

2000 Work Zone Traffic Crash Facts



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Federal Motor Carrier Safety Administration

2000 Work Zone Traffic Crash Fact Summary

- The number of people killed annually in motor vehicle crashes that occur in work zones averaged 829 from 1996 to 2000.
- On an average from 1996 to 2000, 16% of the fatalities resulting from crashes in work zones involved non-motorists (pedestrians and pedalcyclists).
- Approximately 42,000 people annually were injured as a result of motor vehicle crashes in work zones from 1996 to 2000.
- In 2000, 1,093 fatalities resulted from motor vehicle crashes in work zones. Twenty-four percent of these fatalities resulted from crashes involving large trucks.
- In 2000, 31% of all fatal work zone crashes occurred on the weekend, while only 13% of all fatal large truck work zone crashes occurred on the weekend.
- In 2000, approximately half of all fatal work zone crashes occurred during the day, while about two-thirds of fatal large truck work zone crashes occurred during the day (53% vs. 65%).
- In 2000, the percentage of fatal work zone crashes occurring on urban interstates was almost twice the percentage of all fatal crashes occurring on urban interstates (11% vs. 6%).
- In 2000, the percentage of fatal large truck work zone crashes occurring on urban interstates was much higher than the percentage of all fatal large truck crashes occurring on urban interstates (15% vs. 9%).
- In 2000, approximately 60% of fatal work zone crashes occurred on roads with speed limits of 55 miles per hour or greater.

2000 Work Zone Traffic Crash Facts

INTRODUCTION

The safe and efficient flow of traffic through construction and maintenance work zones is of particular concern to the Federal Motor Carrier Safety Administration (FMCSA). Almost 30 percent of work zone crashes involve large trucks. Understanding how, where and when work zone crashes occur supports efforts to create effective countermeasures to prevent future crashes.

The descriptive statistics about work zone crashes presented in this report are not exhaustive, but do provide a basic understanding of the characteristics of these crashes.

ABOUT THIS REPORT

This report presents descriptive statistics for both work zone-related motor vehicle crashes in general as well as work zone-related large truck crashes. In addition to the number of people injured and killed in work zone crashes, the following information is presented:

- When fatal work zone crashes occur: Time of Day, Day of Week, Season (Tables 5-7)
- Where fatal work zone crashes occur: Roadway Function Class, Speed Limit, Traffic Flow, Roadway Alignment, Roadway Profile, Relation to Roadway (Tables 8-13)
- How fatal work zone crashes occur: Number of Vehicles, First Harmful Event, Manner of Collision (Tables 14-16)
- The occurrence of driver violations (Tables 17-18)
- Fatal work zone crashes by State (Table 19)

Data presented in this report for fatal crashes were generated from the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System. Data for nonfatal crashes were generated by NHTSA's General Estimates System.

A work zone crash is a motor vehicle traffic crash that occurs in the vicinity of highway construction, highway maintenance or utility work. The ability to identify whether a crash occurred in a work zone differs from State to State, due in large part to different definitions of a work zone.

