INTRODUCTION
CENTER FOR TRANSPORTATION SAFETY

Established by the Texas Legislature in 2001, the Center for Transportation Safety (CTS) is the focal point for traffic safety research in Texas.

Although the state and nation have seen impressive recent declines in crash fatalities, the number of such deaths remains alarmingly – and unacceptably – high. The CTS is committed to further reducing the injury and death toll on our roadways. The Center’s staff pursues this mission through a program of research and outreach programs funded at nearly $5 million each year through contracts secured with state and federal governmental agencies, as well as private sector interests.

The work of the CTS is focused on developing safer roadways, ensuring safer vehicle occupants, and addressing the needs of high-risk groups. This report provides a summary of those efforts during 2011.
Advisory COUNCIL

The Center’s Advisory Council is composed of experts from numerous backgrounds representing both the public and private sectors. The Council meets once each year, and is responsible for providing feedback and guidance related to the Center’s research and outreach activity. Interest in transportation safety has grown considerably among policy makers, the traveling public and the news media in recent years. As a result, the input offered by the CTS Advisory Council will become increasingly important to the Center’s success.

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Professionals representing a broad range of specialties gathered for the Center’s annual Traffic Safety Conference, this year themed “We’re All in This Together”. Law enforcement, elected officials, health and emergency medical experts, national and state transportation leaders, and traffic-safety experts and researchers were able to share knowledge and insight, underscoring the fact that all of these groups of professionals have separate but equally critical roles in saving lives.

Highlights from the 2011 conference included:

- A roundtable discussion of the state’s most pressing traffic safety concerns, including former Texas State Senator David Cain.

- An examination of the impaired driving problem in Texas, with special emphasis on the potential for sobriety checkpoints as an effective countermeasure.

- A lunch session on the UN Decade of Action for Road Safety, from Dr. Bella Dinh-Zarr, Road Safety Director, FIA Foundation and North American Director, Make Roads Safe Campaign for Global Road Safety.

- Passionate testimony offered by Austin Police Chief Art Acevedo regarding law enforcement’s impact on changing the driving culture to improve safety.

- An examination of the growing problem of distracted driving, along with the associated debate that pits personal freedoms against increasingly well-documented safety concerns.
Safer ROADWAYS

IN THIS SECTION

• Updating the Texas Strategic Highway Safety Plan
• Examining the effects of one license plate versus two
  • Safety analysis in support of traffic operations
• Evaluation of photographic signal improvement projects
  • Improving BAC testing and reporting in Texas
  • Evaluation of highway safety improvement projects
• Evaluating training methods for the CRASH reporting system
• Creating a guide for fatal-crash reporting in Abu Dhabi
Updating the Strategic Highway Safety Plan

Troy Walden, Ph.D.

*Sponsor: Texas Department of Transportation*

CTS researchers were responsible for communicating with metropolitan planning organizations, councils of governments, regional planning councils, Texas police chiefs, sheriffs and emergency medical associations to present information on Strategic Highway Safety Plan activities at meetings across the state. CTS staff participated as active stakeholders at these meetings, promoting traffic safety and sharing information to generate public input concerning safety plan initiatives throughout the state. Using crash analysis and roadway data, researchers were able to provide insight into where, when, why and how crashes are occurring on Texas roadways. These efforts led to the production of a revised Strategic Highway Safety Plan for TxDOT’s consideration.

Examining the effects of one license plate versus two

Melissa Walden, Ph.D., P.E.

*Sponsor: 3M Corporation*

This project is evaluating the effects one rear license plate versus two license plates on vehicles have on the ability of law enforcement, tolling agencies and border patrol to identify vehicles and monitor traffic safety activities. Researchers will examine multiple states — two states that require one license plate and three states that require two license plates — through interviews with enforcement and tolling agencies as well as vehicle observation. Additionally, automatic license plate reader data will be examined in both types of states. Quantitative and qualitative data will be collected and analyzed to provide a thorough understanding of the issues surrounding the identification of vehicles.

Safety analysis in support of traffic operations

Troy Walden, Ph.D.

*Sponsor: Texas Department of Transportation*

TTI provided cross-correlation of various databases to identify and define crash trends. These databases include the Crash Record Information System (CRIS), the Texas Reference Marker (TRM) file including the Roadway/Highway Network Inventory (RHiNo) and the Texas Pavement Management Information System (PMIS) database. This effort allows sponsors to assess crash trends in order to recommend best-fit countermeasures that can be applied to reduce fatal and injury crashes. Once identified, these countermeasures can be used to form action plans that address state, national and international traffic safety problems. Additionally, CTS researchers provide crash analysis assistance to TxDOT as requested.
Evaluation of photographic signal improvement projects

Troy Walden, Ph.D.

