ANALYSIS OF FATAL IMPAIRED DRIVING CRASHES (2018)

Technical Memorandum







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Introduction

In 2018, there were 3,308 Texas Department of Transportation (TxDOT) reportable fatal vehicular crashes, which resulted in 3,645 fatalities. Of those fatal crashes, 35 percent (1,145 crashes) involved at least one driver classified as driving under the influence (DUI) or impaired.¹ For this analysis, the Texas A&M Transportation Institute (TTI) examined 2018 Crash Records Information System (CRIS) crash data, particularly looking at trends and patterns in fatal impaired driving crash events.² Additionally, TTI identified fatal impaired crashes where impaired pedestrians were involved and explored the specific nature of those crashes. Crashes involving impaired pedestrians has been an emerging area of concern in Texas.

Figure 1 illustrates the trends over the past nine years, comparing total fatal crashes with fatal impaired driving crashes. There was an increasing trend in fatal crashes from 2010 to 2017. Compared to 2017, a small decrease in fatal crashes was observed in 2018. Overall, fatal impaired driving crashes remained quite stable from 2010 to 2018.



Figure 1. Total Fatal Crashes vs. Fatal Impaired Driving Crashes, 2010 - 2018

¹ An impaired driver is a driver who has a blood alcohol concentration (BAC) result of greater than 0.00 g/dL, or had a positive alcohol test, or had a positive drug test, or had a contributing factor of "had been drinking", "under the influence – alcohol", "under the influence – drugs", or "taking medication" flagged on a crash report. ² Crash data extracted from Texas Department of Transportation (TxDOT) Crash Record Information System CRIS) on May 28, 2018.

Figure 2 illustrates the trends over the past nine years, comparing total fatalities with impaired drivingrelated fatalities. As with fatal impaired driving crashes, impaired driving fatalities from 2010 to 2017 had an increasing trend, but decreased from 2017 to 2018. Overall, impaired driving fatalities remained quite stable from 2010 to 2018.





Figure 3 illustrates the trends over the past nine years, comparing overall crash fatality rate to the impaired driving crash fatality rate in Texas. In 2018, the overall fatality rate for Texas was 12.7 fatalities per 100,000 people, which is a small decrease compared to 2017.³ The impaired driving fatality rate for 2018 was 4.4 deaths per 100,000 people. This rate represents a downtick from 2017, which registered at 5.1 deaths per 100,000 people. The fatal impaired driving crash rate in 2018 was the lowest rate recorded for the past nine years in Texas.

³ Crash rates were calculated using population estimates from the United States Census Bureau. The 2010-2018 population data estimates are based off the 2010 census and can be obtained via <u>https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF</u>.



Figure 3. Total Fatality Rate vs. Impaired Driving Fatality Rate, 2010 - 2018

Figure 4 depicts impaired driving fatality rates for the top 15 counties in Texas based on the three year (2016 -2018) average of impaired driving related fatalities by county and the population for 2018.⁴ Reeves County had the highest impaired driving fatality crash rate at 13.0 per 100,000 people, followed by Milam County (5.8 per 100,000 people), and Milam Panola County (5.6 per 100,000 people).





⁴ 2018 county population data was obtained from The United States Census Bureau and can be accessed <u>https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2018_PEPANNHU&prodType=table</u>

⁵ Only counties with an average of five or more fatalities were included in this ranking.

Figure 5 plots in a map the top 15 counties with the highest fatal impaired driving crash rate in Texas. Reeves County has a population less than 5,000. Of the top 15 counties, Bastrop County has the largest population (30,168).





Crash Characteristics

Table 1 presents information on crash characteristics like collision type, light condition, and weather condition by total fatal crashes and fatal impaired driving crashes. The rate of single-vehicle crashes (59 percent) versus multiple vehicle crashes (41 percent) for the total fatal crashes and fatal impaired driving crashes are similar. Fifty-six percent of all fatal crashes occurred in the dark in comparison to 68 percent of fatal impaired driving crashes that occurred in the dark. The weather condition at the time of crash were similar for both the total fatal crashes and fatal impaired driving crashes.

⁶ Only counties with five or more fatal impaired driving crashes were included in this ranking.

