

Commercial Vehicle Safety - 2017

COMMERCIAL VEHICLE SAFETY IN LOUISIANA

An Analysis of Truck Crashes for 2017

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Summary

In 2017, the total number of reported CMV crashes increased by 0.7% compared to 2016. The number of fatal CMV crashes increased from 89 in 2016 to 96 in 2017, an increase of 7.9%. The number of injury CMV crashes decreased slightly from 1634 to 1609 during the same period, a decrease of 1.5%.

The percentage of CMV drivers in fatal crashes cited for violations increased from 2016 to 2017. The percentage of CMV drivers receiving violations in fatal crashes increased from 26.5% in 2016 to 39.3% in 2017. Careless Operation and Failure To Yield were the most frequent citations. CMV drivers in injury and property damage crashes were cited for violations 49.0% and 48.0% of the time, respectively. Within this same year, careless operation accounted for the majority of violations committed in association with commercial vehicle crashes. Careless operation made up 31.0% of all violations given to the driver of the CMV in fatal crashes and 36.1% in all crashes. Other violations with relatively high occurrence rates were failure to yield, with 4.8% in fatal and 12.8% in all crashes. Since careless operation is often a proxy for speed violations, we can look at the combined percentage of speed and careless operation violations. For fatal CMV crashes, the combined violations (speeding & careless operation) make up 33.3% of all violations the CMV driver receives. In all CMV crashes, this percentage is 37.2%. When failure to yield is included, these percentages increase to 38.1% for fatal crashes and 50.0% for all crashes.

The manner of collision most common in all CMV crashes are rear-end types at 32.7% and non-collision types (single vehicle crashes) at 18.2%. For fatal crashes, the types were head-on collisions at 19.8%, rear-end collisions at 30.2%, right angle collisions at 18.8%, and non-collision with motor vehicle crashes at 27.1%.

During 2017, 34.0% of all CMV crashes in Louisiana occurred on interstates, 30.6% occurred on state highways, and 18.0% occurred on U.S. highways. In 2016, the respective percentages were 31.3%, 31.9%, and 19.1%. From 2016 to 2017, the number of fatal interstate crashes increased from 27 to 37. U.S. highways experienced a decrease in fatal crashes of 31.8% and state highways saw an increase of 5.7%. Thus, the overall increase in CMV related fatalities of 7.9% was largely due to the increase of fatalities on interstates and state highways.

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The number of fatal CMV crashes in work zones decreased from 8 to 7 from 2016 to 2017. However, the number of fatal crashes within 5 miles of the construction zone (construction zone plus 5 miles on either end) increased by 25.0%, namely from 12 to 15 while the number of fatal crashes in the 5 miles approaching the construction zone from either end (excluding the construction zones) increased from 4 in 2016 to 8 in 2017.

These counts are based on the construction schedule provided by the LA DOTD and may thus differ from the actual number of crashes occurring in construction zones because the schedule may not accurately reflect the actual times work was being done.

Overview

This section provides an overview of the most important issues relating to CMV crashes in 2017 and trend data for the past five years. Table 1 depicts CMV crashes from 2012 to 2017 and shows that the fatal CMV crashes have increased by 7.9% from 2016 to 2017 while the 5-year change in fatal CMV crashes was 3.2%. The CMV involved injury crashes decreased by 1.5% while the CMV involved PDO crashes increased by 1.9% from 2016 to 2017. The total number of CMV crashes increased by only 0.7% from 2016 to 2017, while all vehicle crashes decreased by 4.5%.

Table 1: CMV Crashes 2012-2017

	CMV Crashes				CMV Crashes Percentages				All Crashes				%CMV			
Year	Fatal	Injury	PDO	Total CMV	Fatal	Injury	PDO	Total CMV	Fatal	Injury	PDO	Total	Fatal	Injury	PDO	Total
2012	93	1600	1997	3690	2.52%	43.36%	54.12%	2.41%	654	44577	107970	153228	14.22%	3.59%	1.85%	2.41%
2013	83	1583	2104	3770	2.20%	41.99%	55.81%	2.45%	652	43552	109861	154065	12.73%	3.63%	1.92%	2.45%
2014	92	1622	2284	3998	2.30%	40.57%	57.13%	2.55%	665	44808	111538	157011	13.83%	3.62%	2.05%	2.55%
2015	85	1607	2372	4064	2.09%	39.54%	58.37%	2.41%	698	48372	119549	168620	12.18%	3.32%	1.98%	2.41%
2016	89	1634	2366	4089	2.18%	39.96%	57.86%	2.35%	704	49827	123158	173694	12.64%	3.28%	1.92%	2.35%
2017	96	1609	2411	4116	2.33%	39.09%	58.58%	2.48%	707	47446	117780	165946	13.58%	3.39%	2.05%	2.48%
1 Yr % Change	7.9%	-1.5%	1.9%	0.7%	0.2%	-0.9%	0.7%	0.1%	0.4%	-4.8%	-4.4%	-4.5%	0.9%	0.1%	0.1%	0.1%
5 Yr % Change	3.2%	0.6%	20.7%	11.5%	-0.2%	-4.3%	4.5%	0.1%	8.1%	6.4%	9.1%	8.3%	-0.6%	-0.2%	0.2%	0.1%
Average	8.6%	0.0%	8.4%	4.9%	0.1%	-2.0%	1.9%	0.0%	4.8%	2.6%	2.9%	2.9%	0.5%	-0.1%	0.1%	0.0%

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While injury crashes involving all motor vehicles decreased by 4.8% from 2016 to 2017, CMV injury crashes decreased by 1.5% in the same period. CMV property damage crashes increased by 1.9% from 2016 to 2017, while all CMV crashes combined increased by 0.7%.

The number of CMV crashes is expected to follow the trend of all crashes. Thus, the CMV crashes as a percent of all crashes may provide some insight in how programs specifically designed for the reduction of CMV crashes have worked. Fatal CMV crashes as a percent of all fatal crashes increased in 2017 by 0.9 percentage points compared to 2016 while the CMV injury crashes as percent of all injury crashes increased by 0.11 percentage points compared to 2016.

Figure 1: CMV and Non-CMV Crashes 2012-2017

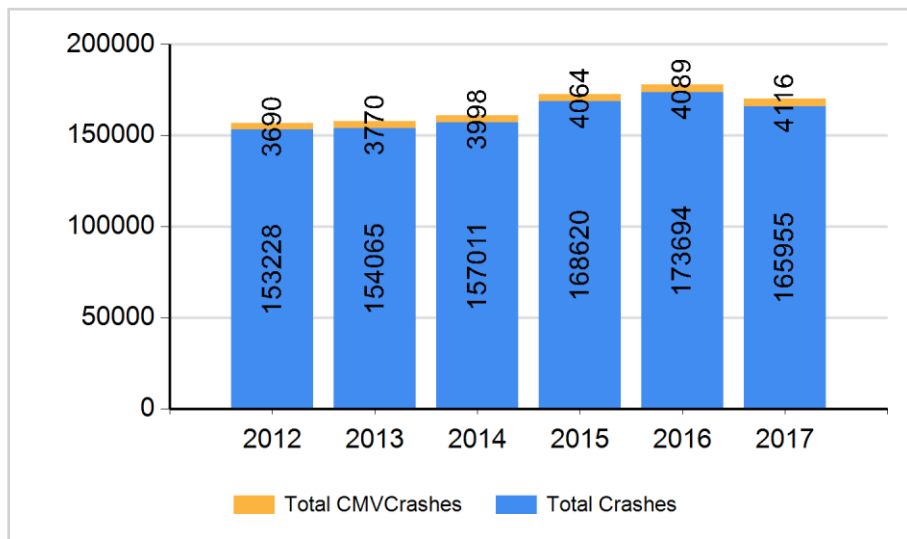
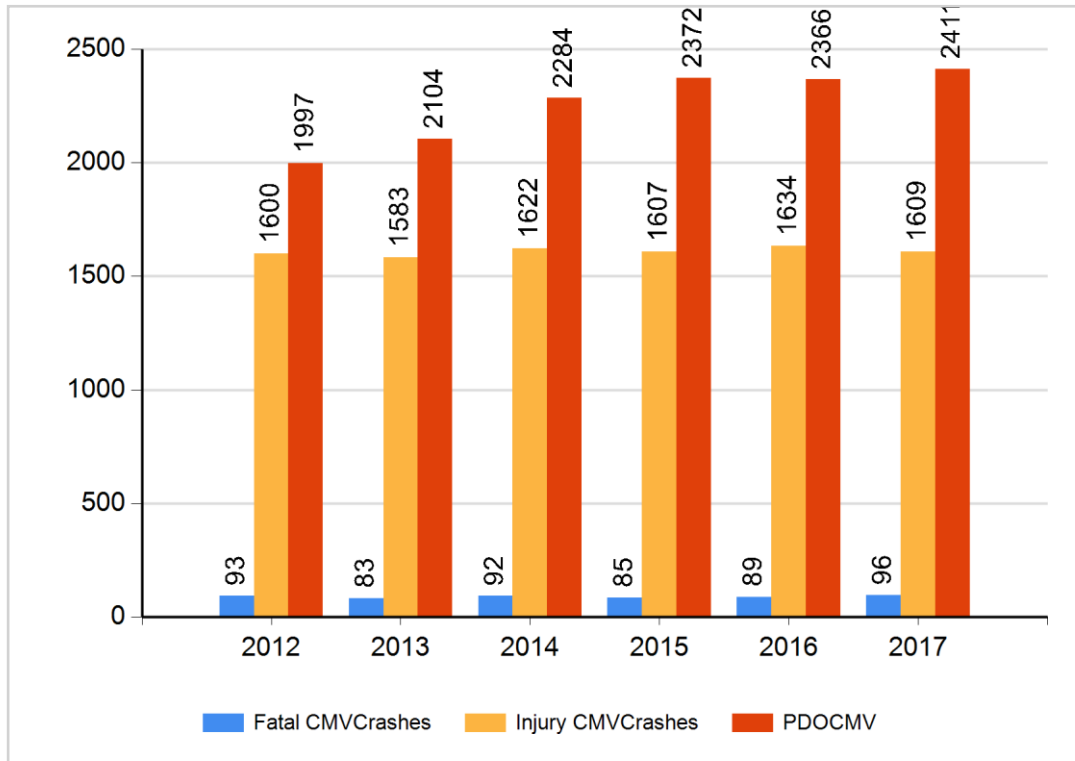


Figure 1 highlights the number of all crashes and shows the CMV crashes from 2012 to 2017. There were 27 more CMV crashes and 7,739 less non-CMV crashes compared to 2016. In addition, as Table 1 shows, CMV crashes accounted for 2.48% of all crashes in 2017, which is slightly higher than the 2.35% in 2016.

