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# Blood Alcohol Concentration in Texas: Improving Medical Examiner and County Performance

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CENTER FOR ALCOHOL AND DRUG EDUCATION STUDIES  
CENTER FOR TRANSPORTATION SAFETY

PREPARED FOR THE TEXAS DEPARTMENT OF TRANSPORTATION

Cinthya Soares Roberto, MPA  
Amber Trueblood, DrPH, MPH  
Troy Walden, Ph.D.  
Marcelina Perez, MS  
Robert Gilbert

TEXAS A&M TRANSPORTATION INSTITUTE | COLLEGE STATION, TX



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**Disclaimer**

The opinions and conclusions expressed in this document are those of the authors and do not represent those of the State of Texas, the Texas Department of Transportation (TxDOT), or any subdivision of the state or federal governments.

This document is a compilation of technical memorandums previously submitted to TxDOT during the 2019 fiscal year.

## Executive Summary

Alcohol and drug driving remains a prevailing issue in the state. Blood Alcohol Concentration (BAC) toxicology results are important in explaining meaningful findings regarding alcohol and drug use by drivers of motor vehicles and determining federal funding that states receive to address impaired driving issues. The Texas Department of Transportation (TxDOT) as the custodian agency of BAC toxicology data counts with the collaboration of medical examiners (MEs) and justices of the peace (JPs) acting as a death investigator to supplement BAC data collected from law enforcement's crash reports.

The Texas A&M Transportation Institute (TTI) found that the state still has a cumbersome BAC data collection process and it does not have a 100% BAC toxicology result-reporting rate. Additionally, the Texas fatally injured drivers testing rates are still not up to the National Highway Traffic Safety Administration (NHTSA) recommended standards. Some of the reported issues pointed to influential factors such as: statutory limitations, high cost to forensic testing and lack of funding, and jurisdictional reporting protocol limit the state's ability to increase testing rates. Furthermore, the difficulty to collect the BAC and other toxicology data, the inaccuracy in toxicology reporting, the missing forensic testing results from MEs and JPs offices, the JPs turnover, the lack of understanding of the importance of the data and established partnerships among stakeholders contribute to the less than perfect toxicology reporting rates in the state.

To address gaps in reporting and to improve the BAC reporting process in Texas, TTI investigators performed a series of activities that included a crash analysis of alcohol-related fatalities between 2010 and 2018. TTI also determined the BAC reporting rates by county. It contacted jurisdictions with missing BACs by mail. It surveyed medical examiners and justices of the peace to determine BAC reporting practices. TTI also educated MEs and JPs on their duty to report toxicology results to TxDOT and ways to stay compliant with the law as well as collected feedback on ways to improve the toxicology reporting system through webinars and in-person presentations. TTI also worked with the crash analysis section at TxDOT to assess the feasibility of improving the current reporting form. All of these activities were performed to improve BAC reporting among JPs and ME offices who had failed to report fatal driver toxicology testing results to TxDOT-CRS.

TTI investigators recognize that missing toxicology data creates a gap in information that defines the current quantitative picture of impaired driving and levels of intoxication in drivers. In order to remedy the shortcoming, TTI investigators recommend targeted education be directed towards counties with high-unreported BAC reporting rates as well as develop partnerships with state laboratories and ME offices.

## Introduction

### Background

Alcohol impaired deaths is a public concern that needs to be targeted by sound traffic safety countermeasures and money allocation decisions that are driven by data. The National Highway Traffic Safety Administration (NHTSA) estimates that approximately one third of all drivers in fatal crashes had a blood alcohol concentration (BAC). (NHTSA, 2018) It is crucial that decision makers identify the extent of the alcohol impaired driving problem to allocate sufficient resources to mitigate the problem of alcohol related deaths that Texas face. BAC toxicology data pinpoints to the scope of the problem. The Texas Department of Transportation (TxDOT), as the custodian agency for all of crash data, which contains BAC information, holds the important role of using BAC data to develop data-driven traffic safety strategy to combat the alcohol related deaths in Texas roads.

### Problem

TxDOT collects BAC toxicology data mostly from the CR-3 form (Texas Peace Officer's Crash Report) that law enforcement agencies provide. However, the Texas Transportation Code (TC) 550.081 underlines that it is the Medical Examiners (MEs) and Justices of the Peace's (JPs) duty to report toxicology results for fatal crashes to the Texas Department of Transportation Crash Records Section (TxDOT-CRS) (see Appendix A for 550.081). The fact that the main source of BAC data comes from a different group than the statutorily mandated stakeholders lead to less than perfect reporting of BAC toxicology results. TxDOT faces a challenging situation because failing to report BAC toxicology results to NHTSA can adversely affect the amount of federal funding that Texas receives for alcohol and drugs traffic safety programs, on top of preventing the state from fully capturing the extent of the impact that alcohol and drugs have on fatal crashes.

### Purpose

To improve BAC reporting practices in the state, TTI identified the extent to which alcohol and/or drugs contribute to crashes. TTI also evaluated county and medical examiners practices in reporting BAC toxicology results for those crashes. Then looked into the process by which medical examiners and justices of the peace report BAC toxicology results to TxDOT – CRS. TTI also determined cases in which MEs and JPs conducted BAC toxicology testing, but did not report them to TxDOT; lastly, it provided recommendations for improving the current BAC reporting system.

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## Scope

To identify issues and inform the identified problem, TTI performed a crash analysis of alcohol-related fatality data from January 2010 - December 2018 to determine the extent that alcohol and drugs contribute to fatal crashes. TTI researcher staff narrowed down the cases in which MEs and JPs requested BAC toxicology testing but did not report the results to TxDOT. To address the missing BAC data TTI research staff sent letters to the counties with missing BAC results encouraging MEs and JPS to forward the BAC results to TxDOT-CRS. TTI staff surveyed 8 medical examiner offices and over 120 justices of the peace across the state to determine their practices of reporting BAC toxicology results to TxDOT-CRS. TTI also conducted four webinars to MEs and JPs and conducted five in-person presentations to JPs. It also hosted a summit for MEs and JPs to educate them in BAC reporting practices and collect their feedback in ways to improve the current toxicology reporting system. TTI worked with the TxDOT-CRS team to gauge the feasibility of updating the toxicology form (CR-1001-Death/Toxicology Report -Medical Examiner/Justice of the Peace) as a way to improve the quality and consistency of the BAC data sent by MEs and JPs. The crash analysis, survey results, CR-1001 feasibility study, and feedback collected from webinars, in-person presentations, and summit all informed the final recommendations for improving BAC reporting practices.

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## Crash Analysis: Blood Alcohol Concentration Reporting Rates in Texas

### Introduction

Texas experienced 3,304 fatal crashes and 3,640 fatalities in 2018. Out of the fatal crashes 1,129 were DUI related, leading to 1,259 deaths (Texas Department of Transportation, 2019). Alcohol-related crashes and fatalities are a public concern that need to be targeted by sound traffic safety countermeasures and money allocation decisions that are driven by data. It is crucial that decision makers identify the extent of the alcohol-related driving problem to allocate sufficient resources to mitigate the problem of alcohol related deaths that Texas face. BAC data pinpoints to the scope of the problem. TxDOT, as the custodian agency for all of crash data, which contains BAC information, holds the important role of using BAC data to develop data-driven traffic safety strategies that combat alcohol related deaths on Texas roads.

TxDOT collects BAC toxicology data mostly from the CR-3 form that law enforcement agencies provide. TC 550.081 underlines that it is the MEs and JPs duty to report toxicology results for fatal crashes to TxDOT-CRS (see Appendix A for 550.081). The fact that the main source of BAC toxicology data comes from different groups of stakeholders other than those who are statutorily mandated to report, a greater chance exists for data to be lost in this less than seamless reporting system.

The purpose of this technical memorandum is to detail the extent to which alcohol and drugs contribute to crashes and evaluate county performance in reporting BAC toxicology results through a crash analysis. This memo has the purpose of highlighting potential steps that improve the number of BAC toxicology tests reported and moves the state closer to achieving accurate and complete BAC toxicology data collection.

## Methods

### Data Collection

Crash data was extracted from the Texas Crash Records Information System (CRIS) on May 9, 2019 to identify records for fatal crashes. Since the CRIS system is a “live” database and records continue to be added daily, TTI staff expected that the majority of 2018 fatal crash data would have been maintained in the system on the date the crash extract was withdrawn.

### Key Terms

Table 1 provides definitions for terms used throughout the report, as well as CRIS codes included to capture each term. It is important to know how these terms are being defined for the analysis because these terms have slightly different definitions across fields. In addition, this section provides the acronyms, which will predominately be used throughout the report.

**Table 1. Key Term Definitions and CRIS codes.**

Term	Definition	CRIS Codes
Blood Alcohol Concentration (BAC)	The number of grams of alcohol per 100 milliliters of blood (Title 10. Offenses Against Public Health, Safety, and Morals. Chapter 49. Intoxication and Alcoholic Beverage Offenses.)	Driver BAC
Driving Under the Influence Intoxicated (DUI)	Driver under the influence of alcohol, drugs, or both (Texas Strategic Highway Safety Plan 2017-2022, 2017)	Driver BAC>0; Contributing Factor 45-had been drinking; Contributing Factor 67-under the influence (alcohol); Contributing Factor 68-under the influence (drugs); Contributing Factor 62-taking medication; and/or positive drug (substance test) (Texas Department of Transportation, 2019a)
Driving Under the Influence of Alcohol (DUI-Alcohol)	Driver under the influence of alcohol	Driver BAC>0; Contributing Factor 45-had been drinking; Contributing Factor 67-under the influence (alcohol) (Texas Department of Transportation, 2019a)
Driving Under the Influence of Drugs (DUI-Drug)	Driver under the influence of drugs	Contributing Factor 68-under the influence (drugs); Contributing Factor 62-taking medication; and/or positive drug (substance test)(Texas Department of Transportation, 2019a)
DUI Driver Fatality Crash	Driver died in a Texas public roadway under the influence of alcohol or drugs	

## Data Analysis

The analysis focused on identifying fatal DUI crashes and drivers to determine the level of toxicology reporting for the state. Descriptive statistics (e.g., counts, percentages) and rates were used to characterize all crashes within Texas.

Rates are defined as the count of something measured over another quantity. For example, a crash rate is commonly defined as the number of crashes compared to the traffic volume (Federal Highway Administration, 2019). Descriptive statistics were utilized to show the significance of DUI crashes in Texas. The descriptive measures were used to identify the extent of DUI crashes and drivers by characterizing crash-contributing factors, BAC reporting frequencies, and substance testing metrics. All of which allow for a better understanding of BAC reporting in the state. Lastly, thematic maps were produced which show the number or frequency of an event over a geographic area.

All maps were produced at the county level and illustrate the distribution of DUI crashes, DUI crashes with no substance test sent to TxDOT, and identify counties with BAC reporting issues. Through mapping, spatial patterns were identified that identified potential locations for implementing DUI driving countermeasures or educational opportunities to train MEs and JPs on toxicology test reporting in fatal DUI crash cases.

## Findings

All results presented in this technical memorandum are based upon independent analysis of crash data that was obtained from the Texas CRIS database.

### Fatal Crashes and Fatalities

#### All Fatal Crashes and Fatalities

To understand the impact of DUI crashes in Texas, it is important to understand the magnitude of crashes on Texas roadways. Between 2010 and 2018, there were 28,144 TxDOT reportable fatal crashes, which resulted in 31,233 fatalities. Over the nine-year period, the state averaged 3,127 fatal crash events that resulted in 3,470 people losing their life. Sadly, the state experienced a 19% increase in both fatal crashes and fatalities between 2010 and 2018. This increase demonstrates a continued need for further crash analyses to determine crash types and to look for contributing factors that lead to crashes and fatalities. Table 2 illustrates the number of fatal crashes and fatalities the state experienced by year between 2010 and 2018.

**Table 2. Total Number of Fatal Crashes and Fatalities by Year, 2010-2018**

Crash Year	Fatal Crashes	Fatalities
<b>2010</b>	2,781	3,060
<b>2011</b>	2,802	3,066
<b>2012</b>	3,037	3,417
<b>2013</b>	3,063	3,406
<b>2014</b>	3,192	3,538
<b>2015</b>	3,193	3,585
<b>2016</b>	3,424	3,794
<b>2017</b>	3,348	3,727
<b>2018</b>	3,304	3,640
<b>Total</b>	28,144	31,233

**DUI Fatal Crashes and Fatalities**

This section of the memorandum examines the role that DUI crashes have when compared to the overall crash frequencies experienced in Texas. Between 2010 and 2018, there were 10,777 TxDOT reportable DUI fatal crashes, which resulted in 12,179 fatalities. DUI crashes accounted for 38% and 39% of all fatal crashes and fatalities in Texas, respectively. There was an average of 1,197 DUI fatal crashes and 1,353 DUI fatalities annually over the nine-year period.

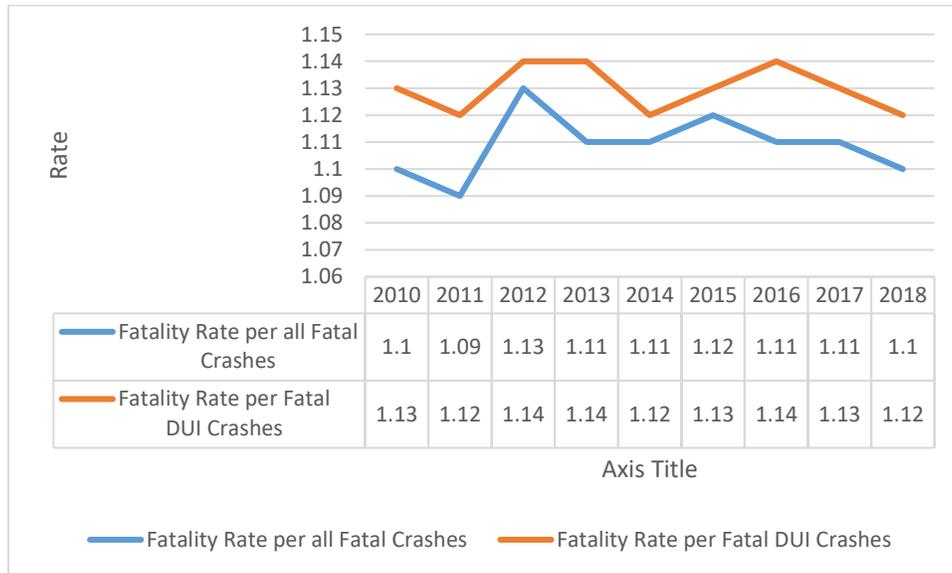
Presently (2018) Texas has experienced a reduction in all DUI fatal crashes and fatalities when compared against the 2010-2018 average; the exception is 2011. While there was an overall decrease of 2.4% in the number of all DUI fatal crashes and a 3.4% decrease in all DUI fatalities, there is still a significant need to reduce the number of DUI fatal crashes and deaths. Table 3 provides an illustration of the number of all statewide DUI fatal crashes and fatalities between 2010 and 2018.

**Table 3. Total Number of DUI Fatal Crashes and Fatalities by Year, 2010-2018**

Crash Year	Fatal Crashes	Fatalities
<b>2010</b>	1,157	1,303
<b>2011</b>	1,118	1,250
<b>2012</b>	1,147	1,305
<b>2013</b>	1,216	1,389
<b>2014</b>	1,261	1,416
<b>2015</b>	1,232	1,393
<b>2016</b>	1,254	1,431
<b>2017</b>	1,263	1,433
<b>2018</b>	1,129	1,259
<b>Total</b>	10,777	12,179

#### **Fatality Rates per Fatal Crashes**

To better understand the number of fatalities occurring due to crashes, TTI investigators explored fatality rates (e.g., the number of fatalities over the number of fatal crashes) for all fatal crashes and for all DUI fatal crashes. Overall, fatality rates remained relatively consistent over the nine-year period between 2010 and 2018. However, the fatality rate per fatal DUI crashes remained consistently higher than the fatality rate for all fatal crashes (*average fatality rate of 1.13 and 1.11, respectively*). This suggests that DUI fatal crashes result in a higher number of fatalities as compared to fatal crashes in general. Figure 1 illustrates the differences between the fatality rate of all crashes compared to the fatality rate of all DUI crashes.



