#### **HEAVY TRUCK/BUS INVOLVED CRASHES**

These crashes involve a heavy truck/bus - defined as having a Gross Vehicle Weight Rating (GVWR) over 10,000 lbs.

Heavy truck/bus crashes differ from other vehicle crashes in a number of ways, many reflecting the size and use of these vehicles. When compared to the overall crash picture, heavy truck/bus crashes involve:

- More turning and backing as the Truck/Bus Driver Action Prior.
- More collisions with fixed object (bridge/pier/abutments), nonfixed object (parked motor vehicles), and noncollision event (cargo loss/shift and other non-collisions) as the Most Harmful Event.
- Fewer collisions with fixed objects (ditches, trees), and nonfixed object (animals).
- Fewer single-vehicle crashes but more sideswipes.
- Fewer drivers indicated to be speeding, failing to yield, reckless driving, disregarding traffic control, and unable to stop in assured clear distance, but more drivers indicated to be making backing, lane use, and turning errors.
- · Fewer crashes outside of the shoulder/curb.
- More crashes between the hours of 12:00 AM and 2:59 PM, and fewer crashes between 3:00 PM and 11:59 PM.
- More weekday crashes and a drop in weekend crashes.



	ALL CR	RASHES	FATAL (	FATAL CRASHES		INJURY CRASHES	
DRIVER ACTION PRIOR TO CRASH	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	
Going straight ahead	128	54.2	2	66.7	24	61.5	
Turning left	20	8.5	0	0.0	2	5.1	
Turning right	12	5.1	0	0.0	0	0.0	
Stopped on roadway	10	4.2	1	33.3	3	7.7	
In prior crash	0	0.0	0	0.0	0	0.0	
Changing lanes	2	0.8	0	0.0	0	0.0	
Backing	22	9.3	0	0.0	1	2.6	
Slowing/stopping on roadway	17	7.2	0	0.0	6	15.4	
Slowing/stopping other	1	0.4	0	0.0	0	0.0	
Starting up on roadway	3	1.3	0	0.0	1	2.6	
Starting up other	0	0.0	0	0.0	0	0.0	
Entering parking	3	1.3	0	0.0	0	0.0	
Leaving parking	0	0.0	0	0.0	0	0.0	
Entering roadway	2	0.8	0	0.0	0	0.0	
Leaving roadway	1	0.4	0	0.0	0	0.0	
Making U-turn	0	0.0	0	0.0	0	0.0	
Overtaking or passing	4	1.7	0	0.0	0	0.0	
Avoiding object	0	0.0	0	0.0	0	0.0	
Avoiding animal	0	0.0	0	0.0	0	0.0	
Avoiding pedestrian	0	0.0	0	0.0	0	0.0	
Avoiding vehicle (front/back)	1	0.4	0	0.0	0	0.0	
Avoiding vehicle (angle)	2	0.8	0	0.0	1	2.6	
Driverless moving	0	0.0	0	0.0	0	0.0	
Parked	4	1.7	0	0.0	0	0.0	
Crossing at intersection	0	0.0	0	0.0	0	0.0	
Crossing not at intersection	0	0.0	0	0.0	0	0.0	
Getting on/off vehicle	0	0.0	0	0.0	0	0.0	
In roadway with traffic	0	0.0	0	0.0	0	0.0	
In roadway against traffic	0	0.0	0	0.0	0	0.0	
Standing or lying in roadway	0	0.0	0	0.0	0	0.0	
Pushing/working on vehicle	0	0.0	0	0.0	0	0.0	
Other working in roadway	2	0.8	0	0.0	0	0.0	
Playing in roadway	0	0.0	0	0.0	0	0.0	
In roadway other reason	0	0.0	0	0.0	0	0.0	
Not in roadway	0	0.0	0	0.0	0	0.0	
Negotiating a curve	1	0.4	0	0.0	0	0.0	
Other	1	0.4	0	0.0	1	2.6	
Unkown	0	0.0	0	0.0	0	0.0	
Uncoded & errors	0	0.0	0	0.0	0	0.0	
TOTAL	236	100.0	3	100.0	39	100.0	