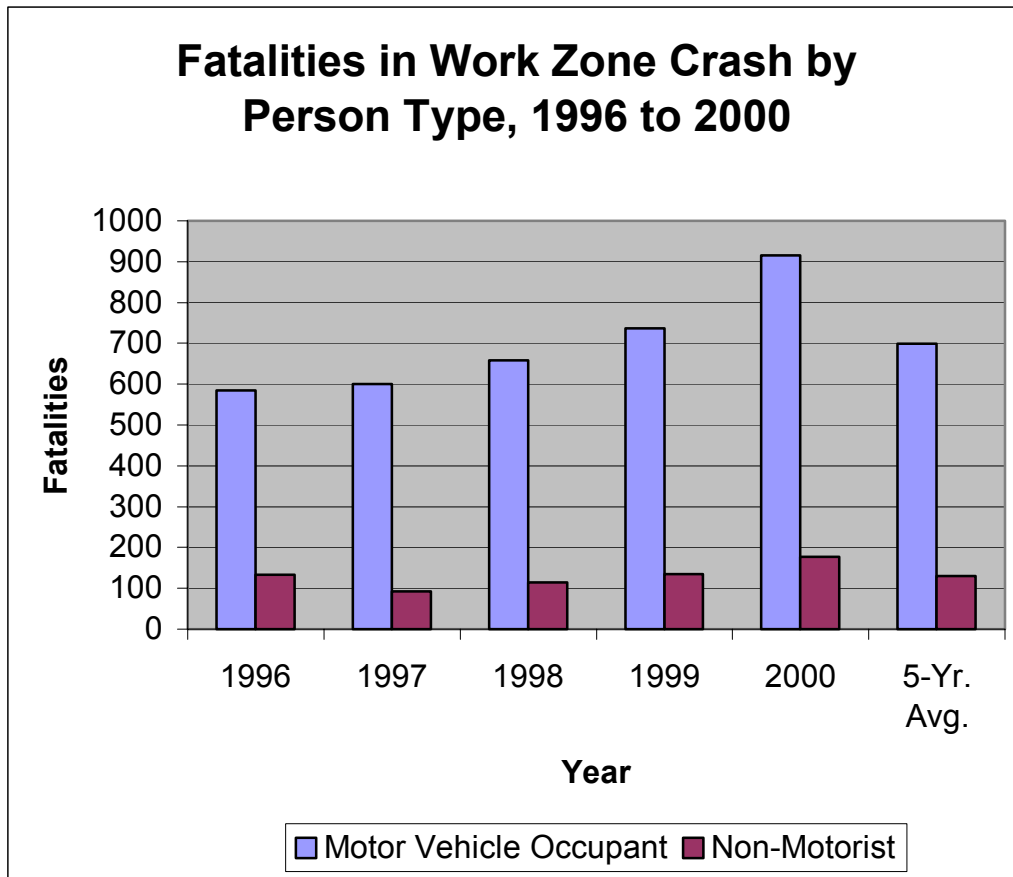
Table 1
Fatalities in Work Zone Crashes by Person Type, 1996 to 2000

Person Type	1996	1997	1998	1999	2000	5-Year Average	
Motor Vehicle Occupant	584	600	658	737	916	699	84%
Non-Motorist	133	93	114	135	177	130	16%
Total	717	693	772	872	1,093	829	100%

Source: NHTSA's Fatality Analysis Reporting System

- From 1996 to 2000, the number of people killed in motor vehicle crashes in work zones has gone from a low of 693 in 1997 to a high of 1,093 in 2000, for an average of 829 per year.
- On average from 1996 to 2000, 16% of the fatalities resulting from crashes in work zones were non-motorists (pedestrians and pedalcyclists).
- In 2000, 1,093 fatalities resulted from motor vehicle crashes in work zones, about 3% of total fatalities (41,821).

