

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., 8+ occupants, or a hazmat placard.

Heavy truck/bus crashes differ from other vehicle crashes in a number of ways, many reflecting the size and use of these vehicles. **When comparing proportions of heavy truck/bus involvements to non-heavy truck/bus involvements, heavy truck/buses have different crash patterns:**

- More turning, backing, and changing lanes as the truck/bus driver action prior to crash.
- More collisions with bridge piers/abutments/supports, utility poles/light supports, and parked motor vehicles, as well as noncollision events such as jackknife, cargo loss/shift, and overturn as the most harmful event.
- Fewer collisions with ditches, trees, and animals.
- Fewer single motor vehicle and head-on crashes, but more sideswipe and backing crashes.
- 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 7:00 AM and 3:59 PM, and fewer crashes between 4:00 PM and 6:59 AM.
- More crashes Monday through Friday and fewer crashes Saturday and Sunday.

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

DRIVER ACTION PRIOR TO CRASH	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Going Straight Ahead	8,346	52.6	60	60.0	1,602	57.8
Turning Left	1,286	8.1	9	9.0	208	7.5
Turning Right	1,103	7.0	4	4.0	112	4.0
Stopped on Roadway	961	6.1	11	11.0	205	7.4
Involved in Prior Crash at Same Location	4	0.0	0	0.0	1	0.0
Changing Lanes	848	5.3	0	0.0	101	3.6
Backing	743	4.7	1	1.0	38	1.4
Slowing/Stopping on Roadway	1,101	6.9	5	5.0	253	9.1
Slowing/Stopping Other Area	17	0.1	0	0.0	4	0.1
Starting Up on Roadway	191	1.2	0	0.0	34	1.2
Starting Up in Other Area	4	0.0	0	0.0	1	0.0
Entering Parking	25	0.2	0	0.0	2	0.1
Leaving Parking	22	0.1	0	0.0	0	0.0
Entering Roadway	97	0.6	0	0.0	17	0.6
Leaving Roadway	25	0.2	0	0.0	3	0.1
Making U-Turn	39	0.2	0	0.0	9	0.3
Overtaking or Passing	112	0.7	0	0.0	18	0.6
Avoiding Object	10	0.1	0	0.0	2	0.1
Avoiding Animal	2	0.0	0	0.0	0	0.0
Avoiding Pedestrian	2	0.0	0	0.0	2	0.1
Avoiding Vehicle (front/back)	127	0.8	3	3.0	31	1.1
Avoiding Vehicle (angle)	40	0.3	0	0.0	8	0.3
Driverless Moving	11	0.1	0	0.0	0	0.0
Parked	448	2.8	5	5.0	78	2.8
Crossing at Intersection	3	0.0	0	0.0	1	0.0
Crossing Not at Intersection	0	0.0	0	0.0	0	0.0
Getting On/Off Vehicle	1	0.0	0	0.0	0	0.0
In Roadway With Traffic	1	0.0	0	0.0	0	0.0
In Roadway Against Traffic	1	0.0	0	0.0	0	0.0
Standing/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 Work in Roadway	2	0.0	0	0.0	0	0.0
Playing in Roadway	0	0.0	0	0.0	0	0.0
In Roadway Other Reason	2	0.0	0	0.0	0	0.0
Not in Roadway	1	0.0	0	0.0	1	0.0
Negotiating a Curve	192	1.2	1	1.0	37	1.3
Other	28	0.2	1	1.0	1	0.0
Unknown	52	0.3	0	0.0	5	0.2
Uncoded & Errors	5	0.0	0	0.0	0	0.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

