

COMMERCIAL VEHICLE SAFETY IN LOUISIANA

An Analysis of Truck Crashes for 2007

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Summary

In an effort to reduce the number and severity of crashes involving Commercial Motor Vehicles (CMV), the Louisiana State Police (LSP) reviews factors such as location, severity, time of day, day of week, violations, primary contributing factors, driver characteristics, carrier and type of truck, road conditions, highway type, and hazardous material involvement. From this, the LSP continues to develop strategies and methods designed to reduce the overall number and severity of CMV crashes. These strategies and methods include enforcement activities, the prompt reporting of road problems, and educating the public on the importance of safe driving. The following crash data and statistical information was calculated by the Department of Information Systems and Decision Sciences at Louisiana State University.

Based on an UMTRI report of December 2006 the reporting definitions for commercial truck crashes were updated to include intra-state and interstate truck crashes of private and public motor carriers. Subsequently the missing 2005-2006 crash records were uploaded to MCMIS in 2007. This increased the count by about 50% compared to earlier reporting. In the post Katrina year 2006, the total number of all reported CMV crashes in Louisiana decreased by 8.5% compared to 2005. In 2007 the total number of reported CMV crashes increased by 5.5% compared to 2006 but decreased by 3.4% when compared to the Katrina year 2005. The number of fatal CMV crashes decreased from 134 in 2005 to 118 in 2007. But when compared to 2006 the fatal CMV crashes increased from 105 to 118. The number of injury CMV crashes is about at the same level as in 2005 after decreasing from 2005 to 2006 by 12.5% and then increasing from 2006 to 2007 by 10.3%.

During 2007, 26% of all CMV crashes in Louisiana occurred on Interstates, 39% occurred on State highways, and 21% occurred on U.S. highways. In 2006, the respective percentages were 26%, 37%, and 20%. Hence, there was small percentage increase in number of crashes on State Highways. The percentages distribution of fatal CMV crashes in 2007 were 32% on interstates, 24% on US highways, and 37% on state routes compared to 31%, 22% and 38% in 2006. We can observe a slight increase of the percentage of CMV crashes on interstates and US Highways.

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For 2007, 17 % of all CMV crashes on interstates occurred in a work-zone (16% of fatal crashes, 18% of injury crashes and 17% of PDO crashes). When 5 miles are added before and after the work zone these percentages for interstates increase to 48% for all crashes, 53% for fatal crashes, 49% for injury crashes, and 47% for PDO crashes.

In 2007, of all CMV drivers in fatal crashes, 35% were cited for a violation. In injury and property damage crashes, the driver of the CMV was cited for a violation 47% and 48% of the time, respectively. In 2007, careless operation accounts for the majority of violations committed in association with commercial vehicle crashes at a rate of 33.5%. Other violations with relatively high occurrence rates were following too closely at 9.6% and failure to yield at 12.2%.

The manners of collision most common in CMV crashes were rear-end type at a rate of 30% and non-collision type (single vehicle crashes) at 19%. In fatal crashes, the most common manners of collision were right angle type collisions at 24%, head-on type collisions at 14%, rear-end collisions at a rate of 21% and non-collision type 20%.

This data indicates the need for continued special attention to traffic enforcement in specific areas for both the CMV operators and the drivers of passenger vehicles. As well, a continued public education posture is appropriate.

Overview

As mentioned in the summary based on the UMTRI study, the reporting of crashes was updated to include intra-state crashes and public motor vehicles meeting the reporting requirements. In order to eliminate the effect of reporting issues and observe the true change in the number of CMV crashes from 2005 to 2006, the 2005 data were updated using the new reporting logic as well. Table 1 which depicts the CMV crashes from 2002 to 2007 also shows that the percentage of fatal CMV crashes of all fatal crashes has increased in 2007 by one percentage point from 12% in 2006 to 13% in 2007, and the percentage of injury crashes has increased by 0.4 percentage points compared to 2006.

Table 1: CMV Crashes 2000-2006

Year	CMV Crashes				All crashes				% CMV			
	Fatal	Injury	PDO	Total CMV	Fatal	Injury	PDO	Total	Fatal	Injury	PDO	Total
2002	101	990	1002	2093	818	50,900	114,900	166,618	12%	1.9%	0.9%	1.3%
2003	120	1301	1287	2708	826	48,700	111,400	160,926	15%	2.7%	1.2%	1.7%
2004	106	1308	1413	2827	886	50,100	113,400	164,386	12%	2.6%	1.2%	1.7%
2005	134	2197	2171	4502	874	49,500	108,100	158,474	12%	2.6%	1.2%	1.7%
2006	105	1922	2093	4120	886	48,100	111,100	160,086	12%	4.0%	1.9%	2.6%
2007	118	2120	2110	4348	887	47,961	110,100	158,948	13%	4.4%	1.9%	2.7%

Figure 1 highlights the number of total crashes and the CMV crashes and Figure 2 shows the CMV crashes by severity.

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Figure 1: CMV Crashes 2002-2007

