# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
</tr>
<tr>
<td>EXECUTIVE SUMMARY</td>
</tr>
<tr>
<td>Chapter 1</td>
</tr>
<tr>
<td>Chapter 2</td>
</tr>
<tr>
<td>Chapter 3</td>
</tr>
<tr>
<td>Chapter 4</td>
</tr>
<tr>
<td>Chapter 5</td>
</tr>
</tbody>
</table>

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Executive Summary

The Houston-Galveston region has a very severe traffic safety problem. Between 1999 and 2001 in the eight-county Houston metropolitan region (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller), there were 252,241 serious crashes, an average of 84,080 a year (or 230 a day). From these crashes, 1,882 persons were killed (an average of 627 a year) and 281,914 persons were injured (an average of 93,971 a year). The crashes in our region accounted for 26% of all serious crashes in the State of Texas during that period while the region’s share of the State’s population is 22% and of the State’s vehicle miles traveled (VMT) is 21%.

The likelihood of a driver in the region being involved in a fatal or in an injury crash in our region is 36% higher than the State of Texas average and 149% higher than the U.S. average. Our region leads the State of Texas in virtually every type of crash and leads the nation in alcohol-related fatalities per capita.

Because of the extent and severity of crashes in the region, the Regional Safety Council was created in order to make recommendations for improving safety and to provide monitoring of safety improvements. The Regional Safety Council is made up of safety experts from a variety of fields—transportation, law enforcement, medical, public health, law, trucking, rail, safety advocacy, and safety research and represents local government, State government, private companies, and nonprofit organizations.

During the 2006 calendar year, the Regional Safety Council met in order to monitor safety in the region and make recommendations for improving safety. The Regional Safety Council created four safety subcommittees to focus on four specific safety problems:

1. Reducing DUI/DWI Crashes
2. Reducing Aggressive Driving
3. Improving Freight Safety
4. Improving Safety Information Systems

The following are the recommendations of Regional Safety Council, divided into those from the four safety subcommittees.

Recommendations for Reducing DUI/DWI Crashes

 Recommendations Requiring Little or No Additional Funding

1. **Encourage maximum implementation of interlock technology.** Texas law mandates the use of Ignition Interlock devices for subsequent offenders as a condition of bond and mandates the use of Ignition Interlock devices as a condition of probation for those convicted of a first offense with a BAC of 0.15 or greater, those convicted of DUI who are under 21 years of age, those convicted of second or subsequent DWI offenses, and those convicted of DWI who are on probation for Intoxication Assault or Manslaughter. Research showsIgnition Interlock devices protect the public and reduce DWI recidivism up to 90% when they are installed on the convicted offenders’ vehicles. Yet in spite of being mandated, their use is substantially underutilized. This committee supports
educational efforts to encourage judges and prosecuting attorneys to enforce the interlock requirements currently in Texas law.

2. **Advocate for legislation to eliminate the “intoxicants clause” in the Texas Insurance Code. This clause allows automobile insurers to avoid liability for claims that result from DWI collisions.**

   Texas insurance laws should be revised to repeal the “intoxicants clause” in insurance policies that allows insurance companies to deny payment of medical expenses if a person is under the influence of alcohol or other drugs at the time of injury. The clause provides a legal shield for intoxicated patients by inhibiting testing and identification of drunk drivers.

3. **Modify the State’s Administrative License Revocation (ALR) laws.**

   The State should modify its ALR laws to allow individuals accepted to participate in a DWI Court program to retain their driver’s license as long as they are an active member and successfully complete the DWI court process.

4. **Advocate for legislation to forbid servers of alcoholic beverages to drink while on duty.** The Committee recommends legislation forbidding all servers of alcoholic beverages from drinking alcoholic beverages while they are working. Since the judgment of alcoholic beverage servers is essential for refusing to serve drunken patrons, it is important that the servers’ cognitive abilities be uninfluenced by alcohol.

5. **Advocate for legislation to authorize sobriety checkpoints.** A sobriety checkpoint is an important law enforcement tool that can reduce drunk driving. It is a proven law enforcement tool in deterring impaired driving.

**Recommendations Requiring Additional Funding**

6. **Fund environmental prevention and education programs to prevent underage drinking.** The Committee supports environmental prevention and education programs to reduce youth access to alcohol by working with law enforcement and the community, and to educate students and the community as a whole on the effects of underage alcohol use, for example the programs that Mothers Against Drunk Driving are implementing. The Committee recommends identifying funding sources for these types of programs and developing better communication with law enforcement enforcing underage drinking laws, safety advocacy groups, such as AAA, MADD, community coalitions, and with school systems.

7. **In order to develop more effective targeted intervention, a study should be conducted to identify problem alcohol establishments and locations with high concentrations of DWI offenders.** This study can be conducted by H-GAC and participating local governments. First, it will require identifying establishments where drivers who are convicted of DWI were served, and second, examining DWI arrest records in order to identify areas where there are concentrations of DWI drivers residing. Based on the results and with the approval of the jurisdiction, propose appropriate community intervention by teams of safety engineers, law enforcement, and community intervention specialists in order to reduce drinking and driving behavior. This may be accomplished in partnership with various other groups, such as Houston Ministers Against Crime and Mothers Against Drunk Driving.
Recommendations for Reducing Aggressive Driving

Recommendations Requiring Little or No Additional Funding

8. **Encourage jurisdictions to implement dynamic speed signs along arterials.** This technology provides information to drivers about their speed and, based on casual observation, appears to be effective at reducing driving speed. In the next year, the Committee will research the effectiveness of this technology to see if there are long-term safety benefits.

Recommendations Requiring Additional Funding

9. **Implement one or more safety corridors.** The Committee has considered implementing a Safety Corridor concept, similar to programs in Pennsylvania, New Jersey, Virginia, Oregon, New Mexico, and Kentucky, where increased efforts are taken to reduce aggressive driving on problematic road corridors. The committee will review roadway corridors in the region that have a high incidence of crashes related to aggressive driving and will partner with jurisdictions in the proposed corridors to educate drivers of the problem, increase enforcement, and implement roadway measures to reduce aggressive driving (e.g., warning signs, dynamic speed signs, improved signal timing, better striping). In addition, the Committee will research funding options, including Selective Traffic Enforcement Program (STEP) funding, for improved enforcement and will conduct an evaluation of safety corridor implementation, including violations, crash reductions, and an evaluation of the speed limit for the corridor.

10. **Promote road safety education to teens.** The Committee recognizes that teen drivers have a disproportionately higher incidence of being involved in crashes resulting from aggressive driving and recommends addressing aggressive driving at the high school level by promoting educational programs for teens. The main program of interest is the “Teens in the Driver’s Seat” program, a Peer-to-Peer driver safety program where teens provide input on the development of educational materials and then delivered the message to fellow teens. The Committee recommends the implementation of this program in conjunction with a Safety Corridor project at a high school located along a proposed safety corridor and recommends the notification of all districts in the region about this program and the active searching for funding options for this and other programs (e.g., “Shattered Dreams” – a graphic look at the dangers of drinking and driving sponsored by TABC, or “Driver’s Edge” – a program developed by professional race car drivers on how to drive defensively).

Recommendations for Improving Truck Safety

Recommendations Requiring Little or No Additional Funding

11. **Expand use of truck lane restrictions on six or more lane freeways to the fullest extent possible where the truck volumes are sizeable and where the existing physical layout of the road, entry and exit ramps, and control conditions are feasible.** The Committee proposes that truck lane restrictions be used where truck volumes are substantial (e.g., 4% or more of all vehicles) and where the roadway infrastructure and traffic conditions make it feasible. The Committee will further study the use of lane restrictions for commercial vehicles on four-lane divided highways by reviewing the
existing literature and evaluate whether any examples are applicable to our region. Under the current guidelines, the Committee will identify additional freeways for which truck lane restrictions might be implemented.

12. **Support development of truck only facilities and work with other agencies to ensure that safety considerations are part of any conceptual plan.** The Committee supports the feasibility of building truck-only lanes as either part of existing freeway facilities or as stand-alone facilities. These will improve safety by eliminating conflicts between trucks and passenger vehicles. Since there are conceptual plans currently being developed to build truck-only facilities, the Committee will work to have safety explicitly considered in these plans.

13. **Investigate options for additional truck enforcement funding.** The Committee will investigate options for additional truck enforcement. The Committee proposes encouraging accountability and self-enforcement at varying levels of freight delivery (e.g., equipment manufacturers, owners, loaders, and drivers) and seeks support for legislation required to allow fining receipts to be dedicated to increased intermodal Carrier Safety enforcement. The Committee will explore freight industry guidelines for self-enforcement (e.g., a system of surcharges that could be dedicated for enforcement purposes).

**Recommendations Requiring Additional Funding**

14. **Develop an educational program about truck safety that targets the general public, the trucking industry, and government.** The Committee encourages public, private and non-profit organizations to increase education about freight safety issues, both in general and specifically in regard to driving with trucks or around trucks. The education would include programs aimed at the general public (e.g., utilizing public service announcements to increase public awareness of freight safety issues; using short catchy phrases on billboards, truck trailers, bumpers, and mud flaps to inform the public about freight safety), the trucking industry (e.g., provide pamphlets, posters, and billboards at intermodal facilities and as part of safety meetings), and government (e.g., utilizing public forums such as the Regional Safety Council, Technical Advisory Committee, and Transportation Policy Council to increase awareness of freight safety issues).

**Recommendations for Improving Safety Information Systems**

**Recommendations Requiring Little or No Additional Funding**

15. **Encourage data sharing at regional level.** A regional Memorandum of Understanding (MOU) regarding data sharing should be established on the use of crash data and limitations about its use. Data from the State Trauma Registry should be linked to the DPS crash data and Mortality Data, with appropriate information removed to protect the identity of patients. Linking crash and medical data can help us to prepare: 1) An epidemiological model where the interaction of the crash victim with the agents of injury and the social and physical environment are studied. This can lead to a better understanding of the causes of crash fatalities and injury levels; and 2) Document hospital charges resulting from motor vehicle crashes. With these data, countermeasures that have the most impact on improving traffic safety can be identified. In addition, discussions for including data from insurance companies should be sought to provide a
better understanding of the magnitude of reported crashes and to improve the information on non-reported crashes.

**Recommendations Requiring Additional Funding**

16. **Ensure proper collection of crash data.** The Committee will seek funding to conduct an inventory of local police departments to determine their data collection procedures, standards and equipment. This survey will benchmark the current conditions to determine the magnitude of the problem or perceived problem related to the quality of the data being gathered at the time of the crash. The survey should also identify some of the key strengths or weakness in the data collection process, such as the software programs being used, GPS equipment, and timeliness of submission. As standardized definitions and timely collection are important to the quality of the data, it is important that a centralized agency take responsibility for establishing a training course which sets out these guidelines. The committee recommends that the Texas Commission on Law Enforcement Standards be required to establish training courses on crash data collection and ensure its implementation in every law enforcement agency statewide.

17. **Setup a clearinghouse for crash information and analysis at H-GAC.** The Committee will seek funding for the creation of a motor vehicle safety information center at H-GAC. The State’s CRIS (Crash Reporting Information System) currently will not have the capability for individual users to directly query and analyze data. However, data will be provided to agencies on a periodic basis if requested. Funding should be sought to create a crash data clearinghouse at H-GAC for crash information and analysis. This clearinghouse would include hardware and software for storage and analysis of crash and related information. The data clearinghouse should have the ability to distribute data and perform analysis. For example, an interactive web site could be developed whereby local agencies could analyze crashes in their jurisdiction. In addition, procedures and tools should be developed to assist in the procurement of safety improvement funds through State or Federal agencies. Potentially this type of system could be ported to other regions within the State since the data is from the same source.

H-GAC could develop the initial database to receive the data from CRIS. However, since the data sets are large and could quickly stretch the limited resources of the current hardware, additional storage and analysis capabilities need to be funded. Also, tools to automate data loading and web analysis would free up the resources for H-GAC personnel to provide analysis of the data.
Chapter 1
OVERVIEW: SAFETY IN THE HOUSTON-GALVESTON REGION

INTRODUCTION

On February 2, 2006, the Regional Safety Council (RSC) met for the first time at H-GAC. The RSC was set up to provide recommendations for improving safety in our region. The members were professionals who had worked in safety for much of their professional careers and reflected a wide diversity of backgrounds—transportation, law enforcement, emergency medical service, injury prevention, public health, trucking, railroads, insurance, shipping, safety advocacy, and safety research.

The RSC was set up with a mandate to meet for four years. Each year, the RSC is to provide a set of recommendations that are submitted to H-GAC’s Transportation Policy Council and are published in an annual safety report on the State of Safety in the Region. This is the first annual report. In addition, the RSC sponsors an annual safety conference, the first one of which was held on November 16, 2006.

The RSC broke into four subcommittees to focus on specific safety issues: 1) Reducing DWI/DUI Crashes; 2) Reducing Aggressive Driving; 3) Improving Freight Safety; and 4) Improving Safety Information Systems. The chapters in this report constitute the recommendations by the RSC and are organized into these four areas. In this first chapter, an overview of the safety problems in the region is presented. Chapter 2 addresses the problem of alcohol and drug-related crashes and which are involved in approximately two-thirds of fatalities in Texas. Chapter 3 looks at the problem of aggressive driving, the source of more than 50% of crashes in our region. Chapter 4 discusses freight safety, specifically involving commercial motor vehicles. Chapter 5 examines safety information systems and the need for providing up-to-date data for monitoring safety improvements. Chapter 6 provides a brief summary of the recommendations for the first year.

BACKGROUND

The following information is aimed at providing some background material about safety in the region and to document some of the factors affecting crashes.

Data Sources

The most recent data available for regional safety is for 2001. The data come from the Crash Records Bureau of the Texas Department of Public Safety.1

Total Crashes

Between 1999 and 2001 in the eight-county Houston metropolitan region (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller), there were 252,241 serious crashes, an average of 84,080 a year (or 230 a day). From these crashes, 1,882 persons were killed (an average of 627 a year) and 281,914 persons were injured (an average of 93,971 a year). Figure 1.1 displays these locations.

1 http://www.txdps.state.tx.us/administration/driver_licensing_control/arb.htm
Children are particularly vulnerable to crashes because they depend on drivers being able to stop. Between 1999 and 2001, there were 128 children under age 16 who were killed (an average of about 43 a year) and there were 37,061 children under age 16 who were injured (an average of about 12,354 a year).

The crashes in our region accounted for 26% of all serious crashes in the State of Texas during that period. Some comparisons follow:

1. The region’s share of the State’s population is 22% and of the State’s vehicle miles traveled (VMT) is 21%.

2. There were 11% more crashes in our eight-county region than in the 16-county Dallas-Fort Worth region, even though the latter region is 12% larger in population.

3. The likelihood of a driver being involved in a fatal or injury crash in our region is 36% higher than the State of Texas average and 149% higher than the U.S. average.

Unfortunately, the number of serious crashes has been increasing. In 1999, there were 80,033 serious crashes; in 2000, there were 84,040, and in 2001 there were 88,167. This represents an average increase of 3.4% a year in serious crashes compared to a 2% annual increase in population or a 1.9% annual increase in employment over the three-year period. Even worse, the number of fatal crashes increased by an average of 8.6% a year over the three-year period, or from 491 to 563 to 618.
While we do not know whether these changes have continued since 2001, we are hopeful that these conditions have improved. In Texas as a whole, the number of fatalities decreased by 2.1% a year from 2002 to 2004.

Types of Crashes

Unfortunately, our region leads the State in virtually all types of crashes:

<table>
<thead>
<tr>
<th>Type of crash</th>
<th>1999-2001 Number</th>
<th>Percent of State total</th>
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</thead>
<tbody>
<tr>
<td>All serious crashes</td>
<td>252,241</td>
<td>26%</td>
</tr>
<tr>
<td>Fatal crashes</td>
<td>1,672</td>
<td>18%</td>
</tr>
<tr>
<td>Injury crashes</td>
<td>161,373</td>
<td>26%</td>
</tr>
<tr>
<td>DWI/DUI crashes</td>
<td>16,389</td>
<td>21%</td>
</tr>
<tr>
<td>Pedestrian crashes</td>
<td>3,579</td>
<td>26%</td>
</tr>
<tr>
<td>Bicycle crashes</td>
<td>1,948</td>
<td>28%</td>
</tr>
<tr>
<td>Truck crashes</td>
<td>154,921</td>
<td>21%</td>
</tr>
<tr>
<td>Rail-vehicle crashes</td>
<td>1,183</td>
<td>23%</td>
</tr>
</tbody>
</table>

(1990-2001)

With fatal crashes, we have a lower percentage than our share of population or VMT. With DWI/DUI and truck crashes, we have a percentage about equal to our share of population or VMT. However, in absolute numbers we still have more fatal crashes, DWI/DUI crashes, and truck crashes than any other region in the State. With the other types of crashes, we have a higher number of crashes than any other region and a higher proportion than our share of population and VMT.

Pedestrian Crashes

Pedestrian safety is a big problem in our region. Between 1999 and 2001, there were 3,579 pedestrian crashes (an average of 1193 a year), 32% of whom were children under age 16. About 19% of fatalities involve pedestrians (17%) or bicyclists (2%).

Truck Crashes

Crashes involving trucks were a substantial problem for the region. Between 1999 and 2001, there were 154,921 serious crashes involving trucks (61% of all serious crashes). Of these, 15,369 (or 6.1% of all serious crashes) involved commercial motor vehicles.

However, the vast majority of truck crashes involved pickup trucks in which there were 77,640 serious crashes between 1999 and 2001 (or 30.8% of all serious crashes. Other truck crashes involve sports utility vehicles (49,418) and panel van-type vehicles (29,506).
Highway-Rail Safety

Between 1990 and 2003, according to the Federal Railroad Administration database, there were 1,183 crashes involving a motor vehicle and a railroad train in the eight-county region, an average of about 95 a year. The region has more than 1100 at-grade crossings, creating significant exposure and potential hazards for highway users including vehicles, pedestrians, and bicyclists.

Relative to the State, the region has a severe problem. For example, between 1990 and 1992, the region accounted for only 15.8% of the State’s total highway/rail crashes. By 2000-2002, however, the region accounted for 23.2% of the State’s total.

Part of this increase is due to the region’s growing share of population but most has to do with a lack of progress in reducing rail/highway crashes in the region. For example, between 1990 and 1992, there were 252 vehicle-train crashes in the region while the number from 2000 to 2002 was 247. Thus, over the decade, the number of railroad highway grade crossing crashes essentially did not change, but did increase as a share of the State total.

H-GAC has identified eight locations where there were eight or more highway/rail crashes between 1990 and June 2003 and 22 more locations where there were five to seven highway/rail crashes in the same period.

Behavioral Factors Contributing to the Crashes

There is a major need to reduce the number and severity of crashes. The major factors cited by the police as causing the crashes are:

<table>
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<th>Major Driver Errors: 1999-2001</th>
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<tr>
<td>Speeding</td>
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<tr>
<td>Failing to yield</td>
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<tr>
<td>Failing to stop at a stop sign</td>
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<tr>
<td>Running a red light</td>
</tr>
<tr>
<td>Driving-under-the-Influence (DUI)</td>
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<tr>
<td>Following too close</td>
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Aggressive Driving

“Aggressive driving” is defined differently by users. Nevertheless, no matter how it is defined, it accounts for a high percentage of the crashes. For example, speeding, failing to yield or stop, and running red lights are often considered aggressive behavior by drivers. Combined, these factors account for more than 70% of all crashes.

