CENTRAL TEXAS

CAMPO

CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

CENTRAL TEXAS

REGIONAL STATE OF SAFETY REPORT

December 2019

Texas A&M Transportation Institute

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State of Safety Report

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State of Safety Report

INTRODUCTION

Motor vehicle crashes have a significant impact on the greater Austin area. Often, crashes merely disrupt our lives, creating traffic headaches, delays to work, and unwanted trips to the body shop to fix the damage done. However, more severe crashes cause serious injury and death. From 2010 to 2018, crashes have claimed the lives of 1,910 people and caused serious injury to nearly 11,000 people in the greater Austin area. These crashes place increased demands on emergency responders and medical services, drive up insurance rates for the region, and in some cases, cause permanent damage and loss in people's lives.

To address this epidemic, the Capital Area Metropolitan Planning Organization (CAMPO) is developing a regional safety plan to identify the traffic safety issues affecting the region and potential solutions to implement. As the initial component of this plan, CAMPO commissioned this State of Safety Report to provide an overview of the traffic safety issues that impact the region. With budget constraints impacting the region's ability to construct safer facilities, efforts will need to be made to improve existing facilities and to promote safer transportation practices by its users.

This State of Safety Report utilizes Texas Department of Transportation (TxDOT) data from its Crash Records Information System (CRIS). CRIS contains information from Texas Peace Officer's Crash Reports (CR-3), which law enforcement officers are required to submit to TxDOT for crashes involving fatalities, injuries, and property damage in excess of $1,000. The following report reflects eight years of crashes in the region from January 1, 2010, to December 31, 2018.

The traffic safety problem comprises of different factors that impact different types of travelers. This report will address the following traffic safety focus areas to help highlight potential areas for future safety efforts:

- Alcohol
- Bicycles
- Bus Crashes
- Distracted Driving
- Large Trucks
- Motorcycles
- Older Drivers
- Pedestrians
- Railroad-Grade Crossings
- Road Departures
- Signalized Intersections
- Speeding
- Unrestrained Passengers
- Unsignalized Intersections
- Work Zones
- Young Drivers

Based on the data discussed in this report, CAMPO will develop a series of performance measures for improving traffic safety as required in the Fixing America's Surface Transportation (FAST) Act. According to the FAST Act, metropolitan planning organizations are required to report traffic-safety performance for the following five measures:

- Number of fatalities,
- Number of serious injuries,
- Fatality rate per 100 million vehicle miles traveled,
- Serious injury rate per 100 million vehicle miles traveled, and
- Number of non-motorized fatalities and serious injuries (bicyclists and pedestrians).

Improving traffic safety will continue to be a gradual process. While the eventual automation and connectivity of vehicles is expected to drastically improve traffic safety, these solutions are still many years into the future. In the meantime, continued efforts need to occur to improve the behavior of transportation system users and to improve our roadways to ensure safer travels for all.

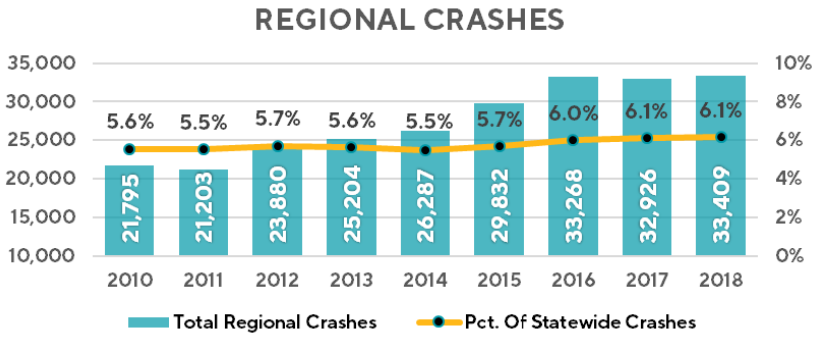
Regional Overview

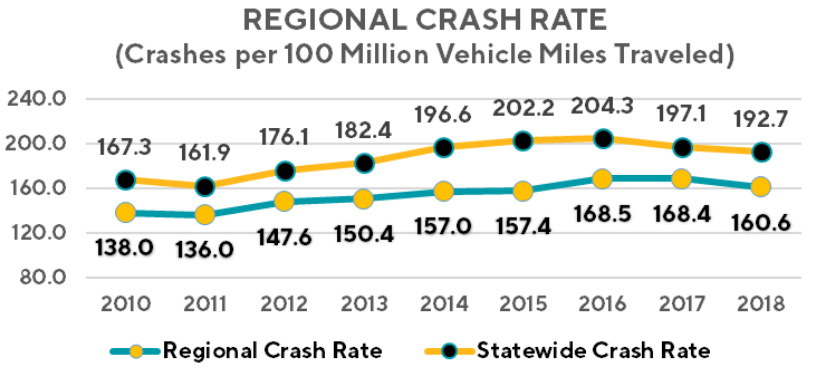
Motor vehicle crashes impact the CAMPO region on a daily basis. They contribute to increased traffic at a minimum. Often they result in injury, and in some cases, death. From 2010 to 2018, crashes have claimed the lives of 1,910 people in the CAMPO region. This is four times as many people than were murdered in the region (422 deaths). Additionally, in 2018 alone, using the National Safety Council's methodology for estimating the economic cost of crashes, crashes cost the region nearly $979 million in travel delay, medical expenses, emergency services, property damage, and lost productivity and wages.

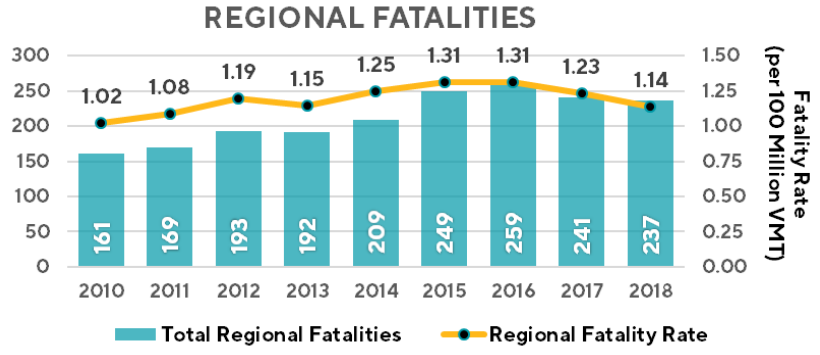
Since 2010, crashes have increased over 53 percent in the region from 21,793 in 2010 to 33,409 in 2018. Burnet County reported a 15 percent increase in crashes between these two years, while Williamson County crashes increased 133 percent. Between 2010 and 2017, the regional crash rate increased 22 percent from 138 crashes per 100 million vehicle miles traveled annually to 168.4, before dropping to 160.6 in 2018. The good news for the CAMPO region is that despite the increase in crashes, the region has remained below statewide crash rate levels throughout this nine-year period.

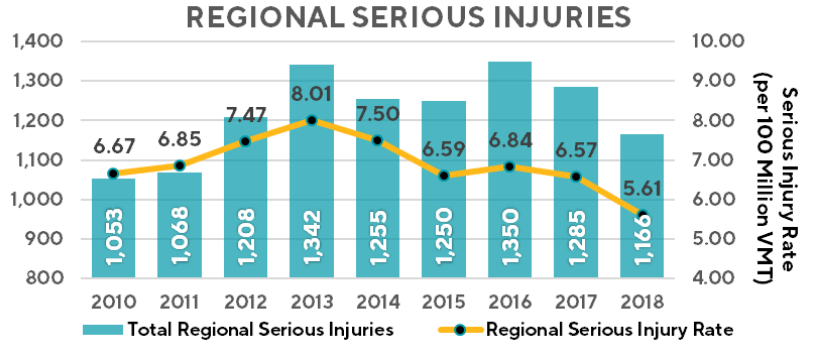
While decreasing in 2017 and 2018, regional fatalities increased over 60 percent between 2010 and 2016. During these nine years, one-third of these deaths involved vulnerable road users such as pedestrians, bicyclists, and motorcyclists. Thirty-two percent of fatalities (622 deaths) involved alcohol. Twenty-one percent (405 deaths) were not wearing seat belts.

While total crashes and fatalities increased significantly, serious injuries rose at a slower rate between 2010 and 2016. However, even with the slower rate of growth, there were still 28 percent more serious injuries reported during this period.









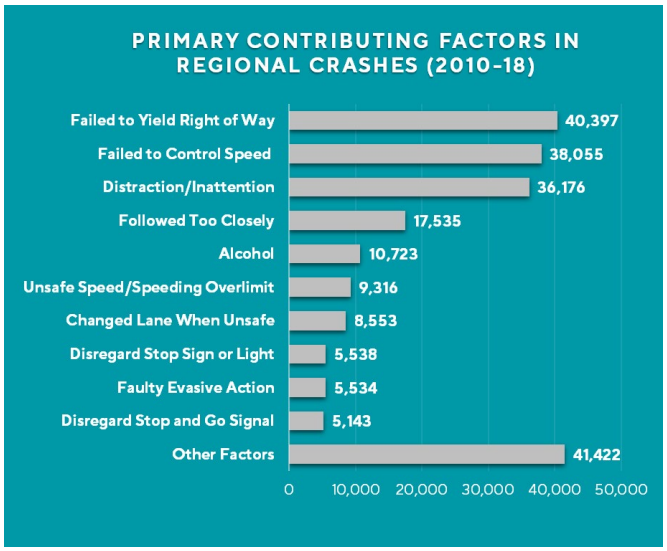
The number of crashes has a strong relation to the amount of traffic on the roadways. More crashes occur in peak travel periods during the work week (Monday–Friday, 7 a.m.–9 a.m and 4 p.m.–7 p.m.), as there are more vehicles on the road. Fridays have the greatest number of crashes, most likely due to commutes to and from work, as well as travel related to the weekend. While there are more crashes during the work week, traffic fatalities tend to occur more often on the weekend. Nearly 40 percent of the region's fatal crashes occurred between Friday at 7 p.m. and Sunday at 11:59 p.m. This may be due to faster speeds and increased alcohol consumption during the weekend.

REGIONAL CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	1,264	1,205	1,683	1,271	799	628	574	605	674	796	973	1,180	1,567	1,681	1,641	1,628	1,663	1,608	1,714	1,470	1,302	1,209	1,059	823
MON	580	494	644	374	302	461	1,095	1,950	2,058	1,433	1,277	1,523	1,964	1,938	1,939	2,221	2,790	3,013	2,356	1,475	1,118	1,038	800	620
TUE	450	369	481	277	241	451	1,253	2,363	2,352	1,642	1,371	1,571	1,937	1,906	1,973	2,378	2,942	3,341	2,724	1,678	1,238	1,200	895	716
WED	543	403	548	330	236	436	1,165	2,345	2,437	1,543	1,324	1,502	1,843	1,875	1,948	2,238	2,802	3,352	2,735	1,695	1,314	1,160	1,026	694
THU	560	460	629	326	272	425	1,128	2,252	2,265	1,462	1,398	1,576	1,965	1,993	1,992	2,256	2,945	3,371	2,799	1,823	1,386	1,348	1,069	881
FRI	668	592	920	579	369	490	1,125	1,984	1,996	1,583	1,458	1,937	2,369	2,521	2,539	2,908	3,583	3,549	2,869	2,191	1,668	1,620	1,528	1,309
SAT	1,100	1,170	1,599	1,003	668	615	668	729	973	1,224	1,522	1,868	2,108	2,142	2,123	2,109	2,072	2,001	2,015	1,680	1,425	1,495	1,491	1,345

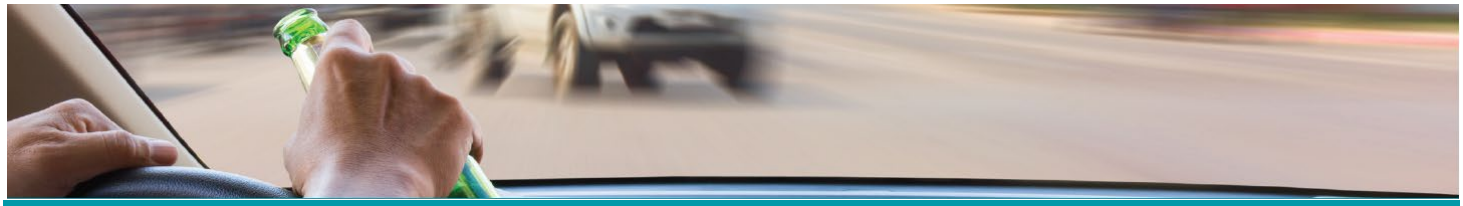
The crash data show that age may play a role in the possibility of being in a crash. Regionally, drivers under 30 years old cause 46 percent of the region's crashes. However, this demographic represents only 20 percent of the population. Drivers between 16 and 20 years old cause 14 percent of the region's crashes, while making up only 7.3 percent of the population. This overrepresentation suggests that additional efforts are needed to promote safer driving practices in the age group.

In regard to the primary causes of crashes, the data show that a vast majority of crashes are due to behavioral reasons where a driver either is not driving appropriately, not paying attention, or fails to adequately control the vehicle. Three primary factors—Failure to Yield Right of Way (18.5 percent), Failure to Control Speed (referring usually to the inability to slow a car fast enough to avoid a crash, 17.4 percent), and Distraction/Inattention (16.6 percent)—make up over half of the causes of crashes. Speeding and driving under the influence of alcohol only consist of 13 percent of crashes in the region. However, in terms of their deadliness, these two factors combined contributed to 44 percent of all fatalities in the region.



AGE OF AT-FAULT ROAD USERS IN CRASHES (2010-2018)

	Bastrop	Burnet	Caldwell	Hays	Travis	Williamson
Under 16	54	26	34	102	650	217
16-20	1,990	1,077	955	5,157	18,935	8,517
21-24	1,458	669	704	4,783	20,711	5,701
25-29	1,239	667	639	2,952	21,297	5,475
30-34	1,024	506	498	2,051	15,874	4,593
35-39	850	451	444	1,683	12,206	4,058
40-44	789	414	399	1,325	9,930	3,532
45-49	742	411	377	1,374	8,436	2,951
50-54	709	395	400	1,154	7,362	2,620
55-59	657	378	297	1,043	6,142	2,181
60-64	468	306	265	807	4,578	1,686
65-69	395	257	171	598	3,086	1,339
70-74	255	221	116	398	1,800	970
75-79	186	167	103	294	1,184	684
80-84	109	116	73	180	782	480
85+	73	90	49	120	584	312



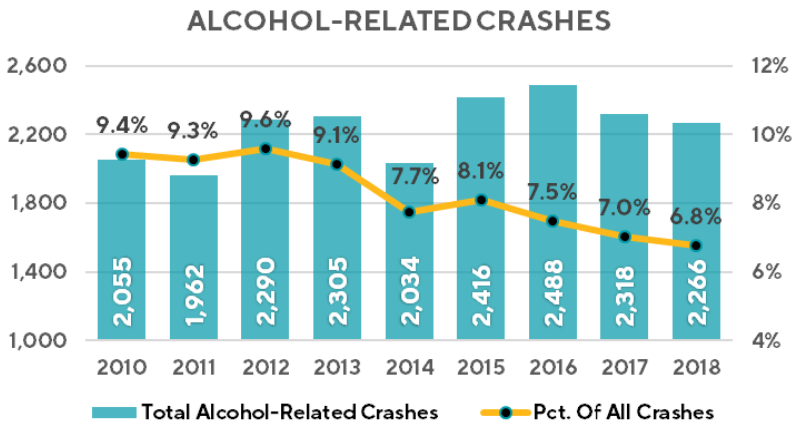
Alcohol-Related Crashes

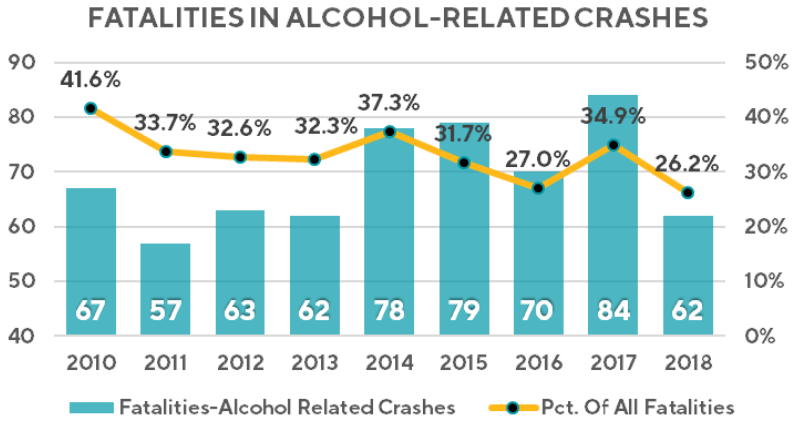
Driving under the influence of alcohol is a deadly and dangerous crime. According to the National Highway Traffic Safety Administration (NHTSA), drunk-driving fatalities in the United States have fallen by a third in the last three decades. However, approximately one-third of all traffic crash fatalities in the United States involve drunk drivers (with blood alcohol concentrations [BACs] of 0.08 or higher).

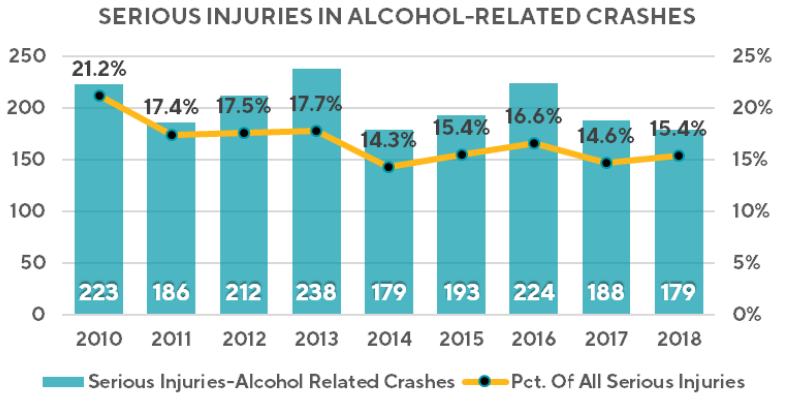
Alcohol can severely impair a driver's ability to safely operate a vehicle. Even a small amount of alcohol can reduce the function of the brain, impairing thinking, reasoning, and muscle coordination. In most states, it's illegal to drive with a BAC of 0.08 or higher. But even with a tough enforcement of drunk-driving laws, someone in Texas is hurt or killed in an alcohol-related crash about every 20 minutes.

In the CAMPO region, the percentage of alcohol-related crashes has been gradually decreasing over the past nine years. But the severity of such crashes remain alarming. Regionally, alcohol-related crashes consisted of 8 percent of all crashes from 2010 to 2018. However, fatalities resulting from these crashes constituted nearly 30 percent of all motor vehicle fatalities during this period and almost 17 percent of suspected serious injuries.

Alcohol-related crashes mostly occur in the evening, with the peak occurring between 2 a.m. and 3 a.m. when bars close. Weekends see a significant rise in alcohol-related crashes as people are likely to consume more alcohol on non-work days.