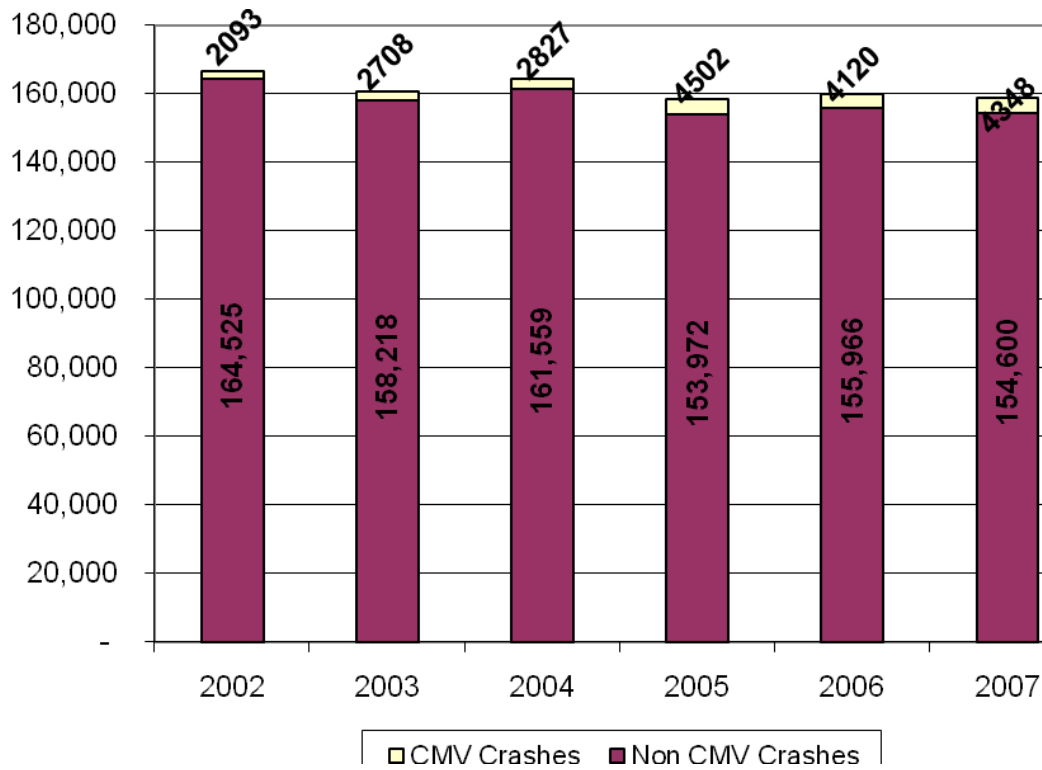
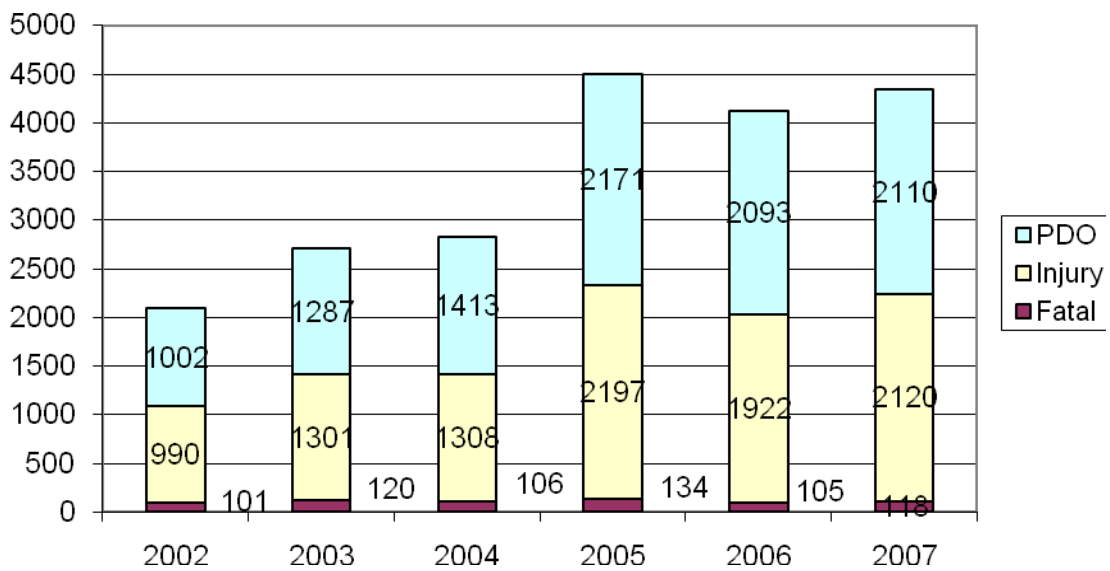


Figure 2: CMV Crashes by Severity: 2002-2007



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Figure 3 shows the fatal CMV crashes and all fatal crashes and Figure 4 shows the trend of fatal CMV crashes. The graphs show that the number of fatal CMV has been fluctuating over the past five years without any clear trend. Figure 5 shows the CMV crashes by severity of injury.

