



**Crash Data Abstract for Fiscal
Years 2009 and 2010
Recommended Countermeasures
to Improve Highway and
Bridge Safety**

PREPARED BY THE
TEXAS DEPARTMENT OF TRANSPORTATION
PURSUANT TO TRANSPORTATION CODE, SECTION 201.806
125 E. 11TH STREET
AUSTIN, TEXAS 78701-2483

DECEMBER 15, 2010

**Report to the Governor and Members of the 82nd Texas Legislature:
Conclusions, Findings and Recommendations of the
Texas Department of Transportation for Decreasing Highway
Crashes and Increasing Highway and Bridge Safety**

Background

Improving the transportation safety of the traveling public has always been the Texas Department of Transportation's (TxDOT) most critical mission. Our key objectives include lowering the state's traffic fatality rate and the total number of traffic fatalities and injuries. Texas seeks to accomplish this through the continued development of a safety culture within the agency, expanded use of safety construction, improving work zone safety, development of an innovative behavioral Traffic Safety Program, incorporating safety planning into every aspect of construction and maintenance, and working closely with a wide range of transportation safety stakeholders.

Transportation Code, Section 201.806, requires the Texas Department of Transportation (TxDOT) to periodically report statistical information on motor vehicle crashes as well as for any fatalities caused by a bridge collapse to the Governor and the Texas Legislature.

As required under the statute, TxDOT publishes summary statistical data as derived from motor vehicle crash reports annually on the agency website. This data may be viewed for years 2003 to 2009 at the following location:

http://www.txdot.gov/txdot_library/drivers_vehicles/publications/crash_statistics/default.htm

Section 201.806 also requires TxDOT to submit a report in even numbered years providing a statistical abstract of crash data for the preceding biennium as well as the department's conclusions, recommendations, and findings for decreasing crashes and improving highway and bridge safety.

This report includes narratives on highway and bridge safety, a statistical summary of crash data for fiscal years 2009 and 2010, and the department's recommended actions to make further gains in transportation safety.

Highway Safety

Traffic crashes and fatalities have been decreasing in Texas for several years as travel on Texas roads and highways continues to become safer. In 2001, Texas had 3,739 traffic-related fatalities. In 2009, this number had declined to 3,089. Between calendar year 2008 and 2009 alone, the total number of traffic fatalities declined by over 11%. During this same 2001 to 2009 time period, the statewide number of registered vehicles and total vehicle miles travelled increased significantly.

Although notable progress has been made in highway transportation safety, TxDOT fully understands that even a single traffic death in the state is too many and represents a preventable tragedy.

As part of our efforts to reach a national goal of zero traffic fatalities, TxDOT manages several programs that focus principally on improving transportation safety.

Texas Traffic Safety Program

The Texas Traffic Safety Program, enabled under Chapter 723 of the Transportation Code, is a federally-funded effort to reduce the number and severity of traffic crashes, injuries, and fatalities through education, training and enforcement. The 2011 program consists of a planned budget of approximately \$96.5 million for 330 traffic safety projects. We believe this program, designed to focus on modifying driver and passenger behavior, is a critical component in the department's effort to improve transportation safety.

The Traffic Safety Program provides grants to state agencies, private non-profit associations and local jurisdictions for projects focusing on areas such as occupant protection, selective traffic enforcement, driving while intoxicated prevention, traffic records, and roadway safety. The Traffic Safety Program's extensive public information and enforcement efforts helped safety belt usage in Texas reach approximately 94% in 2010. Texas also saw a decrease in DWI related traffic fatalities of approximately 5% between calendar year 2008 and 2009.

Texas Safety Bond Program

Section 222.003 of the Texas Transportation Code authorizes the Transportation Commission to issue bonds and other public securities to develop projects on the state highway system. These bonds are secured and payable from the state highway fund. Texas voters approved a constitutional amendment, Proposition 14, in September of 2003 that allowed TxDOT to use this method of debt financing.

The 80th Texas Legislature amended the law in 2007 to increase the maximum amount of bonds that the department may issue to \$6 billion with a maximum issue of \$1.5 billion per year. Of the total amounts of bonds that may be issued,

at least 20% (\$1.2 billion) must be used for safety-related projects that reduce crashes or correct hazardous locations on the state highway system.