Figure 1



Source: NHTSA's Fatality Analysis Reporting System

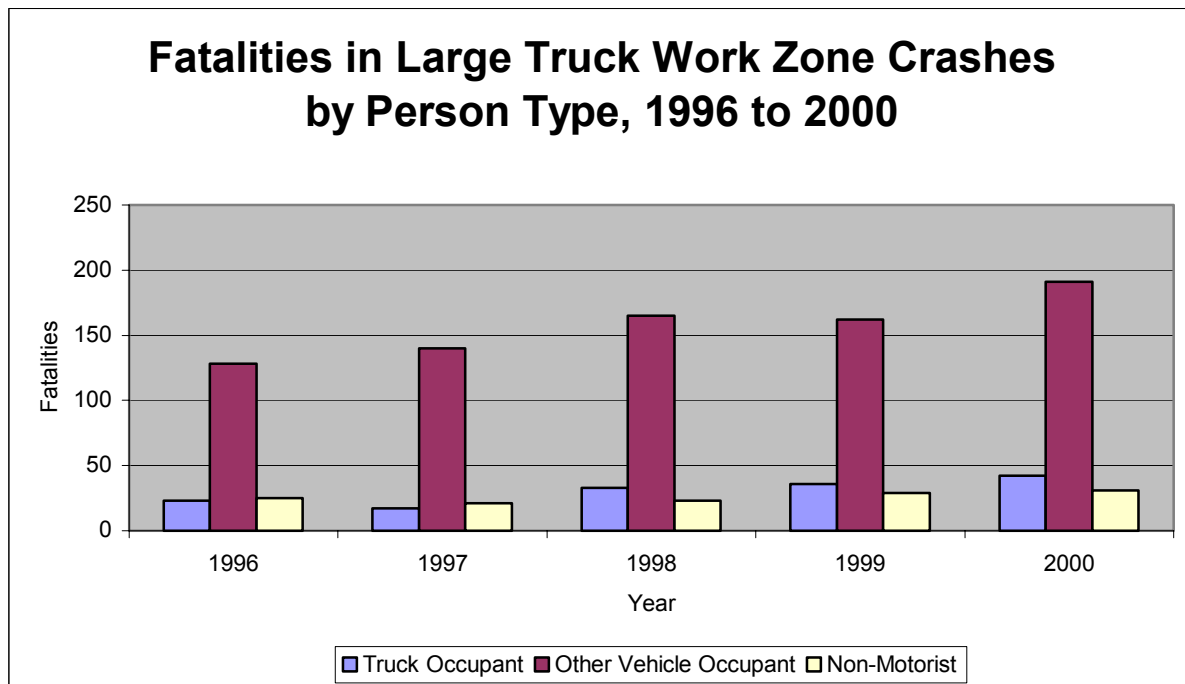
Table 2
Fatalities in Large Truck Work Zone Crashes
by Person Type, 1996 to 2000

Person Type	1996	1997	1998	1999	2000	5-Year Average	
Truck Occupant	23	17	33	36	42	30	14%
Other Vehicle Occupants	128	140	165	162	191	157	74%
Non-Motorist	25	21	23	29	31	26	12%
Total	176	178	221	227	264	213	100%

Source: NHTSA's Fatality Analysis Reporting System

- In 2000, 264 fatalities resulted from large truck crashes in work zones, about 5% of fatalities in large truck crashes (5,211).
- Twenty-four percent of work zone fatalities that occurred in 2000 involved large trucks in the crash (264 out of 1,093).
- From 1996 to 2000, an average of 213 people were killed in large truck crashes in areas designated as work zones, from a high of 264 deaths in 2000 to a low of 176 deaths in 1996.
- In large truck work zone crashes for the time period 1996-2000, 12% of the fatalities were non-motorists.

