

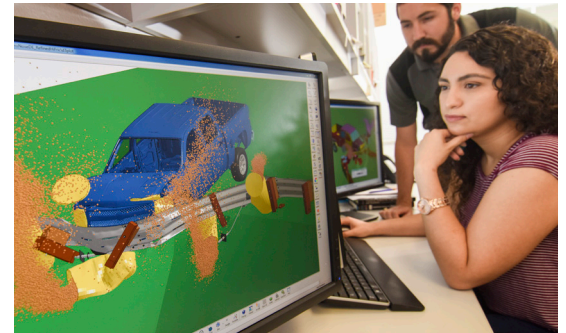
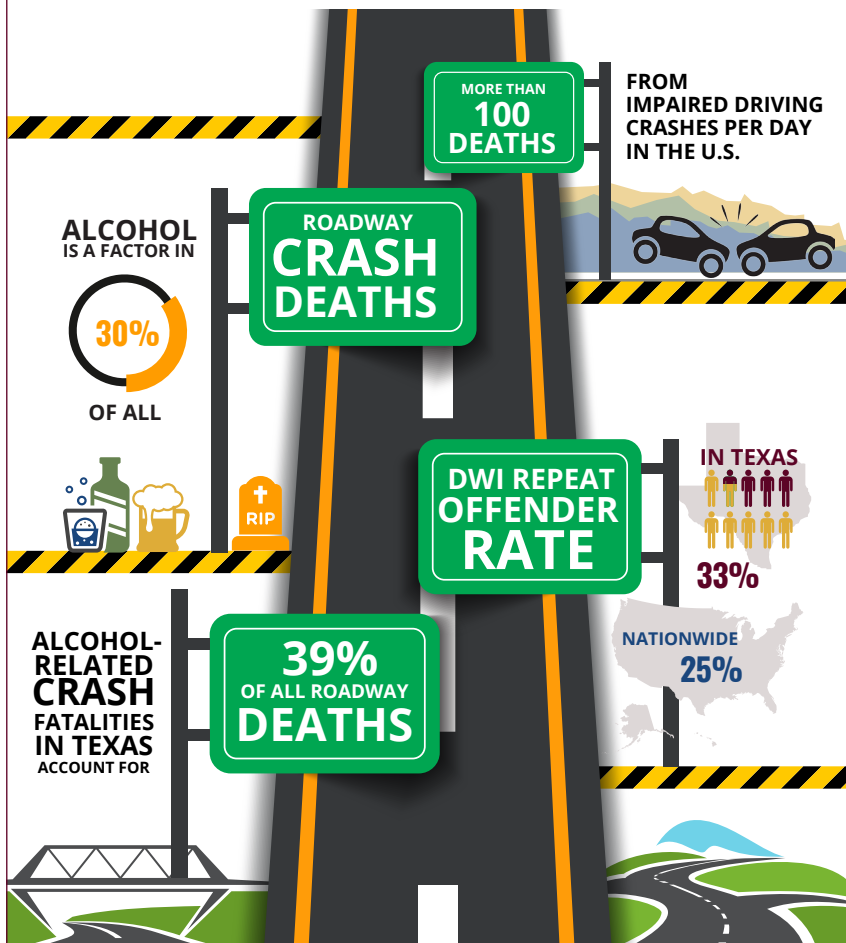


Alcohol and Drug Impacts

Despite public awareness efforts and stricter traffic laws, thousands of Americans die each year in crashes that involve impaired drivers. Researchers in TTI's Center for Alcohol and Drug Education Studies are working to better understand the roadway safety implications of drug and alcohol use and impart that knowledge to the public policy and judicial communities along with other stakeholder groups.

WHAT WE KNOW

Grasping the severity of driver impairment



WHAT WE DO

Channeling multi disciplinary expertise

Our staff bring forth a unique combination of experience and understanding in alcohol/drug traffic safety impacts, law enforcement and judicial procedure, and crash analysis and reconstruction.

We are skilled in the research disciplines of problem investigation, training, and curriculum and instructional design, and well versed in the physiological effects of blood-alcohol concentration and cannabis use.

We work to better comprehend the connections involving traffic safety, public health and criminal justice to save lives and enhance community health.

WHAT WE DELIVER

Gathering insight to enhance systems



Essential Education: Marijuana and Driving

Our staff designed and delivered educational initiatives to increase public awareness of how marijuana use affects driving. This project aimed to meet a call from the National Highway Traffic Safety Administration to increase public education about marijuana and was highlighted as a high priority for the Texas Department of Transportation.



Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses

This project sought to change behaviors related to pedestrian and bicycle safety by engaging students, staff and law enforcement on a large university campus regarding existing pedestrian and bicycle laws. Researchers conducted field and/or electronic interviews with pedestrians/bike road users to identify how safety can be improved. Field observations assessed pedestrian/bike crash risk factors, and researchers addressed data limitations that curtail the advancement of safety practices that eliminate pedestrian/bike crash deaths and injuries. Deliverables include recommendations for improving safety through enforcement of safety laws.



Training and Assistance for Criminal Justice Professionals on DWI Treatment Interventions

We are designing and delivering training to increase awareness of impaired driving and its complications. This project will also provide direct technical assistance to probation departments, the primary provider of interventions and referring bodies of DWI defendants in the state.



Texas Impaired Driving Task Force

We oversee coordination of the Texas Impaired Driving Task Force, the Texas Impaired Driving Plan, and the Texas Impaired Driving Forum, and provide other technical assistance. The task force brings together stakeholders from a diverse set of backgrounds to address the impaired driving challenge from multiple perspectives, including education, outreach, enforcement, prosecution, judicial, health, probation, treatment and research. The collaboration of key stakeholders from state and local levels allows the task force to assess statewide issues and close loopholes in enforcement, legislation and prosecution procedures.



Ignition Interlock Device Training, Outreach and Evaluation

We are providing trainings and educational materials to criminal justice and traffic safety professionals to increase use of ignition interlocks in Texas.



Blood-Alcohol Concentration Reporting in Texas: Improving Medical Examiner Office and County Performance

This effort sought to increase the number of known blood-alcohol concentration toxicology test results so that traffic safety professionals, governing agencies and those within the criminal justice system will better understand the impaired driving problem in Texas. The reported data would provide a more accurate depiction of the issue so stakeholders will be better able to adjust their reporting procedures and ultimately aid in improving toxicology reporting.

FOR MORE INFORMATION

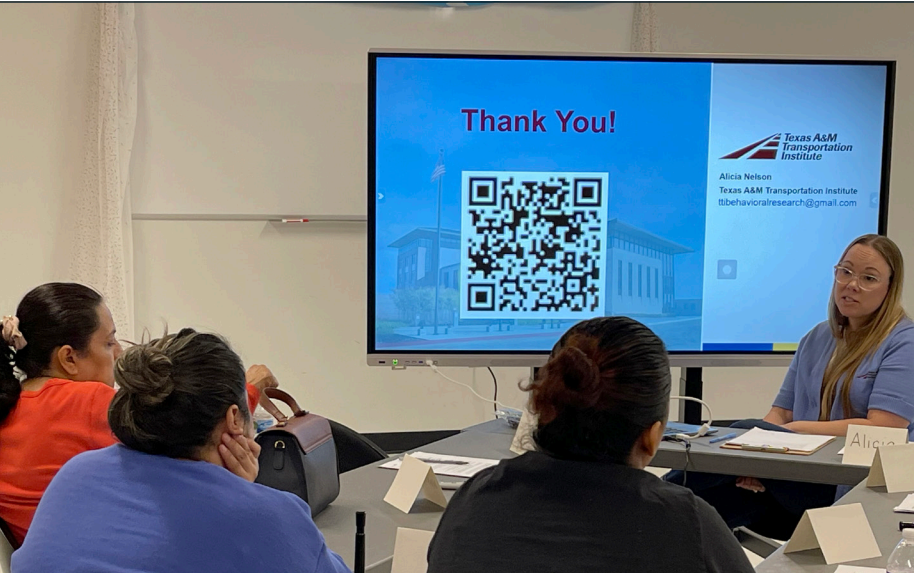


Center for
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Attitudes and Behaviors

Behavioral and attitudinal factors are prevalent underlying conditions of motor vehicle crashes. Studies of driver, passenger, and vulnerable road user behaviors and attitudes lead to a better understanding of how to effectively address these factors to create a safer traffic environment.

WHAT WE KNOW

Traffic safety is behavior driven.



Life-saving benefits of using seat belts are recognized by most but not all Americans. The national seat belt use rate in 2022 was 91.6 percent. The Texas seat belt use rate was 90.4 percent.