In December of 2004, the Texas Transportation Commission approved 644 projects totaling \$605 million in funding in the 2005 Safety Bond Program to:

- widen 1,600 miles of narrow two-lane highway;
- install 740 miles of new concrete or cable median barrier between the main lanes of divided highways;
- install 171 new left turn lanes or two-way continuous left turn lanes on rural highways; and
- build 10 grade separations at existing highway intersections.

The Texas Transportation Institute estimated that these projects could save up to 90 lives and prevent 1,100 serious injuries per year. A one-year before and after analysis was performed on completed cable barrier projects and showed that these projects saved 18 lives and prevented 26 serious injuries. We believe that a similar number of lives will be saved in the future.

In February of 2009, the Commission awarded an additional \$600 million for:

- 164 projects to widen 588 miles of narrow highways;
- 290 miles of new cable or concrete median barrier between the main lanes of divided highways;
- 101 new left turn lanes or two-way continuous left turn lanes on rural highways;
- 9 projects to convert existing four lane undivided highways to four lane divided highways and construct additional shoulders; and
- 28 grade separations at existing highway intersections.

TxDOT believes that the Texas Safety Bond Program has the potential to save many lives and prevent thousands of injuries over the next 20 years.

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP), created under 23 USC §148, is a federal safety construction program designed to reduce the number and severity of traffic crashes. This program allows states to target funds to their most critical safety needs.

The HSIP has been extremely successful. Texas has experienced a 54% reduction in fatal crashes and a 38% reduction in injury crashes over the last four years at project locations. We have also seen a decrease in statewide fatal, incapacitating and non-incapacitating crash rates over the last five years.

The specific purpose of the HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on public roads. This is to be accomplished through the development and implementation of a state Strategic Highway Safety Plan (SHSP) intended to drive state HSIP investment decisions.

The Texas Strategic Highway Safety Plan (SHSP) identifies the serious crash types that the HSIP will focus on in order to meet the state's goals and objectives of reducing fatal and serious injury crashes in Texas. Projects selected for funding in the HSIP align with the goals and objectives identified in the SHSP.

During the last five years, TxDOT has programmed approximately \$500 million in HSIP construction contracts.

The High Risk Rural Roads (HRRR) Program is part of the Highway Safety Improvement Program (HSIP), and is also federally funded. The goal of this program is to achieve a significant reduction in traffic fatalities and serious injuries on rural roads. Projects in this program are limited to paved roadways with functional classifications of rural major or minor collectors, or rural local roads. Eligible roadways must have fatal and incapacitating crash rates that exceed the statewide average for the respective roadway functional classification. TxDOT programs approximately \$7.6 million per fiscal year through the HRRR Program.

Strategic Highway Safety Plan

The Texas Strategic Highway Safety Plan (SHSP), as discussed above, identifies the most critical transportation safety issues facing the State of Texas and the recommended countermeasures to improve transportation safety. These recommendations form the core of TxDOT's efforts to improve transportation safety and are included in this report as *Attachment B*.

The most critical countermeasures recommended for Texas in this plan include:

- Decreasing the number of run off the road crashes, crashes with fixed objects, rollover crashes, head on crashes, and intersection crashes;
- Improving safety in highway construction and maintenance work zones;
- Improving safety at highway-rail at-grade crossings;
- Improving safety for older drivers, teen drivers, motorcyclists, bicyclists, and pedestrians;
- Decreasing the incidence of driving under the influence of drugs and alcohol;
- Decreasing speed related crashes;
- Increasing the statewide rate of safety belt and child passenger seat use;
- Decreasing the number of crashes involving aggressive drivers;
- Decreasing the number of crashes related to cell phone use;
- Further development of the state's crash record system;
- Improvements to existing Emergency Services/911 reporting systems; and
- Continued improvements to public awareness for transportation safety issues.

Other TxDOT Efforts to Improve Highway Safety

TxDOT is also working to improve highway safety through the following actions.

- We continue to eliminate shoulder drop-offs through widening of narrow roadways and pavement edge improvements;
- We have improved highway signing and legibility by using new prismatic and fluorescent sheeting and through the use of the Clearview;
- We are installing shoulder, edgeline and centerline rumble strips where appropriate;
- We perform night and daytime reviews of highways in each TxDOT district every year to ensure that they are being properly maintained;
- We perform reviews of every fatal crash that occurs on the state highway system;
- We have upgraded the Texas Crash Records Information System and developed better tools to analyze crash data; and
- We continue to install lights and gates at approximately 170 highway-rail intersections per year under the Federal Railroad Signal Program.