Figure 2



Source: NHTSA's Fatality Analysis Reporting System

Table 3
People Injured In Work Zone Crashes by Person Type, 1996 to 2000

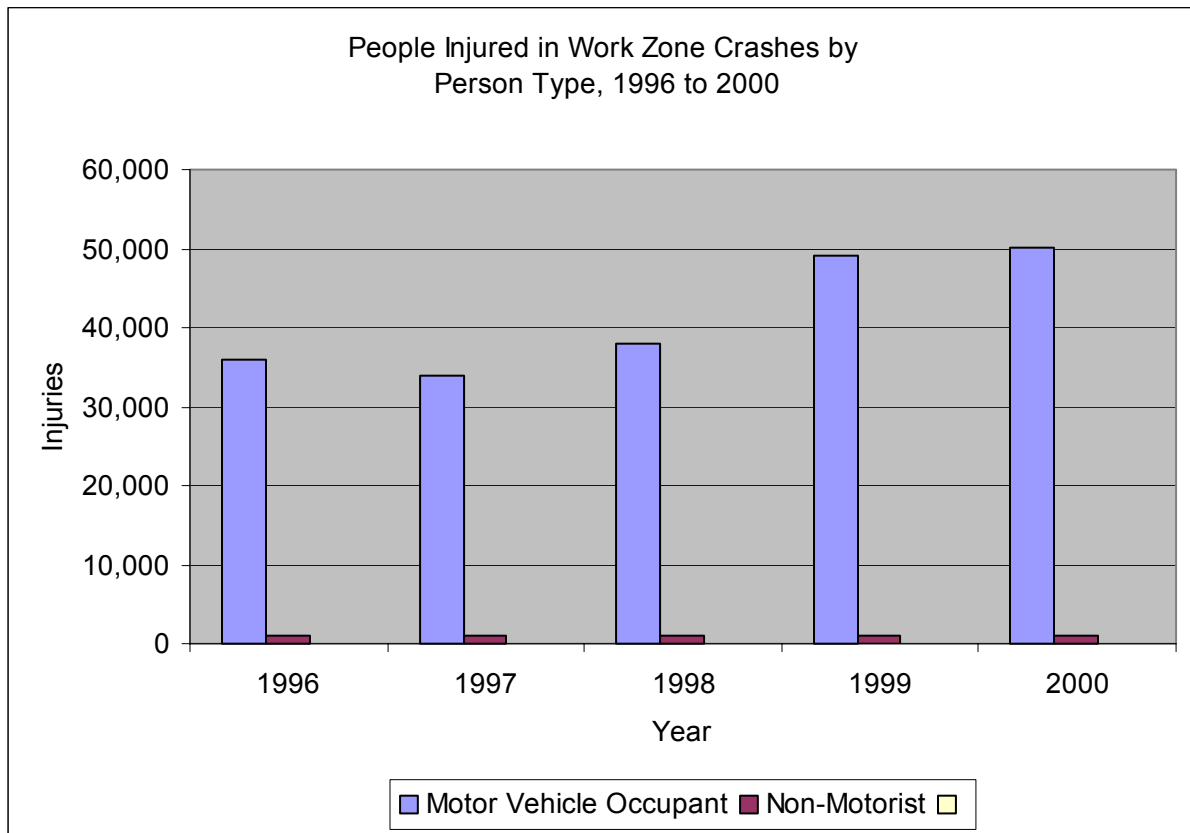
Person Type	1996	1997	1998	1999	2000	5-Year Average	
Motor Vehicle Occupant	36,000	34,000	38,000	49,000	50,000	41,000	98%
Non-Motorist	1,000	1,000	1,000	2,000	2,000	1,000	2%
Total	37,000	35,000	39,000	51,000	52,000	42,000	100%

Source: NHTSA's General Estimates System

NOTE: Estimates rounded to nearest thousand

- Over the last 5 years, non-motorists constituted about 2% of people injured in work zone crashes.

Figure 3



Source: NHTSA's General Estimates System

- Approximately 52,000 people were injured as a result of motor vehicle crashes in work zones in 2000, about 2% of the 3,189,000 persons injured in motor vehicle crashes.

Table 4
People Injured In Large Truck Work Zone Crashes
by Person Type, 1996 to 2000

Person Type	1996	1997	1998	1999	2000	5-Year Average
Motor Vehicle Occupant	2,000	3,000	3,000	5,000	5,000	4,000
Non-Motorist	*	*	*	*	*	*
Total	2,000	3,000	3,000	5,000	5,000	4,000

Source: NHTSA's General Estimates System

* less than 500 injured people

NOTE: Estimates rounded to nearest thousand

- Approximately 5,000 people were injured in large truck work zone crashes in 2000, about 4% of the 140,000 people injured in large truck crashes that year.
- About 10% of people injured in work zone traffic crashes (5,000/52,000) in 2000 were injured in crashes involving large trucks.

Table 5
Fatal Crashes by Time of Day and Work Zone, 2000

Time of Day	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Night	18,888	50%	458	47%	1,463	32%	75	35%
Day	18,521	50%	508	53%	3,056	68%	141	65%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- Half of all fatal work zone crashes occurred during the day (50%), while 65% of fatal large truck work zone crashes occurred during the day.