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Figure 2 shows that the number of fatal injury CMV crashes increased from 2016 to 2017, while the number of injury CMV crashes decreased slightly.

Figure 2: CMV Crashes by Severity: 2012-2017



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Figure 3: CMV and Non-CMV Fatal Crashes 2012-2017

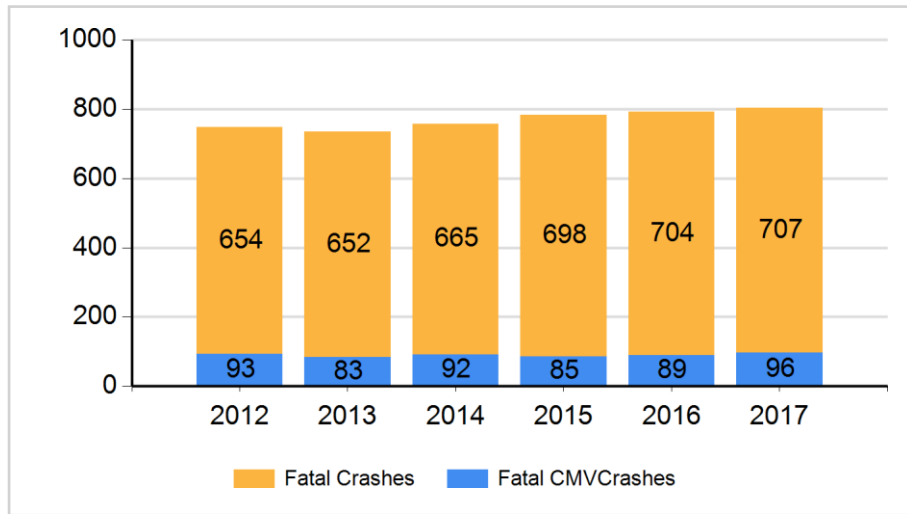
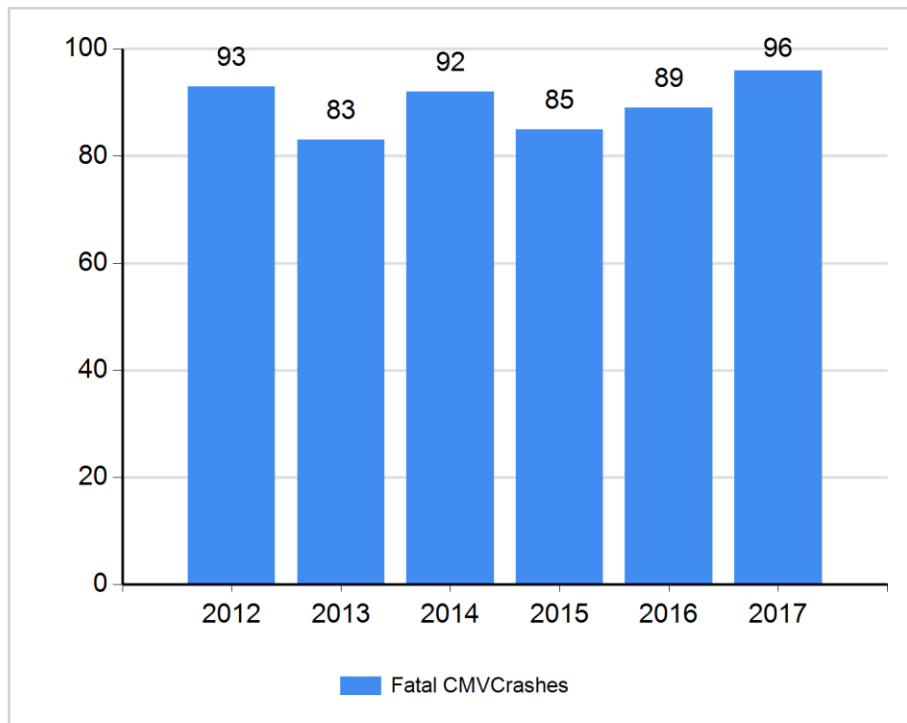


Figure 4: Fatal CMV Crashes by Year: 2012-2017



Figures 3 and 4 illustrate fatal non-CMV and CMV crashes from 2012 to 2017. While the increase in the number of non-CMV fatal crashes was 0.4% from 2016 to 2017, the CMV fatal crashes experienced a large increase of 7.9%, which amounts to 7 more fatal CMV crashes and 8% more fatalities. Figure 4 shows the trend of fatal CMV crashes which indicates that 2013 had the lowest number of fatal CMV crashes in the past five years. In fact, 2013 had the lowest number of CMV fatal crashes since at least 1999 when the yearly report was first compiled.

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Due to a steady increase in Louisiana traffic over the years, the number of crashes should be adjusted by the vehicle miles traveled (VMT) by commercial vehicles. In past reports, vehicle miles traveled for CMVs were obtained from the FMCSA website (<http://ai.fmcsa.dot.gov/CrashProfile/TruckBusFatalityRateAdj.asp>) which was, however, discontinued after 2007. The new FMCSA website (<http://ai.fmcsa.dot.gov/CrashProfile/TruckBusFatalityRateNew2.asp>) now proposes to use total VMT rather than commercial vehicle VMT. Table 2 depicts the fatal crashes, injury crashes, PDO crashes, and all crashes per 100 million miles traveled by all vehicles. The fatality rate for CMV crashes was 0.20 in 2017, an increase from 0.18 in 2016. It is important to note that with the new measure used by FMCSA the CMV rates cannot be compared with the rates for all vehicles because of the use of total VMT to normalize CMV crashes. However, the CMV crash rates can be compared to past CMV crash rates.

Table 2: CMV and All Crashes 2012-2017 per 100 Million Miles Traveled

	CMV Crash Rates				Crash Rates for All Vehicles			
Year	Fatal Crash Rate	Injury Crash Rate	PDO Crash Rate	Total CMV Crash Rate	Fatal Crash Rate	Injury Crash Rate	PDO Crash Rate	Total Crash Rate
2012	0.20	3.42	4.27	7.89	1.40	95.32	230.88	327.66
2013	0.17	3.31	4.41	7.89	1.37	91.19	230.04	322.60
2014	0.19	3.36	4.73	8.29	1.38	92.86	231.16	325.40
2015	0.18	3.33	4.92	8.43	1.45	100.38	248.08	349.91
2016	0.18	3.33	4.83	8.34	1.44	101.64	251.22	354.30
2017	0.20	3.27	4.90	8.36	1.44	96.38	239.26	337.12

Analysis of Crashes by Month

Since monthly crash data fluctuates considerably from year to year, it is difficult to conclude that the month of the year has any effect on the number of crashes. Specifically, the fatal crash count exhibits large variations since small crash numbers vary more, percentage wise, than large crash numbers.

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Table 3: CMV Crashes by Month in 2017

MONTH	FATAL CRASHES	TOTAL KILLED	INJURY CRASHES	PDO	TOTAL CRASHES	TOTAL TRUCKS AND BUSES	% CRASHES
January	4	4	128	184	316	346	7.68%
February	5	5	124	187	316	343	7.68%
March	8	9	144	224	376	389	9.14%
April	10	10	121	181	312	336	7.58%
May	6	8	147	203	356	374	8.65%
June	11	12	108	189	308	331	7.48%
July	7	7	124	178	309	333	7.51%
August	9	9	148	212	369	401	8.97%
September	8	11	164	226	398	416	9.67%
October	10	12	153	210	373	398	9.06%
November	9	11	125	214	348	371	8.45%
December	9	11	123	203	335	352	8.14%
TOTAL	96	109	1609	2411	4116	4390	100.00%

Nevertheless, as the data in Table 3 indicates, June had the highest number of fatal crashes in 2017 with 11 fatal crashes and 12 deaths. The analysis of the CMV crash data for 2017 indicates yearly fatal crash counts in any given month may vary from 4 to 11 with the three highest months being June, April, and October with 12, 10, and 12 people killed.

Violations

There are two ways one can evaluate the citations in CMV crashes, depending on whether we use the number of drivers or the number of citations as the denominator. In a crash, either the CMV driver or the non-CMV driver or both may receive a citation. Thus, when the number of CMV drivers and the number of car drivers are used as the denominator, respectively, the two percentages do not add up to 100%. They may be lower or higher than 100% if there are many crashes where no driver received a citation, and this percentage will be higher than 100% if there are many crashes where both drivers received a citation. For instance, in 2014 the two percentages added up to more than 100% for fatal crashes. The average of both percentages approximates the percentage of all drivers involved in CMV crashes that received citations.

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The percentage of CMV drivers in fatal crashes who received a citation has increased by 12.7 percentage points from 2016 to 2017. In 2017, of all the CMV drivers in fatal crashes, 39.3% were cited for a violation compared to 26.5% in 2016. For injury and property damage crashes, 49.0% and 48.0% of the CMV drivers were cited for violations, respectively. Also 56.2% of non-CMV drivers received violations in fatal CMV crashes in 2017. These figures show that in fatal crashes non-CMV drivers continued to have a higher percentage of citations than CMV drivers. In PDO crashes 48.0% of CMV drivers and 55.8% of non-CMV drivers received citations. The percentages of CMV drivers receiving citations in injury crashes was 49.0% which is higher than the 48.6% received by non-CMV drivers.

Secondly, we can look at the percentage of citations going to CMV versus the non-CMV driver. These two percentages add up to 100% all of the time. Even if the percentage of all citations in crashes would decline to say 10%, still half, for example, could go to the CMV driver and half could go to the non-CMV driver. The percentage of citations in fatal crashes going to the CMV driver has increased from 2016 to 2017, i.e. from 29.89% in 2016 to 41.58% in 2017 (see Table 4b). For injury and property damage only crashes (PDO) the CMV driver received 49.64% and 50.81% of violations, respectively.

