

1999 Work Zone Traffic Crash Facts



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1999 Work Zone Traffic Crash Fact Summary

- The number of people killed in motor vehicle crashes that occur in work zones averaged 768 from 1995 to 1999.
- On average from 1995 to 1999, 16% of the fatalities resulting from crashes in work zones involved non-motorists (pedestrians and pedalcyclists).
- Approximately 40,000 people annually were injured as a result of motor vehicle crashes in work zones from 1995 to 1999.
- In 1999, 868 fatalities resulted from motor vehicle crashes in work zones. Twenty-six percent of these fatalities resulted from crashes involving large trucks.
- Twenty-nine percent 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 1999, 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.
- Most work zone crashes occurred in the summer and the fall.
- The percentage of fatal work zone crashes occurring on urban interstates was more than twice the percentage of all fatal crashes occurring on urban interstates (14% vs. 6%).
- In 1999, the percentage of large truck work zone crashes occurring on urban interstates was much higher than the percentage of all fatal truck crashes occurring on urban interstates (15% vs. 9%).
- In 1999, the majority of fatal work zone crashes occurred on roads with speed limits of 55 miles per hour or greater.

1999 Work Zone Traffic Crash Facts

INTRODUCTION

The safe and efficient flow of traffic through construction and maintenance work zones is of particular concern to 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 our 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, Type of Roadway, 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 by 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.

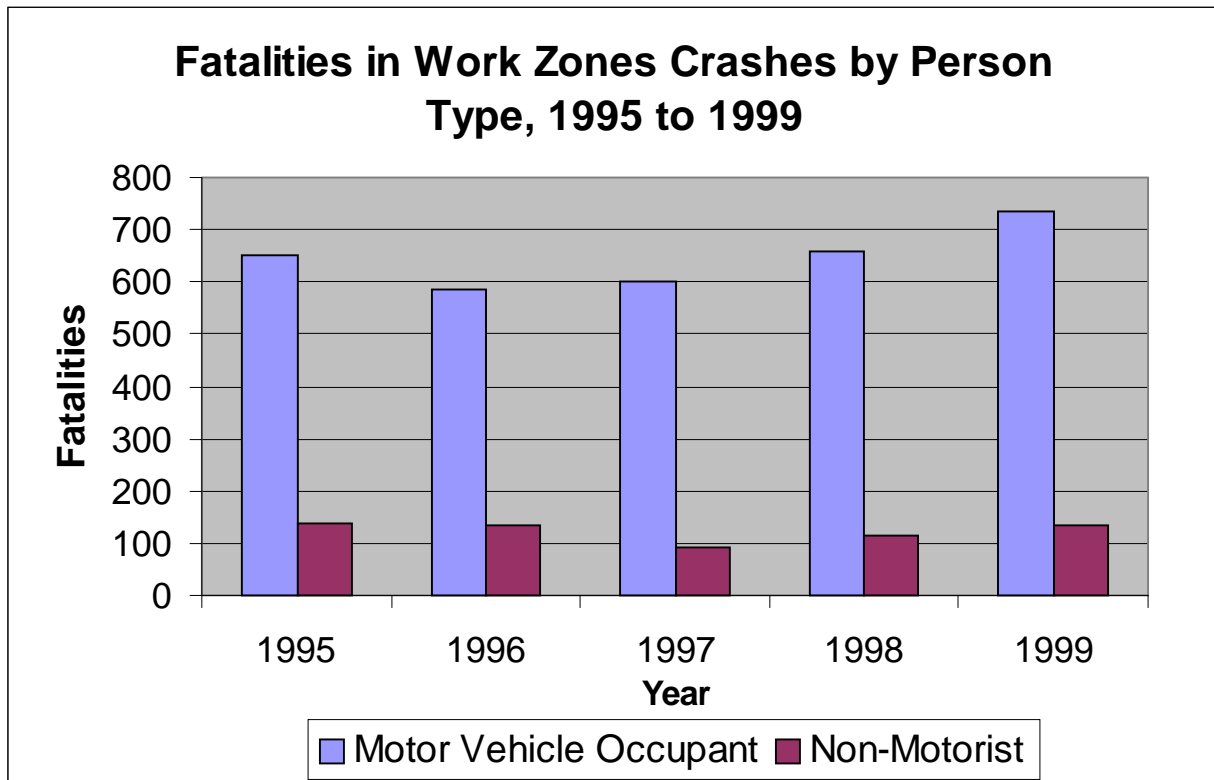
Table 1
Fatalities in Work Zone Crashes by Person Type, 1995 to 1999

Person Type	1995	1996	1997	1998	1999	5-Year Average	
Motor Vehicle Occupant	652	584	600	658	735	646	84%
Non-Motorist	137	133	93	114	133	122	16%
Total	789	717	693	772	868	768	100%

Source: NHTSA's Fatality Analysis Reporting System

- From 1995 to 1999, 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 868 in 1999, for an average of 768 per year.
- On average from 1995 to 1999, 16% of the fatalities resulting from crashes in work zones were non-motorists (pedestrians and pedalcyclists).
- In 1999, 868 fatalities resulted from motor vehicle crashes in work zones, about 2% of total fatalities (41,611).