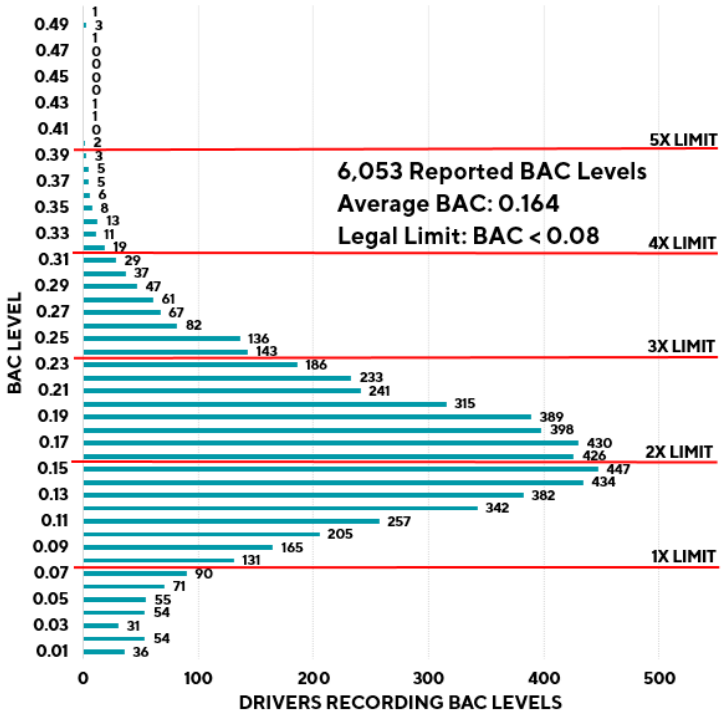
ALCOHOL-RELATED CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	423	470	739	470	258	161	112	73	40	21	19	18	45	28	40	55	79	118	170	204	262	272	273	244
MON	207	171	273	130	65	41	23	11	9	13	8	9	12	20	22	27	56	76	103	99	118	149	132	154
TUE	154	112	197	92	42	25	21	16	9	6	15	16	25	21	27	30	56	63	95	106	141	152	169	197
WED	163	147	245	116	46	33	20	15	9	8	9	9	27	18	25	41	37	85	88	124	115	154	186	175
THU	192	181	286	103	57	27	21	13	10	19	16	14	17	20	25	35	59	70	79	148	176	181	201	232
FRI	213	239	417	219	99	41	24	26	14	13	13	13	25	25	29	41	66	107	124	162	235	273	338	366
SAT	382	494	721	382	213	129	72	44	44	29	23	35	36	45	53	84	84	124	168	203	250	298	354	359

ALCOHOL-RELATED CRASHES BY AGE OF DRIVER (2010-2018)

	Bastrop	Burnet	Caldwell	Hays	Travis	Williamson
Under 16	0	2	0	3	6	0
16-20	53	35	42	248	1,009	241
21-24	103	92	82	681	2,621	467
25-29	114	91	70	368	2,746	516
30-34	81	61	73	233	1,885	344
35-39	59	38	41	160	1,237	284
40-44	54	44	33	102	871	205
45-49	50	46	32	91	603	188
50-54	57	31	34	94	543	162
55-59	42	28	18	53	353	120
60-64	20	16	10	33	194	61
65-69	12	7	3	17	94	27
70-74	2	5	2	7	29	7
75-79	0	1	2	4	9	2
80-84	1	2	1	1	4	0
85+	0	0	0	0	0	1

BLOOD ALCOHOL CONTENT (BAC) IN ALCOHOL-RELATED CRASHES, 2010-2018



While drunk driving is a problem for any age group, it is more common with younger drivers. Regionally, 43 percent of crashes involving alcohol were caused by drivers age 21 to 29, despite consisting of only 13 percent of the population.

Impairment begins with the first drink. At any BAC greater than zero, the risk of being involved in a crash rises. While the legal limit for BAC is under 0.08, regionally, the data show that, on average, impaired drivers in alcohol-related crashes have a BAC more than twice the legal limit.

TAKE STEPS TO PREVENT DRUNK DRIVING

- If you will be drinking, plan on not driving. Plan a safe ride home before you start the party. Designate a sober driver ahead of time.
- If you did not plan a safe ride, call a taxi, a ride share, a sober friend or family member, or use public transportation.
- If someone you know is impaired, do not let that person get behind the wheel. Take their keys and help them arrange a sober ride home.
- If you see an impaired driver on the road, contact local law enforcement. Your actions could help save someone's life.
- Always wear your seat belt—it's your best defense against impaired drivers.

CLICK IT OR TICKET

TxDOT has been focusing on the issue of impaired driving by encouraging drivers statewide to plan for a sober ride before enjoying festivities where drinking may occur. That is the core message that Plan While You Can campaign delivers and it coincides with an enforcement period in which DWI patrols will be at an increased capacity looking for drunk drivers on Texas roadways. Part of the Plan While You Can campaign includes SoberRides.org, which provides easy access for visitors to find safe options for getting home. For more information about TxDOT's Sober and Safe initiatives, please visit TxDOT's website at https://www.txdot.gov/driver/sober-safe.html.

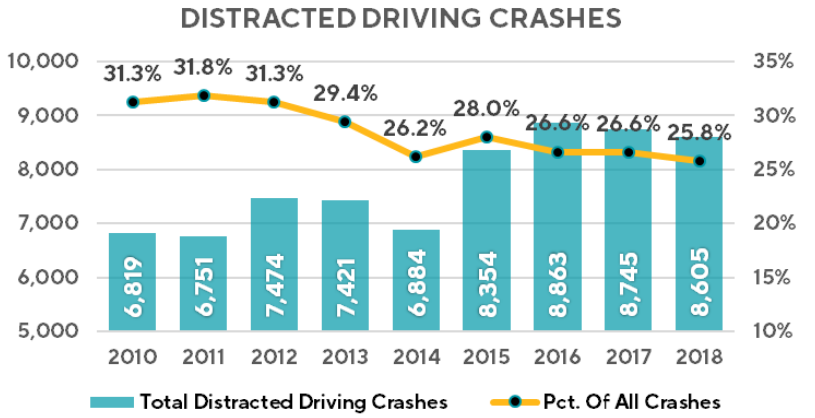
Distracted Driving

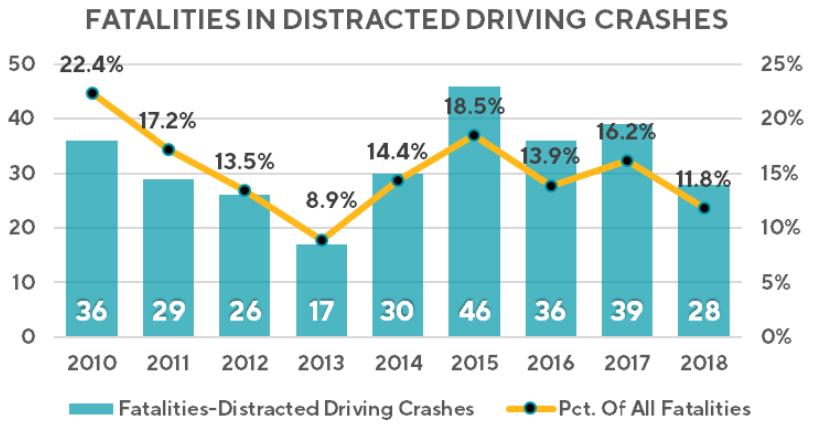
Distracted driving means driving while not fully paying attention to the road. While much of the focus involves texting or talking on the phone, distractions also include eating and drinking, adjusting stereo, entertainment systems, navigation systems, personal grooming, or anything that takes the driver's attention away from the task of safe driving.

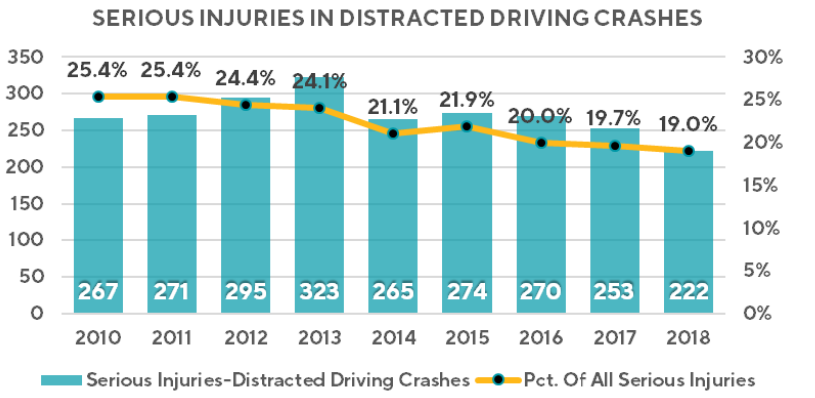
Much of recent focus for distraction involves the use of smartphone technology for texting and accessing information while driving. Sending or reading a text takes a driver's eyes off the road for 5 seconds. If a vehicle is traveling at 55 miles per hour, 5 seconds of inattention from the driver would result in the vehicle traveling the length of a football field (100 yards), effectively with their eyes closed.

Distracted driving has created enormous potential for deaths and injuries on the region's roadways. While statewide statistics attribute distraction to over 20 percent of all crashes reported, the CAMPO region identified over 28 percent of crashes resulting from distraction. Distraction contributed to nearly 15 percent of all motor vehicle fatalities during this period and 22 percent of suspected serious injuries.

Distracted driving crashes are most likely underreported. Unless the driver admits to distraction or a witness states that a driver engaged in a distraction, law enforcement cannot accurately determine if distraction was involved in a crash without obtaining a warrant for a driver's cell phone.

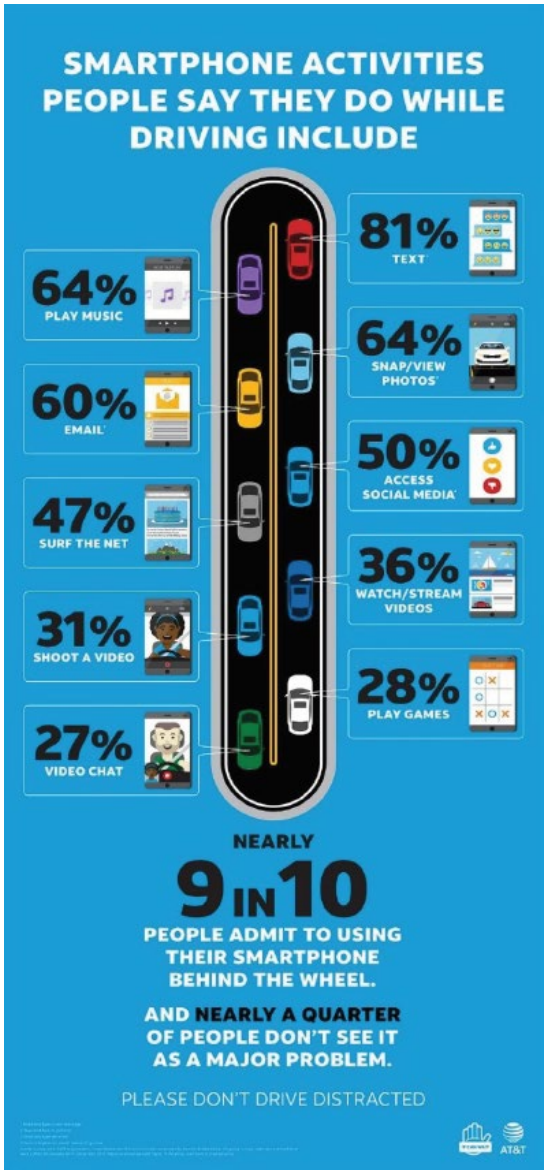






DISTRACTED DRIVING CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	342	293	403	315	225	154	116	121	165	215	244	335	411	496	491	510	534	468	504	402	368	341	292	207
MON	137	108	147	92	76	103	291	526	614	411	381	421	558	540	601	670	894	913	749	430	306	303	246	166
TUE	120	101	134	72	59	108	310	616	645	476	350	432	527	554	540	684	844	988	872	501	344	340	251	213
WED	143	95	144	81	68	112	272	574	663	444	337	399	478	513	565	650	844	1,063	830	519	398	371	294	197
THU	144	107	139	78	71	108	297	588	637	402	378	459	553	559	533	651	902	1,048	865	544	407	438	317	212
FRI	154	130	256	138	95	111	275	510	566	438	376	555	723	722	720	861	1,061	1,073	902	661	466	457	455	348
SAT	262	298	406	282	187	164	137	152	287	328	417	487	580	621	621	609	593	584	575	475	423	417	405	346



HEADS UP, TEXAS CAMPAIGN

In 2018, TxDOT launched its new Heads Up, Texas campaign in partnership with AT&T It Can Wait. According to AT&T It Can Wait, nearly all Texans surveyed consider smartphone distractions to be dangerous while driving, but nearly 9 out of 10, or 89 percent, admit they do it. The new Heads up, Texas campaign aims to educate Texans at a very local level on the new law and dangers of distracted driving. The centerpiece of the campaign is a 19-city, distracted-driving virtual reality experience brought to Texas for the first time. To learn more about TxDOT's Heads Up, Texas campaign, visit www.txdot.gov/driver/share-road/distracted.html.

Distracted driving is often seen as a young person's issue. Nearly 46 percent of all distracted driving crashes were caused by drivers under 30 years old. Adding distraction to less driving experience can exacerbate the problem. However, more experience on the road does not translate to a better ability to drive while distracted.

DISTRACTED DRIVING CRASHES BY AGE OF DRIVER (2010-2018)

	Bastrop	Burnet	Caldwell	Hays	Travis	Williamson
Under 16	13	11	2	17	132	35
16-20	681	288	298	1,676	6,235	2,565
21-24	435	161	172	1,343	6,713	1,596
25-29	339	127	149	861	6,653	1,493
30-34	263	127	124	565	4,814	1,217
35-39	214	86	98	478	3,722	1,056
40-44	197	92	99	364	2,904	914
45-49	176	103	84	367	2,417	715
50-54	186	86	102	316	2,172	697
55-59	165	85	80	288	1,860	571
60-64	114	70	72	202	1,356	411
65-69	96	59	51	153	933	336
70-74	89	47	32	112	535	220
75-79	57	44	43	87	354	176
80-84	30	43	30	59	211	113
85+	16	21	16	17	179	101

CURRENT TEXAS PROHIBITIONS

To curb distracted driving, Texas issued a new statewide law, effective September 1, 2017, to prohibit motorists from reading, writing, or sending electronic messages while driving. Many local jurisdictions have passed stricter ordinances that completely limit any cell phone use while driving. Exceptions to the new law include emergency communication or electronic messaging when the vehicle is stopped.

The following are the current Texas prohibitions:

- Drivers cannot send electronic messages in Texas.
- Drivers under the age of 18 are prohibited from using wireless communications devices.
- School bus operators are prohibited from using cell phones while driving if children are onboard.
- In school zones, all drivers are prohibited from texting and using handheld
- Local restrictions: Since 2009, more than 90 Texas cities have adopted one or more types of cell phone ordinances.

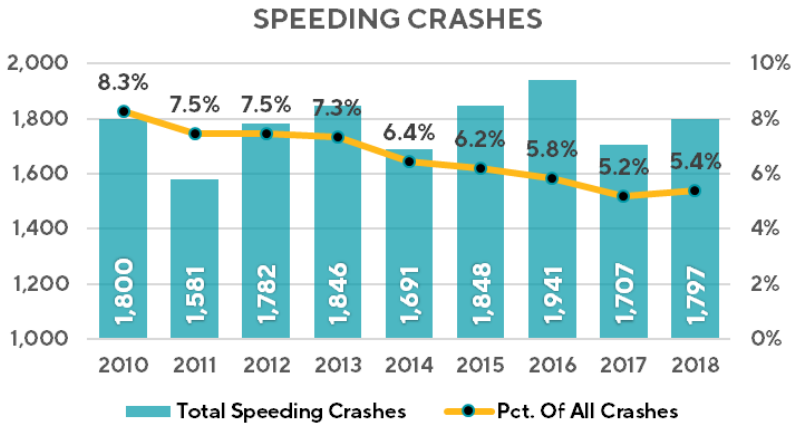
Speeding Crashes

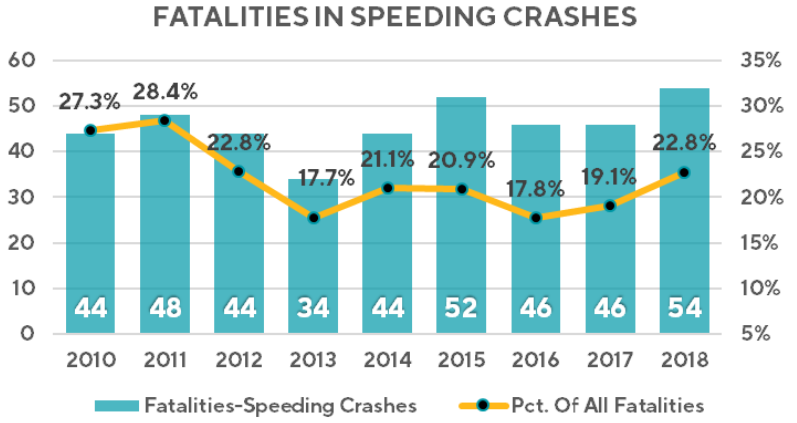
Speeding places the driving public at risk, including the speeder. Speeding can lead to a greater possibility for losing control of one's vehicle, increased stopping distance needed when approaching stopped traffic or roadway hazards, and the reduced effectiveness of designed protection equipment. While many may find them an inconvenience, speed limits are in place to protect the driving public.

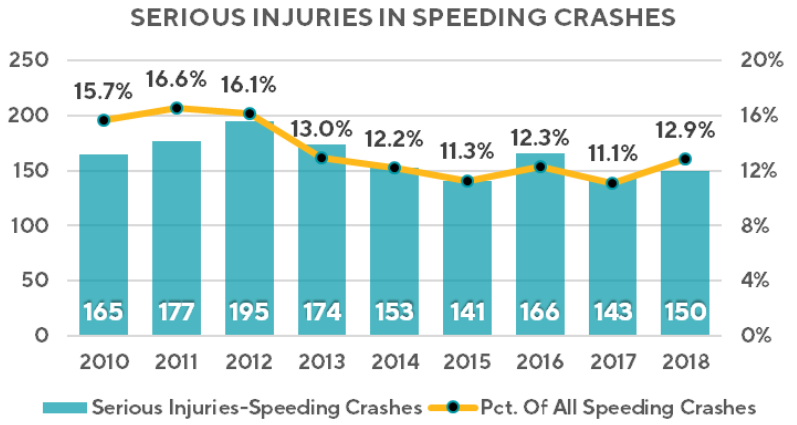
Regionally, speeding, which includes driving at excessive speeds and speeds unsafe for driving conditions, has been attributed to only 6.5 percent of all crashes in the region. However, crashes involving speeding account for 21.6 percent of all motor vehicle crash fatalities in the region. In those crashes 69 percent of the fatalities involved the speeding driver. In addition, speed related crashes caused 13.3 percent of motor vehicle crash injuries, where 62 percent of the speeding drivers sustained serious injury.

Speeding-related crashes may be underreported. Without anyone providing a witness account, law enforcement cannot always determine whether or not speeding was involved.

While speeding-related crashes tend to occur during peak travel periods during the work week, the highest level of incidents occur during the weekends between 12 a.m. and 4 a.m. Traffic is lighter during these periods, which may embolden drivers to go faster than normal.







SPEEDING CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	158	178	213	171	112	94	72	86	74	87	70	95	83	95	101	110	81	114	115	105	86	104	103	93
MON	60	58	80	43	30	52	81	100	80	58	77	82	86	82	89	113	101	117	109	86	87	75	69	56
TUE	61	51	68	34	33	46	86	118	101	94	83	69	89	78	114	106	137	143	122	100	72	95	79	75
WED	63	54	79	50	29	38	83	123	99	74	59	50	94	85	92	88	104	113	114	112	70	85	85	74
THU	67	78	96	36	37	42	76	91	94	62	73	76	74	82	86	93	122	124	129	104	87	102	108	100
FRI	82	77	98	73	49	72	89	131	113	104	88	92	99	105	111	122	137	163	158	121	125	116	124	137
SAT	152	145	202	133	84	72	87	85	75	97	118	101	105	123	102	131	139	142	132	129	119	138	146	169

SPEEDING CRASHES BY AGE OF DRIVER (2010-2018)

	Bastrop	Burnet	Caldwell	Hays	Travis	Williamson
Under 16	7	7	10	18	60	14
16-20	183	214	189	511	1,613	549
21-24	131	138	134	488	1,451	327
25-29	118	122	123	288	1,390	304
30-34	84	82	89	187	838	227
35-39	69	65	66	149	633	168
40-44	53	67	52	108	508	138
45-49	54	51	52	90	391	106
50-54	60	51	62	81	313	84
55-59	25	36	34	79	243	84
60-64	28	23	22	48	162	48
65-69	10	11	10	35	82	33
70-74	12	9	5	12	42	12
75-79	7	9	3	12	24	5
80-84	1	3	1	6	11	2
85+	1	2	2	1	8	1

Younger drivers tend to be more often at fault in speeding-related crashes. Drivers under age 30 caused nearly 58 percent of speeding-related crashes with nearly 39 percent of those offenders being age 16-20. Risk-taking may play a role in the desire to speed; the lack of driving experience in this age group may also be contributing to the problem.