Speeding, which is the dominant behavioral factor involved in crashes (39%), occurs on roads of all types. In our region, 54% of speeding crashes occur on Interstate highways, U.S. highways, State highways, or Farm-to-Market roads while 46% occur on county roads, city streets, toll roads or other ‘local’ streets. NHTSA has reported that, nationally, approximately half of all speeding crashes occur on roads where the posted speed limit is 50 mph or lower.

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Driving Under the Influence (DUI)/Driving While Intoxicated (DWI)

The 7% figure for DUI deserves some comment. This is probably an underestimate, given the low level of Blood Alcohol Content (BAC) testing that occurs in Texas. In the State as a whole, drivers in fatal crashes are only tested about a third of the time down from nearly 50% a decade ago. However, according to NHTSA, DWI/DUI was a factor in 46% of Texas fatal crashes. We do not know whether our region is high or low compared to the rest of the State, but we do know that alcohol and other drug use is a serious problem for highway safety. The interaction of alcohol/drugs and speed is particularly dangerous.

Nationally, there has been a consistent decrease in the number of fatalities attributed to alcohol and drugs since the 1970s. However, the problem seems to be getting worse in our region, at least for the data we have available. In 1999, there were 5,136 crashes in which alcohol or drugs was identified as a factor by the investigating police officers; of these, 180 involved fatalities. As mentioned above, these figures are probably underestimates. Still, by 2000, the number of DWI/DUI crashes reported in the database had increased to 5,599 and the number of those involving obvious fatalities was 209. By 2001, the number of DWI/DUI crashes had increased to 5,654 with the number of DWI/DUI fatal crashes being 217.

Using the Fatality Analysis Reporting System (FARS), the National Highway Traffic Safety Administration estimated that in 2004 Harris County had the highest alcohol-related fatality rate (per capita) of any county in the nation (6.4 deaths per 100,000 population). Since the NHTSA analysis only looked at the central counties of metropolitan areas, by implication the surrounding counties also have a serious DWI problem.

Teenage Drivers

Teenage drivers were involved in 21% of all crashes. This percentage is higher in the suburban counties – Brazoria (29%), Fort Bend (29%), Montgomery (28%) and Galveston (26%).

Geographical Location of Crashes

Slightly more than half the crashes (53%) occur on local roads as opposed to State facilities. About half the speeding crashes occur on local roads. H-GAC has identified 344 major hot spots that account for about 20% of all serious crashes (figure 1.2). These have been incorporated into the Regional Transportation Plan.3

Seatbelt Use

Seatbelt use is lower in the region than elsewhere in the State. According to the crash reports, between 1999 and 2001 about 79% of passengers in vehicles involved in crashes within our region were using a seatbelt compared to the State average of 86% of passengers involved in crashes. There is a need to increase seatbelt use for all passengers as this will reduce the number of fatalities and serious injuries.

The Costs of Crashes

Motor vehicle crashes place huge costs on our society. First, there is the personal cost to those involved—persons who are killed, persons who are injured, and friends and families of those injured. Second, a burden is placed on public services. For every crash, police personnel have to be dispatched to the scene to ensure that any victims receive medical treatment, that traffic is rerouted to avoid additional collisions, to ensure that damaged vehicles and debris are cleared from the road, to obtain necessary information to fully document the crash, and to fill out forms to properly document the crash. Emergency medical services dispatched to a crash scene have to ascertain the level of injury involved and quickly transport any individuals to emergency medical facilities. For persons who are killed in a motor vehicle crash, a medical examiner must come to the scene to pronounce victim deaths and to obtain necessary information to document the fatality. Third, there are medical costs for those injured in motor vehicle crashes. Some of the treatment may go on for years. Fourth, there are economic costs as a consequence of sustained injuries. Injured persons may not be able to work for a while and possibly sustain economic loss. For an employer, there is a loss of productivity from workers who are receiving treatment. Fifth, there are costs to society in the form of cumulative, lifetime costs. Productivity is lost forever as a result of deaths caused by crashes.

Figure 1.2:

All of these costs accumulate and paid for by all of us in the form of taxes and insurance. The very high number of crashes in our region virtually result in very high insurance payments.

The National Safety Council is a nonprofit organization contracted by Congress to estimate the cost of motor vehicle crashes annually. It assigns costs to crashes based on both the
direct costs (burden on public services, medical treatment, direct loss of wages to injured employees, direct loss of productivity to employers, property damage) and indirect costs (lifetime losses in productivity for persons killed in motor vehicle crashes, lifetime medical treatment for persons seriously injured by three different levels of severity). Using the National Safety Council methodology, for the three year period in which we have data (1999-2001), crashes annually cost our region at least $2.0 billion in direct economic costs and at least $4.0 billion in direct and cumulative lifetime (comprehensive) costs.  

CONCLUSION  

In other words, motor vehicle crashes cost all of us a lot of money. They are not ‘other people’s problems,’ but ours. We pay for these crashes either directly by being involved or indirectly through our taxes and motor vehicle insurance. For the most part, these are funds that are not recycled within our community, but are exported beyond the region and beyond the State. These are funds that could have been used for economic development (retail or other purchases which in turn, creates jobs which in turn, creates more investment), but instead are spent just paying for the damage created by motor vehicle crashes.

It was this realization that was the basis for creation of the Regional Safety Council in order to provide recommendations to improve safety. What has to be realized is the way we have been doing things with respect to our transportation system has not worked. If it did, we would not have the very high numbers of crashes and would not lead the State in most crash categories or the nation in DWI/DUI crashes. It is very necessary for us to change our behavior in order to improve the safety of our population.

ADDITIONAL INFORMATION  

More information on safety in the region can be obtained from the H-GAC safety web page:  

http://www.h-gac.com/safety

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4 These are minimal estimates. They do not include costs to non-injury property damage only crashes, which are not documented by the Texas Department of Public Safety. It is probable that these undocumented costs account for another $500 million to $1 billion a year.
Chapter 2
REDUCING DUI/DWI CRASHES

INTRODUCTION

This chapter will make recommendations relating to reducing the number and severity of crashes involving driving under the influence of alcohol or drugs. The Reducing DUI/DWI Crashes Committee met between February and November 2006 and came up with the following recommendations.

Legal Definition

The terms Driving While Intoxicated (DWI) and Driving Under the Influence (DUI) are often used interchangeably by the public, but in Texas there is a legal difference. The Texas legislature has specifically defined the term "intoxication" as it relates to DWI cases. There are two definitions:

1. Not having the normal use of mental or physical faculties by reason of the introduction of alcohol, a controlled substance, a drug, a dangerous drug, a combination of two or more of those substances, or any other substance into the body. It is no defense that the intoxicating substance was a prescribed drug; if any substance, legal or illegal, deprives a driver of the normal use of mental or physical faculties, the case may be prosecuted; or

2. Having a blood alcohol concentration (BAC) of 0.08 or more.

With a 0.08 Blood Alcohol Concentration (BAC) or higher, Texas law presumes the vehicle operator is ‘Driving While Intoxicated’ and the law applies to persons of any age. Any driver who is suspected of having a BAC equal to or higher than this level can be arrested and, if convicted, subject to a fine or prison term and loss of license. Drivers can be charged with DWI at levels below 0/08 if the arresting officer believes the individual is unable to safely operate the motor vehicle and is under the influence of alcohol or other chemicals.

For minors (under 21 years of age), however, there is also an offense called ‘Driving Under the Influence’ (DUI) which involves a minor driving with any (BAC>.00) alcohol or drugs in their blood stream. There are two basic tracks. The first track of DUI is administrative in nature. Licensing sanctions are applied administratively by the Department of Public Safety (DPS) and the procedures have been rolled into the existing administrative license revocation (ALR) procedure.

The second track is the criminal charge for a DUI offense and is tried in the court system. It is a Class C misdemeanor and carries other sanctions such as fines and community service. There is no additional license suspension upon conviction of DUI. There are also several underage alcohol possession, consumption and purchase criminal offenses which now also carry licensing sanctions triggered by notification of DPS of the conviction by the courts and in general, are referred to as zero tolerance violations.
Penalties for DUI/DWI

Penalties for DWI and DUI vary according to the number of previous violations and other conditions.⁵ DWI or DUI is treated by Texas courts as either a misdemeanor or a felony, depending upon the circumstances of the DWI or DUI case, and the prior record of the accused:

1. DWI for a first offense is a Class B Misdemeanor;
2. There is a fine not to exceed $2,000.00;
3. There is confinement in the County Jail for a term of not less than 72 hours nor more than six (6) months;
4. If there was an open container of alcohol in the car when arrested, the minimum term of confinement is six (6) days in the county jail;
5. Absent unusual facts, most persons convicted of a first offense DWI are granted community supervision (probation). The general length of DWI probation is two years;
6. There are also conditions of community supervision ordered that are fairly standard in most courts. Typical conditions imposed are drug/alcohol evaluation, alcohol education classes, or attendance at a MADD Victim Impact Panel; and
7. If the case presents unusual facts (e.g., an accident, a BAC of 0.15 or higher, a demonstrable alcohol problem, prior alcohol contacts, bad driving record etc.), the court has discretion to order additional conditions such as an ignition interlock device.

EXTENT OF THE PROBLEM

In the eight-county region (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller), between 1999 and 2001 (the latest year for which we have data from the Crash Records Bureau of the Department of Public Safety), there were 16,389 crashes in which alcohol or drugs was identified by the investigating police officer as a contributing factor in the crash. In these crashes, 16,623 drivers were identified as being DWI by the investigating officer.

In the three-year period, 606 of the crashes involved fatalities with 698 persons being killed and 9,790 crashes involved injuries with 17,789 persons being injured. The 16,389 crashes in the eight-county region accounted for 21% of all DWI crashes in the State of Texas during the three-year period.

Nominally, the 698 persons who died in DWI crashes between 1999 and 2001 represented 37.1% of all fatalities recorded from motor vehicle crashes in the region. However, the actual percentage is likely much higher due to underreporting of alcohol and other drug results on crash reports.⁶ NHTSA reports that 45% of all fatalities that occurred in Texas during

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⁶ The National Highway Traffic Safety Administration (NHTSA) estimates that alcohol was a factor in 46% of the fatal crashes in Texas. Yet, the BAC results were reported for only about one-fourth
2005 were alcohol related, documented in their Fatality Analysis Reporting System (FARS) database.\(^7\)

Of the 16,389 DWI crashes that occurred between 1999 and 2001, the type of object hit was recorded for 93.8%. Of these, 52.8% involved a collision with another motor vehicle, 34.2% involved a collision with a fixed object (e.g., median barrier, telephone poll, tree), 5.8% involved a collision with a parked car, 0.7% involved a collision with a pedestrian, and 0.7% involved a collision with another moving object (bicycle, animal, train). DWI drivers are much more likely to run off the road and hit a stationary object.

**Interaction of Alcohol and Speed**

The interaction of alcohol and speed is particularly dangerous. Alcohol is considered a central nervous system depressant. In short, it slows the ability of the central nervous system in regards to its ability to recognize a problem and take the appropriate actions. This is not a good combination when factoring in the nature of speed. A vehicle traveling at 60 MPH is covering 88 feet every second. Therefore, reaction times slowed by one to one and a half seconds will create a problem that can extend to a distance of 88-132 feet. These distances are due to increased reaction time alone and do not take into account the actual time required to control the vehicle. These distances create extreme danger when they involve intersections. Signal lights and stop signs require estimations of time and distance, both of which are affected by the alcohol-impaired driver. For this reason, in the H-GAC region between 1999 and 2001, 3.6% of DWI crashes involved fatalities and 61.3% involved injuries (with 9.6% being incapacitating injuries). Of these, 37.5% also involved speeding. Similarly, 29.5% of fatal crashes involved speeding; of these, 46.0% also involved alcohol or drugs.

Nationally, there has been a consistent decrease in the number of fatalities attributed to alcohol and drugs since the 1970s. However, the problem seems to be getting worse in the Harris County region, at least for the data we have available. In 1999, there were 5,136 crashes in which alcohol or drugs was identified as a factor by the investigating police officers; of these, 180 involved fatalities. As mentioned above, these figures are probably underestimates. Still, by 2000, the number of DWI crashes reported in the database had increased to 5,599 and the number of those involving obvious fatalities was 209. By 2001, the number of DWI crashes had increased to 5,654 with the number of DWI fatal crashes totaling 217. NHTSA has identified Harris County as the worst county in the nation in terms of the number of alcohol-related fatalities per capita.

**DWI Drivers**

We examined the known characteristics of the drivers involved in DWI crashes that were identified on the crash report:

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http://www.hgactrans.org/safety/safetyconferenceslides.htm
1. By type of drug: Of the drugs that were a factor in DWI crashes, alcohol was the predominant one being used by 92.4% of the drivers. There were no specifics for the other drugs involved (7.6% of the drivers);

2. By gender: Of the DWI drivers involved in crashes, 82.0% were males and 18.0% were females. There is some evidence nationally that the percentage of female DWI drivers has been increasing. However, our data are for too short a time period to determine that;

3. By race: The crash report form indicates the race of the drivers, but only defined by ‘White’, ‘Black’ and ‘Other’. Of the DWI drivers involved in crashes, 88.1% were White, 10.8% were Black, and 1.2% was ‘Other Race.’ Clearly, the lack of identification of persons of Hispanic or Asian heritage makes these data less clear;

4. By drinking age status: Of the drivers involved in crashes who were identified as DWI, 87.0% were of legal drinking age, but 8.2% were minors under age 21 (DUI drivers). There was no information about the drinking age status for 4.8% of the drivers;

5. By age group: Of the DWI crash drivers, 8.0% were teenagers (under age 20), 34.8% were in their twenties, 26.0% were in their thirties, 17.9% were in their forties, 5.9% were in their fifties, and 2.7% were age 60 or older. There was no information about the age group for 4.8% of the drivers.

6. By driver’s license: Of the DWI crash drivers, 9.4% had no license, 81.1% had a Texas license, and 1.6% had a license from another state. There was no license information for 7.9%;

7. By insurance status: Of the DWI crash drivers, insurance status was known for 95.3% of them. Of these, 57.4% had insurance while 42.6% did not. We do not know the percentage of the driving age population that has insurance, but we can use the insurance status for all drivers involved in crashes between 1999 and 2001 for comparison (N=485,648). Of all drivers involved in crashes in which their insurance status was known, 83.8% had insurance while 16.2% did not. Thus, DWI drivers are much more likely to not have insurance than other drivers involved in crashes, though the majority of them do have insurance.

Drinking by pedestrians is known to be a factor in DWI crashes. From 2002 to 2004, about 44% of pedestrians killed in Texas were intoxicated (BAC ≥ 0.08) at the time of the crash. In contrast, only 22% of the drivers involved in those fatal pedestrian crashes were intoxicated at the time of the crash.\(^8\) Thus, intoxicated pedestrians present a significant challenge in reducing DWI fatalities and injuries.

**DWI Crash Hot Spots**

An analysis was conducted of the locations where DWI crashes occurred in the eight-county area. By road class, 52.6% occurred on local roads (city streets, county roads, tollways, or alleys) while 46.1% occurred on state roads (Interstate, US, SH, FM) with no information being provided for 1.3%. Considering that some State roads are actually local arterials (e.g.,

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Westheimer, Wayside, and Old Spanish Trail), it is clear that the majority of DWI crashes occur on local roads.

However, due to the higher volume of traffic, most of the major hot spots occurred on the freeways. Major DUI crash hot spots were determined using the CrimeStat nearest neighbor hierarchical clustering algorithm (figure 2.1).\(^9\) The top five hot spots were:

1. The intersecting roads of Westpark and Hillcroft (101 DUI crashes between 1999 and 2001);
2. The intersecting freeways of US 59 S and IH 610 W (74 crashes);
3. A small area from US 59 S on the south side to Winsome on the north side, and from Chimney Rock on the east side to Fountain View on the west side (67 DUI crashes between 1999 and 2001);
4. A small area around Bellaire and US 59 S (64 DUI crashes between 1999 and 2001);
5. A stretch along IH 45 N in downtown (the “Pierce Elevated”) from Caroline on the south side to Allen Parkway on the north side (54 DUI crashes between 1999 and 2001).

**POLICIES, PROGRAMS, AND PRACTICES THAT WORK**

There are many strategies that can and should be deployed in the fight against impaired driving.

**High Visibility Law Enforcement**

The most notable is sustained high visibility enforcement. Research has shown that strong and effective laws, combined with highly visible enforcement reduces impaired driving and other crimes as well. In Texas, there is a need to increase high visibility law enforcement activities, including sobriety checkpoints and saturation patrols, to deter impaired driving behavior. It must be noted that Texas law enforcement does not currently have the authority to conduct sobriety checkpoints. Legislation has already been filed for the 2007 legislation session that would authorize Texas law enforcement to utilize sobriety checkpoints to reduce impaired driving crashes. These enforcement activities are more effective when supported by media and other educational efforts to educate the public about the issue and enforcement activities.

Sobriety checkpoints are a law enforcement tool that allows law enforcement to evaluate drivers for signs of alcohol or drug impairment at specific points on the roadway. Vehicles are stopped in a specific sequence such as every other vehicle or every fourth, fifth or sixth vehicle depending on traffic flow. Checkpoints are typically publicized in advance and signs are posted to warn drivers that a checkpoint is ahead. Police must have a reason to believe the driver stopped at a checkpoint has been drinking before a breath test can be conducted. A saturation patrol is a concentrated enforcement effort that targets impaired drivers by observing moving violations

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[http://www.icpsr.umich.edu/crimestat](http://www.icpsr.umich.edu/crimestat)
such as reckless driving, speeding, aggressive driving, and others. A saturation patrol generally covers a larger geographic area than sobriety checkpoints.

**Figure 2.1:**

![Map of DUI Crashes and Crash Hot Spots: 1999-2001](image)

It is understood that law enforcement cannot solve the impaired driving problem alone. Clearly, we must work effectively in collaboration with and in support of our partners and stakeholders. However, it is critical that law enforcement leaders prioritize activities aimed at reducing incidents of impaired driving and related crashes that too often result in fatalities and disabling injuries. Law enforcement leaders at the national, State, and local levels must deliver a clear and consistent message of support and encouragement for strengthened enforcement initiatives. It is acknowledged that many law enforcement agencies are dealing with increased demands with limited resources. Law enforcement leadership must continually and effectively motivate their officers through leadership and clear direction of the need to prioritize traffic law enforcement. By increased utilization of media to support enforcement activities, law enforcement can maximize the limited available resources to reduce impaired driving in their community.

**Specialized DWI Courts**

DWI/drug courts are part of an innovative judicial model whereby offenders are held accountable for their actions and afforded the tools they need to break the patterns of alcohol and
drug abuse that so adversely affects their lives, as well as the lives of others. The major goals of DWI/drug courts have been established to benefit both the offender and the community in which they live. Typically, these goals are to reduce alcohol use, impaired driving and associated criminal behavior by engaging and retaining alcohol/drug-involved offenders in treatment and intensive supervision; to concentrate staff expertise about DWI/drug cases into a single courtroom; to address other defendant needs; and to remove DWI/drug cases from traditional courtrooms, freeing them to adjudicate non-alcohol/drug cases.