Figure 1



Source: NHTSA's Fatality Analysis Reporting System

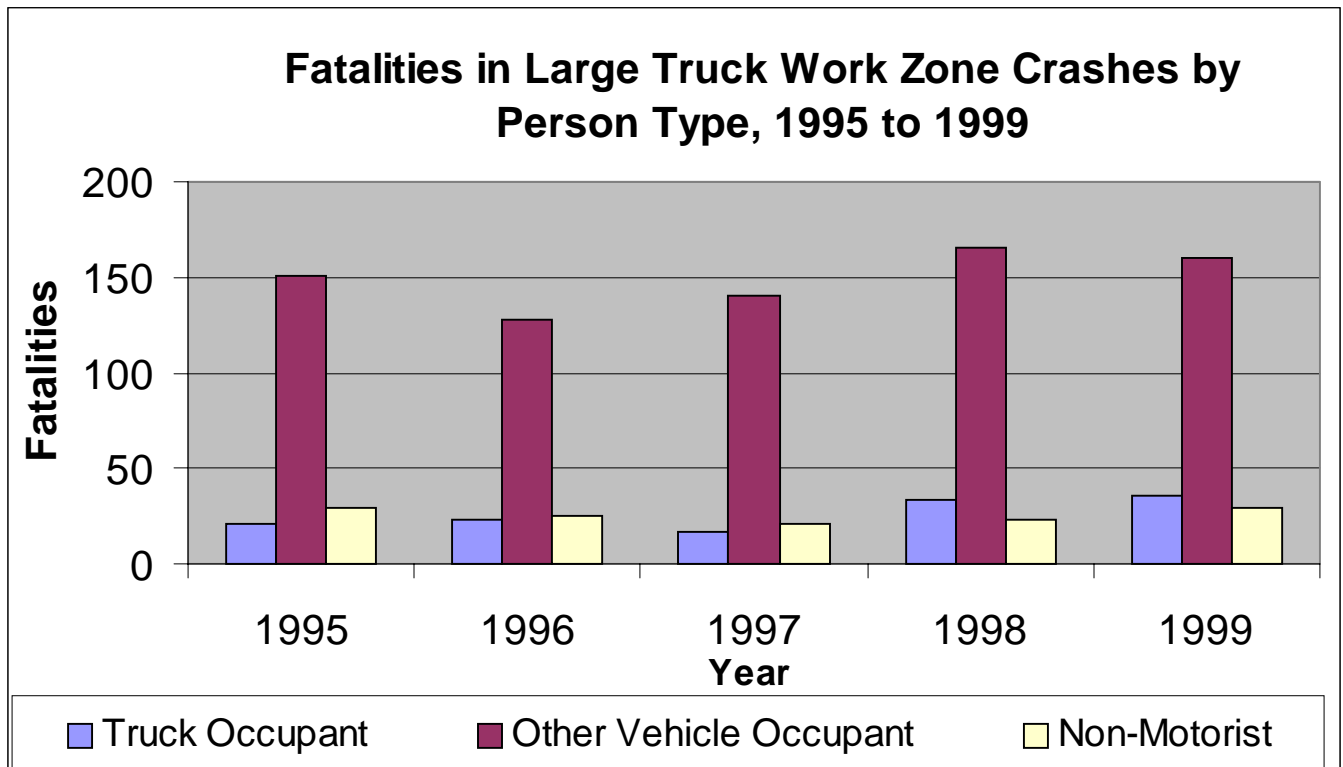
Table 2
Fatalities in Large Truck Work Zone Crashes
by Person Type, 1995 to 1999

Person Type	1995	1996	1997	1998	1999	5-Year Average	
Truck Occupant	21	23	17	33	36	26	13%
Other Vehicle Occupants	151	128	140	165	160	149	74%
Non-Motorist	29	25	21	23	29	25	13%
Total	201	176	178	221	225	200	100%

Source: NHTSA's Fatality Analysis Reporting System

- In 1999, 225 fatalities resulted from large truck crashes in work zones, about 4% of fatalities in large truck crashes (5,362).
- Twenty-six percent of work zone fatalities that occurred in 1999 involved large trucks in the crash. (225 out of 868)
- From 1995 to 1999, an average of 200 people were killed in large truck crashes in areas designated as work zones, from a high of 225 deaths in 1999 to a low of 176 deaths in 1996.
- In large truck work zone crashes for the time period 1995-1999, 13% 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, 1995 to 1999

