Texas Strategic Highway Safety Plan

Strategies, Countermeasures, and Action Plans

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TEXAS TOGETHER
on the Road to Zero

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TEXAS TOGETHER
on the Road to Zero

The development of the *Texas Strategic Highway Safety Plan* was led by the Traffic Safety Division of the Texas Department of Transportation working in conjunction with the Center for Transportation Safety at the Texas A&M Transportation Institute. Hundreds of safety stakeholders from across the state representing local, regional, and state agencies, law enforcement, industry and advocates, engineers, clinicians, and educators actively participated in the process.

Texas Strategic Highway Safety Plan

What do distracted, impaired, and speeding drivers, older road users, pedestrians, and lane departure and intersection crashes have in common?

They are the seven areas of greatest concern related to Texans dying or being seriously injured on our roadways.

Who's responsible for doing something about this?

We all are! Working together as professionals, citizens, drivers, pedestrians, bicyclists, motorcyclists, and passengers is the best way forward.

What can we do about it?

By advocating for or implementing strategies and countermeasures from the Texas Strategic Highway Safety Plan, and by understanding how we personally can lower risk by staying alert and sober, buckling up, being visible, wearing gear, and slowing down.

In 2017, about a dozen Texans lost their lives on average each day in traffic crashes. You probably have been affected personally by a traffic crash. As traffic volumes grow in response to our robust economy and the influx of new Texans each day, we need to find ways to decrease the risk for everyone using our roads.

This introductory guide to the *Texas Strategic Highway Safety Plan* (SHSP) provides information on each of the seven areas of greatest concern. Each area also is accompanied by a list of strategies developed through a collaborative process that bridged disciplines, travel modes, and public- and private-sector agencies and organizations across the state.

When you review the SHSP strategies and countermeasures, you will find ways you, your family, your organization, and your community can be involved. We invite you to join us On the Road to Zero, and we urge you to learn more about specific countermeasures you, your agency, or your community can adopt at www.texasSHSP.com.

Introduction

Strategies and Countermeasures

The SHSP has seven **emphasis areas**:

- Roadway and lane departures.
- Distracted driving.
- Intersection safety.
- Pedestrian safety.
- Speeding.
- Impaired driving.
- Older road users.

Within each emphasis area, safety stakeholders developed **strategies** associated with education and training, engineering, enforcement, and evaluating data. Members of the emphasis area stakeholder and management teams then generated more specific **countermeasures.** Participants initially ranked the countermeasures at the 2017 Texas Traffic Safety Conference, and the Emphasis Area Teams then refined these initial rankings.

The *Texas Strategic Highway Safety Plan* has seven **emphasis areas**.

Within each emphasis area are **strategies** and more specific **countermeasures**.

Some countermeasures have an **action plan** and **evaluation criteria**.

Emphasis Area Team members followed a set of principles while developing the countermeasures:

- To the extent possible, select proven effective countermeasures with a known cost benefit.
- Identify countermeasures with a large impact in terms of reducing the number of fatalities and serious injuries.
- Avoid countermeasures not feasible due to the inability to enact specific laws and policies, resource requirements, lack of expertise or sponsors, and unlikely public acceptance.

Action Plans

Action plans were developed for countermeasures based on the following criteria:

- Ensure that all strategies have at least one countermeasure with an action plan.
- Ensure that any additional Emphasis Area Team priorities are addressed.

For each action plan, Emphasis Area Team members identified the steps for implementation and key participants, and characterized each countermeasure's:

- Effectiveness.
- Cost to implement.
- Time to implement.
- Barriers that might affect implementation.

Team members used the following criteria for these evaluations.

Effectiveness

Assume each countermeasure will be implemented vigorously, publicized extensively, and funded satisfactorily. *Effectiveness* describes whether there are demonstrated reductions in crashes. If crash information is not available, are there changes in behavior or knowledge?

***	Demonstrated to be effective by high-quality evaluations with consistent results.
**	Likely to be effective based on the balance of evidence from high-quality evaluations and/or other sources.
*	Limited or no high-quality evaluation evidence.

Cost to Implement

Cost is difficult to measure, so the summary terms are very approximate. This does not include costs of enacting legislation or establishing policies.

$$$	Requires extensive new facilities, staff, equipment, or publicity, or makes heavy demands on current resources.
$$	Requires some additional staff time, equipment, facilities, and/or publicity.
$	Can be implemented with current staff, perhaps with training; limited costs for equipment, facilities, and publicity.

Time to Implement

The SHSP is a 5-year plan, so a countermeasure that takes longer than 5 years to implement is considered long term. This does not include time required to enact legislation or establish policies.

Long	More than 5 years
Medium	More than 1 year but less than 5 years
Short	Less than 1 year

Barriers

Identify any barriers or other issues that may arise and thwart countermeasure implementation. For every barrier identified, determine ways to overcome or address the issue.

Roadway and Lane Departures Strategies

Strategy Number	Description
1	Analyze run-off-the-road and head-on crashes and roadway characteristics using the new safety methodologies (e.g., *Highway Safety Manual* and systemic approaches).
2	Keep vehicles from encroaching on the roadside or opposite lane.
3	Minimize the consequences of vehicles leaving the road.
4	Minimize the likelihood of crashing in adverse conditions.
5	Identify and address behavioral characteristics associated with roadway departure.
6	Improve emergency response time in rural areas.

STRATEGY 1

Analyze run-off-the-road and head-on crashes and roadway characteristics using the new safety methodologies (e.g., *Highway Safety Manual* and systemic approaches).

Countermeasure

Focus	Number	Description	Action Plan
Improved data systems	1A	Improve data systems for targeting locations with a high probability of roadway departure crashes by road type, geometric characteristics, vehicle type, and area type.	✓

Improved Data Systems Countermeasure (1A) Action Plan

Improve data systems for targeting locations with a high probability of roadway departure crashes by road type, geometric characteristics, vehicle type, and area type.

Element	Description
Steps for Implementation	1. Identify critical information such as position prior to crash and position of point of impact to accurately identify roadway departure crashes and the actions that contributed to these crash types. (Participating organizations: Texas A&M Transportation Institute [TTI], Texas Department of Transportation [TxDOT], Department of Public Safety [DPS], and law enforcement agencies) 2. Enhance the standard crash report form (CR-3) reporting process by including the identified critical information. (Participating organizations: TxDOT and DPS) 3. Provide training to peace officers about the additional information in the CR-3. (Participating organizations: TTI, TxDOT, DPS, and law enforcement agencies) Identify a list of roadway elements by road type and area type needed in order to use the methodologies documented in the standard manuals such as the *Texas Roadway Safety Design Handbook*, *Highway Safety Manual*, the Federal Highway Administration's (FHWA's) *Systemic Safety Project Selection Tool*, and *Roadside Design Guide*. (Participating organizations: TTI and TxDOT) 4. Prepare a guidebook and provide training on how to collect additional roadway characteristics that are not in the existing databases but are needed for using the methodologies presented in the standard manuals. (Participating organizations: TTI, TxDOT, and city and county agencies) 5. Prioritize the cities and counties and roadway types for identifying problematic areas (consider a pilot project). (Participating organizations: TTI and TxDOT) 6. Collect roadway characteristics needed for using the methodologies. (Participating organizations: TxDOT and city and county agencies) 7. Analyze data by using the advanced methods to identify priority locations by vehicle type. (Participating organizations: TTI and TxDOT) 8. Disseminate data analysis results. (Participating organizations: TTI and TxDOT)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Long (5+ years)
Barriers	• Resistance to change the CR-3 reporting process. • Personnel needed to collect required roadway characteristics data. • Inconsistent results among various methodologies for prioritizing locations. • Funds to collect additional variables.

STRATEGY 2

Keep vehicles from encroaching on the roadside or opposite lane.

Countermeasures

Focus	Number	Description	Action Plan
Roadway configura-tion	2A	Revise roadway configuration to provide additional paved recovery area (e.g., convert four-lane roadways to three-lane roadways with design features compatible with surrounding land use context).	
Positive guidance	2B	Provide additional positive guidance (i.e., rumble strips, stripe lines, raised pavement markings, chevrons including light-emitting diode [LED] chevrons, curve delineators, speed feedback signs, edge lines and centerlines, and wider edge lines), and conduct public information campaigns to explain the purpose and how to navigate the roadway safely.	✓
Target speeds	2C	Establish target speeds and use engineering techniques to manage speeds in areas experiencing or susceptible to roadway and lane departures.	
Driver education	2D	Educate drivers about driving around trucks (e.g., avoiding trucks).	

Positive Guidance Countermeasure (2B) Action Plan

Provide additional positive guidance (i.e., rumble strips, stripe lines, raised pavement markings, chevrons including LED chevrons, curve delineators, speed feedback signs, edge lines and centerlines, and wider edge lines), and conduct public information campaigns to explain the purpose and how to navigate the roadway safely.

Element	Description
Steps for Implementation	1. Use safety screening methods to identify, prioritize, and select roadway segments where positive guidance devices may be effective in reducing roadway and lane departures. (Participating organizations: TxDOT and city and county agencies) 2. Select countermeasures based on cost, time to implement, and barriers for selected roadway segments and public input. (Note: A comprehensive listing of potential countermeasures grouped by cost and time to implement with effectiveness measures is posted at www.texasshsp.com.) Consider the needs of all users, including bicyclists and adjacent residents. (Participating organizations: transportation and law enforcement agencies, and public information officers) 3. Program funds for implementing countermeasures or incorporating them into existing projects. (Participating organizations: TxDOT, city and county agencies, and metropolitan planning organizations [MPOs]) 4. Implement countermeasures in new and existing projects. (Participating organizations: transportation agencies at state, city, and county levels) 5. Publicize countermeasures to build additional support for projects. (Participating organizations: media outlets, and principal investigators and staff at state, city, and county transportation agencies) 6. Evaluate effectiveness. (Participating organizations: TxDOT and city and county agencies) Note: See page 10 for a resource listing.
Participating Organizations	See above for each step.
Effectiveness	Various, ranging from * to ***
Cost to Implement	Various, ranging from $ to $$$
Time to Implement	Various, ranging from short to long
Barriers	• Adequate knowledge of screening methods. • Changing engineering practices about incorporating safety into projects and screening for existing issues. • Implementing countermeasures proactively before there is a problem. • Funding sources. • Providing for continuing maintenance.

DEFINITIONS FOR POSITIVE GUIDANCE COUNTERMEASURE (2B)

- **Reflective pavement marker**: The crash modification factor (CMF) ranges from a 33% reduction to a 43% increase in nighttime crashes—item 672 6006 is $2.50 each, and item 672 6010 is $3.00 each.
- **Edge lines:** Highway Safety Improvement Program (HSIP) Work Code (WC) 402 0.25, 2 years, CMF 8 reduction in all crash types with 11% to 13% reduction in run-off-the-road crashes—$0.43 per linear foot.
- **Wide edge lines:** 6-inch CMF 12% to 37% reduction in all crash types—$0.60 per linear foot.
- **Centerlines**: HSIP WC 404 0.65, 2 years, CMF crash reduction minimal but where placed in conjunction with edge lines, an approximately 24% reduction in all crash types—$0.40 per linear foot.
- **Milled edge line rumble strips:** HSIP WC 532 0.5, 10 years—CMF 16% to 17% reduction for all crash types—item 533 6003 is $0.15, and item 533 6005 is $0.59.
- **Profile edge line markings:** HSIP WC 533 0.6, 5 years—item 666 6283 is $0.38 per linear foot (4 inches) or $0.62 per linear foot (6 inches).
- **Raised edge line rumble strips:** HSIP WC 534 0.6, 2 years—item 6056 6001 is $2.75 per linear foot.
- **Milled centerline rumble strips:** HSIP WC 542 0.35, 10 years CMF 14% to 15% reduction for all crash types—item 533 6004 is $0.11.
- **Profile centerline markings:** HSIP WC 543 0.35, 5 years—item 666 6287 is $0.40 per linear foot (4 inches) or $0.64 per linear foot (6 inches).
- **Raised centerline rumble strips:** HSIP WC 544 0.35, 2 years—item 6056 6002 is $2.75 per linear foot.
- **Transverse rumble strips:** HSIP WC 545 0.15, 5 years, CMF at approach to intersection 33% reduction to 33% increase for all crash types—item 6056 6001 is $2.75 per linear foot.
- **Delineators:** HSIP WC 113 0.3, 2 years, CMF installed in combination with edge line and centerline marking results in 45% reduction in all crash types—item 658 2292 is $45 each.
- **Chevrons:** HSIP WC 137 0.25, 10 years, CMF installed with curve warning signs results in 31% to 44% reduction in all crash types—item 644 6007 is $650 each.
- **LED flashing chevrons:** HSIP WC 136 0.35, 10 years—item 6068 6001/6002 is $4,500 each.
- **Advance warning signals:** replace signs with signals HSIP WC 123 0.1, 10 years—item 685 6004 is $5,250 each.
- **Install advance warning signals and signs:** HSIP WC 125 0.15, 10 years, CMF 26% to 30% reduction in all crash types—item 685 6004 is $5,250 each.
- **Install advance warning signs:** HSIP WC 130 0.05, 6 years—item 644 6004 is $575 each.
- **Driver feedback signs.**
- **Install median barriers:** HSIP WC 201 0.55, 20, CMF any type of median barrier can result in up to a 24% increase in total crashes, but will reduce fatal crashes by up to 43% and injury crashes by up to 30%—varies depending on concrete, cable, etc.
- **Install raised medians:** HSIP WC 203 0.25, 20, CMF urban areas: 14% to 71% reduction in all crash types—varies depending on work.

- **Flatten side slopes:** HSIP WC 204 0.46, 20, CMF for cross-median, fixed-object, run-off-the-road, or other crash types in rural areas: 9% reduction up to a 9% increase in all levels of severity—varies depending on how much the slope is flattened.
- **Modernize bridge rails and approach guardrails:** HSIP WC 205 0.15, 10.
- **Improve guardrails to design standards:** HSIP WC 206 0.35, 10—estimated $110 per linear foot.
- **Safety-treat fixed objects:** HSIP WC 209 0.5, 20, CMF removed or relocated fixed object associated with a 38% reduction in all crash types—varies depending on work items.
- **High-friction surface treatment (curve):** HSIP WC 306 0.45, 3014 6001 $28 per square yard.
- **Widen lanes:** HSIP WC 502 0.3, 10, CMF widening rural lane widths from 11 feet to 12 feet results in a 5% reduction in all crash types—depends on how much and type of work.
- **Widen paved shoulders (to 5 feet or less):** HSIP WC 503 0.25, 20, CMF effectiveness varies by width but generally expected to reduce all rural crash types by 18% to 38%—depends on how much and type of work.
- **Construct paved shoulders (1–4 feet):** HSIP WC 504 0.25, 20, CMF results in approximately a 19% reduction in all crash and injury types—depends on how much and type of work.
- **Widen paved shoulders (to >5 feet):** HSIP WC 536 0.4, 20, CMF from 3 feet to 6 feet: 7% to 18% reduction in all crash types and severity types; widening greater than 6 feet results in increased reductions up to 8 feet—depends on how much and type of work.
- **Construct paved shoulders (≥5 feet):** HSIP WC 0.4, 20—depends on how much and type of work.
- **Road diet:** Revise roadway configuration to provide additional paved recovery area (e.g., convert four-lane roadways to three-lane roadways with design features compatible with surrounding land use context). CMF 19% to 25% reduction in urban crashes; approximate 47% reduction in suburban crashes.

STRATEGY 3

Minimize the consequences of vehicles leaving the road.

Countermeasure

Focus	Number	Description	Action Plan
Forgiving roadside features	3A	Implement barriers, median treatments, and forgiving roadside objects (e.g., use median barriers, safety-treat fixed objects, establish safe-clear policies, and improve slopes) with consideration given to land use context.	✓

Forgiving Roadside Features Countermeasure (3A) Action Plan

Implement barriers, median treatments, and forgiving roadside objects (e.g., use median barriers, safety-treat fixed objects, establish safe-clear policies, and improve slopes) with consideration given to land use context.

Element	Description
Steps for Implementation	1. Use safety screening methods to identify, prioritize, and select roadway segments where forgiving roadside features may be effective in reducing the consequences of roadway and lane departures. Include locations where improvements are already planned. (Participating organizations: TxDOT and city and county agencies) 2. Select countermeasures based on cost, time to implement, and barriers for selected roadway segments and public input. (Participating organizations: transportation and law enforcement agencies, and public information officers) 3. Program funds for implementing countermeasures or incorporating them into existing projects. (Participating organizations: TxDOT, city and county agencies, and MPOs) 4. Implement countermeasures in new and existing projects. (Participating organizations: transportation agencies at state, city, and county levels) 5. Publicize countermeasures to build additional support for projects. (Participating organizations: media outlets, and principal investigators and staff at state, city, and county transportation agencies) 6. Evaluate effectiveness. (Participating organizations: TxDOT and city and county agencies)
Participating Organizations	See above for each step.
Effectiveness	Various, ranging from * to ***
Cost to Implement	Various, ranging from $ to $$$
Time to Implement	Various, ranging from short to long
Barriers	• Adequate knowledge of screening methods. • Changing engineering practices about incorporating safety into projects and screening for existing issues. • Implementing countermeasures proactively before there is a problem. • Funding sources. • Providing for continuing maintenance.

STRATEGY 4

Minimize the likelihood of crashing in adverse conditions.

Countermeasures

Focus	Number	Description	Action Plan
Nighttime locations	4A	Identify locations subject to nighttime crashes. Examples are developing and using screening and systemic crash analysis tools to identify locations, providing additional roadway delineation, and providing roadway lighting.	✓
Wet-weather locations	4B	Identify and address locations subject to wet-weather run-off-the-road crashes.	✓

Nighttime Locations Countermeasure (4A) Action Plan

Identify locations subject to nighttime crashes. Examples are developing and using screening and systemic crash analysis tools to identify locations, providing additional roadway delineation, and providing roadway lighting.

Element	Description
Steps for Implementation	1. Develop a program analogous to the TxDOT Wet Surface Condition Reduction Program (formerly the Wet Weather Accident Reduction Program) specific to nighttime crashes. 2. Encourage the use of network screening techniques, such as those outlined in the *Highway Safety Manual* (HSM), to identify locations with high rates of nighttime crashes. This includes two components: • Identify and publicize existing training materials regarding HSM usage. • Develop new training materials as needed to specifically address nighttime crashes. 3. Automate the network screening process via a Microsoft Excel macro or other software tool. 4. Apply a systemic process to diminish relying on the public to identify traffic safety issues.
Participating Organizations	TxDOT; research agency or university, and city or county project managers; advisors; and safety contractors
Effectiveness	*** (automation will allow TxDOT employees to function more efficiently)
Cost to Implement	$$ (working within a Microsoft Excel framework may be cost effective; an external software tool may be most costly)
Time to Implement	Medium (need to tailor existing software to do what is needed)
Barriers	• Dedicated champions. • Buy-in from participating agencies. • Developing a simple yet reliable automated system. • Obtaining sufficient funding for development. • Obtaining sufficient funding for countermeasure implementation.

Wet-Weather Locations Countermeasure (4B) Action Plan

Identify and address locations subject to wet-weather run-off-the-road crashes.