Increased enforcement of speeding laws has the greatest impact on speeding. However, there are not enough law enforcement personnel to adequately enforce speed limits. Automated speed enforcement systems have been implemented in several states throughout the country. However, Texas legislators have expressed minimal interest in the implementation of such systems.

SETTING SPEED LIMITS ON TEXAS ROADS

TxDOT and local communities have jurisdiction over setting speed limits on their roadways. Speed limits are developed based on the design of the roadway and the corresponding maximum speeds that the designs can handle. Speeds can be lowered if a roadway has many curves and hills, multiple driveways, a high crash history, too narrow lanes, or a lack of shoulders. To receive consideration, a study has to be conducted to determine that a reduced speed would be appropriate for the facility. For more information about how speed limits are set, please visit TxDOT's website at www.txdot.gov/government/enforcement/speed-limits.html.

DEALING WITH AGGRESSIVE DRIVERS

- If you are in the left lane and someone wants to pass, move over and let them by.
- Give speeding drivers plenty of space. Speeding drivers may lose control of their vehicle more easily
- Adjust your driving accordingly. Speeding is tied to aggressive driving. If a speeding driver is tailgating you or trying to engage you in risky driving, use judgment to safely steer your vehicle out of the way.
- Call the police if you believe a driver is following you or harassing you.

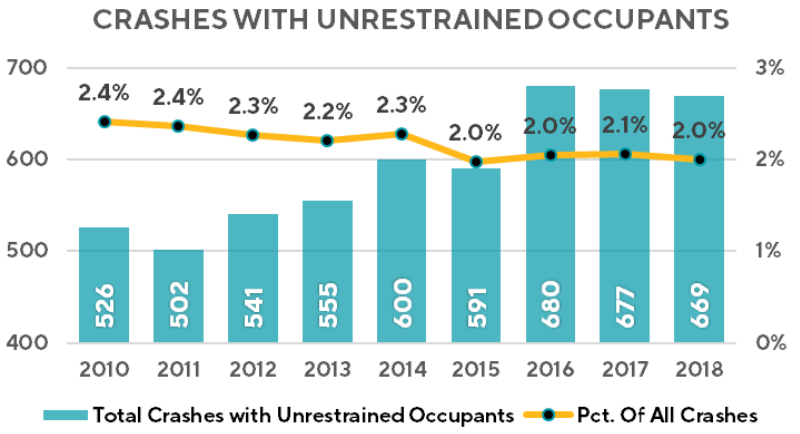
Unrestrained Crashes

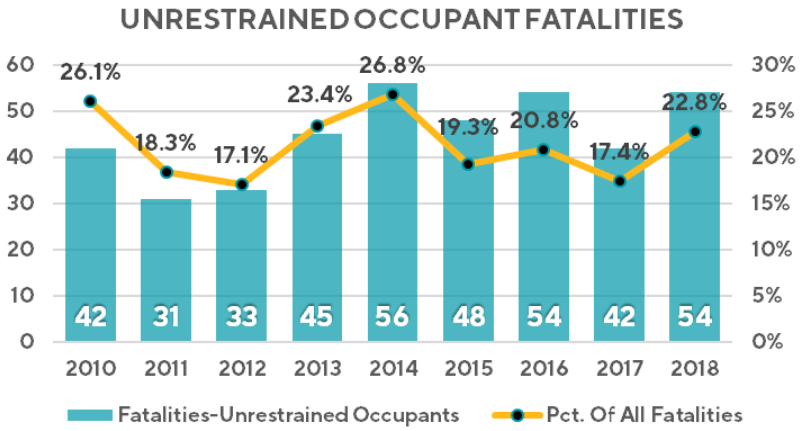
While seat belt use continues to increase in the State of Texas (92 percent in 2017, up from 68 percent in 1992), many lives are lost each year in unrestrained crashes. Wearing a seat belt has a dramatic impact on safety, as being restrained can improve a vehicle occupant's chances of surviving a crash from 45 to 60 percent.

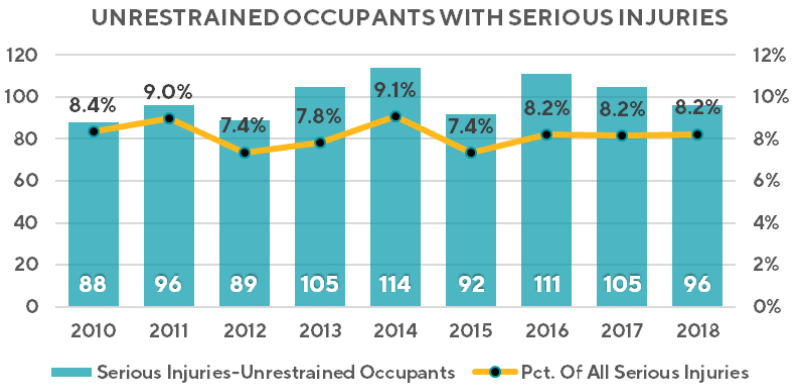
The total number of crashes with at least one unrestrained occupant remains relatively low in Central Texas, representing 2.2 percent of all crashes between 2010 and 2018. Despite the compliance in seat belt usage, over 21 percent of the region's fatalities involved an individual that was not properly restrained.

In 2009, Texas passed two laws to help enforce seat belt and proper restraint usage. All individuals in a vehicle, including those in the back seat must wear a seat belt. In addition, children younger than eight-years old (unless 4 feet 9 inches tall) must be in a child safety seat or booster seat.

The time of day does not necessarily impact whether or not an unrestrained occupant is involved in a crash. Crashes with unrestrained occupants occur when most crashes occur. However, there is a higher concentration of unrestrained crashes during overnight hours on the weekend, when more alcohol-related crashes occur and judgment is impaired. Of the region's unrestrained fatalities, 40 percent involved a driver that was found to be under the influence of alcohol.







CRASHES WITH UNRESTRAINED PASSENGERS BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	57	54	94	50	32	30	23	13	12	15	20	22	19	30	27	29	40	42	34	37	43	45	31	24
MON	23	18	27	8	8	17	18	41	37	20	15	27	24	20	36	57	59	40	46	30	26	21	28	21
TUE	33	16	26	9	6	18	28	41	28	25	25	26	31	36	34	51	66	49	28	39	34	36	30	25
WED	21	18	26	18	6	10	23	58	31	28	13	21	24	28	29	44	36	49	28	40	35	20	22	33
THU	23	16	21	18	15	6	21	36	29	18	17	25	21	35	29	44	54	59	46	42	22	36	17	20
FRI	31	33	43	20	15	12	29	45	33	19	28	29	35	38	45	47	63	53	45	50	41	50	42	41
SAT	46	52	76	47	22	18	25	17	27	27	22	31	33	39	34	28	39	47	44	27	43	39	51	59

UNRESTRAINED OCCUPANTS BY AGE IN CRASHES (2010-2018)

	Bastrop	Burnet	Caldwell	Hays	Travis	Williamson
0-7	64	128	65	73	643	138
8-15	277	110	106	443	1,243	437
16-20	184	66	65	332	907	351
21-24	85	29	41	207	619	139
25-29	54	34	31	102	549	143
30-34	41	23	31	64	397	88
35-39	31	19	20	54	306	76
40-44	25	14	9	46	255	52
45-49	14	19	18	38	237	53
50-54	16	14	8	43	216	40
55-59	19	10	7	33	175	31
60-64	15	7	8	20	118	26
65-69	6	4	0	17	72	19
70-74	8	5	3	10	30	10
75-79	3	0	1	9	19	10
80-84	3	6	3	10	13	6
85+	3	0	0	3	5	4

Looking at unrestrained occupants by age, there are several issues that stand out, specifically regarding young passengers and drivers. Over half of the unrestrained individuals in crashes were under 21 years old. Children under 8 years of age, who should be in child restraint systems or booster seats by law, represent 10 percent of all unrestrained individuals in crashes. In addition, nearly a quarter of all unrestrained individuals in crashes were between ages 8–15.

While increased educational campaigns to help promote the usage of seat belts and other restraints, the data suggest that education needs to begin at home for children. Parents need to ensure that younger children are in appropriate restraint systems or in booster seats. In addition, parents should promote seat belt usage by their older children.

CLICK IT OR TICKET

Since 2003, NHTSA has conducted the national Click It or Ticket safety awareness campaign to encourage the use of seat belts. The Click it or Ticket campaign is an example of a high-visibility enforcement campaign designed to increase the perceived enforcement of a particular law. FHWA reports that campaigns to educate the public about law enforcement efforts aimed at a particular behavior have been shown to be effective. According to FHWA, "the key to this program's success was the media coverage and other informational campaigns telling the public that law enforcement officers are looking for people who are not wearing a seat belt. In other words, for those people who do not typically wear a seat belt, the law itself was not sufficient motivation to change. The motivation came from a perceived threat of being caught and ticketed." NHTSA reports that this campaign has contributed to the continued increase in seat belt usage in the United States. Seat belt compliance rose from 61 percent in 2003 to 84 percent in 2011. Almost 85 percent of those surveyed after the 2011 campaign were able to recognize the Click It or Ticket campaign slogan.

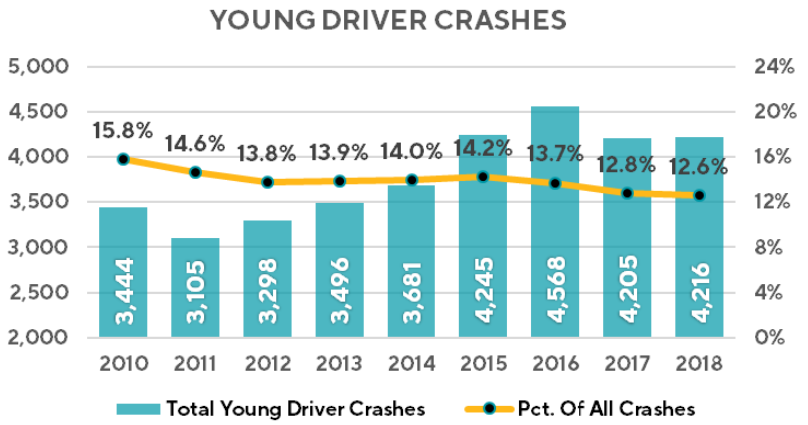
YOUNG DRIVER CRASHES

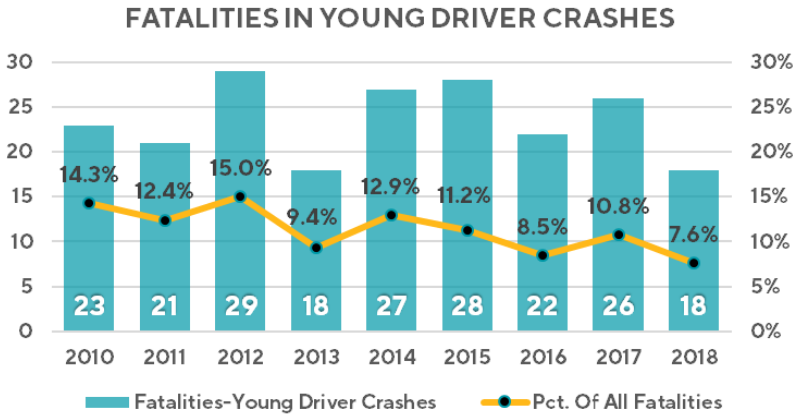
Young drivers ages 16 to 20 cause a disproportionate number of motor vehicle crashes compared to other drivers. From 2010 to 2018, drivers in this age group caused nearly 14 percent of the region's crashes in the CAMPO region. This compares to the 7.3 percent of the population this age group constitutes.

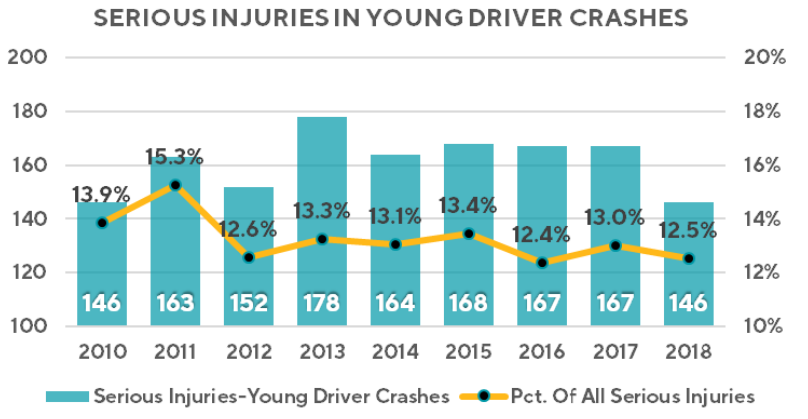
The number of crashes caused by young drivers trended upward during this period. The number of incidents increased 47 percent from 3,105 in 2011 to 4,568 in 2016. However, as a percentage of all crashes, the trend is going downward, dropping from 15.8 percent in 2010 to 12.6 percent in 2018. Young drivers have been responsible for 11 percent of the region's fatalities and over 13 percent of injuries.

Young driver crashes tend to occur during the travel peak periods on weekdays than any other time. This corresponds also with travel times to and from school. A relative lack of driving experience, combined with increased commuting traffic, presents a greater opportunity for a young person to be involved in a crash. In addition, an increase in crashes involving young drivers is seen during weekends.

Texas leads the nation not only in traffic fatalities involving young drivers, but also in fatalities where the young driver is the one who dies in the crash.



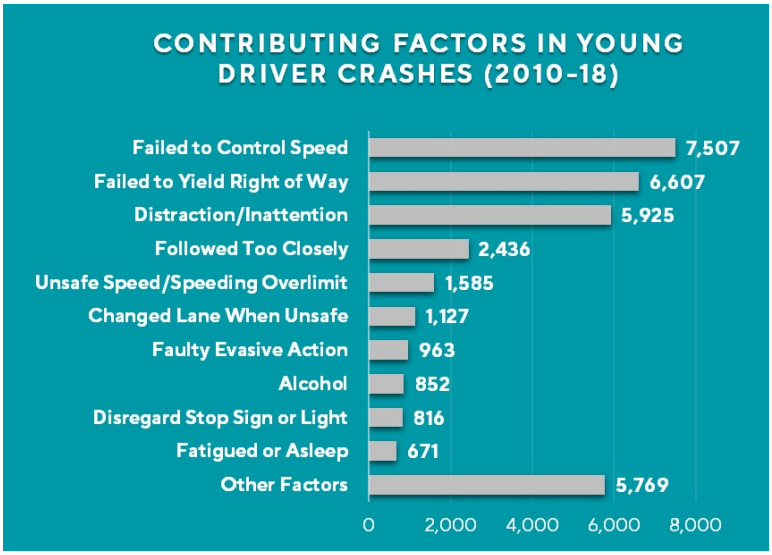




YOUNG DRIVER CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	171	150	155	136	114	99	104	83	101	104	145	167	222	240	266	251	287	261	260	230	183	183	149	119
MON	78	58	62	65	28	52	101	205	298	155	159	193	263	286	276	306	457	454	314	204	170	169	140	83
TUE	59	41	51	38	21	48	99	226	310	186	155	189	244	244	266	348	489	457	362	248	195	210	150	100
WED	63	44	44	35	27	35	99	253	340	172	146	170	231	241	284	305	477	516	406	254	195	179	158	106
THU	63	56	55	31	34	47	90	266	313	158	173	191	270	259	283	322	506	482	410	270	223	211	156	125
FRI	93	63	87	72	41	49	91	233	292	195	171	227	330	325	380	437	615	547	427	328	240	233	260	216
SAT	157	137	152	101	103	84	101	102	135	132	222	235	325	347	315	328	328	323	302	254	217	211	237	192

The top three contributing factors in young driver crashes in the CAMPO region include failure to control speed, failure to yield right of way, and distraction, inattention, and cell/mobile device use. They account for over 58 percent of all factors that lead to young driver crashes.



GRADUATED DRIVER LICENSE

Texas has a Graduated Driver License (GDL) Law to help reduce crashes and allow young drivers to improve their driving skills over time. The GDL Program places certain restrictions on drivers under 18 of age:

- Requires completion of classroom and behind-the-wheel training before testing for a license.
- Prohibits young drivers from having more than one passenger in a vehicle under 21 years old who is not a family member.
- Prohibits vehicle use between midnight and 5 a.m., except for school, emergency, or work-related activities.
- Prohibits the use of any wireless communication device, including a hands-free phone.

SAFETY TIPS FOR TEEN DRIVERS AND PARENTS OF TEEN DRIVERS

For Teen Drivers:

- Keep your cell phone silenced and hidden.
- Ensure that you and all passengers wear a seat belt at all times.
- Don't text.
- Turn on your headlights.
- Obey the speed limit.
- Minimize distractions.
- Drive solo.
- Practice defensive driving.

For Parents of Teen Drivers

- Pick a safe car.
- Enroll your teen in a driver's education course.
- Discuss the dangers of drug and alcohol use.
- Understand the dangers of distracted and impaired driving.
- Be a good role model.

TEENS IN THE DRIVER SEAT

Started in 2002, Teens in the Driver Seat® (TDS) is the first peer-to-peer program for teens that focuses solely on traffic safety and addresses all major risks for this age group. It is part of the solutions that Texas adopted to save teen lives from car crashes. It is also an initiative under the Texas A&M Transportation Institute's Youth Transportation Safety Program. Over 1,300 schools now have implemented the TDS program, and the program has also been deployed in 38 states outside Texas. For more information about the TDS program, please visit their website at: www.t-driver.com.

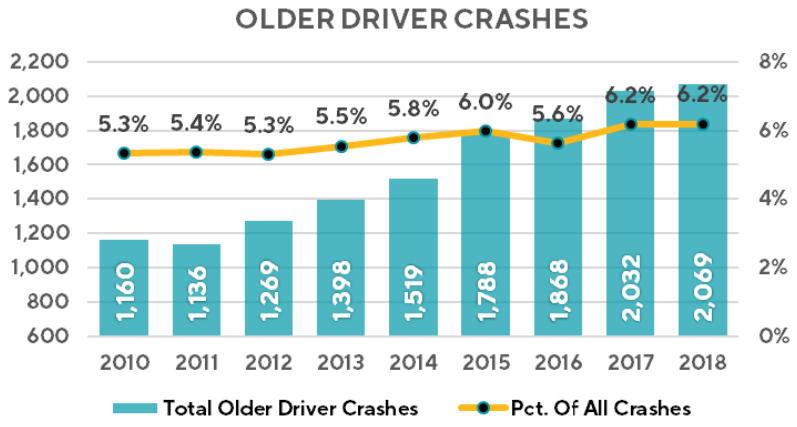
Older Driver Crashes

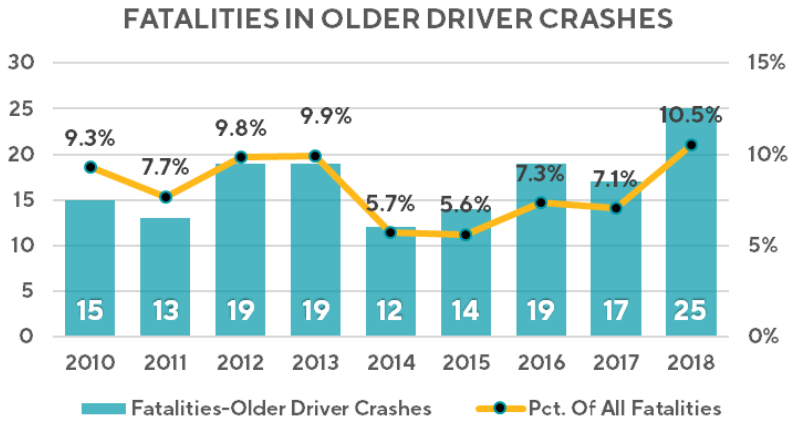
Older drivers, age 65 and above, are increasingly exposed to age-related vulnerabilities that may prevent them from driving safely. Though age is not the sole predictor of driving ability and safety, ample evidence shows that changes in physical and cognitive conditions, such as decline in vision and slower reaction time, occur as people get older. These conditions can lead to a greater crash risk.