Figure 3: CMV and Non-CMV Fatal Crashes: 2002-2007

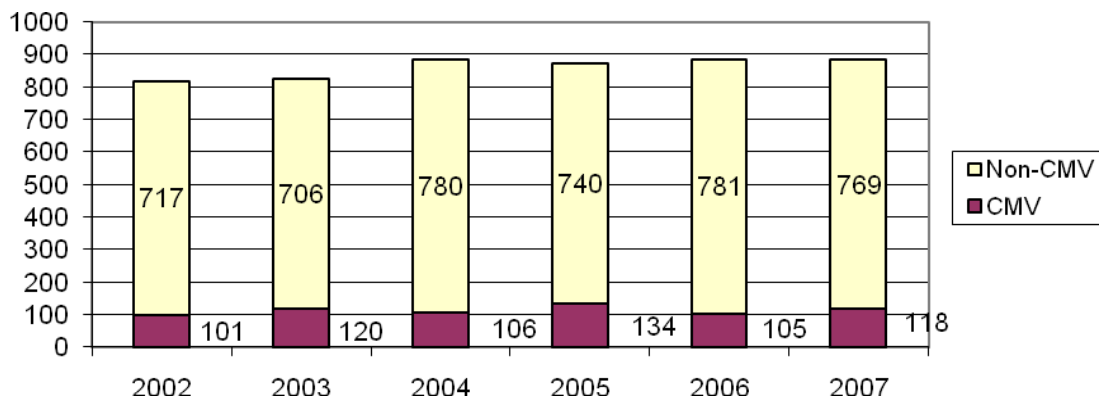


Figure 4: Fatal CMV Crashes by Year: 2002-2007

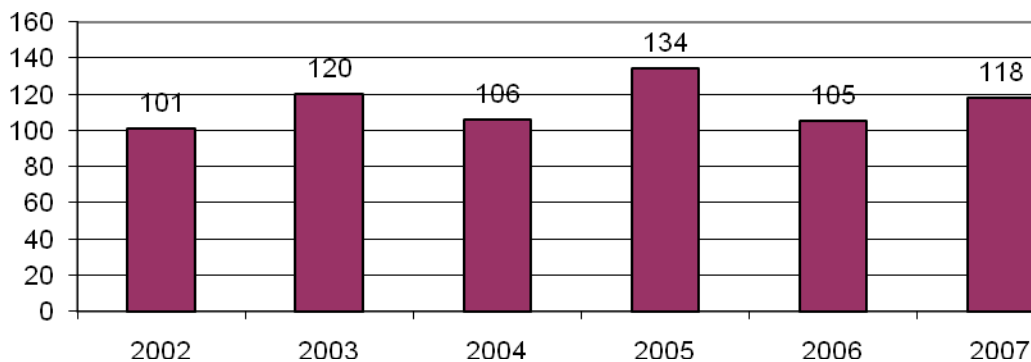
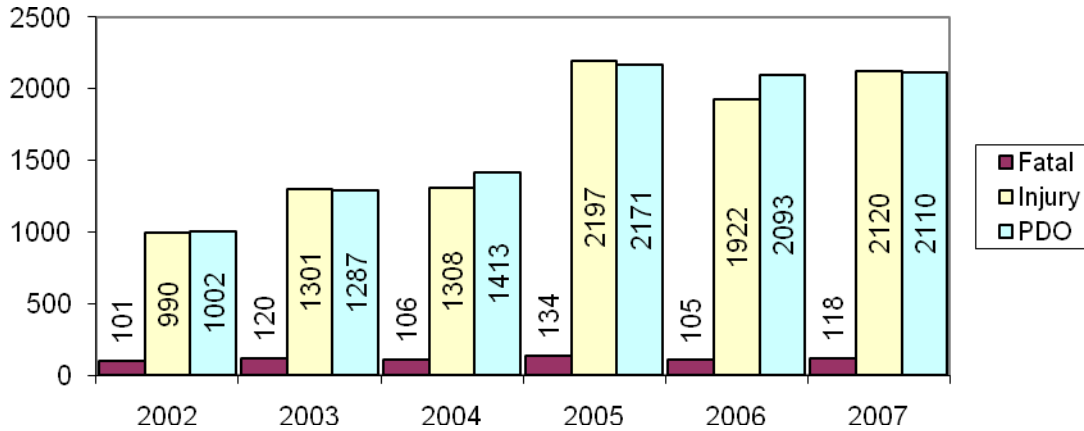


Figure 5: CMV Crashes by Severity: 2002-2007



Due to a steady increase in traffic over the years, the number of crashes should be adjusted by the vehicle miles traveled (VMT). The vehicle miles traveled were estimated by Volpe for the years 2001 to 2004. And posted on <http://ai.volpe.dot.gov/CrashProfile/vmtreport5.asp>. However, since 2005 and 2006 data were not posted at this time, the VMT 2005 to 2007 VMT were estimated using linear regression. Table 2 depicts the estimated crashes per 100 million miles traveled.

Table 2: CMV and all Crashes 2002-2007 per 100 Million Miles Traveled

Year	CMV Crashes				All crashes			
	Fatal	Injury	PDO	Total CMV	Fatal	Injury	PDO	Total
2002	2.1	21	21	44	1.9	118	265	385
2003	2.4	27	26	55	1.9	110	252	364
2004	2.1	26	28	56	2.0	113	255	369
2005	2.6	43	42	88	1.9	110	240	352
2006	2.0	37	40	78	2.0	106	245	353
2007	2.2	39	39	81	1.9	105	241	349

Analysis of Crashes by Month

Table 3 shows the CMV crashes for 2007 by months. As the table shows, December and August had the highest number of fatal crashes. However, the total number of CMV crashes in June and December were not unusually high making

Table 3: CMV Crashes by Month

MONTH	FATAL CRASHES	TOTAL KILLED	INJURY CRASHES	PDO	TOTAL CRASHES	TOTAL TRUCKS AND BUSES	% CRASHES
JANUARY	9	13	166	189	364	387	8%
FEBRUARY	9	10	216	163	388	427	9%
MARCH	12	13	239	199	450	484	10%
APRIL	7	7	180	184	371	399	9%
MAY	11	11	152	186	349	364	8%
JUNE	12	15	164	141	317	334	7%
JULY	5	6	139	170	314	337	7%
AUGUST	8	8	186	186	380	409	9%
SEPTEMBER	11	14	155	157	323	345	7%
OCTOBER	9	10	191	202	402	433	9%
NOVEMBER	11	13	191	177	379	420	9%
DECEMBER	14	16	141	156	311	328	7%
TOTAL	118	136	2120	2110	4348	4667	100%

December not only the deadliest month but also the month with the highest percentage of fatal crashes (4.5%). It is difficult to associate a cause for this high percentage in fatal crashes.

Violations

In 2006, of all CMV drivers in fatal crashes, 32% were cited for a violation. In injury and property damage crashes, the driver of the CMV was cited for a violation 50% of the time.

Table 4: Violations as Percentage of Drivers and Percent of all Violations

As Percentage of Truck/Car Drivers	VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
		Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver
2002		32%	68%	54%	46%	54%	46%	53%	47%
2003		32%	68%	55%	45%	57%	43%	55%	45%
2004		34%	54%	54%	50%	52%	55%	52%	52%
2005		31%	47%	52%	44%	47%	50%	49%	47%
2006		32%	66%	50%	50%	50%	54%	49%	52%
As Percentage of Violations	VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
		Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver	Truck Driver	Passenger Car Driver
2002		32%	68%	54%	46%	54%	46%	53%	47%
2003		32%	68%	55%	45%	57%	43%	55%	45%
2004		36%	64%	54%	46%	55%	45%	54%	46%
2005		37%	63%	39%	61%	40%	60%	39%	61%
2006		30%	70%	50%	50%	53%	47%	51%	49%

In order to assess who is at fault in a CMV crash the data show that in fatal crashes the citation goes to the CMV driver in only 30% of the cases while 70% of the time the other driver is cited for violation (see Figure 6). In non-fatal crashes the violations are about evenly distributed among the CMV driver and the driver of the other vehicle.

