

## HEAVY TRUCK/BUS INVOLVED CRASHES

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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, backing, and changing lanes as the Truck/Bus Driver Action Prior.
- More collisions with bridge/pier/abutments 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 pedestrians, trees, and 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 6:00 AM and 2:59 PM, and fewer crashes between 3:00 PM and 5:59 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	8,424	50.7	68	64.8	1,565	55.8
Turning left	1,388	8.4	7	6.7	219	7.8
Turning right	1,127	6.8	2	1.9	92	3.3
Stopped on roadway	1,222	7.4	10	9.5	255	9.1
In prior crash	6	0.0	1	1.0	3	0.1
Changing lanes	746	4.5	0	0.0	81	2.9
Backing	825	5.0	1	1.0	26	0.9
Slowing/stopping on roadway	1,230	7.4	6	5.7	265	9.4
Slowing/stopping on other	34	0.2	0	0.0	4	0.1
Starting up on roadway	283	1.7	1	1.0	57	2.0
Starting up on other	4	0.0	0	0.0	1	0.0
Entering parking	35	0.2	0	0.0	0	0.0
Leaving parking	13	0.1	0	0.0	1	0.0
Entering roadway	117	0.7	1	1.0	23	0.8
Leaving roadway	14	0.1	0	0.0	2	0.1
Making U-turn	33	0.2	0	0.0	7	0.2
Overtaking or passing	117	0.7	0	0.0	14	0.5
Avoiding object	12	0.1	0	0.0	2	0.1
Avoiding animal	16	0.1	0	0.0	4	0.1
Avoiding pedestrian	3	0.0	0	0.0	3	0.1
Avoiding vehicle (front/back)	151	0.9	1	1.0	39	1.4
Avoiding vehicle (angle)	54	0.3	2	1.9	12	0.4
Driverless moving	13	0.1	0	0.0	1	0.0
Parked	417	2.5	1	1.0	71	2.5
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	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	1	0.0	0	0.0	0	0.0
Standing / laying in roadway	0	0.0	0	0.0	0	0.0
Pushing / working on vehicle	2	0.0	0	0.0	1	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	3	0.0	0	0.0	1	0.0
Not in roadway	3	0.0	0	0.0	2	0.1
Negotiating a curve	202	1.2	4	3.8	43	1.5
Other	47	0.3	0	0.0	6	0.2
Unknown	47	0.3	0	0.0	4	0.1
Uncoded & errors	9	0.1	0	0.0	0	0.0
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

## 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	111	0.7	0	0.0	16	0.6
Cross centerline / median	38	0.2	0	0.0	3	0.1
Ran off roadway left	36	0.2	0	0.0	5	0.2
Ran off roadway right	80	0.5	0	0.0	8	0.3
Re-enter roadway	6	0.0	0	0.0	1	0.0
Overturn	254	1.5	6	5.7	112	4.0
Separation of units	20	0.1	0	0.0	3	0.1
Fire / explosion	50	0.3	0	0.0	0	0.0
Immersion	1	0.0	0	0.0	0	0.0
Jackknife	200	1.2	1	1.0	20	0.7
Downhill runaway	0	0.0	0	0.0	0	0.0
Cargo loss / shift	84	0.5	1	1.0	5	0.2
Individual fell from vehicle	3	0.0	0	0.0	2	0.1
Other noncollision	79	0.5	0	0.0	15	0.5
<b>SUBTOTAL</b>	<b>962</b>	<b>5.8</b>	<b>8</b>	<b>7.6</b>	<b>190</b>	<b>6.8</b>

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	36	0.2	5	4.8	26	0.9
Bicyclist (pedalcycle)	29	0.2	2	1.9	21	0.7
Motor vehicle in transport	12,571	75.7	82	78.1	2,353	83.9
Parked motor vehicle	786	4.7	2	1.9	42	1.5
Railroad train / engineer	3	0.0	0	0.0	2	0.1
Animal	517	3.1	0	0.0	1	0.0
Other nonfixed object	136	0.8	0	0.0	11	0.4
<b>SUBTOTAL</b>	<b>14,078</b>	<b>84.8</b>	<b>91</b>	<b>86.7</b>	<b>2,456</b>	<b>87.6</b>