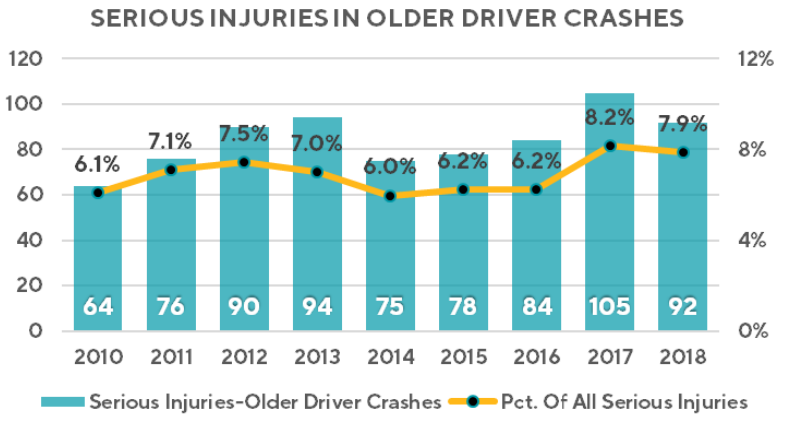
Crashes involving older drivers, while only a fraction of the region's crashes, are notable because of the growing frequency of such crashes. These crashes consist of less than 6 percent of all crashes from 2010 to 2018, but the number of crashes have nearly doubled during that period. The fatalities constitute about 8 percent of all motor vehicle fatalities and 7 percent of suspected serious injuries.

With the increased frailty that comes with age, older drivers have a greater chance of being seriously injured in crashes. Additionally, when an older driver is involved in a crash, they are typically at fault.

A key to reducing older driver crashes is the availability of affordable and accessible alternatives for older adults to use for transportation. Mass transit service providers, such as Capital Metro and CARTS, provide services throughout Central Texas. Additionally, options have grown over the past few years with the advent of ridesharing services such as Uber and Lyft. However, reliance on these services can become expensive for older adults on a fixed income.

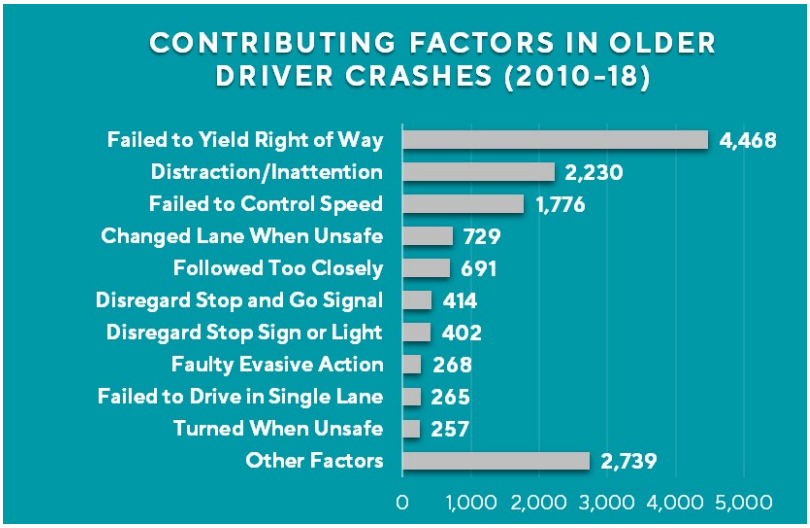






OLDER DRIVER CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	19	9	2	5	1	5	15	14	39	61	78	81	120	120	115	104	92	75	77	48	45	35	21	13
MON	7	3	3	2	5	15	47	81	103	124	121	158	187	190	186	173	197	168	125	70	50	37	16	12
TUE	4	0	5	7	2	11	53	99	132	139	183	165	184	180	183	189	204	180	150	76	58	48	16	10
WED	8	3	2	3	5	17	52	96	110	137	169	172	195	213	194	190	189	159	154	65	47	40	23	10
THU	12	3	3	6	3	15	42	82	110	120	171	192	209	189	203	202	197	169	158	81	53	53	34	10
FRI	6	9	4	2	4	9	39	81	114	128	163	219	236	237	213	217	220	194	162	99	74	40	40	14
SAT	13	7	7	4	4	9	18	25	57	88	138	142	159	133	147	140	111	101	96	69	42	47	20	16



SAFE DRIVING TIPS FOR OLDER DRIVERS

- Exercise regularly to increase strength and flexibility.
- Ask your doctor or pharmacist to review medicines, both prescription and over-the counter, to reduce side effects and interactions.
- Have eyes checked by an eye doctor at least once a year. Wear glasses and corrective lenses as required.
- Drive during daylight and in good weather.
- Find the safest route with well-lit streets, intersections with left turn arrows, and easy parking.
- Plan your route before you drive.
- Leave a large following distance behind the car in front of you.
- Avoid distractions in your car, such as loud radios, talking on your cell phone, texting, and eating.
- Consider potential alternatives to driving.

Texas passed new older driver laws in 2007 in response to a fatal crash caused by a 90-year-old driver. Since then, Texas drivers who are between age 79 and 84 must renew their license in person every six years and pass a vision test. Once reaching age 85, they must renew their license every two years in person and pass a vision test.

Besides law enforcement, family members and communities could also help to alleviate the safety issues associated with older drivers. To many people, driving represents freedom, control, and competence. That makes talking with an older person about their driving difficult. The talk is often delayed until the person's driving has become what others believe to be dangerous. At that point, conversations can be tense and difficult for everyone involved. To avoid that situation, one should think ahead and make plans for such a conversation with older drivers in their family or community.

GET AROUND WITHOUT DRIVING

- Potential services include city and regional buses, taxi cabs, personalized driver services, and shuttle buses offered by churches, senior centers, and retirement communities.
- Your local Area Agency on Aging can lead you to transportation services and benefits you might not be aware of.

DRIVE A SENIOR

The Drive a Senior Network is comprised of partner organizations who serve older adults living in Travis, Bastrop, and Williamson Counties. The program matches volunteer drivers with older adults who need transportation to essential services. The Drive a Senior program provides free rides through partner organizations in Elgin, West Austin, North Central Austin, South Austin, and Southwest Travis County. In 2017, these partners will provide a record number of free rides to support aging adults' ability to age in place in a healthy manner. For more information about the service, please visit Drive a Senior's website at https://driveasenior.org.

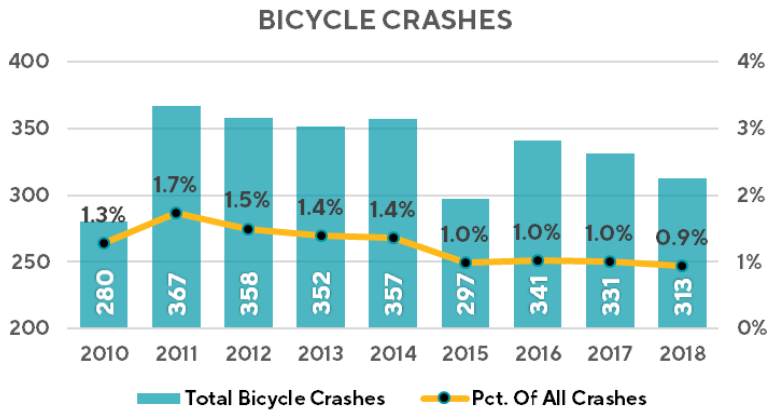
Bicycle Crashes

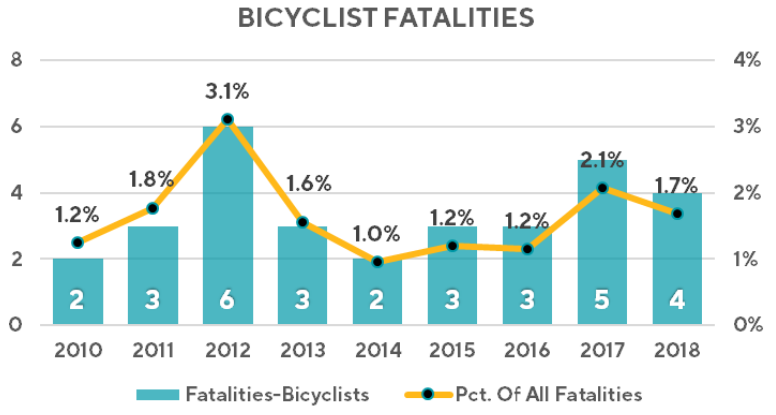
The CAMPO region has seen an increase in bicycling over the past decade. In a recent survey of over 2,000 residents in the region, almost three-fourths indicated that they bicycle. Austin and surrounding cities are expanding the bicycling infrastructure to meet this increasing demand.

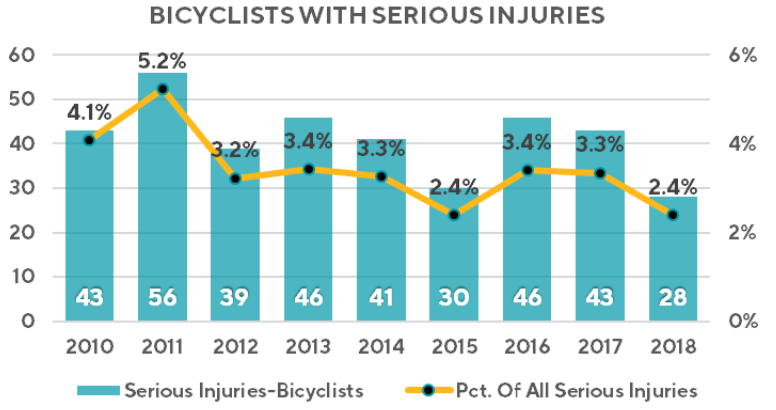
While bicycle crashes make up a small percentage of incidents, they usually result in injury due to the minimal protection that riders have. While the CAMPO region averages three bicyclist deaths a year, over 73 percent of crashes result in injury. The number of crashes is highest during the period between 7 a.m. and 8 a.m. and between 3 p.m. and 6 p.m. on weekdays.

With bicycling on the rise, one would expect that crashes and fatalities would be increasing. However, the number has been relatively consistent. The theory of safety in numbers may be at play here as motorists come to expect bicyclists on the road-way and are learning how to more safely operate around each other. Many identified bike routes are only delineated by a white line.

Texas law states that bicyclists have the same rights and responsibilities as a motor vehicle. Drivers should be extra cautious around bicyclists, providing extra space (at least 3 feet) when passing and watching for them when turning at intersections (this is required by ordinance in Austin and San Marcos). In addition, bicyclists must adhere to all traffic laws, obeying all signs and signals and signaling intent before turning.







BICYCLIST CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

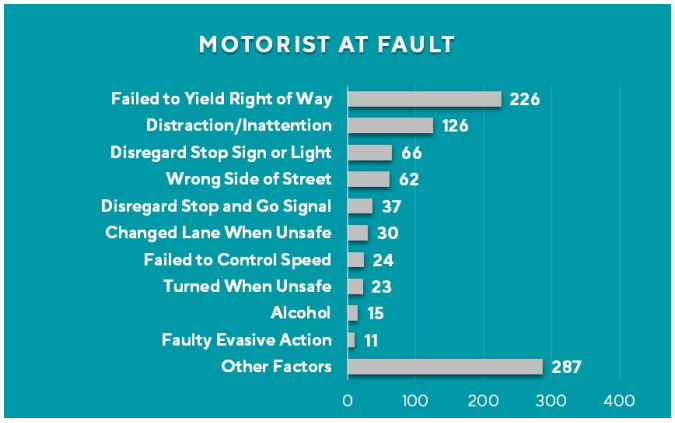
	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	6	4	23	4	5	0	4	4	12	12	15	17	21	11	15	14	24	26	23	16	14	16	13	8
MON	8	3	3	1	0	2	5	27	25	16	12	17	15	18	12	31	46	49	28	23	14	11	14	6
TUE	1	1	2	0	1	6	14	27	40	21	20	20	27	14	22	27	36	62	53	43	13	16	8	7
WED	5	3	3	0	2	3	13	33	41	6	11	16	21	21	23	28	40	55	46	22	25	16	13	9
THU	5	6	3	2	0	2	11	27	38	29	11	13	18	24	18	25	41	52	47	28	20	20	14	11
FRI	5	4	14	3	3	4	6	31	29	23	17	19	32	24	17	40	41	54	40	41	31	18	18	10
SAT	7	7	14	0	2	5	4	9	15	10	23	38	25	23	23	27	27	33	17	25	13	13	9	9

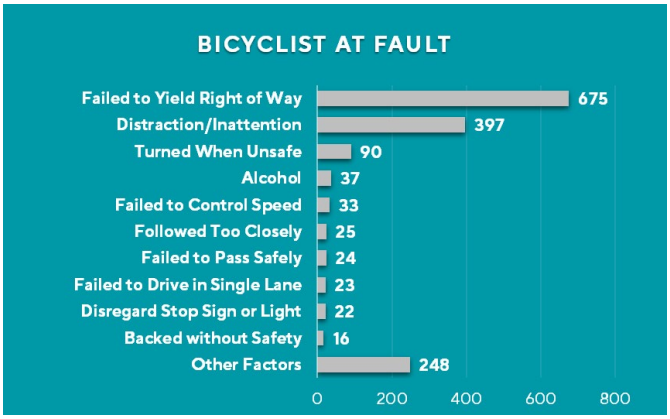
Bicyclist safety needs to be addressed by both bicyclists and motor vehicle drivers alike. While the cause of the majority of events (64 percent) are attributed to motor vehicle drivers, bicyclists were identified as the responsible party in 36 percent of bicyclist crashes.

For motorists at fault, over 42 percent of crashes resulted from failure to yield right-of-way and 25 percent of reported crashes resulted from driver inattention.

For bicyclists at fault, 25 percent of crashes resulted from failure to yield right-of-way and 14 percent of reported crashes resulted from distraction or inattention on the bicyclist's part.

CONTRIBUTING FACTORS IN BICYCLIST CRASHES (2010-2018)





TIPS FOR SHARING THE ROAD

MOTORISTS

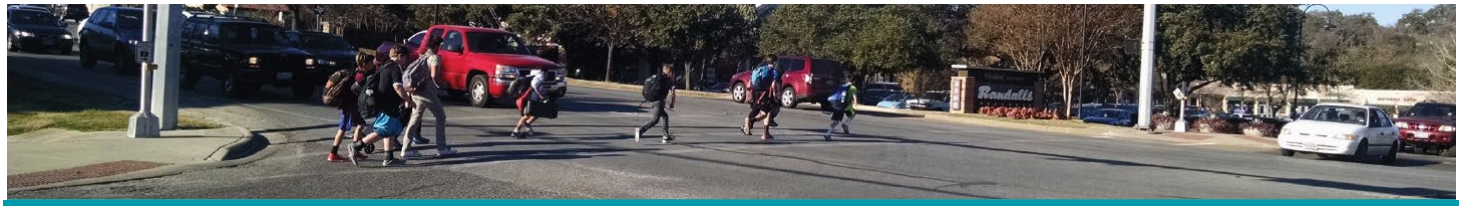
- Yield to bicyclists as you would any other vehicle.
- Provide 3 feet of space when passing a bicycle.
- Use your turn signals to indicate your intention to turn and change lanes.
- At intersections scan for pedestrians and bicyclists by looking left, right, and left again.

BICYCLISTS

- Use hand signals to indicate that you are turning, changing lanes, or moving from the straight line path.
- Yield to pedestrians (especially if riding on the sidewalk).
- Make yourself seen: wear reflective clothing and ensure your bicycle has appropriate lighting.
- Obey all traffic signs and signals.

BICYCLE SAFETY RESOURCES

The League of American Bicyclists (https://www.bikeleague. org) offers a Smart Cycling course, educational videos, and smart cycling tips. Online instruction is provided with links from their website. There are also resources locally from Bike Austin (https://bikeaustin.org) and TxDOT. Being predictable when riding a bicycle is one tip mentioned often. This means following the rules of the road, riding in a straight line, and signaling your intention. Wearing a helmet, light colored clothing at night and equipping the bicycle with lights are other safe practices.



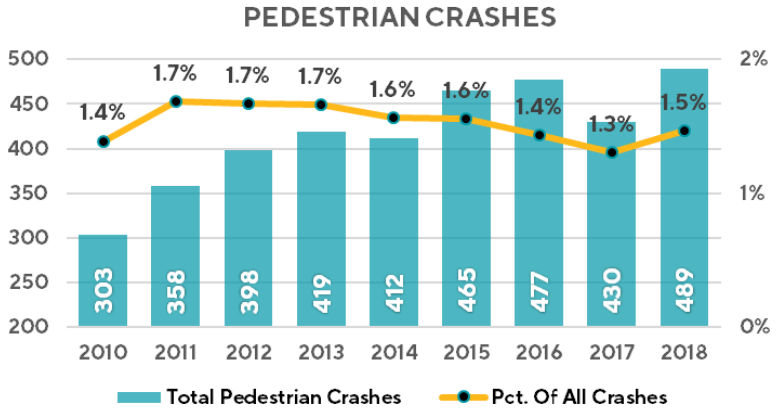
Pedestrian Crashes

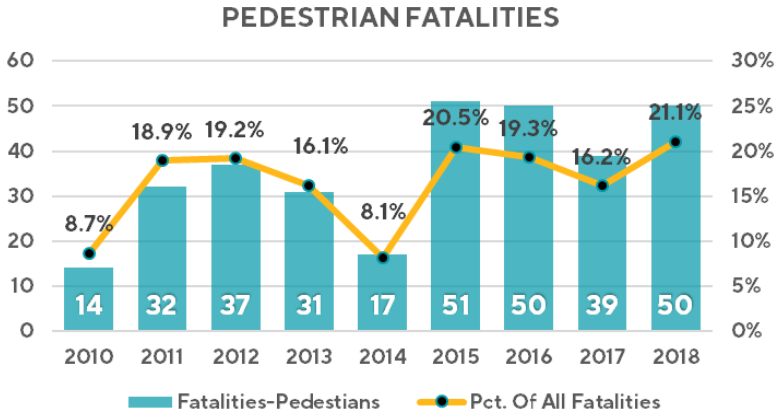
Nearly everyone in Central Texas becomes a pedestrian every day, whether they walk as their sole mode of transportation or if they are traveling by foot to and from their vehicles, public transit, or other modes of transportation.

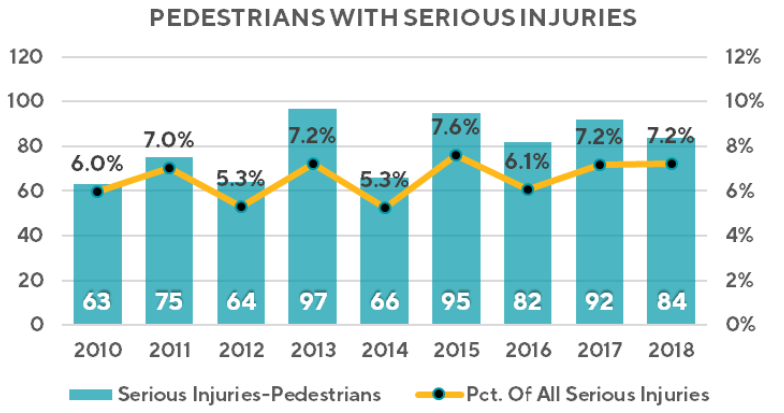
However, pedestrian crashes that occur with vehicles and result in injuries and fatalities continue to be a significant concern in Central Texas. Pedestrians are vulnerable road users, and unfortunately, conflicts that occur between pedestrians and vehicles are often catastrophic for the pedestrian.

The vulnerability of pedestrians is illustrated by the overrepresentation of pedestrian fatalities in the crash statistics. Pedestrian crashes represent 1.5 percent of all crashes between 2010 and 2018, yet they account nearly 17 percent of all fatalities and 6.5 percent of all serious crashes during this period.