**Figure 1. Fatality Rate per Fatal Crashes, 2010-2018**

**Fatal DUI Driver Crashes**

Understanding the number of crashes with a DUI Driver fatality provides a unique insight into DUI crashes. Even though the percentage of DUI crashes and fatalities dropped in 2018, the percentage of DUI Driver crashes and fatalities has increased. Between 2010 and 2018, fatal DUI Driver crashes resulted in 7,996 fatal crashes and 8,069 fatalities. Between 2010 and 2018, an average of 888 DUI driver fatal crashes resulted in 897 DUI driver deaths. During this period there was a 2.8% increase in the number of DUI Driver involved fatal crashes; whereas, there was 1.7% increase in the number of DUI Driver fatalities. Table 4 shows the number of crashes and fatalities from crashes that involved a fatal DUI Driver (driver was under the influence of alcohol/drugs and died in the crash).

**Table 4. Number of Fatal Crashes and Fatalities Involving a Fatal DUI Driver Crash, 2010-2018**

Crash Year	Fatal Crashes	Fatalities
<b>2010</b>	831	841
<b>2011</b>	845	853
<b>2012</b>	815	822
<b>2013</b>	900	911
<b>2014</b>	951	955
<b>2015</b>	928	933
<b>2016</b>	916	930
<b>2017</b>	956	966
<b>2018</b>	854	858
<b>Total</b>	7,996	8,069

#### **Fatal DUI Driver Crashes by DUI Type**

This section explores crashes involving fatal DUI drivers by DUI type. The information provides valuable insight into the role that alcohol and drugs have on crashes. This information helps develop trends on the types of substances that are more commonly found in deceased DUI drivers across time.

Between 2010 and 2018, there were 8,069 fatal DUI drivers from 2010-2018. Of these DUI driver crash types, 74.9% (n=6,051) involved alcohol. By comparison, there was an 8.2% decrease in the number of DUI fatal drivers involving alcohol yet there was a 47% increase in the number of DUI fatal drivers involving drugs. While there are still many fatal DUI drivers being killed in crashes involving alcohol, the overall frequency is decreasing. However, when drugs other than alcohol are considered, the frequency of driver related crash deaths appear to be increasing dramatically. Table 5 displays the number of fatal DUI drivers by DUI type.

**Table 5. Number of Fatal DUI Drivers by DUI Type, 2010-2018**

Crash Year	DUI-Alcohol	DUI-Drug	DUI-Alcohol and Drug
<b>2010</b>	607	168	69
<b>2011</b>	615	169	69
<b>2012</b>	602	160	57
<b>2013</b>	640	217	65
<b>2014</b>	645	246	66
<b>2015</b>	602	267	75
<b>2016</b>	579	276	73
<b>2017</b>	615	278	73
<b>2018</b>	557	247	55
<b>Total</b>	5,462	2,028	589

### Location of Fatal DUI Driver Crashes

To explore crashes involving a fatal DUI Driver further, descriptive statistics and maps were created by TTI investigators. Investigators focused on the most recent year of crash data (2018) to identify current trends of crashes involving fatal DUI drivers. This was performed to identify where crashes involving fatal DUI-Alcohol drivers were occurring most frequently.

In 2018, 171 (65%) of Texas 254 counties had at least one crash that involved a fatal DUI driver. When alcohol was considered alone, 156 (61.4%) Texas counties had at least one crash that involved a fatal DUI-Alcohol driver. This suggests that DUI crashes occur historically throughout the state. Not surprisingly, the majority of the fatal DUI and DUI-Alcohol driver crashes happen in or around large metropolitan areas. These results were expected as metropolitan areas are the most populous areas in Texas and experience a higher opportunity for crashes to occur. Figure 2 and Figure 3 illustrate the frequency of fatal DUI Driver crashes and fatal DUI-Alcohol driver crashes by for 2018.

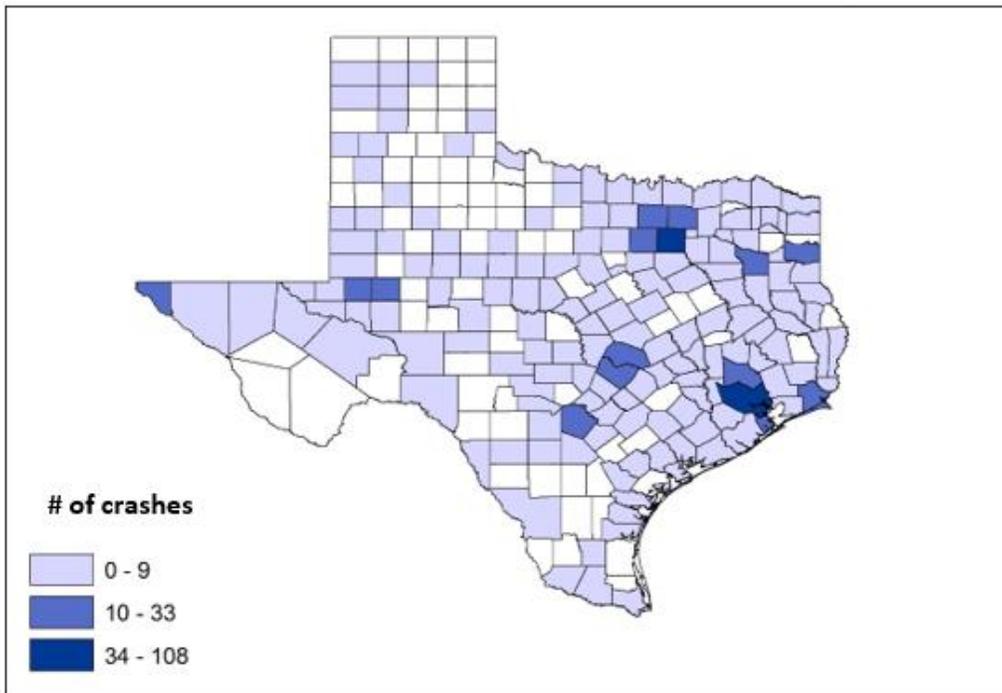


Figure 2. DUI Driver Fatality Crashes by County, 2018

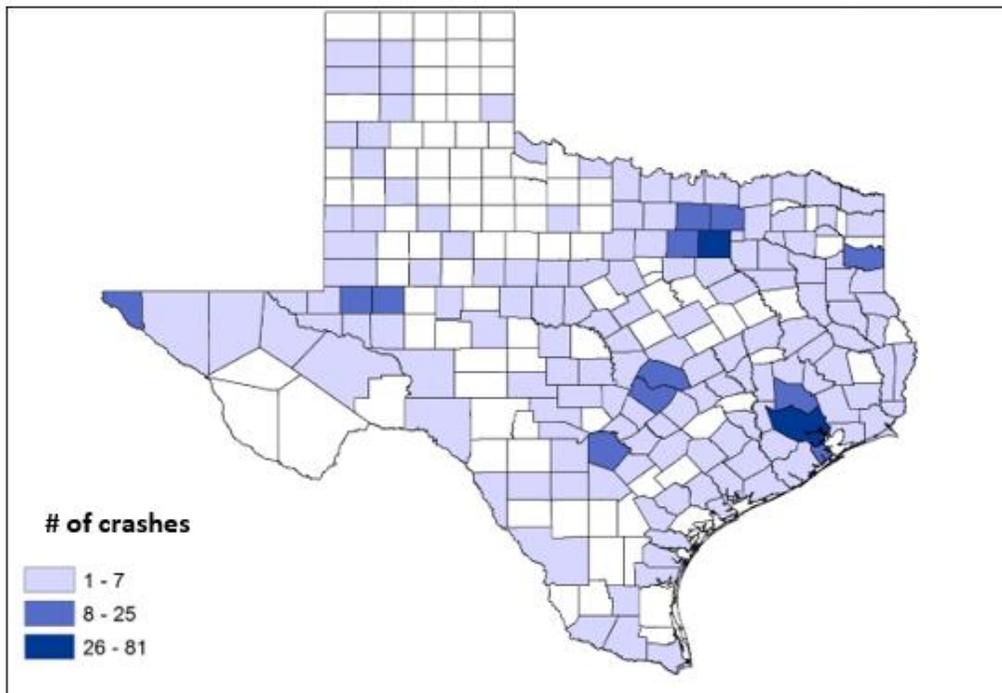


Figure 3. DUI-Alcohol Driver Fatality Crashes by County, 2018

While crash counts can be useful to illustrate where crashes are occurring in the state, crash rates display a different picture. Crash rates illustrate areas of concentrated crash counts per population counts, which can point towards a regional problem. Crash rates also provide greater insight into the magnitude of crashes in given areas.

Interestingly, many of the state's rural areas have higher crash rates, which suggests per population that they have a higher number of DUI and DUI-Alcohol driver fatality crashes. This pattern can be construed because crash factors such as access to critical health care (e.g., Emergency Medical Services) and roadway differences (e.g., lightning conditions, roadway conditions, and speed) in rural areas can ultimately influence injury outcomes and crash rates negatively. Figure 4 and Figure 5 illustrates the crash rate per 100,000 population for DUI and DUI-Alcohol driver fatality crashes by county.

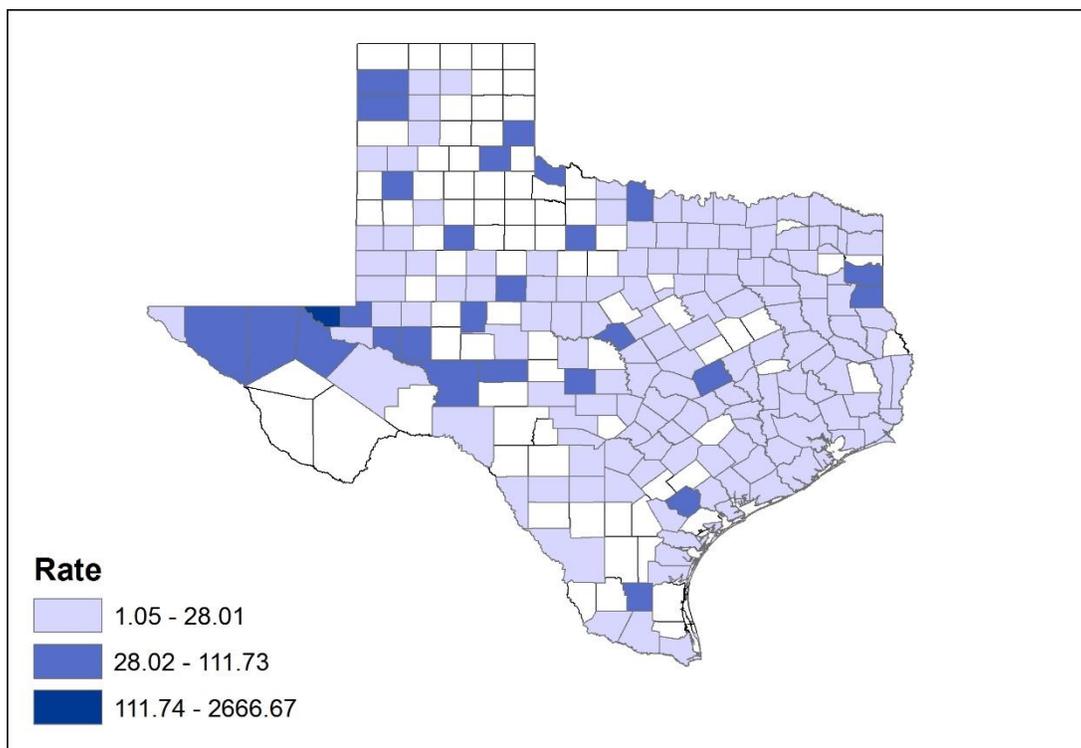
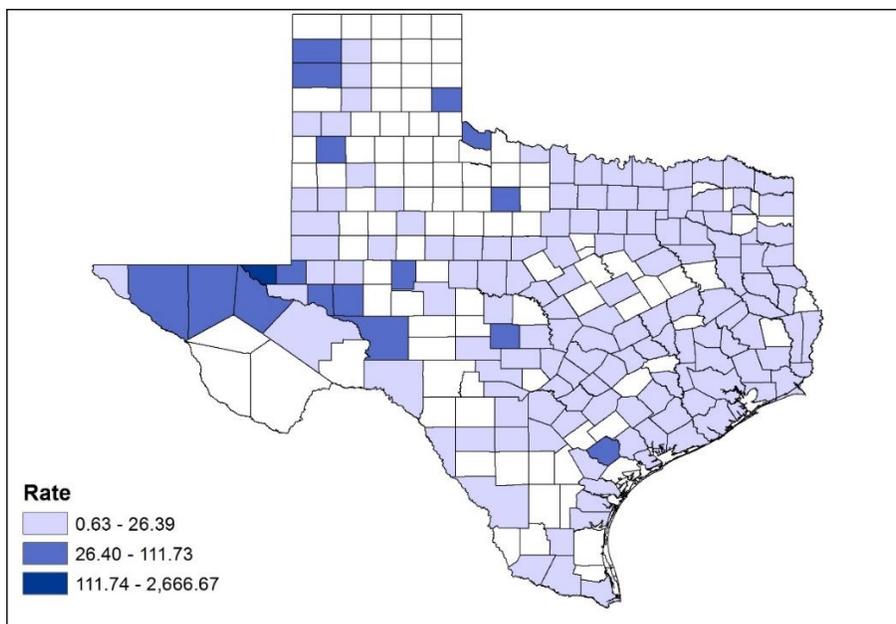


Figure 4. DUI Driver Fatality Crash Rate by County, 2018



**Figure 5. DUI-Alcohol Driver Fatality Crash Rate by County, 2018**

#### Urbanization Status: DUI Fatal Crashes and Fatal DUI Driver Crashes

Urbanization (e.g., rural, urban) status was also explored for fatal DUI Driver crashes. Rural areas account for 55% of DUI Driver fatal crashes whereas urban areas comprise 45% of these crashes. Urban and rural status data help to confirm spatial patterns of crashes identified in the descriptive maps above. Table 6 provides an illustration of the number of urban and rural DUI driver fatalities and crashes between 2010 and 2018.

**Table 6. Number of DUI Driver Fatalities and Crashes by Year and Urbanization Status, 2010-2018**

Year	Fatal DUI Driver Crashes	
	Urban	Rural
<b>2010</b>	396	448
<b>2011</b>	373	480
<b>2012</b>	378	444
<b>2013</b>	425	489
<b>2014</b>	425	531
<b>2015</b>	414	521
<b>2016</b>	438	492
<b>2017</b>	433	533
<b>2018</b>	352	507
<b>Total</b>	3,634	4,445

## BAC Levels and Substance Testing Rates in Texas

Many factors influence a Death Investigator's decision to request a toxicology test in a fatal crash. During the investigation process, a peace officer might conclude later that one of the contributing crash factors involved alcohol or drugs. Additionally, some toxicology testing might be missing from fatal crashes while some might not be reported to TxDOT at all. The ensuing section will focus on exploring Justices of the Peace and Medical Examiners BAC and toxicology reporting rates.

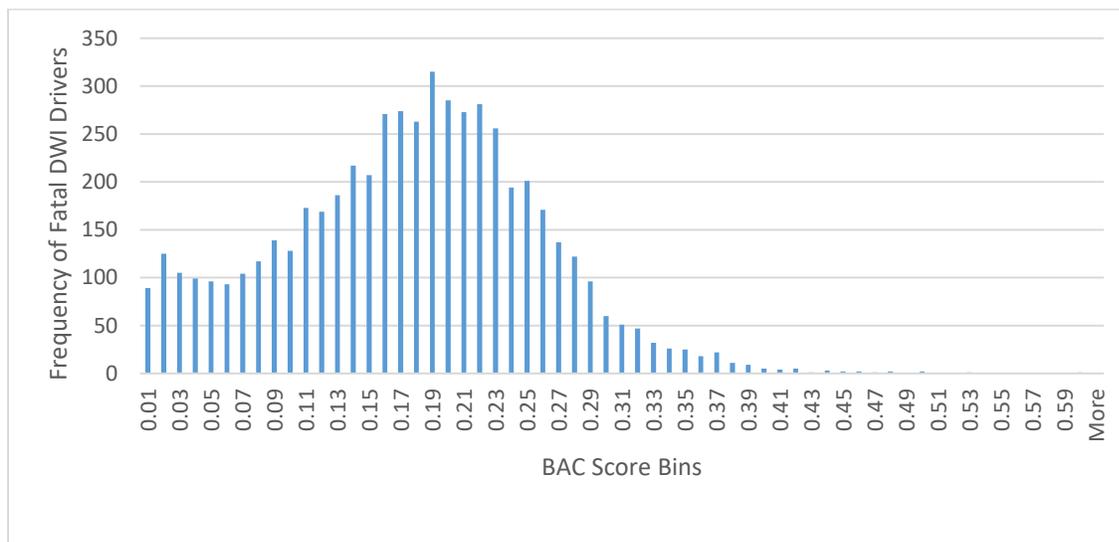
### Reported BAC Values of Fatal DUI Drivers

TTI investigators analyzed the BAC levels of fatal DUI drivers to identify the magnitude of impaired driving on Texas roads. Between 2010-2018 there were 5,516 fatal DUI-Alcohol drivers that had a reported BAC greater than zero. During this same period, the number of fatal DUI-Alcohol drivers with a BAC greater than zero decreased by eleven percent (11%). This finding suggests a reduction in the overall number of fatal DUI alcohol drivers on Texas roads. Table 7 illustrates the number of fatally injured drivers with a BAC greater than zero by year.