CRASH CHARACTERISTICS	FATAL CRASH	%	FATAL IMPAIRED DRIVING CRASH	%
Total	3,308	100%	1,145	100%
				Collision Type
Single Vehicle	1,943	59%	658	57%
Multiple Vehicle	1,365	41%	487	43%
			l	ight Condition
Dark	1,839	56%	784	68%
Dawn/Dusk	107	3%	32	3%
Daylight	1,352	41%	326	28%
Other	5	<1%	2	<1%
Unknown	5	<1%	1	<1%
			Wea	ther Condition
Clear	2,358	71%	840	73%
Cloudy	606	18%	219	19%
Fog	48	1%	14	1%
Other	3	<1%	2	<1%
Rain	270	8%	65	6%
Severe Crosswind/Sleet/Hail/ Snow/Blowing Sand	17	<1%	3	<1%
Unknown	6	<1%	2	<1%

Table 1. Crashes by Collision Type, Light Condition, and Weather Condition, 2018

Figure 6 illustrates fatal impaired driving crashes by day of the week. More fatal impaired driving crashes occurred on Sundays than any other day. Additionally, 42% of all fatal impaired driving crashes occurred on a Saturday or Sunday.



Figure 6. Fatal Impaired Driving Crashes by Day of Week, 2018

Figure 7 graphs fatal impaired driving crashes by time of day. More fatal impaired driving crashes occurred between 2:00 AM and 2:59 AM than any hour of the day. Additionally, 39 percent of all fatal impaired driving crashes occurred between a five-hour window, 10:00 PM to 2:59 AM.



Figure 7. Fatal Impaired Driving Crashes by Time of Day, 2018

Driver Characteristics

In total, 5,395 drivers were involved in fatal crashes in 2018. Of this number, 1,865 drivers were involved in fatal impaired driving crashes. Furthermore, of the 1,865 drivers involved in impaired driver fatal crashes, 1,184 were impaired.

Table 2 presents crash characteristics like collision type, time of day, and day of week, with further breakdowns by driver blood alcohol concentration (BAC) level. The rate of impairment among drivers involved in fatal crashes was more than two times higher at night than during the day (37 percent vs. 15 percent). Eighteen percent of all drivers involved in fatal crashes during the week were impaired compared to 30 percent on weekends. Furthermore, 33 percent of all drivers involved in single-vehicle fatal crashes were impaired, compared to 18 percent in multiple-vehicle fatal crashes.

	ALL DRIVERS IN	ALL IMPAIRED DRIVERS IN FATAL CRASHES		DRIVERS BA	C > 0.08 IN L CRASHES	
CRASH CHARACTERISTICS	FATAL CRASHES FREQUENCY 06 OF DRIVERS		FREQUENCY	% OF DRIVERS		
Total	5,395	1,184	22%	616	11%	
Drivers by Collision Type and Lig	hting Conditio	n				
Single-Vehicle Crash						
Total	2,272	664	29%	376	17%	
Daylight	692	152	22%	53	8%	
Dark Lighting	1,500	492	33%	312	21%	
Multiple-Vehicle Crash						
Total	3,123	520	17%	240	8%	
Daylight	1,699	182	11%	46	3%	
Dark Lighting	1,317	322	24%	190	14%	
Drivers by Time of Day						
Daylight	2,391	334	14%	99	4%	
Dark Lighting	2,817	814	29%	502	18%	
Drivers by Day of Week and Tim	e of Day					
Weekday	3,704	684	18%	315	9%	
Daylight	1,802	239	13%	63	3%	
Dark Lighting	1,759	422	24%	244	14%	
Weekend	1,691	500	30%	301	18%	
Daylight	589	95	16%	36	6%	
Dark Lighting	1,058	392	37%	258	24%	

Table 2. Crash Characteristics by Driver Impairment, 2018

Table 3 presents information on driver characteristics like age, gender, and race/ethnicity by drivers involved in all fatal crashes and drivers involved in fatal impaired driving crashes. Forty-nine percent of drivers in fatal impaired driving crashes were White. Eighty-one percent of drivers in fatal impaired driving crashes were White. Eighty-one percent of drivers in fatal impaired driving crashes were between the ages of 25 and 44. These two age groups represent potential target demographic areas for impaired driving messaging.