Figure 6: CMV and Non-CMV Driver Violations: 2001-2006

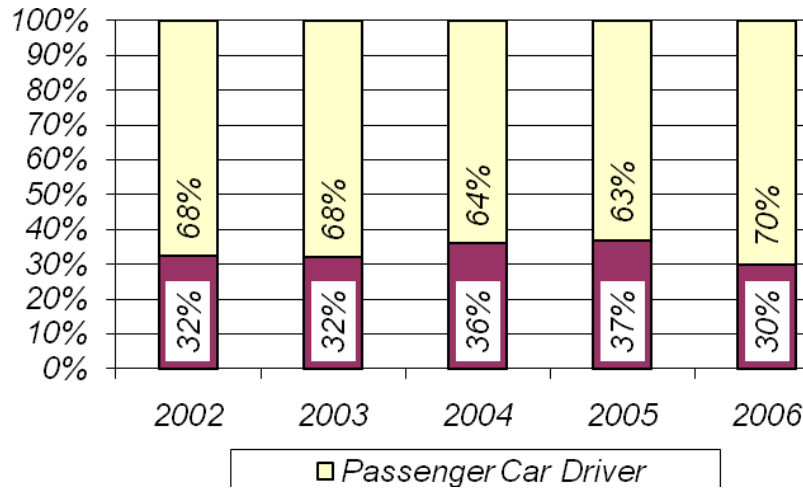


Table 5 shows the type of violations. In 2006, careless operation accounts for the majority of violations committed in association with commercial vehicle crashes at a rate of 35.9%. Other violations with relatively high occurrence rates were failure to yield at 13.2% and following too closely at 10.7%.

Table 5: Type of Violation of CMV Driver

VIOLATIONS	FATAL CRASHES		INJURY CRASHES		PDO		TOTAL CRASHES	
	CMV Driver	Non-CMV Driver	CMV Driver	Non-CMV Driver	CMV Driver	Non-CMV Driver	CMV Driver	Non-CMV Driver
OVER STATED SPEED LIMIT	0	2	4	6	3	5	7	13
OVER SAFE SPEED LIMIT	1	1	13	13	17	12	31	26
FAILURE TO YIELD	5	13	171	186	134	180	310	379
FOLLOWING TOO CLOSELY	1	1	140	94	110	119	251	214
DRIVING LEFT OF CENTER	2	15	19	47	17	30	38	92
CUT IN/IMPROPER PASS	0	1	20	35	23	51	43	87
FAILURE TO SIGNAL	0	0	0	1	2	0	2	1
MADE WIDE RIGHT TURN	0	1	7	0	17	3	24	4
CUT CORNER ON LFT TURN	0	0	8	2	8	1	16	3
TURNED FROM WRONG LANE	2	0	13	6	13	11	28	17
OTHER IMPROPER TURNING	1	1	25	22	35	17	61	40
DISREGARDED TRAF CNTL	2	5	60	49	39	51	101	105
IMPROPER STARTING	0	0	1	1	1	2	2	3
IMPROPER PARKING	2	0	7	3	10	2	19	5
NO FLAGS/FLARES USED	0	0	3	1	3	2	6	3
FAILED TO DIM HEADLTS	0	0	0	0	0	0	0	0

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VEHICLE CONDITION	1	1	24	12	54	21	79	34
DRIVER CONDITION	0	3	27	51	16	29	43	83
CARELESS OPERATION	12	24	379	349	455	376	846	749
IMPROPER BACKING	0	0	26	6	44	3	70	9
NO VIOLATION	77	44	1111	1112	1226	916	2414	2072
UNKNOWN	5	13	60	105	87	81	152	199
OTHER	3	6	93	105	131	101	227	212
TOTAL VIOLATION	37	87	1100	1094	1219	1097	2356	2278
COLUMN % OF VIOLATIONS IN CRASH	32%	66%	50%	50%	50%	54%	49%	52%
ROW % OF VIOLATIONS IN CRASH	30%	70%	50%	50%	53%	47%	51%	49%

Manner of Collision

Table 6 shows the manner of collision. “Head-on”, “right angle”, and “rear-end” collisions make up more than 60% of all fatal multi vehicle CMV crashes.

Table 6: Manner of Collision

MANNER OF COLLISION	FATAL CRASHES		INJURY CRASHES		PDO	
	Count	Percentage	Count	Percentage	Count	Percentage
HEAD-ON	24	16%	55	2%	8	1%
LEFT TURN - ANGLE	2	0%	63	3%	23	2%
LEFT TURN - OPPOSITE DIRECTION	2	0%	44	2%	13	1%
LEFT TURN - SAME DIRECTION	3	0%	30	1%	15	1%
NON-COLLISION WITH MOTOR VEHICLE	10	10%	268	19%	287	27%
OTHER	13	12%	255	12%	1312	57%
REAR END	19	30%	706	31%	336	31%
RIGHT ANGLE	24	18%	334	17%	100	9%
RIGHT TURN - OPPOSITE DIRECTION	0	0%	5	0%	5	1%
RIGHT TURN - SAME DIRECTION	0	1%	26	1%	5	1%
SIDESWIPE - OPPOSITE DIRECTION	8	6%	79	3%	21	2%
SIDESWIPE - SAME DIRECTION	4	5%	225	11%	174	16%
TOTAL	109	100%	2090	100%	2299	100%

Interstate Corridors

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

Interstate 10/12 Corridor

The Interstate 10 corridor includes 16 parishes. These parishes along Interstates 10 and 12 accounted for over half of all truck crashes in the past three years. The corridor includes the Louisiana Interstates 10, 110, 210, 310, 610, 12, 55, 59 and parts of Interstate 49 as shown in Figure 7. The major US Highways along the corridor are US 90, 190 and 61.