Bridge Safety

A bridge collapse is defined in state law as the 'abrupt failure of the basic structure of a bridge that impairs the ability of the bridge to serve its intended purpose and that damages a highway located on or under the structure.' It is TxDOT's interpretation of the definition of a collapse to include collapses that result from an impact by a vehicle or marine vessel or from some other outside force such as water or flooding.

There were no fatalities caused by a bridge collapse in Texas as defined above that occurred during FY 09 (September 1, 2008 - August 31, 2009) or FY 10 (September 1, 2009 – August 31, 2010).

The safety of the traveling public is the number-one priority of TxDOT. This includes ensuring that all 51,000-plus bridges open to vehicular traffic in Texas are safe.

TxDOT is able to ensure our bridges are safe through a vigorous and robust bridge inspection program. Each structure must receive a routine safety inspection at least every 24 months, with those requiring additional attention receiving an evaluation more frequently. Additional inspections are conducted on bridges that have underwater elements at least every 60 months, and on bridges that are susceptible to fatigue damage at least every 24 months. These inspection frequencies are spelled out in the Code of Federal Regulations, 23 CFR 650.311.

TxDOT has historically inspected all publically owned, vehicular bridges in the State of Texas, regardless if owned and maintained by the state (on-system), or by a county, city or other local governmental entity (off-system). The findings and

recommendations generated during an off-system bridge inspection are provided to the local governmental entity that owns the bridge.

Inspections are carried out using a combination of in-house and consulting engineering resources. Approximately 95% of all routine safety inspections are outsourced to consulting engineering firms that have expertise in performing bridge inspections.

TxDOT manages 30 active engineering contracts used to perform routine safety bridge inspections and 2 active engineering contracts to perform fracture-critical inspections across the state. The Department also performs additional routine safety inspections and underwater inspections requiring diving with in-house personnel. The Department performs quality control reviews on inspection data that is submitted, maintains a state-wide bridge inventory database, provides inspection and maintenance recommendations to local governmental bridge owners, evaluates bridges for safety load carrying capacity, monitors the qualifications of inspection personnel, and makes a yearly submission of bridge inventory data to the Federal Highway Administration. The qualifications of individuals performing bridge inspections, including outsourced and in-house personnel, are monitored by TxDOT to make sure that the minimum requirements outlined in the Code of Federal Regulations are met.

After the collapse of the I-35 bridge in Minneapolis on August 1, 2007, many terms were used to describe the status of bridges. We often heard mention of 'unsafe' bridges or 'structurally deficient' bridges. It's very important to realize that these two terms are not synonymous. An unsafe bridge in Texas is closed to traffic. A structurally deficient bridge is open to traffic but is in good or better condition. In other words, structurally deficient bridges are safe.

The term 'structurally deficient' is used by the Federal Highway Administration to designate bridges eligible for federal funding. The fact that a bridge is classified as structurally deficient does not mean that it is unsafe for use by the public. A structurally deficient bridge is one with routine maintenance concerns that do not pose a safety risk or one that is frequently flooded. To remain open to traffic, structurally deficient bridges are often posted with reduced weight limits that restrict the gross weight of vehicles using the bridges.

The term 'functionally obsolete' is also used by the Federal Highway Administration to designate bridges eligible for federal funding. Classification as functionally obsolete means the bridge met current design standards when built, but over time has become obsolete due to an increase in traffic volume. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths or vertical clearance to serve current traffic demands or are occasionally flooded.

Relative to the number of bridges in Texas at any given time, our bridges are in better condition now than at any other time in our history.

The percentage of structurally deficient bridges is consistently decreasing. The percentage of structurally deficient on-system bridges has decreased from 2.4% in 2000 to 1% as of September 2010. The percentage of structurally deficient off-system bridges has decreased from 16.3% in 2000 to 7% as of September 2010. The count of structurally deficient on-system bridges has gone from 758 in 2000 to 305 as of September 2010. Likewise, the count of structurally deficient off-system bridges has gone from 2,637 in 2000, down to 1,248 as of September 2010.