**Table 7. Total Fatal DUI-Alcohol Drivers with a Reported BAC  $\geq$ 0 by Year, 2010-2018**

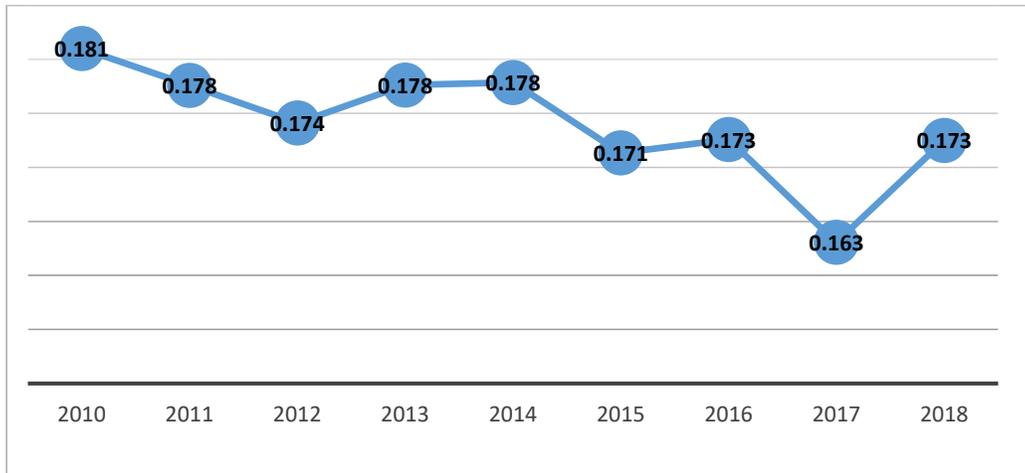
Crash Year	DUI Driver Fatalities
2010	605
2011	631
2012	628
2013	632
2014	649
2015	606
2016	590
2017	636
2018	539
<b>Total</b>	<b>5,516</b>

Figure 6 illustrates the BAC levels found in fatal DUI drivers between 2010 and 2018. This information allows the state to understand the level of impaired driving occurring on Texas roads. During that timeframe, the average reported BAC for DUI drivers killed in DUI crashes was 0.174 g/dL. This number is over twice the state's legal limit for Driving While Intoxicated (BAC >.08). More disturbing is the range of BAC alcohol levels found in fatal DUI drivers. The BAC range of fatal DUI drivers between 2010-2018 varied from 0.002 to 0.6 g/dL with the most frequent BAC being 0.18 g/dL.



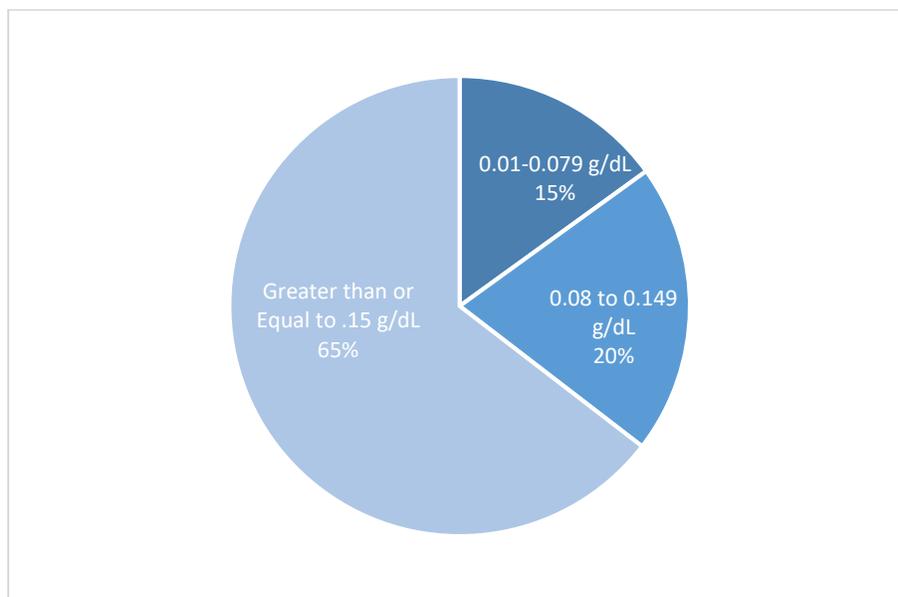
**Figure 6. BAC Levels of Fatal DUI Drivers, 2010-2018**

When examining BAC averages year to year, TTI investigators discovered that the toxicological numbers remained relatively steady across the years except from 2017 to 2018 where there was a slight increase. Across all years, the average known BAC levels of fatal DUI drivers ranged from a low of 0.163 g/dL (2017) to a high of 0.181 g/dL (2010), respectively. Figure 7 displays the average BAC of fatal DUI drivers from 2010 to 2018



**Figure 7. Average BAC of Fatal Drivers, 2010-2018**

The BAC levels for fatally injured drivers in 2018 was further analyzed. Texas reported that 539 fatally injured drivers had a BAC greater than zero. The average BAC for fatally injured drivers was 0.173 g/dL, with a range of 0.010 to 0.499 g/dL. When the drivers were classified by their BAC level, a majority of fatally injured drivers (85%) were above the legal limit of 0.08 g/dL. Additionally, 65 percent of those at or above the legal limit reported BAC levels of 0.15 or greater. Figure provides an illustration of the BAC levels of fatal drivers in 2018.



**Figure 8. Percentage of BAC Levels Reported by Range, 2018**

### Substance Testing Rates of Fatal DUI Drivers

Analyzing toxicology data testing rates can help the state identify potential gaps and patterns in toxicology reporting. Between 2010 and 2018, 63% (n=5,108) of DUI Driver fatalities were tested for both alcohol and drugs, 26% (n=2,064) were tested for alcohol only, and 4% (n=322) were tested for drugs only. Of the 89% (n=7,172) that were tested for alcohol, all had a reported BAC value. The remaining 7% (n=585) did not have a substance test. Of those that did not have a substance test, 91% (n=530) had a positive alcohol factor which suggests alcohol was a contributing factor. This includes had been drinking or under the influence of alcohol were a contributing factor. Between 2010 and 2018, Texas maintained an average of 7% unreported toxicology results for fatal DUI drivers. The year of 2018 had the highest rate of unreported substance tests. Ten percent (10%) of fatal DUI Drivers did not have any toxicology test results sent to TxDOT on May 9, 2019. Table 8 displays the total number of DUI Driver fatalities by substance test type per Year.

**Table 8. Total DUI Driver Fatalities by Substance Test Status, 2010-2018**

Crash Year	Alcohol and Drug	Alcohol Only	Drug Only	No Substance Test
<b>2010</b>	499	607	25	75
<b>2011</b>	516	258	20	59
<b>2012</b>	520	246	21	35
<b>2013</b>	592	236	17	69
<b>2014</b>	612	244	36	64
<b>2015</b>	626	203	42	64
<b>2016</b>	592	209	58	71
<b>2017</b>	634	214	56	62
<b>2018</b>	517	209	47	86
<b>Total</b>	5,108	2,064	322	585

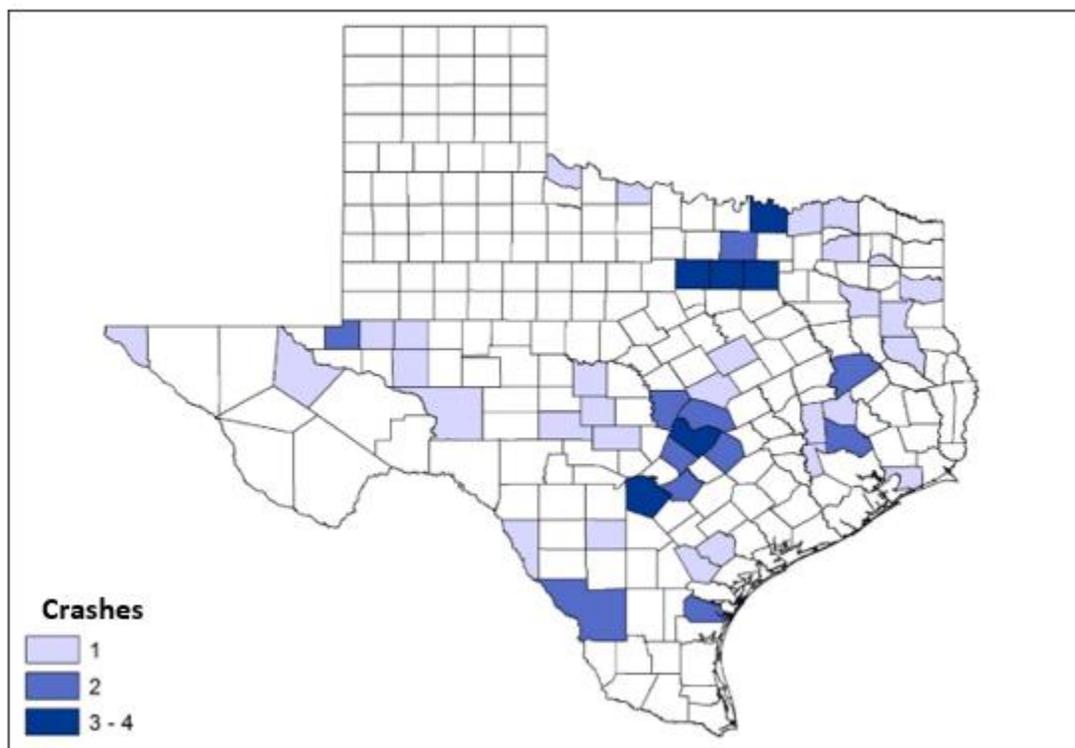
### Fatal DUI Driver with No Substance Test

The numbers of drivers with no substance test reported was explored by DUI type. TTI investigators discovered that Texas still has a great number of fatal DUI drivers that did not have a BAC nor drug test toxicology result associated with it. Although it is good practice to test all fatally injured drivers, there were many cases in which no toxicology testing was requested by a Justice of the Peace or Medical Examiner. Of the fatal DUI cases that were assessed between 2010 and 2018, 84.8% (n=496) were missing alcohol testing results. During this same period, toxicology was not conducted in 15.2% (n=89) of all DUI drug driver crash deaths. Table 9 shows the number of drivers with no BAC and no drug test result by year and DUI Type.

**Table 9. Total DUI Driver Fatalities BAC and Missing BAC and No Drug Test by Year, 2010-2018**

	Driver	Alcohol Driver	Drug Driver
<b>2010</b>	75	65	10
<b>2011</b>	59	47	12
<b>2012</b>	35	30	5
<b>2013</b>	69	62	7
<b>2014</b>	64	52	12
<b>2015</b>	64	58	6
<b>2016</b>	71	60	11
<b>2017</b>	62	51	11
<b>2018</b>	86	71	15
<b>Total</b>	585	496	89

To further illustrate these findings, spatial patterns were explored for crashes with no substance test reported to identify areas where underreporting may be a problem. In 2018, there were 86 fatal DUI drivers where no BAC and no drug test was conducted. Of these, 82.6% (n=71) were DUI-Alcohol which made up the vast number of missing cases. Of the 71 DUI alcohol cases, 33 included fatal DUI Drivers that had biological specimen sample taken. TTI investigators discovered that a specimen had been taken in association with the crash event but that no BAC or toxicology result had been reported to TxDOT crash records section. Figure 9 displays Texas counties with fatal DUI-Alcohol driver crashes but without toxicology or BAC values being reported.



**Figure 9. Fatal DUI-Alcohol Driver with No BAC Reported by County, 2018**

TTI investigators identified the Texas counties with toxicology and/or BAC reporting issues. In 2018, forty-seven counties had missing fatal DUI-Alcohol Drivers toxicology results.

After doing so, investigators calculated the percentage of fatal DUI-Alcohol drivers without a BAC reported to TxDOT Crash Records Section. Table 10 provides a list of counties with fatal DUI-Alcohol Drivers; Fatal DUI-Alcohol Driver with no reported BAC, and the percentage of missing fatal DUI-Alcohol Drivers toxicology results total.

Table 10. Fatal DUI-Alcohol Driver Fatalities without a Report BAC by County, 2018

County	Fatal DUI-Alcohol Driver	Fatal DUI-Alcohol Driver with No Reported BAC	Percent Fatal DUI-Alcohol Driver with No Reported BAC
Bastrop	6	2	33.33
Bee	1	1	100.00
Bell	5	1	20.00
Bexar	25	3	12.00
Burnet	2	2	100.00
Camp	1	1	100.00
Chambers	2	1	50.00
Crockett	1	1	100.00
Dallas	45	3	6.67
Denton	11	2	18.18
Ector	10	1	10.00
El Paso	20	1	5.00
Fannin	4	1	25.00
Frio	2	1	50.00
Gillespie	5	1	20.00
Goliad	2	1	50.00
Grayson	6	3	50.00
Grimes	2	1	50.00
Guadalupe	3	2	66.67
Hardeman	1	1	100.00
Harrison	12	1	8.33
Hays	6	2	33.33
Hopkins	3	1	33.33
Houston	3	2	66.67
Kimble	1	1	100.00
Lamar	2	1	50.00
Mason	1	1	100.00
Maverick	1	1	100.00
McCulloch	1	1	100.00
McLennan	5	1	20.00
Midland	10	1	10.00
Montgomery	13	2	15.38
Nacogdoches	2	1	50.00
Nueces	3	2	66.67
Parker	5	3	60.00
Reeves	5	1	20.00
Rusk	3	1	33.33
Smith	5	1	20.00
Tarrant	23	3	13.04
Travis	15	4	26.67
Upton	1	1	100.00
Walker	3	1	33.33
Waller	3	1	33.33
Webb	7	2	28.57
Wichita	3	1	33.33
Williamson	10	2	20.00
Winkler	4	2	50.00

TTI investigators mapped the spatial patterns of percent fatal DUI-Alcohol Drivers with no reported BAC for Texas counties. (Figure 10) Spatially, besides the large metropolitan areas, some rural counties as well as counties in central Texas seem to have the highest percent of unreported BAC values. This map depicts an image that supports why BAC reporting efforts should be statewide and why TxDOT should continue targeting specific areas with low toxicology reporting issues.