Figure 7: Interstate 10 Corridor

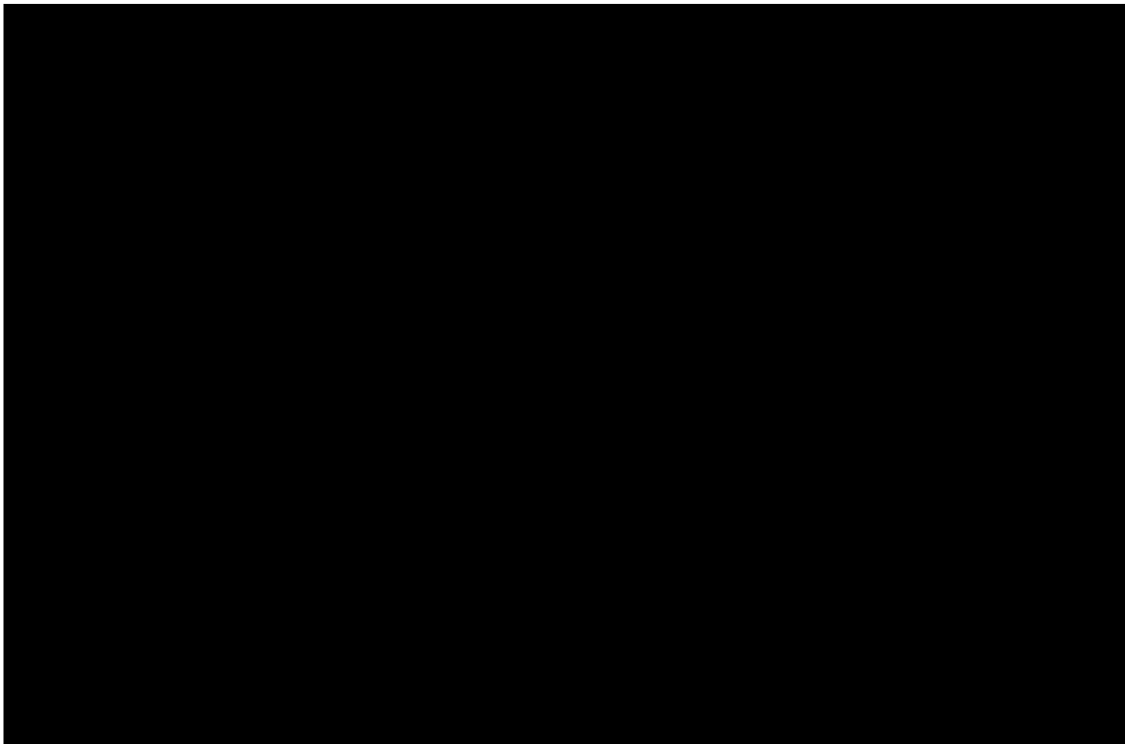


Figure 8 shows the frequency of commercial truck crashes for 2006 by milepost on interstate 10.