Correct use of child safety seats can reduce the risk of serious or fatal injury to infants by 71 percent and to children ages 1–4 years by 54 percent.



High-visibility enforcement campaigns have been shown to have a positive effect on driver and passenger behavior.



Distractions driving claims the lives of over 3,000 Americans each year. National, state and local agencies dedicated to improving traffic safety are focused on ways to change this high-risk behavior.



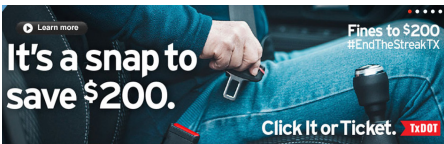
WHAT WE DO

Measure, Evaluate and Educate

The Behavioral Research team conducts a number of annual observational surveys to measure traffic safety behavior by motor vehicle drivers and passengers. These include surveys of statewide seat belt use, child restraint use, nighttime seat belt use, and statewide cell phone use; and urban area surveys of occupant protection and distracted driving using mobile communication devices. The team also conducts a variety of attitudinal surveys annually. We use carefully designed data collection methods to track and evaluate changes in behavior associated with countermeasure efforts. Our expertise extends to development of educational and public outreach material, curricula, and trainings that incorporate research findings.

WHAT WE DELIVER

Quantifying and exploring behavior



Click It or Ticket Evaluation Surveys

The Click It or Ticket enforcement mobilization campaign has been successfully implemented in Texas each year since 2002, publicizing high-visibility enforcement of the strong Texas mandatory seat belt law for all seating positions and child restraint use for children up to age eight. The effectiveness of the mobilization has been measured by the Behavioral Research team each year by conducting observational surveys of seat belt use before, during and after the increased enforcement period in 10 of Texas' major cities.



Law Enforcement Training on Pedestrian and Bicyclist Laws

Law enforcement officers receive a considerable amount of training on state laws and how to enforce them. However, specific training or instruction on laws pertaining to pedestrians and bicyclists can be limited, leaving many law enforcement officers unfamiliar with these laws and ill-equipped to conduct enforcement or properly respond to pedestrian- and bicyclist-related crashes. Similarly, there is little training on how to properly conduct pedestrian and bicycle safety enforcement, and on how to educate motorists, pedestrians and bicyclists during enforcement operations. Our team developed a curriculum to meet this need and conducts trainings for law enforcement agencies throughout Texas.



Statewide Mobile Communication Device Use Survey

Annual estimates of the statewide use of cell phones for talking and texting are determined for Texas using the controlled intersection method of the National Occupant Protection Use Survey as the basis for survey design and observation procedures. The rates are used as a performance measure for traffic safety programming and as a comparison with national trends in wireless communication device use.



Tapping into and Addressing Child Restraint Non-use in Texas

This three-year research and outreach project was designed to identify child safety seat non-users and their reasons for non-use, and to recommend countermeasures based on these findings. The study investigated child safety seat non-use by observation, questionnaire distribution, telephone interviews and focus groups. Age-appropriate educational materials, existing and newly created based on study findings, were provided to parents/caregivers on-site, and additional resources were made available.



Surveys of Nighttime Seat Belt and Cell Phone Use in Texas Cities

This is an ongoing project to measure occupant protection use during nighttime hours. The research initially included development of a survey design and protocol feasible for collecting seat belt use at night using curbside stationary observation. In FY 2021, the survey was expanded to include nighttime cell phone use, which is collected concurrently with seat belt use during the hours of darkness.



Outcome Evaluation of the Buckle Up Phone Down Campaign

To measure the effects of the Buckle Up Phone Down Campaign, the Behavioral Research team conducted a pre- and post-campaign observational survey of seat belt and cell phone use using a matched site sample design. Two program cities and two control cities were selected, and 5,000 drivers were observed during each time period. This National Highway Traffic Safety Administration-funded study is currently under way.


FOR MORE INFORMATION

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Human Capabilities and Performance

Amid the many elements of roadway safety involving laws and infrastructure, one thing remains constant — at the center of everything, **there is a driver**. The Center for Transportation Safety Human Capabilities and Performance team works to better understand how physiological and cognitive factors can affect driving ability.

WHAT WE KNOW

Understanding the road safety challenge



More than 90 percent of crashes are caused by human actions, which include impairment, inattention or risk taking.



In 2021, the **decision to be an unlicensed operator** was responsible for 53 percent of motorcycle crash deaths in Texas.