MOST HARMFUL EVENT IN A NONCOLLISION	ALL CR	ASHES	FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Loss of control	1	0.4	0	0.0	0	0.0
Cross center/median	0	0.0	0	0.0	0	0.0
Ran off road left	0	0.0	0	0.0	0	0.0
Ran off road right	3	1.3	0	0.0	0	0.0
Re-enter road	0	0.0	0	0.0	0	0.0
Overturn	6	2.5	0	0.0	5	12.8
Separation of units	0	0.0	0	0.0	0	0.0
Fire/explosion	1	0.4	0	0.0	0	0.0
Immersion	0	0.0	0	0.0	0	0.0
Jackknife	0	0.0	0	0.0	0	0.0
Downhill runaway	0	0.0	0	0.0	0	0.0
Cargo loss/shift	4	1.7	0	0.0	1	2.6
Individual fell off	0	0.0	0	0.0	0	0.0
Other noncollision	3	1.3	0	0.0	1	2.6
SUBTOTAL	18	7.6	0	0.0	7	17.9

MOST HARMFUL EVENT IN A COLLISION WITH A Nonfixed object	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Pedestrian	1	0.4	0	0.0	1	2.6
Bicycle / Pedalcycle	1	0.4	0	0.0	1	2.6
Motor vehicle in transport	131	55.5	3	100.0	27	69.2
Parked motor vehicle	16	6.8	0	0.0	0	0.0
Railway train	0	0.0	0	0.0	0	0.0
Animal	22	9.3	0	0.0	0	0.0
Other nonfixed objects	5	2.1	0	0.0	0	0.0
SUBTOTAL	176	74.6	3	100.0	29	74.4

The majority of heavy trucks/buses are involved in crashes with a motor vehicle in transport for all crashes (55.5%), fatal crashes (100%), and injury crashes (69.2%) for most harmful event in the crash.



MOST HARMFUL EVENT IN A COLLISION WITH A	ALL CR	ASHES	FATAL C	RASHES	INJURY CRASHES	
FIXED OBJECT	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Bridge/pier/abutment	2	0.8	0	0.0	0	0.0
Bridge parapet end	0	0.0	0	0.0	0	0.0
Bridge rail	1	0.4	0	0.0	0	0.0
Guardrail face	1	0.4	0	0.0	0	0.0
Guardrail end	2	0.8	0	0.0	0	0.0
Median barrier	1	0.4	0	0.0	0	0.0
Highway traffic sign post	2	0.8	0	0.0	0	0.0
Highway signal post	1	0.4	0	0.0	0	0.0
Luminaire/light support	5	2.1	0	0.0	0	0.0
Utility pole	0	0.0	0	0.0	0	0.0
Other pole	1	0.4	0	0.0	0	0.0
Culvert	0	0.0	0	0.0	0	0.0
Curb	0	0.0	0	0.0	0	0.0
Ditch	3	1.3	0	0.0	0	0.0
Embankment	1	0.4	0	0.0	0	0.0
Fence	0	0.0	0	0.0	0	0.0
Mailbox	1	0.4	0	0.0	0	0.0
Tree	6	2.5	0	0.0	2	5.1
Rail crossing signal	0	0.0	0	0.0	0	0.0
Building	0	0.0	0	0.0	0	0.0
Traffic island	0	0.0	0	0.0	0	0.0
Fire hydrant	0	0.0	0	0.0	0	0.0
Impact attenuator	0	0.0	0	0.0	0	0.0
Other fixed object	6	2.5	0	0.0	0	0.0
SUBTOTAL	33	14.0	0	0.0	2	5.1