Table 4a: Violations as a Percentage of Drivers

As Percentage of Drivers								
VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
Year	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver
2012	36.19%	56.04%	51.14%	46.35%	48.48%	53.99%	49.31%	50.44%
2013	34.83%	62.77%	48.82%	48.20%	48.56%	53.36%	48.36%	51.19%
2014	29.91%	74.36%	47.25%	50.29%	47.19%	55.33%	46.78%	53.40%
2015	28.42%	73.63%	49.82%	48.31%	49.02%	52.65%	48.89%	51.24%
2016	26.53%	57.55%	48.78%	48.09%	48.11%	53.70%	47.89%	51.29%
2017	39.25%	56.19%	49.00%	48.62%	47.99%	55.80%	48.17%	52.66%
*These are the percentage of drivers receiving citations.								

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Table 4b: Violations as a Percentage of all Violations

As Percentage of Violations								
VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
YEAR	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver	CMV Driver	Passenger Car Driver
2012	42.70%	57.30%	53.17%	46.83%	51.69%	48.31%	52.13%	47.87%
2013	34.44%	65.56%	48.97%	51.03%	51.50%	48.50%	50.01%	49.99%
2014	35.56%	64.44%	48.20%	51.80%	51.50%	48.50%	49.75%	50.25%
2015	28.72%	71.28%	50.68%	49.32%	52.46%	47.54%	51.19%	48.81%
2016	29.89%	70.11%	48.90%	51.10%	51.01%	48.99%	49.70%	50.30%
2017	41.58%	58.42%	49.64%	50.36%	50.81%	49.19%	50.12%	49.88%
These are all the citations in a crash and the percentages going to either CMV driver or other car driver.								

The different views become apparent when the total number of citations given to the drivers change over time. The relative distribution of the citations changed in the past year with 41.58% going to the CMV driver in fatal crashes and 58.42% going to the non-CMV driver. Thus in 2017, although the total percentage of citations in fatal CMV crashes declined, citations were given less frequently (49.88%) to the non-CMV drivers in 2017 compared to 2016 where 50.30% went to the non-CMV driver (Table 4b).

Figure 5 visualizes the findings expressed above, namely the relative percentage citations going to CMV drivers versus non-CMV drivers in fatal CMV crashes. Overall, the percentages have been relatively stable over the past years for fatal crashes with roughly one third of citations going to the CMV driver and the remaining going to the non-CMV driver.

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Figure 5: CMV and Non-CMV Driver Violations in Fatal Crashes:2012-2017

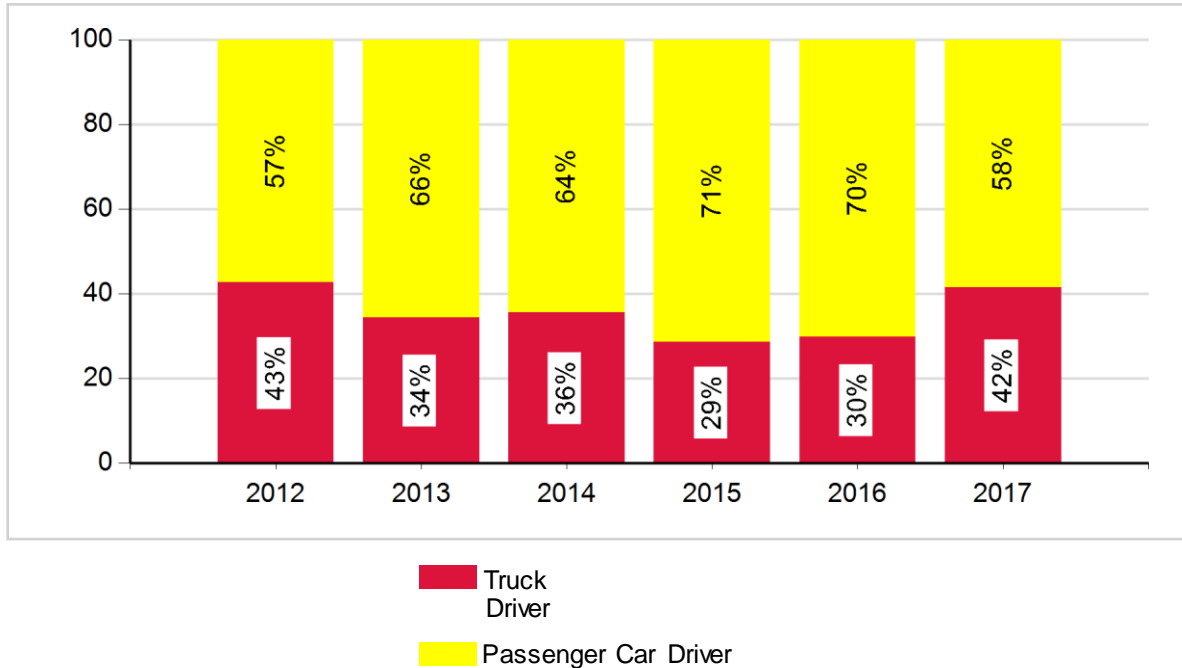


Table 5 shows the types of violations drivers receive. Excluding unknown violations, CARELESS OPERATION and OTHER violations accounted for the majority of violations of the CMV driver in fatal crashes for 2017, namely 13 and 3, respectively, which combined accounted for 53.33% of violations. The percentage of CARELESS OPERATION and OTHER violations for CMV drivers was 45.32% for injury CMV crashes and 51.13% for PDO crashes.

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Table 5: Type of Violation of CMV Driver

VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
CARELESS OPERATION	13	31.0%	273	32.7%	475	38.7%	761	36.1%
CUT CORNER ON LEFT TURN	0	0.0%	2	0.2%	11	0.9%	13	0.6%
CUTTING IN, IMPROPER PASSING	0	0.0%	27	3.2%	46	3.7%	73	3.5%
DISREGARDED TRAFFIC CONTROL	2	4.8%	29	3.5%	29	2.4%	60	2.8%
DRIVER CONDITION	2	4.8%	19	2.3%	20	1.6%	41	1.9%
DRIVING LEFT OF CENTER	1	2.4%	13	1.6%	8	0.7%	22	1.0%
EXCEEDING SAFE SPEED LIMIT	0	0.0%	5	0.6%	15	1.2%	20	0.9%
EXCEEDING STATED SPEED LIMIT	1	2.4%	1	0.1%	0	0.0%	2	0.1%
FAILED TO DIM HEADLIGHTS	0	0.0%	0	0.0%	1	0.1%	1	0.0%
FAILED TO SET OUT FLAGS, FLARES	0	0.0%	2	0.2%	0	0.0%	2	0.1%
FAILURE TO SIGNAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%
FAILURE TO YIELD	2	4.8%	133	15.9%	135	11.0%	270	12.8%
FOLLOWING TOO CLOSELY	2	4.8%	120	14.4%	115	9.4%	237	11.3%
IMPROPER BACKING	2	4.8%	20	2.4%	21	1.7%	43	2.0%
IMPROPER PARKING	1	2.4%	5	0.6%	8	0.7%	14	0.7%
IMPROPER STARTING	0	0.0%	4	0.5%	2	0.2%	6	0.3%
MADE WIDE RIGHT TURN	0	0.0%	4	0.5%	10	0.8%	14	0.7%
OTHER	3	7.1%	76	9.1%	126	10.3%	205	9.7%
OTHER IMPROPER TURNING	0	0.0%	20	2.4%	42	3.4%	62	2.9%
TURNED FROM WRONG LANE	0	0.0%	9	1.1%	16	1.3%	25	1.2%
UNKNOWN	12	28.6%	66	7.9%	100	8.1%	178	8.5%
VEHICLE CONDITION	1	2.4%	8	1.0%	48	3.9%	57	2.7%
NO VIOLATIONS	65		870		1331		2266	
TOTAL VIOLATIONS	42	100.0%	836	100.0%	1228	100.0%	2106	100.0%
% Violations from Table 4a	39.25%		49.00%		47.99%		48.17%	
% from Table 4b	41.58%		49.64%		50.81%		50.12%	

****Includes multiple violations for the driver***

Manner of Collision

Table 6 shows the manner of collision. "REAR END," "HEAD-ON," and "RIGHT ANGLE" collisions make up more than 94.3%, $[(29 + 19 + 18) / (96 - 26)]$ of all fatal multi-vehicle CMV crashes. This is a 14.0 percentage point decrease from 80.3% in 2016 for these three types of collisions. Also, the non-collision fatal CMV crashes increased from 18 in 2016 to 26 in 2017.

Table 6: Manner of Collision

MANNER OF COLLISION	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
HEAD-ON	19	19.79%	40	2.49%	31	1.29%	90	2.19%
LEFT TURN - ANGLE	1	1.04%	44	2.73%	69	2.86%	114	2.77%
LEFT TURN - OPPOSITE DIRECTION	0	0.00%	50	3.11%	67	2.78%	117	2.84%
LEFT TURN - SAME DIRECTION	0	0.00%	26	1.62%	44	1.82%	70	1.70%
NON-COLLISION WITH MOTOR VEHICLE	26	27.08%	189	11.75%	533	22.11%	748	18.17%
OTHER	1	1.04%	92	5.72%	202	8.38%	295	7.17%
REAR END	29	30.21%	579	35.99%	738	30.61%	1346	32.70%
RIGHT ANGLE	18	18.75%	242	15.04%	239	9.91%	499	12.12%
RIGHT TURN - OPPOSITE DIRECTION	0	0.00%	7	0.44%	8	0.33%	15	0.36%
RIGHT TURN - SAME DIRECTION	0	0.00%	26	1.62%	38	1.58%	64	1.55%
SIDESWIPE - OPPOSITE DIRECTION	0	0.00%	46	2.86%	50	2.07%	96	2.33%
SIDESWIPE - SAME DIRECTION	2	2.08%	268	16.66%	392	16.26%	662	16.08%
Total	96	100.00%	1609	100.00%	2411	100.00%	4116	100.00%