Today there is irrefutable evidence that DWI/drug courts are achieving what they set out to do. In a series of critical reviews published from 1998 to 2001 of over 120 evaluations of drug courts located throughout the nation, the National Center on Addiction and Substance Abuse at Columbia University determined that “drug courts provide the most comprehensive and effective control of drug-using offenders’ criminality and drug usage while under the court’s supervision. Drug courts provide closer, more comprehensive supervision and much more frequent drug testing and monitoring during the program than other forms of community supervision. More importantly, drug use and criminal behavior are substantially reduced while offenders are participating in drug court. Studies show that DWI/drug courts outperform virtually all other strategies that have been attempted for drug-involved offenders.” Perhaps the most important finding is that offenders who become part of a DWI/drug court program are succeeding upon completion. Comparisons with other groups reveal much higher retention rates and lower recidivism and drug-use rates for DWI/drug court participants both during the life of a program and after the program ends.

There are currently approximately nine DWI courts operating in the State, and the Texas Department of Transportation is working to develop additional DWI courts throughout the State. Prior 2005, Texas did not have any DWI courts in operation.

**DWI Prosecution**

Prosecution of DWI offenses is an effective deterrent to future alcohol-related driving. Traffic Safety Resource Prosecutors provide a statewide presence on the issue of impaired driving for the prosecutors and provide technical assistance to local prosecutors. Mentoring programs and additional DWI training are provided at the local level to assist inexperienced prosecutors. The Texas Traffic Resource Prosecutor works for the Texas District Attorney Association under a contract with the Texas Department of Transportation.

DWI prosecutions can be improved by implementing a shared records system linking information maintained by the courts, the Texas Department of Motor Vehicles, and law enforcement for the purpose of identifying and tracking impaired driving offenders. The State of Texas does not currently have a DWI violation tracking system that allows the court system to be aware of all arrests for DWI. Therefore, they are unable to determine the exact number of DWI charges filed each year and the number of DWI cases that are dismissed or plea bargained to another charge.

It is very important that the public makes sure that their judicial representatives are aware of the importance of aggressively prosecuting DWI violations. One way to ensure accountability of the judicial system is by court monitoring programs that track DWI violations. Mothers Against Drunk Driving (MADD) currently has court monitors throughout the State and is planning to increase the amount of court monitoring conducted in the Harris County region.
Increased Efficiency of Offender Processing

In September 2003, the Texas Municipal Police Association (TMPA) began a pilot program, funded by the Texas Department of Transportation to create a web-based DWI violation reporting system to reduce the amount of time required to process a DWI arrest. The prototype was tested at South Padre Island during Spring Break 2004 and reduced officers' process time by nearly 1.5 hours. The systems capabilities continue to be developed and the Law Enforcement Advanced DUI/DWI Reporting System (LEADRS) is now considered by some as the most progressive and efficient DWI law enforcement processing system available in the country.

The standardized reporting system format uses a question and answer program to ensure officers include the necessary information in their DWI report to ensure a successful prosecution. This standardization helps prosecutors by providing the necessary elements of the offense and important details in a consistent format and allows for a quick review of the facts by the prosecutor. The report prompts officers to input all of the necessary information to allow for a successful prosecution. The LEADRS program is currently available to Texas police agencies and implementation of the program allows officers to more quickly complete DWI reports and return to their patrol activities sooner. Law enforcement agencies throughout Texas should be urged to utilize the LEADRS program to take advantage of this time saving technology.

Strong Alcohol Beverage Control (ABC) Policy and Enforcement

A significant increase in enforcement activities to improve compliance with ABC laws, particularly those prohibiting service to underage and intoxicated persons, should increase compliance rates, thereby reducing the access of these high risk populations to alcohol. This should reduce the involvement of teenagers and high BAC drivers in alcohol-related fatal crashes.

Alternative Sanctions / Limitations on Pre-Conviction Diversion Programs

Research conducted or funded by NHTSA demonstrates the effectiveness of alternative sanctions, including:

1. **Home Detention With Electronic Monitoring** after controlling for differences in age, sex, household income, education level, and race, a NHTSA study indicates that home confinement resulted in 43 percent less recidivism than in the comparison group and cost significantly less than incarceration;

2. **Intensive Probation Supervision (IPS):** An evaluation of an IPS program for repeat offenders in Milwaukee County, Wisconsin found 48 percent less recidivism in the IPS population than in a comparison group of offenders who served jail sentences. The IPS program cost more than sentencing the offenders to jail, but was working towards self-sufficiency;

3. **Ignition Interlocks:** Research shows that interlocks are associated with substantial and impressive reductions in recidivism, ranging from 50% - 90%.

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4. **Other Vehicle Sanctions:** In the last two decades, much research has focused on the effectiveness of license plate and vehicle sanctions which have proven to reduce recidivism significantly among offenders. A literature review on the topic estimated that vehicle sanctions reduced various measures of recidivism between 15 and 80 percent.

**DWI Task Forces**

The success of the impaired driving strategy is often dependent upon a system-wide approach at the State and/or local level. This includes state, county or city infrastructure improvements, State legislation, and various programs and policies. One infrastructure recommendation is that every state, county and city creates or reinvigorates an office or committee to develop and direct their programs to reduce impaired driving. Such groups exist in many states, usually under the name, "DWI task force." The National Highway Traffic Safety Administration believes a state-impaired driving task force can be an effective tool for galvanizing state and local attention to the impaired driving problem; for identifying needed improvements to state laws and/or agency programs; and for providing political support for difficult and costly changes.

Every city with DWI issues should establish a DWI task force that coordinates with a DWI task force at the county and state level. The task forces major responsibility is to help identify and focus public attention and resources on obstacles impeding effective impaired driving activities. If implemented, DWI task forces can provide oversight to ensure coordinated planning of effective state and local DWI enforcement and prosecution programs.

Although several enforcement agencies utilize DWI Task Forces, interagency cooperation is virtually non-existent. Lines of communication and avenues of cooperation need to be established to promote joint task force operations. None of the agencies in the region have the manpower to adequately staff their task forces with law enforcement personnel. Joint task force operations can be used to address problem areas and increase enforcement measures without a drastic change in staffing to each agency involved.

Additional helpful tools that will assist with the development of a joint task force would be the legalization of sobriety checkpoints and implementation of a mobile breath testing facility.

**RECOMMENDATIONS**

**Recommendations Requiring Little or No Additional Funding**

1. **Encourage maximum implementation of interlock technology.**

Texas law mandates the use of Ignition Interlock devices for subsequent offenders as a condition of bond and mandates the use of Ignition Interlock devices as a condition of probation for those convicted of a first offense with a BAC of 0.15 or greater, those convicted of DUI who are under 21 years of age, those convicted of second or subsequent DWI offenses, and those

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convicted of DWI who are on probation for intoxication assault or manslaughter. Research shows Ignition Interlock devices protect the public and reduce DWI recidivism up to 90% when they are installed on the convicted offenders’ vehicles. Yet, in spite of being mandated, use of this device is substantially underutilized. This Committee supports educational efforts to encourage judges and prosecuting attorneys to enforce the interlock requirements currently in Texas law.

Anti-drunk driving technology could become a major factor in reducing the 13,000 deaths and half million injuries caused by drunk driving crashes each year, but only if courts start widely using these proven devices. While research shows that technology can clearly help detect and prevent impaired driving, many courts have chosen not to use it.

"We have technological solutions that can very likely save lives—it is time we started fully using them," said Paul Marques, Ph. D., senior research scientist with the Pacific Institute for Research and Evaluation. Dr. Marques goes on to say that "Most states and communities could employ this technology right away and see immediate benefits in reducing impaired driving. But they're not doing it".12

The best-known anti-drunken driving technology is the Ignition interlock, which requires a driver to breathe into a tube hooked to an alcohol sensor before the car will start. Ignition interlock has a 20-year record of reducing impaired driving recidivism, and research has proven its effectiveness. However, while more than 40 states have legalized such programs mainly for repeat offenders, and some states, such as New Mexico, mandate them for all convicted DUI offenders, courts more often than not simply decline to order Ignition Interlock to be used.

Although there are about 1.4 million DWI arrests each year, only about 120,000 devices are currently in use in the United States. This represents fewer than 10 percent of all DWI offenders ever sentenced to drive with an interlock.

Whether interlock programs can help public policymakers achieve their expressed goals of substantially reducing the level of impaired driving will remain uncertain until procedural barriers and intransigent judiciary practices can be overcome that provide for more systematic routine use of interlock programs. Despite strong evidence of their effectiveness in all studies to date, the real potential of this technology to reduce drunk driving cannot be estimated until they are more widely adopted.

2. Advocate for legislation to eliminate the “intoxicants clause” in the Texas Insurance Code. This clause allows automobile insurers to avoid liability for claims that result from DWI collisions.

Texas modeled this clause after the Uniform Individual Accident and Sickness Policy Provision Law (UPPL) that stated,

“Intoxicants and Narcotics: The insurer shall not be liable for any loss sustained or contracted in consequence of the insured’s being intoxicated or under the influence of any narcotic unless administered on the advice of a physician.”13


13 National Association of Insurance Commissioners, Uniform Individual Accident and Sickness Policy Provision Law. 1947: Kansas City.
The commissioners designed this law to penalize intoxicated drivers by making them fully responsible for costs associated with a collision. The unintended consequence, however, was that some physicians and hospitals who routinely measured blood alcohol levels in crash victims lost reimbursement for the expenses they incurred when caring for individuals injured in a DWI-related collision. As a result, most physicians and hospitals in Texas no longer routinely test the blood alcohol level in drivers involved in a motor vehicle crash.\textsuperscript{14} The following story illustrates this problem:

A 44-year-old driver suffered a ruptured duodenum and other internal injuries in a 1997 car accident. Because there was alcohol in her blood, her insurer did not cover the nearly $200,000 cost of her treatment at the hospital. She filed for personal bankruptcy; the hospital wrote off the costs. The surgeon who treated her states his lesson learned was, “Given the option, I don’t order blood-alcohol tests, and I ask [emergency physicians] not to order them [either].”\textsuperscript{15}

Emergency Room-based blood alcohol testing confirms intoxication to the healthcare providers who can then provide a brief, focused intervention. These interventions, provided while the patient is in the Emergency Room may have profound effects on reducing future intoxicated driving.

Proponents of the UPPL believe that repealing it would “shield patients from the consequences of their actions in abusing alcohol or drugs.” However, it is clear that the UPPL provides a legal shield for intoxicated patients by inhibiting testing and identification of drunk drivers.\textsuperscript{16}

There are a number of organizations that call for a repeal of the UPPL. These include:

- The National Commission Against Drunk Driving\textsuperscript{17}
- The National Association of Insurance Commissioners
- The American Society of Addiction Medicine\textsuperscript{18}
- The American College of Surgeons\textsuperscript{19}
- The National Conference of Insurance Legislators
- The American Medical Association\textsuperscript{20}

\textsuperscript{14} Texas Transportation Institute, TTI finds Texans drunk more often in traffic crashes, calls for better laws and reporting. 2003: College Station.
\textsuperscript{15} Zimmerman, R., Why Trauma Units Seldom Test Patients for Alcohol, Drugs, in Wall Street Journal. 2003: New York.
\textsuperscript{17} National Commission Against Drunk Driving, Drunk Drivers Escaping Detection Through the Emergency Department. 1999: Silver Spring.
\textsuperscript{18} American Society of Addiction Medicine, Public Policy Statement on Repeal of the Uniform Accident and Sickness Policy Provision Law. 2005.
\textsuperscript{19} American College of Surgeons, Statement on insurance, alcohol-related injuries, and trauma centers. Bulletin of the American College of Surgeons, 2006. 91(9).
\textsuperscript{20} American Medical Association. Advocacy for Repeal of the Uniform Individual Accident and Sickness Policy Provision Law. 2003.
The American Bar Association
Mothers Against Drunk Driving
The Emergency Nurses Association
Join Together
The American Public Health Association
The American College of Emergency Physicians

3. Modify the State’s Administrative License Revocation (ALR) laws.

The State should modify their ALR laws to allow individuals accepted to participate in a DWI Court program to retain their driver’s license as long as they are an active member and successfully complete the DWI Court process. In FY05, there were 80,769 felony and misdemeanor convictions for driving while intoxicated (DWI) in Texas. DWI arrest and convictions present an important opportunity to decrease the risk of future injury or death from an alcohol-related crash through effective intervention. In 1995, Texas began its Administrative License Revocation program as a penalty for DWI. Although suspending driving privileges might appear to be a reasonable and potentially effective general deterrent and punishment for DWI, it is estimated that up to 75% of drivers with suspended licenses continue to drive illegally.

Moreover, up to 50% of suspended drivers fail to reinstate their driver’s licenses when the period of suspension has ended, opting instead to take the chance that they will not be caught for driving without a valid license.

State licensing agencies have a legal responsibility to the greater public to keep unqualified drivers off the roadways. Nevertheless, it has been determined that one in five drivers involved in a fatal crash was driving with an invalid license; and drivers operating a motor vehicle with a suspended or revoked license are 3.7 times more likely to be involved in a fatal crash than validly licensed drivers. Simply suspending a driver’s license and then reinstating it after a given period of time does not appear to be an effective penalty for DWI.

21 American Bar Association, Urges all state, territorial and local legislative bodies and governmental officials to repeal laws and discontinue practices that permit insurers to deny coverage for alcohol or drug related injuries or losses covered by accident and sickness insurance policies that provide hospital, medical and surgical expense coverage. 2005.
22 Mothers Against Drunk Driving, Position Statement: Trauma and Emergency Care.
fact, a study in Florida found that DWI offenders who failed to “resolve” their behavioral issues (i.e., either cease drinking alcohol, or cease driving a motor vehicle after drinking) prior to license reinstatement had a 75% higher violation rate and 97% higher crash rate than drivers who reinstated after resolving their behavioral issues.\(^{30}\)

Increased supervision and monitoring by the court and probation department must be part of any well-coordinated strategy to intervene with DWI offenders and prevent future impaired driving. A meta-analysis on the effectiveness of remedial interventions with DWI offenders concluded that “contact” probation (such as that provided in a DWI Court) was effective in reducing later DWI recidivism and crash involvement.\(^{31}\) One way in which this might be achieved in Texas is to allow ALR-eligible offenders to retain driving privileges if they agree to participate in a DWI Court Program. This option has the benefit of ensuring that problem drinkers who are identified through assessment can receive proper attention in a more structured environment.

Those who support DWI Courts recognize that the threat of punishment alone will not likely change the behavior of individuals, and the principle behind DWI Courts (or, “specialized dockets”) is to treat the problem as well as punish the offender.\(^{32}\) By holding offenders accountable for their actions, these courts can bring about a behavioral change with the promise of reducing recidivism while protecting the public from the threat of unsafe, potentially intoxicated, unlicensed drivers on our roadways. DWI Courts are better prepared to supervise DWI offenders, and keep them within the bounds of legal driving conditions rather than taking the chance that they will repeatedly drive without a valid license and potentially continue to drink and drive unabated.

4. **Advocate for legislation to forbid servers of alcoholic beverages to drink while on duty.**

The Committee recommends legislation forbidding all servers of alcoholic beverages from drinking alcoholic beverages while they are working. Since the judgment of alcoholic beverage servers is essential for refusing to serve drunk patrons, it is important that the servers’ cognitive abilities be uninfluenced by alcohol.

In the State of Texas a permit or license holder including his or her agent, servant or employee may lawfully consume alcoholic beverages while working at on-premise licensed locations. With the responsibility of ensuring a permit holder or their agent, servant, or employee does not sell to minors or intoxicated persons, it would be prudent that the consumption of alcoholic beverages by these persons would be prohibited.

The Texas Alcoholic Beverage Code states that it is illegal for the permit or license holder including their agent, servant or employee to be intoxicated on the licensed premise. However, if servers even have a limited amount of alcohol, their judgment about other patrons may become impaired. For example, a server who has been drinking may not be able to properly detect whether a patron was intoxicated and may, therefore, continue to serve that person drinks, creating a public hazard if that patron then gets into a vehicle to drive.


A “Zero Tolerance” law should be implemented. It is the recommendation to prohibit the consumption of alcoholic beverages of any permit or license holder including their agents, servants, or employees while on duty. If enacted, the relevant sections of the Texas Alcoholic Beverage Code would have to be amended to reflect the change.\footnote{Sec. 11.61. CANCELLATION OR SUSPENSION OF PERMIT. (a) As used in Subsection (b) of this section, the word "permittee" also includes each member of a partnership or association and, with respect to a corporation, each officer and the owner or owners of a majority of the corporate stock. This section shall not be construed as prohibiting anything permitted under Section 22.06, 24.05, or 102.05 of this code. (b) The commission or administrator may suspend for not more than 60 days or cancel an original or renewal permit if it is found, after notice and hearing, that any of the following is true: (13) the permittee was intoxicated on the licensed premises;}

5. **Advocate for legislation to authorize sobriety checkpoints.**

A sobriety checkpoint is an important law enforcement tool that can reduce drunk driving. It is a proven law enforcement tool in deterring impaired driving. In 1990, the Supreme Court upheld the constitutionality of sobriety checkpoints in the case of Michigan v. Sitz. The Court found the State’s interest in reducing sobriety checkpoints in the case of Michigan v. Sitz. The Court found the State’s interest in reducing alcohol-impaired driving was sufficient to justify the brief intrusion of a properly conducted sobriety checkpoint. As a result of this decision, many States have passed legislation to authorize sobriety checkpoints as a law enforcement tool to reduce impaired driving crashes. Currently, 40 States and the District of Columbia allow sobriety checkpoints.

Research has demonstrated that one of the most effective strategies for reducing impaired driving is high visibility enforcement. In particular, sustained high visibility enforcement efforts, employing sobriety checkpoints and media efforts to publicize the checkpoints have led to reductions in alcohol-related fatalities of up to 20%. In 2005, the National Highway Traffic Safety Administration (NHTSA) reported 1,569 alcohol related deaths in Texas. If the Texas legislature authorizes sobriety checkpoints and law enforcement implements a sobriety checkpoint program statewide, as many as 300 lives could be saved each year.

Sobriety checkpoints are an effective law enforcement tool involving the stopping of every vehicle or a specific sequence of vehicles (e.g., every tenth vehicle), at a predetermined location. This strategy seeks to detect drivers impaired by alcohol and/or other drugs and to create a general deterrence by raising the public’s perception of being arrested for driving while impaired. Sobriety checkpoints produce a greater perceived risk of arrest than other types of enforcement because the number of actual law enforcement contacts with the driving public is significantly greater than any other enforcement method. Although the impaired driver may not fear the slight risk of being stopped by a law enforcement officer during normal patrol, individuals aware that checkpoints are being used will understand there is far greater chance of interaction with an officer under these circumstances and thus a far greater chance of detection and arrest. The purpose of highly visible impaired driving enforcement, primarily sobriety...
checkpoints, is to deter individuals who may behave irresponsibly with their drinking and driving before they drive impaired and put themselves and others at risk.

**Recommendations Requiring Additional Funding**

6. **Fund environmental prevention and education programs to prevent underage drinking.**

   The Committee supports environmental prevention and education programs to reduce youth access to alcohol by working with law enforcement and the community, and to educate students and the community as a whole on the effects of underage alcohol use—for example, the programs that Mothers Against Drunk Driving are implementing. The Committee recommends identifying funding sources for these types of programs and developing better communication with law enforcement enforcing underage drinking laws, safety advocacy groups, such as AAA, MADD, community organization, and with school systems.