Pedestrian crashes are most likely to occur during the evening peak travel times (4 p.m. to 8 p.m.) during the week, as increased traffic volumes and pedestrian activity increase the likelihood of conflicts. However, there is also an increase in pedestrian crashes occurring on the weekends between 1 a.m. and 2 a.m. This increase is likely due to a couple factors, including low-visibility and potential intoxication of drivers and pedestrians. TxDOT's Be Safe Be Seen campaign aims to increase visibility and awareness of pedestrians in order to decrease these conflicts.





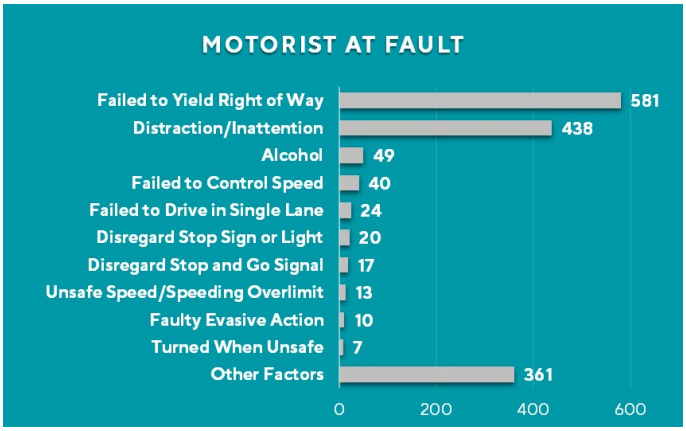


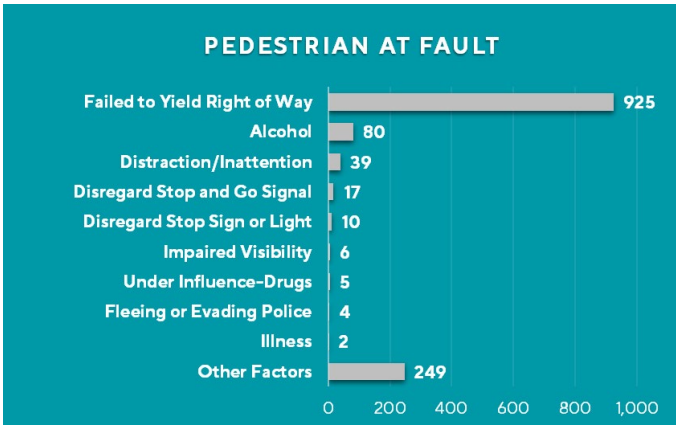
PEDESTRIAN CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	22	31	47	22	3	8	10	6	4	5	8	11	9	12	17	18	14	24	23	33	35	25	19	12
MON	18	4	7	4	2	8	22	25	34	12	11	19	20	26	12	25	49	31	50	34	36	34	26	9
TUE	7	8	11	4	4	3	28	28	39	18	12	19	25	18	20	44	36	47	57	49	42	31	23	17
WED	7	6	13	2	4	9	16	40	22	24	19	19	15	23	21	25	39	41	71	47	45	31	21	17
THU	11	6	14	3	3	8	13	29	31	15	12	16	23	24	22	34	29	41	49	41	40	34	24	10
FRI	12	9	23	4	1	5	19	20	32	22	16	32	22	22	31	28	43	45	44	48	48	43	38	20
SAT	19	25	40	19	8	7	9	11	11	12	12	14	20	11	12	21	21	20	27	29	32	36	41	32

The primary contributing factors in pedestrian crashes between 2010 and 2018 were when drivers failed to yield the right of way to the pedestrians (37.2 percent), and conversely, when pedestrians fail to yield the right of way to drivers (69.2 percent). While 54 percent of pedestrian crashes are attributed to motor vehicle drivers, the pedestrian was identified as the responsible party in 46 percent of pedestrian crashes.

CONTRIBUTING FACTORS IN PEDESTRIAN CRASHES (2010-2018)





BOTH VEHICLE OPERATORS AND PEDESTRIANS PLAY A ROLE IN IMPROVING PEDESTRIAN SAFETY

MOTORISTS

- Look out for pedestrians at all times.
- When approaching crosswalks, prepare to stop for pedestrians.
- Follow posted speeds, especially where there is heavy pedestrian traffic.
- Do not pass vehicles stopped at crosswalks—someone might be crossing.

PEDESTRIANS

- Follow all traffic signals and signs.
- Use marked crosswalks where available.
- Do not walk distracted.
- Wear clothing that makes you visible when it is dark.

TxDOT: BE SAFE BE SEEN PROGRAM

In 2017, TxDOT launched the Be Safe Be Seen program, which works with local businesses and schools along Interstate 35 in high traffic pedestrian areas and construction zones to increase awareness of pedestrian safety. TxDOT provides the community with reflective bags, safety maps, and community safety materials to increase awareness of pedestrian safety issues while also increasing the pedestrian's visibility when wearing the bags. TxDOT has worked closely with a range of organizations to engage the homeless community, as this population is overrepresented in pedestrian fatalities in Central Texas. TxDOT is currently working on evaluating the program with plans to expand its reach.

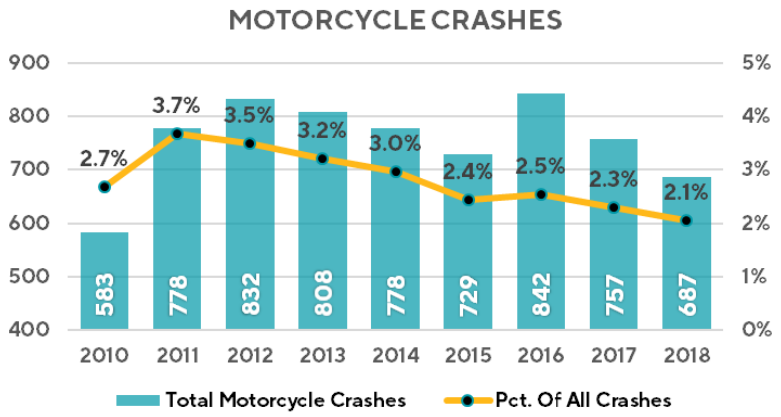
Motorcycle Crashes

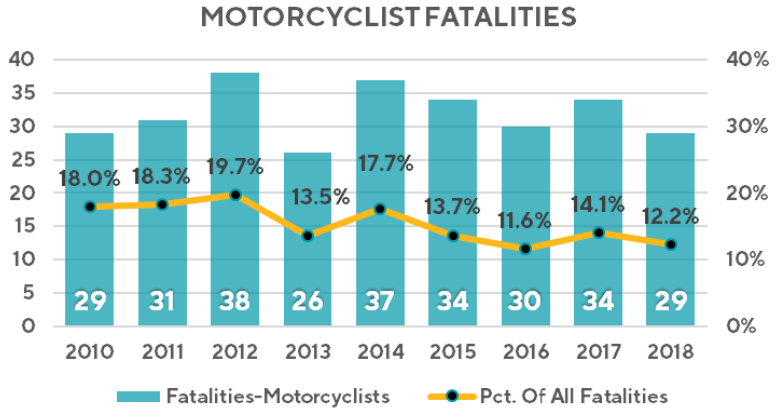
Motorcycles, including motorized scooters and mopeds, provide an inexpensive and unique driving experience. They provide better maneuverability in traffic, improved fuel economy, and easier parking. They also can serve as a recreational vehicle that allows for a sense of freedom and a connection with nature.

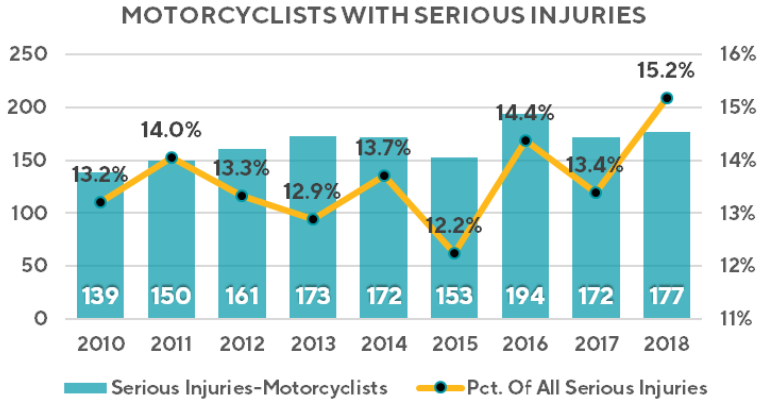
However, motorcycle riding comes with significant risks. Motorcycles have a very narrow profile compared to a car, making them difficult to identify, especially at night. Motorcycle riders have little room for error in controlling their bikes. A change in road surface can lead to a motorcycle's instability and potential loss of control. While motor vehicles provide a metal cage, seat belts, and airbags to protect their occupants, motorcyclists must strictly rely on their clothing and a helmet.

Motorcycle crashes, while only a fraction of the region's crashes, are notable because of the severity of such crashes. Regionally, motorcycle crashes consisted of less than 3 percent of all crashes from 2010 to 2018. However, motorcyclist fatalities constituted over 15 percent of all motor vehicle fatalities during this period and nearly 14 percent of suspected serious injuries.

While motorcycle crashes during the work week occur more often during peak travel periods, they occur more consistently throughout the day during the weekends. This may be due to the fact that many motorcyclists ride for recreational purposes during the weekend.







MOTORCYCLE CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

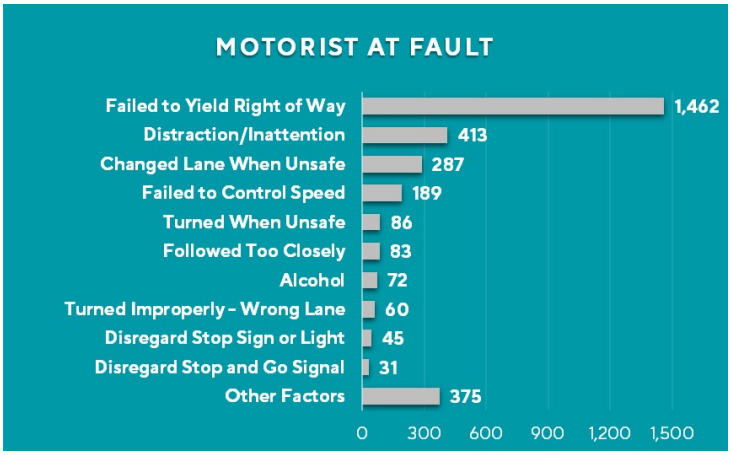
	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	42	32	46	23	7	8	5	9	18	19	44	59	59	75	70	80	81	78	57	60	45	35	35	29
MON	18	9	12	4	9	12	23	32	39	26	23	35	51	55	40	54	57	65	61	55	46	35	27	24
TUE	10	8	15	7	5	8	30	36	34	25	27	29	42	45	55	57	73	86	77	45	40	40	29	20
WED	17	14	15	7	6	13	24	55	39	23	28	38	41	38	47	63	62	88	79	57	44	40	22	22
THU	19	13	25	8	4	7	32	37	43	22	24	38	48	49	51	65	47	91	92	65	48	49	42	35
FRI	26	19	29	7	7	10	21	31	25	38	30	35	60	77	57	68	82	100	84	66	53	66	52	37
SAT	38	39	41	15	7	9	12	9	26	40	69	75	84	73	99	70	86	76	73	66	61	46	57	36

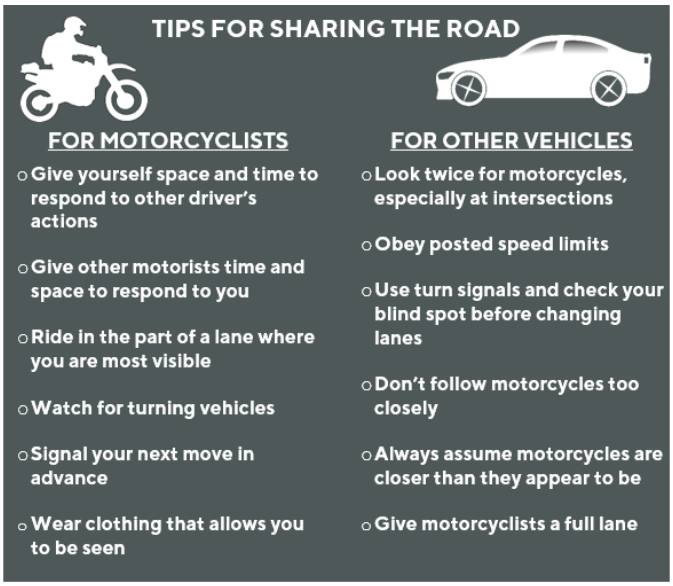
Motorcycle safety issues need to be addressed by both motorcyclists and motor vehicle drivers alike. Crashes are nearly equally attributed to both motorcyclists (53 percent) and other vehicles (47 percent).

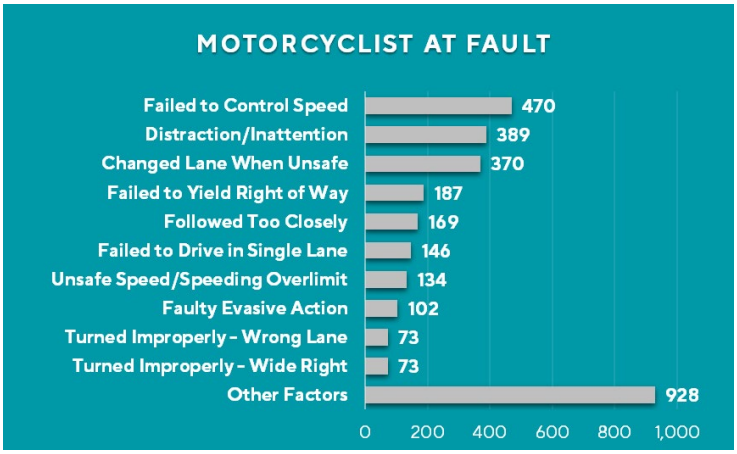
As for other vehicles identified as contributing to crashes, over 47 percent resulted from the other vehicle failing to yield right of way to the motorcycle. This may be due to the difficulty of seeing motorcyclists.

For motorcyclists at fault, 23 percent of reported crashes resulted from the motorcyclist failing to lower its speed or stop in time, and 15 percent of incidents resulted from the motorcyclist traveling at excessive or unsafe speeds.

CONTRIBUTING FACTORS IN MOTORCYCLE CRASHES (2010-2018)







MOTORCYCLE SAFETY COURSES

As of 2009, the Texas Department of Public Safety (TxDPS) requires new motorcyclists to take a Department-certified motorcycle safety course in order to receive a license to ride a motorcycle. TxDPS has developed these courses based on the curriculum created by the Motorcycle Safety Foundation, an internationally recognized organization that promotes safe motorcycling. While riders only need the Basic Course to receive a license, many providers also offer advanced safety courses for current riders, which enhances basic operating skills while focusing on crash-avoidance skills. For more information about these courses, please visit TxDPS's Motorcycle Training Location website at www.dps.texas.gov/msb/map.

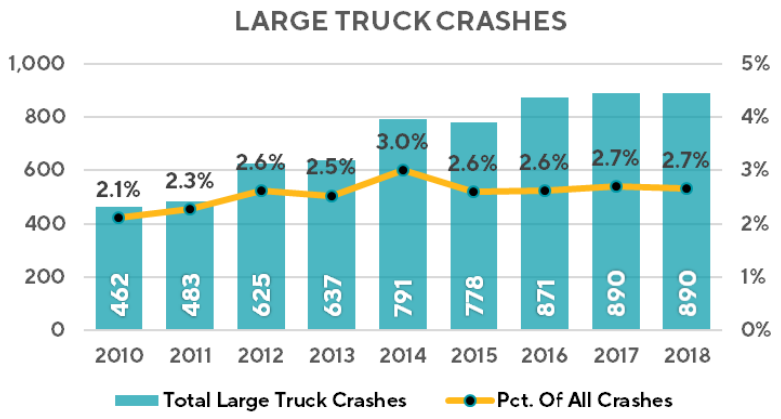
Large Truck Crashes

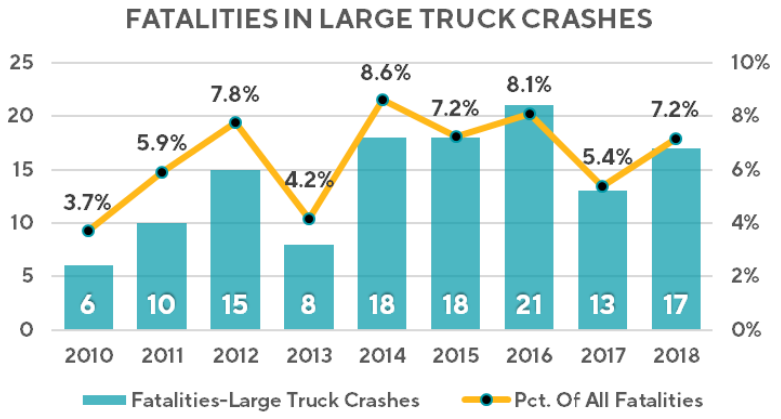
Large trucks are defined as weighing more than 10,000 pounds and can be either single-unit vehicles or combination vehicles consisting of a single-unit truck or tractor pulling one or more trailers. Due to the extreme size and weight differences, crashes between a large truck and a passenger vehicle usually result in significantly more damage and potential injury to the individuals in the passenger vehicle.

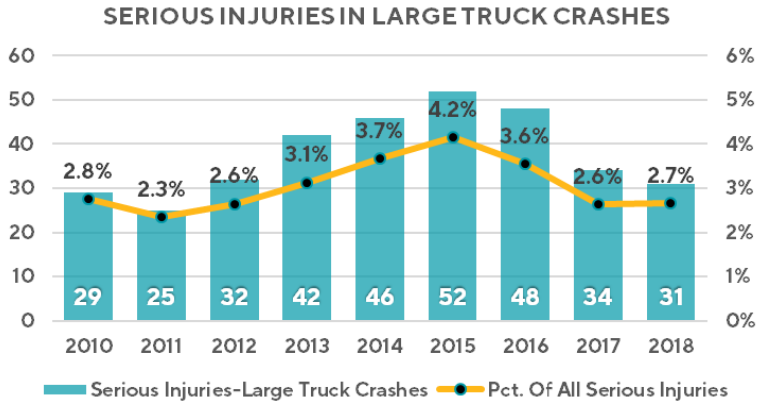
The number of large truck crashes have nearly doubled from 462 in 2010 to 890 in 2018. Although crashes involving large trucks account for less than 3 percent of the region's crashes, they represent 6.6 percent of all fatalities.

According to TxDOT's Roadway Inventory, large truck vehicle miles traveled in the region increased nearly 23 percent from 2010 to 2017. This is compared to only 16 percent for Texas as a whole. Interstate 35 and SH 130 serve as major trucking routes through the CAMPO region for goods transported to and from Mexico.

While most crashes occur during peak commuting periods during the work week, large truck crashes tend to cluster from 7 a.m. to 5 p.m., with peaks between 11 a.m. and 3 p.m. on weekdays. Truck traffic tends to be heavier during off-peak periods to avoid traffic and to conduct commerce with businesses during operating hours.