	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Unknown Event	9	3.8	0	0.0	1	2.6
MOST HARMFUL EVENT TOTAL	236	100.0	3	100.0	39	100.0



	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
CRASH TYPE	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Single Vehicle	66	28.0	0	0.0	8	20.5
Head On	4	1.7	1	33.3	3	7.7
Head On - Left Turn	1	0.4	0	0.0	1	2.6
Angle	47	19.9	1	33.3	11	28.2
Rear End	32	13.6	1	33.3	9	23.1
Rear End - Left Turn	2	0.8	0	0.0	0	0.0
Rear End - Right Turn	5	2.1	0	0.0	1	2.6
Sideswipe - Same Direction	34	14.4	0	0.0	3	7.7
Sideswipe - Opposite Direction	10	4.2	0	0.0	1	2.6
Backing	9	3.8	0	0.0	1	2.6
Other/Unknown	26	11.0	0	0.0	1	2.6
TOTAL	236	100.0	3	100.0	39	100.0

The highest percentage of heavy trucks/buses are involved in single vehicle crashes for all crashes (28.0%) and crashes at an angle for injury crashes (28.2%).

HAZARDOUS ACTION	ALL CR	ALL CRASHES		RASHES	INJURY C	RASHES	HAZARDOUS CITATION Issued	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
None	137	58.1	3	100.0	24	61.5	0	0.0
Speed too fast	7	3.0	0	0.0	0	0.0	2	10.0
Speed too slow	0	0.0	0	0.0	0	0.0	0	0.0
Failed to yield	13	5.5	0	0.0	3	7.7	5	25.0
Disregard traffic control	2	0.8	0	0.0	1	2.6	1	5.0
Drove wrong way	0	0.0	0	0.0	0	0.0	0	0.0
Drove left of center	0	0.0	0	0.0	0	0.0	0	0.0
Improper passing	0	0.0	0	0.0	0	0.0	0	0.0
Improper lane use	4	1.7	0	0.0	0	0.0	0	0.0
Improper turn	11	4.7	0	0.0	1	2.6	0	0.0
Improper/no signal	1	0.4	0	0.0	0	0.0	0	0.0
Improper backing	13	5.5	0	0.0	1	2.6	0	0.0
Unable to stop in assured clear distance	10	4.2	0	0.0	3	7.7	1	5.0
Reckless driving	0	0.0	0	0.0	0	0.0	0	0.0
Careless/negligent driving	11	4.7	0	0.0	4	10.3	6	30.0
Other	19	8.1	0	0.0	0	0.0	4	20.0
Unknown	8	3.4	0	0.0	2	5.1	1	5.0
TOTAL	236	100.0	3	100.0	39	100.0	20	100.0

After no hazardous action, the most common hazardous action coded for drivers of heavy trucks/buses in all crashes is "other" (8.1%). For injury crashes, careless/negligent driving (10.3%) is the most common hazardous action coded after no hazardous action.



RELATIONSHIP TO ROADWAY (LOCATION OF FIRST IMPACT)	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
On Road	200	84.7	3	100.0	34	87.2
Median	1	0.4	0	0.0	0	0.0
Shoulder	18	7.6	0	0.0	0	0.0
Outside of Shoulder/Curb	13	5.5	0	0.0	5	12.8
Gore	0	0.0	0	0.0	0	0.0
On-Street Parking	4	1.7	0	0.0	0	0.0
Off the Roadway	0	0.0	0	0.0	0	0.0
On the Sidewalk	0	0.0	0	0.0	0	0.0
In the Bicycle Lane	0	0.0	0	0.0	0	0.0
Other/Unknown	0	0.0	0	0.0	0	0.0
TOTAL	236	100.0	3	100.0	39	100.0