   Environmental prevention, changing policies settings and community conditions to support healthy behavior and discourage high-risk unhealthy behavior is a new way of thinking about alcohol problems. Alcohol prevention strategies target the individual while environmental prevention strategies address changing the environment such as educating the public on how the media influences youth behavior or working with law enforcement to find more effective ways to enforce underage drinking laws. It is a cost effective and efficient approach to the problem. To be effective, environmental prevention efforts must address all areas that influence alcohol problems: community norms, access and availability, media messages, and policy and enforcement.34

   For example, here is an overview of the programs that Mothers Against Drunk Driving (MADD) is now implementing in the Humble Independent School District. Each of these programs meets the above criteria for effectiveness:

   1. **Youth In Action©** is a community-based program utilizing high school age students as agents of change in the prevention of underage drinking. The Youth in Action group is led by an adult coordinator who aids the teens in implementing the program’s core projects. The Youth In Action projects focus on limiting youth access to alcohol by targeting social access, retail access and working with law enforcement to support the enforcement of underage drinking laws. By consistently doing projects and sustaining Youth In Action groups, this program can help create healthier and safer communities.

   2. **UMADD©** is a campus-based student organization comprised of students, campus and community leaders, and law enforcement concerned about underage and high-risk drinking behaviors. A UMADD group is dedicated to finding solutions to these problems on their campus and community. Student leadership, with support from faculty/staff, can help pave the way for sweeping change regarding alcohol-related problems by forming a community partnership. This partnership helps eliminate unsafe factors that contribute to underage and high-risk drinking behaviors. By training students to engage campus and

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community stakeholders with effective prevention strategies, UMADD chapters can be a great complement to existing campus programs with a focus on long-term results.

3. THINK© is a year-round, pledge-based prevention campaign that can help emphasize to high school students the importance of making good choices when it is time to celebrate during the prom/graduation season, homecoming, holidays and throughout the year. THINK features not only the involvement of students and schools, but provides a place for parental involvement as well. Relevant to the interests of schools, the THINK Pledge Pack provides resources to implement the campaign, complete with posters, banners, pledge pads and other tools.

4. Multimedia Shows is an award-winning assembly of multimedia programs for elementary, middle and high school students use the latest DVD technology to incorporate current movie, music video and television segments into a powerful prevention message. Showcased on three 15’X45’ screens, each show creates a powerful impression through age-appropriate messages encouraging teens to make healthy decisions. Current show descriptions follow:

- **Elementary:** “Game On” takes students inside a video game with safety tips on safe riding, helmets, buckling up, alcohol’s effects on their body, bullies, and more. Great movie clips and music.

- **Junior/Senior High School:** “The Spot” for grades 7-12 where real teens, celebrity interviews, families tell their stories. Open discussions of pressures of substance abuse, facts, stats, movie clips/music.

- **Secondary:** “Take Two” talks about teen driving, media influences, substance use, making healthy choices and consequences with current movie clips/music.

- **Alcohol Edu for High School** is a web-based course that incorporates proven prevention techniques with essential science-based alcohol education.

- **Protecting You/Protecting Me©** is the only elementary-school-level curriculum available that incorporates the latest research on children’s brains and developmental risks associated with exposure to alcohol before the age of 21.

For more information, see the MADD web site: [http://www.MADD.org](http://www.MADD.org). Community coalitions can advocate for communities fighting against alcohol problems, promote community awareness through public education, assist in developing community-based services, strengthen collaboration among other community organizations, and engage in broad community action to change public policy.

7. **Identify problem alcohol establishments and locations with concentrations of DWI offenders in order to develop targeted community intervention.**

The Committee recommends a study to identify problem alcohol establishments and neighborhoods with high concentrations of drivers convicted of DWI. This study can be conducted by H-GAC and participating local governments. First, it will require identifying establishments where drivers who are convicted of DWI were served and, second, it will require examining DWI arrest records for their residence location in order to identify neighborhoods
where there are concentrations of DWI drivers residing. Based on the results, propose community intervention by teams of safety engineers, law enforcement, and community intervention specialists in order to reduce drinking and driving behavior. This may be accomplished in partnership with various other groups, such as Houston Ministers Against Crime and Mothers Against Drunk Driving.

**Identifying alcohol establishments associated with many crashes**

Effective enforcement requires that limited police resources be used to the maximum. Knowing which alcohol establishments are associated with many DWI crashes would allow these establishments and their environments to be patrolled with greater intensity. As figure 2.1 above shows, there are definite hot spot areas where there are a concentration of DUI/DWI crashes occurring. One would expect these to be associated with their surrounding areas, either through a concentration of alcohol establishments or through a concentration of persons prone to DWI. Among the policing strategies that could be developed with this information is:

1. Investigation of the alcohol establishments associated with many crashes to be sure that they are operating in compliance with Texas law, and that they are not serving minors;

2. Communication with the owners of these establishments to devise ways in which to constrain excessive drinking. Texas law does require that alcohol establishment owners not serve patrons who are drunk and a discussion with the owners might strengthen that condition;

3. Increased police patrols around these establishments at closing time (2 AM) since many DWI crashes occur after the close of businesses serving alcohol; and

4. Information could be provided to these establishments about transportation alternatives to driving home for the patrons of those establishments. While we do not want to encourage excessive drinking at bars and other establishments, providing a safe way home would certainly lessen the likelihood of a patron being involved in a crash.

An important consideration about obtaining this information is that it be used professionally and responsibly by police and other government agencies. The Committee was adamant that the information not be used to publicly identify neighborhoods through signs or other high visibility means of communication, but instead be used to guide police and other agencies in developing strategies for reducing the problem. The Committee does not want to point the finger at any one commercial area or neighborhood, but instead wants to develop information that would enable policing to be more focused.

**Identifying neighborhoods associated with many DUI/DWI offenders**

Similarly, identifying neighborhoods associated with a higher concentration of DUI/DWI offenders can allow a number of interventions to reduce the likelihood of future alcohol-related crashes. These include:

1. Follow-up visits by case workers with convicted DWI offenders. Identifying specific neighborhoods where there are a concentration of convicted DWI offenders can allow a more efficient strategy the court system;
2. Discussions with bar owners in these neighborhoods. It is very likely that a major factor in the concentration of drivers involved in DWI crashes is a concentration of bars and liquor store, education efforts can be directed at the owners to discourage drunken behavior and driving while drunk. Again, as mentioned above, information can be provided about alternative transportation for patrons of these establishments.

3. Anti-DWI education campaigns in these neighborhoods. Alcohol education is a component that has to accompany any intervention. While it is not effective in and of itself, it has to be a component in any systematic anti-DWI program. A key point that the Committee wants to emphasize is that the education campaign has to be general, not specific to the neighborhood. The Committee definitely does not want signs that single out a neighborhood, as this kind of action can cause defensiveness and resistance to change. On the other hand, we have to identify neighborhoods where a concentration of DWI offenders live in order to focus intervention efforts more effectively. In short, we don’t want to point the finger at a neighborhood, but rather concentrate education and intervention resources on those neighborhoods with many DWI offenders. It is a subtle distinction, but a critical one.

Being able to identify both establishments which serve a disproportionate number of patrons involved in DWI arrests and convictions, as well as identify neighborhoods with a disproportionate number of DWI offenders residing in them, can allow the identification of likely routes that DWI offenders use. This can improve the effectiveness of policing against DWI. Most police departments have a limited number of personnel who can focus on stopping drunk driving. Providing information about the likely routes will allow those personnel to be utilized efficiently.

CONCLUSION

DWI is a serious problem for the nation as a whole and for the State of Texas, but it is a particularly serious problem for our region. As mentioned above, Harris County leads the country in alcohol-related fatalities per capita, an undesirable distinction. The Committee represents professionals from a variety of fields and are directly involved in alcohol-related driving behavior, including law enforcement, emergency medical services and treatment, anti-DWI advocates, researchers, transportation specialists, the medical examiner’s office, community coalitions, and safety advocates. Daily they see the consequences of this behavior, which accounts for nearly 300 persons being killed in the eight-county region each year and thousands more being injured.

The Committee has made some recommendations for improving the situation. These include changes to the law, improvements in administrative procedures, improved monitoring by alcohol establishments, targeted enforcement, and community education. Hopefully, these recommendations will be implemented to address this very severe problem.

NEXT STEPS

During the next calendar year, the Committee will conduct the following activities. First, it will attempt to increase citizen and community involvement. Public support is necessary in order to pass laws that improve detection and enforcement against DWI. Having as many contacts with the public as possible should help to build that support. The success in reducing
alcohol problems lies in all sectors of the community sharing the responsibility for creating conditions that support positive choices about alcohol.

Second, the safety corridor concept, proposed by the Reducing Aggressive Driving Committee, should have a DWI component. Since one of the major activities of the safety corridor is public information and education programs targeted to teens, this would seem to be an opportunity to add a ‘Don’t Drink and Drive’ program, both through public service announcements and through a teen education program.

Third, the Committee will explore ways to reduce the use of trauma centers for DWI drivers. DWI-related motor vehicle crashes should provide an ideal situation for enforcement activities. Nearly all crashes are investigated by a law enforcement officer and the driver is usually available for several hours, at least, at a medical center. Unfortunately however, studies show that drinking drivers are less likely to receive a citation if they are injured. Despite evidence that injured, legally intoxicated drivers have a high rate of drunken driving episodes, it appears that they are infrequently charged with DWI. Injured drivers should routinely be screened for BAC by health care and public safety providers. Linking ED and criminal justice data sets has important implications for injury prevention and control.  

Fourth, the Committee should encourage the development of phlebotomy training that allows emergency medical personnel to draw blood-alcohol samples at the site of a motor vehicle crash. Currently, only doctors and medical personnel certified in phlebotomy are allowed to draw those samples. Consequently, many drivers involved in crashes who have high levels of alcohol in their blood are not detected. The Committee will explore ways to fund a phlebotomy training course.

Fifth, the Committee will advocate for the creation of a county-wide DWI task force in each of the eight counties that exist in the Transportation Management Area. Each county’s task force will comprise transportation, law enforcement, medical, and other personnel in order to develop specific strategies for addressing DWI at the local level.

Sixth, the Committee will encourage the development of safety workshops on ignition interlock devices for judges and prosecuting attorneys. As discussed above, while Texas law requires that ignition interlock devices be used for any driver convicted of DWI on a second or subsequent offense and for any minor convicted of DUI on any offense, this technology is being required in only a minority of cases. The Committee feels that workshops for the legal community will play an important role in increasing the utilization of the technology.

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ADDITIONAL INFORMATION

More information about DUI and DWI can be obtained from the following sources:


Chapter 3
REDUCING AGGRESSIVE DRIVING

INTRODUCTION

This chapter examines aggressive driving and makes recommendations for reducing the incidence of this risk to traffic safety. The Reducing Aggressive Driving Committee met between February and November 2006 and developed the following recommendations.

There appears to be at least two major definitions of aggressive driving. The first is the focus on excessive behavior by drivers. A document produced by the National Cooperative Highway Research Program defines aggressive driving as involving behaviors seen as aggressive:36

A. Aggressive tailgating
B. Headlight flashing out of annoyance with another driver
C. Aggressive rude gestures or verbal abuse
D. Deliberately obstructing or preventing another driver from moving his/her vehicle

Second, there is a broader definition of aggressive driving that involves unsafe driving. A document produced by the NHTSA and the Governor’s Highway Safety Association takes this approach.37

The Committee focused on the latter definition because unsafe driving is easier to quantify and address through concrete actions rather than aggressive behavior. Nevertheless, the first definition was also considered in shaping and adopting the Committee’s recommendations.

EXTENT OF THE PROBLEM

Speeding is Unsafe

Speeding is the number one factor associated with crashes (39% in our region) followed by failing to yield (20%), failing to stop at a stop sign (11%), running a red light (8%), and following too close (3%). Between 1999 and 2001, there were 98,124 crashes that were attributed to speeding by the investigating officer, an average of 32,708 a year (Figure 3.1). Of these, 54% of speeding crashes occurred on Interstate highways, U.S. highways, State highways, or Farm-to-Market roads while 46% occurred on county roads, city streets, toll roads or other ‘local’ streets. NHTSA has reported that, nationally, around half of all fatal speeding crashes occur on roads where the posted speed limit is 50 mph or lower.38

Using the National Safety Council methodology for costing of crashes, speeding crashes cost our region about $719 million a year in direct economic costs and about $1.3 billion per year in comprehensive costs. The economic costs include medical costs, costs to the employer, lost productivity, and legal costs. The comprehensive costs include both the economic costs plus the cumulative lifetime loss in productivity of victims.

**Figure 3.1**

![Speed is Dangerous Location of Crashes Involving Speeding: 1999-2001](image)

There are several conditions associated with aggressive driving. First are congested roadways and pent-up frustrations (the ‘frustration-aggression’ hypothesis). One’s mood prior to driving prefigures one’s level of stress while driving. Second, however, the two variables most associated with crashes are age and gender.

**Younger Drivers are Higher Risk**

Younger drivers appear to be more aggressive in driving than other age groups. Between 1999 and 2001 in our region, 20.7% of all serious crashes involved teenage drivers. The proportion of crashes involving teenagers is more than double their share of the driving age population (9%).

Teenagers are much more likely to be involved in serious crashes than other age groups. Nationally, teenage drivers have the highest death rates per mile driven than any other age
The problem is particularly bad among 16 year-olds. This age cohort has a crash involvement rate that is 75% higher than that of 17 year-olds. Sixteen year-olds are more likely to make driver errors, speed, and be involved in single vehicle crashes than any other age group; they are also more likely to carry three or more passengers.

The higher proportion of crashes involving teenage drivers is a major public health problem. The fatal crashes occurring in our region from 1999 to 2001 involved a teenage driver 16.9% of the time. A teenage driver was involved in 19.2% of serious incapacitating types of crashes. Whether the percentage of serious crashes involving teenagers remained high past 2001 is not clear since our data stop at that year. The impact of the graduated licensing law in Texas has not yet been fully assessed.

Teenagers are also more likely to be aggressive in their driving than other age groups. Teenagers are slightly more likely to be involved in speeding crashes than non-teenagers (21.9% v. 20.0%) and are more likely to be involved in failing to yield crashes than non-teenagers (25.5% v. 19.5%). One NHTSA study surveyed people about whether they usually pass other cars more than other cars pass them, or vice versa. As might be expected, younger persons stated that they were more likely to pass than be passed (e.g., 60% of 16-20 years old and 54% of 21-24 year olds).

On the other hand, in our region, teenagers are not more likely to be involved in a ‘failing to stop’ crash than non-teenagers. Also, contrary to popular opinion, teenagers are less likely to be involved in DWI crashes than non-teenagers (13.3% v. 21.2%). However, given that the legal drinking age is 21 in Texas, the fact that even 13.3% of DUI crashes involved a teenager is a major concern.

There are several reasons why teenage drivers have a much higher crash rate than other groups. It has been suggested that due to the lack of driving experience, during the first few years of driving at any age, an individual is more likely to make errors. But even with inexperienced drivers, teenagers are more likely to make errors than persons of other age groups. Some research suggests that the high rate of teenage driver crashes is associated with teenaged passengers, who increase substantially the likelihood of a crash for a teenage driver. This most likely can be attributed to the potential distraction that teenage passengers may create for the driver. This was a major rationale for the graduated licensing restrictions placed on drivers under age 18 by the Texas Legislature in 2002. In addition, teen usage of cell phones while driving may be a contributor.

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According to a December 2005 NHTSA study, 10% of younger drivers (ages 16-24) use hand-held cell phones while driving compared to 6% for all drivers.\textsuperscript{43}

The percentage of crashes involving teenage drivers was even higher in the suburban counties—Brazoria (29%), Fort Bend (29%), Montgomery (28%) and Galveston (26%), than for the region as a whole (21%). The reason for the higher proportion of crashes involving teenage drivers in the suburbs is not completely clear. Part of the reason may involve the higher speeds that generally occur in the suburbs. In addition, the higher number of teenage crashes may also involve teenagers’ dependence on the automobile due to lack of other alternatives such as transit, as well as the spread-out nature of suburban landuse patterns. Nevertheless, it is an important issue for suburban governments to address.

**Aggressive Male Drivers**

After age, gender is the most predictive variable for crash risk. Males are more likely to be involved in serious crashes. In our region, between 1999 and 2001 78.3% of all serious crashes involved at least one male driver compared to 57.1% that involved at least one female driver.

Males make up the higher percentage of drivers in the more serious crash levels. Between 1999 and 2001, 83.4% of all fatal crashes involved at least one male driver compared to 32.5% that involved at least one female driver. For incapacitating injury crashes (Type A), 79.4% involved at least one male driver compared to 49.7% that involved at least one female driver.

**Red Light Running Crashes**

Between 1999 and 2001, there were 19,012 red light running crashes in the eight-county region, an average of 6,004 per year. Because of the nature of this type of crash (essentially at a right angle), injury levels are high. Of the 19,012 crashes, 113 involved fatalities and 13,448 involved injuries. Red light running crashes are more likely to cause fatalities or injuries than other types of serious crashes (71.3% v. 63.4%). In terms of persons, there were 128 persons killed and 26,847 persons injured from red light running crashes in the three year period.

Using the National Safety Council methodology for costing crashes, red light running crashes cost our region about $165 million a year in direct economic costs and about $320 million a year in comprehensive costs.

Figure 3.2 shows the major locations for red light running crashes that occurred from 1999-2001. The number of crashes occurring at these intersections totaled 1,104 for the three-year period. All of these locations are within the City of Houston. They account for 11.4% of all red light running crashes that occurred within the eight-county region and 15.3% of all red light running crashes in the City of Houston over the period. However, even though it is a small percentage of all crashes, these locations do represent the top places where many crashes occur. Many of these locations are along frontage roads. Specific intersections with many red light running crashes can be seen at the H-GAC safety web page (http://www.h-gac.com/safety, under ‘Studies and Presentations’).

There are various strategies that can be used to reduce aggressive driving. Among these are:

A. Personal strategy. “Keep out of the way” and avoid eye contact. Avoiding conflict on the road will help prevent the provocation of easily agitated drivers from acting aggressively;

B. Speed limits. A proven strategy when adhered to can reduce injury and fatalities. The passing of the 55 mph National Maximum Speed Limit in 1974 resulted in a significant decrease in fatalities. As Congress allowed states to raise speed limits in 1987, fatalities increased soon after. However, to make speed limits truly effective, enforcement of those speed limits is needed as well;

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45 HTSA and GHSA, *Countermeasures That Work*, p. 3-5
C. High-visibility enforcement. Uncertain outcomes according to (1) with short-term effectiveness but expensive to run. If enforcement is maintained and remains visible, drivers will more likely be more conscious of their behavior on the road to avoid being caught;

D. Strict and consistent penalties (including insurance penalties). Another proven strategy. If penalties are consistently enforced and carry enough weight to negatively impact drivers (fines, increased insurance premiums, license revocation), drivers would be more likely to conform to traffic regulations;

E. Traffic violator school. Uncertain outcomes, sometimes effective other times not. Defensive Driving has ranged from courses run by professional instructors to those run by aspiring comedians. Now there are online courses available that can be taken at one's leisure. Ideally, those taking these courses seriously will walk away with a better appreciation of how to drive safely. However, as these courses are provided with the goal to be more convenient to the offender, it is unclear how much they modify driving behavior; and

F. Automated enforcement. A proven strategy, but one prone to public scrutiny. While the public may recognize the effectiveness of automated enforcement, there is concern that the use of red light or speed detection cameras intrude on personal privacy. In addition, it is often questioned whether these devices are being used for revenue generation as opposed to traffic enforcement.