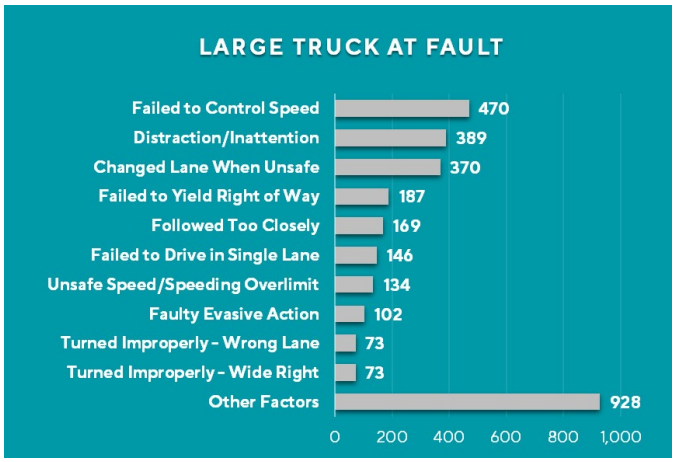
LARGE TRUCK CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

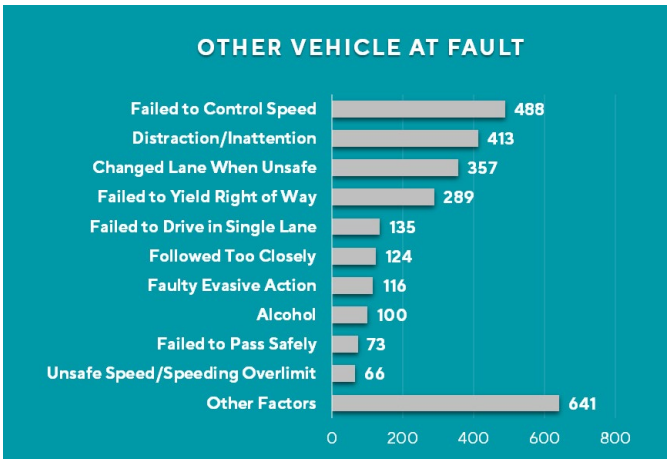
	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	6	15	9	13	12	7	12	9	6	7	7	18	18	10	21	17	21	15	15	23	14	18	19	18
MON	13	7	18	13	19	35	54	50	73	60	59	77	73	70	72	76	70	49	39	26	31	23	23	26
TUE	17	10	14	12	13	25	55	73	86	74	78	98	77	95	94	71	72	42	37	35	23	27	18	29
WED	25	21	18	20	20	30	56	72	79	65	68	69	81	87	75	57	55	62	40	19	25	19	23	20
THU	17	20	23	13	24	31	57	74	61	56	66	82	85	65	89	74	65	54	28	28	21	26	26	33
FRI	21	7	22	29	21	35	49	71	60	62	60	81	89	101	83	81	78	60	31	31	25	22	18	17
SAT	10	16	16	24	14	15	22	17	23	27	38	35	26	37	32	19	22	23	12	17	14	14	7	8

Drivers of large trucks and passenger vehicles need to share the road and be cognizant of each other's presence. Large trucks have signifigant blind spots that make it difficult to see smaller vehicles. In addition, large trucks require significantly more distance to stop than a passenger vehicle. Smaller vehicles that travel within a large truck's blind spot run the risk of being sideswiped by the truck. Additionally, smaller vehicles may pull in front of a truck quickly, requiring the truck to stop suddenly. A large truck operator may not be able to stop in time to prevent striking a passenger vehicle.

The top three contributing factors in large truck crashes include failing to control speed, distraction/inattention, and changing lanes when unsafe. These three contributing factors are identical regardless of whether the truck operator or passenger vehicle are at fault. It is notable that driving under the influence of alcohol or drugs is much less of an issue among truck drivers than it is with passenger vehicle drivers. The Federal Motor Carrier Safety Administration (FMCSA) requires carriers to test all commercial drivers for drugs before employment, after crashes, and on a random basis. Alcohol tests are required after crashes and on a random basis.

CONTRIBUTING FACTORS IN LARGE TRUCK CRASHES (2010-2018)





LARGE TRUCK SAFETY EFFORTS

FMCSA provides a wide range of safety resources for truck operators, including videos, infographics, and tips. Several focus areas covered include driving too fast for conditions, driver fatigue, distraction, and following too closely.

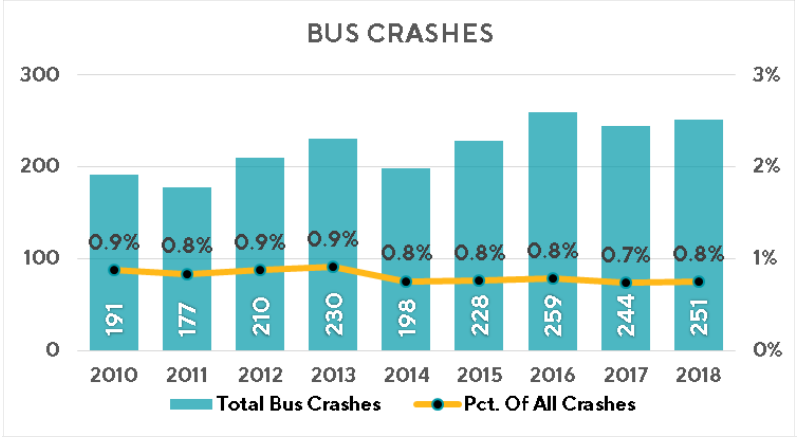
FMCSA also promotes safe road user behavior around large trucks. Their primary message is to give trucks space due to their size, blind spots, turning radius, and inability to stop quickly. While geared primarily toward motor vehicles, bicyclists and pedestrians must also be alert, especially at intersections. For more information about large truck safety, please visit the FMCSA website at www.fmcsa.dot.gov.

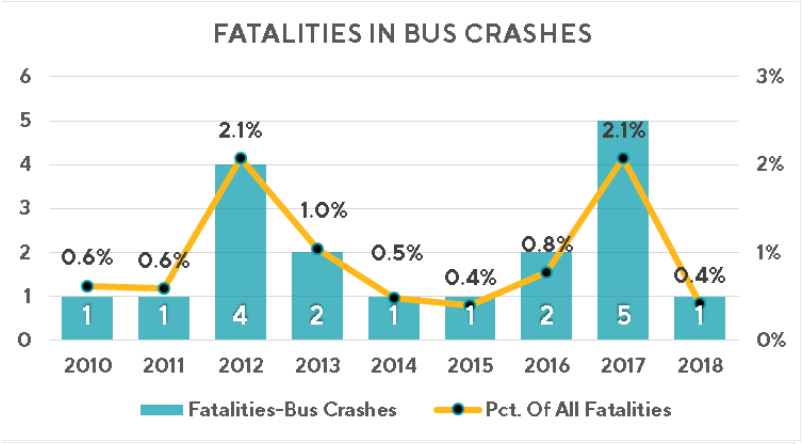
Bus Crashes

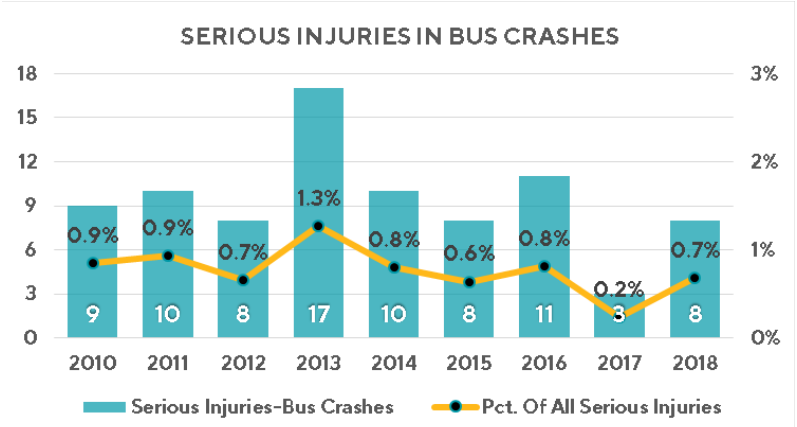
When thinking of safety across the different modes of transportation, riding the bus is one of the safest forms of travel. When crashes do occur, they usually involve vehicles colliding with a bus as the bus slows for, stops at, or leaves a bus stop. Some of the more common crash types for buses include sideswipes, fixed-object, rear-ends and mirror strikes.

Crashes involving buses make up less than 1 percent of all crashes in the CAMPO region. In addition, they cause less than 1 percent of all fatalities and injuries. Buses tend to drive on slower-speed arterials, which helps reduce the severity of crashes. Bus crashes are highest during the period between 7 a.m. and 8 a.m. and between 3 p.m. and 5 p.m. on weekdays, which correspond not just to higher commuter traffic but also to the increased number of buses on the road taking children to and from school.

Bus operators have multiple responsibilities beyond driving the bus. Among other things, they are cashiers, direction-givers, crowd control officials, and handlers of people who need help with mobility. They receive special training for maneuvering such a large vehicle and addressing issues such as blind spots. Newer buses come with technology that alerts bus operators of close following distance, speeding, lane departure, and the presence of bicyclists and pedestrians.







BUS CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

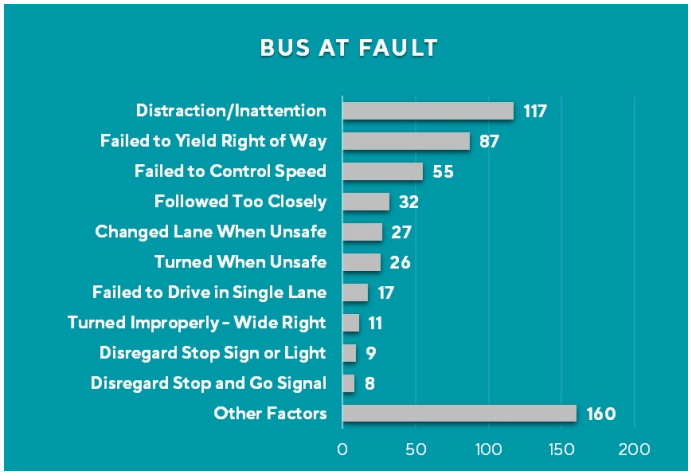
	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	4	1	9	1	0	0	2	3	3	8	3	4	6	7	5	4	8	8	8	4	6	7	4	1
MON	0	1	0	1	1	4	17	39	27	13	8	7	15	15	11	35	52	20	12	6	6	3	2	2
TUE	1	1	3	1	0	1	20	33	23	21	16	13	15	17	21	41	39	33	12	10	6	8	5	5
WED	3	1	0	1	0	2	23	41	34	16	12	10	16	18	25	37	45	31	10	11	4	5	5	1
THU	2	1	1	1	1	4	19	40	31	12	13	10	7	13	15	36	47	33	19	5	7	5	6	5
FRI	4	3	5	2	3	4	14	42	36	11	15	16	11	15	27	43	52	31	17	11	4	8	9	12
SAT	5	9	5	5	2	2	3	4	5	6	3	7	8	9	4	9	13	12	9	6	8	12	5	10

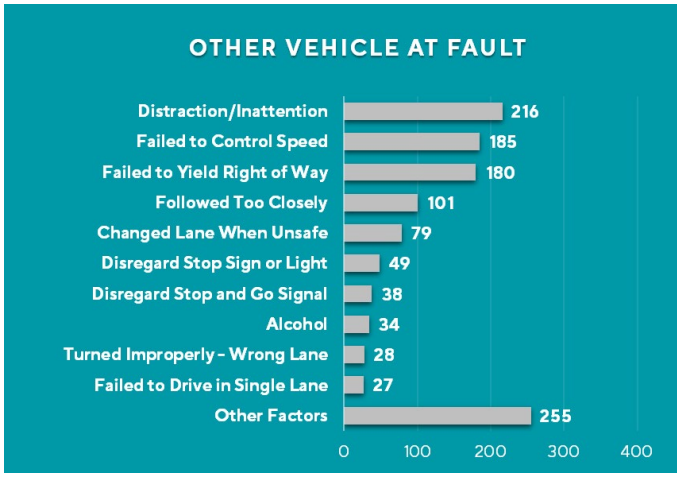
Motorists are more likely to be at fault when crashes do occur with buses. Distraction, speeding, and failing to yield the right of way are the primary contributing factors for motorists. Distraction is also the primary contributing factor when the bus operator is found to be at fault.

There is much attention on school bus safety at the federal level. The National Highway Traffic Safety Administration (NHTSA) provides helpful resources for schools, parents, teachers, and children. The biggest focus is on safety for children approaching and leaving the bus.

A similar safety concern exists for people walking or bicycling to or from public transit bus stops, as researchers found that many pedestrian crashes occur near bus stops in Texas. Drivers should take extra caution when passing stopped buses and watch for pedestrians and bicyclists leaving the bus.

CONTRIBUTING FACTORS IN BUS CRASHES (2010-2018)





SAFETY MANAGEMENT SYSTEM (SMS)

A comprehensive, collaborative approach that brings management and labor together to build on the transit industry's existing safety foundation to control risk better, detect and correct safety problems earlier, share and analyze safety data more effectively, and measure safety performance more carefully.

SMS is required of public transportation systems that receive federal funds.

BUS SAFETY EFFORTS

Capital Metro is a leader in safety education with messages on their buses, training for their operators, public service announcements, and community efforts to collectively work toward crash reduction. They have funded crash analysis work for several years to better understand safety concerns and actively work to address issues. Most recently, Capital Metro placed creative safety campaign ads on the rear of several of their buses. A study of the crashes before and after showed a significant reduction in rear end crashes on campaign buses. In addition, they have technologies such as video camera systems and Mobileye detection systems on many of the buses to assist with training and provide audible and visual alerts of safety concerns.

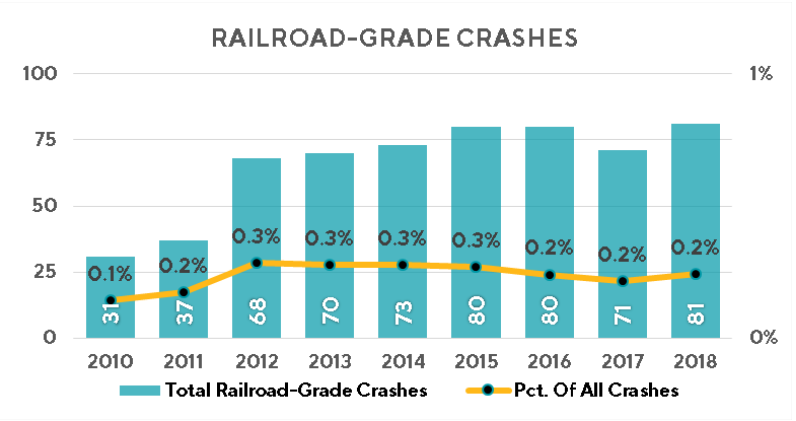
Railroad-Grade Crossing Crashes

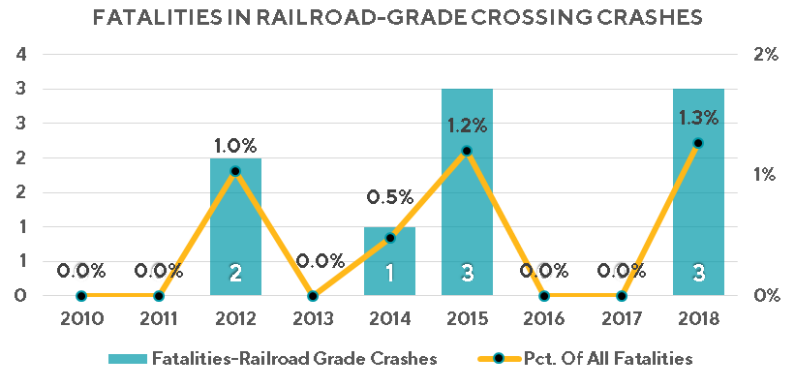
A railroad-grade crossing is a location where a public or private road, street, sidewalk or pathway, intersects railroad tracks at the same level. According to the Federal Railroad Administration (FRA), there are about 900 railroad-grade crossings in the CAMPO region, about 550 of which are public crossings.

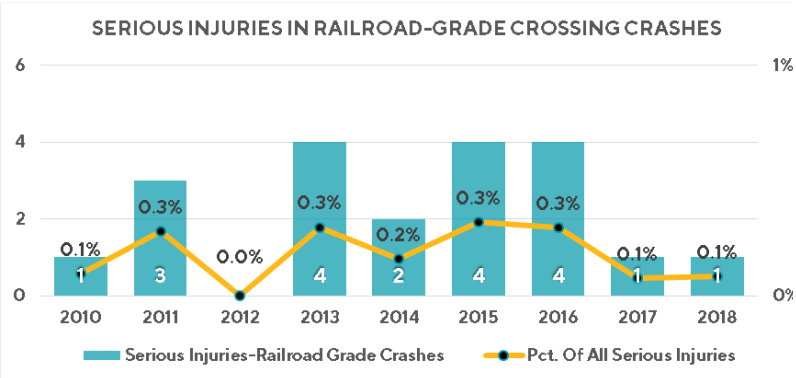
A crash where a train hits a motor vehicle is a catastrophic event. Requiring more than a mile to come to a complete stop, a train can rarely avoid an incident. Of the 591 railroad-grade crossing crashes, only 9 percent involved a train striking a vehicle. Fortunately, there have been very few fatalities and injuries at railroad-grade crossings in the last nine years.

While there have been few incidents where a train crashes into a vehicle, railroad-grade crossings present other opportunities for crashes. Drivers failing to control their speed can crash into a line of vehicles waiting on a train to cross. Thirty-six percent of crashes involve a vehicle crashing into another vehicle stopped at a grade crossing. In addition, a significant number of incidents involve drivers that hit crossing barriers, signals, gates, and parked trains.

Some communities have worked with the railroads to create Quiet Zones, where trains do not sound their horns when passing. These zones require additional devices to warn drivers of approaching trains and prevent collisions. However, drivers need to remain diligent at these crossings and adhere to safety rules, especially since they receive no audible warning of an approaching train.





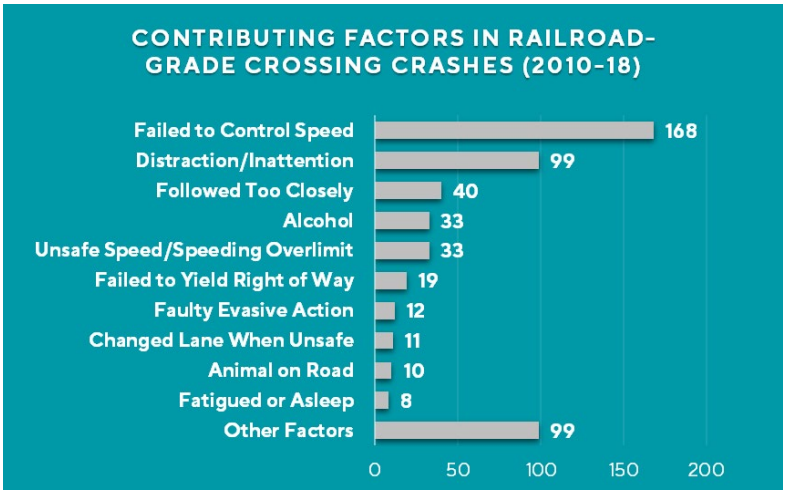


RAILROAD-GRADE CROSSING CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	4	3	5	2	2	1	2	2	4	2	1	2	4	8	0	4	2	4	0	4	2	0	2	1
MON	2	1	0	1	0	0	3	6	9	5	3	3	2	2	3	4	5	5	2	3	3	1	2	3
TUE	1	1	2	1	0	0	5	2	4	6	2	1	7	5	5	4	8	7	5	5	3	2	1	3
WED	3	1	3	2	0	2	2	7	7	4	4	3	7	7	4	8	10	6	4	3	1	3	4	1
THU	1	2	4	0	1	1	2	7	9	4	3	6	1	6	7	8	5	11	4	3	3	2	5	2
FRI	4	1	2	5	0	1	4	6	2	7	5	3	5	10	6	5	9	13	2	4	4	4	1	2
SAT	2	8	6	3	1	2	2	1	1	2	4	5	4	2	3	7	5	5	4	3	6	1	4	3

In terms of primary factors contributing to railroad-grade crossing crashes, 50 percent of events involve either a motor vehicle driver failing to control its speed or distraction.

While this section focuses on motor vehicle crashes, pedestrians must also be careful around railroad crossings. Railroads can traverse through neighborhoods, causing danger to people trying to cross. Pedestrians should follow the same rules as drivers when crossing. In addition, pedestrians should never use railroad tracks as a walking path. Not only is it dangerous, but it is considered trespassing on private property and is illegal.