In August 2001, Texas Transportation Commissioner John W. Johnson established a measure that required that within ten years, or by September 2011, at least 80% of the bridges in Texas be in good or better condition. As part of this initiative, TxDOT adopted an additional goal to accelerate the upgrade of all structurally deficient on-system bridges.

In 2001, 70% of Texas bridges were in good or better condition. By September 2010, we exceeded Commissioner Johnson's goal with 80.3% of Texas bridges in good or better condition. And as mentioned above, the number of structurally deficient on-system bridges is down to 1,248 statewide as of September 2010.

Finally, it is beneficial to see how the condition of Texas' bridges stacks up against other states. According to the November 2009 issue of Better Roads, Texas was 8th in the nation, along with Georgia and Iowa, for having the smallest percentage of structurally deficient on-system bridges. We are especially proud of this since Texas has more bridges than any other state. In addition, there were only twelve states with a smaller percentage of on- and off-system structurally deficient, functionally obsolete bridges.

Attachment A
Summary of Statewide Texas Crash Data

Summary of Statewide Texas Crash Data
for Biennium ending August 31, 2010

10-21-2010

9/1/2008 - 8/31/2009							
Type of Crashes	Fatal Crashes	Fatalities	Injury Crashes	Injuries	Non-Injury Crashes	Unknown Severity Crashes	Total Crashes
On State Highway System	2,144	2,413	86,284	134,148	134,923	4,236	227,587
Off State Highway System	857	903	71,835	106,554	117,919	14,661	205,272
DUI - Alcohol *	901	996	11,756	18,075	13,292	1,474	27,423
Speed Involved **	1,176	1,294	53,731	82,124	76,494	6,503	137,904
Involving a Pedestrian	383	392	4,484	5,110	87	6	4,960
Involving a Pedalcyclist	45	45	2,070	2,203	55	2	2,172
Bridge Collapse	0	0					

9/1/2009 - 8/31/2010							
Type of Crashes	Fatal Crashes	Fatalities	Injury Crashes	Injuries	Non-Injury Crashes	Unknown Severity Crashes	Total Crashes
On State Highway System	1,707	1,927	75,628	118,111	123,114	3,040	203,489
Off State Highway System	718	786	60,519	90,085	104,450	10,400	176,087
DUI - Alcohol *	777	871	11,180	17,231	12,331	1,179	25,467
Speed Involved **	716	802	42,808	66,316	66,096	3,963	113,583
Involving a Pedestrian	291	297	3,573	4,099	77	4	3,945
Involving a Pedalcyclist	41	42	1,629	1,716	68	0	1,738
Bridge Collapse	0	0					

* DUI - Alcohol - Defined as crashes where a driver had a Blood Alcohol Content (BAC) > 0.00 or a contributing factor of "Under Influence - Alcohol" or "had Been Drinking".

** Speed Involved - Defined as crashes with a contributing factor of " Speeding - Unsafe" or "Speeding - Overlimit" or " Failed to Control Speed".

Information contained in this report represents reportable data collected from Texas Peace Officer's Crash Reports (CR-3) received and processed by the Department as of the report date.