TIME OF DAY	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
12:00 AM - 02:59 AM	9	3.8	0	0.0	3	7.7
03:00 AM - 05:59 AM	10	4.2	0	0.0	3	7.7
06:00 AM - 08:59 AM	30	12.7	0	0.0	8	20.5
09:00 AM - 11:59 AM	58	24.6	0	0.0	6	15.4
12:00 PM - 02:59 PM	56	23.7	1	33.3	9	23.1
03:00 PM - 05:59 PM	39	16.5	0	0.0	5	12.8
06:00 PM - 08:59 PM	24	10.2	2	66.7	3	7.7
09:00 PM - 11:59 PM	10	4.2	0	0.0	2	5.1
Unknown	0	0.0	0	0.0	0	0.0
TOTAL	236	100.0	3	100.0	39	100.0

Heavy truck/bus frequencies in crashes peak in the late morning, then drop off steadily until 3:00 AM. The most common time for heavy trucks/buses to be involved in crashes is between 9:00 and 11:59 AM (24.6%) for all crashes, between 6:00 and 8:59 PM (66.7%) for fatal crashes, and between 12:00 and 2:59 PM (23.1%) for injury crashes.

ROADWAY TYPE	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Interstate Routes	16	6.8	0	0.0	2	5.1
U.S. & Michigan Roads	149	63.1	2	66.7	28	71.8
County & City Roads	70	29.7	1	33.3	8	20.5
Uncoded & Errors	1	0.4	0	0.0	1	2.6
TOTAL	236	100.0	3	100.0	39	100.0

The highest percentage of heavy trucks/buses are involved in crashes on U.S. & Michigan roads for all crashes (63.1%), fatal crashes (66.7%), and injury crashes (71.8%).



DAY OF WEEK	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Monday	45	19.1	0	0.0	10	25.6
Tuesday	34	14.4	0	0.0	8	20.5
Wednesday	44	18.6	1	33.3	5	12.8
Thursday	49	20.8	2	66.7	8	20.5
Friday	39	16.5	0	0.0	5	12.8
Saturday	14	5.9	0	0.0	2	5.1
Sunday	11	4.7	0	0.0	1	2.6
TOTAL	236	100.0	3	100.0	39	100.0

The highest percentage of heavy trucks/buses are involved in all crashes on Thursday (20.8%) and injury crashes on Monday (25.6%).

DRIVER GENDER	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Male	215	91.1	3	100.0	35	89.7
Female	19	8.1	0	0.0	4	10.3
Unknown	2	0.8	0	0.0	0	0.0
TOTAL	236	100.0	3	100.0	39	100.0

The majority of heavy truck/bus drivers are male in all crashes (91.1%), fatal crashes (100.0%), and injury crashes (89.7%).

NUMBER OF OCCUPANTS	ALL CR	ASHES	FATAL C	RASHES	INJURY CRASHES		
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	
1 occupant	202	85.6	3	100.0	32	82.1	
2 occupants	19	8.1	0	0.0	3	7.7	
3 occupants	0	0.0	0	0.0	0	0.0	
4 occupants	1	0.4	0	0.0	0	0.0	
5 occupants	2	0.8	0	0.0	1	2.6	
6 + occupants	10	4.2	0	0.0	3	7.7	
0 occupants	2	0.8	0	0.0	0	0.0	
Unknown	0	0.0	0	0.0	0	0.0	
TOTAL	236	100.0	3	100.0	39	100.0	



VEHICLE TYPES INVOLVED IN CRASH WITH HEAVY TRUCK/BUS	ALL CR	ASHES	FATAL C	CRASHES	INJURY CRASHES		
WITH REAVY TRUCKY DUS	Number of Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total	
Passenger Car, SUV, Van	111	67.7	2	66.7	22	61.1	
Motor Home	6	3.7	0	0.0	1	2.8	
Pickup	37	22.6	0	0.0	9	25.0	
Small Truck (under 10,000 lbs.)	2	1.2	1	33.3	1	2.8	
Motorcycle	0	0.0	0	0.0	0	0.0	
Moped	0	0.0	0	0.0	0	0.0	
Go Cart	0	0.0	0	0.0	0	0.0	
Snowmobile	1	0.6	0	0.0	1	2.8	
Off Road Vehicle	0	0.0	0	0.0	0	0.0	
Other	3	1.8	0	0.0	0	0.0	
Unknown	4	2.4	0	0.0	2	5.6	
SUBTOTAL	164	100.0	3	100.0	36	100.0	