Sponsor: Texas Department of Transportation

TTI provides assistance in analyzing data from across Texas regarding the effectiveness of red-light camera enforcement systems. The purpose of this project is to analyze and evaluate the effect that red-light camera treatments at signalized intersections have on reducing all crash types. For the past four years, TTI has performed annual assessments of red-light camera treatments, and a clear pattern has emerged that supports the safety benefit of using these types of systems. TTI has been recognized at the state, national and international level for its work in this area. Researchers will prepare an annual report of findings and report results to TxDOT.

Improving BAC testing and reporting in Texas

Troy Walden, Ph.D.

Sponsor: Texas Department of Transportation

CTS researchers performed an analysis of crash data in CRIS to determine drivers who were involved in alcohol-related crashes across all 254 counties in Texas. The data were used to identify which medical examiners and/or county coroners/justices of the peace are responsible for reporting blood alcohol concentration (BAC) results to TxDOT crash records. Researchers developed a process flow for the BAC-reporting responsibilities of medical examiners and justices of the peace who act as coroners, identified how each county handles toxicology testing related to crashes believed to be alcohol or drug related, and increased BAC reporting by medical examiners and justices of the peace acting as coroners.

Evaluation of highway safety improvement projects

John Mounce, P.E., Ph.D.

Sponsor: Texas Department of Transportation

TTI provides assistance to TxDOT by evaluating safety improvement projects funded through highway safety bonds. Evaluations are performed on the safety benefits, crash reductions, and verification and modification of crash-reduction factors associated with individual safety projects.
Evaluating training methods for the CRASH reporting system

Troy Walden, Ph.D.

**Sponsor: Texas Department of Transportation**

In this effort, researchers evaluate the current classroom training methods for law enforcement professionals learning about the crash-reporting system. By identifying new technologies and instructional methods, CTS researchers can make recommendations to TxDOT for technology-driven applications in CRASH training statewide. As members of the CRASH user group committee and CRASH project management committee, CTS researchers provide valuable user input about the system and guide the future development and implementation goals of CRASH.

Creating a guide for fatal-crash reporting in Abu Dhabi

Troy Walden, Ph.D.

**Sponsor: Abu Dhabi Department of Transport**

CTS research staff will apply their expertise in crash investigation and crash-site analysis to assist the Abu Dhabi Department of Transport in the development of a comprehensive set of procedures for fatal-crash investigation and post-crash-site inspection. After assessing the existing process for accident investigation, two separate guides outlining procedures will be developed. One of the guides will focus on the needs of the Department of Transport and will document information such as investigation procedures, data requirements and other topics. The other guide will target police who are tasked with responding and investigating fatal crashes. This document will highlight proper data collection and reporting procedures to facilitate effective crash analysis. CTS staff will also develop a process for analyzing crash data to identify potential engineering and behavioral solutions to reduce fatal and severe injuries associated with car crashes.
Safer Vehicle

IN THIS SECTION

• Tracking annual changes in seat belt use across Texas
  • Increasing nighttime seat belt use
  • Understanding driver usage of alternate routes
  • Conducting driver attitude and awareness surveys
• Assessing driver understanding of travel-time reliability
  • Determining the effects of texting while driving
  • Determining motivations for speeding
• Evaluation of Administration License Revocation process in Texas
  • Developing the statewide impaired-driving website
• Enhancing DWI prosecution through expert witness training
  • Developing alcohol ignition interlock curriculum
• Assessing effectiveness of public education on impaired driving
  • Evaluating breath alcohol ignition interlock devices
Tracking annual changes in seat belt use across Texas

Katie Womack

Sponsor: Texas Department of Transportation

The objective of this project is to conduct surveys of occupant-restraint, motorcycle-helmet and child-restraint use statewide and in selected urban areas of Texas. The statewide survey and sampling protocol meet the uniform survey criteria adopted by the National Highway Traffic Safety Administration (NHTSA), and therefore the results from this survey are used to estimate the annual statewide seat belt and motorcycle-helmet use rate. Through the findings, researchers can better understand how restraint and helmet use are impacted by various factors, including demographics, outreach and enforcement efforts. TTI’s annual measurement of seat belt use dates back to the mid-1980s, when usage rates were less than 25 percent, as compared to today’s rate of 93.7 percent. The surveys provide evidence of the success of public policy related to seat belts, as well as public acceptance.