Attachment B
Recommended Safety Countermeasures

Crash Type and Location	
<i>Run-Off the Road (ROR) Crashes Crashes with Fixed Objects Rollover Crashes</i>	
Engineering	<ul style="list-style-type: none"> ▪ Increase the use of paved shoulders on FM roads to increase the “forgiveness” of the road during inadvertent lane departures. ▪ Continue to install shoulder and centerline rumble strips. ▪ Provide progressive levels of treatment for curves based on crash experience. Treatments might include; increase use of chevron signs, use of speed activated curve warnings and LED curve displays, and textured pavement. ▪ Install more pavement width to allow edge lines. ▪ Use 30 degree slope or Safety Wedge for pavement edges to facilitate returning to the roadway. ▪ Continue to remove trees, relocate utility poles, and protect culverts or remediate risks by other means.
Enforcement	<ul style="list-style-type: none"> ▪ Increase DUI and speed enforcement as a means of reducing run-off the road crashes.
Education	<ul style="list-style-type: none"> ▪ Ensure that driver education and defensive driving curriculums include information concerning curves, curve warnings, and behaviors that lead to ROR crashes, such as fatigue, distractions and overdriving curves.*
EMS	<ul style="list-style-type: none"> ▪ Reduce EMS response time in rural areas. This could require increasing coverage and/or providing EMS training of volunteers.
<i>Head-On Crashes Wrong Side-Not Passing</i>	
Engineering	<ul style="list-style-type: none"> ▪ Install more concrete and cable median barriers. ▪ Increase the installation of centerline rumble strips. ▪ Widen roadways to increase control and recovery areas. ▪ Address “wrong-way” entrance onto freeways by seeking novel delineation treatments and by taking advantage of freeway monitoring technology to detect “wrong-way” drivers.
<i>Intersection Crashes (Fail to Yield Right of Way)</i>	
Engineering	<ul style="list-style-type: none"> ▪ Consider the use of roundabouts to reduce the number of serious crashes. ▪ Implement engineering solutions to reduce red-light running, such as changes in signal timing (i.e., longer yellow, all-red phase, etc.) ▪ Eliminate limited sight distance on all roads. This includes high speed rural intersection and urban intersection where there are sight distance limitations due to vegetation, signing and other obstructions. ▪ Add more turn bays and acceleration lanes on high-speed rural roads. ▪ Enhance advanced warning at intersections through the use of signing and textured pavements.

* May require legislative action

Crash Type and Location	
Enforcement	<ul style="list-style-type: none"> ▪ Expand the use of red-light cameras by municipalities.
Education	<ul style="list-style-type: none"> ▪ Promote better access management polices and practices by educating consultants and developers on driveway regulation with regard to intersections and by coordinating driveway regulation among city, county and state engineers. ▪ Add information on gap acceptance and intersection crash frequency to a standardized driver education curriculum and to programs targeting elderly drivers.
EMS	<ul style="list-style-type: none"> ▪ Encourage the use of emergency vehicle signal preemption.
<i>Work Zones</i>	
Engineering	<ul style="list-style-type: none"> ▪ Reduce the number, duration, and impact of work zones. ▪ Improve work zone traffic control devices. ▪ Improve work zone design practices.
Enforcement	<ul style="list-style-type: none"> ▪ Improve driver compliance with work zone traffic controls through the use of law enforcement officers trained in enforcement procedures in work zones. ▪ Create safe, efficient enforcement areas when planning a work zone.
Education	<ul style="list-style-type: none"> ▪ Increase knowledge and awareness of work zones. ▪ Develop procedures to effectively manage work zones.
<i>Rail/Highway Safety</i>	
Engineering	<ul style="list-style-type: none"> ▪ Target high incident crossings for elimination or consolidation with other crossings. ▪ Continue to install warning lights and gates at public road grade crossings. ▪ Enhance passive crossing warnings with flashing lights and/or delineation posts for increased conspicuity and for channelization of traffic. ▪ Encourage signal preemption for intersection prior to rail grade crossings. ▪ Continue to eliminate at-grade railroad crossings by construction of overpasses and underpasses where appropriate. ▪ Continue to complete corridor studies to identify candidate crossings for closure, consolidation or elimination.
Education	<ul style="list-style-type: none"> ▪ Educate adult drivers and children on the dangers of at-grade railroad crossings.