Element	Description
Steps for Implementation	1. Identify advanced safety screening methods, such as those outlined in the HSM, to prioritize locations with high risk for wet-weather crashes. (Participating organizations: TxDOT and research agencies) 2. Combine the methods identified in step 1 with the TxDOT Wet Surface Condition Reduction Program to select top locations for treatment. (Participating organizations: TxDOT and research agencies) 3. Assess the road friction level at the time of the crash, and select countermeasures based on the contributing factor. For example, if the crash is due to lack of pavement friction, then a suitable high-friction treatment is needed. If it is due to oil spills, then a treatment that deals with the removal of oil spills is required. (Participating organizations: law enforcement agencies and research agencies) 4. Automate the network screening process and countermeasure selection via a Microsoft Excel macro or other software tool. 5. Program funds for implementing countermeasures or incorporating them into existing projects. (Participating organizations: TxDOT, city and county agencies, and MPOs) 6. Implement countermeasures in new and existing projects. (Participating organizations: transportation agencies at state, city, and county levels)
Participating Organizations	See above for each step.
Effectiveness	Various, ranging from * to ***
Cost to Implement	Various, ranging from $ to $$$
Time to Implement	Various, ranging from short to long
Barriers	• Adequate knowledge of screening methods. • Dedicated champions. • Developing a simple yet reliable automated system. • Funding sources.

STRATEGY 5

Identify and address behavioral characteristics associated with roadway departure.

Countermeasures

Focus	Number	Description	Action Plan
Curves	5A	Provide consistent curve treatments and advisory speeds for similar conditions.	✓
Automated speed enforcement	5B	Encourage adoption of laws that allow automated speed enforcement.	✓
Truck driver medical require-ments	5C	Encourage adoption of laws that change medical card requirements for truck drivers.	
Driving hours for truck drivers	5D	Encourage adoption of laws that require automated recording systems for trucks to monitor driving hours.	
Truck driver health and restrictions	5E	Encourage adoption of truck driver health checkups and driving restrictions.	

Note: renumbered from the original listing.

Curves Countermeasure (5A) Action Plan

Provide consistent curve treatments and advisory speeds for similar conditions.

Element	Description
Steps for Implementation	1. Analyze vehicle speed data on horizontal curves. (Participating organizations: TxDOT and TTI) 2. Update the GPS Method for determining the advisory speed and margin of safety. (Participating organizations: TxDOT and TTI) 3. Develop a curve handbook and implementation tools (e.g., Atlanta District; refer to FHWA proven countermeasures). (Participating organizations: TxDOT and TTI) 4. Present findings to TxDOT districts, cities, and counties. (Participating organizations: TxDOT and TTI) 5. Conduct curve studies and apply consistent treatments. (Participating organizations: TxDOT and city and county agencies) 6. Evaluate treatments. (Participating organizations: TxDOT and TTI)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium to long
Barriers	• Equipment required for curve studies. • Personnel needed to conduct curve studies. • Funds to construct curve treatments.

Automated Speed Enforcement Countermeasure (5B) Action Plan

Encourage adoption of laws that allow automated speed enforcement.

Element	Description
Steps for Implementation	1. Gather data from other states that use automated speed enforcement including public opinion/acceptance, safety effectiveness, and Texas state law. Use a National Transportation Safety Board report as a reference: *Reducing Speeding-Related Crashes Involving Passenger Vehicles,* 2017, https://www.ntsb.gov/safety/safety-studies/Documents/SS1701.pdf. (Participating organizations: TxDOT and TTI) 2. Conduct a public opinion poll about automated speed enforcement. (Participating organizations: TxDOT and TTI) 3. Develop an informational packet on the benefits of automated speed enforcement. (Participating organizations: TxDOT and TTI) 4. Present findings to key stakeholders including the Legislative Affairs Office at TxDOT, city government affairs departments, the Texas Municipal League, safety advocates, legislative committees, and legislators. (Participating organizations: TxDOT, TTI, city agencies, law enforcement agencies, and safety advocates) 5. Adopt statewide legislation (possibly as a pilot). (Participating organization: Texas Legislature) 6. Evaluate short- and/or long-term impacts. (Participating organizations: TxDOT and TTI)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Legislative issues. • Privacy issues. • The “need for speed” mentality among drivers.

STRATEGY 6

Improve emergency response time in rural areas.

Countermeasures

Focus	Number	Description	Action Plan
Emergency air flight time	6A	Provide resources to decrease emergency air flight response time.	
Advanced life support	6B	Provide resources to increase the availability and use of advanced life support equipment to first responders.	
Expedition of crash notification	6C	Implement measures to provide faster crash notification for emergency medical services.	✓

Expedition of Crash Notification Countermeasure (6C) Action Plan

Implement measures to provide faster crash notification for emergency medical services.

Element	Description
Steps for Implementation	1. Develop a coalition by region between TxDOT, DPS, local law enforcement, emergency medical services (EMS), the 911 System, cities, counties, and the Texas Department of State Health Services (DSHS) to create lines of communication between entities. (Participating organizations: DSHS and EMS agencies) 2. Develop a system to be used by all departments involved for reporting areas of safety concerns. (Participating organizations: DSHS and EMS agencies) 3. Analyze locations reported and implement safety measures as warranted. (Participating organizations: TxDOT and city and county agencies) 4. Streamline current 911 dispatch protocols to include notification of other agencies and stakeholders. (Participating organization: 911 System) 5. Increase law enforcement presence on targeted rural roads. (Participating organizations: DPS and local law enforcement) 6. Research new technologies, such as Onstar, and/or apps, such as Waze, to notify EMS of potential crashes. (Participating organizations: EMS agencies) 7. Research grant funding opportunities to improve EMS response services. (Participating organizations: EMS agencies)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Medium
Barriers	• Lack of funding for equipment and personnel; the need to apply for grants. • Volunteer training; the need to find hospitals and other EMS agencies that will provide free training to EMS offices located in rural areas. • Volunteer availability; the need for funding to have staff available 24 hours a day, seven days a week.

Distracted Driving Strategies

Strategy Number	Description
1	Reduce fatalities and serious injuries by identifying and implementing education and awareness strategies to reduce distracted driving.
2	Improve the effectiveness of distracted road user educational techniques, tools, and strategies.
3	Improve and increase enforcement capabilities for addressing distracted driving.
4	Increase the installation of engineering countermeasures known to reduce distracted driving.
5	Use technology to reduce distracted-driving crashes, serious injuries, and fatalities.

STRATEGY 1

Reduce fatalities and serious injuries by identifying and implementing education and awareness strategies to reduce distracted driving.

Countermeasures

Focus	Number	Description	Action Plan
Age groups	1A	Develop and document a suite of countermeasures targeting distracted road users by age group.	
Car technology	1B	Educate consumers, parents, and the public with age-specific messages about car technology and safety options (e.g., mycardoeswhat.org) through car dealers, the media, and employers.	
Education—dangers	1C	Educate the public with age-specific messages (pre-teen to adult) about the dangers of distracted driving through the media, schools, car dealers, community events, and employers, and test the effectiveness of using personal stories/tragedies to impact teens and middle school students' behaviors.	✓
Education—human costs	1D	Educate public officials and employers about the human and economic costs of distracted driving through outreach programs.	
Education—apps	1E	Educate the public with age-specific messages about tools to encourage distraction-free driving (apps, technology, and programs) through outreach programs. Examples are informing adults/parents about tools they can use to limit teen cell phone use while driving, and educating consumers about apps that will disable phones while in a vehicle.	
Education—judiciary	1F	Inform members of the judiciary branch about tools that limit cell phone use and training programs such as Impact Texas Teen Drivers and the Texas Municipal Police Association/TxDOT adult course. Encourage voluntary participation in these courses.	

Focus	Number	Description	Action Plan
Teen involvement	1G	Consider using teens to conduct a public survey to determine the level of support for laws restricting distracted driving.	
Teen education—laws	1H	Inform teen drivers about cell phone, texting, and other restrictions under the Texas graduated driver licensing law.	
Teen education—video	1I	Continue to implement Impact Texas Teen Drivers, an informational tool (a two-hour video) designed to educate teens about distracted-driving dangers.	

Education—Dangers Countermeasure (1C) Action Plan

Educate the public with age-specific messages (pre-teen to adult) about the dangers of distracted driving through the media, schools, car dealers, community events, and employers, and test the effectiveness of using personal stories/tragedies to impact teens and middle school students' behaviors.

Element	Description
Steps for Implementation	1. Develop age-specific messages crafted into public service announcements (PSAs) for targeted media (i.e., PSAs for pre-teen/teen radio stations and media geared to that age group; PSAs for older adults to appropriate media). (Participating organizations: TxDOT, Distracted Driving Area Emphasis Team, and marketing firm) 2. Identify appropriate media targeted to each age group. (Participating organizations: TxDOT and marketing firm) 3. Develop and print materials and information that can be used as resource material or handouts at various events, meetings, businesses, etc. (Participating organizations: TxDOT and marketing firm) 4. Establish a clearinghouse to provide information to interested parties; identify additional champions to market and promote messages and materials to individuals and companies, automobile associations/manufacturers/car dealers, and other organizations for community events; and provide educational materials, messages, and handouts to Texas regional education centers for distribution to schools in each region. (Participating organizations: TxDOT and marketing firm)
Participating Organizations	See above for each step, in addition to probation officers, courts, media, parents, and school systems.
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Limited funding. • Cohesive organized effort. • Legislative roadblocks. • Public pushback. • State agencies. • Buy-in from different age groups. • Cultural issues.

STRATEGY 2

Improve the effectiveness of distracted road user educational techniques, tools, and strategies.

Countermeasures

Focus	Number	Description	Action Plan
Messaging efficacy	2A	Test the efficacy of current and future messaging with different age groups to determine effectiveness.	
Personal stories	2B	Test the effectiveness of using personal stories/tragedies to impact teens and middle school students' behaviors when driving distracted.	✓
Targeted outreach	2C	Use crash data to target locations for media buys and distracted-driving education and awareness campaign methods.	

Note: renumbered from the original listing.

Personal Stories Countermeasure (2B) Action Plan

Test the effectiveness of using personal stories/tragedies to impact teens and middle school students' behaviors when driving distracted.

Element	Description
Steps for Implementation	1. Develop a list/inventory of programs and/or personal stories available to this age group. These include programs offered in recent years (e.g., presentations by Tyson Dever given in 2016–2018) and other personal stories that could be offered and/or pursued in the future. (Participating organizations: TxDOT and TTI) 2. Summarize available data for existing speakers (e.g., attitudinal/awareness surveys conducted by TTI in association with Tyson Dever presentations, 2016–2018). (Participating organizations: TTI and TxDOT) 3. Identify new partners and sponsors by reaching out to coalitions, corporations, sub-grantees, state agencies, or anyone with common interests. (Participating organizations: TxDOT and marketing vendor) 4. Explore other means of spreading these personal (true) stories throughout the state. These could include integration into an annual statewide marketing campaign for distracted driving, social media, and/or other cost-effective digital sharing. (Participating organizations: TxDOT and marketing vendor) 5. Evaluate the program more thoroughly, especially in areas where presentations on this topic have been made multiple times by one or more speakers. Measure changes in awareness, attitudes, and behaviors. Analyze distracted-driving crash data. (Participating organizations: TTI and TxDOT)
Participating Organizations	See above for each step.
Effectiveness	Feedback from young students consistently indicates that true personal stories of this nature (as opposed to mock crashes, ghost-outs, etc.) have a much more effective and lasting impact on their attitudes and behavior.
Cost to Implement	$
Time to Implement	Medium
Barriers	• Limited funding available for evaluations. • Bias. Most data and/or assessments are survey based and may have biases. • Difficulty in tying these interventions to reductions and changes in crash frequency or severity (e.g., cause and effect).

STRATEGY 3

Improve and increase enforcement capabilities for addressing distracted driving.

Countermeasures

Focus	Number	Description	Action Plan
Traffic enforcement	3A	Use Selective Traffic Enforcement Program (STEP) grants and high-visibility enforcement techniques to enforce distracted-driving state laws and local ordinances.	✓
STEP grants	3B	Use crash data to determine the deployment of distracted-driving STEP grants.	
Law enforcement	3C	Encourage law enforcement personnel to report cell phone use in crash reports and citations when applicable; provide distracted-driving educational tools for law enforcement.	
Legislation	3D	Catalogue and disseminate state laws and local ordinances on distracted driving.	
MMUCC	3E	Encourage adoption of the Model Minimum Uniform Crash Criteria (MMUCC) recommendations on distracted driving.	
Policies	3F	Identify and disseminate model distracted-driving policies for law enforcement agencies.	

Note: renumbered from the original listing.

Traffic Enforcement Countermeasure (3A) Action Plan

Use STEP grants and high-visibility enforcement techniques to enforce distracted-driving state laws and local ordinances.

Element	Description
Steps for Implementation	1. Receive funds from the National Highway Traffic Safety Administration. (Participating organization: TxDOT) 2. Increase funding for STEP grants through other revenue sources. 3. Apply for grant funds. (Participating organizations: law enforcement agencies) 4. Select agencies for funding. (Participating organization: TxDOT) 5. Implement grants. (Participating organizations: law enforcement agencies) 6. Evaluate grants. (Participating organizations: law enforcement agencies) 7. Manage and evaluate grants. (Participating organization: TxDOT) 8. Receive funding for the next year. (Participating organization: TxDOT) 9. Reapply for funding. (Participating organizations: law enforcement agencies) 10. Evaluate law enforcement liaisons' effectiveness. 11. Explore alternative distracted-driving enforcement techniques, such as placing officers in tractor-trailers, in buses, and on motorcycles.
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Finding people to work. • Community pushback.

STRATEGY 4

Increase the installation of engineering countermeasures known to reduce distracted driving.

Countermeasures

Focus	Number	Description	Action Plan
Engineering	4A	Identify and systemically implement engineering countermeasures known to reduce distracted driving, such as edge line, centerline, and transverse rumble strips; wider and brighter striping; and lighting—especially in areas associated with distracted-driving crashes.	✓
Network screening	4B	Use network screening techniques to identify distracted-driving crash sites and recommend appropriate countermeasures for systemic installation across Texas.	

Engineering Countermeasure (4A) Action Plan

Identify and systemically implement engineering countermeasures known to reduce distracted driving, such as edge line, centerline, and transverse rumble strips; wider and brighter striping; and lighting—especially in areas associated with distracted-driving crashes.

Element	Description
Steps for Implementation	1. Identify and implement opportunities for creating a dialogue among cities, counties, law enforcement agencies, metropolitan planning organizations, TxDOT, and perhaps others to encourage collaborative working relationships. 2. Define distracted crashes using Crash Records Information System (CRIS) terminology. Retrieve CRIS data and perform hot spot analysis. TTI can help clarify the crash categories and contributing factors associated with driver distraction. Research and address barriers—such as cost, fear of trying something new and unfamiliar, and limited availability in rural areas—to the use of transportation services by older users. (Participating organization: TxDOT) 3. Identify owner/responsible party of hot spot locations. (Participating organizations: TxDOT and owner agencies) 4. Review the current and upcoming project list, and match needs with the project list or develop a separate safety project. (Participating organizations: owner agencies) 5. Identify the appropriate engineering countermeasures, and include any available standards/specifications into the project documents for consistent implementation (e.g., TxDOT work codes and Crash Modification Factors Clearinghouse). (Participating organizations: TxDOT and owner agencies) 6. Broadly announce the availability of funds and the countermeasures to be implemented. Allow agencies to apply for the funds with supporting data and information. 7. Review post-implementation crash data to evaluate effectiveness, and share the findings with other agencies. (Participating organizations: owner agencies and TTI)
Participating Organizations	See above for each step.
Effectiveness	**
Cost to Implement	$
Time to Implement	Medium
Barriers	• Knowledge sharing of subject matter experts from various disciplines such as engineering, maintenance, and traffic operations. • Lack of communication and coordination among agencies. • Lack of information on eligible project funds. • Leadership buy-in by elected officials and administration. • Funding for future projects. • Public concerns about the noise associated with rumble strips in urban areas.

STRATEGY 5

Use technology to reduce distracted-driving crashes, serious injuries, and fatalities.

Countermeasures

Focus	Number	Description	Action Plan
Apps	5A	Test and implement apps to encourage distraction-free driving and discourage distracted driving.	✓
Employer involvement	5B	Encourage employers to adapt company vehicles to include the safe-driving apps and encourage their use in private employee vehicles.	
National Safety Council	5C	Team with the National Safety Council to become informed about and use the technology for tracking employee cell phone use while driving.	

Apps Countermeasure (5A) Action Plan

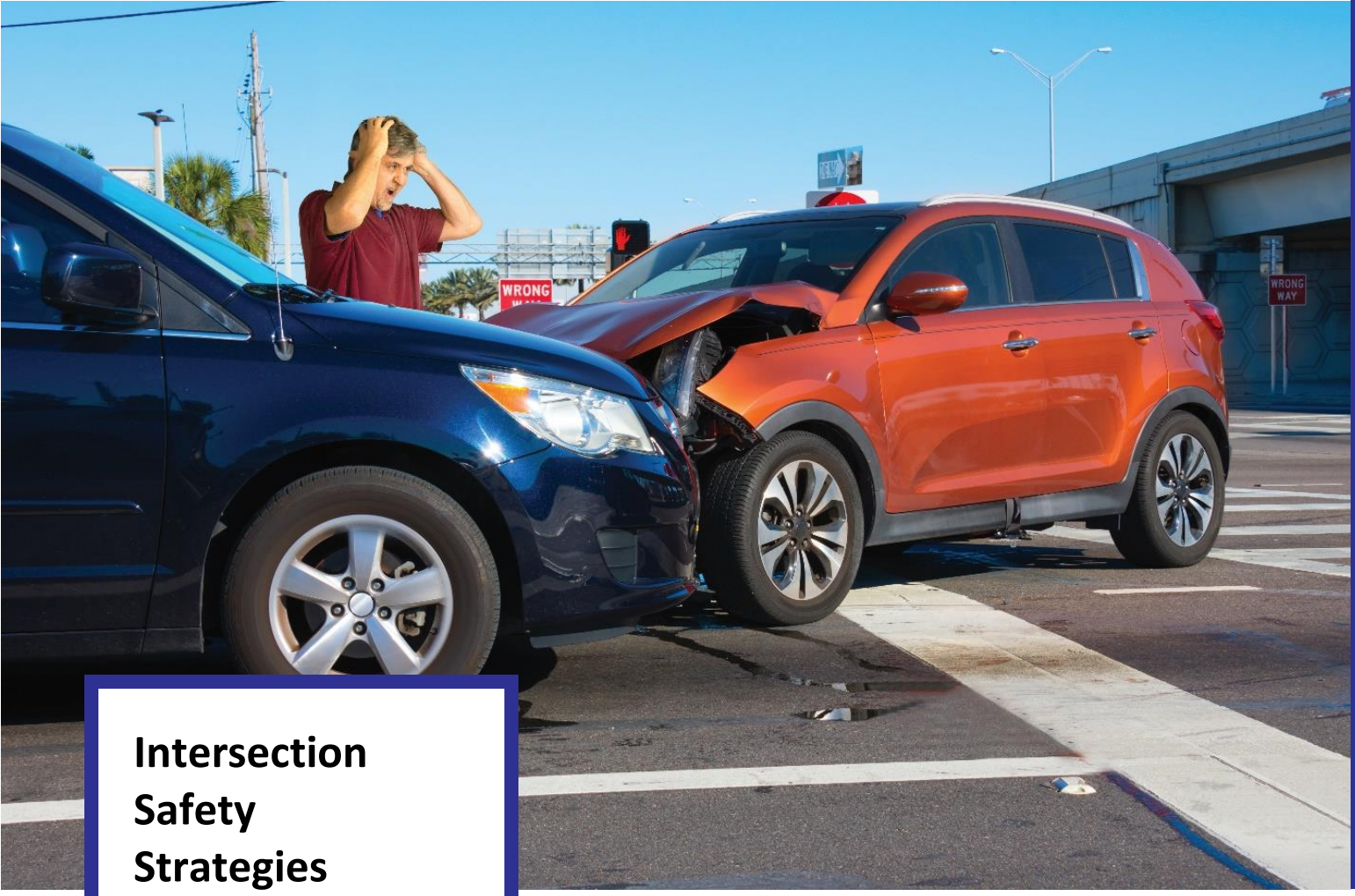
Test and implement apps to encourage distraction-free driving and discourage distracted driving.