Objectives and Strategies

The American Association of State Highway and Transportation Officials (AASHTO) and the Transportation Research Board (TRB) have sponsored a website on highway safety. In general, they argue these strategies can be reduced to one of two objectives:

1. Deter aggressive driving in specific populations and at specific locations (this includes those with a history of such behavior); and

2. Improve the driving environment to eliminate or minimize the external “triggers” of aggressive driving.

According to the report, with both objectives, sub-populations and specific individuals among whom aggressive driving appears to be over represented are identified. For both, the law enforcement community plays a key role. Table 3.1 summarizes the objectives and associated strategies. Each strategy is described in detail below.

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Table 3.1:
Objectives and Strategies for Addressing Aggressive Driving

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Deter aggressive driving in specific populations, including those with a history of such behavior, and at specific locations</td>
<td>Target enforcement</td>
</tr>
<tr>
<td></td>
<td>Conduct educational and public information campaigns</td>
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<td></td>
<td>Educate and impose sanctions against repeat offenders</td>
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<tr>
<td>2. Improve the driving environment to eliminate or minimize the external &quot;triggers&quot; of aggressive driving</td>
<td>Change or mitigate the effects of identified elements in the environment</td>
</tr>
<tr>
<td></td>
<td>Reduce nonrecurring delays and provide better information about these delays</td>
</tr>
</tbody>
</table>

Specifically, the report argues that with the first objective—Deter aggressive driving by specific populations, including those with a history of such behavior, and at specific locations—the object is one of general deterrence, but in a targeted manner, and consists of identifying a series of violations in a particular area and then instituting an intensive program aimed at changing the undesirable behaviors. To quote from the report:

“In addition, there are drivers that habitually drive aggressively. The objective here is to intervene in a way that minimizes or eliminates aggressive driving behaviors. Methods of education and behavior modification are needed to help the habitual offender invoke self-discipline. Additionally, a perception must be created that repetition of violations will bring sanctions. In some cases, sanctions such as licensing actions may be part of the behavior modification. However, research elsewhere questions the overall value of license sanctions in behavior modification”.

The second objective—Improve the driving environment to eliminate or minimize the external “triggers” of aggressive driving—targets conditions on the highway that have been identified as causing frustration to the level that aggressive acts of driving are committed. To quote the report:

“To meet the objective, aspects of the driving environment need to be identified that create a significant probability that the targeted behaviors will occur. This is an uncharted area that currently requires a large degree of judgment on the part of those

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planning the program. Observation of behavior at candidate sites is likely to be the best indicator, given current knowledge. Programs can be put in place to modify, where possible, or at least minimize, these external elements. A key outcome from this objective is minimizing frustrations caused by elements not within the driver’s control.”

Further, to create a truly comprehensive approach to the highway safety problems associated with this emphasis area, four types of related strategies should be included as candidates in any program planning process:

1. **Public Information and Education Programs.** The goal of public information campaigns is to reach a large audience in a metropolitan area. However, there is evidence that suggests that public information alone will not be effective.\(^{49}\) It becomes necessary to combine education with enforcement. Examples can be found in the NHTSA document “Occupant Protection Special Traffic Enforcement Program Evaluation”;\(^{50}\)

2. **Enforcement of Traffic Laws.** When traffic laws are vigorously enforced, with well trained officers supported by the courts, the frequency and severity of highway crashes or injuries linked to their violation can be significantly reduced.;\(^{51}\)

3. **Strategies to Improve Emergency Medical and Trauma System Services.** Treatment of injured parties at highway crashes can have a significant impact on the level of severity and length of time during which an individual spends treatment; and

4. **Strategies Directed at Improving the Safety Management System.** Sound management of the highway safety system is essential to reducing aggressive driving, involving the police, transportation departments, courts, and other entities. Much of this is dependent on current and accurate data on the nature of crashes.\(^{52}\)

**Red Light Camera Photo Enforcement**

Photo enforcement of red light running crashes appears to be a viable mitigation strategy. The following information was obtained from a web search. The first reported use of red light cameras was on the German Autobahn between Cologne and Frankfurt in 1973.\(^{53}\) About 75 countries currently use photo enforcement of some kind.\(^{54}\) The constitutional issues involved in using cameras for enforcement of red light running also has been discussed.\(^{55}\)

A joint 2005 Federal Highway Administration-NHTSA report reviews driver, roadway and operations contributing to red light running and proposes guidelines for the installation and

\(^{49}\) See [http://www.ctre.iastate.edu/reports/chs.pdf](http://www.ctre.iastate.edu/reports/chs.pdf).


\(^{52}\) See, for example, [http://www.roadwaysafety.org/RSF%20Reporter/1st_Qtr_03/penndot.htm](http://www.roadwaysafety.org/RSF%20Reporter/1st_Qtr_03/penndot.htm).


maintenance of the cameras. They point out that many features of intersections can be modified to reduce red light running in addition to cameras.\textsuperscript{56} FHWA also has established a web page for information about red light cameras.\textsuperscript{57}

There have been many studies evaluating the effectiveness of photo enforcement in reducing red light running crashes.\textsuperscript{58} Overall, the general conclusion from these studies is that photo enforcement of intersections with many red light running crashes can substantially reduce the number of drivers who run the red lights as well as the number actually involved in crashes. However, the proper selection of the sites and information provided to drivers as they approach the intersection, as well as other measures to improve intersections, may be as important in reducing crashes as the cameras themselves.

In 2006, the City of Houston adopted photo enforcement of red light running violations. Installation of cameras is proceeding at 50 intersections throughout the City. While it is still too early to evaluate their effectiveness, photo enforcement indicates a commitment to use technology to reduce a very severe aggressive driving behavior, namely the running of red lights.

\begin{itemize}
  \item \textsuperscript{56} http://www.nhtsa.dot.gov/people/injury/enforce/guidance03/Guidancereport.pdf
  \item \textsuperscript{57} http://safety.fhwa.dot.gov/intersections/redl_cameras.htm
\end{itemize}
RECOMMENDATIONS

Recommendations Requiring Little or No Additional Funding

1. **Encourage jurisdictions to implement dynamic speed signs along arterials.**

   This technology provides information to drivers about their speed and, based on casual observation, appears to be effective at reducing driving speed. In the next year, the Committee will research the effectiveness of this technology to see if there are long-term safety benefits.

   Radar speed limit signs can be installed to inform motorists the speed at which they are traveling (Figure 3.3). Current speeds are shown, which can help motorists reduce speeds to comply with posted limits. This technology has been used in various locations throughout the United States, including some locations in Texas. These installations cost approximately $2,500 per site, and are commonly battery powered, with a solar collector assembly.\(^{59}\)

   A few studies have been conducted on the effectiveness of these signs. The City of San Jose implemented a sign test in a school zone, which yielded a 5-7 mph reduction in speeds.\(^{60}\) The city has since installed 31 signs. Another study conducted in Riverside, California by Dr. Steven Bloch of the Automotive Club of Southern California showed that use of radar speed display boards reduced mean speed by 5.8 mph.\(^{61}\) TTI also has conducted a study of these display boards resulting in a 9 mph reduction in school zones. The study did show lesser improvements in other areas depending on the configuration of the road. However, results were improved if the signs were combined with other indicators such as a school zone sign, traffic signal indicator or a warning beacon.\(^{62}\)

   It should be noted that the longer the device is in place, the more drivers tend to ignore the information being displayed. For short-term, high-impact benefits, relocation of the radar units is recommended.

Recommendations Requiring Additional Funding

2. **Implement one or more safety corridors.**

   The Committee has considered implementing a Safety Corridor concept, similar to programs in Pennsylvania, New Jersey, Virginia, Oregon, New Mexico, and Kentucky, where increased efforts are taken to reduce aggressive driving on problematic road corridors. The Committee will review roadway corridors in the region that have a high incidence of crashes related to aggressive driving and will partner with jurisdictions in the proposed corridors to educate drivers of the problem, increase enforcement, and implement roadway measures to reduce aggressive driving (e.g., warning signs, dynamic speed signs, improved signal timing,\(^{59}\) For example, see [http://www.informationdisplay.com/](http://www.informationdisplay.com/); [http://www.nwpwr.com/traffic_siq/speed_signs.htm](http://www.nwpwr.com/traffic_siq/speed_signs.htm); [http://www.ingram-tech.com/us_signs.htm](http://www.ingram-tech.com/us_signs.htm).

   Metropolitan Transportation Commission Safety Toolbox,
   [http://www.mtc.ca.gov/planning/bicyclespedestrians/tools/radarSpeedDisplaySign/index.htm](http://www.mtc.ca.gov/planning/bicyclespedestrians/tools/radarSpeedDisplaySign/index.htm),
better striping). In addition, the Committee will research funding options, including STEP funding, for improved enforcement and will conduct an evaluation of safety corridor implementation, including violations, crash reductions, and an evaluation of the speed limit for the corridor.

As safety corridors are becoming more common throughout the United States, more data are available in regards to their effectiveness. In California, comparing the periods of 1992-1995 to 1997-2000 along the SR 41 and SR 46 corridors, the number of fatalities dropped 35.4% and the number of severe injuries dropped 26.5% since the implementation of the safety corridor. The US 82 Safety Corridor in New Mexico, begun in 2002, showed a 17.1% reduction in total collisions, a 19.2% decrease in collisions involving injury and a 14.3% decrease in collisions involving severe injury. In Virginia, a 15-mile section of Interstate 81 designated as a safety corridor in 2003 showed a 30% reduction in crashes, down from 204 crashes in 2003. Crashes resulting in injuries declined about 60% during this same period.

Figure 3.3:

3. **Promote road safety education to teens.**

The Committee recognizes that teen drivers have a disproportionately higher incidence of being involved in crashes resulting from aggressive driving and recommends addressing aggressive driving at the high school level by promoting educational programs for teens.

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The initial driver training received by the region’s teens varies greatly in quality depending on whether the student driver attends a professional driving school with a good curriculum and instructors, a driving school with a mediocre curriculum and poor instructors, or opts to take a parent-taught driving program. Many teens view basic driver training only as a ticket to a driver’s license, concentrate on memorization of details for the written test rather than safety techniques, and remember little about the instruction received once the driver’s license is secured. Further complicating this situation is the current lack of a driving component to the driver licensing exam. Even when the instruction is excellent and the student driver attentive, this type of driver training is only an introduction to what the teen will face on the actual roadways. Inexperience with challenging driving situations, coupled with the distractions of cell phones, MP-3 players, other teens riding in the vehicle, and the teenage propensity to speed past other vehicles often results in motor vehicle crashes with multiple fatalities. Young drivers would benefit from more training than the driver’s license requires, especially training in handling unexpected hazards. Additionally, teens have to “buy in” to the attitude that driving safely matters and does not diminish them among their social peers.

Road safety education provided to teens by teens or by other interesting instructors to whom a teen may relate on a personal level can fill this need for continued training. The main program of interest suggested by the Committee is the “Teens in the Driver’s Seat” program, a Peer-to-Peer driver safety program developed by Russell Henk of TTI, where teens provide input on the development of educational materials and then deliver the message to fellow teens. The Committee recommends the implementation of “Teens in the Driver’s Seat” in conjunction with a Safety Corridor project at a high school located along a proposed safety corridor and recommends the notification of all districts in the region to consider this program and actively search for funding options for this and other such programs. The integration of the Safety Corridor project and specialized teen driving safety programs into a concurrent project provides the opportunity for increased public awareness of the aggressive driving problem and the region’s attempts to address it. There are several other well-received informational and hands-on safety training programs to choose from for much-needed teen safety training (e.g., “Shattered Dreams”—a graphic look at the dangers of drinking and driving sponsored by TABC, and “Driver’s Edge,” and the “Richard Petty Driving Experience Teen Driver Safety Program”—curricula and hands-on driver training developed by professional race car drivers on how to drive defensively), and these programs are also recommended by the Committee to use in conjunction with future Safety Corridor projects.

**NEXT STEPS**

During the next year, the Committee will follow up on these recommendations. First, the Committee will explore funding for the purchase of dynamic speed signs for jurisdictions throughout the region. Since the cost of these signs are so low (typically $2500 or less), it may be possible to find funds to purchase a significant number. The Committee will obtain sponsorship for jurisdictions for a commitment to use the signs. If the funding source can be identified, it may even be possible to deploy the signs at selected locations during the year. The Committee may also help identify a number of roadway segments in which the signs would appear to be maximally effective.

Second, a couple of corridors will be selected as safety corridors. The Committee has already identified a number of possible corridors. Additional analysis to examine the roadway conditions and the cost of engineering improvements will be required to know whether any of these are good, short-term candidates for safety corridors. In addition, political support must be obtained from the Texas Department of Transportation and the jurisdictions through which the
corridor passes. Support from the high schools and middle schools along the corridor must also be obtained. Funding sources for the enforcement, education and engineering improvements that will be implemented on the corridor must be found. Finally, a staging of the implementation of the corridor will be developed.

Third, independently, the Committee will identify one or more high schools and middle schools that would be receptive to sponsoring a teen driving safety program. Discussions will be held with the administrators at each of these schools to explore the possibility that a program can be implemented there. At the minimum, the Committee will identify a list of schools whose administrators would be interested.

Reducing aggressive driving is not something that can be fixed immediately. Since it involves behavior to a large extent, engineering improvement can only minimally affect such behavior. Enforcement is important, but the limited number of police personnel who could be used for traffic enforcement severely restricts the ability to do little more than slightly dent the problem. That is why the Committee decided to focus on a safety corridor. Existing resources can be focused in a more concentrated manner, thereby multiplying the benefits more effectively than if the resources were dispersed throughout the region. It is with this orientation that the Committee will build on its recommendations during its second year.

ADDITIONAL INFORMATION

More information on aggressive driving can be obtained from the following sources:

   http://www.nhtsa.dot.gov/portal/site/nhtsa/template.MAXIMIZE/menuitem.5928da45f99592381601031046108a0c/?javax.portlet.tpst=4427b997caac504a8bda101891ef9a_ws_MX&javax.portlet.prp_4427b997caac504a8bda101891ef9a_viewID=detail_view&javax.portlet.begCacheTok=token&javax.portlet.endCacheTok=token&itemID=6db1ddd225a08010VgnVCM1000002c567798RCRD&viewType=standard.


3. Strategies for Aggressive Driver Enforcement (NHTSA, 2001)

4. Bibliography of studies on aggressive driving (NHTSA)

   Volume I: Methodology
   Volume II: Driver attitudes and behavior
   Volume III: Countermeasures
   http://www.nhtsa.dot.gov/people/injury/aggressive/unsafe/
Chapter 4

IMPROVING FREIGHT SAFETY

INTRODUCTION

This chapter examines freight safety. This is defined as safety involving commercial motor vehicle, trains, and shipping. Because of limited data, the chapter will focus only on crashes involving commercial motor vehicle and railroad-highway grade crossing crashes. The Improving Freight Safety Committee met between February 2006 and November 2006 and developed the several recommendations based upon its findings which appear at the end of this chapter.

EXTENT OF THE PROBLEM

Commercial Motor Vehicle Crashes

Because of the economic importance of freight, safety of goods movement in conjunction with the movement of passengers is of paramount consideration. The Houston-Galveston region appears to have a serious truck safety problem. Between 1998 and 2001, there were 20,248 crashes involving a commercial motor vehicle (CMV) in the eight-county region (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller). This was approximately 6% of all motor vehicle crashes in the eight-county region. Comparing these numbers to the rest of the State is difficult because we only have 1999 statewide data. In 1999, the number of commercial motor vehicle crashes per 100,000 population was 98.1 for the region, while for the State of Texas per capita rate was 81.2. Thus, the region had a higher rate of commercial motor vehicle crashes per capita. Unfortunately, there is not good data on the number of commercial motor vehicles (CMV), so it is not clear whether the region’s rate is high when compared to a more direct baseline of the number of CMVs registered or to vehicle miles traveled by CMVs.

What may be of more concern is that the numbers keep increasing. In 1998, there were 4,879 CMV crashes. By 1999, this had increased to 4,984, to 5,144 in 2000 and to 5,241 in 2001. This represents an annual growth rate of 2.4%. The growth rate is higher than the population growth rate over the period (1.5%), but about the same as the growth in vehicle miles traveled (2.7%).

As would be expected, a disproportionate number of CMV crashes occur on freeways and other major arterials (Figure 4.1). For example, about 35% occur on the freeways themselves and about 59% occur on the State road system (interstate highways, State roads, and Farm to Market roads); this is in contrast to 47% of crashes involving any kind of vehicle occurring on these types of roads. Because of the size of the vehicles, a large amount of their travel routes must be on the larger roads. Virtually all of the major hot spots that have been identified are on the freeways (see Figure 4.1).

Contributing Factors

More detailed analysis was conducted on the motor vehicle crashes that occurred between 1999 and 2001. For these three years, there were 15,369 CMV crashes in the eight-county region. In these crashes, 9% involved only one vehicle, 77% involved two vehicles, 10% involved three vehicles, and 4% involved four or more vehicles.
The State crash form does not have a field on who was at fault in the crash, but it does have a field on contributing factors to the crash. For each vehicle and driver involved in a crash, any contributing factors are listed. Generally, the driver who was most at fault is listed as having a contributing factor whereas the other drivers are not. However, it is possible to have two or more drivers listed as having a contributing factor (e.g., one is speeding while the other runs a red light).

The contributing factors were examined for vehicle/drivers 1, 2 and 3 only for these crashes since these account for 96% of all CMV crashes.. Of the 15,369 CMV crashes, vehicle 1 was a CMV in 11,403 of these, vehicle 2 was a CMV in 9,268, and vehicle 3 was a CMV in 1,434. In 5,511 crashes (or 35.8%), both vehicles 1 and 2 were commercial motor vehicles. In 974 crashes, vehicles 1 and 3 were CMVs. In 787 crashes, vehicles 2 and 3 were CMVs and in 517 crashes, vehicles 1, 2 and 3 were CMVs. In general, there is greater than one-third likelihood that a CMV crash will involve two or more commercial motor vehicles.

In all, 19,591 contributing factors were listed for these crashes of which the CMV drivers accounted for the most (60.6% v. 39.4%). Table 4.1 lists the contributing factors for CMV drivers 1, 2 and 3 who were involved in a CMV crash:

Table 4.1
Contributing Factors for CMV Drivers 1, 2 & 3
Involved in a Crash: 1999-2001

<table>
<thead>
<tr>
<th>Factor</th>
<th>Frequency</th>
<th>% of Factors Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Other’ factor/N.I.</td>
<td>3,963</td>
<td>33.4%</td>
</tr>
<tr>
<td>Speeding</td>
<td>3,894</td>
<td>32.80%</td>
</tr>
<tr>
<td>Failing to yield ROW</td>
<td>1,273</td>
<td>10.7%</td>
</tr>
<tr>
<td>Improper turn</td>
<td>818</td>
<td>6.9%</td>
</tr>
<tr>
<td>Running red light</td>
<td>639</td>
<td>5.4%</td>
</tr>
<tr>
<td>Following too close</td>
<td>373</td>
<td>3.1%</td>
</tr>
<tr>
<td>DUI</td>
<td>287</td>
<td>2.4%</td>
</tr>
<tr>
<td>Fail to stop at stop sign</td>
<td>220</td>
<td>1.9%</td>
</tr>
<tr>
<td>Improper passing</td>
<td>172</td>
<td>1.4%</td>
</tr>
<tr>
<td>Other mention</td>
<td>239</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

The most frequent factor listed was ‘other’, essentially no information being provided. The most mentioned specific factor was speeding, both above the speed limit and within the speed limit but unsafe (33.1%). This is by far the most cited contributing factor suggesting that about one-third of all CMV drivers involved in a crash were speeding. After this factor, the next most common reasons were failing to yield the right-of-way (10.8%), making an improper turn (6.9%), running a red light (5.4%) and following too close (3.0%). As with non-CMV drivers, speeding is the dominant behavioral factor involved in crashes.