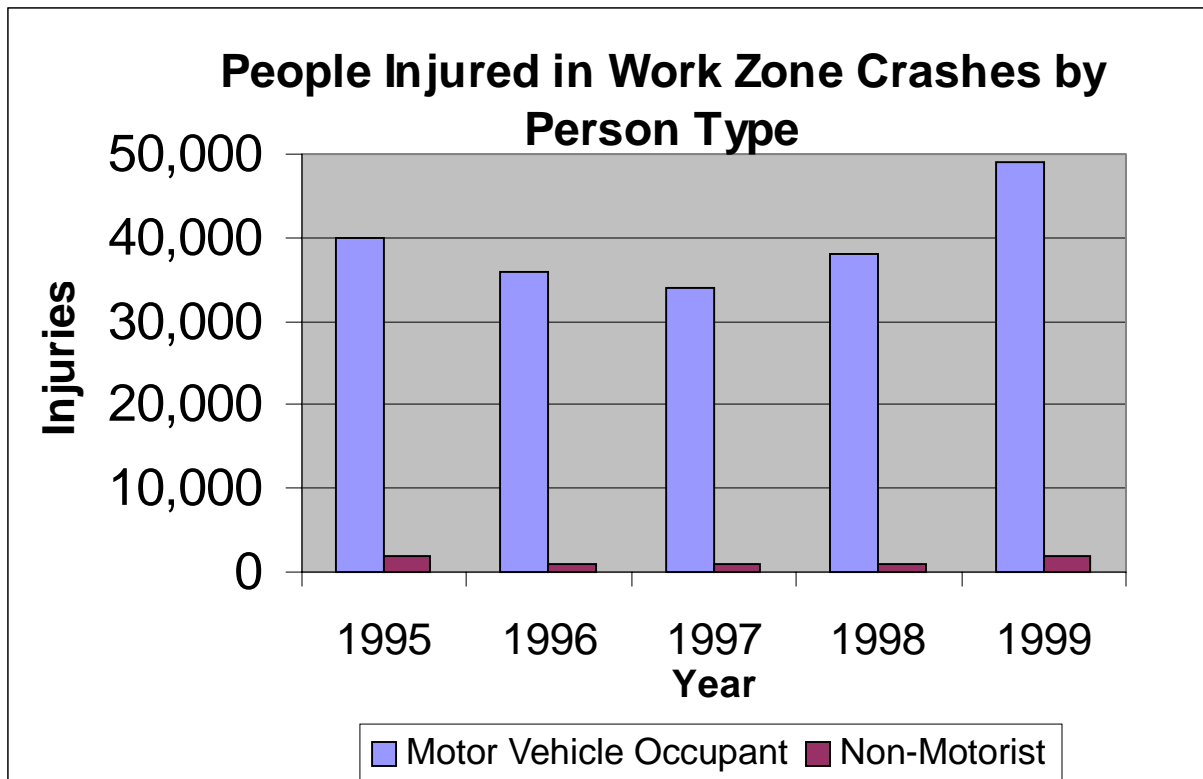
Person Type	1995	1996	1997	1998	1999	5-Year Average	
Motor Vehicle Occupant	40,000	36,000	34,000	38,000	49,000	39,000	97%
Non-Motorist	2,000	1,000	1,000	1,000	2,000	1,000	3%
Total	42,000	37,000	35,000	39,000	51,000	40,000	100%

Source: NHTSA's General Estimates System

NOTE: Estimates rounded to nearest thousand

- Over the last 5 years, non-motorists constituted about 3% of people injured in work zone crashes.

Figure 3



Source: NHTSA's Fatality Analysis Reporting System

- Approximately 50,000 people were injured as a result of motor vehicle crashes in work zones in 1999, about 1% of the 3,236,000 injured persons in motor vehicle crashes.

Table 4

**People Injured In Large Truck Work Zone Crashes
by Person Type, 1995 to 1999**

Person Type	1995	1996	1997	1998	1999	5-Year Average
Motor Vehicle Occupant	2,000	2,000	3,000	3,000	5,000	3,000
Non-Motorist	*	*	*	*	*	*
Total	2,000	2,000	3,000	3,000	5,000	3,000