Element	Description
Steps for Implementation	1. Identify key user groups and developers/partners. • Formulate focus groups, such as: ○ Users by age: youth/young drivers 15 to 25 years old, adults (middle-aged) 26 to 64 years old, and elderly 65+ years old. ○ Users by type (based on varying rules/restrictions that may apply): government users that drive government vehicles (police, medical, city, county, state employees, etc.), private businesses, the commercial trucking industry, and the general public (private vehicle/personal time use). • Engage industry (auto manufacturers, car dealers, car operating systems, etc.) as partners, and get a better handle on upcoming technologies to address upcoming challenges proactively. • Engage app developers for car operating systems/secondary interfaces that integrate smartphones into dashboard/touchscreen (Apple CarPlay, Android Auto, etc.) and infotainment systems (Toyota, Ford, GM, etc.), the National Automobile Dealers Association (franchise car dealers), and the National Independent Automobile Dealers Association (independent car dealers). • Build focus groups around users and the industry/partner groups outlined above. • Develop questions/topics for focus groups for steps 2 and 3. 2. Identify key technological sources of distraction and those with the potential to keep drivers engaged, such as: • Near-term: smartphones, car operating systems (a secondary interface running from the smartphone and displaying on screen/dashboard), wearables (e.g., watches and health trackers), and third-party in-vehicle add-ons (e.g., global positioning system devices such as Garmin, TomTom, Magellan, etc.). • Additional near-term: the Internet of Things, Amazon Alexa, Apple Siri, Google Assistant, Microsoft Cortana, and infotainment systems (built-ins in newer vehicles). 3. Identify most common causes or sources of distraction (i.e., user activity) and under what conditions they occur. Identify the most common activities (e.g., texting, calling, using social media, and navigating) and conditions (e.g., speed, location, and road conditions). 4. Develop a list of the most common existing mobile apps designed to deter distracted driving. Categorize by incentive-based versus phone-locked-down approaches. Rank existing apps by features, benefits, and evidence of positive impact. 5. Call for apps (app-a-thon). Provide a list of preferred/necessary features. Rank vendors/developers by features, costs, and maintenance plans. 6. Use the focus groups (from step 1) to review the app(s) and evaluate the features. 7. Test the app(s). 8. Analyze the data from the app(s). 9. Develop new partnerships with the private sector: smartphone/service providers (AT&T, Sprint, Verizon, Apple, etc.), the National Automobile Dealers Association/National Independent Automobile Dealers Association, original equipment manufacturers (Ford, GM, Toyota, etc.), the insurance industry (State Farm, AAA, etc.), and the Internet of Things (Apple, Amazon, Google, Samsung, etc.). 10. Identify and/or create new methods of (and leverage opportunities for) grassroots education at point-of-sale vehicles and devices. 11. Encourage dealers and salespersons to market safety technology features.

Element	Description
Participating Organizations	AAA Foundation for Traffic Safety, Strategic Highway Safety Plan Management Team and Distracted Driving Emphasis Area Team, auto dealers and manufacturers, law enforcement, TxDOT, and schools
Effectiveness	*** (based on preliminary evidence; further testing is required)
Cost to Implement	$$$
Time to Implement	Long
Barriers	• Funding for development. • Willingness for drivers to download and use the app.

Notes:

1. Government could require smartphone makers to place a warning label on all devices about the dangers of using smart devices and driving (similar to the warning labels on cigarettes or alcohol). This could help reduce the cost and burden of states paying for education and enforcement costs.
2. Seek partnerships with mobile app owners (e.g., Facebook, Snapchat, Apple, and Google) to collaborate with Texas to help fund (and perhaps provide in-kind staff/employees to support) the education of smartphone users about the dangers of distracted driving.
3. Require mobile app developers to include a disclaimer or alert about the dangers of using a mobile app while driving and a warning to users about fines and/or other consequences at the registration or download phase of the app.
4. Require a distracted-driving class before issuing dealer's (or auction) licenses. Dealers should be required to have a person on site to educate buyers about vehicle technology features and the consequences of distracted driving.



Intersection Safety Strategies

Strategy Number	Description
1	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes.
2	Encourage use of the intersection control evaluation (ICE) process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.
3	Improve pedestrian safety at intersections with high probability of crashes.
4	Increase driver awareness of intersections.
5	Develop educational campaigns incorporating data analysis to improve intersection safety.
6	Reduce red light running.

STRATEGY 1

Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes.

Countermeasure

Focus	Number	Description	Action Plan
Intersection database	1A	Create a statewide intersection safety and roadway elements database. (Incorporate the Model Inventory of Roadway Elements [MIRE] format; create a standardized data structure to support geographic information system (GIS) applications; create an app for data collection; develop partnerships between TxDOT, metropolitan planning organizations (MPOs), and local agencies to populate the database; and develop and implement an intersection identifier system for posting at intersections.)	✓

Intersection Database Countermeasure (1A) Action Plan

Create a statewide intersection safety and roadway elements database. (Incorporate the MIRE format; create a standardized data structure to support GIS applications; create an app for data collection; develop partnerships between TxDOT, MPOs, and local agencies to populate the database; and develop and implement an intersection identifier system for posting at intersections.)

Element	Description
Steps for Implementation	1. Develop ramp data and edit GIS line work to ensure the roadway network is topologically correct. 2. Conduct a Geospatial Roadway Inventory Database (GRID) software enhancement project to incorporate an intersection/interchange inventory. 3. Develop algorithms to generate intersections and derive descriptors and location identifiers such that all MIRE fundamental data elements are fully incorporated into the roadway inventory system. 4. Maintain the database.
Participating Organizations	TxDOT's Transportation, Planning, and Programming Division and Traffic Operations Division
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Long
Barriers	• Budget. • Staffing and staff capacity for data enhancements. • Database definition and upkeep. • Data acquisition and maintenance. • Training data users.

Note: For more information, see the Texas Traffic Records Coordinating Committee Strategic Plan, Section 6—MIRE Fundamental Data Element 9/30/2026 Implementation Plan.

STRATEGY 2

Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.

Countermeasures

Focus	Number	Description	Action Plan
Roundabouts	2A	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.	✓
Diverging left intersections	2B	Convert signalized intersections to diverging left intersections.	
Intersection control evaluation	2C	Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.	✓

Roundabouts Countermeasure (2A) Action Plan

Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.

Element	Description
Steps for Implementation	1. Identify stakeholders (TxDOT, local agencies, DPS, and the Department of Motor Vehicles [DMV]). 2. Develop training, design, and construction. • Provide designers/planners with education about roundabout application and design. This includes making agencies aware of the free FHWA peer review program. Fund roundabout design/application training through webinars; the Fort Worth, Dallas, and Atlanta Districts have received this training. Expand it through the Texas A&M Engineering Extension Service (TEEX) or other methods. Provide training at TxDOT Short Course and Texas District of the Institute of Transportation Engineers (TexITE) meetings. • Adopt/implement the ICE process as part of project planning. The process can look at all intersection control strategies and not just roundabouts. • Identify sources for construction funding. • Design and construct roundabouts by identifying locations based on safety performance; incorporate roundabouts in the capital improvements program; design; and construct. 3. Implement an education and outreach program. • Provide documentation of how roundabouts can result in the wide nodes/narrow roads concept, which may defer or eliminate the need for bridges or road widening. • Ensure roundabout information included in the Texas driver's manual is up to date and covers both single-lane and multi-lane roundabouts. • Include roundabout questions on the driver's license exam. • Provide driver training facilities and online driver education programs with roundabout information. • Create a public service announcement on roundabouts for use across the state. • Document successful roundabout implementations across the state so agencies can share with their local appointed and elected officials. 4. Conduct research. • Fund research into construction methods to reduce the cost of multi-lane roundabout retrofits to overcome barriers in urban areas where multi-lanes are more likely to be needed. Find ways to use overlays of existing concrete to reduce initial capital cost. • Support pool-funded research on impacts of striping multi-lane roundabouts.
Participating Organizations	TxDOT's Design Division and Traffic Operations Division, districts, city and county agencies, TexITE, FHWA, Texas Trucking Association, and TEEX
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Medium
Barriers	• Overcoming the inertia of not using roundabouts. • Overcoming public perceptions. • Identifying and securing a champion. • Obtaining sufficient and sustained funding to build roundabouts.

Intersection Control Evaluation Countermeasure (2C) Action Plan

Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.

Element	Description
Steps for Implementation	1. Identify stakeholders (TxDOT, local agencies, DPS, and DMV). 2. Draft policies and guidelines based on best practices. Integrate them into the project development process. Consider maintenance requirements. 3. Revise based on stakeholder input. 4. Develop training materials or adapt FHWA materials.
Participating Organizations	TxDOT's Design Division and Traffic Operations Division, districts, city and county agencies, TexITE, FHWA, Texas Trucking Association, and TEEX
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Institutional inertia. • Identifying and securing a champion. • Changing long-standing practices. Considering early enough in the project development phase. • Public acceptance of non-standard designs and controls.

STRATEGY 3

Improve pedestrian safety at intersections with high probability of crashes.

Countermeasures

Focus	Number	Description	Action Plan
Hot spots	3A	Develop methods to identify and target locations with a high probability of pedestrian crashes: systemic methods (i.e., based on characteristics) and screening for locations with above-average crash experience.	
Systemic approach	3B	Install low- to medium-cost improvements to increase pedestrian safety.	✓

Systemic Approach Countermeasure (3B) Action Plan

Install low- to medium-cost improvements to increase pedestrian safety.

Element	Description
Steps for Implementation	1. Identify high-risk intersection characteristics and a procedure for evaluating pedestrian risk. Create an inventory of relevant intersection characteristics including pedestrian volumes. Prioritize location by risk. 2. Create a toolbox of engineering solutions that can be applied systemically (see note below). 3. Identify specific countermeasures for each intersection. 4. Identify funding sources and costs to implement. 5. Implement. Publicize improvements as safety enhancements. Evaluate outcomes.
Participating Organizations	TxDOT, city and county agencies, transportation and public works departments, engineering design consultants, FHWA, and TexITE
Effectiveness	**
Cost to Implement	$$
Time to Implement	Short
Barriers	• Identifying a committed champion. • Obtaining funding to develop a systemic process. • Collecting a comprehensive set of intersection characteristics. • Obtaining sufficient and sustained funding to implement countermeasures. • Public perception. • Data limitations.

Note: Eliminate free-flow turn lanes or convert them to angled turn lanes that require stopping/yielding, add turn islands and median islands and curb bulb-outs, convert permissive-only or protected-permissive phasing to protected only (when a pedestrian is present or during active times of day), provide enhanced measures (a rectangular rapid flash beacon, pedestrian hybrid beacon, lighting, etc. at uncontrolled high-risk locations, and pedestrian islands). At targeted intersections, prohibit right-on-red and permissive left turns at high-probability locations; install/improve pedestrian signals, pedestrian crosswalks, lighting, and/or high-friction surface treatment on intersection approaches; and ensure pedestrian signals, push buttons, crosswalk markings, etc. meet current requirements or upgrade to current requirements, including signal timing.

STRATEGY 4

Increase driver awareness of intersections.

Countermeasures

Focus	Number	Description	Action Plan
Practitioner guide for resources	4A	Develop Texas-specific resources on the use of specific countermeasures, based on roadway type, system ownership, rural/urban character, etc., as a guide to practitioners.	
Systemic approaches	4B	Implement proven, low-cost engineering countermeasures in a systemic manner: modify operations, add or enhance signs, and add or enhance physical conditions. (Install driver speed feedback signs in advance of intersections. Implement the current Texas Intersection Safety Implementation Plan to prepare for the next iteration of the Highway Safety Improvement Program.)	✓

Systemic Approaches Countermeasure (4B) Action Plan

Implement proven, low-cost engineering countermeasures in a systemic manner: modify operations, add or enhance signs, and add or enhance physical conditions. (Install driver speed feedback signs in advance of intersections. Implement the current Texas Intersection Safety Implementation Plan to prepare for the next iteration of the Highway Safety Improvement Program.)

Element	Description
Steps for Implementation	1. Create a systemic program to develop a procedure that identifies countermeasures, selects locations, and supports contracting and program management. 2. Conduct outreach to encourage participation in the implementation of a pilot program. 3. Set up and implement a pilot program. 4. Evaluate the pilot program and develop a longer-range systemic program. 5. Continue the outreach effort. Encourage more jurisdictions to participate.
Participating Organizations	TxDOT, city and county transportation agencies and public works departments, FHWA, and TexITE
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Identifying and securing a champion. • Developing buy-in among jurisdictions. • Obtaining funding to develop the process. • Finding a jurisdiction willing to pilot. • Obtaining sufficient and sustained funding for more comprehensive implementation.

STRATEGY 5

Develop educational campaigns incorporating data analysis to improve intersection safety.

Countermeasures

Focus	Number	Description	Action Plan
High-volume crash locations	5A	Publicize high-volume crash locations and point out the contributing crash factors (e.g., red light running, speeding, impaired driving, texting, and phone use).	✓
Driver education	5B	Increase and renew emphasis on safe driving behaviors in driver education.	
Media	5C	Create infographics and other media-friendly information.	
Young drivers	5D	Develop and implement a young driver educational campaign relating to signalized intersections.	

High-Volume Crash Locations Countermeasure (5A) Action Plan

Publicize high-volume crash locations and point out the contributing crash factors (e.g., red light running, speeding, impaired driving, texting, and phone use).

Element	Description
Steps for Implementation	1. Gather and analyze data; identify locations. 2. Obtain interagency approvals; obtain necessary public outreach approvals (council, MPOs, division, and coalition); and use existing program guidelines. 3. Implement through use of standardized pamphlets, news and radio spots, internet and social media, and physical signs (aluminum and dynamic message signs) that target citizens and visitors. 4. Coordinate with enforcement activities. 5. Evaluate efficacy; analyze data post-implementation.
Participating Organizations	TxDOT; city and county transportation, public works, and information agencies; law enforcement departments; MPOs; and insurance companies
Effectiveness	**
Cost to Implement	$
Time to Implement	Short
Barriers	• Delays. Consensus between organizations could extend the implementation time. • Staff. Smaller agencies may have difficulty obtaining data analysis. • Incorrect data (outliers; issues with latitude/longitude). • Obtaining stakeholder buy-in. • Need for an improvement plan prior to publicizing. • Addressing liability concerns (may consider publicizing general characteristics versus specific intersections). • Identifying and securing a champion. • Developing widespread buy-in among jurisdictions. • Assessing efficiency. • Obtaining sufficient and sustained funding for implementation.

STRATEGY 6

Reduce red light running.

Countermeasures

Focus	Number	Description	Action Plan
Enforcement	6A	Use targeted enforcement at high-volume incident locations. Install red light indicator lights (in most cases, white lights) to inform law enforcement of red signal onset.	✓
Reduced citation trend	6B	Research, identify, and address the factors contributing to the trend of reduced law enforcement citations for intersection violations.	
Best practices	6C	Develop a best practice guide for automated enforcement. Educate decision makers and the public on the effectiveness and appropriate use of automated enforcement.	
Automated red light cameras	6D	Install automated red light enforcement cameras.	
Improve signal timing	6E	Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.	✓

Enforcement Countermeasure (6A) Action Plan

Use targeted enforcement at high-volume incident locations. Install red light indicator lights (in most cases, white lights) to inform law enforcement of red signal onset.

Element	Description
Steps for Implementation	1. Identify signalized intersections with a high number of red-light-running crashes. 2. Prioritize intersections and install red light indicator lights. 3. Enforce red light running at targeted intersections. Use local funds or apply for Selective Traffic Enforcement Program (STEP) grants. 4. Evaluate effectiveness.
Participating Organizations	City and county transportation agencies, law enforcement officers, TxDOT, and DPS
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• STEP funding and funding at the city level. • Funding for red light indicator lights. • Concern over legal issues due to the removal of red light cameras even though this is just an indicator light, not a camera. • Finding and securing a champion.

Reduced Citation Trend Countermeasure (6E) Action Plan

Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.

Element	Description
Steps for Implementation	1. Screen corridors to determine ones with an overrepresentation of crashes, including an analysis of time of day. 2. Drive corridors during periods when crashes are overrepresented, and determine whether traffic progression can be improved. 3. Select corridors and periods for timing improvements, and select a target speed for the corridor. 4. Collect data, including travel time and delay data; conduct analyses; and develop new timing plans. 5. Implement new timing plans and fine-tune them in the field. Collect after travel time and delay data. 6. Evaluate timing improvements and monitor crash data. Perform an after evaluation.
Participating Organizations	MPOs, city and county transportation agencies, TexITE, and TxDOT
Effectiveness	**
Cost to Implement	$
Time to Implement	Short
Barriers	• Identifying and securing a champion. • Developing widespread buy-in and collaboration between jurisdictions along a corridor. • Obtaining sufficient and sustained funding.

Pedestrian Safety Strategies

Strategy Number	Description
1	Improve driver and pedestrian safety awareness and behavior.
2	Reduce pedestrian crashes on urban arterials and local roadways.
3	Improve pedestrians' visibility at crossing locations.
4	Improve pedestrian networks.
5	Improve pedestrian-involved crash reporting.
6	Establish vehicle operating speeds to decrease crash severity.
7	Develop strategic pedestrian safety plans tailored to local conditions.

STRATEGY 1

Improve driver and pedestrian safety awareness and behavior.

Countermeasures

Focus	Number	Description	Action Plan
Unintended pedestrians	1A	Educate motorists on appropriate actions if they become stranded on a freeway or high-speed roadway to reduce crashes with unintended pedestrians on high-speed roadways.	✓
Driver awareness	1B	Provide driver and pedestrian safety messages and education. Provide high-visibility enforcement related to pedestrian safety issues.	✓
Impaired pedestrians	1C	Reduce crashes involving impaired and distracted pedestrians. (Adapt impaired-driving messages to impaired walking and biking.)	
Impaired pedestrians	1D	Implement a campaign about drugged and drunk walking. Identify alternatives to impaired walking such as transit, taxis, and transportation network companies (e.g., Uber and Lyft). Work with Teens in the Driver's Seat (a high-school-age program) and U in the Driver's Seat (a college-age program) to create awareness around walking and biking issues for young drivers and pedestrians.	

Note: renumbered from the original listing.

Unintended Pedestrians Countermeasure (1A) Action Plan

Educate motorists on appropriate actions if they become stranded on a freeway or high-speed roadway to reduce crashes with unintended pedestrians on high-speed roadways.