System User	
<i>Older Drivers</i>	
Engineering	<ul style="list-style-type: none"> ▪ Improve signing, modify traffic control devices and pavement markings to accommodate older drivers, e.g., provide shoulder rumble strips, wider striping, illuminated street name signs.
Education	<ul style="list-style-type: none"> ▪ Improve driving competency of older adults by offering training programs. ▪ Communicate driving and licensing issues and alternative transportation options to older drivers and family members. (This communication should also include law enforcement and medical personnel and include educational materials regarding potential driving problems associated with aging and how to recognize them.) ▪ Develop community mobility resource guide.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Develop, implement and otherwise encourage public/private partnerships that provide transportation alternatives to the personal vehicle. ▪ Provide vouchers for alternative transportation options. ▪ Develop incentives for older drivers to adopt advanced vehicle technologies that could assist them with age-related driving problems, e.g., back-up warning devices. ▪ Improve links among driver records, vehicle registration information and physical/functional impairments and medical conditions affecting driving capability.
<i>Teen Drivers</i>	
Engineering	<ul style="list-style-type: none"> ▪ Develop means and methods for taking advantage of technological capabilities for external and in-vehicle surveillance and recording of vehicle information (speed, acceleration, hard braking, etc.), including incentives for voluntary use of "black box" devices for monitoring driving performance.
Enforcement	<ul style="list-style-type: none"> ▪ Increase enforcement of zero-tolerance alcohol laws for underage drivers. This would include filing DWI charges where appropriate instead of DUI by minor charges. ▪ Increase enforcement of graduated driver license (GDL) restriction violations and consider making violations a primary offense.*
Education	<ul style="list-style-type: none"> ▪ Conduct teen driver education programs in schools and elsewhere, including state-supported novice driver education and traffic safety-related teen awareness programs. ▪ Develop and implement distracted driving public information and education (PI&E) messages targeted to teens. ▪ Develop and implement educational programs and PI&E messages for parents of novice drivers, e.g., appropriate vehicle selection for new drivers, information about young driver risks, behavioral considerations, etc. ▪ Move away from parent taught driver education and return to sanctioned, supervised programs.*

* May require legislative action

System User	
Public Policy and Other	<ul style="list-style-type: none"> ▪ Evaluate the effectiveness of graduated licensing and alter as necessary, e.g., increase hours of nighttime driving restriction, require adult-supervised driving practice.*
<i>Motorcyclists</i>	
Enforcement	<ul style="list-style-type: none"> ▪ Target enforcement on specific motorcycle/motorist behaviors. ▪ Increase reporting of alcohol involvement in motorcycle crashes.
Education	<ul style="list-style-type: none"> ▪ Train police officers in the detection of impaired riders. ▪ Increase helmet and protective gear usage through education. ▪ Create education programs that address specific unsafe behaviors of motorcyclists, including alcohol issues. ▪ Conduct PI&E campaigns to increase motorist awareness of motorcycles, including helmet requirements, awareness of motorcycle presence, safe driving practices around motorcyclists (e.g., following and stopping distances, passing technique, etc), and the unique characteristics of motorcycles such as braking and acceleration differences between motorcycles and four-wheel passenger vehicles. ▪ Increase participation in rider education and training programs. ▪ Develop educational programs for justice system personnel with regard to motorcycle laws.
EMS	<ul style="list-style-type: none"> ▪ Increase participation of EMS personnel in helmet use advocacy.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Require the use of motorcycle helmets for all riders.* ▪ Enlist support of and participation in motorcycle safety initiatives by formal and informal motorcycle groups.
<i>Bicyclists</i>	
Engineering	<ul style="list-style-type: none"> ▪ Continue to support a comprehensive Safe Routes to School program. ▪ Integrate bicycles into the transportation system (improve connectivity.)
Enforcement	<ul style="list-style-type: none"> ▪ Increase enforcement of bicycle right-of-way traffic laws.
Education	<ul style="list-style-type: none"> ▪ Conduct bicycle training programs for school age children and adults using bicycles for both recreation and transportation. ▪ Increase motorist awareness of bicycles: "share the road." ▪ Conduct PI&E campaigns on bicycle traffic laws and the use of bicycle safety equipment for both bicyclists and non-biking motorists.
EMS	<ul style="list-style-type: none"> ▪ Increase participation of EMS personnel in helmet and other safety equipment use advocacy.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Encourage local ordinances regarding bicycle helmet use. ▪ Encourage municipalities to pas vulnerable road user statues.