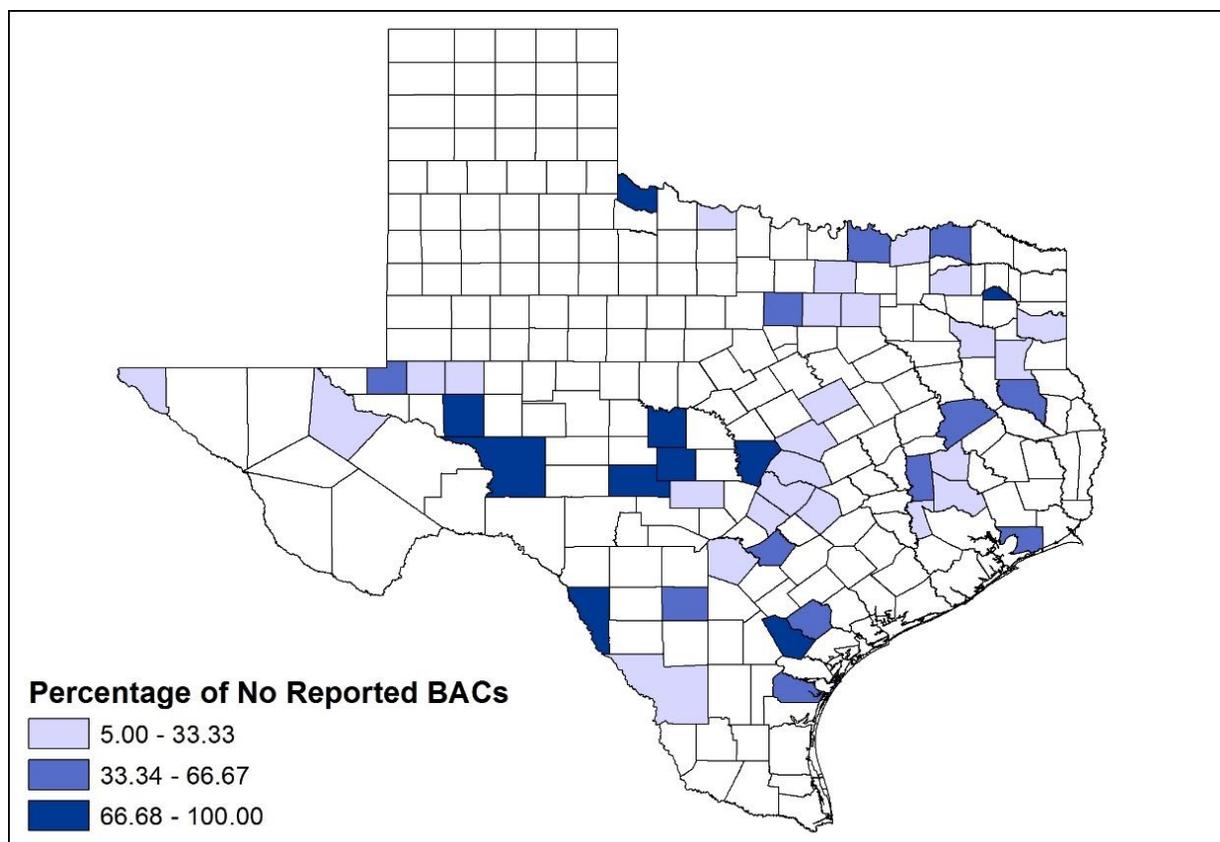
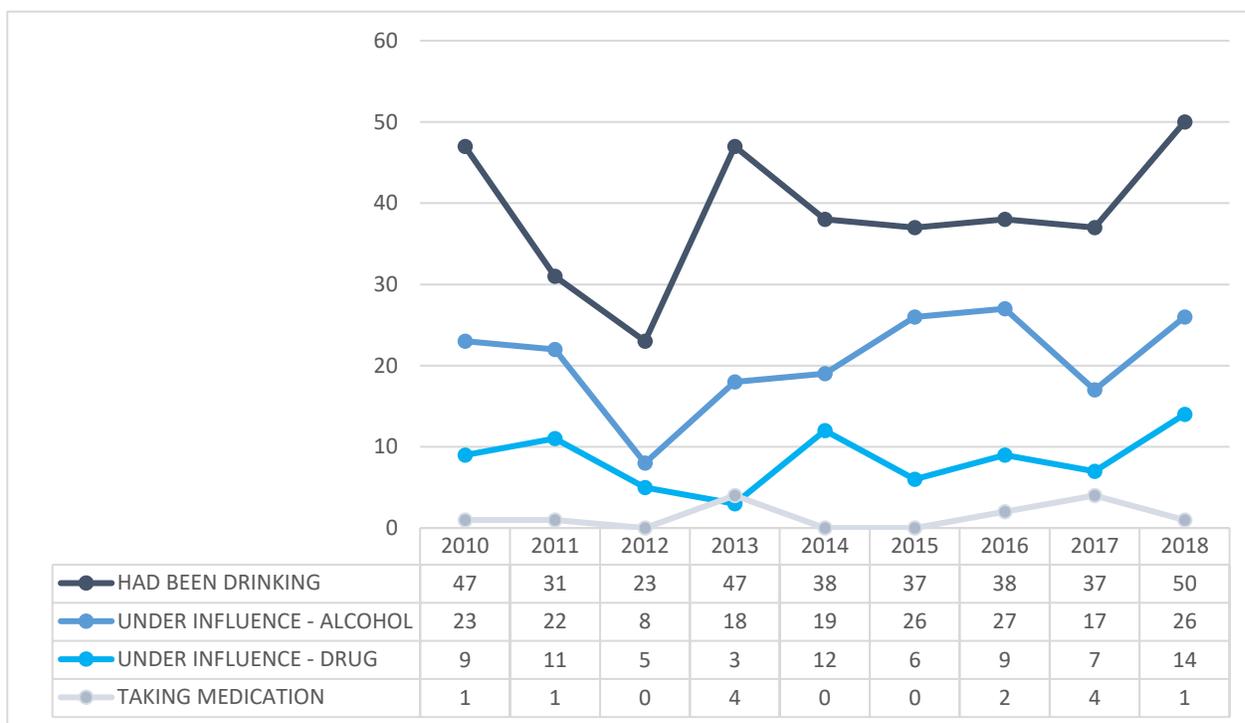


Figure 10. Percent of DUI-Alcohol DUI Driver Fatalities with No Reported BACs, 2018

## DUI Contributing Factors

TTI performed an assessment of DUI-related contributing factors that are present in fatal DUI drivers without a reported toxicology or BAC value reported to TxDOT. Investigating commonly listed law enforcement contributing crash factors has led TTI investigators to a greater understanding of which crash factors were most likely associated with missing BAC results. Figure 11 provides an illustration on the occurrence of reported DUI contributing factors with Fatal DUI drivers without a BAC reported.



**Figure 11. Occurrence of Reported DUI Contributing Factors with Fatal DUI Drivers without a BAC Reported, 2010-2018**

## Summary

TTI investigators analyzed the contribution of alcohol and drugs to Texas crashes from 2010-2018 and evaluated BAC reporting rates in Texas. To determine the true picture of the role that DUI crashes have in Texan's lives, TxDOT should be encouraged to collect complete and accurate BAC and toxicology data. Toxicology data provides insight into the effectiveness of countermeasures, as well as for resource allocation of traffic safety programs that the state implements each year.

This memo identified that overall, 34% percent of all fatal crashes in Texas involved a DUI. In 2018 alone, these crashes were responsible for 1,259 fatalities on Texas roadways. Driving under the influence of alcohol or drugs continues to be a major traffic safety issue in the state.

This memo also acknowledged that between 2010 and 2018, 7.2% of fatal DUI drivers did not have reported BAC levels or a substance test. Of that 7.2%, 90.6% of fatal DUI driver crashes were positive for alcohol as a contributing factor. In addition, 9.4% (n=55) had a positive drug factor suggesting that drugs were a contributing factor to the crash. TTI investigators found that in 2018, 10% of fatal DUI driver crashes did not have a reported BAC or substance test. It also found that out of the unreported 10%, 4% consisted of cases in which a biological specimen was requested but no results had been sent to TxDOT.

After spatial pattern analysis, TTI found that counties with very few DUI driver fatal crashes tend to have higher percentages of DUI-Alcohol Driver Fatalities with no reported BAC. This finding suggests that urbanization status may be associated with a higher percentage of unreported BAC values. The findings above also proposes that there may be an issue related to lack of experience or a lack of general knowledge concerning the importance that role of toxicology reporting especially in areas of the state with fewer resources.

The results from this crash analysis informed TxDOT and TTI of the need of targeted education to be directed towards counties with high-unreported BAC reporting rates as well as the development of potential outreach opportunities to educate MEs and JPs of their duty to report, but also inform them of their role in improving traffic safety in Texas.

## Survey of Medical Examiner Offices in Texas

### Introduction

TTI has been funded by TxDOT to improve BAC reporting. Project tasks include conducting training, as well as surveying MEs and JPs to identify issues and barriers to BAC reporting for fatal crashes. This section provides TxDOT with information gathered from surveying medical examiner offices in Texas. This survey focused on current BAC testing and reporting practices for fatal crashes as well as evaluation of current TTI medical examiner educational activities.

In Texas, MEs investigate motor vehicle crash fatalities, as well as determine the extent to which alcohol and/or drugs contributed to the crash. Presently, 12 counties in Texas have a MEs office, including Bexar, Collin, Dallas, Ector, El Paso, Galveston, Harris, Lubbock, Nueces, Tarrant, Travis, and Webb. Tarrant, Denton, Parker, and Johnson counties have been established as a medical examiner district, the only in the state. (Tarrant County Medical Examiner)

In addition, to the counties where they are housed, the MEs also serves neighboring counties through inter-agency agreements. These medical examiner districts are authorized under the Texas Code of Criminal Procedure 49.25.

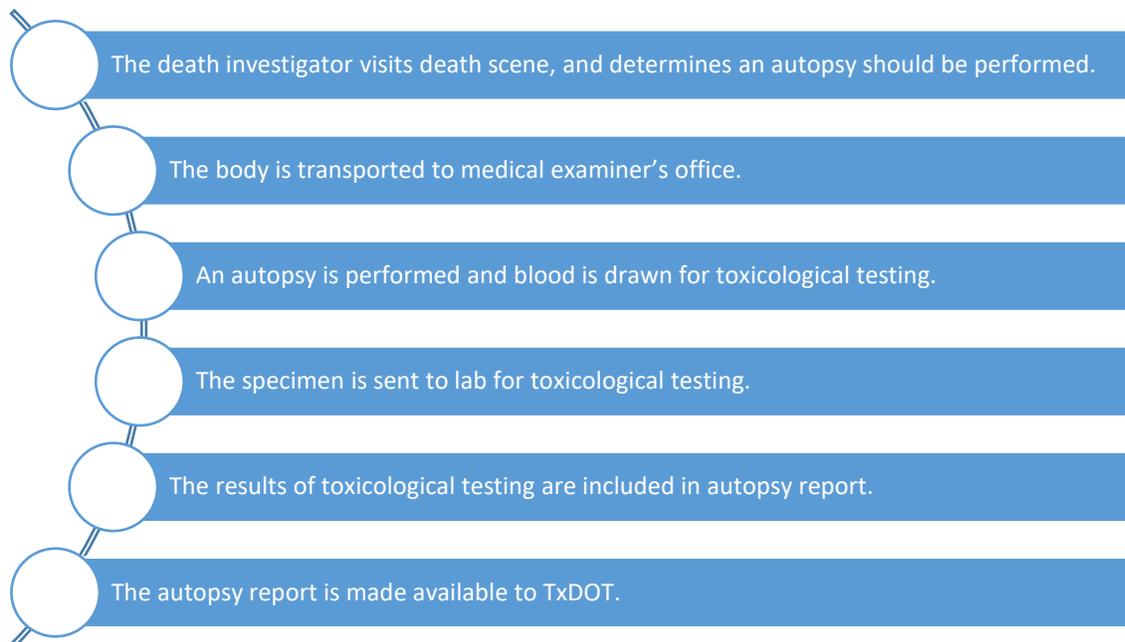
When a fatal crash occurs, the MEs office is notified by the law enforcement agency that is investigating the crash. Based on the circumstances surrounding the crash death, a formal investigation may be conducted, which includes an autopsy and toxicological testing for alcohol and/or other drugs.

### Survey Methods

TTI surveyed medical examiner's offices via an online Qualtrics survey. Each medical examiner's office was emailed information regarding the survey, the survey link, and contact information for potential questions. In addition, TTI reminded medical examiners who did not complete the survey were via email and phone call. After multiple follow-ups, eight of the twelve medical examiner offices completed our survey.

### Current BAC Testing and Reporting Practices

TTI asked MEs step-by-step process for obtaining a specimen once a toxicology test for BAC is requested. The following template was provided for MEs reference.



Survey respondents agreed that the template provided describes the detailed process flow for BAC reporting with a few caveats:

- A Medical examiner said that they only send the results from the toxicology report or autopsy every six months.
- Other medical examiner mentioned that they only release the toxicology/autopsy data to TxDOT upon request.
- A third ME mentioned that they are not aware if results are made available to TxDOT.

## Survey Results

### Demographics

TTI, in 2018, collected survey responses from all twelve medical examiners in the state. Figure 12 displays medical examiner locations, including counties with a medical examiner office, counties that operate as a medical examiner district through inter-agency agreement, and counties with no medical examiner office.

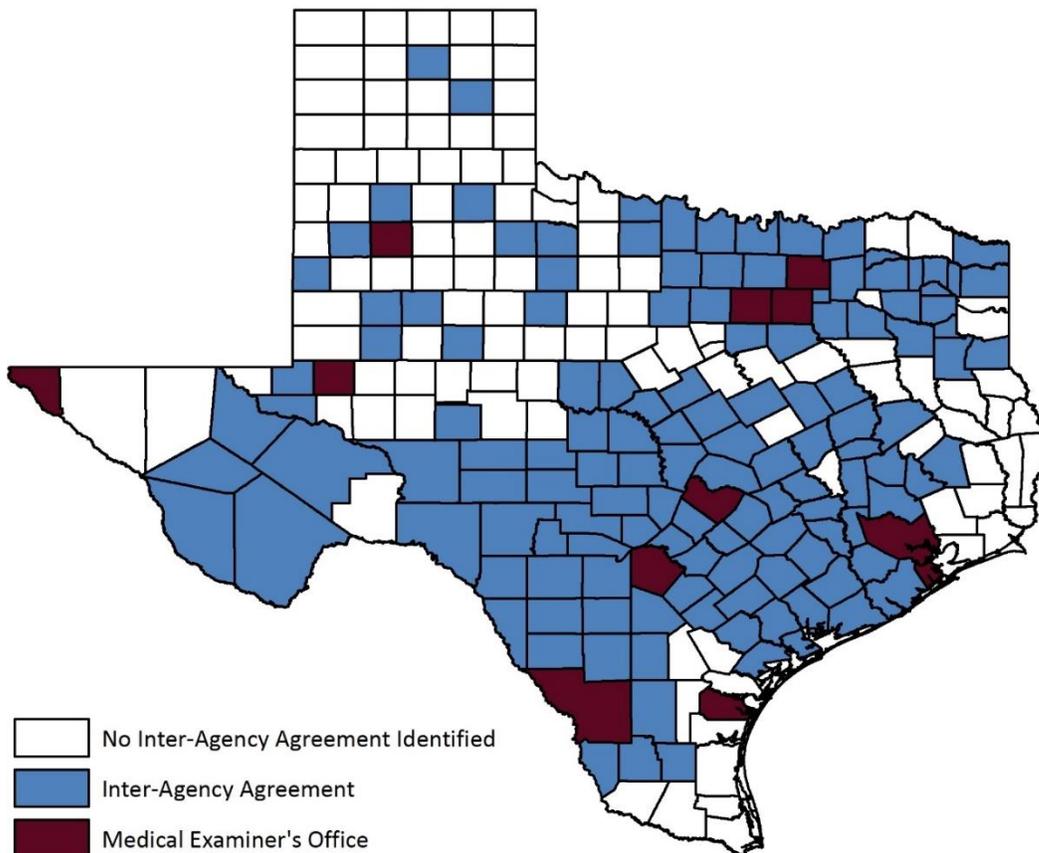
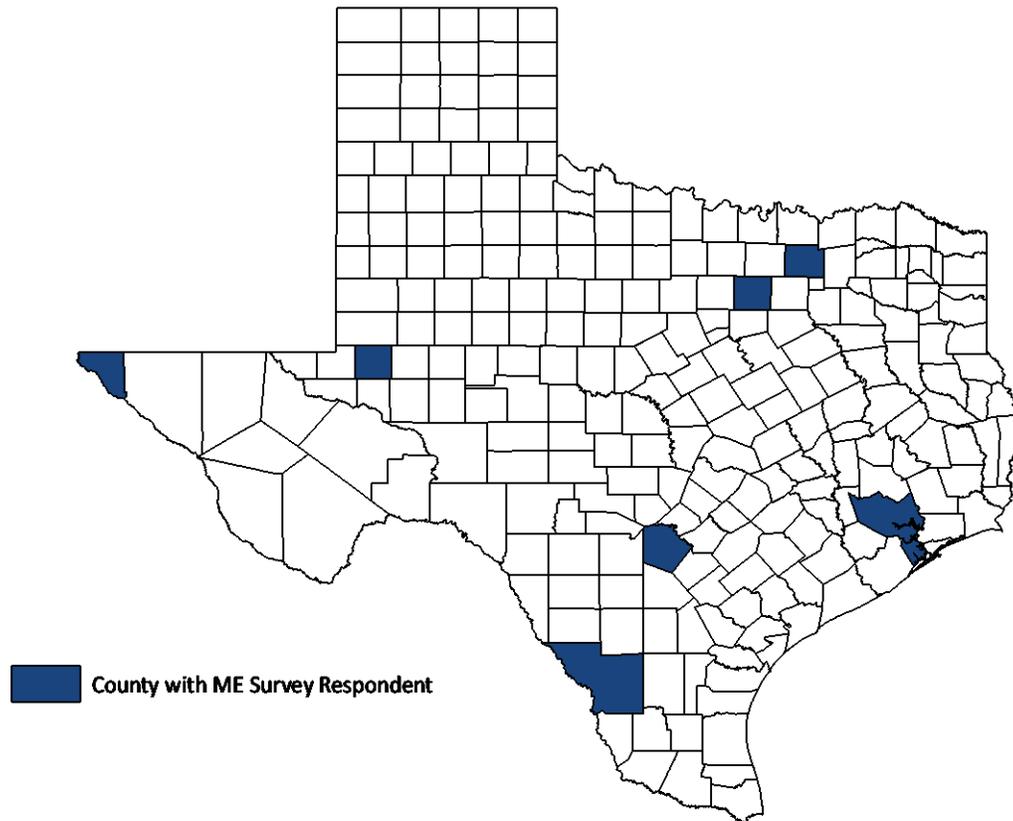


Figure 12. Medical Examiner Texas Counties Served, 2018

This year, despite all contacting efforts, only eight out of the twelve offices responded to the survey. Figure 13 displays the geographical location of survey respondents.