Increasing nighttime seat belt use

Katie Womack

Sponsor: Texas Department of Transportation

Seat belt use among crash victims is generally lower at night than during the day. To estimate use levels among nighttime drivers and passengers, CTS researchers conduct surveys in 18 Texas cities. Surveys are conducted at intersections with ambient lighting during the nighttime hours of 10 p.m. to 5 a.m. The results will be compared to daytime seat belt use patterns in the same 18 cities.
Understanding driver usage of alternate routes

Laura Higgins
Sponsor: Wisconsin Department of Transportation

Researchers from TTI are working with the Wisconsin Department of Transportation in its efforts to determine the reasons for the low usage of marked alternate routes during freeway blockages. By conducting focus groups and surveys, TTI will help gain insight into driver thought processes and determine outreach methods to support more effective use of the existing infrastructure.

Conducting driver attitude and awareness surveys

Katie Womack
Sponsor: Texas Department of Transportation

Survey findings reveal high awareness levels for statewide traffic safety initiatives and support for tougher traffic safety laws. The survey is one performance measure recommended for tracking driver attitudes and awareness of traffic safety programs. In 2011, CTS conducted a survey of 2,156 Texans on the priorities of various traffic safety issues and on potential law or policy changes, knowledge of laws and penalties, perceptions of enforcement, awareness of recent enforcement and media campaigns, and self-reported behavior. Survey results indicated that Texans considered impaired driving the most serious threat to their safety on the roads; they favored strong enforcement, and were generally aware of anti drinking-and-driving media and enforcement efforts. However, just over half knew the legal blood alcohol concentration limit for intoxication in Texas. Self-reported seat belt use was high, as was knowledge and awareness of seat belt-related laws and enforcement.

Assessing driver understanding of travel-time reliability

Laura Higgins
Sponsors: Federal Highway Administration and American Association of State Highway and Transportation Officials

In the second phase of efforts to study driver understanding of travel-time reliability information and the best way to inform drivers of that information, TTI will conduct advanced laboratory studies nationwide. This effort will use results gathered from the previous year’s usability studies to compare selected terms to develop a bank of words that can be used to effectively communicate reliability information to drivers. Phase two will also include collecting data on driver understanding of graphical displays and testing audio and visual information.
Determining the effects of texting while driving

Christine Yager

**Sponsor:** Southwest Region University Transportation Center

In the first study conducted in an on-road environment with an actual vehicle, researchers examined the effect of both sending and receiving text messages while driving. The goals of this effort were to better understand the distraction potential of texting while driving, to determine how texting behavior varies according to driving demands, and to consider the effects of driver age and experience in texting while driving. Findings from the study confirmed previous research that suggested text messaging while driving results in slower response time and the higher likelihood of a crash. More specifically, results showed that writing a text message resulted in reaction times 2.5 times slower than not text messaging. Reading text messages delayed reaction time by a factor of 1.9. Research also found that text messaging while operating a vehicle affected driving speed and lane position.

Determining motivations for speeding

Laura Higgins

**Sponsor:** National Highway Traffic Safety Administration

In the first phase of this project, CTS researchers partnered with the Battelle Memorial Institute to monitor driver speeding behavior through global positioning system (GPS) records and travel diaries. Drivers from the Seattle area represented the urban population, and drivers from the area surrounding Bryan/College Station represented the rural population. From the initial data collection, researchers discovered that there was no single demographic that appeared to be frequent speeders. In phase two, focus groups were conducted in both locations with study participants. Researchers in each study area met with one group of speeders and one group of non-speeders to determine driver attitudes toward speeding, enforcement and motivations to reduce excessive speeding.
Evaluation of Administrative License Revocation process in Texas

Melissa Walden, Ph.D., P.E.

**Sponsor:** Texas Department of Transportation

In this effort, CTS staff are working to identify the strengths and opportunities for improvement within the current Texas Administrative License Revocation system (ALR). Researchers will determine the effect of ALR on deterrence of impaired driving; the deployment of the program is intended to change the behavior of the public based on the expectation that they will lose their driver license if caught for driving while intoxicated. To measure the process impact, surveys and focus groups will be conducted with the public to gauge awareness of the ALR process. Researchers will also evaluate the ALR hearing process and impact on criminal procedures, and contact a sample of individuals who are DWI offenders. The final report for this project will include the rationale for ALR along with a discussion of the history of ALR in the state. This background will provide stakeholders with the necessary perspective to understand the data and the associated analysis.

Developing the statewide impaired-driving website

Melissa Walden, Ph.D., P.E.

**Sponsor:** Texas Department of Transportation

CTS researchers provide technical assistance for the Alcohol and Other Drug Countermeasures Program. By performing tasks such as developing the statewide impaired-driving website, facilitating both an expert panel and a program partners working group, and developing educational materials, program directors are able to focus on maximum effectiveness.