*May require legislative action

System User	
<i>Pedestrians</i>	
Engineering	<ul style="list-style-type: none"> ▪ Improve signals, signs and crosswalk markings at intersections. ▪ Improve pedestrian environments through traffic calming. ▪ Increase the number of sidewalks and walkways in rural and urban areas. Needs are especially great in and around ports of entry. ▪ Remove impediments to walking on existing sidewalks. ▪ Increase sight distance to and from intersections and increase lighting at intersections and crosswalks.
Enforcement	<ul style="list-style-type: none"> ▪ Increase enforcement of pedestrian laws and public intoxication laws in urban and rural areas.
Education	<ul style="list-style-type: none"> ▪ Develop PI&E materials concerning pedestrian crashes and pedestrian and driver responsibilities, including appropriate actions following vehicle breakdowns. ▪ Develop programs to encourage safe walking rather than driving for appropriate trips.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Implement programs for removing disabled vehicles and their occupants from limited access highways and extending hours, especially at night, of existing “courtesy patrol” programs.
<i>Large Trucks</i>	
Engineering	<ul style="list-style-type: none"> ▪ Reduce driver fatigue-related crashes by providing center and shoulder rumble strips and truck parking areas. ▪ Increase use of heavy truck lane restrictions and consider implementation of “truck only” lanes in areas identified as having very high commercial vehicle volumes during concentrated, typically nighttime, periods. ▪ Create adequate storage for truck inspection stations in and around ports of entry.
Enforcement	<ul style="list-style-type: none"> ▪ Increase enforcement of commercial (i.e., truck) motor vehicle speed limits. ▪ Increase inspections of trucks for safety equipment and violations. Consider decreasing minimum jurisdiction size for conducting for Level 1 truck inspections.*
Education	<ul style="list-style-type: none"> ▪ Increase public knowledge about techniques for sharing the road with trucks and other vehicles. ▪ Conduct PI&E campaigns on heavy vehicle operational/performance limitations, rules, crash experience and restrictions. .
Public Policy and Other	<ul style="list-style-type: none"> ▪ Coordinate with Department of Homeland Security for funding inspection stations/personnel to staff.

* May require legislative action

User Behavior	
<i>Driving Under the Influence (Drugs and Alcohol)</i>	
Enforcement	<ul style="list-style-type: none"> ▪ Continue to use Selective Traffic Enforcement Programs (STEPS) to deter drunk driving. ▪ Limit the ability of drivers charged with DWI to plea bargain the charge down to a lesser offense. ▪ Increase training and the use of new technology to reduce DUI/DWI processing time of suspects. ▪ Increase enforcement of vehicle confiscation law. ▪ Increase enforcement of Zero Tolerance laws for underage drivers. ▪ Use warrants to obtain evidence when breath or blood tests are refused. ▪ Increase the use of interlock devices as a condition of bond for DWI, intoxicated assault, and intoxicated manslaughter. ▪ Develop and implement programs that provide rapid response for DWI reported by citizens. A dedicated phone number for reporting would be useful. ▪ Explore issues related to implementing sobriety check points.
Education	<ul style="list-style-type: none"> ▪ Continue PI&E campaigns to encourage people not to drive impaired. ▪ Develop bilingual, culturally appropriate, materials for anti-DWI campaigns. ▪ Educate judges and prosecutors concerning DWI laws. ▪ Educate legislators in regards to the financial burden and human impact of DWI. ▪ Develop, implement and maintain effective designated driver campaigns and programs.
EMS	<ul style="list-style-type: none"> ▪ Promote alcohol screening in trauma centers and emergency rooms.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Consider tougher penalties for drivers convicted of having blood alcohol concentrations of 0.15 or greater, if research demonstrates that such penalties do not adversely effect sentencing.* ▪ Require all drivers involved in fatal crashes to be tested for alcohol use.* ▪ Establish minimum sentencing for DWI offenses.* ▪ Re-evaluate, strengthen and create uniform enforcement of administrative license revocation (ALR) law.* ▪ Encourage expansion of DWI courts as a viable track for offenders. ▪ Improve BAC reporting through breath and/or blood testing. ▪ Explore ways to make DWI offenders less anonymous (zebra plates, public service appearances, etc).
<i>Speed Related (Over Limit, Unsafe Speed or Failure to Control Speed)</i>	
Engineering	<ul style="list-style-type: none"> ▪ Encourage the use of traffic calming (roundabouts, bumps, striping, etc.) in urban and rural areas. ▪ Reduce speed limits on roads with poor geometrics. ▪ Encourage the use of speed activated feedback or warning signs to increase compliance with speed limits. ▪ Increase the use of commercial motor vehicle truck lane restrictions and truck only lanes.