**Figure 13. Texas Counties with a Medical Examiner’s Office that Participated in the Survey**

Approximately 75 percent (75%) of MEs who participated in the survey reported providing services to other counties as part of a medical examiner district through an interagency agreement. The MEs district reported providing services to Atascosa, Austin, Bandera, Brazoria, Brooks, Calhoun, Crockett, Denton, Dimmitt, Duval, Edwards, Fannin, Fort Bend, Freestone, Frio, Gillespie, Grayson, Jim Hogg, Johnson, Karnes, Kendall, Kerr, Kimble, Kinney, La Salle, Llano, Mason, Matagorda, Maverick, McMullen, Medina, Menard, Parker, Polk, Real, San Jacinto, Schleicher, Sutton, Tarrant, Uvalde, Val Verde, Waller, Wilson, Zapata, and Zavala counties. Figure 14 displays Texas counties that received assistance from a medical examiner district in 2018.

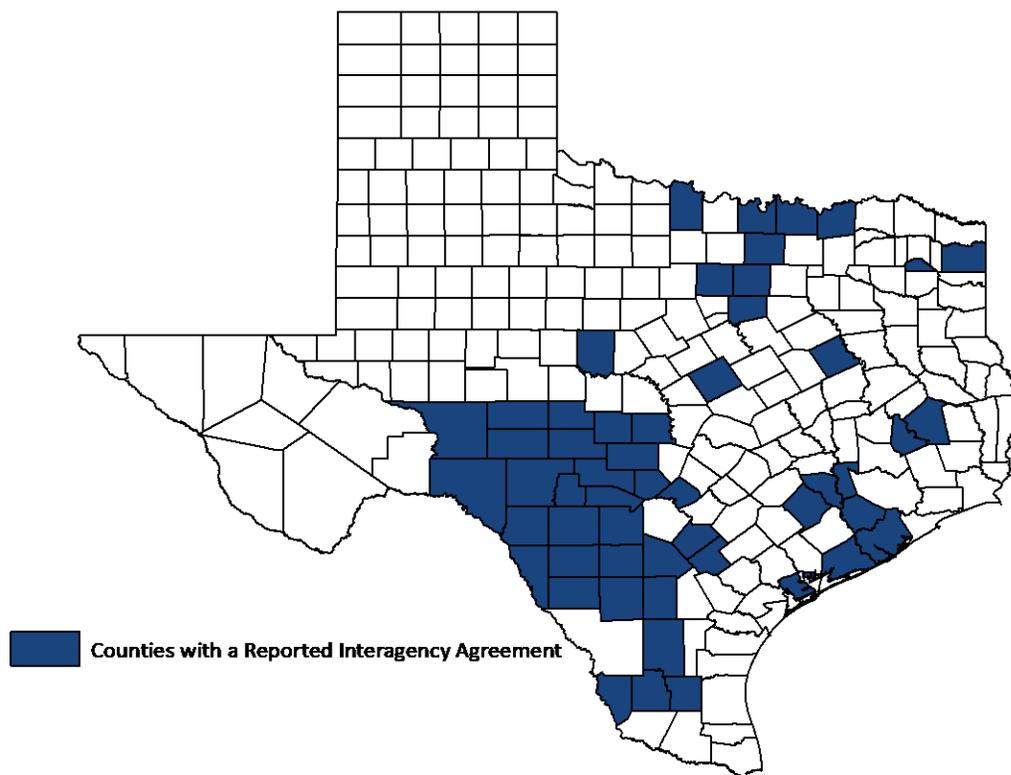


Figure 14. Texas Counties receiving service from a Medical Examiner's District

After establishing demographic information, TTI asked if MEs were aware of their duty to report based on the Texas Transportation Code § 550.081. Fifty percent (50%) of MEs reported being aware of the Code § 550.081.

### Determining the Need to Request Toxicology Testing

TTI then focused on identifying which stakeholders were responsible for requesting toxicology results. TTI found that law enforcement requested toxicology testing for fatal crashes in sixty-three percent (63%) percent) of the cases. Other individuals included medical examiners in fifty percent (50%) of their cases. This included the justice of the peace (25%), district attorney (12.5%), and pathologists (12.5%). In addition, fifty percent (50%) of MEs reported there were circumstances in which they would not request toxicology tests, reasons provided included:

- hospitalization,
- length of time between death and discovery of body,

- fatality was not the driver,
- single motor vehicles,
- admission blood disposed of, and
- customer or other county testing requests.

### **Toxicological Testing Process**

The next survey questions focused on the process of toxicological testing. Of the ME offices who completed the survey, twenty-five percent (25%) described that the costs for toxicology testing ranged from \$301-\$400, whereas thirty-eight percent (38%) were not sure of the cost. In addition, thirty-eight percent (38%) of MEs reported the cost of toxicology testing is included with an autopsy, with reported autopsy prices ranging from \$1,700 to \$3,000.

Sixty-two percent (63%) of MEs reported that they were responsible for incurring the cost of toxicology testing. Other ME offices reported that the responsibility for bearing the cost of toxicology testing was placed upon the county (25%) and law enforcement (13%). Interestingly, seventy-five percent (75%) of MEs reported sending biological specimens to an outside lab for toxicology analysis, with all respondents indicating the use of NMS labs. Approximately twenty-five percent (25%) of the MEs reported that it typically took 3-4 weeks to receive results for a toxicology test, followed by less than two weeks (25%) and 2-3 months (25%). One ME reported that the toxicology results timeline varied from days to months and one other ME reported the time length varies 2-3 weeks.

### **Submission of Toxicology Results**

The next section focuses on the submission of toxicology results. MEs reported sending toxicology/autopsy results to law enforcement agencies (75%), TxDOT (50%), District Attorney (25%), and other stakeholders (63%). Some examples of other stakeholders who receive the results include justices of the peace, pathologists, and other public requests.

Fifty percent (50%) of MEs reported forwarding results automatically while others said that the results were available upon request. Of those that automatically forward results to others, seventy-five percent (75%) reported that they submit results at the completion of the report. Another twenty-five percent (25%) report forwarding the test results every 2-3 months. A majority of MEs (88%) reported that they send the test results in via email.

### **Submitting BAC results to TxDOT**

The next section focuses on reporting BAC results to TxDOT. Fifty percent (50%) of MEs reported completing TxDOT's CR-1001 form while an additional twenty five percent (25%) report submitting the autopsy report directly to TxDOT. MEs that submit toxicology results directly to TxDOT vary in the frequency. Sixty seven percent (67%) of MEs reported sending toxicology results upon completion of the toxicology/autopsy assessment, seventeen percent (17%) report toxicology results monthly, and seventeen percent (17%) indicated that they send toxicology results in every six months. A majority of MEs (67%) said that the submission method of toxicology/autopsy results to TxDOT is completed through email while twenty-five percent (25%) do not directly report toxicology results but instead rely on law enforcement for submission services.

TTI also inquired as to if MEs reported out-of-jurisdiction toxicology/autopsy results. In eighty-three percent (83%) of the cases, MEs reported that they do submit out-of-jurisdiction toxicology results directly to TxDOT. In addition, fifty percent (50%) of responding MEs reported having a staffed position/employee who is responsible for submitting BAC toxicology results to TxDOT. These include administrative assistants and morgue technicians.

### **Usage of TxDOT's CR-1001-Death/Toxicology Report Form**

Fifty percent (50%) of MEs reported utilizing TxDOT's CR-1001 form as the preferred method of reporting toxicology results. One hundred percent (100%) of those who use the CR-1001 form stated that they would prefer to continue using the form as the prime submission method. The MEs gave an average score of 4.5 out of 5 for how useful they found the CR-1001 form, with five being extremely useful. For those that do not use the CR-1001 form they prefer to submit toxicology results directly to TxDOT through a database or another electronic format.

All MEs said that the current process for reporting toxicology reports to TxDOT is currently efficient, and they did not provide recommendations for future improvements. Interestingly, twenty-five percent (25%) of the respondents indicated that they would be open to and willing to work with a third-party agency, regarding collecting and reporting of toxicology results to TxDOT. Table 11 summarizes the survey results regarding MEs testing and reporting procedures.

Table 11. Summary of Toxicology Testing and Reporting by Medical Examiner Offices

County	Agency Responsible for Conducting Autopsies	Other Counties Served	Site of Toxicology Testing	Approximate Toxicology Test Cost	MEO Receives Toxicology Results in	Individual/Agency Responsible for Reporting BAC data to TxDOT	Frequency of BAC Reporting to TxDOT	BAC Reports Submitted to TxDOT via	Are out of jurisdiction cases reported to TxDOT?	Policy for Reporting BAC Results to Law Enforcement:
<b>Bexar</b>	Bexar Co. MEO	Atascosa, Bandera, Crockett, Dimmitt, Edwards, Frio, Gillespie, Karnes, Kendall, Kerr, Kimble, Kinney, La Salle, Llano, Mason, Maverick, McMullen, Medina, Menard, Real, Schleicher, Sutton, Uvalde, Val Verde, Wilson, Zavala	In-house	Included with cost of autopsy, \$2,500-\$3,000	2-3 months	Law Enforcement	Unknown	Do not directly report	Unknown	Automatically Forwarded
<b>Collin</b>	Collin Co. MEO	Fannin, Grayson	Sent to another lab	\$301-\$400	2-3 weeks	Medical Examiner	Monthly	Submit full autopsy report to TxDOT	Yes	Available Upon Request
<b>Ector</b>	Ector Co. MEO	N/A	Sent to another lab	Not Reported	3-4 weeks	Medical Examiner	Upon completion of Report	Complete TxDOT CR-1001-Death/Toxicology Report	Yes	Automatically Forwarded
<b>El Paso</b>	El Paso MEO	N/A	Sent to another lab	Not Reported	Varies from days to weeks	Medical Examiner	Upon completion of Report	Complete TxDOT CR-1001-Death/Toxicology Report	No	Available Upon Request
<b>Galveston</b>	Galveston Co. MEO	Brazoria, Fort Bend, Matagorda	Sent to another lab	Included with cost of autopsy, \$2,500-\$3,000	3-4 weeks	Medical Examiner	Upon Completion of the Report	Complete TxDOT CR-1001-Death/Toxicology Report	Yes	Automatically Forwarded
<b>Harris</b>	Harris Co. Institute of Forensic Sciences	Austin, Calhoun, Freestone, Polk, San Jacinto, Waller	In-house	\$150 for alcohol screen and quantitation; \$200 per additional drug quantitation	2-3 months	Medical Examiner	Upon completion of Report	Submit full autopsy report to TxDOT	Yes	Available Upon Request

Table 11. Continued Summary of Toxicology Testing and Reporting by Medical Examiner Offices

County	Agency Responsible for Conducting Autopsies	Other Counties Served	Site of Toxicology Testing	Approximate Toxicology Test Cost	MEO Receives Toxicology Results in	Individual/Agency Responsible for Reporting BAC data to TxDOT	Frequency of BAC Reporting to TxDOT	BAC Reports Submitted to TxDOT via	Are out of jurisdiction cases reported to TxDOT?	Policy for Reporting BAC Results to Law Enforcement:
Tarrant	Tarrant Co. MEO	Denton, Johnson, Parker	In-house	\$301 - \$400	Less than 2 weeks	Unknown	Unknown	Unknown	Unknown	Automatically Forwarded
Webb	Webb Co. MEO	Brooks, Dimmitt, Duval, Jim Hogg, La Salle, Maverick, Val Verde, Zapata, Zavala	Sent to another lab	Included with cost of autopsy, \$1,700 to 2,000	Less than 2 weeks	Medical Examiner	Every six months	Complete TxDOT CR-1001-Death/Toxicology Report	Yes	Unknown

**Legend**

- MEO: Medical Examiner's Office.
- N/A: Not Applicable
- Not Reported: Question Left Blank on Survey

### TTI Educational Activity Feedback

Over the past four years, TTI's project team has been conducting education and outreach activities that focus on BAC and toxicology reporting for medical examiners. The educational activities consist of webinars for medical examiners that focus on related laws, duty to report, TxDOT acceptance methods, where to send results, and experiences with the current toxicology reporting system. The survey posed questions to respondents asking for MEs thoughts about the current education and outreach activities and solicited their opinion for potential topics they might like to see in future outreach endeavors.

Four (50%) of the MEs offices reported that they participated in the educational webinar hosted by TTI in 2018. Of those reporting, all felt the educational webinars were beneficial but they did not have suggestions for improving future iterations of the webinar-based training.

### Conclusion

Texas statute requires MEs to submit toxicology test results to TxDOT's Crash Records Section. If the results are not available, a supplement must be completed and sent to TxDOT- CRS when the results become available. Despite this, approximately twenty-five percent (25%) of MEs stated they do not directly report toxicology results to TxDOT Crash Records Section. As such, there is a continued need for follow up inquiry with ME offices to identify and collect missing BAC toxicology testing results.

Missing toxicology creates a gap in information that defines the current quantitative picture of impaired driving and levels of intoxication in drivers. Without this information, choices for countermeasures options may be skewed resulting in misappropriated or misdirected traffic safety funding to less-effective safety treatment options. Because of this project effort, TTI has discovered that there is an ongoing need to continue communicating and building partnerships with ME offices around the state. Helping MEs understand the importance of BAC reporting and increasing their reporting rates is critical to advancing TxDOT's mission in identifying the level of impairment in drivers involved in fatal crashes. Through continued surveying on BAC reporting procedures, TxDOT will be better able to understand gaps in BAC reporting and identify potential solutions for reducing the gaps among medical examiner reporting.

## Survey of Justices of the Peace in Texas

### Introduction

TTI identified issues that adversely affect JPs who report BAC toxicology results for crash fatalities. To accomplish this, TTI surveyed justices of the peace and conducted webinars to understand their experiences and processes for reporting BAC toxicology results for fatally injured drivers to the TxDOT's-CRS. The purpose of this memorandum is to provide TxDOT with information on JPs experiences and processes for reporting BAC toxicology results, as well as to gauge the impact of TTI's educational efforts.

In Texas, there are 12 counties with a medical examiner office. ME offices along with JPs are responsible for investigating crash fatalities. The state has over 800 JPs that fulfill the role of a death investigator in counties without a ME office. Additionally, JPs acting as death investigators must also report BAC toxicology reports when no inter-agency agreement exists with a ME office. An overwhelming majority of Texas counties utilize a JP to determine cause and manner of death in fatal crashes.