Table 6
Fatal Crashes by Day of Week and Work Zone, 2000

Day of Week	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Weekend (Sat & Sun)	12,912	35%	299	31%	677	15%	29	13%
Weekdays (Mon-Fri)	24,492	65%	667	69%	3,842	85%	187	87%
Unknown	5	*	0	0%	0	0%	0	0%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

* Less than one percent

- Over twice as many fatal work zone crashes occurred on weekdays than on weekends. However, based on the number of fatal crashes in work zones per day, fewer fatal crashes occurred in work zones on weekdays ($667/5=133$ vs. $299/2=150$). For large trucks, over six times as many fatal work zone crashes occurred on weekdays, or about 37 per weekday and 15 per weekend day.

Table 7
Fatal Crashes by Season and Work Zone, 2000

Season	All Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Winter	8,511	23%	155	16%	1,065	24%	28	13%
Spring	9,037	24%	264	27%	1,062	23%	65	30%
Summer	10,186	27%	288	30%	1,216	27%	64	30%
Fall	9,675	26%	259	27%	1,176	26%	59	27%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- Fatal work zone crashes, regardless of whether a large truck was involved, occurred least often in the winter. This may be the result of most work zones being set up in the spring through fall.

Table 8
Fatal Crashes by Roadway Function Class and Work Zone, 2000

Roadway Function Class	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Rural-Interstate	2,699	7%	131	14%	639	14%	57	26%
Rural-Other	18,020	48%	375	39%	2,234	50%	74	34%
Subtotal – Rural	20,719	55%	506	53%	2,873	64%	131	60%
Urban-Interstate	2,115	6%	109	11%	426	9%	33	15%
Urban-Other	12,316	33%	303	31%	977	22%	40	19%
Subtotal – Urban	14,431	39%	412	42%	1,403	31%	73	34%
Unknown	2,259	6%	48	5%	243	5%	12	6%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- The majority of fatal motor vehicle crashes, regardless of the vehicles involved or whether they occurred in a work zone or not, occur in rural areas. Based on data from the Federal Highway Administration's Highway Statistics 2000, only 39% of all vehicle miles traveled and 58% of all truck travel are on rural roads.

- The percentage of fatal work zone crashes occurring on urban interstates was almost twice the percentage of all fatal crashes occurring on urban interstates (11% vs. 6%).
- For fatal large truck crashes, the percentage of work zone crashes occurring on urban interstates was also much higher than the percentage of all fatal large truck crashes occurring on urban interstates (15% vs. 9%).

Table 9
Fatal Crashes by Speed Limit and Work Zone, 2000

Speed Limit	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
1-50 mph	16,875	45%	383	40%	1,313	29%	63	29%
55-75 mph	19,566	52%	568	59%	3,149	70%	150	70%
Unknown	968	3%	15	1%	57	1%	3	1%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- The majority of fatal work zone crashes for all vehicles and large trucks occurred on roads with speed limits of 55 miles per hour or greater (59% and 70%, respectively).

Table 10
Fatal Crashes by Traffic Flow and Work Zone, 2000

Traffic Flow	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Not Divided	24,021	64%	471	49%	2,456	54%	86	40%
Median-No Barrier	9,248	25%	298	31%	1,439	32%	76	35%
Median w/Barrier	3,057	8%	172	18%	537	12%	51	24%
Unknown	1,083	3%	25	2%	87	2%	3	1%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- Although the majority of fatal large truck crashes occurred on roads that are not divided (54%), the majority of fatal large truck work zone crashes occurred on roads that are divided (35% + 24%=59%).

Table 11
Fatal Crashes by Roadway Alignment and Work Zone, 2000

Roadway Alignment	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Straight	27,717	74%	786	81%	3,689	82%	189	88%
Curve	9,291	25%	174	18%	817	18%	25	12%
Unknown	401	1%	6	1%	13	*	2	*
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

* Less than one percent

- The vast majority of fatal crashes occurred on straight roads (74%). The same is true for all work zone crashes (81%), large truck involved crashes (82%), and large truck work zone crashes (88%).

Table 12
Fatal Crashes by Roadway Profile and Work Zone, 2000

Roadway Profile	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Level	26,608	71%	698	72%	3,264	72%	153	71%
Grade	8,909	24%	236	25%	1,102	24%	53	24%
Other /Unk	1,892	5%	32	3%	153	4%	10	5%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- About three times as many fatal crashes occurred on level roadways than on grade roadways, regardless of whether there is a work zone present or a large truck involved.

