions at the individual, interpersonal, community, and societal levels. The objective of this research is to develop protocols for states to follow when designing and implementing a media or educational campaign that discourages high-risk pedestrian, bicyclist, and motorcyclist behaviors.

Status: Research underway

BTS-14/NCHRP 22-45: INFORMING THE SELECTION OF COUNTERMEASURES BY EVALUATING, ANALYZING, AND DIAGNOSING CONTRIBUTING FACTORS THAT LEAD TO CRASHES

Funds: $690,000 (jointly funded by BTSCRP and the National Cooperative Highway Research Program)

Contractor: Exponent

Overview: Research is needed to develop diagnostic tools that leverage crash, roadway, traffic volume, human factors, behavioral, socioeconomic, and demographic data, as well as non-traditional data sources in order to advance the state of the practice in crash diagnostics and countermeasure selection that consider both modal priorities and facility context. The objective of this research is to develop new tools for diagnosing contributing factors leading to crashes that will aid practitioners in selecting appropriate countermeasures in modally diverse contexts. The tools should address a wide variety of contributing factors leading to crashes (e.g., roadway, technological, behavioral, human factors, socioeconomic, demographic, weather, and land use) in order to further practitioner understanding of how to most effectively balance tradeoff decisions in a given modal priority and facility context.

Status: Research underway

BTS-15: HIGHWAY SAFETY STRATEGIES FOR RURAL AREAS

Funds: $300,000

Contractor: Western Transportation Institute | Montana State University

Overview: While rural areas account for about 30% of the total miles traveled and only 19% of the population lives in rural areas, nearly half of all traffic fatalities occur in rural areas. Although this certainly shows a need to improve road safety in rural areas, numerous constraints and resource limitations hinder current safety efforts. For example, in most states the vast majority of rural mileage is owned and managed by local governments. The 2012 Census of Governments found a total of 3,031 counties, 19,522 municipalities, and 16,363 townships in the United States. Most are either partially or entirely rural. In addition, the Bureau of Indian Affairs recognizes 573 American Indian tribes and Alaskan Native Villages in the United States. The sheer number of rural jurisdictions makes it difficult to assure that programs aimed at improving rural transportation safety are effective in reaching all areas. The large number of rural government units vary considerably in the way they are organized, their legal authority, and the available financial and human resources. The vast rural highway mileage is another challenge: rural crashes are often very dispersed, with a considerable degree of randomness in crash locations. This makes it very difficult to apply traditional crash reduction strategies that focus on "hot spots." The objective of this research is to develop a behavioral safety toolkit that can help rural practitioners reduce the burden of traffic fatalities and serious injuries by applying Vision Zero and other techniques to (1) identify effective methods for organizing multidisciplinary, inter-jurisdictional road safety groups to address the fragmentation of resource constraints of rural communities; (2) review the knowledge of cultural factors that affect road safety; (3) identify best practices to address risky driving behaviors and develop successful

techniques for influencing personal behaviors that contribute to rural crash risk reduction; and (4) develop guidance to de-stigmatize alcohol use disorder (AUD) treatment, and identify unconventional channels for distributing AUD treatment information.

Status: Research underway

BTS-16: DEVELOPING ON-ROAD DRIVER SKILLS TEST AND SCORING GUIDANCE FOR MEASURING AND PREDICTING HIGH SAFETY RISK TEEN DRIVERS

Funds: $650,000

Contractor: TBD

Overview: On-road tests during drive licensure are conducted to assure that drivers have basic skills to operate a motor vehicle unsupervised. In the United States, driver training curricula offer minimal practice and skill development to pass the on-road skill test. Despite the prominent role of experience in motor vehicle crashes, much more attention has been paid to the post-licensure "problem" driving behaviors of adolescents, and scant attention has been paid to the pre-licensure or permit phase. The objective of this research is to evaluate and measure the effectiveness of the current on-road driver skills tests and test scoring methods and develop guidance that includes methods for on-road driver skills test administration and scoring that predicts high safety risk.

Status: Anticipated

BTS-17: IS COMBINED HIGH VISIBILITY ENFORCEMENT (HVE) EFFECTIVE?

Funds: $300,000

Contractor: TBD

Overview: The National Highway Traffic Safety Administration (NHTSA) has conducted a single evaluation of a combined traffic safety enforcement program – More Cops More Stops – in Oklahoma and Tennessee. The evaluation found some positive outcomes but found no evidence for enhancing the effects of the Click It or Ticket and Drive Sober or Get Pulled Over campaigns. The objective of this research is to draw lessons from the evaluation of More Cops More Stops to structure alternative evaluation methodologies to determine the benefits and disadvantages of combined traffic enforcement and media efforts.

Status: Anticipated

BTS-18: UNDERSTANDING THE EFFECTIVENESS OF PUBLIC AWARENESS EDUCATIONAL CAMPAIGNS

Funds: $400,000

Contractor: TBD

Overview: Some states have launched new behavioral-based traffic safety campaigns focused more on public awareness, education, and individual responsibility rather than enforcement to change unsafe driver behavior. One example is Missouri's Buckle Up, Phone Down program, an initiative that asks individuals and organizations to increase two behaviors: always using a seat belt when riding in a vehicle and always putting down the phone while driving or walking. The objective of this research is to provide State Highway Safety Offices with evidence of the effectiveness of educational public awareness campaigns and their essential components.

Status: Anticipated

Photo by Alexandria Gilliott/Unsplash.

BTS-19: MOPED AND MOTOR SCOOTER (50 CC OR LESS) SAFETY: ISSUES AND COUNTERMEASURES

Funds: $350,000

Contractor: TBD

Photo by End Injury/Unsplash.

Overview: There are few studies examining the risk factors for moped and motor scooter crashes in the United States. The objective of this research is to investigate safety issues unique to moped and motor scooter riding and connect those findings with practical policy recommendations and educational programs. The research will use national and state traffic crash databases to determine the types of crashes and injuries most associated with motor scooter and moped use. The research will also develop a web-based tool that will allow stakeholders to create social media graphics, posters, and other visual content to improve safety.

Status: Anticipated

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