Enhancing DWI prosecution through expert witness training

Maury Dennis

**Sponsor:** Texas Department of Transportation

Much work has been done in Texas to reduce the number of traffic crashes involving alcohol and other drugs; however, the percentage of fatal crashes in Texas is still 25 percent higher than the U.S. average. Even with new laws, it is often difficult to obtain convictions, due in many cases to the lack of ability to analyze, prepare and deliver information to judges and juries on the actual effects of alcohol and other drugs, increased risk of death as blood alcohol concentration rises, and the probability of crash responsibility when alcohol and/or other drugs are involved. Convictions are more likely when such information is explained thoroughly and effectively to juries. Even if a prosecutor is knowledgeable in this area, this information must be provided by someone other than the prosecutor, and few individuals have been trained to testify on this topic. Thus, there is a need to develop a cadre of professionals who can conduct expert witness analysis and provide testimony in alcohol/drug/traffic cases. To address this problem, CTS staff developed and refined an Expert Witness Training Curriculum which included a pilot study and two full-scale training sessions. The Expert Witness program successfully trained 26 individuals in expert witness analysis and testimony in alcohol/drug/traffic cases. Evaluation of the program showed an overall 19 percent knowledge increase and an overall program rating of 9 out of 10. CTS researchers will continue to provide training throughout Texas.
Developing alcohol ignition interlock curriculum

Maury Dennis, Ph.D.

Sponsor: Texas Department of Transportation

The goal of this effort is to better acquaint probation officers with ignition interlock devices and problems of alcohol related violations. Approximately 50 percent of persons on probation in Texas are there as a result of alcohol and/or drug offenses. In addition, previous efforts have shown that adult probation officers lack knowledge about the effects of alcohol/drugs on driving performance and lack knowledge or formal training related to ignition interlock devices. In 2011, preparations began to develop a Texas Department of Transportation (TxDOT) sponsored alcohol/ignition interlock course for adult probation officers to assist them in dealing with probationers who have alcohol related convictions. A survey was developed and administered to 76 probation personnel in two Texas counties to determine general knowledge, experience, and beliefs about ignition interlock. An analysis of the survey found that most adult probation officers felt they had limited knowledge about ignition interlock devices. Eighty-three percent of respondents reported that it would be worthwhile to have a brief Ignition Interlock program developed for probation officers. CTS researchers are working in conjunction with an ignition interlock device provider to facilitate training sessions for probation officers. This project is being conducted in Conroe, Houston and Bryan with an ultimate goal of taking this training statewide in order to further equip and aid Texas probation officers.

Assessing effectiveness of public education on impaired driving

Lee Ann Bell

Sponsor: Texas Department of Transportation

The objective of this project is to identify the effectiveness of education programs on awareness of alcohol-impaired driving. A comparative study is being performed to determine if behavior changes as a result of such an active campaign, compared to two locations with no campaign. Researchers are in the process of collecting data, such as call volumes and arrest data, from multiple places to determine the level of impact. Additionally, focus groups have been conducted to obtain feedback and understand the general impression of the campaign and its materials since its inception. The findings will be presented to the local police agencies and citizens.

Evaluating breath alcohol ignition interlock devices

Lee Ann Bell

Sponsor: Texas Department of Transportation

This research effort is aimed at examining the differences and similarities of judicial monitoring and probation officer monitoring of DWI offenders who are ordered to install an ignition interlock device on a vehicle, in both rural and urban areas. The findings from surveying judges and probation officers and gathering courthouse records indicate that urban counties have specific advantages with regard to monitoring offenders because of the division of departments, which provides several outlets to monitor offenders. Currently, surveys and courthouse records are being examined to determine if the location of ignition interlock service centers has an impact on whether a judge orders a defendant to install an ignition interlock device.
High-risk Groups

IN THIS SECTION

- Increasing recruitment and retention of motorcyclist safety training instructors
  - Evaluating ways to reduce motorcycle crashes in Texas
- Developing law enforcement motorcycle safety and awareness training
- Implementing a motorist awareness and motorcycle safety campaign
  - Expanding the Teens in the Driver Seat program
Evaluating ways to reduce motorcycle crashes in Texas
Patricia Turner
Sponsor: Texas Department of Transportation
The objective of this project is to assist TxDOT in preventing and mitigating motorcycle crashes by developing a broad-based plan containing countermeasures and outreach activities. Researchers will examine existing and emerging technologies, crash patterns and injury outcomes, and will identify outreach avenues to determine recommended countermeasures. Ultimately, this toolbox of solutions has the potential to reduce motorcycle-related injuries and fatalities as well as provide baseline information to track the future effectiveness of implemented programs.