MOST HARMFUL EVENT IN A NONCOLLISION	ALL CRASHES		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	83	0.5	0	0.0	16	0.6
Cross Centerline	33	0.2	1	1.0	5	0.2
Cross Median	2	0.0	0	0.0	0	0.0
Ran Off Roadway Left	38	0.2	0	0.0	5	0.2
Ran Off Roadway Right	82	0.5	1	1.0	14	0.5
Re-Enter Roadway	6	0.0	0	0.0	1	0.0
Overturn	227	1.4	3	3.0	100	3.6
Separation of Units	24	0.2	0	0.0	5	0.2
Fire/Explosion	51	0.3	1	1.0	4	0.1
Immersion	4	0.0	0	0.0	0	0.0
Jackknife	107	0.7	0	0.0	13	0.5
Downhill Runaway	0	0.0	0	0.0	0	0.0
Cargo Loss/Shift	118	0.7	0	0.0	6	0.2
Individual Fell from Vehicle	3	0.0	0	0.0	2	0.1
Equipment Failure (blown tire, brake failure, etc.)	70	0.4	0	0.0	3	0.1
Other Noncollision	80	0.5	0	0.0	7	0.3
SUBTOTAL	928	5.9	6	6.0	181	6.5

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	46	0.3	8	8.0	34	1.2
Bicyclist	31	0.2	1	1.0	25	0.9
Motor Vehicle in Transport (in motion or on roadway)	12,144	76.6	80	80.0	2,318	83.6
Parked Motor Vehicle	785	5.0	2	2.0	47	1.7
Work Zone/Maintenance Equipment	9	0.1	0	0.0	0	0.0
Cargo Falling/Shifting/Anything Set in Motion by a Motor Vehicle	65	0.4	0	0.0	3	0.1
Railroad Train	6	0.0	0	0.0	2	0.1
Animal	558	3.5	0	0.0	8	0.3
Other Nonfixed Object	149	0.9	0	0.0	9	0.3
SUBTOTAL	13,793	87.0	91	91.0	2,446	88.2

The majority of heavy trucks/buses are involved in crashes with a motor vehicle in transport for all crashes (76.6%), fatal crashes (80.0%), and injury crashes (83.6%) for most harmful event in a collision with a nonfixed object in the crash.

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

MOST HARMFUL EVENT IN A COLLISION WITH A FIXED 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
Bridge Pier/Abutment/Support	47	0.3	0	0.0	6	0.2
Bridge Rail	19	0.1	0	0.0	1	0.0
Bridge Overhead Structure	30	0.2	0	0.0	3	0.1
Guardrail Face	81	0.5	0	0.0	21	0.8
Guardrail End	13	0.1	0	0.0	1	0.0
Cable Barrier	34	0.2	0	0.0	1	0.0
Concrete Barrier	95	0.6	0	0.0	29	1.0
Traffic Sign/Post	63	0.4	0	0.0	4	0.1
Traffic Signal Equipment	46	0.3	0	0.0	0	0.0
Utility Pole/Light Support	164	1.0	0	0.0	9	0.3
Other Post/Pole/Support	42	0.3	0	0.0	1	0.0
Culvert	8	0.1	0	0.0	3	0.1
Curb	15	0.1	0	0.0	0	0.0
Ditch	145	0.9	0	0.0	28	1.0
Embankment	17	0.1	0	0.0	6	0.2
Fence	10	0.1	0	0.0	1	0.0
Mailbox	22	0.1	0	0.0	0	0.0
Tree	112	0.7	3	3.0	29	1.0
Railroad Crossing Signal	14	0.1	0	0.0	0	0.0
Building	5	0.0	0	0.0	0	0.0
Traffic Island	2	0.0	0	0.0	0	0.0
Fire Hydrant	18	0.1	0	0.0	0	0.0
Impact Attenuator (crash cushion)	6	0.0	0	0.0	3	0.1
Other Fixed Object	123	0.8	0	0.0	1	0.0
SUBTOTAL	1,131	7.1	3	3.0	147	5.3

	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
Uncoded & Errors	0	0.0	0	0.0	0	0.0
No Event Coded as Most Harmful	0	0.0	0	0.0	0	0.0
MOST HARMFUL EVENT TOTAL	15,852	100.0	100	100.0	2,774	100.0