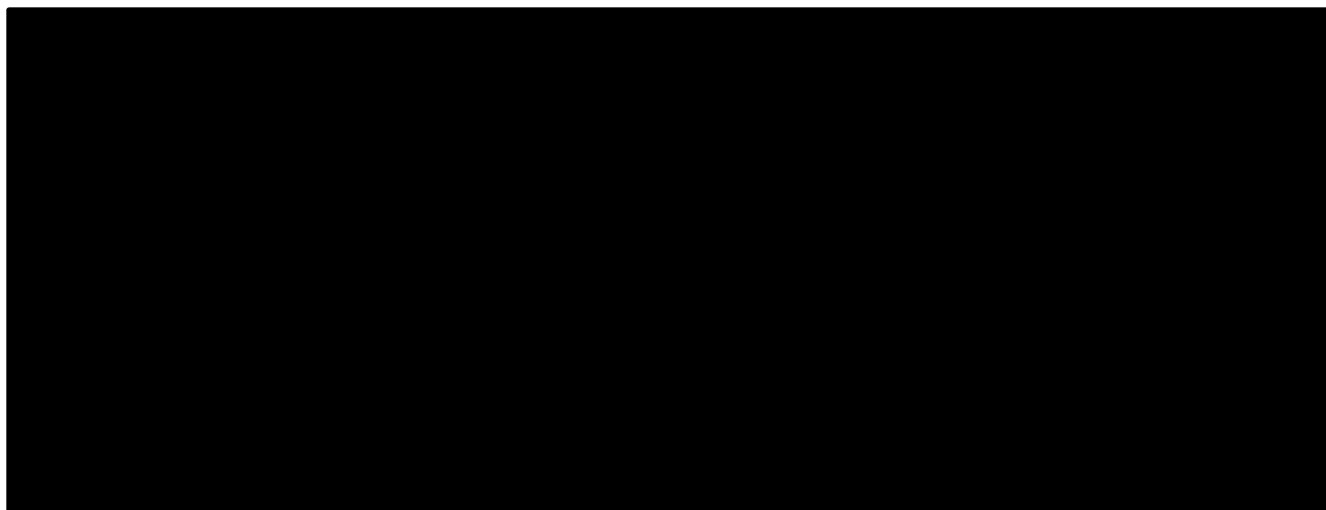
High Crash Locations in Interstate Corridors

There are two main corridors in Louisiana, (1) Interstate 10/12 corridor in south Louisiana from the Texas state line to the Mississippi state line, and (2) Interstate 20 corridor in north Louisiana from the Texas state line to the Mississippi state line. Both corridors have significant interstate traffic.

Interstate 10/12 Corridor

The Interstate 10/12 Corridor includes 16 parishes, and these parishes accounted for 54% of fatal CMV crashes and 61% of all crashes in 2017.

Figure 6: CMV Crashes in Interstates 10/12 Corridor



The corridor includes Louisiana Interstates 10, 110, 310, 610, 12, 55, and parts of 59 as shown in Figure 6. The major US Highways along the corridor are US 90, US 190 and US 61.

The cumulative percentage graphs provide an easy to understand method to identify high crash locations. For any interval of mileposts, the steeper the graph, the more crashes occur within the mileposts. For instance, Figure 7 shows the cumulative frequency of commercial vehicle crashes for 2017 and 2016 by milepost on interstate 10 along with all crashes. The comparison between 2016 and 2017 shows the percentage of crashes within the first 50 miles of Interstate 10 has decreased slightly from 26% to 22%.

Figure 7: Cumulative Percentage of Interstate 10 Crashes in 2016 and 2017

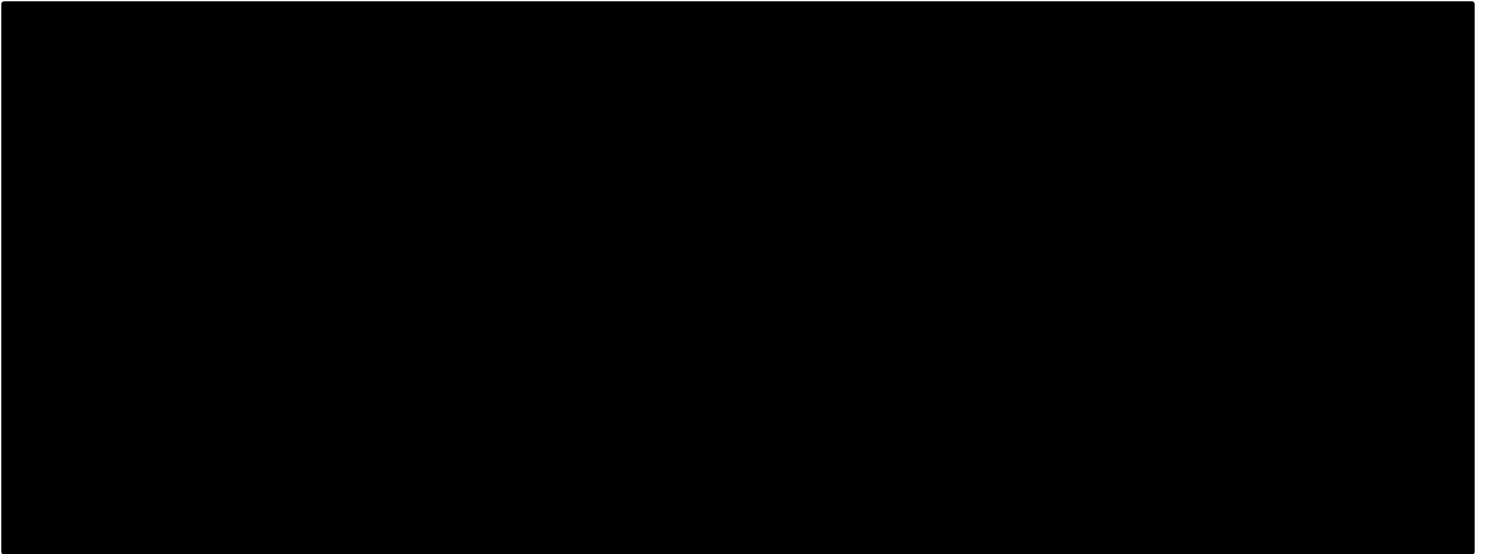
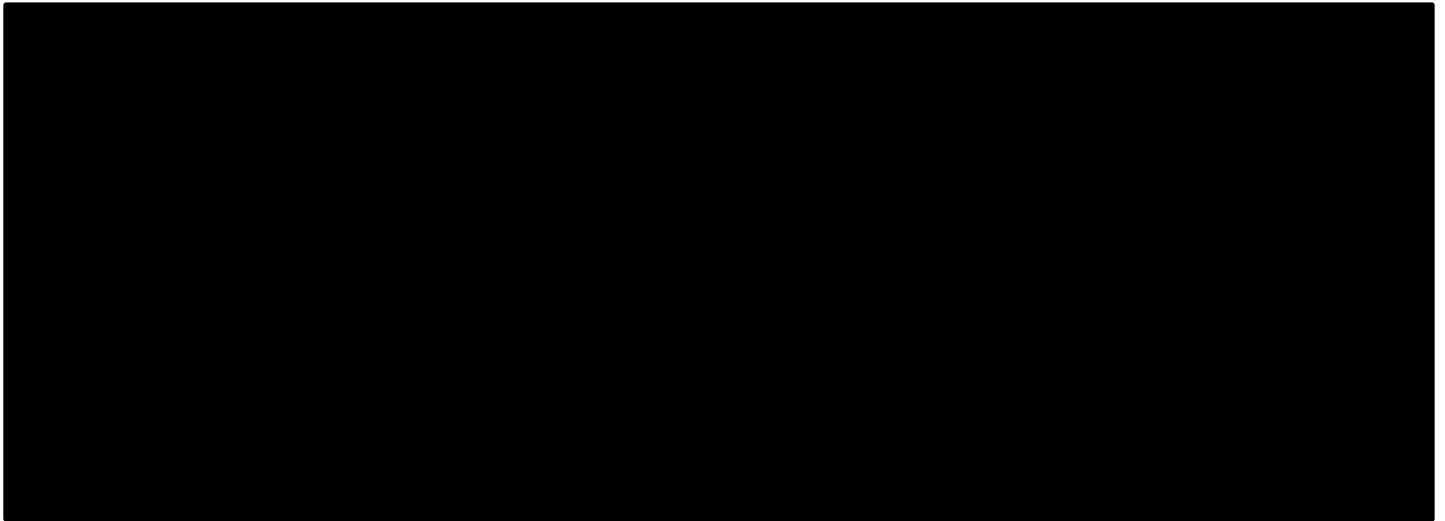


Figure 8a: CMV Interstate 10 in New Orleans between Mileposts 200 to 230



The interstate section of I10 between West Baton Rouge and the I10/12 split has about 4% of all crashes on I10, but about 5% of all CMV crashes. These crashes are shown in Figure 8b.

Figure 8b: CMV Crashes on Interstate 10 Between WBR and I10/12 Split



Figure 8c shows that several CMV crashes in 2017 occurred on the I10 bridge in Baton Rouge.

Figure 8c: CMV Crashes on Interstate 10 Bridge in Baton Rouge

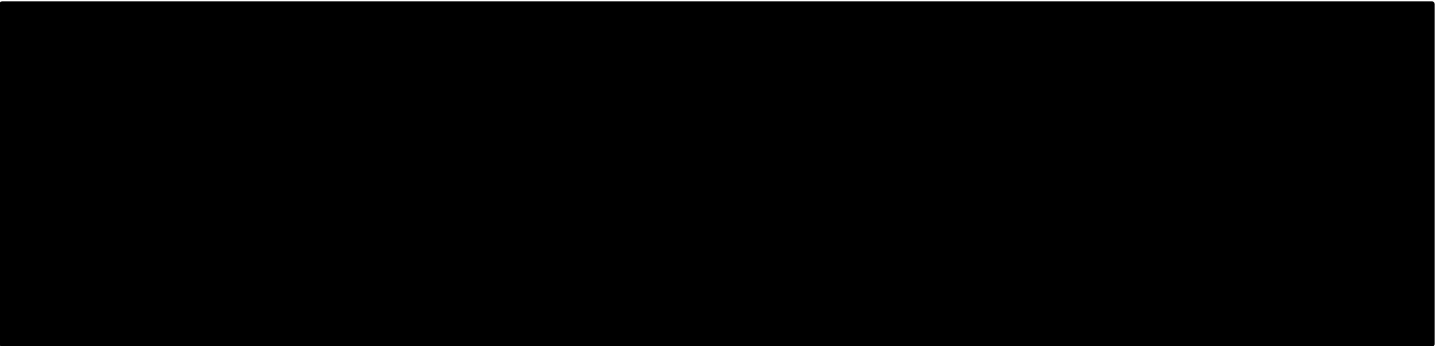


Figure 9 shows a decrease in the cumulative percent of CMV crashes within the first 20 miles of Interstate 12 from 19% in 2016 to 14% in 2017.