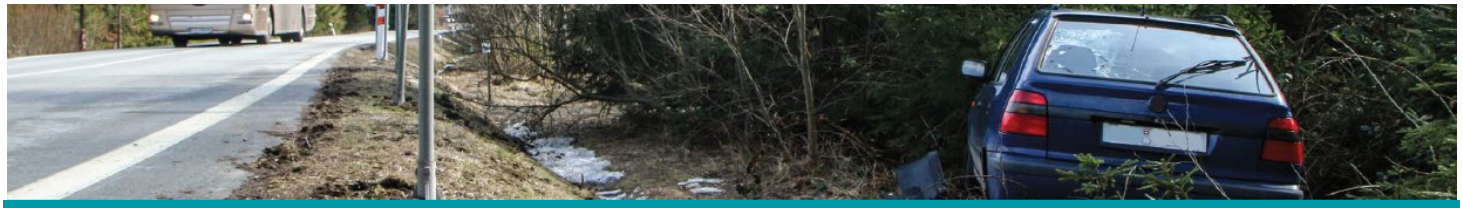


SAFETY TIPS FOR DRIVERS

- **Trains and cars do not mix**. Never race a train to the crossing—even if you tie, you lose.
- **The train you see is closer and faster-moving than you think**. If you see a train approaching, wait for it to go by before you proceed across the tracks.
- **If your vehicle ever stalls on the tracks, get out and get away from the tracks, even if you do not see a train**. Locate the Emergency Notification System sign and call the number provided. If a train is approaching, run toward the train but away from the tracks at a 45 degree angle. If you run in the same direction a train is traveling, you could be injured by flying debris.
- **At a multiple track crossing waiting for a train to pass, watch out for a second train on the other tracks**. When you need to cross train tracks, go to a designated crossing, look both ways, and cross the tracks quickly, without stopping.
- **Do not get trapped on the tracks**. Proceed through a highway-rail grade crossing only if you are sure you can completely clear the crossing without stopping. Remember, the train is 3 feet wider than the tracks on both sides.
- **Be aware that trains cannot stop quickly**. Even if the locomotive engineer sees you, a freight train moving at 55 miles per hour can take a mile or more to stop once the emergency brakes are applied.
- **Never drive around lowered gates**. It's illegal and deadly. If you suspect a signal is malfunctioning, call the emergency number posted on or near the crossing signal or your local law enforcement agency.
- **ALWAYS EXPECT A TRAIN!** Freight trains do not follow set schedules.

RAILROAD-GRADE CROSSING EFFORTS

Operation Lifesaver is a non-profit organization providing public education programs in states across the United States to prevent collisions, injuries, and fatalities on and around railroad tracks and highway-rail grade crossings. They have an extensive website with statistics, educational resources (posters, videos, press releases, etc.), and training opportunities. They say that as technology advances to help build quitter, faster trains, the need to teach people how to be safe around them increases. They focus on public awareness and education, but also have information about engineering and enforcement. For more information about Operation Lifesaver, please visit https://oli.org.



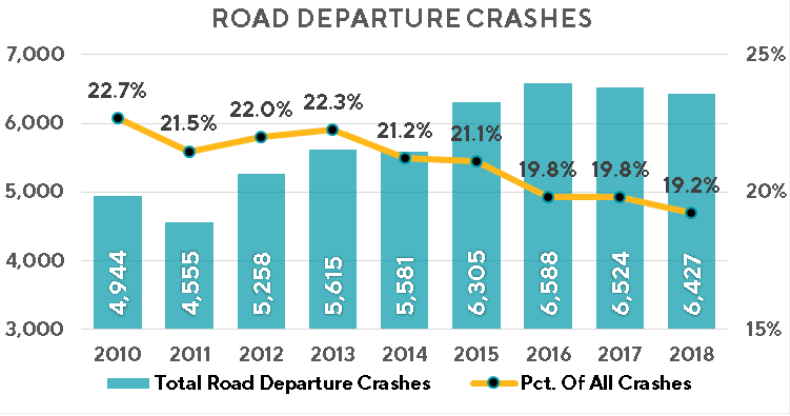
Road Departure Crashes

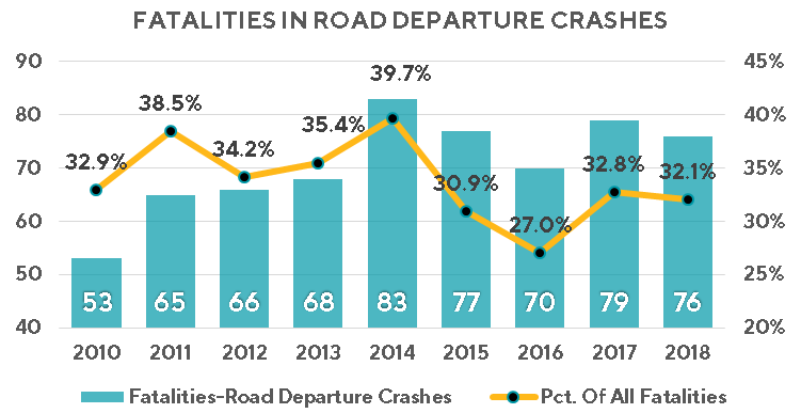
Road departure crashes involve crashes where a driver leaves the roadway, usually driving into a ditch, median, tree, or other fixed object. While usually involving a single vehicle, a roadway departure crash can involve a second vehicle when the driver veers across the road divider into opposing traffic or when a driver overcorrects after running off the road and into another vehicle. In addition, overturning is a major concern for road departure crashes.

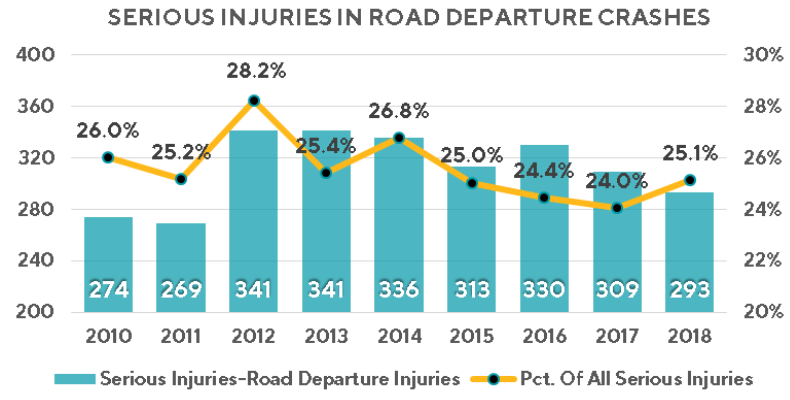
Twenty-one percent of crashes in the region involved a roadway departure. These crashes resulted in over 33 percent of the region's traffic fatalities. In addition, roadway departures played a role in nearly 26 percent of the region's serious injuries.

While most crashes tend to occur during daytime hours, the greatest instance of these crashes occur between 10 p.m. and 4 a.m. on Fridays and Saturdays. This may be due to a series of factors including dark conditions limiting visibility, faster speeds due to lighter traffic, and the increased consumption of alcohol during these times. It is also notable that the vast majority of road departure crashes in Texas occur on two-lane, two-way highways in rural areas.

In terms of driver age, nearly 35 percent of road departure crashes involved drivers under 25 years old. Driver inexperience may play a role in some of these crashes.

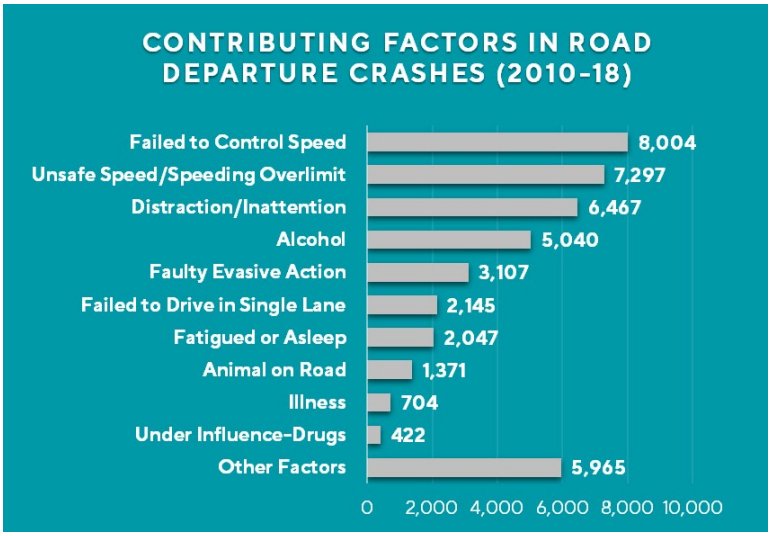






ROAD DEPARTURE CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	508	552	744	661	495	383	338	341	292	282	249	258	273	258	296	291	291	307	331	352	332	318	360	317
MON	277	288	355	238	172	194	273	312	273	233	221	284	287	271	282	301	301	324	282	252	277	244	246	263
TUE	237	213	302	188	143	186	265	328	290	253	237	255	294	242	307	303	355	366	325	289	257	294	288	303
WED	267	236	314	205	135	177	251	329	292	227	201	213	246	267	264	259	294	319	271	312	257	270	319	270
THU	272	246	349	198	155	164	234	274	296	213	221	238	222	261	271	262	312	317	319	312	299	331	331	329
FRI	309	320	483	340	221	240	281	335	317	290	270	275	302	295	326	330	373	367	346	340	340	370	437	450
SAT	481	588	772	540	418	349	341	324	294	301	302	272	307	290	303	333	387	379	375	368	372	394	447	483



Failure to control speed is the top primary contributing factor for road departure crashes. This could be partially due to sudden changes in the roadway where a driver had limited notice to slow down. Improved signage or warning may help provide better notification to drivers about the roadway ahead to drive more carefully.

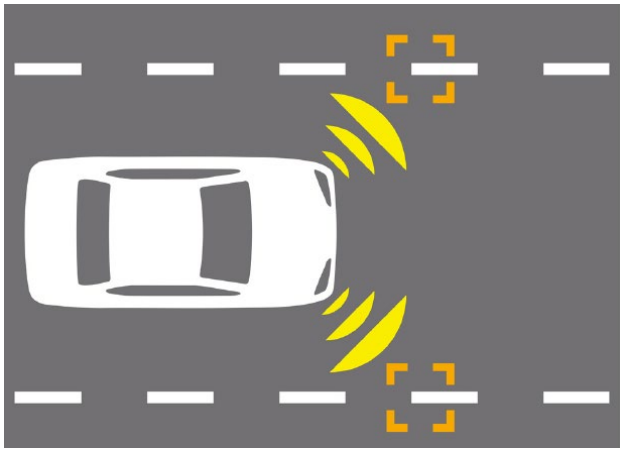
While some engineering solutions may help reduce road departure crashes, driver behavior still plays a major factor. Over 44 percent of reported road departure crashes occurred due to unsafe speed, speeding, distracted driving, or alcohol consumption. Additionally, wearing seat belts can reduce the severity of crashes when they occur.

LOW-COST ENGINEERING IMPROVEMENTS

There are various low-cost implementations that can either help reduce the number of road departure crashes or reduce the severity of these crashes:

- Improving or adding highly visible signage and striping to clearly indicate curves or significant changes in the roadway.
- Installing rumble strips on centerlines and shoulders to provide a tactical and audible warning that the vehicle is leaving the roadway.
- Removing or relocating fixed objects in rural areas, such as trees and utility poles that are in close proximity to the roadway.
- Installing median cable barriers to prevent vehicles from entering opposing traffic.
- Reducing speeds on curves.

IN-VEHICLE LANE DEPARTURE TECHNOLOGIES



To help reduce road departure crashes, auto manufacturers have been integrating lane departure technologies into their vehicles. These technologies use cameras that detect lane markings on the roadway and warn drivers if the vehicle is veering out of the lane. Lane departure Warning Systems provide warnings if a driver appears to be drifting out of a lane of traffic by visual or audio feedback. Some warning systems create a vibration in the steering wheel, similar to running over a rumble strip. More-advanced lane departure systems contain technologies that actively attempt to reposition the vehicle in the lane of travel. The vehicle automatically tries to correct its position; however, it still requires the driver to maintain control of the vehicle. While manufacturers continue to improve technologies to completely automate lane and road departure prevention, these current warning and assist technologies can help make drivers more aware and reduce road departure crashes.

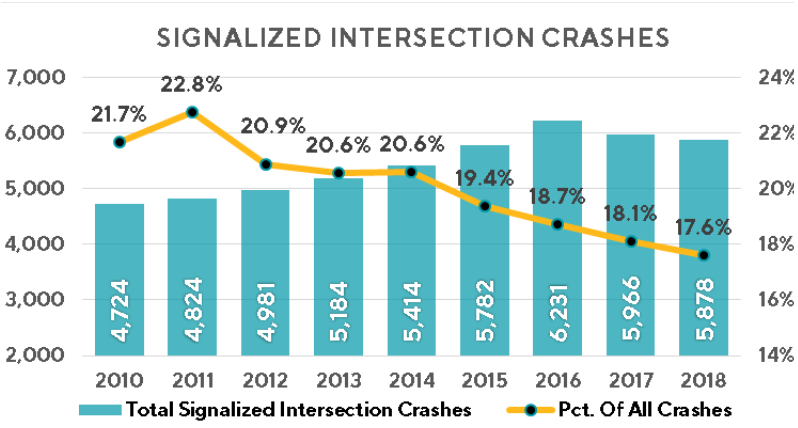
Signalized Intersection Crashes

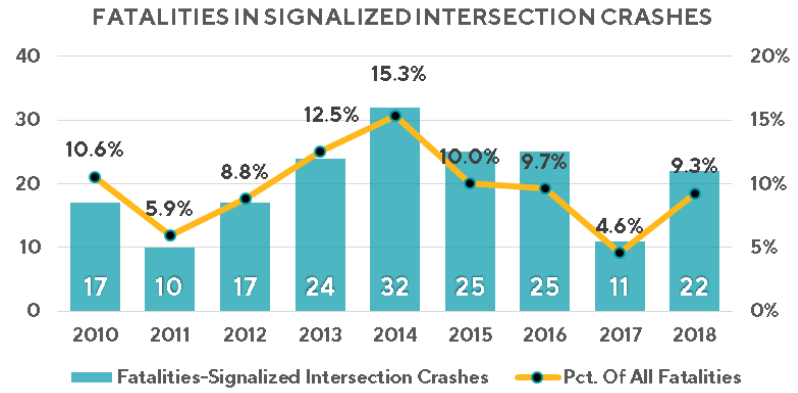
Compared to unsignalized intersections, which require a greater level of judgment by drivers, signalized intersections can provide a higher level of safety. On intersecting roads with a significant amount of traffic, signals actively inform travelers when traffic can and cannot proceed. Signalized intersections provide additional safety for pedestrians and bicyclists, especially when equipped with pedestrian crossing indicators.

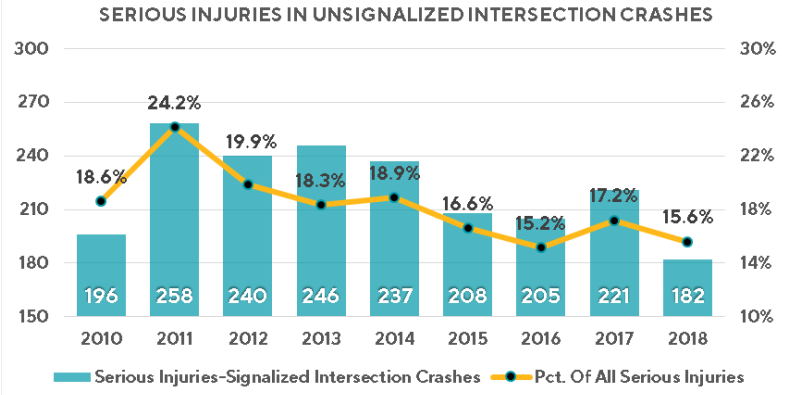
About one-fifth of all crashes in the CAMPO region occurred at signalized intersections. Signalized intersection crashes increased 32 percent from 4,724 in 2010 to 6,231 in 2016. However, 2017 and 2018 both showed reductions. Nearly 10 percent of fatalities occurred at signalized intersections, along with 18 percent of serious injuries.

Traffic signals have their greatest impact in preventing crashes from intersecting traffic. However, nearly one in eight signalized intersection crashes involve a vehicle running a red light. These crashes can be the most damaging as the vehicle on the receiving end is usually hit on the most vulnerable part of the car.

While red-light running is a significant concern, the top two collision types occurring at signalized intersections involves vehicles running into the back of a stopped vehicle (27 percent) and vehicles running into a left-turning vehicle from the opposite direction (25 percent). These two collision types suggest that drivers are possibly not paying attention to traffic ahead and some drivers are making left-turns at inappropriate times.

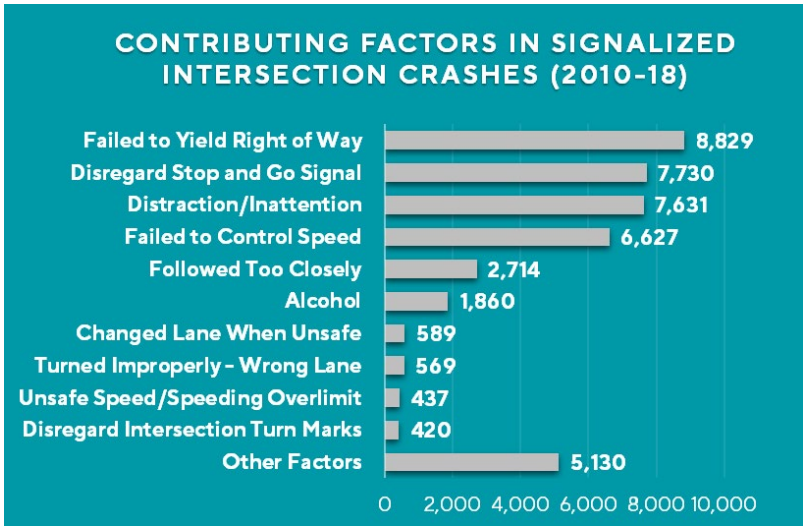






SIGNALIZED INTERSECTION CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	258	196	315	167	82	62	70	105	141	200	240	288	323	347	306	333	369	348	396	304	284	305	263	148
MON	104	59	90	41	32	83	191	326	381	332	317	349	422	452	430	457	536	523	487	364	246	286	190	120
TUE	62	50	69	31	19	72	214	351	423	364	343	372	432	389	439	492	555	575	510	383	310	289	223	152
WED	77	57	83	31	20	62	220	335	471	322	328	368	381	402	414	449	488	558	552	355	309	300	207	151
THU	101	57	102	32	28	66	179	365	380	311	338	354	410	408	432	465	554	571	539	400	331	352	256	184
FRI	107	84	133	83	35	61	204	344	387	350	339	385	471	473	523	515	584	579	517	445	398	403	340	294
SAT	217	195	279	114	68	70	95	136	232	312	295	381	428	403	419	417	426	430	427	367	326	353	324	274



The top contributing factors for crashes at signalized intersections are failing to yield the right of way, disregarding the signal, distraction/inattention, and failing to control speed. Following too closely is also a contributing factor for signalized intersection crashes indicating the occurrence of rear end crashes. Although the often more serious, right angle crashes are typically reduced after a traffic signal is installed, it is not unusual to see an increase in typically less severe rear end crashes after installation.

SIGNALIZED INTERSECTION SAFETY EFFORTS

Transportation agencies focus significant time and resources on signalized intersections from installation and maintenance to operations and safety. Traffic signal timing and phasing requires choosing elements that may lead to trade-offs in safety and mobility. For example, implementing a protected-only left-turn phase is likely to address left turn crashes, but could mean an increase in delay for left-turning motorists. Improving driver compliance with traffic control devices is often the goal.

In their Annual Signal Timing Program, City of Austin traffic signal engineers re-time each of their 1,000+ signals at least once every three years with the goal of ensuring signals are timed for optimum safety and performance for all road users including pedestrians, bicyclists, transit vehicles and motorists.