Element	Description
Steps for Implementation	1. Develop a public service announcement campaign for both motorists and pedestrians. This includes developing campaign materials including audio, television, social media, dynamic message sign messages, and potential giveaways. Implement the campaign using a data-driven approach to identify designated outreach regions and time frames. 2. Expand courtesy patrol programs. Develop service levels (service hours, services provided, and call times). Determine how to dispatch and receive calls (new facility, new phone lines, and new dispatch equipment). Purchase equipment, and hire and train staff.
Participating Organizations	TxDOT, regional mobility agencies, metropolitan planning organizations (MPOs), toll authorities, and county and city agencies
Effectiveness	** to ***
Cost to Implement	$$ to $$$
Time to Implement	Medium
Barriers	• Concise messaging of what to do (to get out or not get out of the car because of things such as fire). • *Manual on Uniform Traffic Control Devices* (allowable dynamic message sign messages). • What is the hook? How to make this interesting? • Funding. • Educating people on availability of services and how to contact agencies for those services. • Availability of employee or staff pool.

Notes:

1. Stay in the vehicle and call for help (Steer It and Clear It).
2. Consider policies for, and enforcement of, moving over and/or encouragement for motorists to move over and away from stranded cars and roadside pedestrians (safe passing law). Examples are expansion of the move over/slow down law, safe passing laws such as the San Antonio ordinance, and proposed statewide legislation.

Driver Awareness Countermeasure (1B) Action Plan

Provide driver and pedestrian safety messages and education. Provide high-visibility enforcement related to pedestrian safety issues.

Element	Description
Steps for Implementation	1. Identify educational materials and campaigns for pedestrians and motorists (e.g., Walk.Bike.Safe, Look Out Texans, Watch for Me—North Carolina). 2. Identify an agency or group to lead the pedestrian safety campaigns. 3. Identify common traffic violations by motorists and pedestrians. 4. Identify target locations where behaviors are prevalent (high-volume pedestrian areas such as schools, social activities, and bus stops). 5. Develop a partnership with law enforcement agencies to provide high-visibility enforcement of targeted behaviors. (Also, reward those who are following the rules.) 6. Work to incorporate information on motorist and pedestrian responsibilities into driver training materials and manuals. 7. Work to revise the driver's license test to include a pedestrian-related question or questions. 8. Work to incorporate pedestrian safety information in required defensive driving classes.
Participating Organizations	DPS and other law enforcement agencies; municipal, county, and regional transportation agencies; pedestrian advocates; driver training providers; engineers; public health agencies; and city planners
Effectiveness	**
Cost to Implement	$ to $$
Time to Implement	Medium
Barriers	• Finding local champions. • Obtaining law enforcement buy-in. • Finding sustained funding. • Changing driver training and testing requirements. • Changing defensive driving training requirements.

STRATEGY 2

Reduce pedestrian crashes on urban arterials and local roadways.

Countermeasures

Focus	Number	Description	Action Plan
Safe distance	2A	Research the distance needed between safe pedestrian crossings.	✓
Design for pedestrians	2B	Implement pedestrian-oriented design treatments at high-volume pedestrian activity locations.	✓
Pedestrian intervals	2C	Use leading or exclusive pedestrian intervals at signalized intersections (i.e., pedestrian walk signals activate prior to parallel green), high-volume pedestrian-use signaled intersections, and pedestrian push-button locations.	
Policies and programs	2D	Develop and implement a program to assist cities and other agencies to develop policies and implement projects that address common pedestrian crash types.	✓
Traffic control	2E	Disseminate information and training on the effectiveness and appropriateness of pedestrian traffic control measures.	
Urban form	2F	Disseminate information on the connection between urban form (driveway density, setbacks, pedestrian scale, frontage road design speeds, etc.) and safety outcomes. Encourage incorporation into local land use planning and review.	
Every Day Counts	2G	Disseminate information on FHWA's Every Day Counts Safe Transportation for Every Pedestrian for countermeasures for improving pedestrian safety.	

Note: renumbered from the original listing.

Safe Distance Countermeasure (2A) Action Plan

Research the distance needed between safe pedestrian crossings.

Element	Description
Steps for Implementation	1. Develop a research problem statement regarding the maximum desirable distance between safe pedestrian crossings. (Participating organization: TTI) 2. Submit problem statements to potential funding sources. (Participating organizations: TxDOT, TTI, and city agencies) 3. Conduct a research project to investigate the distance between pedestrian crossings. (Participating organizations: TxDOT and TTI) 4. Disseminate information from the research project. (Participating organization: TxDOT) 5. Based on guidance from TxDOT, FHWA, TTI, and others, identify roadway sections potentially in need of safe pedestrian crossing retrofits; develop a prioritized ranking of these locations for retrofitting to increase safety. (Participating organizations: local jurisdictions) 6. Incorporate this prioritized list into existing planning and funding decision-making processes. (Participating organizations: local jurisdictions)
Participating Organizations	See above for each step.
Effectiveness	**
Cost to Implement	$
Time to Implement	Short
Barriers	• Funding. • Engineering acceptance of findings.

Note: Develop criteria for the maximum desirable distances between safe crossing opportunities for different roadway classifications. Consider FHWA materials on Safe Transportation for Every Pedestrian (STEP), level-of-service calculations for all users at signalized intersections, and the typical distance a pedestrian will walk before crossing the street at an unsignalized location. The recommendations may vary by functional classification (e.g., arterial versus local street) and by context (e.g., rural versus urban core). The recommendations may also vary by treatment type (e.g., traffic control signal or pedestrian hybrid beacon versus markings and sign only with no supplemental beacons).

Design for Pedestrians Countermeasure (2B) Action Plan

Implement pedestrian-oriented design treatments at high-volume pedestrian activity locations.

Element	Description
Steps for Implementation	1. Compile and disseminate methods to identify characteristics of, or locations with, higher pedestrian risk. (Participating organizations: TxDOT, MPOs, and local transportation and police agencies) 2. Identify locations with higher probability for pedestrian crashes based on characteristics, risk, and public input. (Participating organizations: TxDOT, MPOs, local governments, community organizations, school districts, transit agencies, and neighborhoods) 3. Identify appropriate lead organization(s). (Participating organizations: TxDOT and local governments) 4. Identify suitable treatment(s). Review available pedestrian design guidelines and practices in Texas, in the United States, and internationally. (Participating organizations: TxDOT and local agencies) 5. Identify and secure funding. (Participating organizations: TxDOT, MPOs, and local agencies) 6. Implement the treatment. (Participating organizations: TxDOT and local agencies) 7. Educate the public about the treatment. (Participating organizations: TxDOT, local agencies, public information officers, the news media, school districts, and the medical community) 8. Evaluate the efficacy of the treatment. (Participating organizations: TxDOT and local partners)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium to long
Barriers	• Funding. • Engineering acceptance of treatments. • Political will. • Public support and education.

Policies and Programs Countermeasure (2D) Action Plan

Develop and implement a program to assist cities and other agencies to develop policies and implement projects that address common pedestrian crash types.

Element	Description
Steps for Implementation	1. Build awareness by documenting the extent of the pedestrian fatality and injury issue in the local area. (Participating organizations: TxDOT, FHWA, MPOs, and city agencies) 2. Document and disseminate information about existing programs in Texas, in the United States, and internationally. (Participating organizations: TxDOT, FHWA, MPOs, and research agencies) 3. Provide information on STEP. Identify local leaders. (Participating organizations: TxDOT, FHWA, and local organizations and advocacy groups) 4. Develop the program. Target motorists and pedestrians. (Participating organizations: TxDOT, FHWA, MPOs, city agencies, and local organizations and advocacy groups) 5. Identify partners in the local area. (Participating organizations: TxDOT, local agencies, community safety and assistance organizations, neighborhoods, school districts, transit agencies, medical community, law enforcement, and business entities that generate pedestrian activity) 6. Implement the program. (Participating organizations: local agencies) 7. Evaluate the efficacy of the program and share results with stakeholders. (Participating organizations: TxDOT and local agencies)
Participating Organizations	See above for each step.
Effectiveness	**
Cost to Implement	$
Time to Implement	Medium to long
Barriers	• Funding. • Political will. • Public support and education. • Lack of champions.

STRATEGY 3

Improve pedestrians' visibility at crossing locations.

Countermeasures

Focus	Number	Description	Action Plan
Nighttime visibility	3A	Improve nighttime visibility of pedestrians.	✓
	3B	Merged with 3a	

Nighttime Visibility Countermeasure (3A) Action Plan

Improve nighttime visibility of pedestrians.

Element	Description
Steps for Implementation	1. Identify locations and conditions where nighttime visibility of pedestrians is a concern (e.g., bus stops and high-nighttime-activity areas). 2. Identify suitable treatments. (See examples in the note below.) 3. Identify and secure funding. 4. Implement the treatments. 5. Educate the public on looking for pedestrians at night and being visible while walking. 6. Evaluate the efficacy of the treatments and share information with stakeholders.
Participating Organizations	TxDOT, local agencies, MPOs, news media, school districts, community safety and assistance organizations, AARP, injury prevention associations, utility (lighting) companies, transit agencies, and research agencies
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Funding. • Public support and education. • Coordination between groups and agencies.

Note: Examples are use of visible/reflective clothing by pedestrians, pedestrian-illuminating lighting on urban corridors, midblock crosswalk lighting in accordance with FHWA guidance, and smart lighting to illuminate when pedestrians are detected. Identify target audiences for information dissemination.

STRATEGY 4

Improve pedestrian networks.

Countermeasures

Focus	Number	Description	Action Plan
Transporta-tion plans	4A	Incorporate pedestrian considerations in transportation plans.	✓
Policy—levels of service	4B	Develop policies to analyze pedestrian levels of service, delay, and network connectivity as part of project development. Develop and disseminate a complete streets policy support guide with model policy and implementation information for local agencies and MPOs.	
Safe crossings	4C	Ensure opportunities for crossing arterials/highways safely. Consider the overall pedestrian network and travel desire lines. Consider setting standards or guidelines for the distance between safe crossings given land uses, densities, and roadway function. Provide safe crossings of freeways.	
Connected networks	4D	Create connected pedestrian networks and remove barriers to pedestrian travel (pedestrian over/underpasses and crossings to overcome physical barriers).	

Note: renumbered from the original listing.

Transportation Plans Countermeasure (4A) Action Plan

Incorporate pedestrian considerations in transportation plans.

Element	Description
Steps for Implementation	1. Inventory existing pedestrian facilities. 2. Review existing transportation plans, and revise plans to incorporate appropriate features where needed. 3. Prioritize locations for improvements based on gaps, transit routes, and community input. 4. Secure funding for improvements. 5. Design projects. 6. Construct improvements. 7. Develop public education materials and disseminate them.
Participating Organizations	TxDOT, government agencies, consultants, contractors, and public
Effectiveness	**
Cost to Implement	$$
Time to Implement	Short to medium
Barriers	• Public. • Politics. • Amount of space to work in.

Notes:

1. Prioritize pedestrian safety and considerations for mobility and accessibility in the context of land use and roadway environment.
2. Prioritize improvements to fill gaps in networks and crossings within ¼ mile of bus stops and ½ mile of other mass transportation.
3. Provide appropriate features along the pedestrian network (wide shoulders, sidewalks, pedestrian crossing treatments, and pedestrian refuge islands).

STRATEGY 5

Improve pedestrian-involved crash reporting.

Countermeasures

Focus	Number	Description	Action Plan
Crash type	5A	Work to include crash typing in pedestrian crash reporting. Use the Pedestrian Crash Analysis Tool (PBCAT) for categories on crash typing.	
Definition of pedestrian crashes	5B	Add fields to the standard crash report form (CR-3) to better define pedestrian crashes and provide additional detail on the specifics of each crash. This includes those needed to use the PBCAT and develop law enforcement roll-call videos on the need for and uses of pedestrian crash data.	✓

Definition of Pedestrian Crashes Countermeasure (5B) Action Plan

Add fields to the CR-3 to better define pedestrian crashes and provide additional detail on the specifics of each crash. This includes those needed to use the PBCAT and develop law enforcement roll-call videos on the need for and uses of pedestrian crash data.

Element	Description
Steps for Implementation	1. Gather requirements, and identify minimum and desirable data elements. 2. Prepare cost estimates and prioritize elements. 3. Test with law enforcement and TxDOT staff. 4. Update forms, develop a communications plan, and revise training. 5. Implement.
Participating Organizations	TxDOT, law enforcement agencies, and PBCAT analysts
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Funding. • Contract. • Standardization of data.

STRATEGY 6

Establish vehicle operating speeds to decrease crash severity.

Countermeasures

Focus	Number	Description	Action Plan
Target speeds—pedestrians	6A	Encourage use of target speeds that consider pedestrians, land use, and the roadway context (e.g., a target speed of 35 mph or less on arterials). Other examples are to provide design flexibility guidance for techniques to reduce operating speeds on surface streets; encourage use of tree-lined medians, bicycle lanes, and safe and attractive pedestrian crossings and walkways; and support use of traffic calming for local streets.	✓
Target speeds—all users	6B	Design new roadways for a target speed appropriate for the adjacent environment and safety of all users rather than for a design speed intended to maximize motor vehicle speeds.	✓

Target Speeds—Pedestrians Countermeasure (6A) Action Plan

Encourage use of target speeds that consider pedestrians, land use, and the roadway context (e.g., a target speed of 35 mph or less on arterials). Other examples are to provide design flexibility guidance for techniques to reduce operating speeds on surface streets; encourage use of tree-lined medians, bicycle lanes, and safe and attractive pedestrian crossings and walkways; and support use of traffic calming for local streets.

Element	Description
Steps for Implementation	1. Work with a diverse set of jurisdictions, including TxDOT districts—as well as diverse stakeholders including those representing people with disabilities, pedestrians, business districts, low-income communities, and transit providers—to explore benefits and barriers to implementation of slower target speed concepts. Draw from the National Association of City Transportation Officials and American Association of State Highway and Transportation Officials guidance for designing urban streets with appropriate speeds, the recent Florida Department of Transportation design manual overhaul, and the Netherlands Sustainable Safety Approach—including the concept of management of kinetic energy. (Participating organization: TxDOT) 2. Provide guidance regarding the ability to set speed limits based on the target speed concept (e.g., USLimits2). (Participating organizations: FHWA and TxDOT) 3. Consider potential changes to Sec. 545.356 of the Transportation Code, "Authority of Municipality to Alter Speed Limits," to allow cities to use target speed limits and remove unintended barriers to implementation of safe neighborhood streets. (Participating organizations: Texas Legislature and governor) 4. Implement pilot programs to develop pilot arterial and collector slow zones and other safe design speed pilots across the state in various jurisdictions and various overlapping bureaucracies. (Participating organizations: city and county agencies, Texas Legislature, and governor) 5. Evaluate the effectiveness and how to spread effective treatments of pilot slow zones and other safe design speed treatments. (Participating organizations: city agencies and TxDOT) 6. Write guidance on road design to achieve target speed based on lessons learned, best practices, and proven countermeasures. (Participating organizations: city agencies and TxDOT) 7. Build and retrofit streets with target speeds that consider pedestrians, land use, and the roadway context. (Participating organizations: city and county agencies, Texas Legislature, and governor)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$
Time to Implement	Medium to long

Element	Description
Barriers	• Misperception that congestion or commuter delay is a bigger problem than crashes, when crashes in fact impose a much higher cost on Texans. (References: Farm and City [http://www.farmandcity.org/2017/09/05/how-much-do-traffic-crashes-cost-the-people-of-texas-a-162-billion/] and U.S. Department of Transportation [https://www.transportation.gov/sites/dot.gov/files/docs/briefing-room/305216/infrastructure-initiative-booklet.pdf].) • Public perception of the need for speed and lack of understanding of how safe, multimodal streets can provide greater access, shorter trips, and even quicker vehicle trips when crashes are avoided. • Institutional inertia, which will require leadership, taking concerns seriously, and working through issues to allow the possibility of arriving at results that may seem heretical to many dedicated professionals at various levels of the transportation system. • Lack of local experience with pedestrian-compatible operating speeds—in terms of users, decision makers, and practitioners. • Interpretations of the 85th percentile rule, which some might perceive conflicts with this. • Texas laws. Texas law bars cities from using 20-mph speed limits on neighborhood streets. Sec. 545.356 of the Transportation Code requires difficult reporting requirements that some cities say are impossible to meet and thus are seen as a limiting factor for establishing 25-mph speed limits, which this section is intended to allow. Some cities believe that target and design speeds cannot be set lower than the speed limit, essentially creating a de facto lower limit on the safety of designs at the 30-mph design speed. • Reasonable interpretations of this sentence from the TxDOT Procedures for Establishing Speed Zones: “New or reconstructed roadways (and roadway sections) should be designed to accommodate operating speeds consistent with the roadway’s highest anticipated posted speed limit based on the roadway’s initial or ultimate function.”

Target Speeds—All Users Countermeasure (6B) Action Plan

Design new roadways for a target speed appropriate for the adjacent environment and safety of all users rather than for a design speed intended to maximize motor vehicle speeds.

Element	Description
Steps for Implementation	1. Design pilot urban arterials with target speeds of 35 mph or less, pilot local streets with target speeds of 30 mph or less, and pilot neighborhood streets with target speeds of 20 mph, according to National Association of City Transportation Officials and American Association of State Highway and Transportation Officials guidance. (Participating organizations: local jurisdictions) 2. Implement design changes on local and neighborhood streets using interim, low-cost street redesign strategies to achieve safe vehicle operating speeds. (Participating organizations: local jurisdictions) 3. Monitor vehicle speeds before and after implementation of interim design changes. (Participating organizations: local jurisdictions) 4. Integrate safe target speeds into street hierarchy and design manuals, such that all new street construction and retrofits incorporate the benefits of pedestrian-compatible target speed design. (Participating organizations: local jurisdictions) 5. Study costs and benefits of pedestrian-compatible target speed implementations across the state. (Participating organizations: TxDOT and various research institutions)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$
Time to Implement	Medium to long

Element	Description
Barriers	• Misperception that congestion or commuter delay is a bigger problem than crashes when crashes in fact impose a much higher cost on Texans. (References: Farm and City [http://www.farmandcity.org/2017/09/05/how-much-do-traffic-crashes-cost-the-people-of-texas-a-162-billion/] and U.S. Department of Transportation [https://www.transportation.gov/sites/dot.gov/files/docs/briefing-room/305216/infrastructure-initiative-booklet.pdf].) • Public perception of the need for speed and lack of understanding of how safe, multimodal streets can provide greater access, shorter trips, and even quicker vehicle trips when crashes are avoided. • Institutional inertia, which will require leadership, taking concerns seriously, and working through issues, to allow the possibility of arriving at results that may seem heretical to many dedicated professionals at various levels of the transportation system. • Lack of local experience with pedestrian-compatible operating speeds—in terms of users, decision makers, and practitioners. • Interpretations of the 85th percentile rule, which some might perceive conflicts with this. • Texas laws. Texas law bars cities from using 20-mph speed limits on neighborhood streets. Sec. 545.356 of the Transportation Code requires difficult reporting requirements that some cities say are impossible to meet and thus are seen as a limiting factor for establishing 25-mph speed limits, which this section is intended to allow. Some cities believe that target and design speeds cannot be set lower than the speed limit, essentially creating a de facto lower limit on the safety of designs at the 30-mph design speed. • Reasonable interpretations of this sentence from the TxDOT Procedures for Establishing Speed Zones: “New or reconstructed roadways (and roadway sections) should be designed to accommodate operating speeds consistent with the roadway’s highest anticipated posted speed limit based on the roadway’s initial or ultimate function.”