### Survey Methods

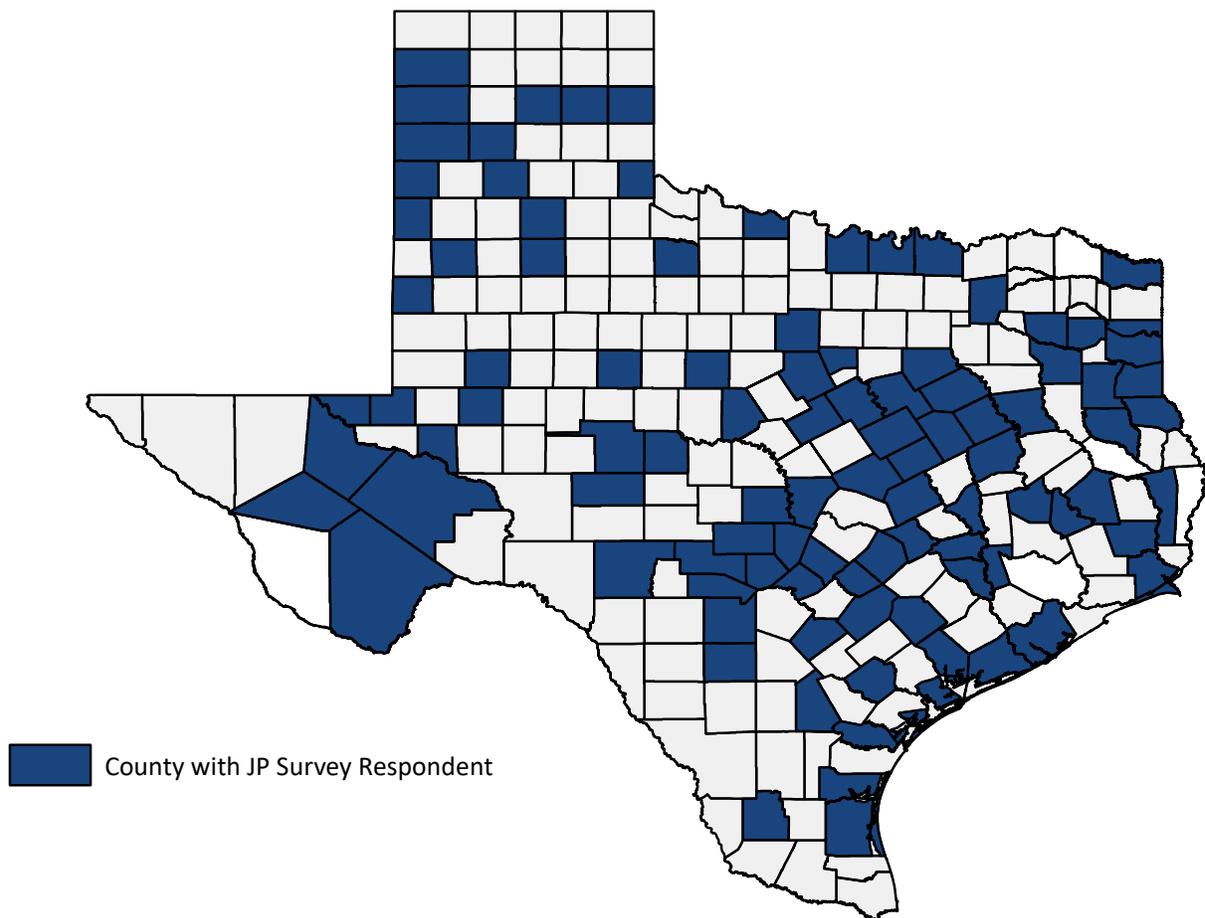
TTI has conducted similar survey analyses during prior years of this project. However, the survey of preceding years was slightly modified based in this iteration based upon feedback that was received from previous survey participants. TTI used Qualtrics, an online survey platform to cumulate and aggregate survey response data. TTI continued its partnership with the Texas Justice Court Training Center (TJCTC) who assisted this effort by sending out two emails with the survey link to JPs in its network.

### Survey Response Rate

TTI received 126 completed surveys as well as 72 partially completed surveys. An additional 96 JPs failed to complete the survey with a majority only completing the first question. To ensure consistency of response, TTI used only those responses where the JP fully answered all survey questions. Table 12 and Figure 15 provide an illustration all counties where JPs participated in the survey along with the number of JP respondents for each designated county.

Table 12. Texas Justice of the Peace Survey Respondents by County

County	Number of Completed Surveys	County	Number of Completed Surveys	County	Number of Completed Surveys	County	Number of Completed Surveys
Anderson	1	Ellis	2	Kerr	1	Randall	1
Aransas	1	Erath	1	Kleberg	1	Reeves	1
Austin	1	Falls	1	Knox	1	Rusk	1
Bailey	1	Floyd	1	Lavaca	2	San Jacinto	1
Bandera	1	Freestone	1	Lee	1	San Patricio	1
Bastrop	1	Frio	1	Leon	2	Schleicher	1
Bell	1	Gillespie	1	Limestone	1	Shelby	1
Blanco	1	Goliad	2	Live Oak	1	Smith	2
Bosque	1	Gonzales	1	Llano	2	Swisher	1
Bowie	1	Gray	1	Loving	1	Tom Green	1
Brazoria	2	Grayson	1	Marion	2	Upshur	2
Brazos	1	Hamilton	1	Martin	1	Walker	1
Brewster	1	Hardin	1	Matagorda	1	Waller	1
Brown	2	Harrison	1	McLennan	1	Washington	2
Burnet	1	Hartley	1	Medina	2	Wheeler	1
Caldwell	1	Hays	1	Midland	1	Wichita	1
Calhoun	2	Hill	1	Milam	1	Wilson	3
Callahan	1	Hockley	1	Montague	2	Winkler	1
Carson	1	Hood	1	Nacogdoches	1	Wood	2
Childress	1	Hunt	1	Navarro	1	Yoakum	2
Comal	1	Jackson	1	Nolan	1		
Concho	1	Jasper	1	Oldham	1		
Cooke	1	Jeff Davis	1	Palo Pinto	2		
Crane	1	Jefferson	2	Panola	1		
Crosby	1	Jim Hogg	1	Parmer	1		
Deaf Smith	1	Kendall	4	Pecos	1		
Edwards	1	Kennedy	1	Polk	3		



**Figure 15. Texas Justice of the Peace Survey Respondents by County**

### Survey Results

#### Crash Notification

Sixty-five percent (65%) of JPs surveyed reported that they are always notified when a fatal crash occurs in their jurisdiction. The remaining thirty-five percent (35%) are not always notified and of those, ninety-eight percent (98%) are in counties where joint reporting occurs. In these instances, another JP within that same jurisdiction may be notified and respond to fulfil the judicial role in the fatal crash event. The remaining two percent (2%) of JPs who are not always notified of a fatal crash did not provide any reason as to why they are not notified. Interestingly, eight counties (Brazoria, Lavaca, Llano, Medina, Montague, Smith, Upshur, and Wilson) have experienced inconsistencies when it comes to being notified on fatal crashes.

### Awareness of the Texas Transportation Code § 550.081

TTI asked JPs about their awareness of BAC toxicology reporting requirements under the Texas Transportation Code (TTC) Section 550.081. TTI found that eighty-two percent (82) of survey responding JPs were aware of TTC section 550.081 Report of Medical Examiner or Justice of the Peace. The JPs were also aware of the requirements of the statute that guides toxicology reporting requirements in Texas.

### Requesting Toxicology Tests

The survey results suggest that approximately ninety-four percent (94%) of the time there is a fatal crash, the JP is the official who request toxicology testing be completed as part of their inquest. Roughly thirty-six percent (36%) of the surveyed JPs indicated that they were the only official who requests BAC toxicology testing in their jurisdiction. There were eight instances (6%) where surveyed JPs stated that they were not the official that requests a BAC toxicology test for fatal crash events. In the six percent (6%) of cases, law enforcement was responsible for request BAC toxicology testing to be performed. Figure 16 provides a summary of JPs' opinion of who requests BAC toxicology testing in fatal crashes by profession.

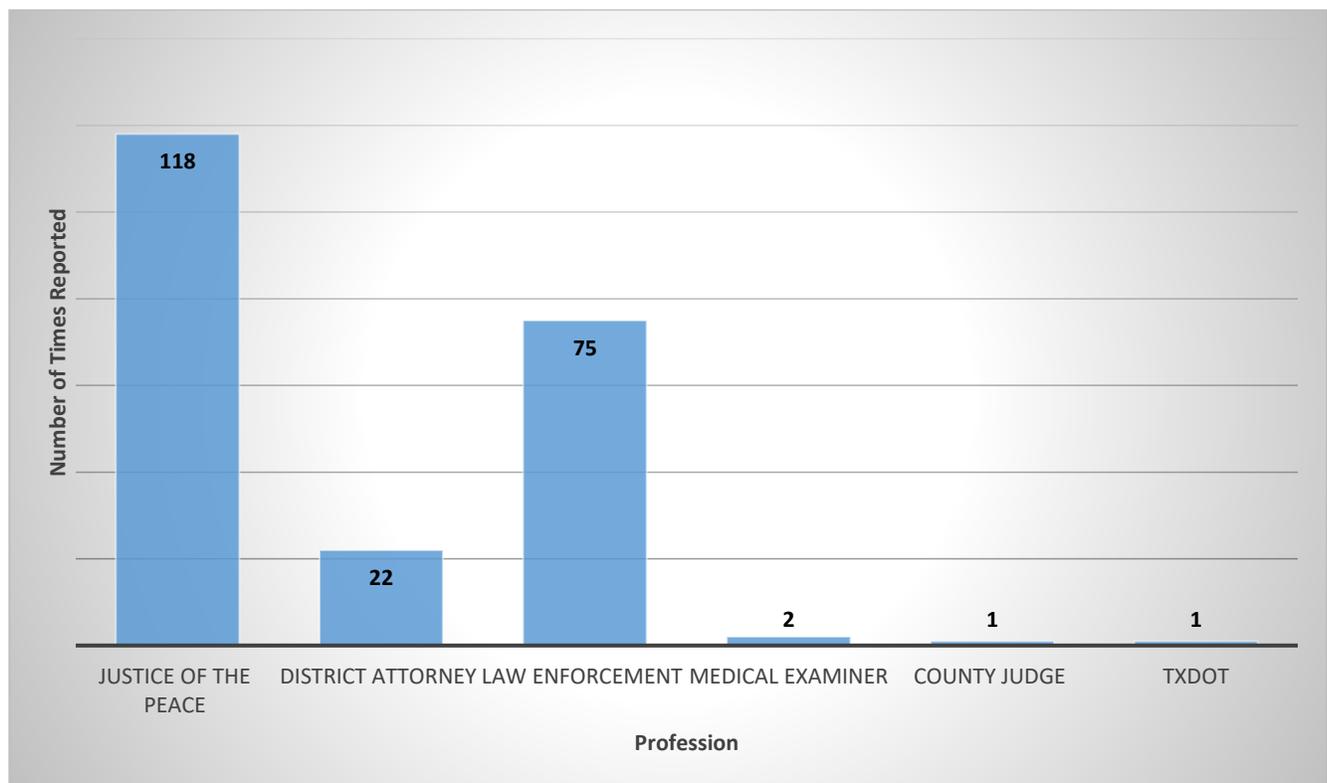
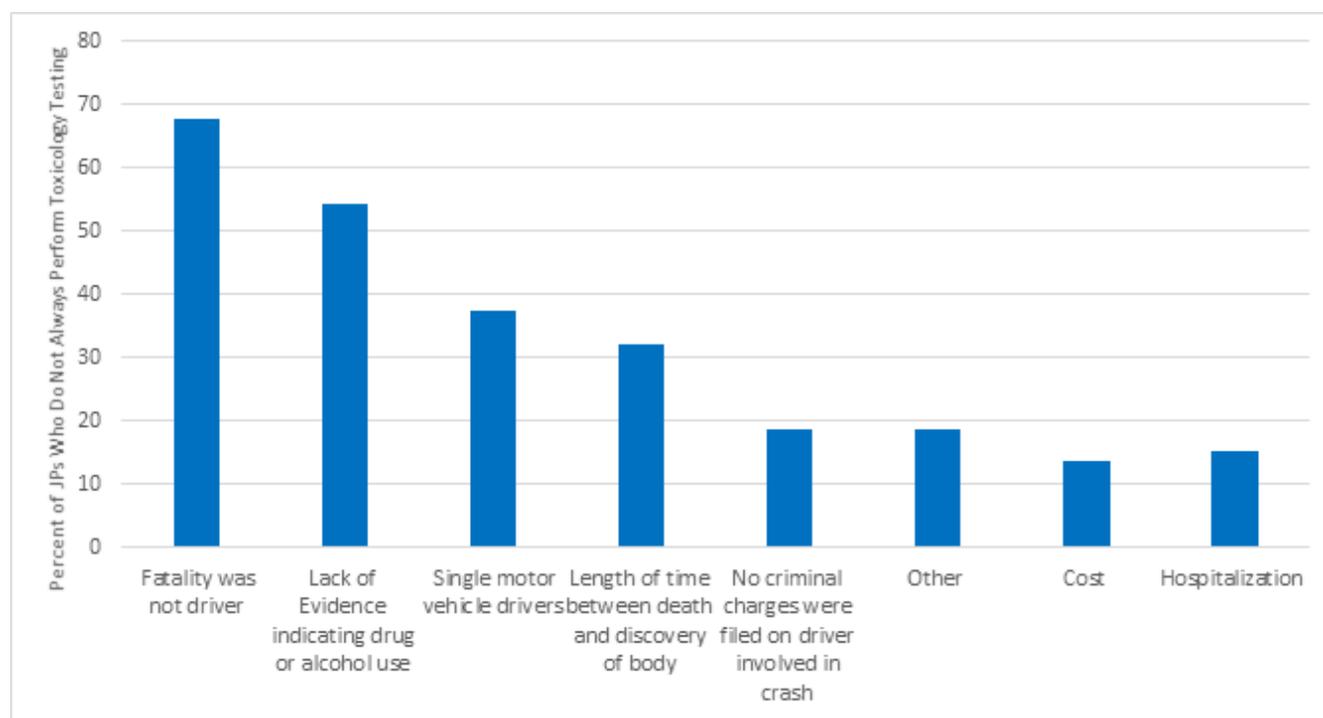


Figure 16. Completion of BAC Toxicology Testing Requests in Fatal Crashes, By Profession

JPs hold the discretion to order autopsies and forensic toxicology tests in fatal crashes. Some JP respondents indicated that autopsies and forensic toxicology testing are not always ordered for all crash types and decedents. Forty-seven percent (47%) of JPs respondents reported circumstances in which they would not forensically test for BACs or drugs in a fatal crash. The most common reported reason was that the fatality was not sustained by the driver (68%), followed by lack of evidence indicating drug or alcohol use (54%) and the fatal crash involved a single motor vehicle driver fatality (37%). Additional reasons given by JP respondents included environmental conditions contributed to the crash and investigating officers did not believe BAC toxicology testing was required or necessary. Figure 17 provides a summary of the percentages of the different factors cited by the responding JPs as reasons for not performing forensic toxicology testing.



**Figure 17. Justice of the Peace Offices: Circumstances for No Toxicology Testing**

### **Inter-agency Agreements with MEs or Private Labs**

In addition to the factors listed in previous sections of this report, seventy-six percent (76%) of responding JPs reported having no active interagency agreements for forensic testing with the MEs office or private laboratory. Of those with active interagency agreements, forty-nine percent (49%) of responding JPs reported using a MEs office and fifty-one percent (51%) of responding JPs reported using a private lab to perform forensic toxicology testing to acquire BAC results.

## Current BAC Testing and Reporting Practices

Since there is a statutory requirement that mandates BAC toxicology results be reported to TxDOT Crash Records Section, there must be a logical process in which JPs are given direction on how to report forensic testing outcomes. Figure 18 provides a graphic illustration that depicts a process flow for BAC toxicology reporting when a JP inquest is ordered.

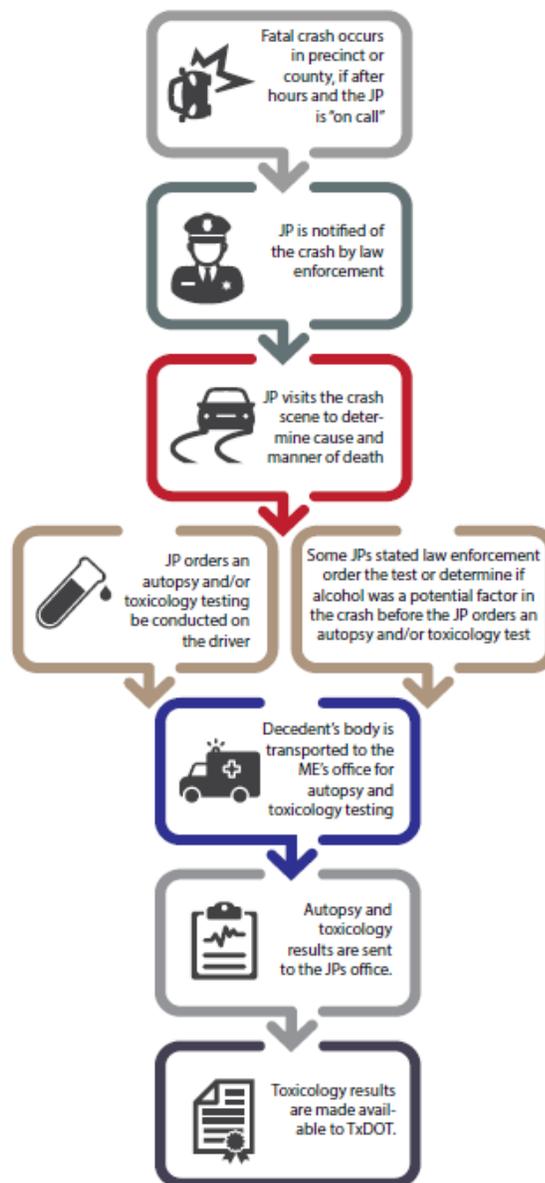


Figure 18. BAC Reporting Process Flow

Unfortunately, JPs differ in the considered factors that determine whether they should request toxicology testing and if so, how can the results be submitted through a third party. For in-depth information, refer to attachment A for raw survey results.