FHWA SIGNALIZED SAFETY STRATEGIES

FHWA Provides guidance on approaches that improve the safety of drivers at signalized intersections:

- **Protected left turn phase**: Providing a dedicated left-turn signal phase provides an all directional stop to allow those turning left to do so with a reduced risk of a head-on crash from the opposite direction, sideswipes from the approaching traffic on the right, or angled crashes from the left.
- **Prohibit right turns on red**: Preventing vehicles from turning right on red can help reduce crashes with pedestrians crossing perpendicular with traffic and reduce angle and sideswipe crashes.
- **Provide or lengthen left-turn and right-turn lanes**: Creating left-turn and right-turn channels provide space for turning traffic to wait and not interfere with through traffic, reducing rear-end crashes. At locations with heavy turning traffic, lengthening channels will allow more vehicles to queue for turns, removing them from through traffic.
- **Inform drivers of upcoming signals**: Making drivers aware of an upcoming signalized intersection, especially on roads with visibility issues, can help drivers prepare to stop.
- **Driveway turn restrictions near intersections**: Restricting or eliminating driveway access near intersections will reduce angle and sideswipe crashes at these locations where multiple speed differentials (e.g., full speed, slowing, full stop) occur in the same location.
- **Install signal backplates**: Installing backplates on traffic signals improves the visibility of the traffic signal by providing a contrasting background that stands out. Additionally, adding a retroreflective border to the existing signal backplate enhances the visibility of the signal at night.

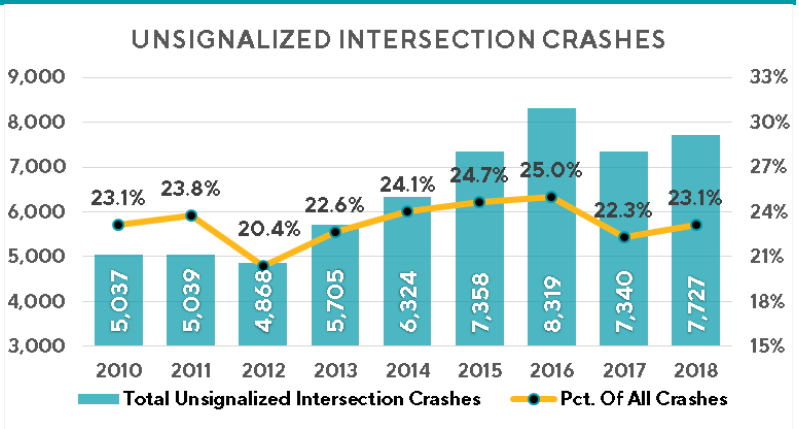
Unsignalized Intersection Crashes

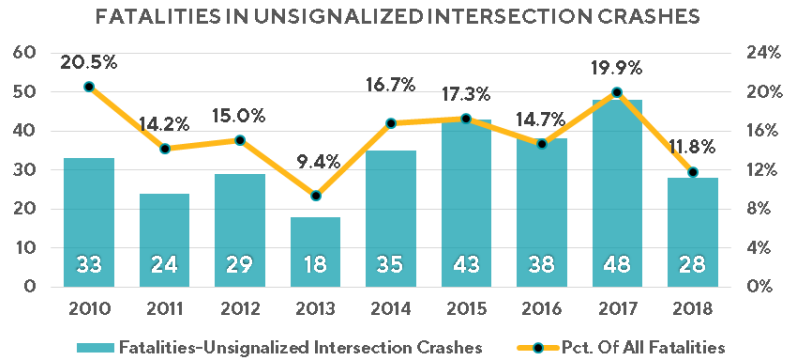
Unsignalized intersections are intersections where there is no traffic signal—merely a stop sign, yield sign, or in some cases, no sign at all. Unsignalized intersections are more prevalent than signalized intersections. In an urban setting, city arterials can have 12–18 unsignalized intersections on a single mile stretch.

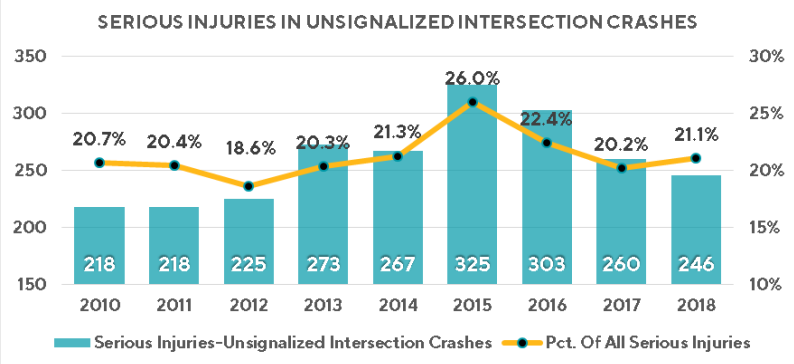
While speeds on intersecting streets tend to be slower than the arterial to which they connect, each intersection represents a crash opportunity. Unlike signalized intersections, which provide definitive direction for traffic flow, unsignalized rely more on the judgment of the driver to enter into the intersection when safe.

Regionally, 23 percent of all crashes occurred at unsignalized intersections compared to 20 percent occurring at signalized locations. While the number of crashes are only slightly higher, unsignalized events were more severe than signalized. Unsignalized intersection crashes resulted in 15.5 percent of the region's fatalities compared to 9.6 percent for signalized crashes. In addition, 21.3 percent of the region's serious injuries occurred at unsignalized locations compared to 18.2 percent at signalized locations.

Most unsignalized intersection crashes occur during the weekday peak driving times. This includes the morning from 7 a.m. to 8 a.m. and the evening from 3 p.m. to 6 p.m.

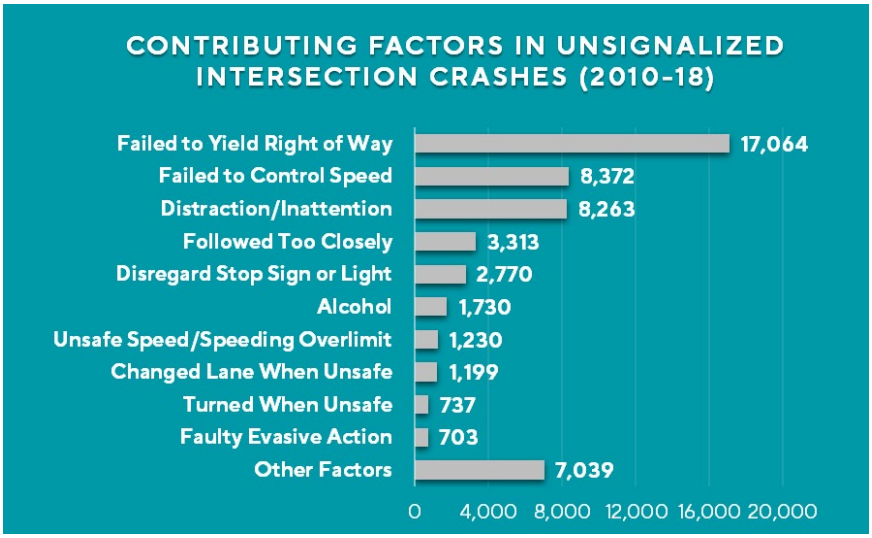






UNSIGNALIZED INTERSECTION CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	216	189	260	180	118	74	70	78	139	152	237	271	413	424	376	389	386	366	393	343	303	235	188	136
MON	81	74	96	41	35	79	196	519	521	357	301	375	471	445	502	544	758	845	584	395	241	177	137	95
TUE	68	62	77	46	27	70	231	622	613	393	336	429	484	507	479	618	778	950	704	435	266	221	162	132
WED	90	61	82	37	37	88	235	637	589	355	333	383	484	473	524	612	775	920	702	439	302	243	163	113
THU	75	69	82	44	41	69	233	619	603	350	341	393	516	535	477	587	796	934	710	453	283	250	184	135
FRI	113	105	155	87	46	73	225	524	494	390	352	493	573	660	602	730	968	984	769	525	365	330	297	241
SAT	180	194	259	152	87	73	85	121	223	317	390	460	502	514	501	526	507	463	500	406	317	289	299	280



Contributing factors that lead to crashes at unsignalized intersections vary. The most common contributing factor is failure to yield right of way. However, failure to control speed and distraction, inattention, and cell/mobile device use also account for many of the crashes at unsignalized intersections in Central Texas. Continued education for drivers as to who has the right of way at unsignalized intersections may help reduce the number of crashes at these locations.

FHWA UNSIGNALIZED SAFETY STRATEGIES

FHWA provides guidance on approaches that improve the safety of drivers at unsignalized intersections:

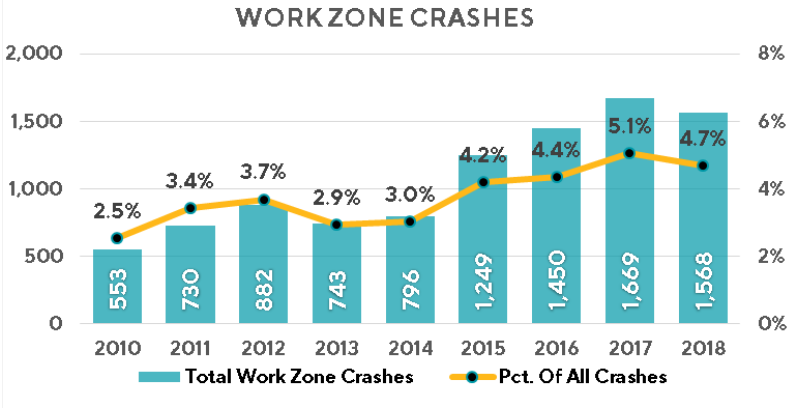
- **Improve management of access at intersection**: Reducing or modifying driveway conflicts adjacent to intersections is an effective countermeasure to improve safety at unsignalized intersections. Additionally, reducing the number of intersections near intersections can reduce the number of conflict points.
- **Reduce conflicts though geometric design improvements**: There are a wide range of geometric design improvements that can improve safety at unsignalized intersections, including providing right or left-turn lanes, installing medians and pedestrian crossing islands, and installing roundabouts or mini-roundabouts.
- **Improve sight distance**: Clearing roadside or median obstructions, changing horizontal and/or vertical alignment of approaches and eliminating parking are all strategies that can improve sight distance and improve intersection safety.
- **Improve availability of gaps and assist drivers in judging gaps**: Intersection conflict warning systems can improve awareness for drivers at intersections with a crash history related to vehicles entering or crossing a major road.
- **Improve driver awareness**: FHWA provides a wide range of safety strategies to improve driver awareness. These include using lighting or enhanced signaling to improve visibility, and installing rumble strips at intersection approaches, pavement markings (e.g., STOP AHEAD), intersection warning signs, reflective strips on sign posts.
- **Choose appropriate intersection traffic control**: Choosing the right traffic control at an intersection will improve intersection safety, whether all-way stop-controlled, roundabout, pedestrian hybrid beacons, rectangular rapid flashing beacons or "J-turns", FHWA provides guidance on when and why to choose the correct intersection control.
- **Improve compliance with traffic control devices and traffic laws**: Targeted enforcement and public education on safety problems at specific intersections is a strategy that can raise awareness and increase intersection safety.
- **Reduce operating speeds**: As speed is a significant contributing factor in unsignalized intersection crashes, strategies that reduce speed greatly improve intersection safety. FHWA provides a range of strategies, including targeted speed enforcement, traffic calming approaches on intersection approaches, and speed reduction pavement markings.
- **Guide motorists more effectively**: Providing turn path marking, double yellow centerlines on the median of a divided highway at intersections and minor road approaches, and dotted edge-line extensions all serve to guide motorists into safer and more effective turning positions at unsignalized intersections.

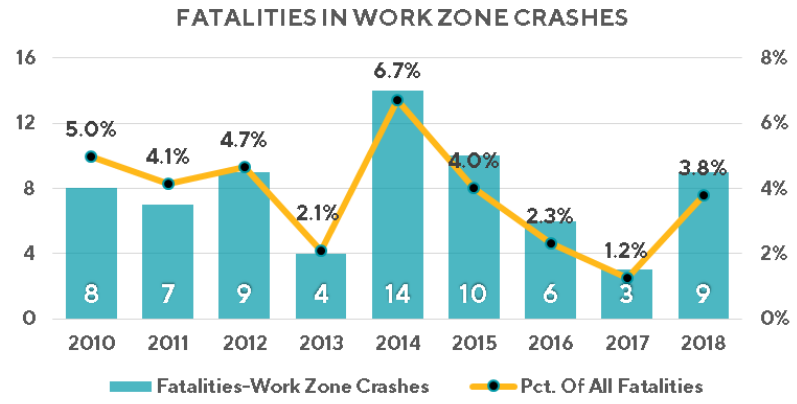
Work Zone Crashes

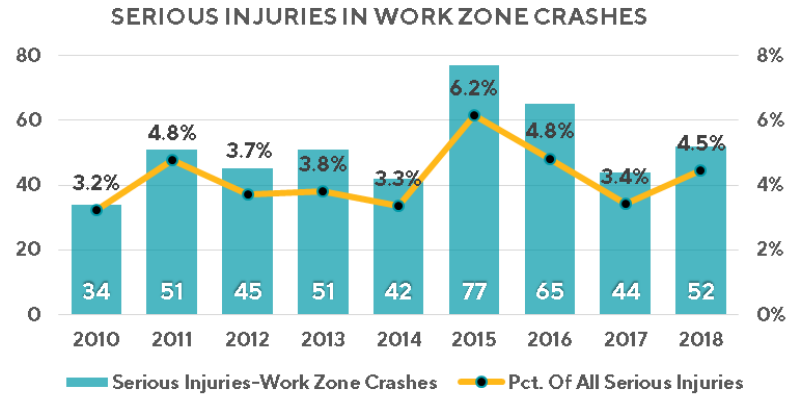
With efforts to improve the region's roadways, road construction usually plays a role in instituting those improvements. While engineers design their work zones to minimize their impact on flowing traffic, these work zones still create an unexpected and compromised travel experience for roadway patrons. Narrowed lanes, reduced or eliminated shoulders, and the placement of cones and barrels create a more constricted travel situation with less room for driver error. In addition, with more major construction projects occurring during nighttime hours in order to not interfere with traffic, darkness exacerbates safety risks by impacting drivers' vision as they pass through work zones.

While exhibiting a slight drop in 2018, work zone crashes in the CAMPO region increased over 200 percent from 554 crashes in 2010 to 1,669 crashes in 2017. Despite this increase, work zone fatalities have averaged eight deaths a year over the last nine years.

Nearly 50 percent of work zone incidents in the region involve a driver running into the back of a stopped or moving vehicle or sideswiping a vehicle in an adjacent lane. While this highlights the need for drivers to pay additional attention to other vehicles when in work zones, drivers need to also be aware of obstacles that arise in these environments. Approximately one quarter of work zone incidents involve a single vehicle either running off the road or colliding with construction-related equipment, such as a barrier.

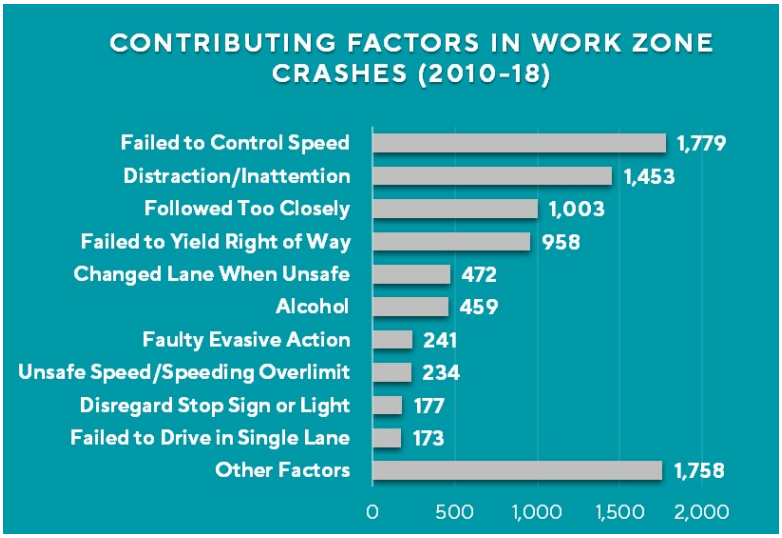






WORK ZONE CRASHES BY TIME OF DAY/DAY OF WEEK (2010-2018)

	12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
SUN	36	27	51	46	36	26	20	27	16	30	33	37	54	50	49	45	54	53	50	59	74	68	63	35
MON	25	33	27	8	10	35	43	69	72	64	58	65	71	91	89	86	103	88	68	38	57	56	56	25
TUE	19	12	17	15	13	17	54	86	90	70	62	66	82	82	80	89	122	101	74	38	48	54	53	42
WED	29	17	27	20	10	13	70	101	98	72	58	71	75	97	85	96	100	90	82	43	63	65	66	42
THU	33	18	27	20	16	26	47	99	95	81	53	63	73	103	90	87	116	110	82	43	57	74	47	57
FRI	40	25	39	22	13	23	35	80	70	74	61	81	88	103	102	122	116	113	89	62	54	43	54	66
SAT	43	50	65	38	39	28	33	30	43	55	52	75	82	86	85	61	56	62	61	68	36	41	60	47



In terms of primary factors contributing to work zone crashes, over 20 percent of events involve a driver failing to control its speed. Work zones lead to increased stop-and-go traffic due to reduced speeds and merging due to lane reductions. This can result in unanticipated stops that some drivers fail to make.

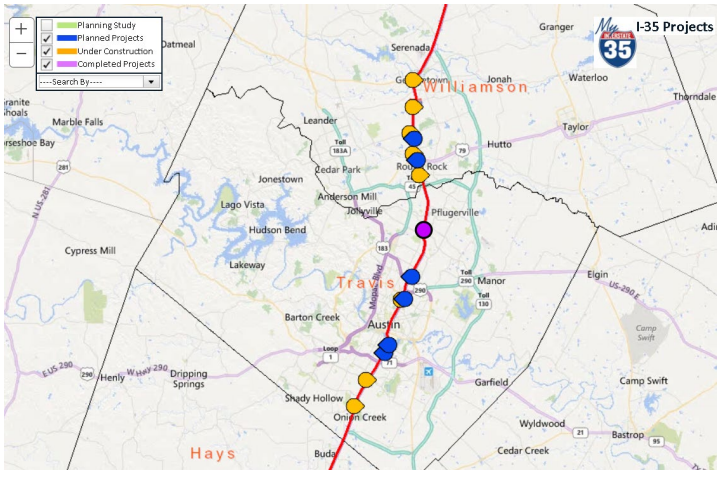
Distracted or inattentive driving played a primary factor for one of six work zone crashes during this period. With the above-mentioned stop-and-go traffic in a work zone, failure to pay attention to traffic will drastically increase the potential for a crash.

WORK ZONE TIPS FOR DRIVERS

Work zones create hazardous situations for both drivers and construction workers due to unexpected traffic changes, construction-related obstacles, and the proximity of workers to moving traffic. TxDOT recommends the following tips when driving through a work zone:

- Slow down and always follow posted work zone speed limits. Speeding is one of the major causes of work zone crashes. Remember, traffic fines double in work zones when workers are present; fines can cost up to $2,000.
- Pay attention. Workers and heavy equipment may only be a few feet from passing vehicles.
- Don't tailgate.
- Stay alert and minimize distractions such as cell phones.
- Obey road crew flaggers.
- Expect the unexpected. Delays from highway construction can be frustrating, but it only takes a few extra minutes to slow down for a work zone.
- Plan ahead. Leave a few minutes early when traveling through a work zone in order to reach your destination on time.

INTERSTATE 35 CONSTRUCTION INFORMATION



Proper planning ahead of one's travels can help ensure one's safety when traveling through a work zone. Currently, TxDOT is engaged in a major reconstruction project on Interstate 35 throughout the CAMPO region. To help provide information to drivers about roadway conditions, TxDOT established https://my35construction.org to provide information about construction activities along Interstate 35 throughout the region. The site allows interested travelers to sign up to receive information about construction activities. For more information about all the proposed improvements to the Interstate 35 corridor in the CAMPO region, please visit: www.my35.org/capital.