DRIVER CHARACTERISTICS	ALL DRIVERS IN FATAL	% OF DRIVERS	ALL IMPAIRED DRIVERS IN	% OF DRIVERS
	CRASHES		CRASHES	
Total	5,395	100%	1,184	100%
Age				
<16	14	<1%	2	<1%
16-20	445	8%	86	7%
21-24	513	10%	178	15%
25-34	1185	22%	365	31%
35-44	893	17%	213	18%
45-54	793	15%	161	14%
55-64	670	12%	118	10%
65-74	346	6%	44	4%
>=75	227	4%	14	1%
Unknown	309	6%	3	<1%
Gender				
Female	1,180	22%	201	17%
Male	3,858	72%	964	81%
Unknown	357	6%	19	2%
Race/Ethnicity				
American Indian/Alaskan Native	14	<1%	3	<1%
Asian	93	2%	5	<1%
Black	765	14%	187	16%
Hispanic	1563	29%	367	31%
White	2466	46%	577	49%
Other	119	2%	25	2%
Unknown	375	7%	20	2%

Table 3. Drivers by Age, Gender, and Race/Ethnicity, 2018

Table 4 provides information on driver characteristics like driver age, driver race/ethnicity, and vehicle type, with further breakdowns by driver BAC level. In 2018 fatal crashes, drivers in the 21-24 year age group had the highest percentage of impairment (35 percent) and the highest percentage with a BAC level 0.08 g/dL or higher (21 percent). This age group was followed by drivers in the 25-34 year age group, with impairment at 31 percent and a BAC level of 0.08 g/dL or higher at 17 percent. The percentage of impaired drivers involved in fatal crashes was 25 percent among males and 17 percent among females. There were four male impaired drivers involved for every female impaired driver involved (964 vs. 201) in fatal crashes. Considering only drivers with BAC 0.08 g/dL or higher, there were five male drivers involved for every female drivers.

The rate of impairment was highest among motorcycle operators (28 percent), followed by drivers of pickups or vans (24 percent each), and drivers of passenger cars (23 percent). In fatal crashes, BAC of .08 g/dL or higher was also found to be highest among motorcycle operators (14 percent).

	TOTAL	ALL IMPAIRED DRIVERS		DRIVERS BAC > 0.08 IN	
	DRIVERS IN	IN FATAL CRASHES		FATAI	CRASHES
DRIVER CHARACTERISTICS	FATAL		% OF	EDEOLIENCY	% OF
	CRASHES	FREQUENCE	DRIVERS	FREQUENCE	DRIVERS
Total	5,395	1,184	22%	677	13%
Drivers by Age Group (Years)					
<16	14	2	14%	1	7%
16-20	445	86	19%	31	7%
21-24	513	178	35%	109	21%
25-34	1185	365	31%	198	17%
35-44	893	213	24%	114	13%
45-54	793	161	20%	94	12%
55-64	670	118	18%	52	8%
65-74	346	44	13%	14	4%
>75	227	14	6%	3	1%
Unknown	309	3	1%	0	0%
Drivers by Gender					
Female	1,180	201	17%	90	8%
Male	3,858	964	25%	521	14%
Unknown	357	19	10%	5	3%
Drivers by Race/Ethnicity					
American Indian/Alaskan					
Native	14	3	21%	3	21%
Asian	93	5	5%	2	2%
Black	765	187	24%	78	10%
Hispanic	1563	367	23%	230	15%
White	2466	577	23%	283	11%
Other	119	25	21%	15	13%
Unknown	375	20	11%	5	3%
Drivers by Vehicle Type	1	1	1	1	1
Passenger Car	1,762	408	23%	218	12%
Pickup	1,348	330	24%	167	12%
SUV	930	197	21%	104	11%
Van	156	37	24%	16	10%
Truck or Truck Tractor	601	73	12%	41	7%
Motorcycle, Police Motorcycle	437	124	28%	62	14%
Bus, Yellow School Bus	12	1	8%	0	0%
Other (including Ambulance,					
Fire Truck, Police Car, Farm	61	12	19%	8	13%
Equipment)					
Unknown	88	2	2%	0	0%

Table 4. Drivers Characteristics by Impairment, 2018

BAC Level

In 2018, 1,184 impaired drivers were involved in fatal crashes. Of the 1,184 drivers, 732 (62%) had a reported BAC greater than 0.00 g/dL. Additionally, of the 732 with a recorded BAC, 616 (84%) had BAC greater than the legal limit of 0.08 g/dL. Furthermore, 72% (446 drivers) of those at or above the legal limit reported BAC levels of 0.15 g/dL or greater. Twenty-seven percent of drivers in fatal impaired driving crashes with BAC greater than 0.00 g/dL also had a positive substance test. The most common substance other than alcohol for drivers with a positive substance test was cannabis (23 percent), followed by multiple drugs (20 percent), and CNS stimulants (16 percent).

BAC levels for drivers involved in fatal impaired driving crashes with a recorded BAC ranged from 0.003 g/dL to 0.499 g/dL. Figure 8 illustrates the distribution of BAC levels found in drivers in fatal impaired driving crashes.