Figure 9: Cumulative Percent of Interstate 12 Crashes 2016 and 2017

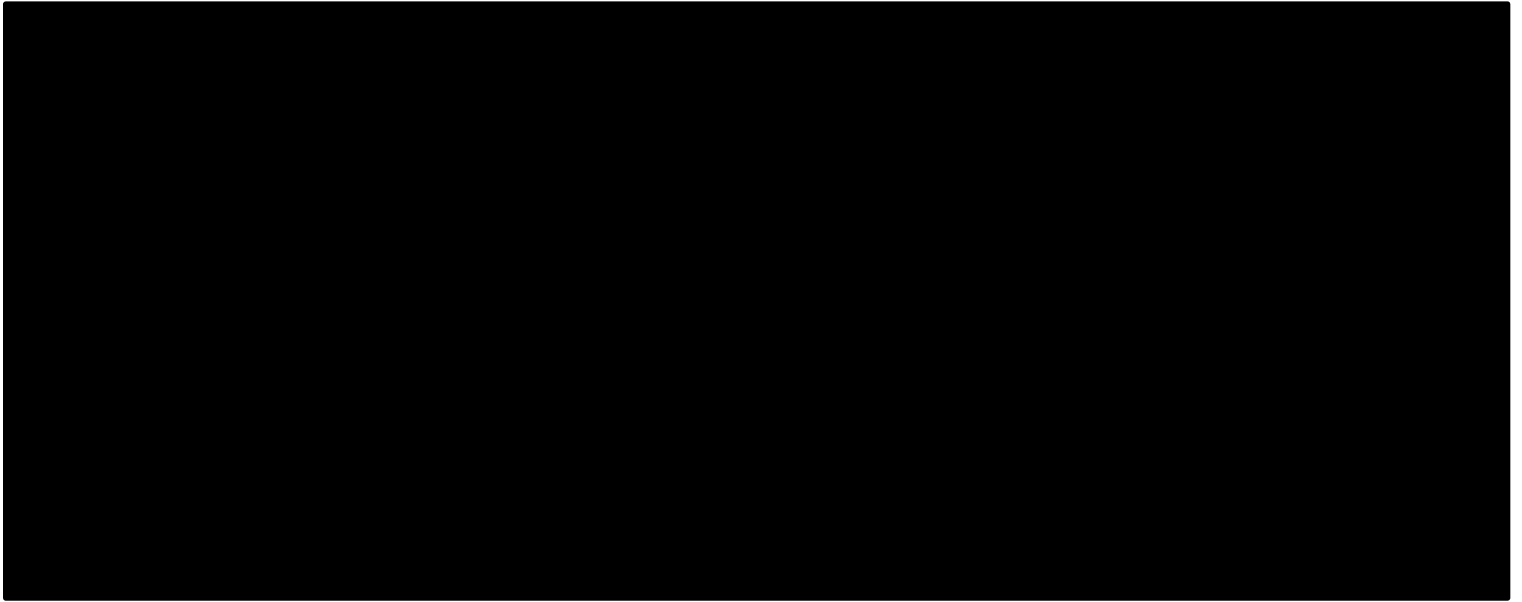
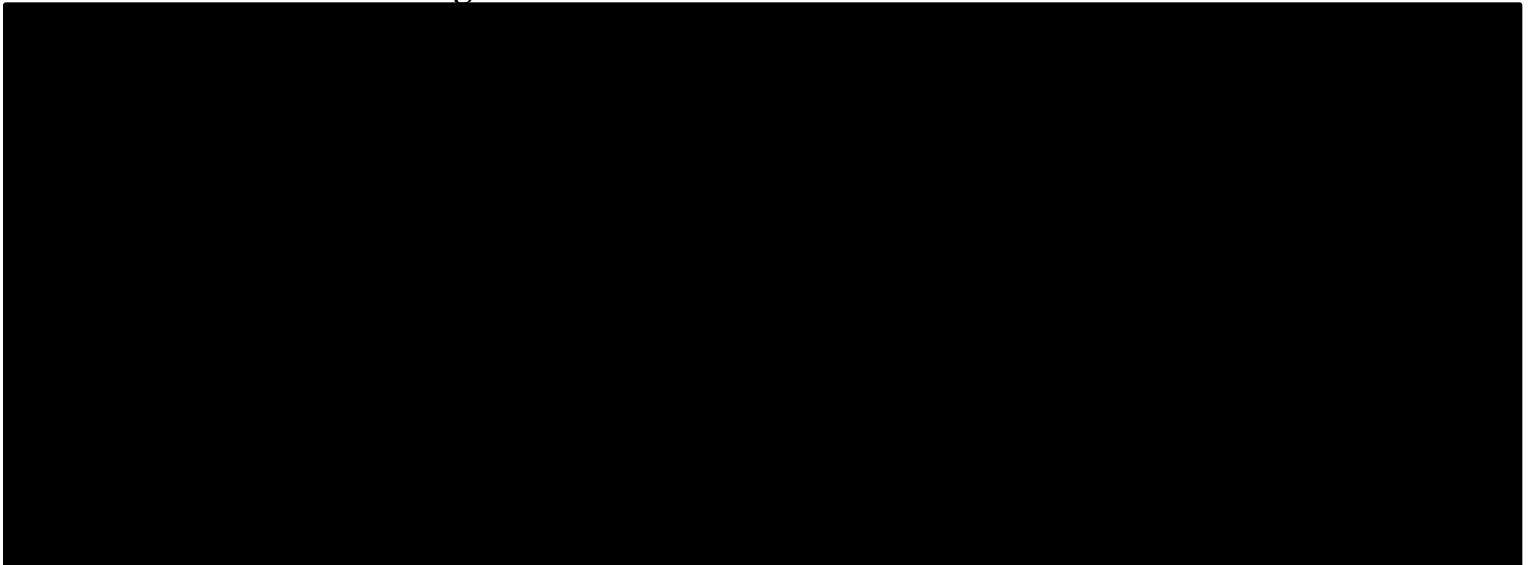


Figure 10 shows the Interstate 12 corridor between Baton Rouge and Slidell, which had an increase in CMV crashes from 183 in 2016 to 199 in 2017, and a decrease in fatalities over the same period (4 to 3).

Figure 10: CMV Crashes on Interstate 12



Interstate 20 Corridor

The Interstate 20 corridor includes 10 parishes. The three parishes (Caddo, Ouachita, and Bossier) account for 9% of all commercial vehicle crashes in 2017. As illustrated in Figure 11, the corridor includes Interstate 20, 220 and parts of Interstate 49. The major US highways along the corridor are 61, 65, 71, 80, 165, 167.

Figure 11: Interstate 20 Corridor

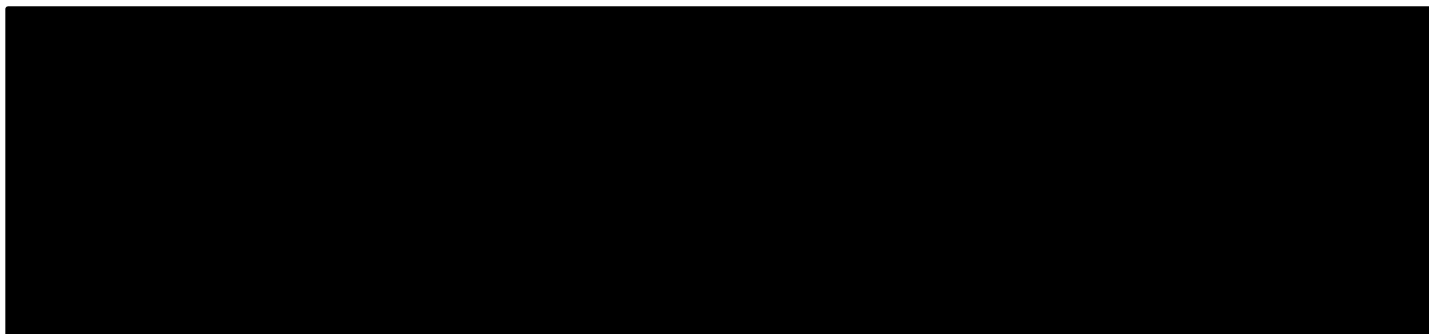
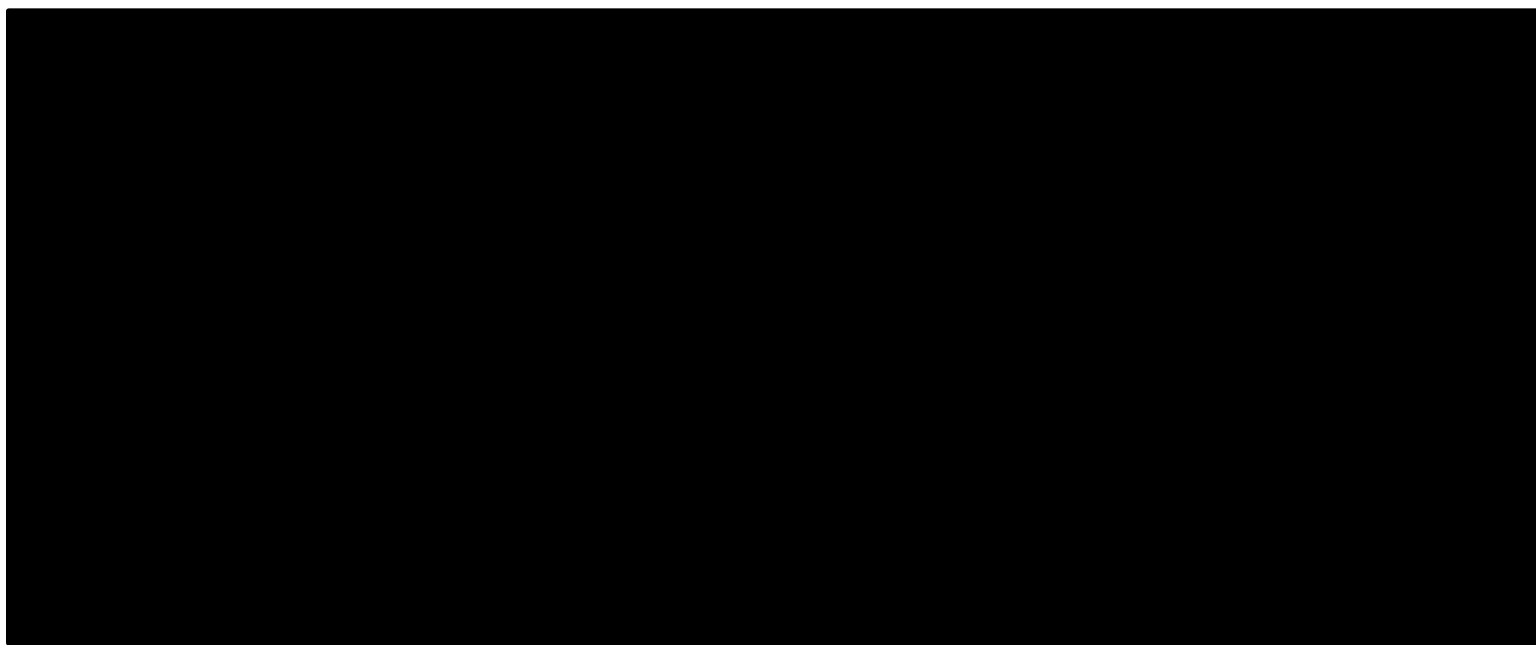


Figure 12 shows the cumulative frequency of commercial motor vehicle crashes by milepost on Interstate 20 along with all crashes. The percentage of CMV crashes within the first 50 miles of Interstate 20 decreased from about 42% in 2016 to about 39% in 2017.