* May require legislative action

User Behavior	
Enforcement	<ul style="list-style-type: none"> ▪ Continue to use STEPs to deter speeding. ▪ Use minimally marked enforcement vehicles to enforce speed laws. ▪ Continue speed enforcement in school and work zones.
Education	<ul style="list-style-type: none"> ▪ Develop and implement PI&E campaigns targeting speed and speed-related behaviors (adjusting speed according to conditions, use the left lane for passing only, etc.). ▪ Encourage the addition of learning modules to driver education curriculums to address safe speed selection according to conditions.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Require tougher penalties for excessive speeding e.g., 20% or more above the limit) and in special corridors. Earmark a portion of the fines collected for state and local safety incentives.* ▪ Dedicate a portion of citation revenue back to enforcement efforts (like STEP programs) and other state and local traffic safety initiatives.* ▪ Encourage insurance companies to provide incentives to discourage speeding among their clients.
<p><i>Occupant Protection</i> <i>Lack of Seat Belt Usage in Serious Crashes</i></p>	
Enforcement	<ul style="list-style-type: none"> ▪ Continue to use STEPs to increase occupant restraint use.
Education	<ul style="list-style-type: none"> ▪ Continue PI&E campaigns to encourage occupant restraint use giving special attention to low use population subgroups. ▪ Develop PI&E materials with better instructions for child and booster seat installation. ▪ Increase the quantity of bilingual educational materials for safety belt and child seat campaigns. ▪ Promote community child seat checkup events and establish permanent checkpoints in local areas. ▪ Encourage and/or increase educational efforts focused on pre-drivers (school programs, roll-over convincers, etc.). Develop PI&E materials which provide better instructions for child and booster seat installation.
EMS	<ul style="list-style-type: none"> ▪ Encourage hospitals to ensure children are properly restrained before they are discharged.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Develop strategies to address nighttime belt use. ▪ Increase penalties for occupant protection violations.* ▪ Make non-use of safety belts and child seats a moving violation in Texas to encourage perennial non-users to buckle-up.*

* May require legislative action

User Behavior	
<i>Aggressive Drivers</i>	
Enforcement	<ul style="list-style-type: none"> ▪ Train law enforcement to recognize aggressive driving behaviors. ▪ Increase high visibility enforcement. ▪ Increase coordinated enforcement of aggressive driving.
Education	<ul style="list-style-type: none"> ▪ Conduct PI&E campaigns about aggressive driving and basic tips for dealing with an aggressive driver. ▪ Educate pre-drivers and those participating in defensive driving and driver education programs about aggressive driving and how to deal with such behavior. ▪ Educate aggressive drivers to remediate behavior.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Define aggressive driving for purposes of classifying crashes. ▪ Ensure data systems can accurately capture aggressive driving as a specific safety issue. ▪ Develop or access technology that can use vehicle data recording devices to capture aggressive driving activities of individual drivers. ▪ Enhance penalties for aggressive driving.*
<i>Cell Phone Usage</i>	
Enforcement	<ul style="list-style-type: none"> ▪ Train police officers to investigate and record cell phone usage as a contributing factor in crashes. ▪ Develop and disseminate educational materials to raise the awareness of the risks of cell phone use and driving.
Public Policy and Other	<ul style="list-style-type: none"> ▪ Develop a baseline for crashes related to cell phone use (voice or text messaging). ▪ Institute penalties for drivers using cell phones while their vehicle is moving.*

* May require legislative action

System Administration	
<i>Traffic/Crash Records</i>	
EMS	<ul style="list-style-type: none"> ▪ Supplement crash records with public health records (e.g., hospital discharge records) to obtain a clearer picture of the true societal costs of traffic crashes. The Texas Crash Outcome Data Evaluation System (CODES) project might serve as a model for such a records system.
<i>E911 Reporting Systems</i>	
EMS	<ul style="list-style-type: none"> ▪ The emergency medical services community should take the lead in pressing for the expenditure of already available funds to increase deployment of E911 systems in Texas.
<i>Public Awareness</i>	
Engineering	<ul style="list-style-type: none"> ▪ Involve Chambers of Commerce in identifying and addressing crash-prone traffic corridors.
Education	<ul style="list-style-type: none"> ▪ Announce forecasts of traffic casualties before holiday weekends. ▪ Work on the development of a “safety culture,” as has been done in Europe and Australia (with resultant dramatic reductions in traffic crashes.)
<i>Policy Maker Awareness</i>	
Education	<ul style="list-style-type: none"> ▪ Develop approaches/methods and support for disseminating information to policy makers, e.g. central dedicated web sites.