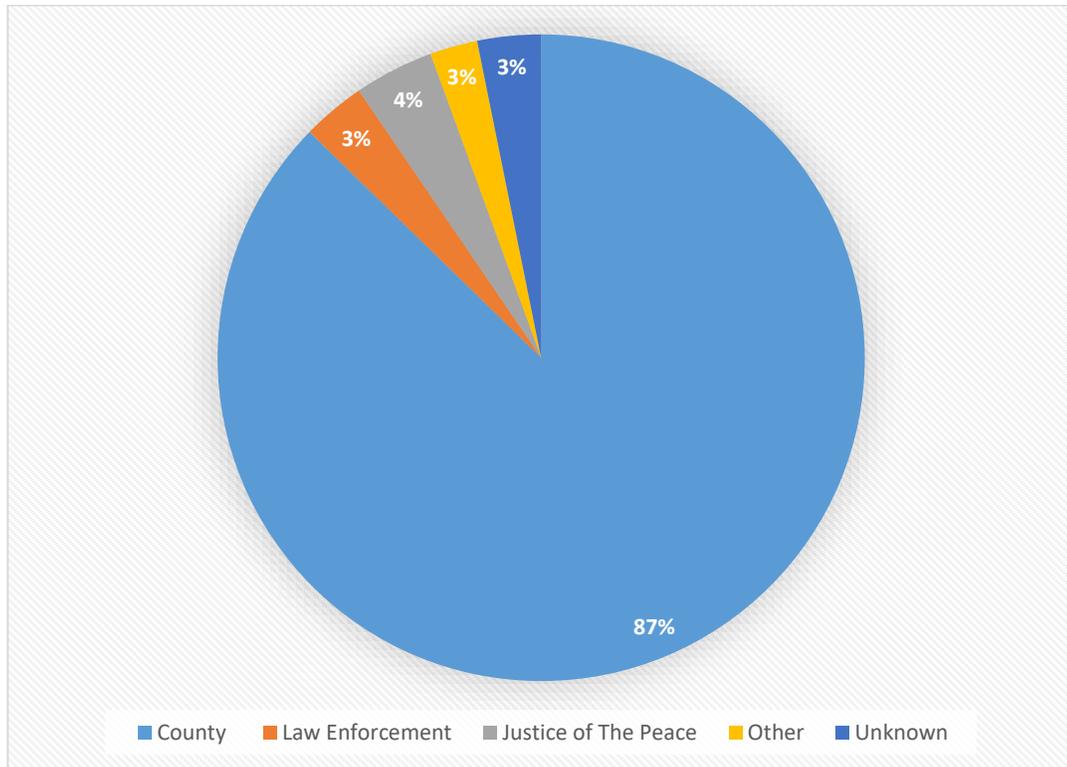
A larger concern of JP was the issue of BAC toxicology testing costs and the amount of time it takes to receive results from testing laboratories. Because of the many different industry options for forensic testing (state vs private industry), JPs are confronted with choices that are sometime more costly and time consuming than others. Below are JP survey responses that helped cast light upon forensic testing costs and result return timeframes.

### **Testing Costs**

Sixty-two percent (63%) of responding JPs reported that in their county, the cost of the toxicology test was included with the autopsy. Of the sixty-two percent (63%), fifteen percent (15%) of the JPs did not know the cost of the autopsy. For those JPs that did know the cost of the autopsy, they reported a range of \$1,200 to \$3,000, with an average cost of \$2,352.82 per autopsy.

Regarding toxicology testing being separated from the cost of autopsy, JPs responding indicated that this was the case for their office in six percent (6%) of the cases. This included one (1) JP that reported \$1-\$100, Two (2) JPs reported \$201-\$300; Two (2) JPs reported \$401-\$500, One (1) reported \$501-\$1000, and one (1) reported \$1600. The remaining twenty-nine percent (29%) of JPs reported that they were not sure of the cost of BAC toxicology testing.

In regards to which agency in the county was responsible for the cost of toxicology testing, eighty-seven percent (87%) of responding JPs reported that the county was responsible for covering testing costs. Figure 19 provides illustration of the party responsible for covering costs associated with BAC toxicology testing.



**Figure 19. Reported Responsible Party for Cost of Toxicology Testing**

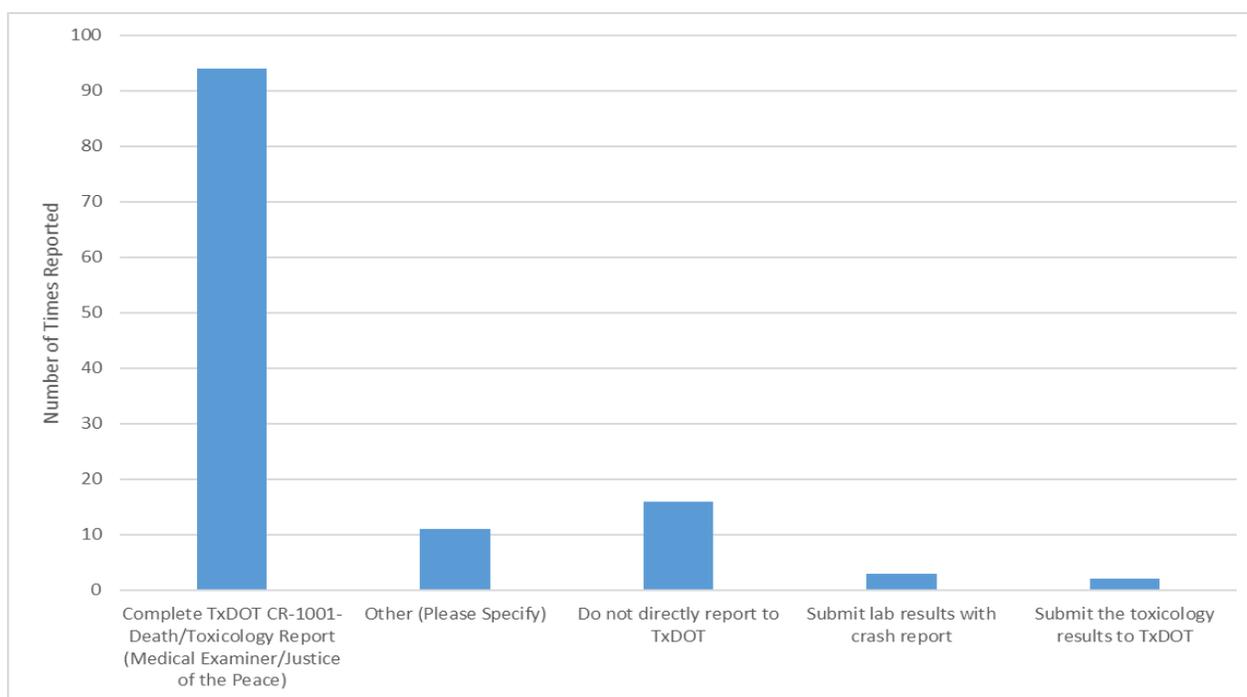
### **Timeframe to Receive Toxicology Results**

The window for receiving toxicology results back from the medical examiner's office, state or private laboratory varies greatly – from as quickly as less than two weeks to as long as six months. The most commonly reported window for results was 5-6 weeks (24%), followed by 3-4 weeks (19%), 7-8 weeks (19%), 2-3 months (16%), 3-6 months (14%), other (6%), and less than 2 weeks (3%). The others included different times depending on if the toxicology test was through the ME or a private lab.

### **Submission of Toxicology Results to TxDOT**

Once the JPs receive the BAC toxicology results from the MEs office or laboratory, seventy-eight percent (78%) percent are sent directly to the law enforcement agency that investigated the fatal crash. Though required by statute, not all JPs reported that BAC toxicology results are directly to TxDOT's Crash Records Section. Roughly, sixty-two percent (62%) of JPs said that the BAC toxicology results are sent directly to TxDOT Crash Records Section.

Of the JPs who directly report BAC toxicology results to TxDOT, many provide the information at different time intervals. The most common methods for submitting reports to TxDOT include mail (60%), email (34%) and fax (34%). In addition, fifty-nine percent (59%) of JPs reported having a specific person or position that is responsible for submitting BAC toxicology results to TxDOT Crash Records Section. For those that do not directly report BAC toxicology results to TxDOT Crash Records Section, sixty-three percent (63%) report that law enforcement is responsible for submitting the BAC toxicology results. The other BAC toxicology results are reported through unknown means or through the ME office. Seventy-five percent 75% of JPs report submission of the BAC toxicology results using TxDOT's CR-1001 form. Figure 20 provides a summary of the different methods of reporting toxicology results directly to TxDOT Crash Records Section.



**Figure 20. Justice of the Peace Offices: Method of Reporting Toxicology Results to TxDOT**

#### **Usage of TxDOT's CR-1001-Death/Toxicology Report Form**

Overall, eighty percent (80%) of the JPs report using TxDOT's CR-1001 form. Of those offices using the CR-1001 form as their main method of reporting toxicology results, seventy-nine percent (79%) prefer continuing to use the form and twenty-one percent (21%) prefer to send lab results directly into TxDOT (with no additional form). The JPs using the CR-1001 form found the current BAC toxicology reporting system to be efficient with the average usefulness of the form (5-extremely useful) to be 4 out of 5 with a range of 1 to 5.

Approximately, twenty percent (20%) of JPs reported to not use the CR-1001 Form for reporting BAC toxicology results. Of those offices not using the CR-1001, forty percent (40%) reported they do not send BAC toxicology results directly to TxDOT. In eighty percent (80%) of the responses, JPs who do not use the CR-1001 form for BAC toxicology reporting agreed that the current reporting system is efficient. For those JPs that believed the reporting system could be more efficient, their recommendations included:

- having law enforcement submit,
- making the form easier to submit through email or an electronic form, and,
- confirmation of receipt of the form.

### **Current BAC Reporting System Improvement Suggestions**

Regarding the current BAC reporting system, eight percent (8%) of JP respondents provided suggestions of changes that could improve or enhance BAC reporting. The most common recommendations were:

- educational opportunities should be provided to JPs about the reporting process,
- law enforcement submit the CR-1001 form instead of JPs, and,
- improve the current process, which were previously discussed

TTI also asked if JPs would be willing to work with a third-party organization to increase reporting of BAC toxicology results to TxDOT's Crash Records Section. The majority sixty-two percent (62%) of justices of the peace offices were agreeable to that possibility.

### **TTI Educational Activity Feedback**

Over the past four years the TTI's project team has been conducting educational and outreach activities to JPs that focus' on BAC toxicology reporting. The educational and outreach activities include:

- webinar training sessions, and,
- presentations at educational events for JPs that focus on related laws, duty to report, TxDOT acceptance, and experiences with current reporting systems.

Survey questions were crafted to collect data on JPs current educational activity and identify potential topics for future training opportunities/activities. Twelve (12) JPs reported participating in the educational webinar hosted by TTI. All who participated thought the educational webinar found the training sessions to be beneficial.

## Conclusion

Texas statute requires JPs to submit toxicology test results to TxDOT's Crash Records Section. If the results are not available, a supplement must be completed and sent to TxDOT-CRS when the results become available. Despite the law, thirteen percent (13%) of the responding JPs indicate that they do not report BAC toxicology results directly to TxDOT-CRS. Clearly, there is room for improving this number and efforts will be made to continue to reach out to those JPs in an effort to educate them regarding the law. Through surveying on BAC reporting procedures, we are better able to understand gaps in BAC reporting, as well as potential solutions for reducing the gaps. Without this information, choices for countermeasures options may be skewed resulting in misappropriated or misdirected traffic safety funding to less-effective safety treatment options.

## CR-1001 Feasibility Study

### Introduction

TTI to support TxDOT in improving BAC reporting in Texas conducted a feasibility study to assess if there is a need to update the CR-1001 form to improve BAC reporting rates and increase accuracy reporting among JPs and MEs. This memorandum outlines the feedback received, from interviews with the head of the Crash Analysis Division at TxDOT and surveys, webinar and in-person interactions with JPs and MEs, to base its conclusions.

### Methods

TTI met with TxDOT's Crash Records Division Head and team to secure feedback on potential issues and changes that could improve the CR-1001 form. It then surveyed and interviewed JPs and MEs across the state. Based on feedback received from all the stakeholders involved, TTI assessed the costs and benefits of changing the CR-1001 form. It also provided recommendations on how to improve the form.

### Study Findings

#### Current Toxicology Reporting Climate

NHTSA reported that in 2008, Texas had 65 instances (3%) in which the BAC test was administered to a fatal driver, but the results were unknown. Thus, it also reported 28 cases (1%) in which driver fatalities were flagged as unknown if tested". In 2017, the number of cases of unknown results dropped to 14 instances (1%), however, the state saw an alarming increase in the numbers of cases of unknown BAC testing, 136 cases (6%). (NCSA, 2019)

The 5% increase in the number of unknown if tested cases of driver fatalities can be attributed to many factors. The Crash Records Division team at TxDOT identified common CR-1001 filling mistakes as potential indicators to the percentage increase in unknown BAC toxicology reporting rates.

#### TxDOT's Crash Analysis Team Feedback on CR-1001 Form Issues

TTI interviewed TxDOT's Head of the Crash Division, Jim Hollis, and his team in February 2019 at the TxDOT Headquarters to collect information on common issues that they see with toxicology reporting when MEs and JPs utilize the CR-1001 Form.

The crash analysis team listed two main issues that they frequently see with the results being reported by CR-1001 form users. The first deals with the lack of information about the units of measurement for the drug results. The second concern touches upon technical mistakes caused by human input error when reporting BAC levels and drug concentration levels. TxDOT enforces that it is paramount that Texas reports accurate information to the FARS system, but it recognizes the limitations of data collection that the form presents as well as the need to improve the quality of the data being received by various stakeholders in the state.

### **Issue # 1: The lack of drug measurement units with toxicology reporting**

The first issue that the crash analysis team faces when collecting the data from CR-1001 forms deals with the lack of drug measurement units when JPs and MEs report drug results. This common issue was also found at the federal level.

In 2014, NHTSA identified that the US does not have a uniform drug testing set of procedures across states. The lack of singular policy and consistency across different laboratories and states toxicology reporting practices lead to a variation in the types of test that are performed, which cut-off levels are used, the calibration standards for equipment, and the type of biological specimen has been used during testing. Hence, NHTSA reports that the FARS system is not equipped to collect and code for all of the variations listed above. It is up to the states to report how these toxicology tests need to be done and what the toxicology results represent. (Berning & Smither, 2014)

A Crash Analysis Division team member identified that this issue is potentially caused because the form does not ask the CR-1001 user to select a drug unit nor to report it. That issue coupled with the limited form space to list the drug thresholds leads to confusing, sometimes incomplete information that the division receives.

### **Issue # 2: Human input error**

The crash analysis group also pointed out that BAC results and other drugs information sometimes appear misrepresented in the CR-1001 form due to human input error. Thus, not all instances of inaccurate reporting are caught because if the BAC or drug count seems within the normal range or even therapeutic levels, it is hard to estimate the quality of the data being reported if the full autopsy or toxicology report has not been attached to the CR-1001 Form.

It takes a great amount of personnel time to dig through narrative of crash reports and other secondary data sources to match the information listed in the CR-1001, if the crash analysis team thinks the reported results are inaccurate. The crash analysis group works diligently to catch those mistakes, but it is not always able to confirm if the information being reported in the CR-1001 is veridical.

#### **MEs and JPs Feedback on CR-1001 Form Issues**

TTI collected feedback from JPs and MEs on issues related to filling out the CR-1001 form through Qualtrics, an online surveying method. It also appraised their views through interactions held on educational webinars and in-person meetings. The JPs and MEs received the survey in March 2019 and the gathered the responses of 126 JPs and 8 MEs are listed below.

#### **Justices of the Peace Feedback on the CR-1001 Form Issues**

TTI received survey results from 126 JPs. Overall, 80 percent of the JPs said that they report toxicology results to TxDOT using the CR-1001 Form. Of those offices using the CR-1001 as their method of reporting toxicology results, 79 percent prefer to continue using the form, and 21 percent prefer to send lab results directly to TxDOT (with no additional form). The JPs using the CR-1001 form found the current toxicology reporting system to be efficient with the average usefulness of the form (5- extremely useful) to be 3.93 out of 5 with a range of 1 to 5.