Table 13
Fatal Crashes by Relation to Roadway and Work Zone, 2000

Relation to Roadway	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
On Roadway	21,821	58%	611	63%	3,948	87%	186	86%
Off Roadway	15,298	41%	353	37%	567	13%	30	14%
Unknown	290	1%	2	*	4	*	0	0%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

* Less than one percent

- While almost twice as many fatal work zone crashes involving all vehicles occurred on the roadway compared to off the roadway, more than 6 times as many fatal large truck work zone crashes occurred on the roadway compared to off the roadway (86% vs. 14%).

Table 14
Fatal Crashes by Number of Vehicles Involved and Work Zone, 2000

Number of Vehicles Involved	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
One	21,052	56%	495	51%	802	18%	34	16%
Two	13,766	37%	338	35%	2,950	65%	114	53%
More than 2	2,591	7%	133	14%	767	17%	68	31%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

- While the majority of all fatal crashes involved only one vehicle (56%), the majority of large truck fatal crashes occurring in work zones involved two or more vehicles (84%).
- Over 80% of fatal large truck crashes involved two or more vehicles, regardless of whether a work zone was present.

Table 15
Fatal Crashes by First Harmful Event and Work Zone, 2000

First Harmful Event Collision With:	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Motor Vehicle in Transport	15,435	41%	427	44%	3,515	78%	162	75%
Fixed Object	11,302	30%	233	24%	331	8%	17	8%
Pedestrian	4,441	12%	131	14%	285	6%	19	9%
Non-Collision	4,423	12%	85	9%	236	5%	7	3%
Not Fixed Object	1,774	5%	90	9%	150	3%	11	5%
Unknown	34	*	0	0%	2	*	0	0%
Total	37,409	100%	966	100%	4,519	100%	216	100%

Source: NHTSA's Fatality Analysis Reporting System

* Less than one percent

- A vast majority of large truck fatal crashes, whether or not in a work zone, occurred as a result of a collision with another moving vehicle.

Table 16
Two-Vehicle Fatal Crashes by Manner of Collision and Work Zone, 2000

Manner of Collision	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Rear-end	1,388	10%	56	17%	546	19%	31	27%
Head-on	4,558	33%	112	33%	868	29%	28	25%
Angle	6,597	48%	124	37%	1,256	43%	34	30%
Side-Swipe: Same direction	269	2%	10	3%	65	2%	5	4%
Side-Swipe: Opposition direction	106	1%	1	*	55	2%	1	1%
Not Applicable/Unknown	848	6%	35	10%	160	5%	15	13%
Total	13,766	100%	338	100%	2,950	100%	114	100%

Source: NHTSA's Fatality Analysis Reporting System

* Less than one percent

- The most common manner of collision for all two-vehicle fatal work zone crashes was an angle collision (37%), followed by head-on (33%) and rear-end (17%).
- For two-vehicle fatal work zone crashes where one of the vehicles was a large truck, the most common manner of collision was angle (30%), followed by rear-end (27%) and head-on (25%).

Table 17
Drivers Involved in Multi-Vehicle Fatal Truck-Related Crashes
by Driver Type, Violations Charged and Work Zone, 2000

Violations Charged	Truck Drivers Fatal Crashes	%	Other Driver Fatal Crashes	%	Truck Driver Fatal Work Zone Crashes	%	Other Driver Fatal Work Zone Crashes	%
Yes	476	12%	283	6%	27	12%	14	6%
No	3,610	88%	4,256	94%	203	88%	235	94%

Source: NHTSA's Fatality Analysis Reporting System

- Only a minority of drivers involved in multiple-vehicle fatal truck crashes was charged with violations. The proportion of truck drivers involved in fatal crashes that were charged with violations was the same regardless of whether the crash occurred in a work zone. The same was true for drivers of the other vehicle involved.