STRATEGY 7

Develop strategic pedestrian safety plans tailored to local conditions.

Countermeasures

Focus	Number	Description	Action Plan
Pedestrian Safety Action Plans	7A	Develop Pedestrian Safety Action Plans (PSAPs) in urbanized areas. Identify and create funding sources.	✓
State Action Plan	7B	Develop a Pedestrian State Action Plan.	✓

Pedestrian Safety Action Plans Countermeasure (7A) Action Plan

Develop PSAPs in urbanized areas. Identify and create funding sources.

Element	Description
Steps for Implementation	1. Encourage Texas MPOs, cities, and counties to study pedestrian safety and develop PSAPs, but allow a local broader set of options that include coordination with Vision Zero Action Plans, other safety plans, or active transportation plans (identified solely as PSAPs in further steps). (Participating organizations: FHWA, MPOs, and city and county agencies) 2. Develop regional and local PSAPs. (The first wave is FHWA focus cities/regions.) (Participating organizations: FHWA, MPOs, and local agencies) 3. Work with MPOs to use existing funding flexibilities to implement PSAP action items and for additional PSAP development. (Participating organizations: FHWA, MPOs, TxDOT, Texas Transportation Committee, and advocates) 4. Explore opportunities for funding to encourage wider-spread adoption of PSAPs. (Participating organizations: MPOs, advocates, TTI, and Texas Legislature) 5. Implement PSAP action items. (Participating organizations: MPOs and local agencies) 6. Evaluate effectiveness and report to stakeholders. Consider the ability to scale to additional communities. (Participating organizations: TxDOT and TTI)
Participating Organizations	See above for each step.
Effectiveness	*** (PSAPs are FHWA's lead intervention for cities with high levels of pedestrian fatalities and serious injuries. Cities with PSAPs include New York City, San Francisco, Los Angeles, San Antonio, Austin, and Fort Worth.)
Cost to Implement	$ to $$
Time to Implement	Medium to long
Barriers	• Local champions, who may be reluctant to identity safety areas of concern or to commit to additional physical infrastructure, or who may lack the staff capacity to take on additional planning activities. • Cities' and MPOs' need for executive leadership support or champions, which ensure plans can be completed and implemented. • Need for funding (but minimal compared to potential impact). • Need for a balanced approach to transportation considering all modes (solutions that benefit all modes). • Lack of understanding of pedestrian danger/risk and complete multimodal safety performance (pedestrian fatalities make up more than 25% of traffic fatalities in urban areas). • Collaboration and cooperation required by broad groups of jurisdictions and levels of government. • Disagreements about effective pedestrian safety strategies (which are also opportunities for this program).

State Action Plan Countermeasure (7B) Action Plan

Develop a Pedestrian State Action Plan.

Element	Description
Steps for Implementation	1. Gain members with a diverse group of advocates. 2. Develop a statewide pedestrian action plan. 3. Incorporate goals of other plans, taking local plans into consideration when appropriate. 4. Develop a coalition to distribute the plan to local areas throughout the state. 5. Establish a funding stream. 6. Collect and monitor data continually.
Participating Organizations	TxDOT, TTI, municipalities, law enforcement agencies, advocacy agencies, emergency response agencies, and engineers
Effectiveness	The statewide plan is a further refinement of the emphasis area included in the Strategic Highway Safety Plan. The plan will incorporate effective countermeasures.
Cost to Implement	$
Time to Implement	Medium
Barriers	• Funding for local implementation. • Maintaining and increasing momentum. • Cost reimbursement. • Retirees leaving organizations without leaving lessons learned or transferring knowledge. • Government limitations with state funding; members of coalitions may lobby the legislature for more funding. • Bringing in important stakeholders possibly through a pedestrian advisory committee. • Difficulty in reaching the target population. • Difficulty in evaluation. It is unclear how many entities have adopted local plans based on a statewide plan.

Note: The action plan is a road map for the coalition to follow.

Speeding Strategies

Strategy Number	Description
1	Use the concept of establishing a target speed limit and road characteristics to reduce speeding.
2	Educate law enforcement on contributing crash factors to improve crash data collection.
3	Leverage data to improve engineering, education, and enforcement.
4	Increase and sustain high-visibility speeding enforcement. (Develop, catalog, and disseminate tools and other resources to improve enforcement capabilities.)
5	Improve the effectiveness of educational techniques, tools, and strategies for speeding (target specific age groups).

STRATEGY 1

Use the concept of establishing a target speed limit and road characteristics to reduce speeding.

Countermeasure

Focus	Number	Description	Action Plan
Target speed	1A	Encourage use of target speeds for arterial, collector, and local roadways; encourage use of target speeds with pedestrian, land use, and roadway context, including options for target speeds of 35 mph or less on arterials and the evaluation of existing speed limits to appropriate target speeds.	✓

Target Speed Countermeasure (1A) Action Plan

Encourage use of target speeds for arterial, collector, and local roadways; encourage use of target speeds with pedestrian, land use, and roadway context, including options for target speeds of 35 mph or less on arterials and the evaluation of existing speed limits to appropriate target speeds.

Element	Description
Steps for Implementation	1. Identify a lead organization 2. Identify agencies (e.g., TxDOT, municipalities, and counties) and stakeholders (e.g., representatives of people with disabilities, pedestrian and walking advocates, business district leaders, low-income communities, and transit providers) to explore benefits and barriers to implementation of slower target speed concepts. 3. Provide information about setting speed limits based on target speed concepts related to kinetic energy, crash severity, and safe systems concepts (e.g., USLimits2). 4. Explore potential changes to Sec. 545.356 of the Transportation Code, "Authority of Municipality to Alter Speed Limits," to clarify that cities may use target speed limits and that designers can select a design speed to use in geometric decisions based on safe operating speeds in a complex environment. 5. Implement a pilot program to implement pilot arterial and collector target speed zones and related design treatments for encouraging target speed compliance, including the use of interim, low-cost street redesigns. 6. Evaluate the effectiveness of and keys to success for pilot target speed zones and related design treatments for controlling speed. 7. Write guidance on road design to achieve target speed based on lessons learned, best practices, and proven countermeasures. 8. Build and retrofit streets with target speeds that consider pedestrians, land use, and roadway context.
Participating Organizations	Transportation agencies (TxDOT, municipalities, and counties); safety, pedestrian, and biking advocates; transit providers; representatives of people with disabilities and low-income communities; FHWA; and legislature and political leaders
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Long (5+ years)

Element	Description
Barriers	• Misperception that congestion or commuter delay is a bigger problem than crashes, when crashes in fact impose a much higher cost on Texans. (References: Farm and City [http://www.farmandcity.org/2017/09/05/how-much-do-traffic-crashes-cost-the-people-of-texas-a-162-billion/] or U.S. Department of Transportation [https://www.transportation.gov/sites/dot.gov/files/docs/briefing-room/305216/infrastructure-initiative-booklet.pdf].) • Public perception of the need for speed and lack of understanding of how safe, multimodal streets can provide greater access, shorter trips, and even quicker vehicle trips when crashes are avoided. • Institutional inertia, which requires leadership, taking concerns seriously, and working through issues, to allow the possibility of arriving at results that may seem heretical to many dedicated professionals at various levels of the transportation system. • Lack of local experience with pedestrian-compatible operating speeds, in terms of users, decision makers, and practitioners. • Interpretations of the 85th percentile rule, which some might perceive conflicts with this. • Texas laws. Texas law bars cities from using 20-mph speed limits on neighborhood streets. Sec. 545.356 of the Transportation Code requires difficult reporting requirements that some cities say are impossible to meet and thus are seen as a limiting factor for establishing 25-mph speed limits, which this section is intended to allow. Some cities believe that target and design speeds cannot be set lower than the speed limit, essentially creating a de facto lower limit on the safety of designs at 30-mph design speed. • Reasonable interpretations of this sentence from the TxDOT Procedures for Establishing Speed Zones: “New or reconstructed roadways (and roadway sections) should be designed to accommodate operating speeds consistent with the roadway’s highest anticipated posted speed limit based on the roadway’s initial or ultimate function.”

STRATEGY 2

Educate law enforcement on contributing crash factors to improve crash data collection.

Countermeasures

Focus	Number	Description	Action Plan
Law enforcement education	2A	Educate law enforcement on the use of crash data and the need for accurate information. (Examples are to encourage periodic training for officers on crash reporting; better define contributing factors in instructions for law enforcement officers; and highlight the difference between failure to control speed and speeding over the limit.)	✓
Education on contributing factors for law enforcement and crash analysts	2B	Ensure law enforcement and crash analysts understand the difference in speeding-related contributing factors and their association with statutes when analyzing crash data.	
CR-3 electronic submission	2C	Encourage electronic submission of the standard crash report form (CR-3) and citations, with features to ensure all fields are completed.	
CR-3 fields for estimated speed	2D	Collaborate with law enforcement to explore methods to add the estimated speed of vehicles to crash reports (including when vehicles are traveling at or below the speed limit).	

Law Enforcement Education Countermeasure (2A) Action Plan

Educate law enforcement on the use of crash data and the need for accurate information. (Examples are to encourage periodic training for officers on crash reporting; better define contributing factors in instructions for law enforcement officers; and highlight the difference between failure to control speed and speeding over the limit.)

Element	Description
Steps for Implementation	1. Identify stakeholders to tailor a program to local agencies. This program may be similar to the Selective Traffic Enforcement Program (STEP) program. (Participating organization: TxDOT) 2. Document the importance and use of crash data, and the identification of contributing factors and other crash characteristics especially when aggregated. Provide examples of providing value back from aggregated statistics, including obtaining data-driven funding. Create a data dictionary for the CR-3. (Participating organization: TxDOT) 3. Set up liaisons and develop training programs (dual lines of communication). (Participating organization: TxDOT) 4. Set up a pilot program, get feedback from all involved, and analyze with law enforcement at all levels (the San Antonio Police Department has been identified as a pilot agency). (Participating organizations: TxDOT with the San Antonio Police Department and City of San Antonio Transportation and Capital Improvements) 5. Establish standardized metrics statewide to aid in consistent implementation. (Participating organization: TxDOT) 6. Roll out the statewide TxDOT program for law enforcement to implement. (Certify the program for Texas Commission on Law Enforcement credit and investigate linking it to STEP.) (Participating organization: TxDOT)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$
Time to Implement	Short to medium
Barriers	• Lack of buy-in from all stakeholders. • Identifying stakeholders. • Setting up liaisons.

STRATEGY 3

Leverage data to improve engineering, education, and enforcement.

Countermeasures

Focus	Number	Description	Action Plan
Mapping resource center	3A	Develop a resource center for assisting law enforcement agencies with data-driven deployment, including mapping of high-volume crash locations (especially injury and fatality) and contributing factors.	✓
Law enforcement training	3B	Train and encourage law enforcement agencies to make effective use of data during planning and patrols.	
Selective traffic enforcement	3C	Require STEP grant-funded enforcement programs to be data driven.	✓
Reduction of operating speeds	3D	Produce a report on the potential crash, death, and serious injury reduction of shifting all surface streets in urban districts under TxDOT control to a lower operating speed, including feeder/frontage roads.	
Safety design demonstration projects	3E	Encourage cities to implement safe design speed demonstration projects in various settings. This could include involving neighborhoods in community-based traffic calming.	
Partnering with school districts	3F	Encourage partnerships of agencies with school districts to implement safe streets projects across the state, while also providing the students with knowledge of the crisis of traffic deaths and the potential solutions that modify their behavior and decisions.	

Mapping Resource Center Countermeasure (3A) Action Plan

Develop a resource center for assisting law enforcement agencies with data-driven deployment, including mapping of high-volume crash locations (especially injury and fatality) and contributing factors.

Element	Description
Steps for Implementation	1. Use three years of crash data to determine areas with historical overrepresentation of crash activity, and plot the high-volume crash areas on maps for distribution to all law enforcement agencies in Texas. (Participating organizations: TxDOT and DPS) 2. Change STEP grant operational plans to focus high-visibility enforcement efforts on high-volume crash areas rather than areas of low compliance. (Participating organization: TxDOT) 3. Roll out the resource center statewide with the fiscal year STEP request for proposals. (Participating organization: TxDOT) 4. Begin enforcement October 1 of the following fiscal year. (Participating organization: TxDOT)
Participating Organizations	See above for each step.
Effectiveness	Uncertain
Cost to Implement	$$$
Time to Implement	Medium
Barriers	• Start-up and sustained funding. • Finding an appropriate host for the resource center. • Securing buy-in from law enforcement agencies.

Selective Traffic Enforcement Countermeasure (3C) Action Plan

Require STEP grant-funded enforcement programs to be data driven.

Element	Description
Steps for Implementation	1. Use three years of crash data to determine areas with historical overrepresentation of crash activity, and plot the high-volume crash areas on maps for distribution to all law enforcement agencies in Texas. (Participating organizations: TxDOT and DPS) 2. Change STEP grant operational plans to focus high-visibility enforcement efforts on high-volume crash areas rather than areas of low compliance. (Participating organization: TxDOT) 3. Roll out the requirement statewide with the fiscal year STEP request for proposals. (Participating organization: TxDOT) 4. Begin enforcement October 1 of the following fiscal year. (Participating organization: TxDOT)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	No additional
Time to Implement	Short
Barriers	• Law enforcement agencies diluting or overconcentrating enforcement. • Agencies selecting inappropriate enforcement zones.

STRATEGY 4

Increase and sustain high-visibility speeding enforcement. (Develop, catalog, and disseminate tools and other resources to improve enforcement capabilities.)

Countermeasures

Focus	Number	Description	Action Plan
Enforcement best practices	4A	Develop a best practices guide for speed enforcement techniques.	✓
Automated speed enforcement	4B	Investigate the effectiveness and acceptance of automated speed enforcement.	✓

Enforcement Best Practices Countermeasure (4A) Action Plan

Develop a best practices guide for speed enforcement techniques.

Element	Description
Steps for Implementation	1. Research current practices. (Participating organizations: DPS and TTI) 2. Experiment with different speeding enforcement techniques. (Participating organizations: DPS, law enforcement agencies, and TTI) 3. Develop a speed enforcement handbook. (Participating organizations: DPS and TTI) 4. Present findings to law enforcement agencies. (Participating organizations: DPS, law enforcement agencies, and TTI)
Participating Organizations	See above for each step.
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Funding to develop the guidebook. • Funding to present findings. • Law enforcement agency jurisdictions.

Automated Speed Enforcement Countermeasure (4B) Action Plan

Investigate the effectiveness and acceptance of automated speed enforcement.

Element	Description
Steps for Implementation	1. Gather data from other states that use automated speed enforcement. (Participating organization: TTI) 2. Conduct a public opinion poll in relation to automated speed enforcement, making sure to include a summary of potential impacts prior to gathering opinions (engage law enforcement). Potential impacts include safety benefits of automated speed enforcement, separate revenue that goes toward safety improvements, and tolerance levels of enforcement (targeting higher speeds). (Participating organizations: TxDOT and TTI) 3. Develop an informational packet on the societal cost of crashes, the benefits of automated speed enforcement, and the results of the automated speed enforcement poll. (Participating organizations: TxDOT and TTI) 4. Present findings of automated speed enforcement to the TxDOT Legislative Affairs Office, city government affairs departments, the Texas Municipal League, safety advocates, the Legislative Transportation Committee, and legislators willing to champion a bill. (Participating organizations: TxDOT, cities, law enforcement agencies, and safety advocates) 5. Enact statewide legislation. (Participating organization: Texas Legislature) 6. Evaluate effectiveness. (Participating organizations: TxDOT and TTI)
Participating Organizations	See above for each step.
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Legislative support. • Privacy issues. • Rural mentality.

STRATEGY 5

Improve the effectiveness of educational techniques, tools, and strategies for speeding (target specific age groups).

Countermeasures

Focus	Number	Description	Action Plan
Driver's education	5A	Revisit driver education courses, including parent-taught program design; document the benefits of certified instructor training; and enhance ticket dismissal courses, particularly with regard to speed choice and speeding.	✓
Public education	5B	Educate the public on the difference between the posted speed limit, speed design, and safe driving speed.	✓

Note: renumbered from the original listing.

Driver's Education Countermeasure (5A) Action Plan

Revisit driver education courses, including parent-taught program design; document the benefits of certified instructor training; and enhance ticket dismissal courses, particularly with regard to speed choice and speeding.

Element	Description
Steps for Implementation	1. Estimate the level of effort and cost of the study (review earlier studies). 2. Identify sources of potential funding. 3. After securing funding, prepare a request for proposals and select the provider. 4. Conduct the study. 5. Review the 2007 study for gaps in the new study and share the findings.
Participating Organizations	TxDOT, FHWA, research agencies, driver education providers, and DPS
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Current legislation not in line with increasing certified instructor training. • Countermeasure wording, which needs to be revised to more action-oriented verbiage. The wording needs to be expanded to include the actual effectiveness of educational techniques. • Pushback from parents and homeschool organizations.

Public Education Countermeasure (5B) Action Plan

Educate the public on the difference between the posted speed limit, speed design, and safe driving speed.

Element	Description
Steps for Implementation	1. Collect data. (Participating organizations: TxDOT and TTI) 2. Investigate crash involvement. 3. Prepare statistics for use in the campaign. 4. Transfer the information to law enforcement and safety advocates. (Participating organization: DPS) 5. Provide funding for campaign and grants. (Participating organization: TxDOT) 6. Form a coalition focused on speed (sustain momentum). (Participating organization: TxDOT) 7. Execute the coalition and evaluate it. (Participating organizations: TxDOT, TTI, DPS, and the safety coalition)
Participating Organizations	See above for each step.
Effectiveness	* to ***
Cost to Implement	$$
Time to Implement	Short to medium
Barriers	• Legislative funding for the coalition and public/private funding. • Public acceptance. • Coalition/grassroots effort. • Showing problem via media/public service announcements.

Impaired Driving Strategies

Strategy Number	Description
1	Use data systems to identify alcohol licensed and permitted locations within a community and Alcoholic Beverage Code violation history at these locations to determine any correlation with alcohol-related crashes.
2	Increase education for all road users on the impact of impaired driving and its prevention.
3	Increase officer contacts with impaired drivers through regular traffic enforcement.
4	Improve mobility options for impaired road users.
5	Increase data, training, and resources for prosecutors and officers in the area of drugged driving.

STRATEGY 1

Use data systems to identify alcohol licensed and permitted locations within a community and Alcoholic Beverage Code violation history at these locations to determine any correlation with alcohol-related crashes.

Countermeasures

Focus	Number	Description	Action Plan
Data analysis	1A	Develop and maintain data to identify correlations between impaired-driving crashes and citations, road type, corridor, region, county and community, and Texas Alcoholic Beverage Commission licensing data.	✓
Frequent offenders	1B	Track frequent driving-under-the-influence offenders to identify and address persons with multiple impaired-driving arrests and/or crashes. Pursue more intensive interventions.	
Hot spots	1C	Partner, where possible, with community groups and task forces to promote a comprehensive action plan to determine and address community hot spots.	

Data Analysis Countermeasure (1A) Action Plan

Develop and maintain data to identify correlations between impaired-driving crashes and citations, road type, corridor, region, county and community, and Texas Alcoholic Beverage Commission licensing data.