Figure 8: Interstate 10

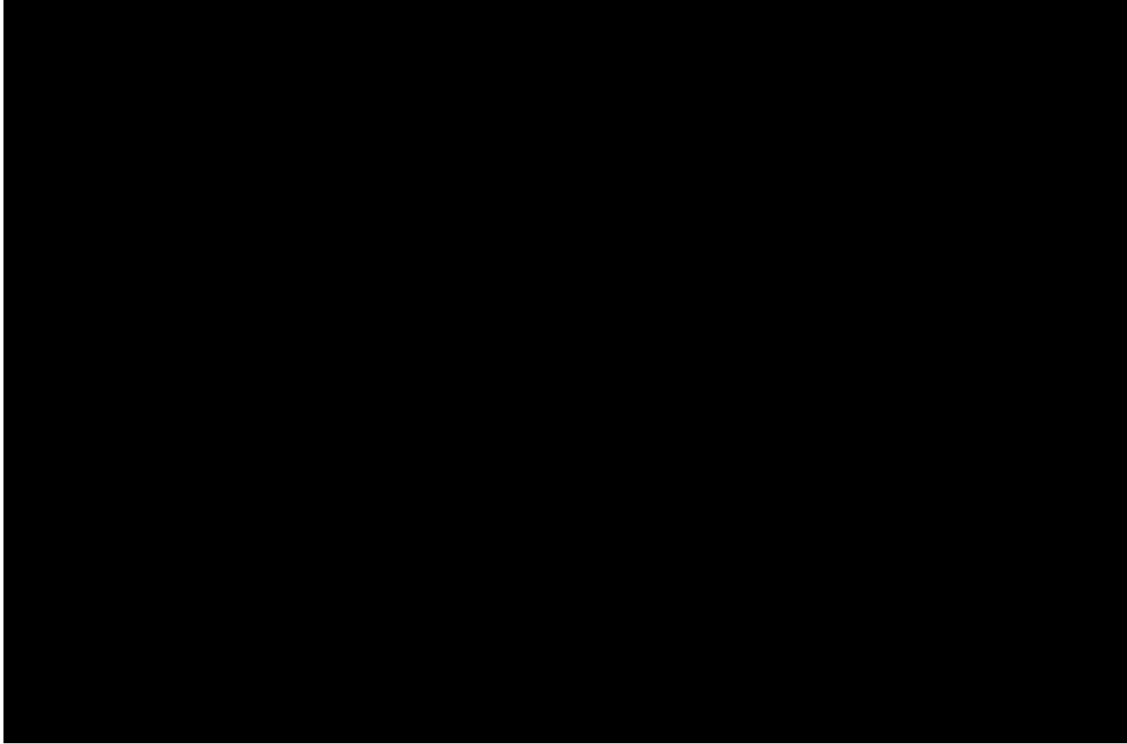


Figure 9: Interstate 10 at Milepost 160

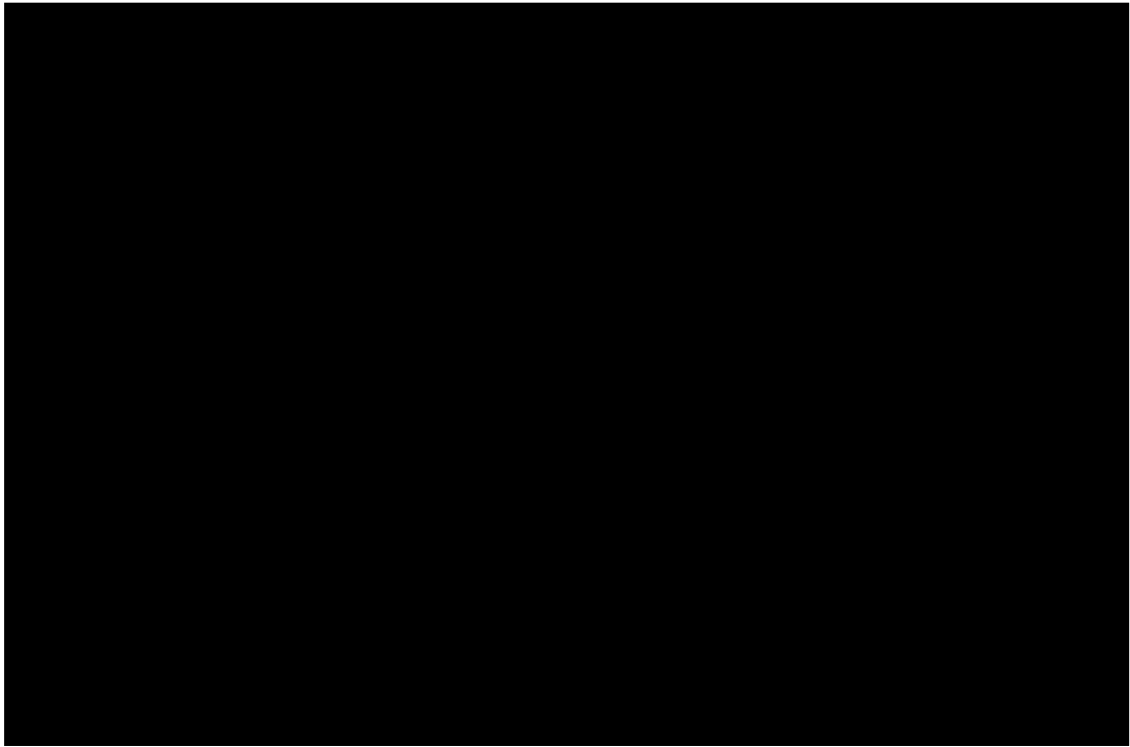
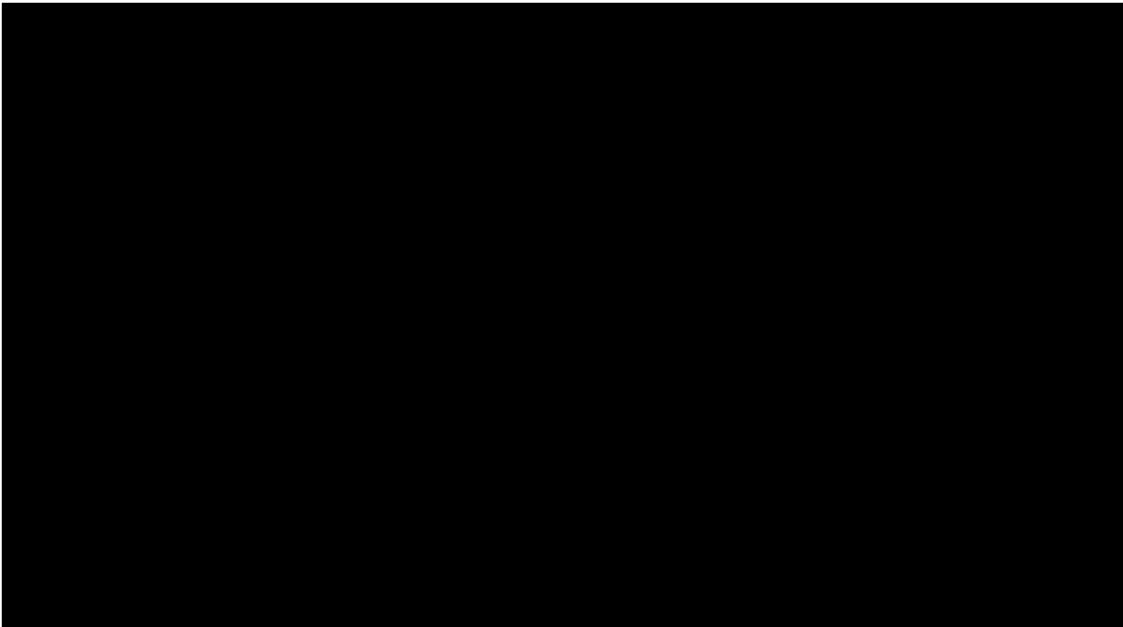


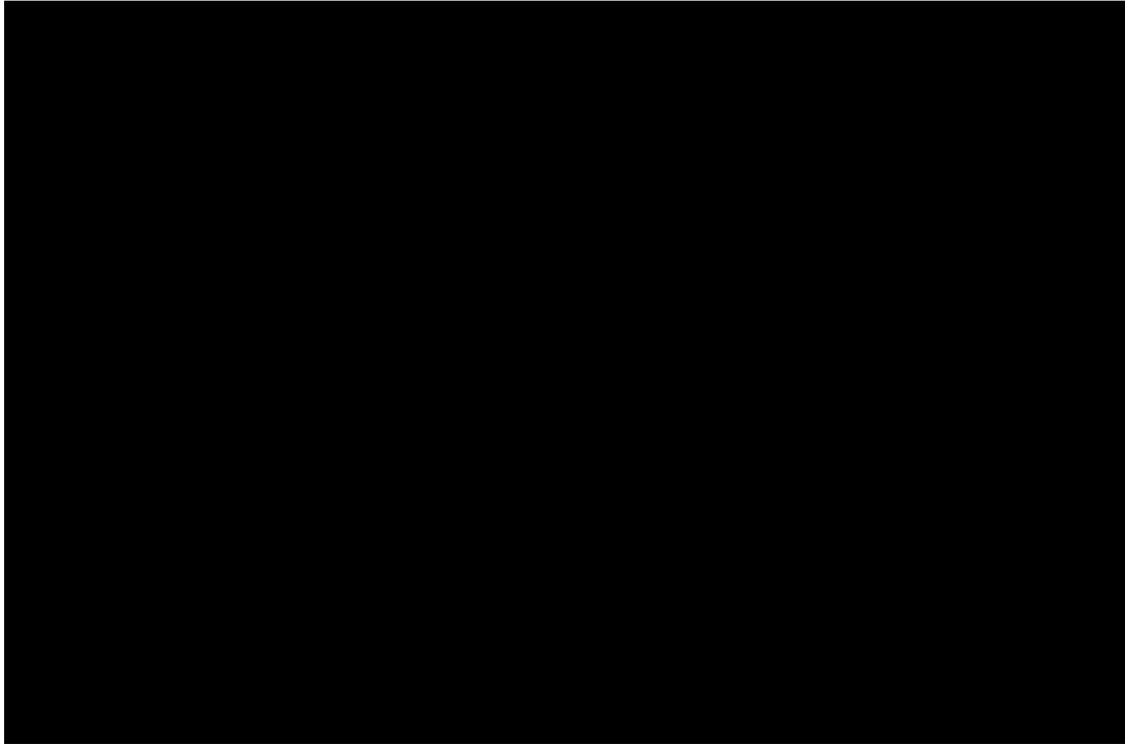
Figure 10 shows the frequency of CMV crashes for Interstate 12.