Implementing a motorist awareness and motorcycle safety campaign
Patricia Turner
Sponsor: Texas Department of Transportation
Over several years, TTI has worked with TxDOT and TxDPS to develop and promote public information messages and educational materials for drivers and riders to improve motorcyclist safety and reduce the number of motorcycle crashes and related injuries. This project continues these efforts through the implementation of a statewide motorist awareness and motorcyclist safety outreach program. The project includes updating/developing motorist and rider awareness materials, including those associated with the Look Twice for Motorcycles, Take the Course, Ride Safe and Drink, Ride, Lose. campaigns; facilitating meetings, including the annual motorcycle safety forum, for the Texas Motorcycle Safety Coalition (TMSC) and its board and standing committees; maintaining and updating the motorcycle safety website, www.looklearnlive.org; and distributing and promoting campaign materials and messages at public events, motorcycle gatherings, rallies and conferences.

Developing law enforcement motorcycle safety and awareness training
Patricia Turner
Sponsor: Texas Department of Transportation
This project involves converting the State of Texas Law Enforcement Motorcycle Safety and Awareness Training course developed by CTS staff from a classroom-based curriculum to a web-based training program. The curriculum informs officers about motorcycle laws, safety issues and enforcement strategies to aid in reducing motorcycle crashes and injuries. A web-based training program will support the goal of reaching a larger number of Texas peace officers more efficiently.
Expanding the Teens in the Driver Seat program

Russell Henk, P.E.

**Texas Sponsors:** Texas Department of Transportation and Houston-Galveston Area Council

**Texas Partner:** State Farm Insurance

**Other State Sponsors:** Georgia Department of Transportation, California Highway Department and Connecticut Department of Transportation

**Texas**

The Teens in the Driver Seat (TDS) initiative steadily continued its growth across Texas in 2011. TDS is the nation's first peer-to-peer program focused solely on teen driver safety. The program is different from other teen driver safety initiatives in several ways. It focuses on the most common dangers for young drivers: driving at night; distractions such as cell phones, texting and too many teen passengers; speeding; lack of seat belt use; and driving under the influence of alcohol/drugs. The program relies on the teen audience to both develop and deliver safety messages to their peers. The program also encourages ongoing, year-round distribution of safety messages among young people and creation of a safety culture. The program is fundamentally designed to augment and reinforce a state's graduated driver license law. During 2011, the TDS program grew to be active in nearly 550 schools in Texas. The program has been designated as a national best practice for teen driving safety for the past three years in a row.

**Other States**

The success and expansion of TDS in Texas has led to the program being spread to other parts of the United States. The program is in nearly 100 schools in other states, including California, Connecticut, Georgia, North Carolina and Montana. This year, TDS-Georgia had its first TDS Teen of the Month, the first Georgia teen was elected to the TDS Teen Advisory Board, and two Georgia schools were named TDS Outstanding Schools.
Expanding the Teens in the Driver Seat program

TDS—Jr. High

Russell Henk, P.E.

**Sponsor: Texas Department of Transportation**

Teens in the Driver Seat Jr. High is a peer-to-peer Texas program designed to help junior-high-aged students be safer car passengers and teach them how to be safer drivers, even before they start to drive. The more this age group knows about the dangers that cause teenage drivers to crash, the more they can help prevent those crashes just by doing what is safe and smart. By learning the risk factors for teen drivers now, good habits will already be established before they start to drive. The program also focuses on how the top five risk factors (driving at night; distractions such as cell phones, texting and too many teen passengers; speeding; lack of seat-belt use; and driving under the influence of alcohol/drugs) apply.

U in the Driver Seat

Russell Henk, P.E.

**Sponsors: Texas Department of Transportation and Southwest Region University Transportation Center**

U in the Driver Seat is a peer-to-peer safety program for college students and addresses the persistent problem of alcohol-impaired driving. Car crashes are the number-one killer of young people in America, and for the college-age population, alcohol use stands out as one of the most common contributors to these crashes. The scope of the problem is especially severe in Texas. According to NHTSA, nearly 12,000 people nationwide were killed in alcohol-related crashes in 2008, and 1,463 of them died in Texas — the highest total of any state. In an effort to reverse this alarming trend, TTI has developed a peer-driven outreach program focused on this increasingly high-risk group. The program is modeled after TTI’s successful TDS program. CTS was also the recipient of a second grant for the U in the Driver Seat program that focuses on all five of the top risks, including alcohol, identified for college drivers. While the highest driving risks are the same for all drivers under age 25, the percentages vary with life stage, and it is important to educate college students on all of the common dangers.
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