Element	Description
Steps for Implementation	1. Use Crash Records Information System (CRIS) data to determine fatal and suspected serious injury crashes in communities with high probability for impaired-driving issues. (Participating organizations: Texans Standing Tall, TxDOT, TTI, metropolitan planning organizations [MPOs], and city and county agencies) 2. Through the use of existing licensing data available in the Texas Alcoholic Beverage Commission's (TABC's) Public Inquiry System, determine whether any correlations exist between those data and alcohol-related crash data. Also, mine data from prosecutions. (Participating organization: TABC) 3. Create geographic information system map overlays of data, where possible (depends on available data). (Participating organizations: Texans Standing Tall and TxDOT) 4. Identify partnerships to develop a list of information needs; identify communities that want to work on this issue; work in local communities to collect localized crash data with local police and sheriff departments; and use data collected to determine community variables that could impact the collected data related to special conditions, licensing requirements, community measures, and other determined factors. (Participating organization: Texans Standing Tall) 5. Determine areas where specific licensing data are not available through TABC's Public Inquiry System that could have an impact on alcohol-related crashes to determine incomplete data sets. (Participating organizations: Texans Standing Tall and TABC) 6. Partner, where possible, with community groups and task forces to promote a comprehensive action plan to address and determine community hot spots. (Participating organization: Texans Standing Tall)
Participating Organizations	See above for each step.
Effectiveness	***
Cost to Implement	$ to $$$
Time to Implement	6 months to 3 years
Barriers	• The difficulty of data sharing. TABC has restrictions about data sharing. • Database compatibility. The database is not designed to export data. • Festival and special event licenses done on paper in notebooks, not electronically. (Temporary licensing is issued to actual licensed establishment, so festival violations will not reflect location accurately.) • Identification of a champion. • Developing and sustaining a coalition of participating agencies. • Estimating real and meaningful correlations between establishments and crash locations. • Developing sufficient and sustained funding for enforcement and education efforts.

STRATEGY 2

Increase education for all road users on the impact of impaired driving and its prevention.

Countermeasures

Focus	Number	Description	Action Plan
Illegal behaviors and road safety	2A	Identify gaps in knowledge with respect to the impact of illegal behaviors (e.g., specifically prescription drugs, marijuana, and substances other than alcohol) on road safety.	
Consequences of traffic violations	2B	Identify gaps in knowledge on the negative consequences of traffic violations among road users (e.g., fines, loss of license, and effects of a criminal record on future employment).	
Impact of impairment	2C	Demonstrate to all road users the magnitude of the impact of impaired-driving crashes on fatality rates by making comparisons with other causes of death (e.g., murder rate).	✓
Cost of impaired driving	2D	Demonstrate to all road users the magnitude of the cost and liability exposure associated with impaired-driving crashes resulting in injury and/or fatality.	
Medical professionals	2E	Educate medical professionals to inform patients of the effects of medications on the ability to drive or operate heavy machinery.	
Knowledge gaps—judges and prosecutors	2F	Identify the gaps in knowledge of judges and prosecutors about impaired driving, and provide messaging or training to close the gaps.	
Blood test law—educate professionals doing blood draws	2G	Educate professionals making blood draws about the blood test law.	

Impact of Impairment Countermeasure (2C) Action Plan

Demonstrate to all road users the magnitude of the impact of impaired-driving crashes on fatality rates by making comparisons with other causes of death (e.g., murder rate).

Element	Description
Steps for Implementation	1. Identify agencies/organizations that are collecting data correlated with impaired driving, and convene a working group to pursue this countermeasure together. 2. Identify leading causes of death and how they compare to impaired-driving fatality rates. Example are alcohol-related deaths, cancer (e.g., breast, lung, colon, and prostate), murder, heart disease, diabetes, influenza/pneumonia, and tobacco-related deaths. 3. Identify agencies/organizations with state-specific data on different causes of death identified in step 2. 4. Collect data from appropriate sources identified in steps 1–3. 5. Compare data and determine which data points are compelling for different audiences. 6. Create an appropriate number of fact sheets (a minimum of one) that compare death rates and associated costs. Examples are the cost of law enforcement to respond, health insurance rates, car insurance, and lost productivity. 7. Create compelling charts and other visuals/infographics that show the comparisons. 8. Create an editorial calendar that identifies when to share what materials and the type of messaging associated with each item. 9. Identify audiences who should receive materials and who has access to distribute materials to those audiences (e.g., task force, employers, or employees). Others who can distribute information include TxDOT programs, nonprofits, colleges/universities, and the criminal justice system. 10. Identify the cost of implementing prevention programs versus the cost of impaired-driving fatalities.
Participating Organizations	Nonprofit agencies (e.g., Texans Standing Tall)
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Medium
Barriers	• Securing initial and sustained funding. • Obtaining injury outcome data for impaired crashes. • Obtaining reliable cost data for injuries. • Estimating costs of effective prevention programs.

STRATEGY 3

Increase officer contacts with impaired drivers through regular traffic enforcement.

Countermeasures

Focus	Number	Description	Action Plan
Traffic enforcement	3A	Educate the police, community leaders, the public, and traffic safety partners on the role of regular traffic enforcement stops as a primary tool in detecting impaired drivers, and encourage their use to reduce impaired crashes. Identify trends in driving under the influence (DUI) arrests, and compare the data to trends in citations and crashes for use in education.	✓
Data-driven approach	3B	Use a data-driven approach to optimize areas and times for enforcement.	✓
Law enforce-ment training	3C	Identify training gaps for police on locations with a high probability for alcohol and drug use that lead to impaired driving (e.g., breaking up/preventing underage-drinking parties).	✓
Sobriety checkpoints	3D	Conduct surveys to assess public support for sobriety checkpoints and enhanced impaired-driving penalties; document practices, short- and long-term results, and acceptance of checkpoints across the nation; develop a report on the survey results and impaired-driving countermeasure effectiveness; and share the reports with lawmakers and the public.	✓

Note: renumbered from the original listing.

Traffic Enforcement Countermeasure (3A) Action Plan

Educate the police, community leaders, the public, and traffic safety partners on the role of regular traffic enforcement stops as a primary tool in detecting impaired drivers, and encourage their use to reduce impaired crashes. Identify trends in DUI arrests, and compare the data to trends in citations and crashes for use in education.

Element	Description
Steps for Implementation	1. Review available resources on traffic stop volume and its relation to DUI arrests and impaired-driving fatalities. Gather existing data from the Texas Office of Court Administration (OCA) annual report and the Texas Municipal Courts Education Center (TMCEC) on trends in traffic stops. 2. Correlate traffic stop data to driving while intoxicated (DWI) arrest data from OCA and impaired-driving data from the Fatality Analysis Reporting System. 3. Create a data report based on the existing report from TMCEC. 4. Disperse those data to traffic safety partners and policy makers (including positioning on dyingtodrink.org and the impaired-driving task force). 5. Prepare a presentation of those data, and arrange speakers to convey those data to the Texas Sheriff's Association, Texas Police Chiefs, DPS, Texas Commission on Law Enforcement (TCOLE), safety coalitions, and other police and police leadership groups. Prepare articles for publication in their newsletters, websites, and other publications. 6. Prepare and disseminate public information based on this research. 7. Convey this information to the Texas Legislature and other public policy makers.
Participating Organizations	OCA, TMCEC, Texas Sherriff's Association, Texas Police Chiefs, DPS, TCOLE, and city and county agencies
Effectiveness	** to ***
Cost to Implement	$$
Time to Implement	Short
Barriers	• Finding local and state leaders/champions. • Developing partnerships necessary for implementing this countermeasure. • Obtaining sustained and sufficient funding. • Need for police chiefs to support community outreach.

Data-Driven Approach Countermeasure (3B) Action Plan

Use a data-driven approach to optimize areas and times for enforcement.

Element	Description
Steps for Implementation	1. Prepare Data-Driven Approaches to Crime and Traffic Safety (DDACTS) training for police leadership organizations. 2. Prepare DDACTS articles for police leadership newsletters, websites, and publications. 3. Make DDACTS training available for cooperating agencies. 4. Present DDACTS information for use in Selective Traffic Enforcement Program (STEP) programs as a best practice, and strongly recommend its inclusion in STEP grant applications. 5. Compile DDACTS success stories to use as examples for departments not using DDACTS. 6. Provide location-specific DDACTS information to police departments within that location.
Participating Organizations	TxDOT and law enforcement organizations
Effectiveness	** to ***
Cost to Implement	$
Time to Implement	Short to medium
Barriers	• Finding local and state leaders/champions. • Developing partnerships necessary for implementing this countermeasure. • Obtaining sustained and sufficient funding. • Need for police chiefs to support community outreach.

Law Enforcement Training Countermeasure (3C) Action Plan

Identify training gaps for police on locations with a high probability for alcohol and drug use that lead to impaired driving (e.g., breaking up/preventing underage-drinking parties).

Element	Description
Steps for Implementation	1. Identify areas with a high volume of impaired crashes, and determine if coalitions are working with law enforcement to address underage-drinking parties and calls for noise violations. For example, examine San Antonio's Social Host Ordinance. 2. Determine whether coalition and law enforcement agencies need and/or desire for controlled party dispersal training and provide training. 3. Identify communities with social host ordinances and coalitions, and document ordinances and standard operating procedures. 4. Identify best practices training and training materials on location components to impaired-driving and underage-drinking enforcement (e.g., San Antonio's standard operating procedures for its ordinance). 5. Disseminate best practices training materials, resources, and publications through dyingtodrink.org, the Impaired Driving Task Force, and police training and leadership organizations.
Participating Organizations	Texans Standing Tall, police and sheriff departments, Mothers against Drunk Driving (MADD), prosecutors, dyingtodrink.org, and other advocacy groups
Effectiveness	* to ***
Cost to Implement	$
Time to Implement	Short
Barriers	• Finding champions to develop the support for adopting an ordinance. • Developing and sustaining the necessary collaboration or coalition to enforce the ordinance. • Obtaining funding to implement and sustain a program.

Sobriety Checkpoints Countermeasure (3D) Action Plan

Conduct surveys to assess public support for sobriety checkpoints and enhanced impaired-driving penalties; document practices, short- and long-term results, and acceptance of checkpoints across the nation; develop a report on the survey results and impaired-driving countermeasure effectiveness; and share the reports with lawmakers and the public.

Element	Description
Steps for Implementation	1. Document practices, results, and acceptance of checkpoints across the nation. 2. Develop a report on the survey results and impaired-driving effectiveness. 3. Convey findings to the Texas Legislature and other public policy makers.
Participating Organizations	Texas Legislature, other public policy makers, lobbyists, and outreach and advocacy organizations
Effectiveness	* to ***
Cost to Implement	$
Time to Implement	Short
Barriers	• Overcoming legal issues. • Public acceptance.

Notes:

1. According to the Centers for Disease Control and Prevention (Intervention Fact Sheets, 2015, https://www.cdc.gov/motorvehiclesafety/calculator/factsheet/checkpoints.html), "In 1990, the U.S. Supreme Court ruled in favor of the constitutionality of sobriety checkpoint; however, the debate over checkpoints has continued, and some individual state courts have deemed them illegal for violating state constitutions (IIHS, 2012)." The Texas Legislature has deemed sobriety checkpoints illegal under Texas' interpretation of the U.S. Constitution.
2. Womack and Johnson of TTI polled Texans in September 2018, (Womack, K.N. and N.A. Johnson. Texas Statewide Traffic Safety Awareness Survey: 2018 Results, Texas A&M Transportation Institute, College Station, Tx., September 2018.). Respondents were asked if they favor or oppose sobriety checkpoints in Texas: 58% were in favor, with 36.4% strongly in favor; 18.4% were opposed; and the remaining 23.6% were neutral.
3. According to the Centers for Disease Control and Prevention (Intervention Fact Sheets, 2015, https://www.cdc.gov/motorvehiclesafety/calculator/factsheet/checkpoints.html), "Nunn and Newby, 2011, examined the effectiveness of 22 sobriety checkpoints implemented over one year at nine checkpoint locations in Indianapolis, Indiana.... Impairment rates…decreased insignificantly in nondowntown locations and increased significantly in downtown areas. Sobriety checkpoints also resulted in a small significant reduction in the number of alcohol-related crashes compared with similar control locations, with differences more pronounced in downtown areas. Finally, a time-series analysis found that the number of impaired collisions in postcheckpoint periods was approximately 19 percent less than in pre-checkpoint periods."
4. There was overall uncertainty about whether this countermeasure should remain in the plan given legislative willingness and other issues.

STRATEGY 4

Improve mobility options for impaired road users.

Countermeasures

Focus	Number	Description	Action Plan
Public education	4A	Educate the public and community leaders on methods for identifying mobility options at the community level in both urban and rural areas.	✓
Local task forces	4B	Create local task forces to identify local actions.	
Trip planning	4C	Promote trip planning, including designated drivers, public transportation, taxis, and alternate transportation service companies.	✓

Public Education Countermeasure (4A) Action Plan

Educate the public and community leaders on methods for identifying mobility options at the community level in both urban and rural areas.

Element	Description
Steps for Implementation	1. Identify and list existing successful options and marketing materials for mobility options for impaired road users (soberrides.org). If none are available, develop materials for marketing. 2. Identify and list high-risk cities and counties with relatively few or no alternative mobility options. 3. Facilitate distribution and dissemination of these successful materials through social media, websites, colleges and other schools, local businesses, courts, and city governments. 4. Identify and list current gaps/needs related to mobility options for impaired road users. 5. Create resource materials for municipal courts and city governments outlining how to bring new mobility options to their community, such as how to partner with local businesses. 6. Distribute the resource materials at TMCEC judicial education seminars and the Texas Municipal League Annual Conference (for city governments).
Participating Organizations	TxDOT, ad agencies, transit associations, transportation network companies, taxi companies, injury prevention professionals, MADD, local and regional safety coalitions, prosecutors, MPOs, law enforcement agencies, DUI task forces, city and county agencies, restaurant associations, TABC, chambers of commerce, and Texas Municipal Courts Education Center
Effectiveness	* to ***
Cost to Implement	$
Time to Implement	Short
Barriers	• Obtaining sufficient and sustained funding. • Availability of current data on options. • Getting cities engaged. • Developing partnerships. • Lack of advertising by providers. • Difficulty finding providers with internet search engines. • Need to provide information beyond “don’t drink and drive.” • Widespread dissemination of materials and developing effective information dissemination strategies. • Identifying a champion. • Getting participating agencies to follow through with commitments to the effort. • Identifying targeted groups.

Trip Planning Countermeasure (4C) Action Plan

Promote trip planning, including designated drivers, public transportation, taxis, and alternate transportation service companies.

Element	Description
Steps for Implementation	1. Consult with transit agencies, community coalitions, school groups, and alternate transportation service companies on methods of increasing availability of sober rides. 2. Invite these groups to join the Impaired Driving Task Force. Identify and list current gaps/needs related to mobility options for impaired road users. 3. Focus attention on the top 10 counties for DWI crashes. List the existing sober ride options in those counties. 4. Determine target markets (e.g., young persons versus chronic drinkers). 5. Promote trip planning for college students in rural areas through material distribution. 6. Promote trip planning for other targeted groups. 7. Continue to promote soberrides.org and explore the possibility of a statewide smartphone app. 8. Disseminate marketing materials through social media.
Participating Organizations	TxDOT, ad agencies, transit associations, transportation network companies, taxi companies, injury prevention professionals, MADD, local and regional safety coalitions, prosecutors, MPOs, law enforcement agencies, DUI task forces, city and county agencies, restaurant associations, TABC, chambers of commerce, TMCEC, religious organizations, and colleges and universities
Effectiveness	* to ***
Cost to Implement	$ to $$$ (high expense for phone app development)
Time to Implement	Medium
Barriers	• Obtaining sufficient and sustained funding. • Availability of current data on options. • Getting cities engaged. • Developing partnerships. • Lack of advertising by providers. • Difficulty finding providers with internet search engines. • Need to provide information beyond “don’t drink and drive.” • Widespread dissemination of materials and developing effective information dissemination strategies. • Identifying a champion. • Getting participating agencies to follow through with commitments to the effort. • Identifying targeted groups. • Willingness of transportation providers to transport impaired patrons. • Providing affordable and practical sober rides. • Availability of sober rides in rural areas. • Determining effective messages. • Meeting needs during peak hours (late night).

STRATEGY 5

Increase data, training, and resources for prosecutors and officers in the area of drugged driving.

Countermeasures

Focus	Number	Description	Action Plan
Training—DUI detection	5A	Develop training for prosecutors and regular patrol officers on detecting and prosecuting drugged drivers.	
Training—court evidence	5B	Develop joint training for prosecutors and laboratory personnel (forensic toxicologists) to assist in presenting scientific evidence of drug impairment in court.	
Standardized Field Sobriety Testing, Drug Recognition Evaluator training, and roadside drug testing	5C	Continue and increase Standardized Field Sobriety Testing (SFST), Advanced Roadside Impaired Driving Enforcement (ARIDE) training, and Drug Recognition Evaluator (DRE) training. Continue to monitor the development of roadside drug testing instruments, and as appropriate, investigate deploying them into the field as an additional tool to detect impaired driving.	✓
Resources—DUI identification	5D	Identify methodologies and resources for improving the identification of drugged driving as a contributing factor in impaired-driving crashes.	✓
Lab resources	5E	Secure additional resources for laboratories.	
Roadside testing	5F	Continue to monitor the development of roadside drug testing instruments, and as appropriate, investigate deploying them in the field as an additional tool to detect impaired driving.	

SFST, DRE Training, and Roadside Drug Testing Countermeasure (5C) Action Plan

Continue and increase SFST, ARIDE training, and DRE training. Continue to monitor the development of roadside drug testing instruments, and as appropriate, investigate deploying them into the field as an additional tool to detect impaired driving.

Element	Description
Steps for Implementation	This countermeasure has been divided into three individual countermeasures. These countermeasures have implementation steps outlined depending on the objectives the user chooses to implement.
Participating Organizations	Texas Municipal Police Association, Texas DPS, law enforcement agencies, academies and regional academies, University of Houston–Downtown, TxDOT, Texas DPS Troopers Foundation, DPS, National Highway Traffic Safety Administration (NHTSA), Sam Houston State University, Texas Parks and Wildlife, and drug recognition experts
Effectiveness[1]	* to ***
Cost to Implement[1]	$ to $$$
Time to Implement[1]	Short to long
Barriers	• Securing start-up and sustained funding for data analysis, training, travel, and marketing. • Need to continually update and analyze data to identify needs, and to identify the lead organization to analyze data. • Adequacy of county prosecution and court capacity. • Availability of personnel for training, and the impacts of time away from the job and costs of travel. • Availability of SFST-trained officers. • Obtaining buy-in from law enforcement, prosecutors, and courts. • Pushback from parents and homeschool organizations.

[1]Depending on specific countermeasure objectives chosen.

Countermeasure 5c1: Continue and Increase SFST Trainings

Objective: To Increase the number of SFST training courses in Texas.

Objective: To increase the number of SFST trainings in underserved counties.