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

CRASH 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
Single Motor Vehicle	2,205	13.9	13	13.0	262	9.4
Head-On	144	0.9	15	15.0	58	2.1
Head-On - Left Turn	187	1.2	3	3.0	73	2.6
Angle	1,978	12.5	28	28.0	626	22.6
Rear-End	3,350	21.1	25	25.0	879	31.7
Rear-End - Left Turn	135	0.9	0	0.0	31	1.1
Rear-End - Right Turn	112	0.7	0	0.0	17	0.6
Sideswipe - Same Direction	5,247	33.1	7	7.0	490	17.7
Sideswipe - Opposite Directions	613	3.9	1	1.0	89	3.2
Backing	704	4.4	0	0.0	28	1.0
Other	1,126	7.1	7	7.0	215	7.8
Unknown	51	0.3	1	1.0	6	0.2
Uncoded & Errors	0	0.0	0	0.0	0	0.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

The highest percentage of heavy trucks/buses are involved in same direction sideswipes for all crashes (33.1%), angle crashes for fatal crashes (28.0%), and rear-end crashes for injury crashes (31.7%).

HAZARDOUS ACTION	ALL CRASHES		FATAL CRASHES		INJURY CRASHES		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	8,084	51.0	71	71.0	1,540	55.5	27	1.2
Speed Too Fast	543	3.4	2	2.0	127	4.6	225	9.6
Speed Too Slow	6	0.0	0	0.0	1	0.0	2	0.1
Failed to Yield	1,044	6.6	5	5.0	216	7.8	399	17.1
Disregard Traffic Control	173	1.1	3	3.0	68	2.5	91	3.9
Drove Wrong Way	11	0.1	1	1.0	3	0.1	2	0.1
Drove Left of Center	67	0.4	2	2.0	10	0.4	15	0.6
Improper Passing	139	0.9	0	0.0	10	0.4	19	0.8
Improper Lane Use	933	5.9	0	0.0	99	3.6	292	12.5
Improper Turn	533	3.4	0	0.0	29	1.0	136	5.8
Improper/No Signal	18	0.1	0	0.0	1	0.0	3	0.1
Improper Backing	555	3.5	1	1.0	23	0.8	144	6.2
Unable to Stop in Assured Clear Distance	1,463	9.2	4	4.0	373	13.4	651	27.8
Reckless Driving	14	0.1	0	0.0	5	0.2	5	0.2
Careless/Negligent Driving	310	2.0	2	2.0	60	2.2	124	5.3
Other	1,037	6.5	5	5.0	102	3.7	196	8.4
Unknown	922	5.8	4	4.0	107	3.9	8	0.3
TOTAL	15,852	100.0	100	100.0	2,774	100.0	2,339	100.0

Excluding no hazardous action and "other" hazardous actions, the most common hazardous action coded for drivers of heavy trucks/buses in all crashes (9.2%) and injury crashes (13.4%) is unable to stop in assured clear distance. For fatal crashes, the most common hazardous action excluding none and "other" is failed to yield (5.0%).

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

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 the Road	14,736	93.0	90	90.0	2,595	93.5
In the Median	79	0.5	0	0.0	16	0.6
On the Shoulder	394	2.5	3	3.0	68	2.5
Outside of the Shoulder/Curb-Line	344	2.2	4	4.0	64	2.3
In the Gore (area between ramp and freeway convergence)	10	0.1	1	1.0	4	0.1
On-Street Parking	214	1.3	1	1.0	9	0.3
Off the Roadway	0	0.0	0	0.0	0	0.0
On the Sidewalk	26	0.2	0	0.0	6	0.2
In the Bicycle Lane	5	0.0	1	1.0	1	0.0
Other/Unknown	44	0.3	0	0.0	11	0.4
TOTAL	15,852	100.0	100	100.0	2,774	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 - 2:59 AM	421	2.7	4	4.0	98	3.5
3:00 AM - 5:59 AM	566	3.6	8	8.0	124	4.5
6:00 AM - 8:59 AM	2,833	17.9	17	17.0	492	17.7
9:00 AM - 11:59 AM	3,359	21.2	20	20.0	538	19.4
12:00 PM - 2:59 PM	3,575	22.6	23	23.0	616	22.2
3:00 PM - 5:59 PM	3,348	21.1	16	16.0	567	20.4
6:00 PM - 8:59 PM	1,150	7.3	8	8.0	217	7.8
9:00 PM - 11:59 PM	596	3.8	4	4.0	122	4.4
Unknown	4	0.0	0	0.0	0	0.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