Restraint Use and Licensing

Table 5 shows the restraint use among passenger vehicle drivers involved in fatal crashes in 2018. Out of

 the 1,184 impaired drivers involved in fatal crashes, 124 were motorcycle operators. Of the remaining

935 impaired passenger vehicle⁷ drivers, 44 percent were unrestrained. In comparison, among all passenger vehicle drivers involved in fatal crashes, 19 percent were unrestrained.

RESTRAINT USE	ALL DRIVERS IN FATAL CRASHE S	% OF DRIVERS	IMPAIRED DRIVERS IN FATAL CRASHES	% OF DRIVERS	DRIVERS WITH BAC > 0.00 & BAC < 0.08	% OF DRIVERS	DRIVERS WITH BAC >= 0.08	% OF DRIVERS
Restrained ⁸	2,719	67%	389	42%	71	86%	171	35%
Unrestrained	785	19%	413	44%	35	42%	245	50%
Not Applicable	75	2%	36	4%	5	6%	22	4%
Other	7	0%	3	0%	0	0%	1	0%
Unknown	452	11%	90	10%	6	7%	50	10%
Total Passenger Vehicle Drivers	4,040	100%	935	100%	83	100%	489	100%
Motorcycle Riders	437		124		16		62	
Total	4,477		1,1059		99		551	

Table 5. Restraint Use by Passenger Vehicle Drivers Involved in Fatal Crashes, 2018

Examining restraint use by BAC level, 42 percent of passenger vehicle drivers with a BAC greater than 0.00 g/dL and less than 0.08 g/dL were unrestrained in fatal crashes. Fifty percent of passenger vehicle drivers with a BAC 0.08 g/dL or more were unrestrained in fatal crashes in fatal crashes.

Table 6 presents the license class of all drivers involved in fatal crashes in 2018. Twelve percent of all drivers in fatal crashes were unlicensed at the time of crash compared to 18 percent of impaired drivers in fatal crashes.

⁷ Includes vehicles with a vehicle body style of passenger car (2-door, 4-door), pickup, and sport utility vehicle.

⁸ Includes persons restrained by shoulder and lap belt, lap belt only, or shoulder belt only.

DRIVER LICENSE CLASS	ALL DRIVERS IN FATAL CRASHES	% OF DRIVERS	IMPAIRED DRIVERS IN FATAL CRASHES	% OF DRIVERS
Class A	451	8%	50	4%
Class A & M	92	2%	15	1%
Class B	55	1%	9	1%
Class B & M	15	0%	3	0%
Class C	3,022	56%	707	60%
Class C & M	350	6%	92	8%
Class M	1	0%	1	0%
No Data	205	4%	4	0%
Other/Out Of State	440	8%	63	5%
Unknown	210	4%	27	2%
Unlicensed	554	10%	213	18%
Total	5,395	100%	1,184	100%

Table 6. Driver's License by Drivers Involved in Fatal Crashes, 2018

Pedestrian Involvement

Crashes involving impaired pedestrians is an emerging area of concern in Texas. The National Highway Traffic Safety Administration (NHTSA) defines pedestrians as any person on foot, walking, running, jogging, hiking, sitting, or lying down who is involved in a motor vehicle crash.⁹ Whenever pedestrians are involved in motor vehicle crashes, the consequences can be especially dire because pedestrians are considered vulnerable road users.

Of the 3,308 fatal crashes in 2018, 19 percent involved pedestrians. **Table 7** provides a breakdown of all fatal crashes by pedestrian involvement. There were 2,163 fatal non-impaired driver crashes, of which 569 (26 percent) had pedestrian involvement. In comparison, 51 (four percent) of the 1,145 fatal impaired driver crashes had pedestrian involvement.

⁹ National Highway Traffic Safety Administration. 2015 Traffic Safety Facts – Pedestrians. <u>https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812375</u>.

PEDESTRIAN INVOLVED	FATAL NON- IMPAIRED DRIVING CRASH	% OF FATAL NON- IMPAIRED DRIVING CRASH	FATAL IMPAIRED DRIVING CRASH	% OF FATAL IMPAIRED DRIVING CRASH	TOTAL FATAL CRASH	% OF TOTAL FATAL CRASH
No	1,594	74%	1,094	96%	2,688	81%
Yes	569	26%	51	4%	620	19%
Total	2,123	100%	1,219	100%	3,308	100%

Table 7. Fatal Crashes by Pedestrian Involvement, 2018

Table 8 provides a breakdown of person types involved in fatal crashes. Of the 665 motorcycle operators involved in fatal crashes 38 percent (167) were killed in impaired driving crashes.