1. Conduct county assessment of SFST trainings to determine areas of the state where gaps in training exist.
2. Reach out to counties with low commitment to SFST training.
3. Work with DPS and county sheriff departments in rural underserved areas to promote SFST training and a multijurisdictional approach to providing training opportunities.
4. Promote SFST training courses to chief of police, sheriff, and constable associations.
5. Promote extension outreach to underserved rural counties to garner interest in SFST training.
6. Work with rural and underserved councils of governments, traffic safety coalitions, and TxDOT traffic safety specialists (TSSs) to promote SFST training opportunities.

Objective: To increase the number of SFST trainings in areas of the state with elevated fatal or serious (KAB) ethanol (ETOH)–related crashes.

1. Market SFST training to areas strongly impacted by high-KAB crashes that are alcohol involved.
2. Conduct KAB ETOH crash analysis to identify areas of the state that have a significant need for SFST training.
3. Work with DPS and county sheriff departments in KAB ETOH-elevated crash areas to promote SFST training.
4. Promote a multijurisdictional approach to providing training opportunities in KAB ETOH-elevated crash areas.
5. Promote extension outreach to KAB ETOH-elevated crash counties to garner interest in SFST training.
6. Work with councils of governments, traffic safety coalitions, and TxDOT TSSs to promote SFST training in KAB ETOH-elevated crash areas to promote SFST training opportunities.

Objective: To increase funding resources that support the state's effort to conduct more SFST trainings.

1. Lower match requirements from NHTSA from 20% in order to dedicate more of the federal dollars to increase the number of SFST trainings.
2. Use NHTSA incentive funding dollars to increase Texas SFST trainings.
   Note: This would be due to Texas being an at-risk state (more ETOH fatalities than the national average).
3. Increase opportunities for allowable match dollars to be met faster for the NHTSA minimums to participate in SFST grant opportunities.
   Note: This would allow the match percentage to be met more easily so that federal dollar amounts could be accessed faster.
4. Redirect federal grant dollars from underrun projects to a fund specifically for increasing SFST training opportunities.
   Notes:
   - Since underrun dollars roll over to TxDOT for three years, reallocate the overrun funds to support increasing SFST trainings.
   - Using the reallocation of underrun dollars can help to offset the cost of attending an SFST course. Use the financial surplus to cover agency costs such as travel, lodging, and meals for

officers attending the SFST training course. This incentivizes agencies to send officers to training due to agency cost savings.
- Reallocation of underrun dollars could be used as an incentive for STEP agencies to send officers to SFST trainings.

Objective: To increase human capital resources for increasing the number of SFST trainings offered.

1. Conduct county assessment of SFST trainings to determine counties with SFST instructors eligible to train SFST courses.
2. Identify SFST instructors, and reach out to them to perform more courses.
3. Work with DPS and county sheriff departments in rural underserved areas to promote SFST training and a multijurisdictional approach to providing training opportunities.
4. Promote outreach to counties that have no SFST instructors to garner interest in training.
5. Work with rural and underserved councils of governments, the Texas Municipal Police Association (TMPA), DPS, and TxDOT TSSs to promote SFST instructor training opportunities.
   Notes:
   - There is a significant need to identify and market the importance of SFST training to law enforcement agency administrators.
   - Explain the importance of SFST training and its impact on supporting blood and breath evidence.
6. Use SFST training courses to promote SFST instructor, ARIDE, and DRE training courses.
7. Promote SFST refresher training to law enforcement academies that conduct SFST practitioner training as part of the basic academy curriculum.
   Note: There is a significant need to refresh academy graduates with SFST principles as a result of lost knowledge through a lengthy academy course of instruction. Often the SFST training is provided early in the academy curriculum, and information is lost due to the demands of learning other material.

Objective: To increase marketing strategies that support increasing SFST course training.

1. Continue to promote SFST practitioner training at the basic academy level as part of the TCOLE curriculum.
2. Continue to market and promote SFST training to law enforcement agencies through the effort of TMPA and other training providers.
3. Continue to market and promote SFST training to law enforcement agencies at traffic safety conferences, workshops, and events.
4. Continue to market and promote SFST training through multimedia efforts such as websites, social media, and direct marketing opportunities.

Objective: To identify gaps in training that reduce scheduling opportunities for SFST training in Texas.

1. Assess the relevance of DWI enforcement in the context of prioritization of service calls.
   Note: There is a significant need to understand how calls for service (reactive policing) impact the ability of officers to self-initiate (proactive policing) impaired-driving enforcement activity.
2. Identify DWI enforcement as a priority service element that reinforces the need for SFST training.
3. Prioritize wet lab (alcohol workshops) immersion training opportunities as opposed to the video lab.
   Note: There is a significant need to require the wet lab (alcohol workshops) to help demonstrate

to students evidence of impairment associated with the SFST test battery and so that they may experience impairment associated with testing methods.

4. Allow liquor purchase for wet labs as a justified grant expense.
   Note: Currently, agencies pay for alcohol for wet labs and cannot charge the costs back to the grant as match because it is an unallowable cost. For wet labs to be done, the instructor must pay out of pocket for alcohol, which can be a limitation for conducting SFST training courses and wet labs.

Countermeasure 5c2: Continue and Increase ARIDE Trainings

Objective: To increase the number of ARIDE training courses in Texas.

Objective: To increase the number of ARIDE trainings in underserved counties.

1. Conduct county assessment of ARIDE trainings to determine areas of the state where gaps in training exist.
2. Reach out to counties with low commitment to ARIDE training.
3. Work with DPS, Texas Parks and Wildlife, and county sheriff departments in rural underserved areas to promote ARIDE training and a multijurisdictional approach to providing training opportunities.
   Note: A multijurisdictional approach includes teaming with other law enforcement agencies in the region to pull resources to host and conduct ARIDE training courses.
4. Promote ARIDE training courses to chief of police, sheriff, and constable associations.
5. Promote extension outreach to underserved rural counties to garner interest in ARIDE training.
6. Work with rural and underserved councils of governments, traffic safety coalitions, and TxDOT TSSs to promote ARIDE training opportunities.

Objective: To increase the number of ARIDE trainings in areas of the state with elevated KAB ETOH and other drug-related crashes.

1. Market ARIDE training to areas strongly impacted by a high volume of KAB crashes that are alcohol and drug involved.
2. Conduct KAB ETOH and other drug crash analysis to identify areas of the state that have a significant need for ARIDE training.
3. Work with DPS and county sheriff departments in KAB ETOH and other drug-elevated crash areas to promote ARIDE training.
4. Promote a multijurisdictional approach to providing training opportunities in KAB ETOH and other drug-elevated crash areas.
5. Promote extension outreach to KAB ETOH and other drug-elevated crash counties to garner interest in ARIDE training.
6. Work with councils of governments, traffic safety coalitions, and TxDOT TSSs to promote ARIDE training in KAB ETOH and other drug-elevated crash areas to promote ARIDE training opportunities.

Objective: To increase funding resources that support the state's effort for conducting more ARIDE trainings.

1. Lower match requirements from NHTSA from 20% in order to dedicate more of the federal dollars to increase the number of ARIDE trainings.
2. Use NHTSA incentive funding dollars to increase Texas ARIDE trainings.
   Note: This would be due to Texas being an at-risk state (more ETOH and other drug fatalities than the national average).
3. Increase opportunities for allowable match dollars to be met faster for the NHTSA minimums to participate in ARIDE grant opportunities.
   Note: This would allow the match percentage to be met more easily so that federal dollar amounts could be accessed faster.

4. Redirect federal grant dollars from underrun projects to a fund specifically for increasing ARIDE training opportunities.
   Notes:
   - Since underrun dollars roll over to TxDOT for three years, reallocate the overrun funds to support increasing ARIDE trainings.
   - Using the reallocation of underrun dollars can help to offset the cost of attending an ARIDE course. Use the financial surplus to cover agency costs such as travel, lodging, and meals for officers attending the ARIDE training course. This incentivizes agencies to send officers to training due to agency cost savings.
   - Reallocation of underrun dollars could be used as an incentive for STEP agencies to send officers to ARIDE trainings.

Objective: To increase human capital resources for increasing the number of ARIDE trainings offered.

1. Conduct county assessment of ARIDE trainings to determine counties with ARIDE instructors eligible to train ARIDE courses.
2. Work with ARIDE instructors and practitioners to obtain recommendations for candidates who are interested in attending ARIDE training courses.
   Note: Qualifications to attend ARIDE training require that the candidate has attended and successfully completed the SFST training course and that the candidate can pass an SFST proficiency examination in the presence of an SFST or ARIDE instructor.
3. Identify ARIDE instructors and solicit them to perform more courses.
   Note: ARIDE instructors may not be delinquent in their Drug Evaluation and Classification (DEC) recertification status and must have completed a DEC instructor training course.
4. Work with DPS, Texas Parks and Wildlife, and county sheriff departments in rural underserved areas to promote ARIDE training and a multijurisdictional approach to providing training opportunities.
5. Promote outreach to counties that have no ARIDE instructors to garner interest in training.
6. Work with rural and underserved councils of governments, Sam Houston State University, DPS, and TxDOT TSSs to promote ARIDE instructor training opportunities.
   Notes:
   - There is a significant need to identify and market the importance of ARIDE training to law enforcement agency administrators.
   - Explain the importance of ARIDE training and its impact on supporting blood and breath evidence.
7. Use ARIDE training courses to promote DEC and SFST training courses.
8. Promote SFST refresher training to law enforcement agencies that conduct ARIDE practitioner training.

Objective: To increase marketing strategies that support increasing ARIDE course training.

1. Continue to promote ARIDE practitioner training at SFST and DEC training courses.
2. Continue to market and promote ARIDE training to law enforcement agencies through the effort of Sam Houston State University and other training providers.
3. Continue to market and promote ARIDE training to law enforcement agencies at traffic safety conferences, workshops, and events.
4. Continue to market and promote ARIDE training through multimedia efforts such as websites, social media, and direct marketing opportunities.

Objective: To identify gaps in training that reduce scheduling opportunities for ARIDE training in Texas.

1. Assess the relevance of DWI enforcement in the context of prioritization of service calls.
   Note: There is a significant need to understand how calls for service (reactive policing) impact the ability of officers to self-initiate (proactive policing) impaired-driving enforcement activity.
2. Identify DWI enforcement as a priority service element that reinforces the need for ARIDE training.
3. Prioritize wet lab (alcohol workshops) immersion training opportunities as opposed to the video lab.
   Note: There is a significant need to require the wet lab (alcohol workshops) to help demonstrate to students evidence of impairment associated with the ARIDE test battery and so that they may experience impairment associated with testing methods.
4. Allow liquor purchase for wet labs as a justified grant expense.
   Note: Currently, agencies pay for alcohol for wet labs and cannot charge the costs back to the grant as match because it is an unallowable cost. For wet labs to be done, the instructor must pay out of pocket for alcohol, which can be a limitation for conducting ARIDE training courses and wet labs.

Countermeasure 5c3: Continue and Increase DRE Trainings, DRE Recertifications, and DRE Instructors

Objective: To increase the number of DRE training courses in Texas.

Objective: To increase the number of DRE trainings in underserved counties.

1. Identify underserved counties to market DRE courses.
2. Use lead organizations to market DRE courses to identified underserved county law enforcement agencies/regional academies.
3. Promote DRE training course to chief of police, sheriff, and constable associations.
4. Work with rural and underserved councils of governments, traffic safety coalitions, and TxDOT TSSs to promote DRE courses to local law enforcement agencies.

Objective: To increase the number of DRE trainings in areas of the state with elevated KAB ETOH-related crashes.

1. Market DRE training to areas strongly impacted by high-volume KAB crashes that are drug involved.
2. Conduct KAB ETOH crash analysis to identify areas of the state that have a significant need for DRE training.
3. Work with DPS and county sheriff departments in KAB ETOH-elevated crash areas to promote DRE training.
4. Promote extension outreach to KAB ETOH-elevated crash counties to garner interest in DRE training.
5. Work with councils of governments, traffic safety coalitions, and TxDOT TSSs to promote DRE training in KAB ETOH-elevated crash areas to promote DRE training opportunities.

Objective: To increase funding resources that support the state's effort for conducting more DRE trainings.

1. Lower match requirements from NHTSA from 20% in order to dedicate more of the federal dollars to increase the number of DRE trainings.
2. Increase opportunities for allowable match dollars to be met faster for the NHTSA minimums to participate in DRE grant opportunities.
   Note: This would allow the match percentage to be met more easily so that federal dollar amounts could be accessed faster.
3. Redirect federal grant dollars from underrun projects to a fund specifically for increasing DRE training opportunities.
   Notes:
   - Since underrun dollars roll over to TxDOT for three years, reallocate the overrun funds to support increasing DRE trainings.
   - Using the reallocation of underrun dollars can help to offset the cost of attending DRE courses. Use the financial surplus to cover agency costs such as travel, lodging, and meals for officers attending the DRE training course. This incentivizes agencies to send officers to training due to agency cost savings.
   - Reallocation of underrun dollars could be used as an incentive for STEP agencies to send officers to DRE trainings.

Objective: To increase marketing strategies that support increasing DRE training.

1. Continue to market and promote DRE training to law enforcement agencies at traffic safety conferences, workshops, and events.
2. Continue to market and promote DRE training through multimedia efforts such as websites, social media, and direct marketing opportunities.

Objective: To identify gaps in training that reduce scheduling opportunities for DRE training.

1. Assess the relevance of DWI enforcement in the context of prioritization of service calls.
   Note: There is a significant need to understand how calls for service (reactive policing) impact the ability of officers to self-initiate (proactive policing) impaired-driving enforcement activity.
2. Identify DWI enforcement as a priority service element that reinforces the need for DRE training.
3. Prioritize wet lab (alcohol workshops) immersion training opportunities as opposed to the video lab.
   Note: There is a significant need to require the wet lab (alcohol workshops) to help demonstrate to students evidence of impairment associated with the DRE test battery and so that they may experience impairment associated with testing methods.
4. Allow liquor purchase for wet labs as a justified grant expense.
   Note: Currently, agencies are paying for alcohol for wet labs and cannot charge the costs back to the grant as match because it is an unallowable cost. For wet labs to be done, the instructor must pay out of pocket for alcohol, which can be a limitation for conducting DRE training courses and wet labs.

Resources—DUI Identification Countermeasure (5D) Action Plan

Identify methodologies and resources for improving the identification of drugged driving as a contributing factor in impaired-driving crashes.

Element	Description
Steps for Implementation	This countermeasure has been divided into seven individual countermeasures. These countermeasures have implementation steps outlined depending on the objectives the user chooses to implement.
Participating Organizations	TxDOT, Sam Houston State University, DPS, TTI, law enforcement training organizations, Texans Standing Tall, Department of State Health Services, Texas District and County Attorneys Association, and traffic safety resource prosecutor
Effectiveness[1]	* to ***
Cost to Implement[1]	$ to $$$
Time to Implement[1]	Short to long
Barriers	• Securing start-up and sustained funding to change procedures, perform evidence analysis, and train personnel. • Resistance to changing the standard crash report form and related documents and training. • Determining methods to evaluate ARIDE and DEC. • Changing CRIS business rules. • Continuing need to orient personnel and legislators. • Challenges related to blood evidence collection and analysis. • Potential freedom-of-information requests.

[1]Depending on specific countermeasure objectives chosen.

Countermeasure 5d1: Improve Robustness of Data Related to Possible Drug Impairment on Crash Reports

Objective: To identify the most effective data elements relating to drugged-driving crashes.

1. Identify vehicle indicators that can be observed during the crash investigation.
2. Identify chemical evidence that can and should be obtained in crash investigations.
3. Calculate the return on investment for each of the identified data elements.

Objective: To develop methods by which law enforcement officers can recognize and document data that can identify drugged driving on the crash report.

1. Review the application of ARIDE and DEC in the field.
2. Identify ways to improve the documentation of ARIDE and DEC by law enforcement officers.
3. Identify stakeholders and advocates to improve the use of existing techniques to identify and classify drug impairment.

Objective: To identify data gaps related to documenting drugged driving on the crash report.

1. Compare the existing crash report to the data judged as most effective, and identify the gaps.
2. Revise the crash report to reflect the data elements that best inform the likelihood of drug-impaired driving.
3. Allow stakeholders to review the revised crash report and provide feedback.
4. Make the final updates to the crash report.
5. Train law enforcement officers through roll-call deliveries on the changes to the crash report.

Objective: To improve the accuracy of data and the process for determining a drug-elevated crash county.

1. Develop a baseline using current data collection methods.
2. Determine the threshold for classifying counties according to drugged-driving crashes.
3. Track the overall number of crashes with drugged-driving crashes including the crash data elements previously identified.

Countermeasure 5d2: Use Supplemental Crash Reports to Add Missing Drug-Impairment Data to Crash Reports

Objective: To provide valuable details that enhance information about drugged-driving contributing factors.

1. Identify data elements that can be gathered after an initial report is filed that will enhance the classification of crashes relative to drug impairment.
2. Compare the existing supplemental report to the data judged as most effective, and identify the gaps.
3. Revise the supplemental report to reflect the data elements that best inform the likelihood of drug-impaired driving.
4. Add formatting to ease report completion for all potential users.
5. Allow stakeholders to review the revised crash report and provide feedback.
6. Make final updates to the supplemental crash report.

Objective: To train law enforcement, emergency medical services, and/or medical examiners on how to add missing drug-impairment data to crash reports.

1. Train all potential users on the changes to the supplemental report.
2. Develop field tools to serve as reminders for users.

Countermeasure 5d3: Analyze Policies and Possible Legislation Advancing Decriminalization and Legalization of Marijuana

Objective: To analyze legislation and traffic safety impact in other states with legalized marijuana.

1. Review existing legislation in states where marijuana has been legalized.
2. Identify differences in legislation based on type: recreational, medical, and drug form.
3. Quantify the impact on traffic safety crashes.
4. Summarize the findings in a matrix format.
5. Submit the matrix to selected stakeholders to gage the ease of understanding of the analysis results.
6. Revise the matrix based on stakeholder feedback.

Objective: To educate legislators about the potential impact of legalizing marijuana on highway safety.

1. Based on the analysis, develop an outline for the legislative educational materials.
2. Develop educational materials for distribution to legislators and their staff.
3. Develop presentation materials for use in communications with legislators and their staff.
4. Distribute materials to legislators, staff, and other stakeholders who will further distribute materials to target audiences.

Objective: To educate the traffic safety stakeholders and general public about the potential consequences of legalizing marijuana on highway safety.

1. Based on the analysis, develop an outline for traffic safety stakeholder educational materials.
2. Develop educational materials for distribution to traffic safety stakeholders.
3. Develop presentation materials for use in communications with traffic safety stakeholders.
4. Based on the analysis, develop an outline for the educational materials targeting the general public.
5. Develop educational materials for distribution to the general public.
6. Develop presentation materials for use in communications with the general public.
7. Distribute materials to stakeholders who will further distribute materials to target audiences.

Countermeasure 5d4: Optimize Resources Available in the Gathering and Processing of Evidence Related to Drug-Impaired Driving

Objective: To review available resources in gathering and testing blood evidence in drugged-driving cases.

1. Identify the number of samples collected.
2. Analyze the available resources and time requirements to fully test for drug impairment in all samples.
3. Identify needed lab equipment and personnel to fully and promptly process all blood submissions for known substances.
4. Identify and report needed increases.
5. Estimate the return on investment for the proposed changes.
6. Gather input on potential stakeholders.
7. Communicate needed resources to all affected stakeholders.
8. Analyze the impact by collecting data over a designated period.

Objective: To investigate potential efficiencies in employing a law enforcement phlebotomist program.