Table 18
Drivers Involved in Single-Vehicle Fatal Crashes
by Driver Type, Violations Charged and Work Zone, 2000

Violations Charged	Truck Drivers Involved in Fatal Crashes	%	Non-Truck Drivers Involved in Fatal Crashes	%	Truck Drivers Involved in Fatal Truck Crashes in Work Zones	%	Non-Truck Drivers Involved in Fatal Crashes in Work Zones	%
Yes	73	9%	2,776	14%	3	9%	57	12%
No	724	91%	17,389	86%	31	91%	402	88%

Source: NHTSA's Fatality Analysis Reporting System

- The percentage of large truck drivers charged with a violation in single-vehicle fatal crashes was less than the percentage for non-truck drivers charged with a violation in single-vehicle fatal crashes (9% vs. 14%). Similarly, the percentage of large truck drivers charged with a violation in fatal single vehicle work zone crashes was less than the percentage of non-truck drivers charged with a violation in single-vehicle fatal crashes (9% vs. 12%).



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Table 19 2000 Fatalities by Work Zone and Large Truck Involvement (FARS)

STATE	TOTAL FATALITIES		FATALITIES IN LARGE TRUCK CRASHES	
	TOTAL	WORK ZONE	TOTAL	WORK ZONE
Alabama	995	20	159	3
Alaska	103	2	4	0
Arizona	1,036	31	105	4
Arkansas	652	30	118	7
California	3,753	121	376	22
Colorado	681	11	68	2
Connecticut	342	8	34	5
Delaware	123	2	20	1
Dist. of Columbia	49	0	4	0
Florida	2,999	83	310	10
Georgia	1,541	95	219	27
Hawaii	131	1	1	0
Idaho	276	8	26	1
Illinois	1,418	52	173	10
Indiana	875	40	162	15
Iowa	445	10	90	4
Kansas	461	16	81	6
Kentucky	820	9	101	4
Louisiana	937	11	126	5
Maine	169	4	30	0
Maryland	588	16	63	3
Massachusetts	433	7	51	2
Michigan	1,382	11	156	6
Minnesota	625	18	87	3
Mississippi	949	1	123	0
Missouri	1,157	16	183	3
Montana	237	3	26	1
Nebraska	276	8	56	2
Nevada	323	11	37	1
New Hampshire	126	1	10	0
New Jersey	731	33	94	6
New Mexico	430	9	50	0
New York	1,458	20	156	6
North Carolina	1,472	44	188	13
North Dakota	86	0	10	0
Ohio	1,351	34	182	8
Oklahoma	652	9	112	1
Oregon	451	6	52	1
Pennsylvania	1,520	37	184	9
Rhode Island	80	1	1	0
South Carolina	1,065	14	89	0
South Dakota	173	5	22	2
Tennessee	1,306	31	162	16
Texas	3,769	155	510	42
Utah	373	0	39	0
Vermont	79	2	9	0
Virginia	930	21	105	7
Washington	632	15	72	4
West Virginia	410	4	57	1
Wisconsin	799	4	97	1
Wyoming	152	3	21	0
Total	41,821	1,093	5,211	264

Source: NHTSA's Fatality Analysis Reporting System

SUMMARY:

Of the 41,821 fatalities in motor vehicles crashes in 2000, about 3% occurred in work zone areas. However, 24% of the fatalities in work zone crashes involved large trucks, compared to 12% of fatalities in all crashes. Of the approximately 3.2 million people injured in non-fatal motor vehicle crashes in 2000, less than 2% of the injuries occurred in work zone crashes. About 10% of the people injured in work zone crashes were injured in crashes involving large trucks.



For More Information:

Information on work zone crashes involving large trucks is available from the Federal Motor Carrier Safety Administration (FMCSA), Analysis Division, 400 Seventh Street, S.W., Washington, D.C. 20590, (202-366-1861), or www.fmcsa.dot.gov. General information about work zone safety may also be obtained from the Federal Highway Administration (FHWA), Safety Design Division, 400 Seventh Street, S.W., Washington, D.C. 20590, at (202) 366-1795, or <http://safety.fhwa.dot.gov>.