PERSON TYPE	TOTAL PERSONS INVOLVED	FATALITIES	% OF PERSONS	IMPAIRED DRIVING CRASH FATALITIES	% OF PERSONS
DRIVER	4,747	1,861	39%	813	17%
PASSENGER/ OCCUPANT	2,680	665	25%	222	8%
MOTORCYCLE OPERATOR	437	398	91%	167	38%
PEDESTRIAN	665	624	94%	50	8%
PEDALCYCLIST	76	72	95%	17	22%
MOTORCYCLE PASSENGER	45	20	44%	7	16%
OTHER (EXPLAIN IN NARRATIVE)	19	5	26%	-	0%
UNKNOWN	1	0	0%	-	0%
TOTAL	8,670	3,645		1,276	

Table 8. Fatalities by Person Type, 2018

Examining only fatal impaired driving crashes with pedestrian involvement, 50 pedestrian fatalities were related to impaired driving crashes. **Table 9** shows the breakdown of pedestrian-involved crashes by collision type. Ninety percent of pedestrian crashes were single-vehicle crashes, while the remaining ten percent involved two or more vehicles.

 Table 9. Fatal Impaired Driver Crashes with Pedestrian Involvement by Collision Type, 2018

	FATAL IMPAIRED	% OF FATAL
COLLISION TYPE	PEDESTRIAN CRASHES	CRASHES
Single Vehicle	43	84%
Multiple Vehicle	8	16%
Total	51	100%

In 2018, there were 138 pedestrians with a BAC greater than 0.00 g/dL killed in motor vehicle crashes. Ten of those pedestrians were killed in a crash with an impaired driver. **Table 10** shows the breakdown of fatal impaired driving crashes and non-impaired driver crashes with pedestrian involvement where at least one pedestrian involved in the crash had a BAC greater than 0.00 g/dL. Ninety-three percent of the impaired pedestrians were killed in non-impaired driving crashes.

IMPAIRED DRIVER CRASH	IMPAIRED PEDESTRIAN FATALITIES	%
No	128	93%
Yes	10	7%
Total	138	100%

Table 10. Fatal Impaired and Non-impaired Driver Crashes with Impaired Pedestrian Involvement by,2018

Table 11 provides a breakdown of BAC levels of drivers and pedestrians with a reported BAC greater than 0.00 g/dL involved in fatal crashes with an impaired pedestrian.¹⁰ Ninety-three (67 percent) of the impaired pedestrians involved in such crashes had a BAC of greater than or equal to 0.15 g/dL. Sixty-three percent of the impaired drivers had a BAC equal to or greater than 0.08 g/dL.

BAC LEVEL	DRIVERS	% OF DRIVERS	PEDESTRIANS	% OF PEDESTRIANS	Total	% OF TOTAL
0.00 > BAC < 0.08	3	38%	14	10%	17	12%
0.08 >= BAC < 0.15	2	25%	32	23%	34	23%
BAC >=0.15	3	38%	93	67%	96	65%
TOTAL	8	100%	139	100%	147	100%

Table 11. BAC of Pedestrians and Drivers in Fatal Crashes with Impaired Pedestrian Involvement, 2018

Conclusion

Vehicular crashes resulting from impaired driving remain a large problem in Texas. From 2010 to 2018, the total number of impaired driving fatal crashes and fatalities in Texas did not see significant decline and remained relatively stable. Additionally, the rate of fatal impaired driving crashes in Texas (per 100,000 people) in 2018 showed a small downtick compared to 2017. The year 2018 registered the smallest rate of fatal impaired driving crashes in Texas.

¹⁰ Not all drivers and pedestrians have a reported BAC.

In this report, TTI analyzed the 2018 impaired driving crash data looking at crash and driver characteristics. In 2018, majority crash characteristics of fatal impaired driving crashes include

- Single vehicles crashes (57 percent)
- Occurred on Saturday or Sunday (42 percent)
- Occurred between the hours of 10:00 PM and 2:59 AM (39 percent)

Additionally, a majority of impaired drivers were

- White/Caucasian (49 percent)
- Male (81 percent)
- Between the ages of 21 and 34 (64 percent).

Of the 935 impaired passenger vehicle drivers¹¹ involved in fatal crashes, 44 percent were unrestrained at the time of the crash. In comparison, 19 percent of all passenger vehicle drivers involved in fatal crashes were unrestrained. Eighteen percent of the 1,184 impaired drivers involved in fatal crashes were unlicensed, compared to 10 percent of all drivers involved in fatal crashes who were unlicensed.

¹¹ Excludes motorcycle operators.