Figure 10: Interstate 12



There are several areas where frequencies of truck crashes are higher than expected. These areas on Interstate 10 are between milepost 150 to 160 depicted in Figure 9. On Interstate 12 these areas include mileposts 0 to 10 and 38 to 40 depicted in Figure 11.

Figure 11: Interstate 12 at Milepost 38



Interstate 20 Corridor

The Interstate 20 corridor includes 10 parishes. These parishes along Interstate 20 accounted for 15% of all truck crashes in the last three years. As shown in Figure 12, the corridor includes the Interstates 20, 220 and parts of Interstate 49. The major US Highways along the corridor are US 61, 65, 71, 80, 165 and 167.

Figure 12: Interstate 20 Corridor

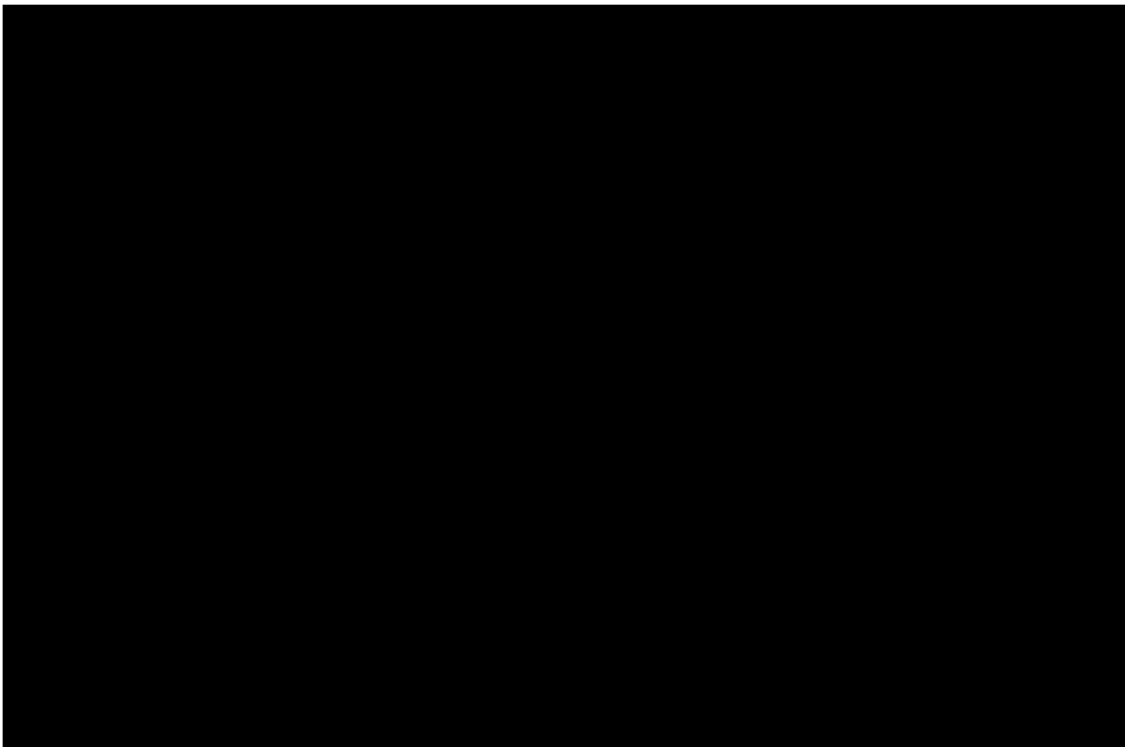
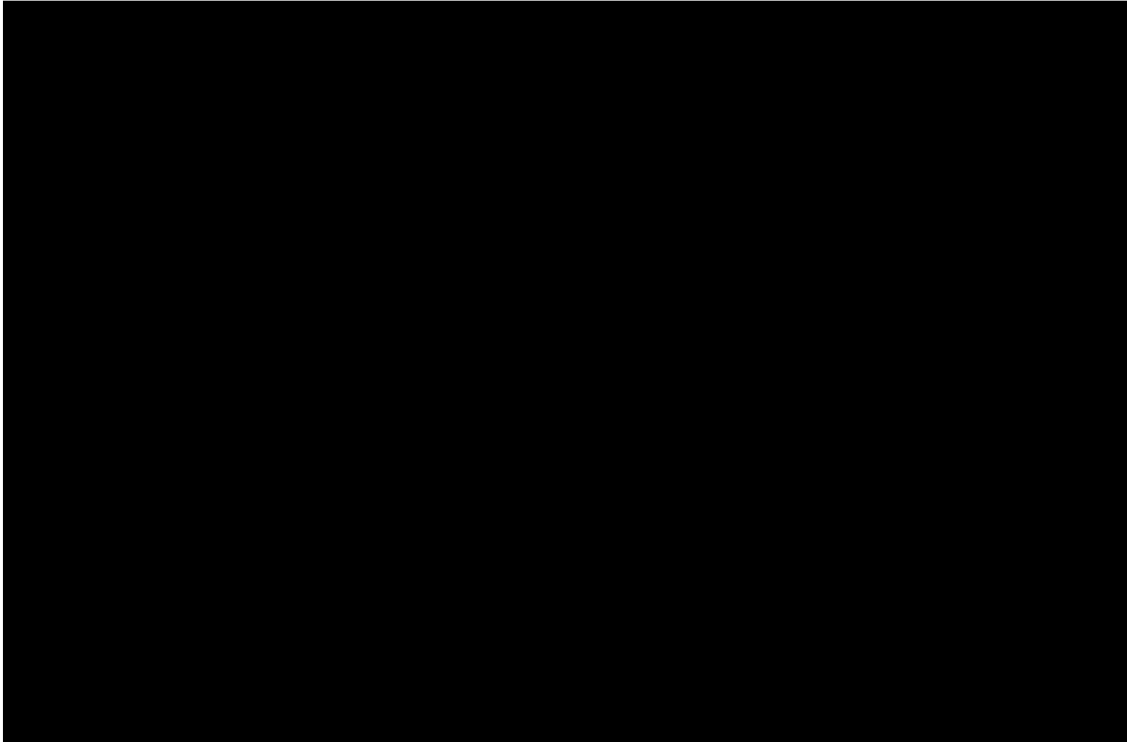


Figure 13 shows the frequency of truck crashes by milepost on Interstate 20.