Heavy truck/bus frequencies in crashes peak in the early afternoon, then decrease until 3:00 AM. The time period between 12:00 PM and 2:59 PM is the most common time for trucks/buses to be involved in all crashes (22.6%), fatal crashes (23.0%), and injury crashes (22.2%).

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	4,107	25.9	25	25.0	786	28.3
US and Michigan Routes	4,861	30.7	43	43.0	928	33.5
County Roads and City Streets	6,867	43.3	32	32.0	1,060	38.2
Uncoded & Errors	17	0.1	0	0.0	0	0.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

For all crashes (43.3%) and injury crashes (38.2%), the highest percentage of heavy trucks/buses are involved in crashes on county roads and city streets. For fatal crashes, the highest percentage of heavy trucks/buses are involved in crashes on US and Michigan routes (43.0%).

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

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	2,816	17.8	11	11.0	494	17.8
Tuesday	2,910	18.4	16	16.0	525	18.9
Wednesday	2,931	18.5	20	20.0	448	16.1
Thursday	3,004	19.0	16	16.0	499	18.0
Friday	2,735	17.3	26	26.0	511	18.4
Saturday	919	5.8	7	7.0	186	6.7
Sunday	537	3.4	4	4.0	111	4.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

The highest percentage of heavy trucks/buses are involved in crashes on Thursday for all crashes (19.0%), Friday for fatal crashes (26.0%), and Tuesday for injury crashes (18.9%).

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	13,579	85.7	86	86.0	2,452	88.4
Female	1,458	9.2	9	9.0	221	8.0
Non-Binary	0	0.0	0	0.0	0	0.0
Uncoded & Errors	815	5.1	5	5.0	101	3.6
TOTAL	15,852	100.0	100	100.0	2,774	100.0

The highest percentage of heavy truck/bus drivers are male in all crashes (85.7%), fatal crashes (86.0%), and injury crashes (88.4%).

NUMBER OF OCCUPANTS	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
1 occupant	12,986	81.9	81	81.0	2,195	79.1
2 occupants	1,250	7.9	7	7.0	279	10.1
3 occupants	260	1.6	2	2.0	59	2.1
4 occupants	119	0.8	0	0.0	29	1.0
5 occupants	52	0.3	1	1.0	14	0.5
6+ occupants	408	2.6	3	3.0	97	3.5
0 occupants	479	3.0	5	5.0	74	2.7
Unknown	298	1.9	1	1.0	27	1.0
TOTAL	15,852	100.0	100	100.0	2,774	100.0

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

VEHICLE TYPES INVOLVED IN CRASH WITH HEAVY TRUCK/BUS	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total
Passenger Car, SUV, Van	11,068	82.4	66	61.7	2,555	85.7
Motor Home	38	0.3	0	0.0	6	0.2
Pickup Truck	1,623	12.1	21	19.6	271	9.1
Small Truck Under 10,000 lbs. GVWR	91	0.7	0	0.0	15	0.5
Motorcycle	36	0.3	8	7.5	21	0.7
Moped/Goped	4	0.0	0	0.0	4	0.1
Go-Cart/Golf Cart	0	0.0	0	0.0	0	0.0
Snowmobile	0	0.0	0	0.0	0	0.0
Off-Road Vehicle (ORV)/All-Terrain Vehicle (ATV)	3	0.0	0	0.0	3	0.1
Other (non-registered farm equipment, construction equipment, snow plows, etc.)	104	0.8	0	0.0	12	0.4
Truck/Bus (over 10,000 lbs. GVWR/8+ occupants/hazmat placard)	0	0.0	0	0.0	0	0.0
Uncoded & Errors	471	3.5	12	11.2	95	3.2
SUBTOTAL	13,438	100.0	107	100.0	2,982	100.0