HEAVY TRUCK/BUS GROSS VEHICLE WRIGHT	ALL CR	ASHES	FATAL C	RASHES	INJURY CRASHES		
RATING	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	
10,000 lbs. or Less	6	2.5	0	0.0	1	2.6	
10,001 - 26,000 lbs.	45	19.1	0	0.0	6	15.4	
Greater than 26,000 lbs.	181	76.7	3	100.0	31	79.5	
Uncoded & Errors	4	1.7	0	0.0	1	2.6	
SUBTOTAL	236	100.0	3	100.0	39	100.0	

	ALL CR	ASHES	FATAL C	RASHES	INJURY CRASHES		
	Number of Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total	
Total Number of Vehicles in Heavy Truck/ Bus Crashes	400		6		75		



		Н	IEAVY TRUCK/BUS	NON-HEAVY TRUCK/BUS INVOLVED CRASH						
DRIVER ACTION PRIOR TO Crash Hazardous Citation Issued	Single Veh	icle Crash	Multi-Vehicle Crash				Single Vehicle Crash		Multi-Vehicle Crash	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Non-Heavy Truck Ve- hicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total
None	0	0.0	0	0.0	0	0.0	9	2.0	10	1.2
Speed too fast	1	9.1	1	11.1	3	11.1	210	47.2	65	7.8
Speed too slow	0	0.0	0	0.0	1	3.7	1	0.2	0	0.0
Failed to yield	0	0.0	5	55.6	8	29.6	6	1.3	306	36.7
Disregard traffic control	0	0.0	1	11.1	1	3.7	6	1.3	68	8.2
Drove wrong way	0	0.0	0	0.0	0	0.0	0	0.0	5	0.6
Drove left of center	0	0.0	0	0.0	0	0.0	2	0.4	14	1.7
Improper passing	0	0.0	0	0.0	2	7.4	0	0.0	12	1.4
Improper lane use	0	0.0	0	0.0	0	0.0	2	0.4	21	2.5
Improper turn	0	0.0	0	0.0	0	0.0	1	0.2	15	1.8
Improper/no signal	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0
Improper backing	0	0.0	0	0.0	0	0.0	1	0.2	9	1.1
Unable to stop in assured clear distance	0	0.0	1	11.1	4	14.8	5	1.1	204	24.5
Reckless driving	0	0.0	0	0.0	1	3.7	14	3.1	10	1.2
Careless/Negligent driving	5	45.5	1	11.1	1	3.7	146	32.8	62	7.4
Other	4	36.4	0	0.0	6	22.2	33	7.4	30	3.6
Unknown	1	9.1	0	0.0	0	0.0	8	1.8	2	0.2
CITED VEHICLES SUBTOTAL	11	100.0	9	100.0	27	100.0	445	100.0	833	100.0

	HEAVY TRUCK/BUS INVOLVED CRASH							NON-HEAVY TRUCK/BUS INVOLVED CRASH				
	Single Vehicle Crash Multi-Vehicle Crash					Single Vehicle Crash Mul			Iti-Vehicle Crash			
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Non-Heavy Truck Ve- hicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total		
Cited Vehicles	11	16.7	9	5.3	27	16.9	445	9.1	833	13.3		
Vehicles with No Citation Issued	55	83.3	161	94.7	133	83.1	4,462	90.9	5,413	86.7		
Vehicles with Unknown Citation	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0		
TOTAL VEHICLES IN- VOLVED	66	100.0	170	100.0	160	100.0	4,908	100.0	6,246	100.0		