The passenger vehicles and drivers were also analyzed to see if there were different behavioral factors. Table 4.2 presents the results in the same order as Table 4.1:
Table 4.2
Contributing Factors for Passenger Drivers 1, 2 & 3
Involved in a Crash: 1999-2001

<table>
<thead>
<tr>
<th>Factor</th>
<th>Frequency</th>
<th>% of Factors Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Other’ factor/N.I.</td>
<td>2,897</td>
<td>37.6%</td>
</tr>
<tr>
<td>Speeding</td>
<td>2,968</td>
<td>38.5%</td>
</tr>
<tr>
<td>Failing to yield ROW</td>
<td>371</td>
<td>4.8%</td>
</tr>
<tr>
<td>Improper turn</td>
<td>221</td>
<td>2.9%</td>
</tr>
<tr>
<td>Running red light</td>
<td>399</td>
<td>5.2%</td>
</tr>
<tr>
<td>Following too close</td>
<td>211</td>
<td>2.7%</td>
</tr>
<tr>
<td>DUI</td>
<td>235</td>
<td>3.0%</td>
</tr>
<tr>
<td>Fail to stop at stop sign</td>
<td>156</td>
<td>2.0%</td>
</tr>
<tr>
<td>Improper passing</td>
<td>155</td>
<td>2.0%</td>
</tr>
<tr>
<td>Other mention</td>
<td>100</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Comparing Tables 1 and 2, the distribution of contributing factors by passenger drivers is somewhat similar to that of the CMV drivers, but there are some important differences. The CMV drivers were more likely to have failed to yield the right-of-way (10.7% v. 4.8%), more likely to have made an improper turn (6.9% v. 2.9%), and more likely to have been following too close (3.1% v. 2.7%). Conversely, passenger drivers are more likely to have been speeding than the CMV drivers (37.6% v. 33.4%), more likely to have been driving under the influence of alcohol or drugs (3.0% v. 2.4%) and more likely to have made an improper pass (2.0% v. 1.4%). For the other factors, there were no substantial differences.

Thus a pattern of behavior involved in CMV crashes starts to become clearer. First, speed is a major factor in a CMV crashes, whether it is by the CMV drivers or the passenger driver. In a typical crash involving a CMV driver, the passenger driver is more likely to be speeding, but speed is the dominant factor associated with a sizeable proportion of crashes, whether by the CMV or passenger vehicle driver (33.8% of all drivers were seen as speeding). After speed, the CMV drivers are seen as failing to yield the right-of-way, more likely to have made an improper turn, or more likely to have been following too close than the passenger vehicle driver. Conversely, the passenger vehicle drivers are seen as more likely to have been DWI and more likely to have made an improper pass.

Vehicle Movements for CMV Crashes Involving Speeding

Given the predominance of speeding as a factor in CMV crashes, an analysis was conducted of the vehicle movements involved in CMV crashes. Drivers 1, 2, and 3 were examined to see what types of movement were involved when speeding was a factor in a CMV crash. For those crashes in which the CMV driver was speeding, 93.7% involved crashes where both vehicles were going in the same direction while 4.1% involved the vehicle approaching at an angle. For the ‘same direction’ crashes, 51.5% involved the truck driver running into the passenger vehicle while stopped and 36.2% involved the truck driver running into the passenger vehicle from behind, even though the passenger vehicle was still moving. These are ‘rear end’ crashes. In only 6.1% of the cases was a turn involved, and in only 5.4% of the cases was there a sideswipe movement.

The vehicle movement of the passenger vehicle drivers when they were speeding was similar to that of the CMV drivers. For those crashes in which the passenger vehicle driver was
speeding, 88.7% involved crashes where both vehicles were going in the same direction while 6.2% involved the vehicles approaching at an angle and 5.0% involved the vehicles approaching in the opposite direction (‘head on’ collisions). For the ‘same direction’ crashes, 47.7% involved the passenger vehicle driver running into the truck while stopped and 33.5% involved the passenger vehicle driver running into the truck from behind even though the truck was still moving. In 11.0% of the cases there was a turn involved and in 7.6% of the cases there was a sideswipe movement. The majority of CMV crashes in which the passenger vehicle was speeding also involved rear end crashes, though there were proportionately more involving turns as well.

In other words, for both CMV drivers and passenger vehicle drivers involved in CMV crashes where one or more drivers were speeding, the vast majority of crashes involved a crash from the rear where the speeding vehicle ‘runs up’ on the front vehicle. It is possible that the front vehicle cut in front of the following vehicle, though there is no data directly documenting this occurrence. However, if it was always the passenger vehicle that cut in front, the majority of crashes involves passenger vehicle and commercial vehicles would primarily involve the commercial vehicle being seen as speeding. Because this does not happen, it shows that it is not a general condition. In fact, the passenger vehicle is seen as speeding more often than the commercial vehicle (see above).

In short, speeding seems to be a major factor in CMV crashes whether by commercial vehicles or passenger vehicles.

**Highway/Rail Grade Crossing Collisions**

A major indicator of how railroad safety interfaces with road safety is the number of highway/railroad crashes. Between 1990 and June 2003, there were 1,183 crashes involving a train and a motor vehicle in the eight-county region, an average of about 95 a year. Unfortunately, for State and local level comparisons, H-GAC does not have good baseline data. Consequently, the region’s highway/rail safety is compared to the State total. Regarding railroad safety, the region has a relatively severe problem, which appears to be getting worse. According to the Federal Railroad Administration (FRA), from 2000 to 2002, there were 247 highway/rail crashes in the region (excluding Chambers County for which there was no information). These involved 13 fatalities and 74 injuries. The 247 crashes accounted for 23.2% of the State’s total highway/rail crashes.

Compared to 10 years earlier (1990-1992), the percentage of highway/railroad crashes in the region decreased only slightly, but has increased as a share of the state’s rail-highway grade crossing crashes. Between 1990 and 1992, the region had 252 crashes and accounted for only 15.8% of the State’s total highway/rail crashes.\(^{66}\) Figure 4.2 shows the location of the crashes.

Part of this proportional increase can be explained by the region’s increasing share of population. In 2000, for example, the region had 22.3% of the State’s population. However, the fact that total highway/rail crashes in Texas decreased over the 10-year period from 1994 to 2003, whereas the region showed no changes in these types of crashes, suggests that safety measures have not been sufficiently taken to reduce the number of highway/rail crashes.

Using the CrimeStat program, eight hot spots have been identified where there were eight or more highway/rail crashes between 1990 and June 2003 (Figure 4.3). There are 22 more locations where there were 5-7 crashes between 1990 and June 2003. In addition, there are small areas (hot spots) where there are many crashes involving trains and motor vehicles, including the East End of Houston, the Pasadena-La Porte area, and the US 90A corridor.

The Texas Department of Transportation (TxDOT) and the FRA will begin working in 2007 on an “action plan” to address crossing locations which have continued to have multiple collisions. Many of these “multiple-collision locations” are in the H-GAC area. The Regional Safety Council can assist this process by supporting funding of grade separations and expensive crossing signal upgrades on “off-system” local highway/rail grade crossings. Also, from a planning perspective, H-GAC should study and promote landuse and development to minimize the impact on rail corridors. This will include supporting the closure of redundant grade crossings and establishing policies that minimize the proliferation of new at-grade crossings. The costs of building overpasses should be included in new development planning. The future of grade crossing safety and the efficiency of rail transportation will be greatly affected if development demands great large numbers of new at-grade crossings.

Figure 4.2:

Railroad-Highway Grade Crossing Crashes: 1990-June 2003
Location of Crashes

Figure 4.3:

Railroad-Highway Grade Crossing Crashes: 1990-June 2003
Frequent Crash Locations
POLICIES, PROGRAMS, AND PRACTICES THAT WORK

A number of policies and actions have been shown to be effective in reducing freight crashes. In the following sections of this chapter, we will concentrate on CMVs, leaving the Freight Safety Committee’s recommendations for rail/highway grade crossing crashes until next year.

Sharing the Road With Trucks\textsuperscript{68}

Efficient movement of goods is a major factor in the growth of United States economy and the trucking industry plays an important role in it. In 1992, the Intermodal Surface Transportation Efficiency Act (ISTEA) banned Larger Combination Vehicles (LCV’s) from many important nationwide trucking routes. This restriction resulted in higher trucking volumes on the interstates. Also in 1992, the North America Free Trade Agreement (NAFTA) added to the trucking volume in Texas. The higher trucking volumes on the existing freeway system in Texas in general and eight-county region in particular, resulted in increased crashes. Over time, the crash data and public perception made us conscious that the use of freeways by commercial trucks in our area is a major safety issue. Some studies have shown that one-fifth of the accidents involve a combination of vehicles, e.g., commercial trucks and cars. Shear commercial truck volume may not have that much adverse effect on the traffic congestion on a freeway, but the problem gets acute once there is a crash on a freeway involving a commercial truck. One of the reasons a car and commercial truck collision could occur is because the two vehicles have different operational characteristics, and the car driver does not have adequate education about the limitations of the truck and its driver.\textsuperscript{69}

According to the National Highway and Traffic Safety Administration (NHTSA), 71% of fatal multi-vehicle crashes involving a large truck are caused by the other vehicle. People in passenger vehicles are especially vulnerable in collisions with large trucks because of the great difference in weight between cars and large trucks. While heavy trucks account for 3% of all registered vehicles, they are involved in 13% of all fatal accidents.

Separating Trucks from Passenger Vehicles

Whether it is traffic congestion problems or crashes involving commercial trucks, a simplistic approach to finding a solution is to add freeway capacity. Adding a lane or two to a freeway should ease the problem to some extent, but adding more capacity without addressing the truck volume issue is not likely to solve the safety problem in a corridor. Another alternative is to prohibit commercial trucks from a section of a freeway. This is not a good solution as it has implications on the movement of essential goods in that area. In the long term, plans to add more capacity and, in the short term, plans to introduce some degree of separation between trucks and cars may help to optimize safety on the freeway. It has been proposed that separating trucks and passenger vehicles would be the ideal solution, removing the conflict and increasing predictability for both truck drivers and passenger drivers. Truck-only lanes or facilities have been proposed for many years as a solution, though to date, only a few such facilities have been built in the nation. There are two ways to separate heavy vehicles from the cars on a freeway – restrict the heavy vehicles to specific lanes of the freeway or introduce dedicated truck lanes on the congested freeway sections.

\textsuperscript{68} http://www.smartmotorist.com/tru/tru.htm.
\textsuperscript{69} http://www.cte.iastate.edu/mtc/papers/burke.pdf.
Truck Lane Restrictions

From an operational viewpoint, certain policies seem to improve safety among trucks. One such policy is the restriction of truck lanes. The concept of restricting the commercial trucks from a particular lane on a six-lane freeway is common in many states including Texas. The Texas Department of Transportation has introduced this concept on certain sections of IH 10, IH 45 North, US 290 Northwest, and SH 225. The commercial trucks are restricted from using the left lane from 6 AM to 8 PM Monday through Friday. State Senate Bills, City of Houston Ordinances, and State House Bills were enacted to introduce this restriction in certain sections of the stated freeways in the Houston area and eight-county region. The Texas Transportation Institute (TTI) conducted a study to evaluate the impacts of this restriction and came up with positive findings: the restriction was a positive experience; reduced crashes by 68%; 95% compliance rates were observed; and there were no impacts to the overall freeway operations. Necessary components for successful truck lane restriction implementation identified in this study are: support from trucking industry; good information distribution and media involvement; and active enforcement.

Truck-only lanes have their own advantages and disadvantages. During the past 10 years, the increase in crashes involving cars and heavy vehicles created awareness of the problem and governments at all levels and research institutes have started investigating the idea of introducing dedicated truck lanes on congested freeway sections. Such a dedicated lane on a six-lane facility may be the first freeway lane or the innermost/left lane. The dedication of the first freeway lane (with appropriate signs and pavement marking) has its own limitations like cars entering or existing a freeway will have a conflict with the heavy vehicles in that lane. The inner most lane dedication will not be useful unless it is separated from the other freeway traffic by a concrete barrier. This concept should normally be studied for the freeway sections with high volume of commercial trucks. Truck-only, barrier-separated lanes are likely to reduce the overall operational flexibility of the facility and problems will occur whenever a crash occurs or maintenance needs to be done in this lane. There are very few places in the country where such barrier-separated lanes exist. The New Jersey Turnpike is one such example where commercial trucks are separated from the cars and other vehicles. The concept of separate truck lanes needs to be further studied to fully understand its pros and cons.

Truck Safety Education

Education is the most critical dimension for the truck operators, the public, and elected officials. Truck operators need to develop a ‘culture of safety’ in their organization, a set of procedures and quality control measures that will encourage drivers to be vigilant and concerned with safety at all times. In addition, the public needs to be educated about driving around trucks. There seems to be a lack of awareness by many drivers about what truck drivers can see and also a lack of consideration about how long it takes a large, heavily-weighted CMV to stop. There is a need to add information about trucks to the DPS driver’s manual. Newspaper and electronic media and school boards can play an important part in educating public and high school students.

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Safety conferences can also play a crucial role in addressing the safety problem on the freeways as they are a great forum to share research results and educate various segments of the community and community leaders.

**Truck Enforcement**

Enforcement is an equally important part of mitigating crashes involving commercial vehicles and cars. Along with consideration of introducing the measures listed above, adding more effective enforcement should help reduce the number of crashes in the Houston region. The Houston Police Department established a separate Truck Enforcement Unit (TEU) in October 1999 in response to a rapid increase in the number of fatal commercial vehicle crashes. The mission of TEU is “Safe Trucks Driven Safely.” In December 2000, HPD started a Selective Traffic Enforcement Program. It is the first program of its kind dedicated solely to the enforcement of CMVs in Texas. Last year, 16,003 citations were issued under this program. The TEU has four sergeants and nineteen officers and operate 6 AM to 6 PM on weekdays. Considering the large number of freeways passing through the Houston area, this unit needs more manpower and resources to expand operations to cover extended hours from 6 AM to 8 PM and additional locations.

**Carrier Views**

Motor carriers have their own thoughts about reducing crashes involving CMVs. They oppose the idea of limiting truck operations during peak hours because they already choose to avoid them. Truckers sometimes face difficulty in negotiating freeway ramps and connector roadways where there are left-hand exits. Merge areas and acceleration lanes are the most challenging design situations for truck drivers and trucking companies think that they are already working to educate their drivers and already have checks and balances in place.

**State Truck Safety Commissions**

Many states are beginning to recognize the importance of CMV programs. For example, the State of Michigan has created a Michigan Truck Safety Commission. The Michigan Truck Safety Commission (MTSC) is a unique institution that deals with truck safety and is the only one in the country. While all states have a motor carrier division, only Michigan has a Truck Safety Commission.

The MTSC was created by the Michigan legislature in 1988. Historically, Michigan has had large numbers of truck crashes due to its heavy industrial base. The MTSC has 11 members by statute. The director of the Michigan State Police Motor Carrier Division is automatically part of the MTSC as is the director of the Michigan Office of Highway Safety Planning. Also, there is a representative from the Secretary of State’s office and a Transportation Commissioner from the Michigan Department of Transportation. Other members include representatives from the trucking industry, organized labor and the general public, and are appointed by the Governor for two year terms.

Funding for the MTSC comes from a Truck Safety Fund with the MTSC responsible for managing it and the Michigan Office of Highway Safety Planning serving as the administrator for

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the fund. Every truck over 10,000 pounds registered in Michigan pays an annual surcharge (in addition to the usual licensing and registration fees). There are exceptions with farm vehicles and vehicles owned by schools, universities, and municipalities not having to pay into the fund. Out-of-state trucks (with single state registrations) pay a fee proportional to their mileage within Michigan.

The MTSC is unique, the only organization in the nation dedicated to commercial truck driver education and training supported not with tax dollars but solely by the industry it serves. What was born of modest beginnings has grown to become a renowned safety advocate for the State's trucking industry. The MTSC is committed to enhancing truck and truck driver safety by providing truck driver education and training, heightening all drivers' awareness of the operational characteristics and limitations of trucks, initiating data collection and research, and supporting enforcement of motor carrier safety laws. The State of Michigan serves as an example to the State of Texas. Better education reaps better compliance with safety laws and ultimately reduces crashes.

**RECOMMENDATIONS**

The Freight Safety Committee recommends the following steps be taken to address trucking safety in the H-GAC area. This year’s recommendations are limited to trucking; however, future recommendations will address additional freight modes.

**Recommendations Requiring Little or No Additional Funding**

1. **Expand use of truck lane restrictions on six lane or more freeways to the fullest extent possible where the truck volumes are sizeable and where the existing physical layout of the road, entry and exit ramps, and control conditions are feasible.**

   The Committee proposes that truck lane restrictions be used where truck volumes are substantial (e.g., 4% or more of all vehicles) and where the roadway infrastructure and traffic conditions make it feasible. The Committee will further study the use of lane restrictions for commercial vehicles on four-lane divided highways by reviewing the existing literature and evaluate whether any examples are applicable to our region. Under the current guidelines, the Committee will identify additional freeways for which truck lane restrictions might be implemented.

   Legislation has been passed allowing the Texas Department of Transportation to restrict lane use by class of vehicle (i.e., trucks). The restrictions must be set by a City Ordinance, County Order or Commission Minute Order. The restriction has currently been implemented on IH 10E, SH 225, IH 45N and US 290 in the Houston area, IH 10/US 90 in San Antonio, IH-20 and IH-30 in the Dallas-Fort Worth area, and IH 35 in the Austin area. Restricted truck lanes can only be enacted on highways with a minimum of three lanes in each direction, so trucks will always have access to at least two lanes. Trucks may also use the left lane to pass another vehicle or enter and exit a highway.

   A traffic study was performed by the Texas Transportation Institute (TTI) after the restriction was enacted on IH 10E in Houston. Although there are several factors which affect crash rates, the lane restriction likely had a role in reducing vehicle crashes by 68% along the freeway main lanes during the 36 weeks that were monitored.
Lane restrictions for trucks improve safety by reducing:

- Differential vehicle speeds
- Lane changes, and
- Passing maneuvers

The Texas Department of Transportation believes that the safest conditions exist when vehicles are not traveling at widely differing rates of speed. Removing the conflict of the differential speed between passenger vehicles and large trucks traveling in the left lane will reduce the number of lane changes and passing maneuvers attempted by the trailing passenger vehicles thereby reducing the number of collisions. Typically, large trucks take much longer to accelerate to the prevailing speed than do passenger vehicles. When this occurs, lane changes tend to be more frequent and exaggerated as faster vehicles attempt to move around slower moving trucks.