Despite the positive affectivity towards the usefulness of the form, more in-depth discussions with JPs during webinars and in-person meetings revealed a few areas of improvement to the form. First, JPs noted that the form lacks the necessary space to report all of the potential screened drugs. They have also said that the form is often hard to find on TxDOT's website and it does not open with all internet browsers. The form is not currently supported under the google chrome browser, for example. Third, there seems to be an information gap between TxDOT and JPs. Survey respondents and webinar participants both seem to believe that the form could not be submitted via electronic form. JPs also mentioned a lack of follow-up from the crash analysis team that the form has been received.

### **Medical Examiners Feedback on the CR-1001 Form Issues**

The state has twelve medical examiner offices, and eight of them participated in the survey. Fifty percent of MEs reported utilizing TxDOT's CR-1001 form. A hundred percent who use the report, all state they would prefer to continue using the form. The MEs gave an average score of out of 5 for how useful they found the form, with the rating five being extremely useful. For those that do not use the CR-1001 form, reported submitting a database or another electronic document of results to TxDOT.

Through webinars, TTI also asked MEs that do not currently use the CR1-1001 if they are likely to use the form in the future. Unanimously, these MEs had a strong objection to using the form because of its size limitations and the fact that it adds extra work to the office.

### **Cost-Benefit Assessment of changing CR-1001 Form**

Texas' ability to analyze accurate toxicology data is critical to measuring the scope of the impaired driving problem and evaluate its trends to shape better-informed traffic safety programs.

The endeavor of reporting BAC and drug toxicology information of impaired driving crashes is a joint effort among law enforcement, death investigators such as JPs and MEs, health professionals, traffic safety professionals, and TxDOT. With many moving pieces, it is easy to lose sight of the bigger picture and undermine the importance of toxicology reporting. TTI's crash analysis, previously pointed that a preliminary look at crash data from years 2010-2018 found that the state missed collecting substance test results from alcohol and drug-impaired driving crashes in 585 cases. These alarming numbers affect Texas image at the national level, but it greatly affects the lives of Texans on the roads.

TTI, in partnership with TxDOT, is looking into ways that toxicology data reporting can be improved in the state. Moreover, one of the main ways of reporting toxicology data is the usage of the CR-1001 form. CR-1001 managers and users identified that the most common CR-1001 issues are

- the lack of space to add drug information,
- the lack of drug unit identification,
- the difficulty to find and submit the CR-1001 form,
- and the lack of follow-up of receipt of the form

The factors above lead to inaccurate reporting or missing toxicology results. These issues warranted an assessment of the potential social-economic costs and benefits of changing the form based on feedback received from the crash analysis group at TxDOT and death investigators across the state.

### **Benefits of Changing the CR-1001**

Implementing changes to the form such as adding drug unit identifiers, adding space for screened drugs, informing JPs about the accessibility of the form, submission methods, and automatic receipts can lead to increased toxicology reporting as well as more accurate reporting. Texas would be moving towards the direction of providing quality data to NHTSA and more closely complying with its latest trends.

### **Costs of Changing the CR-1001**

The state's goal to achieve a reduction in alcohol and drug-related fatal crashes is limited if the understanding of the importance of reporting toxicology test results is not occurring or is reported inaccurately. An obstacle to accurate CR-1001 data reporting is the fact that Texas has 815 JPs, whose election cycle occurs every four years. These judges conducted 21,766 inquests in 2017. (OCA, 2017)

Changing the CR-1001 format will take a considerable amount of training investment to make sure all JPs are up-to-date with the new reporting needs and its importance. The lack of communication about form changes can lead to pushback from JPs, which may negatively affect the toxicology reporting rates in the state for the subsequent years. Lastly, logistic and funding limitations within TxDOT is also a hindering factor in the ability to make small changes to the form.

### **Feasibility of Changing the CR-1001 Form Results**

Modifying the structure of the CR-1001 form is an endeavor that comes with specific challenges. It would require TxDOT's investment in more personnel time and add the need for more storage space in its systems. Thus, changing the form signifies an increased effort by TTI and TxDOT to reach out to all JPs and MEs and educate them about the form upgrades and its reasoning for the change. The factors above make the likelihood of implementation of changes to the CR-1001 moderately likely.

The benefits to modifying the CR-1001 form seem to be far removed and hard to quantify in the eyes of stakeholders, at times, but if NHTSA keeps pushing towards the increasing need of accurate and complete toxicology data from states, Texas would be in the forefront of leading this process.

## Conclusion

Improving the number of toxicology testing results reported in impaired driving crashes passes through clear, standardized, and easy to follow reporting process. In Texas, this is done through the CR-3 form, submitted by law enforcement, and the CR-1001 form, submitted by JPs and MEs. This feasibility study identified a few issues that hinder the optimization of toxicology reporting by CR-1001 form users. Small changes such as adding drug unit identifiers, adding space to report to accommodate a wider range of drugs, informing JPs and MEs about the accessibility of the form, submission methods, and sending automatic receipts can all lead to increased toxicology reporting. Engaging in outreach activities after form changes are also a crucial component to make sure the form changes do not negatively influence toxicology reporting. TTI further identified that the solutions above come with technological and educational challenges, but it can benefit the state in staying ahead of toxicology reporting national trends. TTI concludes that revising the CR-1001 form can positively increase toxicology reporting in Texas, which in turn can lead to a greater understanding of the impaired driving problem in the state.

## Current and Promising BAC Reporting Practices

### Introduction

Despite the clear mandate of MEs and JPs to report BAC and toxicology results to TxDOT, Texas still suffers from inaccurate and cumbersome reporting, low testing rates, and missing BAC and toxicology data. TTI worked with TxDOT to identify ways to educate and improve forensic testing and reporting rates by MEs and JPs throughout the fiscal year. This section discusses the results of data collected through surveys, educational webinars, in-person presentations, crash analysis, feasibility study, and outreach efforts completed with the intent to draw conclusions and formulate recommendations to TxDOT.

### Current limitations to the Current Reporting System

Texas' overall goal to increase BAC toxicology reporting involves the increased awareness of the roles that MEs and JPs play. Forensic testing rates of all fatally injured drivers are still not up to NHTSA's desired goal. Some of the reasons for the low testing rates are Texas statutory limitations, high testing costs and lack of jurisdictional funding and lack of death investigation protocol.

Furthermore, although Texas had a high overall BAC toxicology result-reporting rate 2017, there is still room for improvement. Some of the limitations to reach the 100% reporting rate are the cumbersome process to collect the BAC and toxicology data, the inaccuracy in reporting, missing reports from MEs and JPs offices, the JPs turnover, and the lack of understanding of the importance of the data and partnerships among other stakeholders.

### Toxicology Testing Limitations

#### *Texas Statute Limitations*

The Texas Transportation Code Section 550.081 does not mandate that all persons fatally injured in crashes to be tested for the presence of alcohol and other substances. The code mandates that if the ME or JP acting as a death investigator determines that a toxicology test is needed in a crash fatality, then the results from that test need to be sent to TxDOT. The code states that the ME/JP shall submit a report to the Texas Department of Transportation before the 11th day of each month with information relating to all deaths, which occurred during the preceding month. (Transportation Code 550.081)

### ***High Cost to the County***

Throughout the fiscal year, TTI interacted with JPs in in-person justices of the peace workshops and online webinars. A common reason as to why JPs might choose for not testing all fatally injured drivers is cost. TTI's JP survey collected information on the costs involved in requesting toxicology tests to JPs. A majority of the JPs (63 percent) reported that the cost of the toxicology test was included with autopsy. Of these, 15 percent did not know the cost of the autopsy. For those that did know the cost of the autopsy, they reported a range of \$1,200 to \$3,000, with an average cost of \$2,352.82 per autopsy. Approximately 6.3 percent (n=8) reported the cost of toxicology testing that is not included with the autopsy, including 1 that reported \$1-\$100, 2 reported \$201-\$300, 2 reported \$401-\$500, 1 reported \$501-\$1000, and 1 reported \$1600. The remaining 29 percent of JPs were not sure of the cost of toxicology testing. The costs impose a burden to JPs in small jurisdictions. With an average autopsy cost of \$2,352.82 per person, JPs may opt to do not request toxicology testing in some cases.

### ***Lack of Death Investigation Protocol***

Another contributor to the low toxicology testing rates in fatal crashes is the lack of established reporting processes among counties. Anecdotal stories from JPs who participated in webinars stated that there have been instances in a death scene that law enforcement might be the ones to decide if toxicology testing is necessary. Therefore, if the law enforcement officer determined that there was no criminal charge to be filled and did not recommend the toxicology testing to be done, JPs were likely not to order testing as well, even though JPs and LEs have different roles to play.

### **Toxicology Results Reporting Limitations**

#### ***Cumbersome Data Collection Process and Inaccurate Reporting***

In conversation with TxDOT's Crash Division team, TTI found that BAC and other toxicology data received in the state is cumbersome to be collected and it contains inaccuracies that affect the quality of the data. The team listed two main issues that crash analysis group frequently see with the results reported by MEs and JPs who use the CR-1001 form. The first deals with the lack of information about the units of measurement for the screened drugs. The second concern touches upon technical mistakes caused by human input error when reporting BAC levels and drug concentration levels.

***Justice of the Peace Turnover and Missing Reports***

The state counts with 815 JPs to fulfill the role of a death investigation in counties without a physical ME office or counties with no ME inter-agency agreement. Considering the expected JP turnover during election cycles, one can agree that a considerable number of new JPs entering the profession. JPs would need education on toxicology reporting practices. The two leading JPs organizations in the state, TJCTC and the Texas Justice Court Judges Association (TJCJA), currently do not offer formal training in the matter.

Thus, the JP turnover can lead to misinformation or unawareness of toxicology reporting practices in the state. Often when a new JP takes over office, there is no clear protocol of what has been done in the past. This unawareness can lead to toxicology reports not sent to TxDOT because of the lack of knowledge about the Texas Transportation Code Section 550.081.

***Lack of Understanding of the Importance of Toxicology Data***

The educational events that TTI held throughout the year shed light about the lack of knowledge on the importance of reporting toxicology results. JPs lack a clear understanding of why they are required to send the toxicology results to TxDOT, and the utility of the data for the state.

***Lack of Stakeholder Partnerships for Toxicology Reporting***

The lack of understanding the why the toxicology data matters to the state leads to another limitation of reporting results rates: the lack of jurisdictional toxicology reporting protocols. Anecdotal stories from JPs who attended TTI educational events say that if a toxicology test is requested by law enforcement, some LE agencies do not feel comfortable sharing the information with the JPs. The lack of procedural protocol in crash fatalities can sometimes hinder agencies ability to communicate and collaborate with others when trying to make sure TxDOT receives toxicology data.

### Current Efforts to Improve Toxicology Reporting Rates

TTI has worked to improve the reporting of BAC toxicology results among medical examiners and justices of the peace through education and outreach. TTI conducted webinars with MEs and JPs, attended in-person justices of the peace workshops, surveyed both MEs and JPs on their current toxicology reporting practices, conducted a crash analysis, reached out to MEs and JPs with missing toxicology results during the fiscal year, and collected recommendations from MEs, JPs, and TxDOT on how to improve the current reporting system.

In interactions with TxDOT'S crash analysis team, TTI found that TxDOT still actively working to build trust and create partnerships with various ME offices and toxicology laboratories in the state. The division has also started sending electronic receipts of toxicology reports received.

### Future of Toxicology Reporting

NHTSA is moving towards improving drugged toxicology data reporting among states. The Chief of the Behavioral Research Division at NHTSA, Randolph Atkins, at the 2019 Traffic Records Forum said that NHTSA is committed to improving the NHTSA'S ability to collect a higher volume of data and it will request states to provide more detailed and accurate data in the future. (Atkins, 2019) Thus, refining drugged driving toxicology data will also lead to an improvement in BAC reporting data as both are usually reported together.

This trend will likely require states to establish relationships with state toxicology laboratories to get consistent and accurate toxicology data. (NHTSA, 2004) Currently, Texas is not able to collect BAC and toxicology data from all lab sources in the state. It is improbable these partnerships will be symbiotic and whole; therefore, MEs and JPs will continue to have an important role to play in the future.

## Recommendations

TTI recognizes that to increase toxicology testing rates of fatally injured drivers in the state would take mandatory legislation, additional funding to the counties, as well as an established reporting mechanism. To improve the current toxicology reporting process, given the current legislation and climate, would take coordinated collaboration among law enforcement, death investigators such as JPs and MEs, health professionals, traffic safety professionals, toxicology labs, and TxDOT. A few actions need to be in place to reach this higher level of partnership.

- Increase the outreach efforts to MEs and JPs about their duty to report toxicology data as well as inform them of the importance of toxicology data for the state
- Educate law enforcement of the JPs and MEs role in a death investigation and inform them of the importance of the toxicology data
- Further develop partnerships with state labs and MEs offices to collect complete and accurate data
- Stay up-to-date with recent NHTSA drugged driving toxicology data requirements
- Collect and build upon feedback received from stakeholders with successful jurisdictional partnerships that lead to effective toxicology reporting.

## Project Limitations

One of the objectives for this grant year was to contact 10 medical examiners offices to determine their BAC reporting procedures. TTI was unable to meet the objective statement outlined above. During the project year, it was difficult to connect with all medical examiner offices. TTI sent a link to an online survey to all medical examiner offices in February. It then followed-up with emails and calls, but TTI was only able to collect eight responses instead of the estimated ten.

## Conclusion

Alcohol and drug impaired driving remains a prevailing issue in the state. BAC toxicology results are important in explaining meaningful findings regarding alcohol and drug use by drivers of motor vehicles and determining federal funding that states receive to address impaired driving issues. TxDOT as the holder of BAC toxicology data for the state counts with the collaboration of medical examiners and justices of the peace acting as a death investigator to supplement BAC data collected from CR-3 forms. MEs and JPs will continue to play a significant role in improving BAC toxicology reporting as the state moves towards increasing the quality of the BAC data received as well as the completeness of it.

The state has worked diligently to improve its BAC toxicology reporting rates over the past several years. TxDOT, together with TTI's efforts to educate medical examiners and justices of the peace, has seen an increase in toxicology reporting rates, but there is still room for improvement. The state still has a cumbersome BAC data collection process and it does not have a 100% BAC toxicology result-reporting rate of its fatally injured drivers testing rates are still not up to NHTSA recommended standards. Issues such as statutory limitations, high cost to forensic testing and lack of funding, and jurisdictional reporting protocol limit the state's ability to increase testing rates. Furthermore, the difficulty to collect the BAC and other toxicology data, the inaccuracy in toxicology reporting, the missing forensic testing results from MEs and JPs offices, the JPs turnover, the lack of understanding of the importance of the data and established partnerships among stakeholders contribute to the less than perfect toxicology reporting rates in the state.

TTI proposes to intensify the education and outreach efforts to MEs, JPs, LEs, and toxicology labs as well as fostering relationships among these stakeholders to improve the current toxicology reporting system.

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## Appendix A: Texas Transportation Code § 550.081

### Texas Transportation Code § 550.081. Report of Medical Examiner or Justice of the Peace

(a) In this section:

(1) "Department" means the Texas Department of Transportation.

(2) "Bridge collapse" means the abrupt failure of the basic structure of a bridge that impairs the ability of the bridge to serve its intended purpose and that damages a highway located on or under the structure.

(b) A medical examiner or justice of the peace acting as coroner in a county that does not have a medical examiner's office or that is not part of a medical examiner's district shall submit a report in writing to the department of the death of a person that was the result of a traffic accident or bridge collapse:

(1) to which this chapter applies; and

(2) that occurred within the jurisdiction of the medical examiner or justice of the peace in the preceding calendar quarter.

(c) The report must be submitted before the 11th day of each calendar month and include:

(1) the name of the deceased and a statement as to whether the deceased was:

(A) the operator of or a passenger in a vehicle involved in the accident; or

(B) a pedestrian or other non occupant of a vehicle;

(2) the date of the accident and the name of the county in which the accident occurred, and, if a bridge collapse, the location of the bridge in that county;

(3) the name of any laboratory, medical examiner's office, or other facility that conducted toxicological testing relative to the deceased; and

(4) the results of any toxicological testing that was conducted.

(d) A report required by this section shall be sent to:

(1) the crash records bureau of the department at its headquarters in Austin; or

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(2) any other office or bureau of the department that the department designates.

(e) If toxicological test results are not available to the medical examiner or justice of the peace on the date a report must be submitted, the medical examiner or justice shall:

(1) submit a report that includes the statement "toxicological test results unavailable"; and

(2) submit a supplement to the report that contains the information required by Subsections (c)(3) and (4) as soon as practicable after the toxicological test results become available.

(f) The department shall prepare and when requested supply to medical examiners' offices and justices of the peace the forms necessary to make the reports required by this section.