



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.



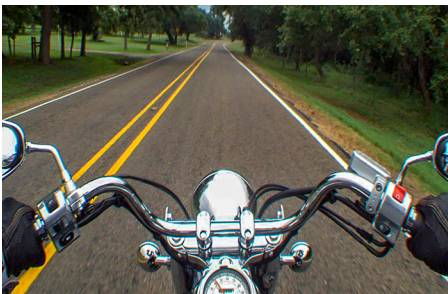
Increasing Rider Instructor Participation Rates in Texas

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

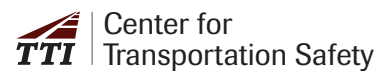
In 2020, there were 717 pedestrian fatalities in Texas, 8 percent more than a year before. Pedestrian deaths increased a staggering 68 percent from 2011 to 2020. This project brings together stakeholders in a statewide Texas Pedestrian Safety Forum to communicate trends and share safety countermeasures 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



Michael Manser, Ph.D.
 m-manser@tti.tamu.edu
 512-407-1172

<https://cts.tti.tamu.edu>