The majority of heavy trucks/buses are involved in crashes with a motor vehicle in transport for all crashes (75.7%), fatal crashes (78.1%), and injury crashes (83.9%) for most harmful event 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	43	0.3	0	0.0	2	0.1
Bridge parapet end	0	0.0	0	0.0	0	0.0
Bridge rail	24	0.1	0	0.0	2	0.1
Guardrail face	104	0.6	1	1.0	17	0.6
Guardrail end	21	0.1	0	0.0	3	0.1
Median barrier	98	0.6	0	0.0	22	0.8
Highway traffic sign post	91	0.5	0	0.0	5	0.2
Highway signal post	49	0.3	0	0.0	1	0.0
Luminaire / light support	185	1.1	1	1.0	6	0.2
Utility pole	0	0.0	0	0.0	0	0.0
Other pole	60	0.4	0	0.0	1	0.0
Culvert	10	0.1	0	0.0	1	0.0
Curb	12	0.1	0	0.0	1	0.0
Ditch	181	1.1	0	0.0	23	0.8
Embankment	28	0.2	0	0.0	6	0.2
Fence	15	0.1	0	0.0	0	0.0
Mailbox	18	0.1	0	0.0	1	0.0
Tree	142	0.9	3	2.9	25	0.9
Railroad crossing signal	16	0.1	0	0.0	1	0.0
Building	17	0.1	0	0.0	4	0.1
Traffic island	2	0.0	0	0.0	0	0.0
Fire hydrant	22	0.1	0	0.0	1	0.0
Impact attenuator (crash cushion)	7	0.0	0	0.0	3	0.1
Other fixed object	114	0.7	0	0.0	1	0.0
<b>SUBTOTAL</b>	<b>1,259</b>	<b>7.6</b>	<b>5</b>	<b>4.8</b>	<b>126</b>	<b>4.5</b>

	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	304	1.8	1	1.0	33	1.2
<b>MOST HARMFUL EVENT TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

## 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 Vehicle	2,563	15.4	11	10.5	279	9.9
Head On	166	1.0	19	18.1	73	2.6
Head On - Left Turn	180	1.1	4	3.8	79	2.8
Angle	2,057	12.4	31	29.5	581	20.7
Rear-end	3,620	21.8	25	23.8	936	33.4
Rear End - Left Turn	136	0.8	0	0.0	55	2.0
Rear End - Right Turn	127	0.8	0	0.0	24	0.9
Sideswipe - Same Direction	5,062	30.5	7	6.7	441	15.7
Sideswipe - Opposite Direction	632	3.8	2	1.9	79	2.8
Backing	706	4.3	0	0.0	15	0.5
Other / Unknown	1,354	8.2	6	5.7	243	8.7
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

The highest percentage of heavy trucks/buses are involved in same direction sideswipes for all crashes (30.5%), angle crashes for fatal crashes (29.5%), and rear-end crashes for injury crashes (33.4%).

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	8,283	49.9	74	70.5	1,512	53.9	31	1.1
Speed too fast	891	5.4	8	7.6	184	6.6	418	14.4
Speed too slow	14	0.1	0	0.0	5	0.2	3	0.1
Failed to yield	970	5.8	4	3.8	215	7.7	450	15.5
Disregard traffic control	164	1.0	1	1.0	68	2.4	97	3.3
Drove wrong way	6	0.0	0	0.0	0	0.0	1	0.0
Drove left of center	68	0.4	0	0.0	10	0.4	19	0.7
Improper passing	122	0.7	0	0.0	12	0.4	35	1.2
Improper lane use	874	5.3	0	0.0	67	2.4	309	10.7
Improper turn	558	3.4	0	0.0	36	1.3	170	5.9
Improper / no signal	24	0.1	0	0.0	5	0.2	6	0.2
Improper backing	613	3.7	0	0.0	16	0.6	177	6.1
Unable to stop in assured clear distance	1,500	9.0	3	2.9	390	13.9	730	25.2
Reckless driving	11	0.1	0	0.0	6	0.2	5	0.2
Careless / negligent driving	367	2.2	4	3.8	69	2.5	190	6.6
Other	1,184	7.1	5	4.8	103	3.7	242	8.4
Unknown	954	5.7	6	5.7	107	3.8	13	0.4
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>	<b>2,896</b>	<b>100.0</b>

After no hazardous action, the most common hazardous action coded for drivers of heavy trucks/buses in all crashes (9.0%) and injury crashes (13.9%) is unable to stop in assured clear distance and for fatal crashes is speed too fast (7.6%).