Figure 12: Cumulative Frequency of CMV and all Crashes on Interstate 20



Work-Zone Crashes

Work zones are of specific interest for enforcement activities because they are potential hotspots for crashes. The work zones were derived from a DOTD file containing all scheduled work on interstates. Because this schedule may not accurately reflect the actual construction, the numbers in Table 7a are likely to be higher than the true number of work zone crashes. There are also work-zone indicators on the crash report form (Work Zone Indicator (Yes/No) and a Road Condition field with 14 options, two of which are Construction Repair and Construction No Warning). However, these crash report fields have drawbacks, as they may not be filled out consistently in cases where there is a work zone but no work is performed. Also, since many of the crashes occur before the work zone when traffic slows down or comes to a standstill, these crashes may be missed in the crash report. This analysis will include the 5 miles of the approach to the construction zone. Since we do not have the detailed information about the lane the construction is in or if both lanes are under construction, we include 5 miles on either side of the construction zone indicated in the work schedule by DOTD.

Table 7a shows that the number of fatal CMV crashes on all interstates increased by 37.0% from 27 in 2016 to 37 in 2017 while the number of fatal crashes in construction zones decreased by 12.5% from 8 to 7 when only the schedule is used. However, the number of crashes must be adjusted by the construction time and miles under construction. For instance, the year 2017 had 19.4% less construction zone day miles, i.e. miles times days under construction. We will therefore adjust the crash count by the miles multiplied by the days under construction to normalize the count. This adjustment does not take into consideration the VMT of CMV within the construction zones because it is not readily available. When miles and days under construction are taken into account, fatal crashes increased from 4.2 fatal crashes per day-mile in 2016 to 4.5 fatal crashes per day-mile in 2017.

The number of fatal crashes within the +/-5 miles of the construction zones increased from 12 in 2016 to 15 in 2017 and the number of fatal crashes per day mile increased from 6.9 in 2016 to 9.3 in 2017 even though there was a 19.4% increase in construction day miles.

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Also seen in Table 7a is an increase in all CMV crashes within the +/- 5 miles that exclude the construction zones, i.e., from 244 in 2016 to 342 in 2017, an increase of 40.2%, while the number of crashes within construction zones increased from 190 in 2016 to 200 in 2017, an increase of only 5.3% .

Table 7a: Work-Zone CMV Crashes on Interstates (2016-2017)
(Based on DOTD Schedule)

Within 5 miles of construction zone refers to 2 times 5 miles plus the length of construction

In 5 miles approach to construction zone refers to only the 5 miles on either side of the construction zone excluding the construction zone

	WHERE	2017				2016				Percent Change			
		FATAL	INJ.	PDO	ALL	FATAL	INJ.	PDO	ALL	FATAL	INJ.	PDO	ALL
ALL CMV CRASHES ON INTER-STATES	Count	37	452	904	1393	27	455	791	1273	37.0%	-0.7%	14.3%	9.4%
	Per 100K Miles	10.8	132.2	264.5	407.5	8.0	134.4	233.6	376.0	35.7%	-1.6%	13.2%	8.4%
CONSTRUCTION ZONES	Count	7	61	132	200	8	65	117	190	-12.5%	-6.2%	12.8%	5.3%
	Per 100K Day-Miles	4.5	39.5	85.5	129.6	4.2	33.9	61.1	99.1	8.6%	16.5%	40.0%	30.7%
WITHIN 5 MILES OF CONSTRUCTION ZONE	Count	15	178	349	542	12	157	265	434	25.0%	13.4%	31.7%	24.9%
	Per 100K Day-Miles	3.2	37.9	74.3	115.4	2.2	28.2	47.6	77.9	111.6%	71.4%	134.8 %	111.2%
IN 5 MILE APPROACH TO CONSTRUCTION ZONES	Count	8	117	217	342	4	92	148	244	100.0%	27.2%	46.6%	40.2%
	Per 100K Day-Miles	2.5	37.1	68.8	108.4	1.1	25.2	40.5	66.8	131.6%	47.3%	69.8%	62.3%

Using crashes that are marked both on the crash report as both (Work Zone Indicator "Yes" and a Road Condition field "Construction Repair" or "Construction No Warning"), the number of fatal crashes in the approach to the construction zones was zero (0) in 2016 and 2017, since the crashes in the approaches are not to be counted as work zone crashes according to the crash manual unless the crash falls within the first warning signs. Table 7b therefore does not report crashes before or after construction zones. The number of fatal CMV crashes based on the crash report was 2 in 2016 and only 1 in 2017.

Table 7b: Work-Zone CMV Crashes on Interstates (2016-2017)
(Based on Crash Report)

	WHERE	2017				2016				Percent Change			
		FATAL	INJ.	PDO	ALL	FATAL	INJ.	PDO	ALL	FATAL	INJ.	PDO	ALL
ALL CMV CRASHES	Count	37	452	904	1393	27	455	791	1273	37.0%	-0.7%	14.3%	9.4%
ON INTER-STATES	Per 100K Day-Miles	10.8	132.2	264.5	407.5	8.0	134.4	233.6	376.0	35.7%	-1.6%	13.2%	8.4%
CONSTRUCTION	Count	1	30	36	67	2	22	21	45	-50.0%	36.4%	71.4%	48.9%
ZONES	Per 100K Day-Miles	0.6	19.4	23.3	43.4	1.0	11.5	11.0	23.5	-37.9%	69.3%	112.8 %	84.8%

Seat Belt Usage

Seat belt usage is one of the most important factors preventing death in a crash. Table 8 shows that in 2017, 41.18% of CMV drivers killed in a crash did not wear a seat belt while 57.54% of all drivers killed in all motor vehicle crashes were not wearing a seat belt. However, since the number of CMV drivers killed is relatively small, these percentages vary more than the percentages for all drivers. The five-year average shows that CMV drivers killed had a higher rate of seat belt usage than drivers of passenger vehicles. The 5-year average of CMV drivers killed not wearing a seat belt was 45.80% compared to 60.41% for passenger vehicles.

Table 8: Seat Belt Usage

This includes only drivers with known seat belt use.

Year	CMV Drivers						All Drivers					
	Drivers Killed w/o Seatbelt	Total Number of Drivers Killed	% of Drivers Killed w/o seatbelt	Drivers Seriously Injured w/o Seatbelt	Total Number of Drivers Seriously Injured	% of Drivers Seriously Injured w/o seatbelt	Drivers Killed w/o Seatbelt	Total No. of Drivers Killed	% of Drivers Killed w/o seatbelt	Drivers Seriously Injured w/o Seatbelt	Total No. of Drivers Seriously Injured	% of Drivers Seriously Injured w/o seatbelt
2013	5	12	41.67%	3	9	33.33%	235	389	60.41%	198	627	31.58%
2014	6	13	46.15%	3	13	23.08%	235	372	63.17%	199	621	32.05%
2015	2	7	28.57%	2	10	20.00%	262	413	63.44%	210	633	33.18%
2016	5	7	71.43%	3	9	33.33%	211	367	57.49%	209	621	33.66%
2017	7	17	41.18%	0	9	0.00%	229	398	57.54%	198	604	32.78%
Year Total	25	56	45.80%	11	50	21.95%	1172	1939	60.41%	1014	3106	32.65%

Hazardous Material

CMV crashes involving CMVs carrying hazardous material are of particular interest due to their potential danger to the environment and community when hazardous materials are released. Over the past 6 years, from 2012 to 2017, on average, about 14.2% of crashes involving hazardous material resulted in a release of the hazardous material. This percentage was 12.3% in 2017. The actual percentage of release may be higher since many of the CMVs identified as transporting hazardous material may actually be returning with an empty load, thus the percentage of releases based on crashes with full loads of hazardous material may be much higher than the percentages shown in Table 9.

The interstates accounted for 44.3% of all crashes involving hazardous materials in 2017. Specifically, Interstate 10 accounts for 55.6% of all hazardous material crashes on interstates in 2017. US highways account for 18.0% of all hazardous material crashes in 2017, with US 90 and US 190 accounting for 63.6% of hazardous material crashes on US highways. State highways accounted for 27.9% of all hazardous crashes in 2017.

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Table 9: Hazardous Material Crashes
(Includes only known Chemicals Transported)

Year	Transport	Released	% Released	Fatal Crash	Fatalities
2012	115	12	10.43%	11	12
2013	115	15	13.04%	7	8
2014	141	23	16.31%	1	1
2015	138	25	18.12%	4	5
2016	86	12	13.95%	4	4
2017	124	15	12.10%	5	5

The types of hazardous material reported in CMV crashes are displayed in Table 10. On average, 21% involve corrosive material, 8% involve flammable gasses, and 45% involve flammable liquids. The remaining percentages are various chemicals. Note that Table 10 does not include unknown chemicals.