The Texas Department of Transportation believes that the use of truck lane restrictions in certain areas will improve safety for cars and trucks. Designating a lane for passenger vehicles only will increase the speed of that lane, thus encouraging those vehicles to stay in that lane.

2. **Support development of truck-only facilities and work with other agencies to ensure that safety considerations are part of any conceptual plan.**

The Committee supports the concept of building truck only lanes as either part of existing freeway facilities or as stand-alone facilities. These would improve safety by eliminating many of the conflicts between trucks and passenger vehicles. Since conceptual plans are currently being developed to build truck-only facilities, the Committee will work to have safety explicitly considered in these plans.

Truck-only facilities may provide opportunity for improved operations and safety where the proportion of trucks is relatively high and where trucks would realize incentives to use the facility through reduced travel times on express lanes. Other factors generally recognized for review in assessing the viability of truck facilities are terrain, geometrics, and length of route.

Nationally, truck facilities have not been implemented widely; however, in consideration of increases in truck volumes and a desire to identify measures to improve the ability to safely move cargo by truck, this alternative is starting to receive greater consideration. The Committee will support efforts of other agencies along these lines.

3. **Investigate Options for additional truck enforcement funding.**

The Committee will investigate options for additional truck enforcement. The Committee proposes encouraging accountability and self enforcement at varying levels of freight delivery (e.g., equipment manufacturers, owners, loaders, and drivers) and seeks support for legislation required to allow fining receipts to be dedicated to increased intermodal carrier safety enforcement. The Committee supports the development of industry guidelines for self-enforcement (e.g., a system of surcharges that could be dedicated for enforcement purposes).

In 2006, the Houston Police Department (HPD) and the Harris County Sheriff’s Department both utilized STEP grants to target CMV safety. Information obtained from the Texas Department of Transportation reflects the following results for the period of October 1,
2005 thru September 30, 2006 (Table 4.3). Clearly both agencies placed a high priority on this STEP grant which was reflected in the hours dedicated and results achieved.

In FY 2007, both the HPD and the Harris County Sheriff’s Department have STEP-CMV grants once again (Table 4.4). These grants will go a long way to target CMVs. Continual enforcement will be followed by improved compliance by the commercial motor vehicle industry. Other enforcement agencies in the region are encouraged to participate in STEP grants targeting CMVs.

The HPD is currently working on two initiatives to increase funding for the Truck Enforcement Unit. The first involves requiring overweight, over height and over length loads to seek and obtain permits. A portion of the revenue generated through the permitting process will be directed to the TEU to increase enforcement on the roadways in the city.

The second initiative involves changes to State law and is targeted for the upcoming legislative session. The HPD is supporting the introduction of a bill which would change the State statute governing how funds from the Federal Motor Carrier Safety Assistance Program (MCSAP) of the Federal Motor Carrier Safety Administration (FMCSA) are currently allocated and ultimately allow municipalities to obtain available grant monies to increase truck enforcement efforts within major urban areas.

Table 4.3:

<table>
<thead>
<tr>
<th>AGENCIES</th>
<th>ENFORCEMENT HOURS at SITES</th>
<th>STEP Elements (Arrests/Citations)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CMV/HMV Actual/Target</td>
</tr>
<tr>
<td>Houston PD</td>
<td>6896.75</td>
<td>5276/3416</td>
</tr>
<tr>
<td>Harris County Sheriff’s Dept.</td>
<td>1004.2</td>
<td>625/1375</td>
</tr>
</tbody>
</table>

Table 4.4:

<table>
<thead>
<tr>
<th>AGENCIES</th>
<th>REIMBURSEABLE AMOUNT</th>
<th>LOCAL MATCH</th>
<th>TOTAL GRANT WORTH $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston PD</td>
<td>$356,500.00</td>
<td>$191,962.00</td>
<td>$548,462.00</td>
</tr>
<tr>
<td>Harris County Sheriff’s Dept.</td>
<td>$104,230.00</td>
<td>$20,052.00</td>
<td>$124,282.00</td>
</tr>
</tbody>
</table>
Recommendations Requiring Additional Funding

4. **Develop an educational program about truck safety that targets the general public, the trucking industry, and government.**

The Committee encourages public, private, and nonprofit organizations to increase education about freight safety issues, both in general and specifically in regard to driving with trucks or around trucks. The education would include programs aimed at the general public (e.g., utilizing public service announcements to increase public awareness of freight safety issues; using short catchy phrases on billboards, truck trailers, bumpers, and mud flaps to inform the public about freight safety), the trucking industry (e.g., provide pamphlets, posters, and billboards at intermodal facilities and as part of safety meetings), and government (e.g., utilizing public forums).

Part of the STEP-CMV grant process is the distribution of public information and educational materials. Information obtained from the Texas Department of Transportation reflected the following results for the period of October 1, 2005 through September 30, 2006 (Table 4.5).

**Table 4.5:**

<table>
<thead>
<tr>
<th>AGENCIES</th>
<th>PUBLIC INFORMATION AND EDUCATION MATERIALS DISTRIBUTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston PD</td>
<td>9944</td>
</tr>
<tr>
<td>Harris County Sheriff’s Dept.</td>
<td>2577</td>
</tr>
</tbody>
</table>

The Texas Department of Transportation’s FY 2007 Texas Traffic Safety Goals, Strategies, Performance Measures, and Objectives reflects the goal of reducing commercial motor vehicles crashes, injuries and fatalities involving vehicles weighing more than 10,000 pounds. This goal will be accomplished by:

1. Increasing public information and education on sharing the road with commercial motor vehicles;
2. Developing partnerships with commercial motor vehicle industry and trade associations to increase education and training of the general public and drivers; and
3. Increasing enforcement of commercial motor speed limits.

The FY 2007 objectives will be:

1. No more than 0.189 fatalities per 100M VMT for motor vehicles weighing more than 10,000 pounds
2. No more than 0.173 fatal crashes per 100M VMT for motor vehicles weighing more than 10,000 pounds.
Educational Programs

The Committee recommends the development of educational programs for the general public, truck drivers, and government entities regarding the special issues associated with truck safety on the area’s highways. In order to maximize the effectiveness of an overall safety education program, all three areas must be addressed. The Committee recommends that the following approaches be taken for each target audience:

1. **General Public.** The public must be made more aware of the safety issues associated with driving around and near trucks in congested areas, as well as the turning and braking characteristics that make trucks more difficult to maneuver and stop in traffic. Additionally, the public needs to be reminded of the dangers of highway/rail grade crossings. To achieve these goals, the Committee proposes the following strategies:

   - **Use of public safety announcements (PSAs).** Several existing PSAs are available for use from the Federal Motor Carrier Safety Administration (FMCSA) regarding truck safety and both the Federal Railroad Administration (FRA) and Operation Lifesaver regarding grade crossing safety. These PSAs could be run on local cable public access channels as well as local television stations seeking to meet their public service goals required for licensing.

   - **Development of local freight safety materials.** This strategy would require development of a local freight safety campaign that would have a recognizable logo and target emphasis. Similar to the “Click It or Ticket” campaign for seat belt use, this program would use catchy phrases on billboards, bumper stickers, truck trailers, truck mud flaps, etc. to spread the message of safety when driving around trucks. The program could also have coordinated special PSAs that would air on local television and cable access channels.

2. **Truck drivers and trucking companies.** Truck drivers and trucking companies in the area need more training and information on the safety of their own equipment and proper methods for loading and tie-down. The need for such educational materials was verbalized on several occasions by the members of the Committee from the Houston Police Department Truck Enforcement Unit. The HPD officers stated that often, when interviewed during routine inspections, drivers are either uninformed or negligent about basic safety procedures regarding proper truck loading or load tie-down regulations. Much of this ignorance of regulations has been attributed to the rapid turnover of truck drivers and the need to quickly train and put into service new drivers. Secondarily, demographic trends within the truck driving community, namely the recent trend of retirement of experienced drivers and their replacement with younger drivers with limited or no experience has also played a role.

3. **Development of truck driver safety training materials.** To address the observed deficiencies in truck driver knowledge identified by truck enforcement officers, a program of truck driver safety training reinforcement materials should be created. As envisioned, this program would consist of bilingual pamphlets, posters, and billboards that would be targeted to truck drivers addressing proper loading and other safety issues. Distribution of the materials would be at truck stops and other intermodal facilities such as ports and truck weigh stations. Further distribution of the training materials would also be accomplished during safety meetings at trucking companies and by enforcement officers in the field during routine stops. The cost of developing this program would likely require aid from FMCSA or other federal partners.
Assistance would also be sought from local agencies and trucking associations for input into the program.

4. **Government entities.** Local government entities should be more aware of the special safety concerns that should be taken into account near freight-related facilities and locations that generate a large number of freight vehicles. Increased awareness and enforcement of freight safety by local government officials will in turn improve overall safety for the traveling public.

5. **Use local forums to emphasize freight safety.** H-GAC will encourage all member cities and counties to increase awareness of freight safety issues as a part of their overall safety training programs. This would include outreach to local freight-related companies as well as to the general public regarding safety in and around freight facilities and vehicles. Activities could include local participation in the public outreach program described above, distribution of safety materials, and training of local government officials.

**Federal Educational Program Experience**

In recommending the development of educational programs to increase public awareness of freight safety, the Committee must take into account the past attempts of similar programs. The most clearly similar program to the one proposed is the FMCSA “Share the Road Safely” program which has been an ongoing effort since ISTEA was passed in 1991. Two recently completed studies by the U.S. Government Accountability Office (GAO) have identified several means of improving the implementation of truck safety educational programs. These two reports point out two primary lessons for implementation of the local program.

First, a system for measuring or evaluating the effectiveness of the program must be determined. Without a means of gauging effectiveness, future funding may not be allocated to the program as there is no way to know if program changes improve or decrease program effectiveness. Second, educational programs that are not linked with increased enforcement activities are not as effective in achieving the desired outcome. For example, the “Click It or Ticket” seat belt use campaign combines educational outreach and publicity with increased enforcement. The GAO recommends similar linkages between any truck safety educational program and increased enforcement of truck safety rules. Pilot programs of this type are being sponsored by FMCSA at the present time and are expected to continue through 2009.

**NEXT STEPS**

During the next year, the Committee will expand on these recommendations, both in breadth and in depth, and will concentrate on three goals. First, the Committee will look at other freight modes including highway/grade crossing safety, safety around the ports and at other interactions with water, safety at airports, and safety around pipelines. While the focus needs to be on motor vehicle safety, the Committee will explore any interactions with these other modes and will make additional recommendations for improving safety to the extent that they are appropriate.

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Second, the Committee will attempt to develop some specific projects relating to the recommendations made above. Specifically, the Committee will explore potential funding sources for an education program for truckers and elected officials, and for the development of public service announcements for the general public. It may be possible to develop a specific project for truck safety education during the coming year.

Third, the Committee will explore options for increasing truck enforcement funding. Aside from the FMCSA Motor Carrier Safety Assistance Program (MCSAP), where the funds go directly to the State rather than to specific police departments, it may be possible to link truck enforcement with other efforts that could provide funding for additional enforcement. In addition, the Committee will look at the ability of the trucking industry to enforce its own safety standards (self-enforcement).

ADDITIONAL INFORMATION

More information on freight safety can be obtained from the following sources:


Chapter 5

IMPROVING SAFETY INFORMATION SYSTEMS

INTRODUCTION

This chapter outlines some recommendations for improving the quality and usefulness of motor vehicle crash data. The Improving Safety Information Systems Committee met between February and November 2006 and developed the following recommendations.

The emphasis is on the total utility of crash data, not just on the data itself. There are several dimensions that make crash information useful for improving safety by state and local governments as well as in behavioral applications by nonprofit or private organizations.

Timeliness

The first dimension is the timeliness of the crash data that is collected by police officers and which is digitally coded by the local police department. If data are up to date, then useful decisions can be made about safety priorities and monitoring of roadways and intersections can be done effectively and accurately. On the other hand, if the data are old, then the usefulness of the information is much more limited with greater uncertainty existing for decisions that are made based on the old information. The Crash Records Information System (CRIS) allows law enforcement to provide a data file to be imported into CRIS as well as a web portal that allows smaller agencies to enter data directly into CRIS. This is a vast improvement over the previous system that would not allow an import from another system and in which all forms were printed and digitally has to be reentered by the Department of Public Safety.

Data Quality

The second dimension is the quality of the information that is collected by the police officers and coded by the department. In theory, the State crash form includes an enormous amount of information about motor vehicle crashes, providing data on the crash characteristics, the drivers involved, the vehicles involved, and any victims. In practice, however, much data is poorly collected and coded so that the usefulness of the data is uneven. There is still a need for better training but since the responding officer is entering the data there should be less coding errors and less interpretation of the narrative.

Accessibility

The third dimension is the accessibility of the crash data. Having the data in a form that can be easily obtained by a user is essential for allowing the data to be used effectively. For local governments, easy accessibility will allow analysts to quickly monitor crashes in the jurisdiction and, thereby, encourage preventive actions to be taken to reduce crashes. On the other hand, if the data are not easily accessible, then there is little use that will come out of it. The CRIS system will provide periodic dumps of the data and the hope is that H-GAC becomes a clearinghouse for the crash information in the region. Web query tools can be developed to provide ease of access and at least some analysis of the information. In addition H-GAC will likely still do some study on a regional and sub regional basis.
Analysis

The fourth dimension is the ability to analyze the data. Data needs to be analyzed and interpreted to be useful because it is not very useful by itself. Simply counting the number of crashes has limited utility; it does indicate whether the number is higher than some earlier time period (e.g., this year compared to last year), but does not help identify the high risk drivers nor the most hazardous locations. Linking the crash data set to a Geographic Information System (GIS) adds more knowledge about the crashes, compared to just tables but is still limited in its ability to provide information from which decisions to reduce crashes could be made. Analysts need tools to extract conclusions from the data and these tools have to be targeted to decisions that users will want to make based on the data. Thus, having easily available analysis tools is an essential part of making the crash data useful to a local government, the state department of transportation, or another user. Further, to utilize analysis tools, users have to be trained so that they know how to extract the information.

Reporting

The fifth dimension is the ability to report the results of the analysis. Whether the report is in tabular or graphical form, the information has to be presented to decision makers in a way that will allow them to draw conclusions about which safety priorities need to be emphasized and where decisions need to be made. Mapping crashes with GIS helps show the over all crash patterns and linking the crash data to statistical analysis can identify the most hazardous locations (hot spots). Further breaking down the hot spots into types of crashes can help identify which behaviors are triggering crashes and then linking this to an analysis of the drivers can help understand some of the characteristics that might be contributing to the behavior. However, the information needs to be reported to the public at large and to key decision makers in order to be translated into actions that can eventually improve safety. The Texas Department of Transportation will provide some general reporting through the CRIS system but the real benefit will be the ability to analyze and customize reports to suit the needs of the user.

Linking Safety Information Systems - Role in Injury Prevention and Treatment

A sixth dimension is the linking of motor vehicle crash data with Emergency Medical Services (EMS)/Hospital Treatment information and insurance information. It helps us to:

1. Enable local trauma hospitals plan appropriately for treatment of injured patients that present there via EMS and to use health resources in a cost-effective manner;
2. Ensure that emergency/trauma patients are delivered to an appropriate facility based on their severity; and
3. Plan local injury prevention activities, which in the long run can significantly improve traffic safety in our region.

The matrix below (called “Haddon’s Matrix” after the person who conceptualized it,\textsuperscript{73}) indicates the links between the precursors to a crash and the consequences (Table 5.1).

Table 5.1:  
**Haddon’s Matrix**

<table>
<thead>
<tr>
<th>Human</th>
<th>Vehicle</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-event</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Defects</td>
<td>Visibility</td>
</tr>
<tr>
<td>Experience</td>
<td>Brakes</td>
<td>Pavement</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Tires</td>
<td>Signals</td>
</tr>
<tr>
<td>Drugs</td>
<td>Avoidance systems</td>
<td>Construction</td>
</tr>
<tr>
<td><strong>Event</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belt use</td>
<td>Air bag</td>
<td>Guard rails</td>
</tr>
<tr>
<td>Helmet use</td>
<td>Automatic belts</td>
<td>Medians</td>
</tr>
<tr>
<td>Tolerance</td>
<td>Crash worthiness</td>
<td>Breakaway posts</td>
</tr>
<tr>
<td><strong>Post-event</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Post-crash</td>
<td>EMS system</td>
</tr>
<tr>
<td>Physical condition</td>
<td>Fire</td>
<td>First responder</td>
</tr>
<tr>
<td></td>
<td>Fuel leaks</td>
<td>Bystander care</td>
</tr>
</tbody>
</table>

**Safety information system**

In short, motor vehicle crash data is part of a safety information system that will allow information collected by police officers at the crash scene to ultimately be used for planning and intervention purposes in order to improve safety. It is not just data by itself, but represents a collection of analysis, visualization, and reporting tools that help create an understanding of the factors causing the crashes. Figure 5.1 illustrates the way in which crash data forms the base of an information system and how linked data, analysis, and reports form the basis of applying the information to projects that will improve safety.

**EXTENT OF THE PROBLEM**

The current status of crash information systems in our region (and in Texas as a whole) is generally very poor. The information is out of date, of uneven quality, not easily accessible, and with few available analytical tools to work with it. Consequently, the information has not been used very often to make strategic decisions for improving safety in the region. All crash information is collected on a standardized state reporting form (ST3). This ensures that the same types of information will be collected by all jurisdictions in the state. However, even though reports are made for virtually all motor vehicle crashes that fulfill the legal obligations of Texas law with few exceptions—most local governments only record limited amounts of information from the crash forms and there is little consistency in the way this is done. The rest of the information exists only on the paper crash forms. For example, some jurisdictions digitally code some of the fields while other jurisdictions file the crash reports in a filing cabinet. A notable exception is the City of Sugar Land which digitally codes all fields from the crash form and references the crashes to a GIS.

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74 Current Texas law requires that a crash form be collected for any crash involving a fatality, an injury, or property damage in excess of $1000.
A major problem is inconsistent collection of quality information on the crash form by police. Some information is of high accuracy (e.g., date, number of vehicles involved) while other information is of very low accuracy (e.g., whether struck pedestrians had been under the influence of alcohol). Of particular importance is the geographical information on the crash form which allows the crash to be located at a particular point, either an intersection or on a road segment; if the geographical attributes are not properly recorded on the crash form, then it becomes difficult to assign a location to the crash. While there are national and state standards for the collecting of crash data, in practice training is variable between jurisdictions leading to poorly collected data. Efforts need to be made to improve the quality of the crash information collected by local police departments.

Another problem is storage. While the state keeps records going back many years, many large jurisdictions only keep records for a limited number of years (as few as one year). Thus, it becomes very difficult to conduct temporal analysis of crashes at locations because of the lack of historical information. The CRIS system addresses many of these aspects and with proper training and the move towards electronic data entry and direct import into the CRIS system many of these consistency issues should be addressed.
A Dated Safety Information System

At the State level, the Crash Records Bureau of the Texas Department of Public Safety (DPS) has been vested with the responsibility of digitally recording all crashes that meet the criteria used by DPS for reporting crashes. Each jurisdiction is required to send copies of their crash forms to DPS for digital coding so that, in theory, there is a comprehensive record of all crashes that occur in the State. However, problems exist with the DPS system for several reasons. First, because of the volume of crashes, the DPS only records information for the more serious crashes. Thus, there is inconsistency between the State legal reporting requirements and the information the DPS collects. This makes it harder for a local jurisdiction to compare its crash records with those collected by the DPS. In theory, the serious crashes should be a subset of all the crashes, but in practice different identification numbers and the lateness of the data release makes it very difficult to match the records. A major problem with the DPS data release is that it is now five years out of date. The most recent data is from 2001. Thus, there is great uncertainty about whether any conclusions drawn from five year-old data is still applicable to existing road conditions (e.g., many improvements to safety have been made since 2001).