1. Obtain best practice procedures and processes associated with a law enforcement phlebotomist program based on existing programs modified with Texas legal requirements.
2. Estimate the return on investment for a law enforcement phlebotomist program.
3. Gather stakeholder input related to the draft procedures and processes.
4. Summarize the proposed procedures/process, return on investment, and stakeholder input.
5. Submit the final summary to an advisory group (senior law enforcement, prosecutors, attorneys general, and/or judges) for review and recommended actions.

Objective: To investigate efficiencies in using a jailor phlebotomist program.

1. Obtain best practice procedures and processes associated with a jailor phlebotomist program based on existing programs and Texas legal requirements.
2. Estimate the return on investment for a jailor phlebotomist program.
3. Gather stakeholder input related to the draft procedures and processes.
4. Summarize the proposed procedures/process, return on investment, and stakeholder input.
5. Submit the final summary to an advisory group (senior jail administrators, enforcement, prosecutors, attorneys general, and/or judges) for review and recommended actions.

Countermeasure 5d5: Assess Law Enforcement Resources (Number of DREs, ARIDE Officers, etc.) and Resources for Prosecutors in Drug-Elevated Crash Counties

Objective: To identify and prioritize where ARIDE- and DRE-trained officers are required.

1. Develop a statewide database of individual training to conduct ARIDE and DRE evaluations.
2. Map the trained officers and associated agencies to the counties.
3. Identify gaps in resources based on the county comparison, with special emphasis on those counties designated as elevated in relation to drugged-driving crashes.
4. Compare the location of training opportunities to the gaps in resources.
5. Develop a plan to deliver ARIDE and/or DRE training to individuals and agencies that have a demonstrated need.
6. Track training in order to plan for and deliver refresher training in ARIDE and DRE.

Objective: To access if prosecutors have received adequate resources relating to drug-impaired driving.

1. Coordinate with the Texas District and County Attorneys Association's DWI Prosecutor Task Force to identify existing and needed resources.
2. Determine barriers to prosecutors auditing ARIDE and DRE training.
3. Identify gaps in resources based on the county comparison, with special emphasis on those counties designated as elevated in relation to drugged-driving crashes.
4. Compare the location of training opportunities to the gaps in resources.
5. Use the Texas District and County Attorneys Association's DWI Prosecutor Task Force to get DRE and ARIDE resources into existing and new training, publications, and online resources.

Countermeasure 5d6: Use the SFST, ARIDE, and DRE Tracking System to Identify Common Factors Associated with Impaired Driving

1. Review similar tracking systems in other states.
2. Compare the characteristics of other systems to the policies and procedures that impact resources at Texas law enforcement agencies (time, equipment, training, interest, etc.).
3. Conduct a survey of current SFST, ARIDE, and DRE officers to identify strengths and challenges on employing a tracking system.
4. Determine the inputs, outputs, constraints, limitations, and participation requirements of a proposed system.
5. Assess the financial resources required to develop and deploy a tracking system.
6. Based on this analysis, determine the return on investment of a tracking system for Texas.

Countermeasure 5d7: Determine Whether the Drug Testing Equipment Is Accessible and Robust Enough to Quantify Blood Drug Results

1. Identify the minimum equipment required to support testing related to ARIDE and DRE evaluations.
2. Determine the return on investment based on arrests, crashes, and prosecuting processes.
3. Determine the existing equipment resources.
4. Compare the equipment resources to the drugged-driving crashes and trained personnel to perform evaluations.
5. Identify gaps and establish a plan to address the deficiencies.

Older Road Users Strategies

Strategy Number	Description
1	Reduce wrong-way crashes.
2	Design and operate roadways to meet the needs of older road users.
3	Implement effective methods and tools to prepare older road users to deal with the limitations brought on by the aging process.
4	Improve mobility options for older road users.
5	Implement methods to reduce injury severity among older road users.

STRATEGY 1

Reduce wrong-way crashes.

Countermeasures

Focus	Number	Description	Action Plan
Crash mitigation programs	1A	Track and disseminate the results of wrong-way crash mitigation programs around the state.	
Wrong-way drivers	1B	Install wrong-way driver warning signs, pavement markings, and advanced technology to detect and warn wrong-way drivers, particularly at high-speed intersections with medians where drivers are likely to turn into oncoming traffic.	✓

Wrong-Way Drivers Countermeasure (1B) Action Plan

Install wrong-way driver warning signs, pavement markings, and advanced technology to detect and warn wrong-way drivers, particularly at high-speed intersections with medians where drivers are likely to turn into oncoming traffic.

Element	Description
Steps for Implementation	1. Form regional task forces that include the state transportation agency, local transportation agencies, local law enforcement agency, and other entities to share information about wrong-way driving events and collaborate on methods and countermeasures to address the issue. 2. Use 911 call logs and/or crash data to identify the location of wrong-way events/crashes and the characteristics of wrong-way drivers. While event and crash data typically do not provide the actual wrong-way entry point, these data can be used to determine corridors with a high frequency of wrong-way maneuvers. 3. Conduct field reviews of exit ramps and intersections in the identified area to ensure the signing and pavement markings in place meet the current state standards and are in adequate condition. Any noted traffic control device deficiencies should be corrected as soon as possible. The field review should also note other items that may increase the likelihood of wrong-way maneuvers, such as the location of nearby businesses that serve alcohol and special event facilities, the location of driveways near the ramp, the downstream intersection geometry and traffic control devices, and the interchange design. A one-page field review sheet can be found in Appendix B of Texas A&M Transportation Institute Research Report 0-6769-1. 4. Consider low-cost signing and pavement marking countermeasures, such as: • Additional DO NOT ENTER and/or WRONG WAY signs. • Oversized DO NOT ENTER and/or WRONG WAY signs. • Lower-height DO NOT ENTER and/or WRONG WAY signs. • Wrong-way arrow pavement markings. • Red retroreflective sheeting on DO NOT ENTER and WRONG WAY sign supports. 5. Consider active detection and warning systems, such as: • Red flashing lights around the border of WRONG WAY signs. • Blank-out WRONG WAY signs. • Internally illuminated WRONG WAY signs. 6. Consider access management and geometric modifications. 7. Identify innovative countermeasures, and fund research to examine their design, feasibility, and effectiveness. 8. Develop cost estimates for the purchase, installation, and maintenance of selected countermeasures. 9. Obtain funding to purchase and install selected countermeasures. 10. Install, document, and test selected countermeasures. 11. Evaluate installed countermeasures using wrong-way driving event and crash data, as well as surrogate measures (e.g., percent self-corrected). 12. Document and share evaluation results and lessons learned.
Participating Organizations	TxDOT, city agencies, municipalities, and law enforcement agencies

Element	Description

Effectiveness	***
	• In closed-course studies, participants felt installing oversized signs and adding red retroreflective sheeting on the sign support and red flashing lights around the border of the sign made it easier to recognize a WRONG WAY sign (Texas A&M Transportation Institute Research Report 0-6769-1).
	• In 2014, researchers found red flashing lights around the border of WRONG WAY signs at freeway exit ramps resulted in a 38% reduction in wrong-way driving events (Texas A&M Transportation Institute Research Report 0-6769-1). Using a more recent data set, in 2017, researchers attributed a 32% reduction in wrong-way driving events to red flashing lights around the border of WRONG WAY signs. This finding equates to an event (non-crashes and crashes) modification factor of 0.68 with a 95% confidence interval of 0.45 to 0.91 (forthcoming National Cooperative Highway Research Program [NCHRP] report).
	• At divided highway intersections, researchers have found the following treatments deter wrong-way movements (forthcoming NCHRP report):
	  ○ DO NOT ENTER and WRONG WAY signs on the outside of a wrong-way turn.
	  ○ Wrong-way arrow pavement markings for the through lanes.
	  ○ The presence of a centerline in the median opening.
	  ○ Use of stop or yield lines when interior right-of-way treatments are provided.

Cost to Implement	$$$ • Low-cost signing and pavement marking countermeasures: $100 to $500 each (includes equipment purchase and installation). • Active detection and warning systems: $10,000 to $35,000 each (includes equipment purchase and installation).
Time to Implement	• Forming regional task forces: 1 to 3 months. • Obtaining and analyzing wrong-way driving event and/or crash data: 1 to 3 months. • Conducting field reviews: 1 to 3 months. • Implementing low-cost signing and pavement marking countermeasures: 1 to 3 months. • Implementing active detection and warning systems: 6 months to 1 year. • Implementing access management and geometric modifications: 1 to 3 years. • Researching innovative countermeasures: 1 to 3 years. • Evaluating installed countermeasures: 1 to 5 years.
Barriers	• Funding. • Sample sizes insufficient to establish expected effectiveness. • A large number of freeway exit ramps and divided highway intersections. • Lack of data about actual entry points (i.e., where the wrong-way maneuver was initiated).

STRATEGY 2

Design and operate roadways to meet the needs of older road users.

Countermeasures

Focus	Number	Description	Action Plan
Roadway design standards	2A	Implement strategies and standards included in the *Human Factors Guide* and the *Handbook for Designing Roadways for the Aging Population* broadly across Texas.	✓
Safe system approaches	2B	Adopt Safe System (Vision Zero) and Complete Streets approaches to benefit older road users when designing and operating roadways.	
Intersection geometry	2C	Continue to investigate the effectiveness of intersection geometric features (e.g., channelization, island size, and lane width) related to older driver and pedestrian safety.	
Commercial develop-ments	2D	Encourage developers to work with law enforcement to proactively mitigate potential crash hazards for older motorists and pedestrians when building or expanding commercial developments based on the FHWA aging population guidance.	
Engineer training	2E	Bring FHWA and National Highway Institute training courses on the *Human Factors Guidelines* and the *Handbook for Designing Roadways for the Aging Population* to TxDOT districts, metropolitan planning organizations (MPOs), and city engineering audiences.	✓

Roadway Design Standards Countermeasure (2A) Action Plan

Implement strategies and standards included in the *Human Factors Guide* and the *Handbook for Designing Roadways for the Aging Population* broadly across Texas.

Element	Description
Steps for Implementation	1. Evaluate the time to implement and the cost effectiveness. 2. Prioritize measures to implement. 3. Implement the measures. 4. Evaluate measures to justify making the measures part of standards. 5. Publicize improvements. Note: Specifically adopt as standard practice turn-lane channelization, offset left-turn lanes, edge line and curb delineation, left-turn traffic control for signalized intersections (protected left-turn phases), advance street name signs (particularly at three-legged intersections and locations with a relatively large annual average daily traffic or a large expected number of crashes), larger signs, advance warning signs, overhead lane assignment on intersection approach, and improved signal head visibility.
Participating Organizations	TxDOT, city agencies, municipalities, and law enforcement agencies
Effectiveness	***
Cost to Implement	$$
Time to Implement	Long for full implementation. During the facilitated discussions, 10 years was mentioned a few times.
Barriers	• Lack of maintenance and construction policies and standards to require infrastructure improvements. • Funding. • In some cases, public acceptance (e.g., roundabouts).

Engineer Training Countermeasure (2E) Action Plan

Bring FHWA and National Highway Institute (NHI) training courses on the *Human Factors Guidelines* and the *Handbook for Designing Roadways for the Aging Population* to TxDOT districts, MPOs, and city engineering audiences.

Element	Description
Steps for Implementation	1. Identify availability of courses. A handbook course may not exist. Consider working to develop a course or asking for a course from the U.S. Department of Transportation. 2. Select the desired training format: • Option 1: NHI instructors deliver a low-cost NHI course (limited to a few locations to be selected by TxDOT). • Option 2: NHI instructors deliver one in-person course and one condensed webinar course (similar to Interstate Access Justification Report training conducted a few years ago; each district sent two representatives to an in-person training in Austin, and one condensed webinar version was offered to any others). • Option 3: NHI instructors conduct a train-the-trainer course to TxDOT staff, Local Technical Assistance Program (LTAP) staff, or others. The course is then delivered through TxDOT, LTAP, etc. 3. Deliver training to TxDOT divisions and districts, MPOs, city engineering audiences, and the consultant community. Also deliver training during the Texas District of the Institute of Transportation Engineers conference and other similar statewide conferences.
Participating Organizations	TxDOT divisions and districts, MPOs, city engineering audiences, and consultant community
Effectiveness	Determining effectiveness is difficult for training.
Cost to Implement	$
Time to Implement	Short
Barriers	• Needed TxDOT management support and direction. • The difficulty of determining whether training is effective.

STRATEGY 3

Implement effective methods and tools to prepare older road users to deal with the limitations brought on by the aging process.

Countermeasures

Focus	Number	Description	Action Plan
Apps	3A	Initiate a pilot program designed to test a smartphone-based application that provides real-time information and warnings to older road users.	
Training	3B	Encourage participation by older road users in education and training opportunities, such as AARP Smart Driver™.	
Licensing	3C	Encourage adoption of a law requiring periodic driver licensing tests for adults.	✓

Note: renumbered from the original listing.

Licensing Countermeasure (3C) Action Plan

Encourage adoption of a law requiring periodic driver licensing tests for adults.

Element	Description
Steps for Implementation	1. Gather data from other states concerning periodic driver licensing tests for adults. (Participating organization: TTI) 2. Create a statewide, multidisciplinary advisory panel including the TxDOT Legislative Affairs Office, city government affairs offices, Municipal League, safety advocates, Transportation Committee (legislature), and others. 3. Develop alternate solutions to periodic driver licensing tests for adults: safe-driving courses for older users, vision and/or cognitive testing, reporting of drivers to the Medical Advisory Board, and preparation for older drivers taking tests. (Participating organizations: TTI and University of Texas *Journal of the American Planning Association*) 4. Conduct a public opinion poll about periodic driver licensing tests for adults, making sure to include a summary of potential benefits prior to gathering opinions. (Participating organizations: TxDOT and TTI) 5. Develop a technical advisory team or task force to address older road users. (Participating organizations: Strategic Highway Safety Plan Executive Team, Older User Emphasis Area Team, AARP, and Public Health) 6. Develop an informational packet on the benefits of periodic driver licensing tests, alternate solutions for adults, and results of the poll. (Participating organizations: TxDOT and TTI) 7. Present findings about periodic driver licensing tests and alternate solutions for adults to the TxDOT Legislative Affairs Office, city government affairs departments, the Texas Municipal League, safety advocates, the Legislative Transportation Committee, and legislators willing to champion a bill. (Participating organizations: TxDOT, cities, law enforcement agencies, safety advocates, and legislature) 8. Enact statewide legislation. (Participating organization: Texas Legislature) 9. Evaluate outcomes. (Participating organizations: TxDOT and TTI)
Participating Organizations	See above for each step.
Effectiveness	*
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Legislative support. • Public support. • Cost to implement. • Technical expertise.

STRATEGY 4

Improve mobility options for older road users.

Countermeasures

Focus	Number	Description	Action Plan
Regional clearing-houses	4A	Create regional clearinghouses on mobility options available to older road users, and educate the public on methods for identifying mobility options at the community level.	
Recom-mended strategies	4B	Identify current and recommended strategies for improving older person mobility in urban and rural areas.	✓

Recommended Strategies Countermeasure 4B Action Plan

Identify current and recommended strategies for improving older person mobility in urban and rural areas.

Element	Description
Steps for Implementation	1. Identify current transit/transportation options for the older population: transit (urban and rural transit), taxi and network companies, volunteer networks, councils of governments/MPOs (inventory and data), social services, and nonprofits serving older adults. 2. Research barriers to use of transportation services by older users: cost, fear of trying something new and unfamiliar, limited availability in rural areas, physical limitations, scheduling conflicts, agency coordination and/or competition, state/federal laws (pertaining to funding), and geographic challenges. • Survey current volunteer programs; find out what does and does not work, and identify steps to implementing such programs and promoting them to the public. • Develop and offer training on volunteer driving programs to senior centers, churches, medical facilities, AAA chapters, and MPOs. 3. Contact the Florida and California departments of transportation to identify volunteer driving programs and traditional services already in place (e.g., Drive a Senior). 4. Provide information to older road users on mobility options and overcoming barriers to use, and identify the entity and mechanism to update and keep the information current.
Participating Organizations	MPOs, medical facilities, churches, TxDOT, social service agencies, and AAA
Effectiveness	**
Cost to Implement	$
Time to Implement	Medium
Barriers	• Cost and state or federal laws relating to funding. • Fear of trying something new. • Limited availability in rural areas and other geographic challenges. • Physical limitations. • Scheduling conflicts. • Agency coordination or competition.

STRATEGY 5

Implement methods to reduce injury severity among older road users.

Countermeasures

Focus	Number	Description	Action Plan
Safe systems approach	5A	Adopt a safe system (Vision Zero) approach to reduce the consequences of human error.	
Education	5B	Educate older drivers on vehicle safety and available resources. Educate medical professionals and law enforcement on issues regarding aging drivers, and encourage them to initiate discussions with those drivers.	✓
Vehicle safety features	5C	Provide incentives for purchase of vehicles with enhanced safety features.	
Safety belt use	5D	Determine older road users' safety belt use from TxDOT surveys, and conduct a targeted campaign explaining the benefits of safety belt use.	
Dealer involvement	5E	Work with the Texas Automobile Dealers Association to educate older vehicle purchasers on vehicle safety technologies, and provide incentives for purchasing safer vehicles.	

Education Countermeasure (5B) Action Plan

Educate older drivers on vehicle safety and available resources. Educate medical professionals and law enforcement on issues regarding aging drivers, and encourage them to initiate discussions with those drivers.

Element	Description
Steps for Implementation	1. Identify resources, such as agencies and websites that educate older drivers and their caregivers. Create handouts and flyers about topics such as My Car Does What?; CarFit; warning signs (limitations associated with age); self-assessment tools; and fact sheets with statistics, common mistakes, and challenges older drivers face. 2. Put together a packet of information (from step 1) that can be disseminated to: • Dealerships and salespeople: ○ Encourage training about vehicle technology by having salespeople demonstrate it to buyers. ○ Raise awareness of vehicle characteristics that may benefit older drivers. ○ Provide CarFit training and implementation. ○ Provide packets for dissemination. ○ Develop a recognition program for those serving older drivers, such as "This dealership certified on older driver vehicle education." • The medical community: ○ Identify resources for educating older road users from Florida and California departments of transportation and others. ○ Provide packets for dissemination. ○ Offer training on the resources available. ○ Conduct workshops at medical conferences. ○ Hold lunch-n-learn for medical offices. • Law enforcement: ○ Provide packets for dissemination. ○ Check with the National Highway Traffic Safety Administration and other states to seek available resources. ○ Offer training. ○ Work with the Texas Municipal Police Association (TMPA) to develop a Texas Commission on Law Enforcement credit class on older drivers. • The general public: ○ Provide packets for dissemination to active senior communities, DMVs, tax offices, car service agencies (e.g., oil change locations, insurance companies, post offices, and senior centers). ○ Create a system for drivers to report anonymously by sending in cards when an older driver is seen making poor driving choices. ○ Send packets to drivers participating in the Mature Driver Program. ○ Work with DMV or DPS (Texas KidSafe Program with Baylor Scott & White Health) to identify addresses.
Participating Organizations	DMV, DPS, outreach organizations, TMPA, and TxDOT
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium

Element	Description
Barriers	• Who will champion this movement? • Support for an aging road user summit or a statewide coalition. • Stakeholder buy-in (lack of time and resources). • Dissemination methods.