## 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 Road	15,155	91.3	93	88.6	2,607	92.9
Median	151	0.9	0	0.0	24	0.9
Shoulder	525	3.2	4	3.8	78	2.8
Outside of Shoulder/Curb	532	3.2	6	5.7	84	3.0
Gore	16	0.1	0	0.0	1	0.0
On-Street Parking	161	1.0	0	0.0	3	0.1
Off the Roadway	0	0.0	0	0.0	0	0.0
On the Sidewalk	23	0.1	0	0.0	1	0.0
In the Bicycle Lane	4	0.0	0	0.0	1	0.0
Other/Unknown	36	0.2	2	1.9	6	0.2
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

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	435	2.6	9	8.6	85	3.0
3:00 AM - 5:59 AM	633	3.8	7	6.7	123	4.4
6:00 AM - 8:59 AM	3,111	18.7	13	12.4	484	17.3
9:00 AM - 11:59 AM	3,580	21.6	16	15.2	619	22.1
12:00 PM - 2:59 PM	3,763	22.7	24	22.9	639	22.8
3:00 PM - 5:59 PM	3,425	20.6	19	18.1	550	19.6
6:00 PM - 8:59 PM	1,076	6.5	7	6.7	190	6.8
9:00 PM - 11:59 PM	578	3.5	10	9.5	115	4.1
Unknown	2	0.0	0	0.0	0	0.0
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

Heavy truck/bus frequencies in crashes peak in the early afternoon, then drop off steadily 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 crashes overall (22.7%), as well as in fatal crashes (22.9%) and injury crashes (22.8).

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	4,328	26.1	23	21.9	809	28.8
U.S. and Michigan Roads	5,040	30.4	47	44.8	933	33.3
County & City Roads	7,182	43.3	35	33.3	1,060	37.8
Uncoded & Errors	53	0.3	0	0.0	3	0.1
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

For all crashes (43.3%) and for injury crashes (37.8%), the highest percentage of heavy trucks/buses are involved in crashes on county and city roads. For fatal crashes, the highest percentage of heavy trucks/buses are involved in crashes on U.S. and Michigan roads (44.8%).

## 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	3,125	18.8	17	16.2	543	19.4
Tuesday	3,395	20.4	18	17.1	583	20.8
Wednesday	3,228	19.4	14	13.3	509	18.1
Thursday	2,724	16.4	23	21.9	448	16.0
Friday	2,671	16.1	19	18.1	441	15.7
Saturday	925	5.6	8	7.6	171	6.1
Sunday	535	3.2	6	5.7	110	3.9
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

The highest percentage of heavy trucks/buses are involved in crashes on Tuesday for all crashes (20.4%) and injury crashes (20.8%). For fatal crashes Thursday is the most common day for heavy truck/bus involvements (21.9%).

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	14,320	86.2	99	94.3	2,474	88.2
Female	1,608	9.7	5	4.8	260	9.3
Unknown	675	4.1	1	1.0	71	2.5
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

The highest percentage of heavy truck/bus drivers are male in all crashes (86.2%), fatal crashes (94.3%), and injury crashes (88.2%).

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	13,600	81.9	88	83.8	2,244	80.0
2 occupants	1,265	7.6	10	9.5	259	9.2
3 occupants	260	1.6	0	0.0	58	2.1
4 occupants	118	0.7	0	0.0	29	1.0
5 occupants	86	0.5	2	1.9	12	0.4
6+ occupants	602	3.6	4	3.8	129	4.6
0 occupants	427	2.6	1	1.0	57	2.0
Unknown	245	1.5	0	0.0	17	0.6
<b>TOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