An additional problem is that the existing crash data system is mainframe computer-based with information coded in raw (EBCDIC) format. Thus, a local government wishing to use this information would have to first get a raw data dump of the data on to a personal computer and then record the data into a database program to translate the raw information into fields that could be accessed. The number of steps needed to translate the data into a useable form has made it very difficult for local governments to be able to use that information.

Alternative Solutions

Several components will ultimately provide a solution to all dimensions of the data system and address the problems that have been identified. The three recommendations are the basis of these components. CRIS the crash record information system will be the vehicle that holds the data and allow statewide collection, analysis and reporting. A regional or local crash reduction system will take the output or a subset of data from and allow local users access. This regional crash information system will also be used to link local data sources such as EMS/Health records. The quality of the information will also be addressed in the form of training for law enforcement to ensure officers are aware of the latest techniques and equipment to provide accurate and consistent data.

CRIS

The State is in the process of replacing their existing legacy system with a new Crash Records Information System (CRIS). This new fully-automated system will provide more accurate and timely data. The system will interact with other data systems within the DPS and the Texas Department of Transportation to import roadway attributes, driver’s license and motor vehicle registration information not previously linked to the crash data. Also, the crash location will be geocoded based on the peace officer’s description. This will provide a more precise crash location enabling the user to spatially depict crashes.

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75 DPS’s criteria are that a crash form be sent to them for any crash involving a fatality, an injury, or serious property damage. The latter is defined as one or more vehicles being towed from the scene. Thus, information about less than half of the property damage crashes is being recorded by the DPS system.
Reducing the number and severity of crashes in Texas is one of the goals of the Texas Department of Transportation. The ability to access accurate, timely and comprehensive crash data is critical to achieving this goal. Millions of Federal and State dollars are allocated annually to implement roadway safety improvements and to address unsafe driver behavior. In order to ensure that these limited safety funds are spent where they can have the greatest impact on reducing the number and severity of crashes in Texas it is important to have the most accurate and current data.

In addition to identifying safety needs, the Texas Department of Transportation also uses the crash data in engineering studies, research projects, roadway design, speed studies, warranting traffic signals, and other engineering functions. It is a central part of many of the Department’s business functions.

Local Government Crash Information Systems

At local levels, few jurisdictions we have examined use crash data for anything other than annual reports. The data are not used to identify hazardous locations (hot spots) or to prioritize enforcement or engineering efforts. From what we can tell, most of the use is for legal purposes in case there are questions about a particular crash or, occasionally, as part of an engineering analysis of a particular intersection. Given the expense of collecting and coding the crash data, the lack of use of these data by local governments limits their ability to make strategic decisions based on the safety of roadways or intersections.

Regional Safety Information Systems

At a regional level, the Houston-Galveston Area Council (H-GAC) has utilized the information that does exist and has referenced it to a GIS to produce a GIS-based crash information system. H-GAC developed an extensive translation program that converted the mainframe-based data released by the DPS to a PC-based database that could be then matched against a GIS. Geographical references were then converted into standardized road names to allow the matching to occur.

H-GAC uses this information to identify overall safety problems in the region, to conduct safety analyses of particular corridors, and to identify hot spot locations for safety engineering studies. The agency has produced five types of products:

1. Regional summaries of total crashes and particular types of crash (e.g., pedestrian crashes, truck crashes, speeding crashes);
2. Corridor summaries of the total number of crashes and the crash risk (crashes relative to vehicle miles traveled) along particular corridors. Within the corridors individual hot spots and high crash risk locations are identified;
3. Small area summaries of crashes within a small geographical area, either an individual jurisdiction or a small district; and
4. Analysis of particular crash types (e.g., pedestrian bicycle, truck, red light running); and
5. Detailed analysis of crashes at particular locations as part of a safety engineering study (safety hot spots).

To date, H-GAC has conducted more than 40 analyses of these types as well as sponsored detailed safety engineering studies in the Cities of Houston (two studies), Pasadena, Galveston, and Sugar Land. More information can be obtained from the H-GAC safety web site. The
information has been valuable for many cities and there are continual requests for new analysis.76 Nevertheless, there are limitations to these efforts. The information is still old (the latest data comes from 2001) and, because of incomplete information, still has a lot of error in both the spatial referencing as well as the comprehensiveness of information in many of the data fields. H-GAC has estimated that it was able to geographically reference (geocode) about 81% of the crashes with about 90% spatial accuracy. The comprehensiveness of the spatial referencing and the spatial accuracy both need to be improved (at least 90% being geocoded with 95% spatial accuracy would be an acceptable goal).

**Linking Crash Information with EMS/Health Data**

Current sources of injury data (EMS, State Trauma Registry, TX-DOT/DPS, etc.) are not consolidated or used to monitor the performance of emergency/trauma care service systems at the local and regional level. Obtaining data or access to the injury data is a challenge because of several reasons. These include 1) a lack of appreciation for the need for such data, 2) a data delivery system that is operationally but not strategically driven, and 3) a strong bias that the data is proprietary and should not be shared for system wide improvements.

The Texas Department of State Health Services (TDSHS) has permitted access to the State Trauma/EMS Registry by making available de-identified and aggregate information for research. The advantages are:

1. They provide data to allow the monitoring of the performance of regional emergency/trauma care service systems. (H.B. 3588);
2. Research that can help policy makers ensure that low severity emergency/trauma patients are delivered to an appropriate facility in order to reserve capacity at level 1 centers for more critical patients;
3. Evaluate the feasibility of establishing appropriate local or regional centers to improve the transfer of patients and to facilitate coordination with other services that impact trauma care delivery;
4. Study Hospital Diversion rates and EMS transport times; and
5. Study the capability of smaller hospitals to transfer patients to larger hospitals.

However, despite the availability of aggregate data from the State Trauma Registry, the data is devoid of the geographic location of injury (ZIP codes). In addition, linkage of Trauma Registry data and Hospital Admission Data with other data is not permitted. In order to plan and execute efficient and cost-effective trauma care and injury prevention services, it is necessary to ascertain the location of the crashes resulting in injuries. Linking of crash data and injury severity with special reference to the location of the crashes is vital in ascertaining the epidemiology of motor vehicle crashes in our region.

In short, the existing crash data that is collected is in an information system that is dated, somewhat inaccessible, and not of great utility. While improvements to the State’s system are

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being currently implemented, there is a great need to improve the timeliness, quality, accessibility, and utility of the information.

RECOMMENDATIONS

The Improving Crash Information Systems Committee of the Regional Safety Council addressed these issues. For the first year, the Committee recommended the following actions.

Recommendations Requiring Little or No Additional Funding

1. **Encourage data sharing at the regional level**

   A regional Memorandum of Understanding (MOU) regarding data sharing should be established on the use of crash data and limitations about its use. There are multiple data sources that include information on motor vehicles. The most obvious one is the official State Crash Form for a motor vehicle crash (the ST 3 form). All crashes that meet the State’s reporting criteria (see footnote 1) must have a crash form filled out.

   Motor vehicle crash victims transported by EMS and who are treated at regional hospitals represent an important group. The care and well being of these patients is determined in large part by the preparedness of the Regional Trauma Care System. Therefore it is important to accurately determine the epidemiology of injuries from motor vehicle crashes.

   Data from the State Trauma Registry or Hospital Admission Data should be linked to the DPS/Texas DOT crash data and Coroner’s Office Mortality Data, with appropriate patient privacy, legal and ethical controls. All health-related data stripped of patient identifiers and all crash, vehicle, driver and roadway information should be collected. All hospital-specific data or specific pricing information should be deleted before any reports are generated. Assurances should be made to data owners that they would oversee the use of their data.

   Relational databases would allow linkages between constituent files and then permit the formation of one combined database that could be used to study the interaction of the crash victim with the agents of injury and the social and physical environment. This can lead to a better understanding of the causes of crash fatalities and injury levels. In addition, the economic and health related costs of motor vehicle crashes could be calculated and monitored. The data should be analyzed to drive injury prevention measures and community education. Finally, data from insurance companies should be sought to provide a better understanding of the magnitude of reported crashes and to improve the information on non-reported crashes.

Recommendations Requiring Additional Funding

2. **Proper collection of crash data needs to be ensured**

   The most critical element of a crash records information system is the quality of the information that is collected. As mentioned above, there are considerable problems in the current quality of crash information in our region and in Texas in general. Geographical information is inconsistent. Streets are referred to by different names by officers (e.g., IH 610, Loop 610, 610 Loop) and directions are frequently left off the crash reports. Behavioral information is often inconsistently interpreted. On each crash form, the reporting officer is required to identify a
‘contributing factor’ that caused the crash. Different officers interpret the coding rules in inconsistent ways (e.g., running a red light should be different from running a stop sign, but the two codes are often mixed up). Similarly, many, if not most crashes, involve multiple behavioral factors. However, the crash form requires that the officer choose the dominant one with the result being inconsistencies in reporting (e.g., red light running crashes often involves speeding, too).

Proper collection implies that the data is collected following a standardized set of definitions, that all appropriate data is collected, and that all crash records be spatially referenced to a standard coordinate system. Much of this will be addressed in the initial version of CRIS larger street fields will allow for proper coding of street names. While advances in GPS technology costs are dropping, more law enforcement agencies may start using true GPS readings at the crash site. Initial training and refresher courses will be needed to ensure consistency and to ensure that these new tools are used properly.

A second aspect of proper data collection is in storing the data in a digital form that can be accessed by analysts and other users. Yet, from all available information, there appears to be huge differences in the way jurisdictions compile and store the information (e.g., some use mainframe computers; some use personal computers; some even use filing cabinets; some code all the information whereas most code only selected fields). Because of the lack of information about existing practices, the Committee will seek funding to conduct an inventory of local police departments to determine their data collection procedures, standards and equipment. This survey will benchmark the current conditions to determine the magnitude of the problem or perceived problem related to the quality of the data being gathered at the time of the crash. The survey should also identify some of the key strengths or weakness in the data collection process, such as the software programs being used, GPS equipment, and timeliness of submission.

A third aspect in proper data collection involves training of police officers and coders to handle the information in consistent ways. While most police officers do take classes on the procedure for filling out crash information properly, there appears to be a lot of variability in the comprehensiveness and quality of this information. As standardized definitions and timely collection are important to the quality of the data, it is important that a centralized agency take responsibility for establishing a training course which sets out these guidelines. The Committee recommends that the Texas Commission on Law Enforcement Standards be required to establish training courses on crash data collection and ensure its implementation in every law enforcement agency state wide. This training course should be required periodically and should address the consistency issues. Most of the information is taught at the academy, but depending on the frequency of use and the length of time since that academy training, some officers may not know of the most current method of data entry and new definitions available such as cell phones as a contributing cause of a crash.

3. **H-GAC should be a clearinghouse for crash information and analysis**

The Committee will seek funding for the creation of a motor vehicle safety information center at H-GAC. The State’s CRIS (Crash Reporting Information System) currently will not have the capability for individual users to directly query and analyze data. However, data will be provided to agencies on a periodic basis if requested. Funding should be sought to create a crash data clearinghouse at H-GAC for crash information and analysis. This clearinghouse would include hardware and software for storage and analysis of crash and related information. The data clearinghouse should have the ability to distribute data and perform analysis. For example, an interactive web site whereby local agencies could analyze crashes in their jurisdiction could be developed. In addition procedures and tools should be developed to assist in the procurement of
safety improvement funds through state or federal agencies. Potentially this type of system could be ported to other regions within the state since the data is from the same source.

H-GAC could develop the initial database to receive the data from CRIS. However, since the data sets are large and could quickly stretch the limited resources of the current hardware, additional storage and analysis capabilities need to be funded. Also, tools to automate data loading and web analysis would free up the resources for H-GAC personnel to provide analysis of the data.

H-GAC also has the capability of conducting regional level analysis. Its work in conducting analysis of safety in the region, on particular corridors and small areas, and in focusing safety engineering studies provides H-GAC with experience and tools for analysis. As a consortium of cities and counties, H-GAC has the capability to run courses for local governments on safety planning and can help smooth the transition to a more sophisticated safety information system.

The proposed crash information system should address four dimensions of the crash information system accessibility, analysis, reporting and potentially a link with other data sources. With the development of the CRIS system, data should be available in a timely manner and have enhanced features such as the geolocation information. While the data is available, it will not be readily accessible to local users due to the limitations of system resources. CRIS has limitations on the number of users that can directly query the information. The method for distributing the data is to provide agencies with a dump of the data from there region typically in a database format. This will allow the agencies to perform analysis on the regional subset. GIS, standard databases, or even spreadsheets could be used to do analysis depending on the amount of time devoted to the effort and the skill of the analyst. This process is potentially time consuming and prone to errors. Larger agencies potentially have staff resources and skills to analyze the data using more sophisticated programs and GIS. These systems can be costly, require specialized training and can be time intensive to set up. The alternative is a web-based system that will be slightly less sophisticated but quick and efficient for most users.

An alternative would be to develop a system of internet tools that could

1. Import the data into a relational data base
2. Allow the user to query the data on a variety of fields
3. Develop tables, graphs, and potentially maps

This system could be developed once and shared with other agencies since the data elements and fields are consistent. Each region would need a relational database and web server to run the application. Developing one system to be used by multiple agencies would be an efficient use of scarce resources, allowing one agency to develop a more sophisticated analysis tools and sharing it with other regions. This would also allow small agencies who may not have the expertise to do more sophisticated analysis quickly and easily.

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It is envisioned that the Texas Department of Transportation will provide a region with a data dump and that data will be loaded to a local servers that can be used for analysis and reporting. This data will be put through a QAQC process identifying reasonableness checks and verifying the geolocational data. Once the data is loaded and cleaned, a set of web-based tools will be developed to analyze and report the data. Sufficient security controls such as password protection would need to be employed to guard the data against unlawful and malicious use. By using a web-based system multiple users can have instantaneous access to the data. Multilevel user specified queries would allow the users to analyze data for their jurisdiction and compare it with others in the region in a timely manner. Some base level of functionality would be developed in the initial deployment, and more features and enhancements would be added as the system matures. This model could be implemented in one region tested and then deployed to other regions.

CONCLUSION

There is a great need to modernize existing safety information systems in order to allow governments (state and local) to properly address the large numbers of crashes that occur on their systems, either through engineering improvement, enforcement efforts, or public education. A modern safety information system is the core of these efforts since it provides information about the problems and allows priorities to be set. It can allow a local government to focus efforts on those parts of the road system that are most critical. But, to achieve this efficiency in responding to safety problems, the State and local governments are going to have to address obstacles that currently prevent this from happening. Of these obstacles, a lack of data sharing across entities, inconsistent data reporting and quality, outdated information systems, and a lack of existing analytical tools are major impediments.

Improvement of the safety information system requires improvement on several dimensions:

1. Timeliness
2. Data quality
3. Accessibility
4. Analysis
5. Reporting
6. Linkages with other data sets

The recommendations of the Committee have attempted to address these obstacles. The CRIS system should address timeliness, and some aspects of data quality with a regional crash information system to provide the remaining aspects. A web-based query tool will rely on a dump from the CRIS system that would be imported into a regional database and allow users to analyze the data based on user selected variables and a variety of outputs potentially including tables, graphs, and maps could be developed based on user selections. Additional linkages to other data sources can enhance the value of the information adding the dimension of behavior aspects. All this information assumes that the data being input from the field is being systematically and accurately collected. The development and implementation of a crash investigation and data integrity course would enhance the data collection and recording aspects.
NEXT STEPS

During the next year, the Committee will accomplish several tasks. First, it will establish draft guidelines for data sharing. Since the first recommendation of the Committee is to encourage data sharing among agencies, establishing a set of rules and guidelines will be a step toward furthering the sharing of data. In order to do this, the Committee must learn about the constraints and concerns of various organizations who deal with crash data in order to establish guidelines that are as comprehensive as possible. This involves first documenting what information each agency has that could be shared and second, identifying sensitivities and obstacles towards the sharing of data by an organization. It is expected that the process of establishing guidelines that are acceptable to all parties will take time. Nevertheless, the Committee feels that by sharing information, more sophisticated analysis can result as well as more effective actions taken toward reducing aggressive driving behavior.

Second, the Committee will create draft guidelines for crash reporting and data collection by local police departments. The crash report itself is a State form and the collection guidelines come from the Texas Department of Public Safety. Still, the Committee recognizes that data collection is often of uneven quality with some items being collected more thoroughly and accurately than others. The Committee will consider various means to improve crash data collection including a possible refresher training course for police officers or in writing some specific guidelines for local police departments that are easy to understand.

Third, the Committee will develop a prototype of the H-GAC crash clearinghouse. The Committee expects the first data from the CRIS system will be available during the year. Depending on its comprehensiveness and accuracy, the Committee will propose guidelines for establishing the crash clearinghouse. These include considerations for funding the clearinghouse, the personnel required, which data items will be released to local governments or to the public at large, the types of tools that are needed to analyze crash data, and the types of standardized reports that will be released by H-GAC on a regular basis. There will be different information needs by users, of course. The Committee will explore several types of standardized reports that can address most of those needs. In addition, the Committee will discuss the feasibility of custom analysis. Currently, H-GAC does conduct a certain amount of analysis targeted to particular jurisdictions, but there is a limit to how much this can be done without increasing the costs substantially. The Committee will address the balance between standardized reports and custom analysis.

In short, the Committee will continue exploring ways to improve the availability of crash information as well as improve its quality and utility. As the information becomes better, we expect that jurisdictions will be able to more effectively address safety needs.
ADDITIONAL INFORMATION

More information about safety information systems can be obtained from the following sources:


5. International Association of Chiefs of Police (2006). IACP Technology Clearinghouse. International Association of Chiefs of Police: Alexandria, VA. On their current web page (http://www.IACPtechnology.org/Programs), crash data collection experiments are described for dozens of jurisdictions, including:

A. The Connecticut State Police (mobile data entry for truck inspections);

B. The Kentucky State Police (the development of a information system for linking traffic collision data with roadway data);

C. The Miami Beach Police Department (the use of mobile computers with in-car printers to automate the issuing of moving violations);

D. The New Jersey Division of Highway Traffic Safety (the automation of motor vehicle crash reports using laptop computers and digital pen entry);

E. The North Carolina State Highway Patrol (the use of pen-based laptop computers to collect accident data);

F. The Norwich (Ct) Police Department (the use of data terminals on laptop computers to enter accident data);

G. The Phoenix (Az) Police Department (the development of a data collection system that gathers header information on all crashes for use in data queries);
H. The Prince George’s County (Md) Police Department (the use of surveyor equipment attached to a laptop computer to identify location information about vehicle crashes);

I. The Utah Highway Patrol (a mobile data collection system that gathers all types of information on crashes including citations, warning, DUI reports and citations, incidents, drugs, weapons, accident diagrams, and vehicle maintenance);

J. The Washington County (Or) Sheriffs Office (an automated mobile data crash/crime scene reconstruction system); and

K. The Woodland (Ca) Police Department (the use of laptop computers and automated data entry as part of a multi-jurisdictional information system);