Table 10: Type of Hazardous Material in CMV Crashes

Year	2012		2013		2014		2015		2016		2017	
Material	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.
CORROSIVE GASES (CANADA)	0	0	0	0	0	0	0	0	0	0	0	0
CORROSIVE MATERIALS	19	3	15	2	23	2	24	5	14	2	26	3
DANGEROUS WASTES (CANADA)	0	0	0	0	0	0	0	0	0	0	0	0
DANGEROUS WHEN WET MATERIALS	1	0	0	0	0	0	0	0	0	0	0	0
ENVIRONMENTALLY HAZARDOUS SUBSTANCES (CANADA)	0	0	0	0	0	0	0	0	0	0	0	0
EXPLOSIVES	0	0	0	0	0	0	0	0	0	0	1	0
EXPLOSIVES WITH A MASS EXPLOSION HAZARD	1	0	1	0	0	0	0	0	1	0	0	0
EXPLOSIVES WITH A NO SIGNIFICANT BLAST HAZARD	0	0	0	0	0	0	0	0	1	0	2	0
EXPLOSIVES WITH A PREDOMINANTLY A FIRE HAZARD	1	0	0	0	0	0	1	0	0	0	1	0
EXPLOSIVES WITH A PROJECTION HAZARD	0	0	0	0	0	0	0	0	0	0	0	0
EXTREMELY INSENSITIVE DETONATING ARTICLES	0	0	0	0	0	0	0	0	0	0	0	0
FLAMMABLE GASES	17	2	15	1	20	0	17	2	2	0	10	2
FLAMMABLE LIQUIDS	52	5	73	11	69	17	62	15	44	8	56	6
FLAMMABLE SOLIDS	0	0	0	0	1	0	2	0	1	0	2	1
FLAMMABLE SOLIDS OR SPONTANEOUSLY COMBUSTIBLE MATERIALS OR DANGEROUS WHEN WET MATERIALS	1	0	0	0	0	0	0	0	0	0	0	0
GASES	0	0	1	0	0	0	1	0	0	0	4	0
GASES TOXIC BY INHALATION	2	0	1	0	1	0	4	0	3	0	0	0
INFECTIOUS SUBSTANCES	0	0	0	0	0	0	0	0	0	0	0	0
MISC DANGEROUS GOODS	12	1	4	0	11	2	10	1	8	2	12	2
MISC DANGEROUS GOODS (CANADA)	0	0	0	0	0	0	0	0	0	0	0	0
NON-FLAMMABLE, NON-TOXIC COMPRESSED GASES	5	1	2	0	7	0	8	2	2	0	7	1
ORGANIC PEROXIDES	0	0	0	0	1	0	2	0	1	0	0	0
OXIDIZERS	1	0	0	0	1	1	1	0	5	0	1	0
OXIDIZERS AND ORGANIC PEROXIDES	0	0	0	0	0	0	0	0	0	0	0	0
RADIOACTIVE MATERIALS	0	0	1	0	2	0	0	0	0	0	0	0
SPONTANEOUSLY COMBUSTIBLE MATERIALS	1	0	0	0	1	0	1	0	0	0	0	0
TOXIC MATERIALS	2	0	2	1	4	1	5	0	4	0	2	0
TOXIC MATERIALS AND INFECTIOUS SUBSTANCES	0	0	0	0	0	0	0	0	0	0	0	0
VERY INSENSITIVE EXPLOSIVES; BLASTING AGENTS	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	115	12	115	15	141	23	138	25	86	12	124	15

(Includes only known Chemicals Transported)

Distractions

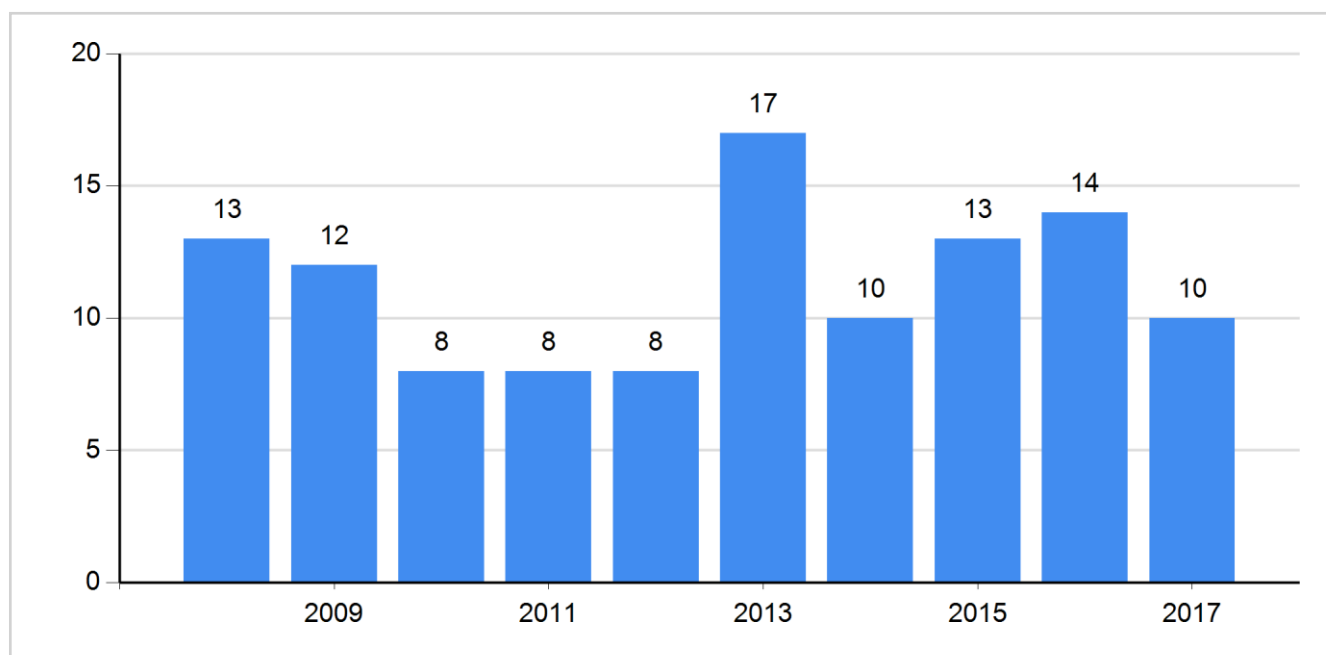
Although distractions play an important role in all crashes, including CMV crashes, no fatal CMV crashes were reported in 2017 in which cell phone usage was the cause of distraction. Table 11 shows the breakdown of crashes by type of distraction for CMV crashes.

Table 11: Distractions

Driver Distraction Description	Fatal	Injury	PDO	Total
CELL PHONE	0	4	6	10
NOT DISTRACTED	76	1807	1526	3409
OTHER ELECTRONIC DEVICE	0	3	2	5
OTHER INSIDE THE VEHICLE	2	32	35	69
OTHER OUTSIDE THE VEHICLE	4	43	20	67
UNKNOWN	22	428	318	768

The number of CMV crashes with cell phone usage has varied between 13 in 2009 to a low of 8 in 2010 to 2012 and was 10 in 2017.

Figure 13: Cell Phone Use as a Distraction in CMV Crashes



Changes in Number of Crashes by Parish

The 15 parishes with the highest number of fatal and non-fatal CMV crashes are listed in Table 12. From 2016 to 2017, Louisiana experienced a significant increase in all CMV crashes along the I10/I12 corridor and I20: Rapides (27%), St. Tammany (15%), and Terrebonne (15%). Tangipahoa (10%) and Lafourche (7%) also had considerable increases in CMV crashes. Thus, the I10/I12 corridor and I20 are candidates for increased enforcement to counteract the increasing trend in crashes.

Table 12: CMV Crashes by Parishes

PARISH	FATAL CRASHES		TOTAL CRASHES		TOTAL CRASHES	
	2017	2016	2017	2016	Diff	% Change
East Baton Rouge	8	5	366	364	2	1%
Orleans	3	6	298	328	-30	-9%
Calcasieu	2	8	272	254	18	7%
Lafayette	4	1	232	236	-4	-2%
Jefferson	4	4	224	212	12	6%
St. Tammany	6	2	210	182	28	15%
Tangipahoa	5	6	170	154	16	10%
Caddo	1	4	148	138	10	7%
Livingston	1	2	123	135	-12	-9%
Ouachita	5	1	123	149	-26	-17%
Rapides	0	3	116	91	25	27%
Lafourche	2	2	102	95	7	7%
St. Martin	5	3	101	69	32	46%
Bossier	1	1	92	90	2	2%
Ascension	4	1	91	114	-23	-20%
West Baton Rouge	4	0	91	110	-19	-17%
TOTAL	55	49	2759	2721	38	1%

Rural CMV Crashes

Table 13a displays the count of crashes on rural roads by highway type. Although the data shows that rural roads account for most of the fatal and injury crashes, rural roads make up the majority of the roadway sections. While the fatal CMV crashes on US highways decreased by 7 or 31.8% from 2016 to 2017, the fatal CMV crashes on state highways increased by 2 (5.7%), and the fatal CMV crashes on interstates increased by 10 or 37%.

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The injury crashes during the same period exhibit a decrease of 1% on interstates, a decrease of 4% on state highways and a decrease of 4% on US highways.

Table 13a: CMV Crashes by Highway Type 2017

HIGHWAY TYPE	FATAL CRASHES			INJURY CRASHES			PDO			TOTAL		
	2017 CRASH	2016 CRASH	DIFFERENCE	2017 CRASH	2016 CRASH	DIFFERENCE	2017 CRASH	2016 CRASH	DIFFERENCE	2017 CRASH	2016 CRASH	DIFFERENCE
INTERSTATE	37	27	37.0%	452	455	-0.7%	904	791	14.3%	1393	1273	9.4%
US HIGHWAY	15	22	-31.8%	324	339	-4.4%	400	418	-4.3%	739	779	-5.1%
STATE ROAD	37	35	5.7%	507	530	-4.3%	710	733	-3.1%	1254	1298	-3.4%
PARISH ROAD	2	0	0.0%	83	87	-4.6%	145	155	-6.5%	230	242	-5.0%
CITY/LOCAL ROADS	5	5	0.0%	233	213	9.4%	245	259	-5.4%	483	477	1.3%
OTHERS	0	0	0.0%	10	10	0.0%	7	10	-30.0%	17	20	-15.0%
ALL ROADWAYS	96	89	7.9%	1609	1634	-1.5%	2411	2366	1.9%	4116	4089	0.7%
% Interstates	38.5%	30.3%	8.2%	28.3%	28.0%	0.3%	37.6%	33.6%	4.0%	34.0%	31.3%	2.7%
% US	15.6%	24.7%	-9.1%	20.3%	20.9%	-0.6%	16.6%	17.7%	-1.1%	18.0%	19.1%	-1.1%
% State	38.5%	39.3%	-0.8%	31.7%	32.6%	-0.9%	29.5%	31.1%	-1.6%	30.6%	31.9%	-1.3%
% State, US, & Interstate	92.7%	94.4%	-1.7%	80.2%	81.5%	-1.3%	83.8%	82.4%	1.3%	82.6%	82.3%	0.3%

The crash report does not indicate if a crash was urban or rural besides the city code which is not a reliable indicator. Because of urban sprawl over the years there are many urbanized areas outside the city limits.