Figure 13: Interstate 20



Work-Zone Crashes

Crashes in and around road work zones seem to be disproportionately high at first sight. Table 7 shows the number of CMV crashes in work zones for 2006. Table 7 shows that while the number of fatal CMV crashes on all interstates decreased from 2005 to 2006, from 44 to 34, the fatal crashes in construction zones decreased from 3 in 2005 to 2 in 2006. When the miles and days under construction are taken into account, the fatal crashes decreased from 7.3 day-miles in 2005 to 5.9 day-miles in 2006. Table 7 also shows the number of CMV crashes within 5 miles of a construction zone.

Table 7: Work -Zone CMV Crashes on Interstates (2005-2006)

		2006				2005			
	WHERE	FATAL	INJURY	PDO	ALL	FATAL	INJURY	PDO	ALL
ALL CMV CRASHES ON INTERSTATES	Count	34	471	676	1181	44	508	670	1222
	PER 100,000 Day-MILES	10.5	145	208	364	13.6	157	206	376
CONSTRUCTION ZONES	Count	2	58	113	173	3	51	81	135
	PER 100,000 Day-MILES	5.9	172	334	512	7.3	123	196	326
WITHIN 5 MILES OF CONSTRUCTION ZONES	Count	5	170	257	432	12	200	279	491
	PER 100,000 Day-MILES	4.1	141	213	358	9.0	150	209	368
IN 5 MILES OF CONSTRUCTION ZONE	Count	3	112	144	259	9	149	198	356
	PER 100,000 Day-MILES	3.5	129	166	298	9.8	162	215	387

There is no evidence that construction zones had more CMV fatal crashes in 2006 than interstate miles not under construction.

Seat Belt Usage

Table 8 shows that in 2006, 25% of CMV drivers killed in a crash did not wear a seat belt while 62% of all drivers killed in all crashes did not wear a seat belt. However, since the number of CMV drivers killed is relatively small, this percentage varies much from year to year. As can be seen in Table 8, the percentage of CMV drivers killed in crashes not wearing a seatbelt was 73 % in 2005.

Table 8: Seat Belt Usage

Year	CMV		All Drivers	
	% of Drivers Killed	% of Drivers Severely Injured	% of Drivers Killed	% of Drivers Severely Injured
	not Wearing a Safety Belt	not Wearing a Safety Belt	not Wearing a Safety Belt	not Wearing a Safety Belt
2000	55	36	69	34
2001	67	33	64	31
2002	33	30	64	32
2003	62	19	64	32
2004	67	38	59	30
2005	73	25	61	27
2006	25	20	62	25
Average	60	26	63	31

Hazardous Material

CMV crashes involving trucks carrying hazardous material are of particular interest because of the potential danger to the environment and people when hazardous material is released. On the average, about 1 out of five crashes involving hazardous material results in a release of the hazardous material. The actual percentage of release may be higher since many of the trucks identified as transporting hazardous material may actually be returning with an empty load and thus the percentage of releases based on crashes with full loads of hazardous material may be much higher than 20%. Table 9 shows the hazardous material crashes from 2001 to 2006.

Table 9: Hazardous Material Crashes

Year	Transport	Released	% Released
2001	111	17	15%
2002	96	19	20%
2003	82	13	16%
2004	58	15	26%
2005	86	15	17%
2006	102	19	19%

The interstates account for 40% of all crashes involving hazardous materials. Specifically, Interstate 10 accounts for 26% of all hazardous material crashes on interstates. US highways account for 24% of all hazardous material crashes with US 90 accounting for 35% of hazardous material crashes on US highways. Highway 1 accounts for 15% of all state highway hazardous material crashes.

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The type of hazardous material reported in CMV crashes is depicted in Table 10. On the average, 50% of the hazardous material crashes involve flammable liquids and 12% involve flammable gases.

Table 10: Type of Hazardous Material in CMV Crashes

Material	2002		2003		2004		2005		2006	
	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.	Transp.	Rel.
CORROSIVE MATERIALS			0	0	0	0	0	0	1	1
DANGEROUS WASTES (CANADA)	15	1	19	2	9	3	19	2	17	3
ENVIRON HAZARDOUS SUBSTANCES(CANADA)			1	0	0	0	0	0	0	0
EXPLOSIVES-MASS EXPLOXION HAZARD			0	0	0	0	0	0	0	0
EXPLOSIVES WITH A NO SIGNIFICANT BLAST HAZARD	1		0	0	0	0	1	0	0	0
EXPLOSIVES-PROJECTION HAZARD	2		1	0	0	0	0	0	1	0
FLAMMABLE GASSES	1		0	0	1	0	0	0	1	0
FLAMMABLE LIQUIDS			0	0	2	0	0	0	2	0
FLAMMABLE SOLIDS			0	0	0	0	0	0	0	0
GASES TOXIC BY INHALATION			0	0	0	0	0	0	0	0
MISC DANGEROUS GOODS(CANADA)	15	2	15	2	8	2	1	0	13	1
NON-FLAM, NON-TOXIC COMPRESSED GASES	42	10	36	7	26	7	56	10	59	13
OXIDIZERS	1	1	1	0	0	0	0	0	1	0
RADIOACTIVE MATERIALS			1	0	0	0	0	0	1	0
SPONTANEOUSLY COMBUSTIBLE MATERIALS			0	0	0	0	0	0	0	0
TOXIC MATIERALS	6	2	4	0	4	1	1	0	1	0
Total	5	1	1	1	3	1	7	2	5	1

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Note: Definition of Reportable Truck Crashes: To qualify for reporting to the SafetyNet, the crash has to involve a private or public motor carrier, a truck weight of at least 10,001 pounds or above, a tow of one of the vehicles, or the transportation of a person to medical treatment away from the crash scene, or a fatality.

References: UMTRI Report: EVALUATION OF 2005 LOUISIANA CRASH DATA REPORTED TO MCMIS CRASH FILE