## 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	11,551	83.5	82	75.2	2,479	84.3
Motor Home	32	0.2	0	0.0	9	0.3
Pickup	1,640	11.9	10	9.2	321	10.9
Small Truck (under 10,000 lbs.)	75	0.5	0	0.0	9	0.3
Motorcycle	36	0.3	4	3.7	26	0.9
Moped	6	0.0	2	1.8	4	0.1
Go Cart	1	0.0	0	0.0	0	0.0
Snowmobile	5	0.0	0	0.0	2	0.1
Off Road Vehicle	4	0.0	0	0.0	4	0.1
Other	99	0.7	1	0.9	10	0.3
Unknown	390	2.8	10	9.2	75	2.6
<b>SUBTOTAL</b>	<b>13,839</b>	<b>100.0</b>	<b>109</b>	<b>100.0</b>	<b>2,939</b>	<b>100.0</b>

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	193	1.2	0	0.0	11	0.4
10,001 - 26,000 lbs	5,306	32.0	18	17.1	770	27.5
Greater than 26,000 lbs.	10,773	64.9	87	82.9	2,013	71.8
Uncoded & Errors	331	2.0	0	0.0	11	0.4
<b>SUBTOTAL</b>	<b>16,603</b>	<b>100.0</b>	<b>105</b>	<b>100.0</b>	<b>2,805</b>	<b>100.0</b>

	ALL CRASHES		FATAL CRASHES		INJURY CRASHES	
	Number of Vehicles	% of Total	Number of Vehicles	% of Total	Number of Vehicles	% of Total
<b>Total Number of Vehicles in Heavy Truck/Bus Crashes</b>	<b>30,442</b>	<b>---</b>	<b>214</b>	<b>---</b>	<b>5,744</b>	<b>---</b>



## 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	9	1.5	22	1.0	19	0.7	150	1.1	712	0.8
Speed too fast	314	51.6	104	4.5	379	14.0	6,997	53.3	3,716	4.4
Speed too slow	2	0.3	1	0.0	3	0.1	21	0.2	27	0.0
Failed to yield	8	1.3	442	19.3	634	23.4	467	3.6	23,855	28.0
Disregard traffic control	8	1.3	89	3.9	133	4.9	133	1.0	5,262	6.2
Drove wrong way	0	0.0	1	0.0	5	0.2	15	0.1	87	0.1
Drove left of center	1	0.2	18	0.8	27	1.0	128	1.0	663	0.8
Improper passing	1	0.2	34	1.5	76	2.8	28	0.2	768	0.9
Improper lane use	17	2.8	292	12.8	271	10.0	221	1.7	4,366	5.1
Improper turn	37	6.1	133	5.8	55	2.0	65	0.5	1,938	2.3
Improper / no signal	0	0.0	6	0.3	1	0.0	1	0.0	153	0.2
Improper backing	11	1.8	166	7.3	37	1.4	37	0.3	1,789	2.1
Unable to stop in assured clear distance	15	2.5	715	31.3	737	27.2	412	3.1	35,774	42.0
Reckless driving	3	0.5	2	0.1	17	0.6	338	2.6	334	0.4
Careless / negligent driving	100	16.4	90	3.9	179	6.6	2,482	18.9	2,631	3.1
Other	78	12.8	164	7.2	127	4.7	1,447	11.0	2,976	3.5
Unknown	4	0.7	9	0.4	5	0.2	174	1.3	205	0.2
<b>CITED VEHICLES SUBTOTAL</b>	<b>608</b>	<b>100.0</b>	<b>2,288</b>	<b>100.0</b>	<b>2,705</b>	<b>100.0</b>	<b>13,116</b>	<b>100.0</b>	<b>85,256</b>	<b>100.0</b>

	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	608	22.8	2,288	16.4	2,705	20.1	13,116	12.1	85,256	22.2
Vehicles with No Citation Issued	2,064	77.2	11,640	83.6	10,736	79.8	95,335	87.9	299,047	77.8
Vehicles with Unknown Citation	0	0.0	3	0.0	5	0.0	17	0.0	242	0.1
<b>TOTAL VEHICLES INVOLVED</b>	<b>2,672</b>	<b>100.0</b>	<b>13,931</b>	<b>100.0</b>	<b>13,446</b>	<b>100.0</b>	<b>108,468</b>	<b>100.0</b>	<b>384,545</b>	<b>100.0</b>