Drivers can react too slowly to threats because driver reaction time can be approximately three-fourths of a second while determining what to do, and acting on that decision can add an additional three-fourths of a second.



Age can differentially affect driving safety with younger drivers needing to learn to identify threats and older drivers needing to address declines in physical and cognitive functioning.



WHAT WE DO

Marshalling expertise to examine problems

Our staff is skilled in traditional research design, conduct and statistics. We examine how drivers gather information about their driving environment (perception), how drivers process information and make decisions (cognition), and how they act based on those decisions (behavior), and then we find ways to reduce the number of crashes.



Building knowledge to produce solutions



Telltale and Human Machine Interface Concepts in the Development of Trust and Mental Models in ADS

This project examines

- to what degree the traditional vehicle display icons (e.g., telltales) may still be applicable for vehicles equipped with automated driving systems and how drivers' understanding of automated driving systems (e.g., mental models) develop; and
- how they are impacted by trust.

Steps included literature review, documenting existing interface telltales, and a series of driving simulator studies.



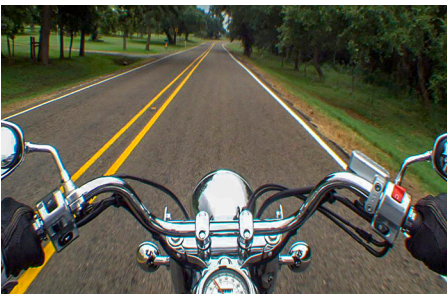
Increasing Rider Instructor Participation Rates in Texas

Roughly half of all motorcycle fatalities in Texas involve unlicensed riders, suggesting that they lacked basic education and training on motorcycle laws and safe handling. The problem is exacerbated by a shortage of motorcyclist instructors qualified to teach the Basic Rider Course and advanced courses. TTI is working to identify the underlying reasons why motorcyclists become instructors and why they don't. Results will inform and guide efforts aimed at recruiting more safety instructors.



Statewide Pedestrian and Motorist Outreach and Support to Address Pedestrian Safety Behaviors

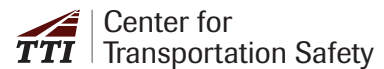
In 2020, there were 717 pedestrian fatalities in Texas, 8 percent more than a year before. Pedestrian deaths increased a staggering 68 percent from 2011 to 2020. This project brings together stakeholders in a statewide Texas Pedestrian Safety Forum to communicate trends and share safety countermeasures and also conducts the Texas Pedestrian Safety Coalition meetings to address the critical issues of alcohol involvement, pedestrian law awareness and nighttime crashes.



Statewide Motorist Awareness and Motorcyclist Safety Outreach and Support

Motorcyclists represent about 14 percent of all motor vehicle fatalities but only 1–2 percent of all vehicles. Crash contributors include both motorcyclist factors (e.g., alcohol use and excessive speed), and car/truck driver factors (e.g., turning left in front of motorcyclists). This project brings together stakeholders from across Texas — including motorcyclists, dealers, instructors, researchers, law enforcement, legislative staff, and emergency medical services — to pursue appropriate countermeasures.

FOR MORE INFORMATION



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Traffic Crash Analytics

To prevent vehicle crashes, we must first understand the causes and conditions under which they happen. By knowing the time, location, driver condition and myriad other factors involved in collisions, safety experts are far more able to design appropriate countermeasures.

WHAT WE KNOW

Discerning the nature of collision patterns.

TEXAS IN TOP 3 FOR COMMERCIAL VEHICLE CRASHES

3

3

MAJOR CRASH CONTRIBUTORS

alcohol, speeding and distractions

FATAL CRASHES OCCUR BETWEEN 3 p.m. and 9 p.m.

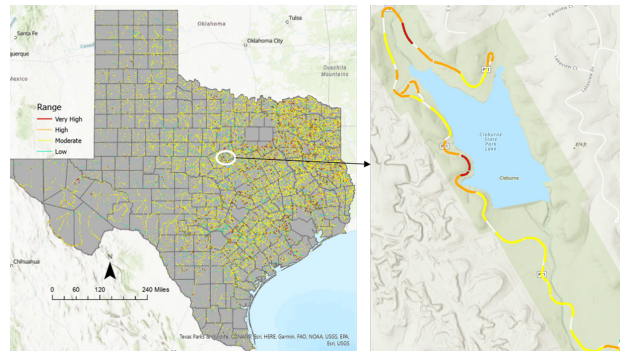
33%

50%

HALF OF ALL DRIVERS IN FATAL CRASHES WERE PREVIOUSLY IN A CRASH

30%

U.S. ROADWAY FATALITIES INCREASED OVER PAST DECADE



WHAT WE DO

Converting data to actionable knowledge

Our team uses data from a variety of sources, including state crash records and massive vehicle data sets, to create robust models and statistical analysis. The team specializes in linking crash data with important contextual information (e.g. weather data, roadway characteristics, citations and driver behaviors) and outcome data (e.g. EMS and hospital records for