Table 13b shows the percentage of crashes by severity and highway type coded with city code 00. This code is most often used by the state police to identify crashes that occurred outside of city limits. However, some crashes worked by state police could have been inside city limits. About 68% of the fatal interstate CMV crashes occurred in rural areas and about 54% of the injury interstate CMV crashes occurred in rural areas. Overall, 70% of fatal CMV crashes and 54% of all CMV crashes occur in rural areas. Thus, rural interstates, US highways, and state highways should continue to be the focus of enforcement.

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Table 13b: Percentage of CMV Crashes Outside City Limits 2017

HWY Type	Fatal	Injury	PDO	Total
INTERSTATE	67.6%	54.0%	59.1%	57.6%
US HIGHWAY	60.0%	42.6%	49.0%	46.4%
STATE ROAD	81.1%	69.0%	66.6%	68.0%
PARISH ROAD	100.0%	79.5%	89.0%	85.7%
CITY/LOCAL ROADS AND STREETS	20.0%	0.4%	2.0%	1.4%
ALL ROADWAYS	69.8%	50.0%	55.6%	53.7%

Bus Crashes

Small and large busses are of particular interest to law enforcement because of the potential risk of high number of fatalities in a single crash. The number of CMV bus crashes, injuries, and fatalities is depicted in Table 14. In 2017, there were 115 large bus crashes where 256 passengers were injured inside the bus. There were 46 small bus crashes with no people killed but 56 passengers were injured. There were 160 school bus crashes with 429 passengers injured. Overall, in 2017, there was 1 person killed in 321 bus crashes and 741 injured. The number of bus crashes has decreased from 353 in 2016 to 321 in 2017, and the number of injuries has decreased from 810 in 2016 to 741 in 2017. The number of school bus crashes has decreased by 22.3%, while small bus crashes have increased by 21.1%, and large bus crashes have increased by 5.5%.

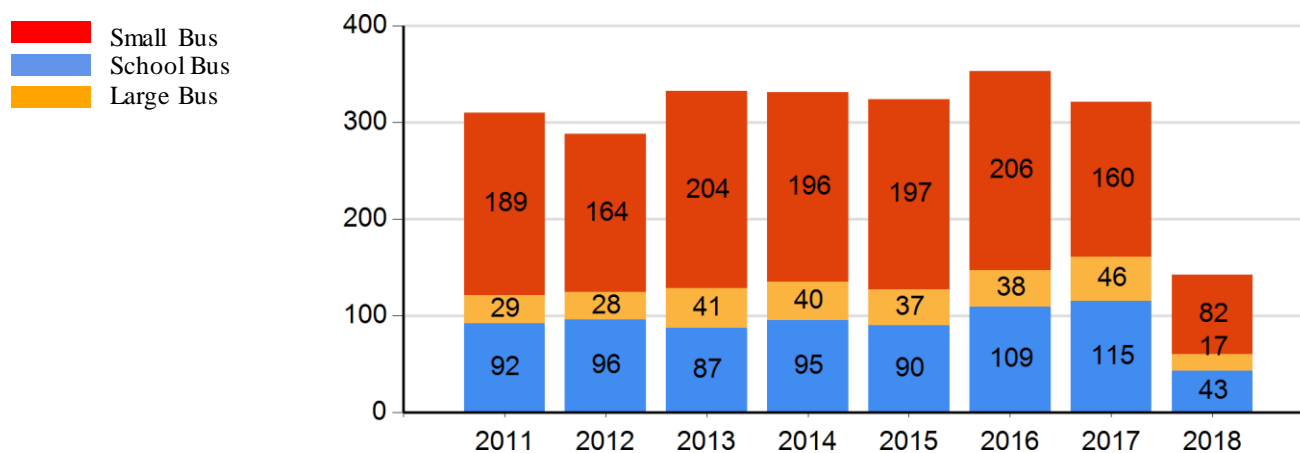
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Table 14: CMV Bus Crashes in 2016-6/8/2018

Year		Count	SCHOOL BUS	SMALL BUS	LARGE BUS	TOTAL
2016	Bus Crash	Number of Crashes	206	38	109	353
		Number of Fatal Crashes	4	1	1	6
		Number Total Killed	5	1	3	9
		Number Killed Inside Bus	0	0	0	0
		Number Injured Inside Bus	479	37	294	810
2017	Bus Crash	Number of Crashes	160	46	115	321
		Number of Fatal Crashes	0	0	1	1
		Number Total Killed	0	0	1	1
		Number Killed Inside Bus	0	0	0	0
		Number Injured Inside Bus	429	56	256	741
2018	Bus Crash	Number of Crashes	82	17	43	142
		Number of Fatal Crashes	2	0	0	2
		Number Total Killed	2	0	0	2
		Number Killed Inside Bus	1	0	0	1
		Number Injured Inside Bus	173	15	109	297

Figure 14 shows the trend in bus crashes. The graph shows that the total number of bus crashes have decreased from 353 in 2016 to 321 in 2017.

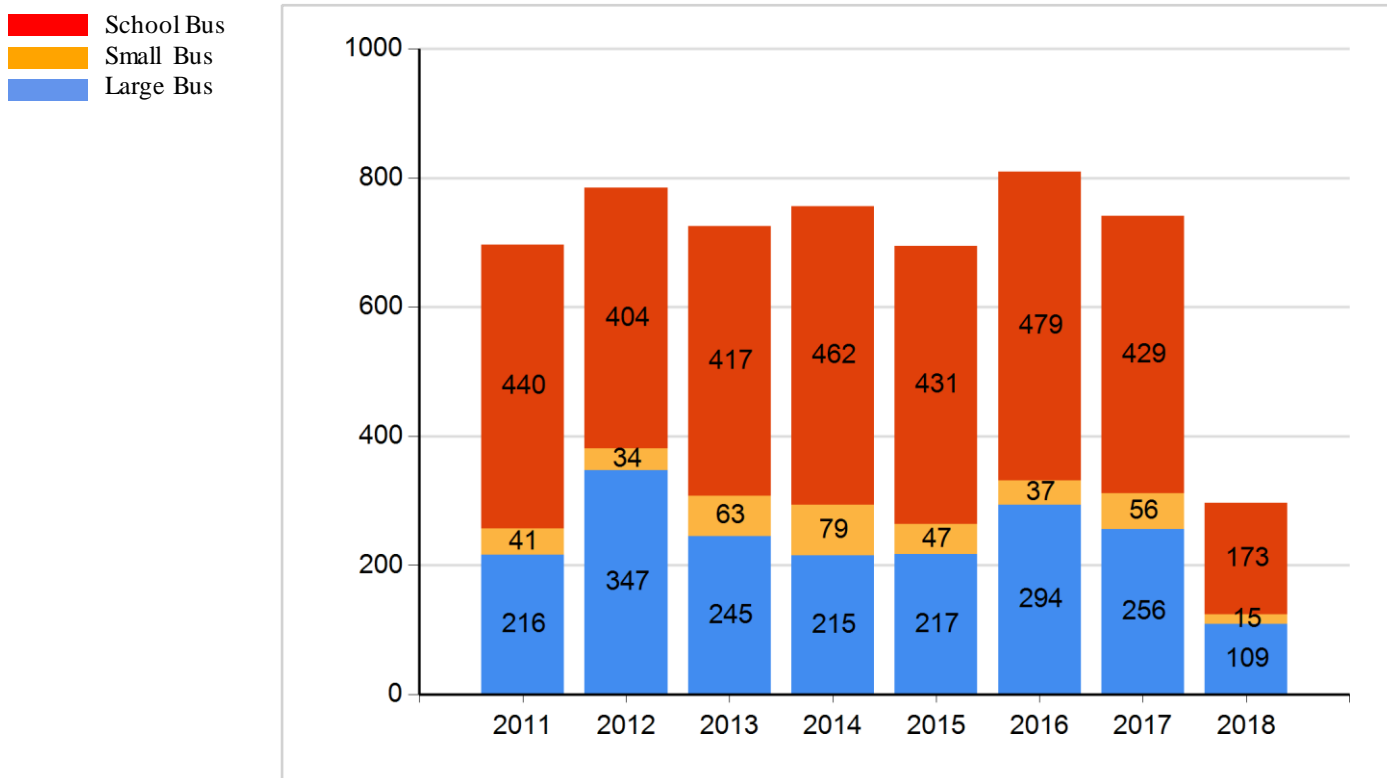
Figure 14: CMV Bus Crashes 2011 to 6/8/2018



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Figure 15 shows that injuries in bus crashes peaked in 2016 with 810 injuries reported.

Figure 15 : Bus-Crash Injuries 2011 to 6/8/2018



While the number of bus crashes has decreased by 9.97% from 2016 to 2017, namely from 353 to 321, the number of injuries have decreased by 8.52%, namely from 810 to 741.

2018 YTD Crash Results

The 2018 data is still being collected at this time, but the following Table 15 provides a snapshot of CMV crashes YTD.

Table 15: CMV Crashes YTD 2018

CMV Crashes and Type	2018 YTD*
Total CMV Fatal Crashes	34
Total Fatalities	37
Total Passenger Carrier Crashes	142
Total Passenger Carrier Fatal Crashes	2
Total Passenger Carrier Fatalities (In Crash)	1
Total HazMat Crashes	43
Total HazMat Fatal Crashes	2
Total HazMat Fatalities	3
Total Construction Zone Fatal Crashes (Table 7a)	0
Total in 5 Mile Approach to Construction Zone (Table 7a)	0

***As of Friday, June 8, 2018, NA: Not available at this time.**

Note: Definition of Reportable CMV Crashes: To qualify for reporting to the SafetyNET, the crash has to involve a private or public motor carrier, a GCWR weight of at least 10,001 pounds or above, a motor vehicle that can transport 9 or more people including the driver seat or a vehicle displaying a hazmat placard and one of the three conditions apply: (1) a tow of one of the vehicles, (2) the transportation of an injured person to medical treatment away from the crash scene, or (3) a fatality.