HEAVY TRUCK/BUS GROSS VEHICLE WEIGHT RATING	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total	Number of Heavy Trucks	% of Total
10,000 lbs. or Less	34	0.2	0	0.0	1	0.0
10,001-26,000 lbs.	5,947	37.5	22	22.0	944	34.0
Greater Than 26,000 lbs.	9,617	60.7	78	78.0	1,820	65.6
Uncoded & Errors	254	1.6	0	0.0	9	0.3
SUBTOTAL	15,852	100.0	100	100.0	2,774	100.0

	ALL CRASHES		FATAL CRASHES		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	29,290	---	207	---	5,756	---

HEAVY TRUCK/BUS INVOLVED CRASHES (CONTINUED)

DRIVER HAZARDOUS ACTION WHERE HAZARDOUS CITATION ISSUED	HEAVY TRUCK/BUS INVOLVED CRASH						NON-HEAVY TRUCK/BUS INVOLVED CRASH			
	Single Vehicle 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 Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total
None	4	1.0	23	1.2	23	1.0	143	1.6	531	0.8
Speed Too Fast	163	41.7	62	3.2	171	7.2	3,817	44.0	1,713	2.6
Speed Too Slow	2	0.5	0	0.0	0	0.0	11	0.1	18	0.0
Failed to Yield	7	1.8	392	20.1	640	26.8	455	5.2	20,502	31.4
Disregard Traffic Control	5	1.3	86	4.4	168	7.0	119	1.4	4,877	7.5
Drove Wrong Way	0	0.0	2	0.1	1	0.0	8	0.1	101	0.2
Drove Left of Center	2	0.5	13	0.7	41	1.7	74	0.9	578	0.9
Improper Passing	0	0.0	19	1.0	82	3.4	24	0.3	686	1.0
Improper Lane Use	23	5.9	269	13.8	283	11.9	295	3.4	3,990	6.1
Improper Turn	20	5.1	116	6.0	64	2.7	76	0.9	1,772	2.7
Improper/No Signal	0	0.0	3	0.2	4	0.2	1	0.0	108	0.2
Improper Backing	12	3.1	132	6.8	12	0.5	24	0.3	1,207	1.8
Unable to Stop in Assured Clear Distance	15	3.8	636	32.6	612	25.6	253	2.9	24,776	37.9
Reckless Driving	4	1.0	1	0.1	14	0.6	294	3.4	298	0.5
Careless/Negligent Driving	69	17.6	55	2.8	160	6.7	1,901	21.9	1,917	2.9
Other	59	15.1	137	7.0	103	4.3	993	11.5	2,107	3.2
Unknown	6	1.5	2	0.1	9	0.4	183	2.1	191	0.3
CITED VEHICLES SUBTOTAL	391	100.0	1,948	100.0	2,387	100.0	8,671	100.0	65,372	100.0

	HEAVY TRUCK/BUS INVOLVED CRASH						NON-HEAVY TRUCK/BUS INVOLVED CRASH			
	Single Vehicle 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 Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total
Cited Vehicles	391	16.8	1,948	14.4	2,387	18.4	8,671	8.3	65,372	19.3
Vehicles with No Citation Issued	1,934	83.2	11,568	85.5	10,551	81.4	95,318	91.6	272,063	80.5
Vehicles with Unknown Citation	0	0.0	11	0.1	24	0.2	24	0.0	598	0.2
TOTAL VEHICLES INVOLVED	2,325	100.0	13,527	100.0	12,962	100.0	104,013	100.0	338,033	100.0