those involved in crashes) to better understand crash circumstances and outcomes. From those raw statistics, we distill evidence and create insight in the form of usable maps, screening and systemic tools, and educational materials for drivers, engineers, fleet operators, law enforcement officers and other stakeholders to make safety-driven decisions.

WHAT WE DELIVER

Exposing clues and unlocking mysteries

Making Every Day Count: Applying Data-Driven Safety Analyses in a TxDOT District

Using a data-driven approach to analyze safety issues and projects will help Texas Department of Transportation (TxDOT) districts target safety investments with more confidence and reduce crashes on Texas highways. Many predictive and systemic analysis tools are now available that provide the means to quantify safety impacts in a similar way so that roadway capacity and operations, environmental impacts, drainage, and pavement life can be quantified. TTI developed a logical, practical, and data-driven framework for integrating these tools into practice within the TxDOT Beaumont District.

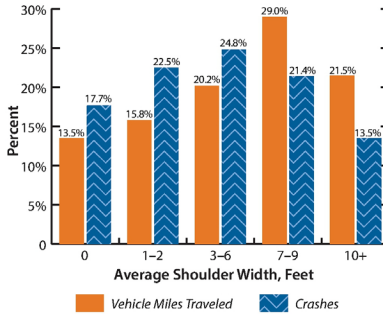


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Employer-Based Behavioral Traffic Safety Programs

An interactive web-based tool incorporates previous research, state-of-the-practice, and theory, along with planning aids such as an introduction to behavioral change theory, an overview of measures of program effectiveness, and a logic model template to aid program development and implementation.



Identification of Factors Contributing to the Decline of Traffic Fatalities in the United States

This research provided a multidisciplinary analysis of the relative influence of the types of factors that contributed to national decline in the number of highway fatalities and rates in the United States from 2005 to 2011. This research assisted transportation agencies and other safety stakeholders in optimizing resource allocation and strategic decision making to improve safety.

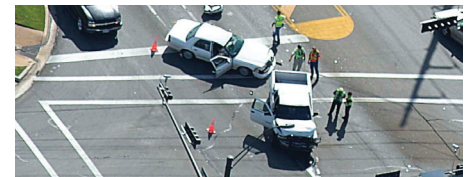


Calibrating the Highway Safety Manual Predictive Methods for Texas Highways

The *Highway Safety Manual* (HSM) contains safety performance functions (SPFs) that are used in project-level decision making for estimating the average crash frequency by severity level for existing conditions, alternatives to existing conditions, or proposed new roadways. However, SPF calibration is needed because most of the existing HSM SPFs were developed for states other than Texas. In addition, the HSM does not contain predictive models for frontage roads. Researchers derived reliable local calibration factors to apply to Texas roadways for most of the SPFs in the HSM. Researchers also developed an analysis spreadsheet tool to help practitioners implement the new models to facilitate analysis of all rural and urban roadway segments and intersections.

Crash-Reporting Resources for Law Enforcement Officers

The Crash Analytics team provides law enforcement roll-call videos, tip cards, and other resources that provide guidance on complete and accurate crash reporting in Texas.



Texas Traffic Records Coordinating Committee

The Crash Analytics team provides technical assistance to the Texas Traffic Records Coordinating Committee, a partnership of representatives from the transportation, law enforcement, criminal justice and health professions. This statewide group of stakeholders uses the committee as a forum for improving the state's traffic records system.



Improving Commercial Motor Vehicle Safety on Rural Roadways in Texas

To address large truck tractor and heavy truck/pick-up crashes on rural roadways in Texas, this project involved developing data-driven tools for drivers/fleet operators and law enforcement officers. These tools include information on risk factors for higher-severity crashes, an interactive data dashboard, and visualizations designed to identify rural roadways that are more prone to crashes involving trucks.

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