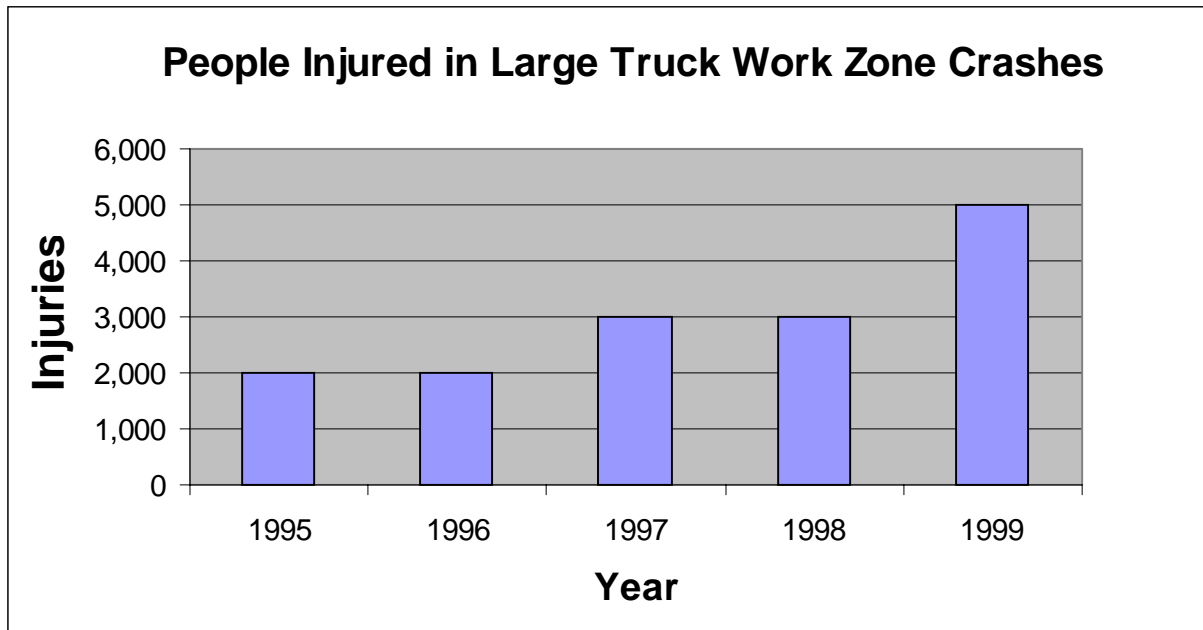
Source: NHTSA's General Estimates System

* less than 500 injured people

NOTE: Estimates rounded to nearest thousand

- Approximately 5,000 people were injured in large truck work zone crashes in 1999, about 4% of the 142,000 people injured in large truck crashes that year.
- About 10% of people injured in work zone traffic crashes (5,000/50,000) in 1999 were injured in crashes involving large trucks.

Figure 4



Source: NHTSA's Fatality Analysis Reporting System

Table 5
Fatal Crashes by Time of Day and Work Zone, 1999

Time of Day	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Night	18,467	50%	378	49%	1,518	33%	61	31%
Day	18,576	50%	387	51%	3,024	67%	133	69%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- Roughly half of all fatal work zone crashes occurred during the day (51%), while almost 70% of fatal large truck work zone crashes occurred during the day.

Table 6
Fatal Crashes by Day of Week and Work Zone, 1999

Day of Week	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Weekend (Sat & Sun)	12,691	34%	223	29%	731	16%	25	13%
Weekdays (Mon-Fri)	24,346	66%	542	71%	3,811	84%	169	87%
Unknown	16	0%	0	0%	0	0%	0	0%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- Almost three times as many work zone crashes occurred on weekdays than on weekends. However, based on the number of fatal crashes in work zones per day, *slightly* fewer fatal crashes occurred in work zones per weekday (542/5=108 vs. 223/2=112). For large trucks, almost seven times as many fatal work zone crashes occurred on weekdays, or about 34 per weekday and 12 per weekend day.

Table 7
Fatal Crashes by Season and Work Zone, 1999

Season	All Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Winter	8,216	22%	121	16%	968	21%	19	10%
Spring	8,821	24%	144	19%	1,068	24%	41	21%
Summer	10,079	27%	260	34%	1,270	28%	82	42%
Fall	9,927	27%	240	31%	1,236	27%	52	27%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

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

Table 8
Fatal Crashes by Roadway Function Class and Work Zone, 1999

Roadway Function Class	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Rural-Interstate	2,674	7%	120	16%	765	17%	52	27%
Rural-Other	19,229	52%	321	42%	2,359	52%	85	44%
Urban-Interstate	2,049	6%	105	14%	415	9%	29	15%
Urban-Other	12,463	34%	212	28%	1,036	23%	25	13%
Unknown	628	2%	7	1%	51	1%	3	2%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- The majority of fatal motor vehicle crashes (59%), 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 1999, 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 more than twice the percentage of all fatal crashes occurring on urban interstates (14% 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, 1999

Speed Limit	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
1-50 mph	16,818	45%	281	37%	1,328	29%	48	25%
55-75 mph	19,337	52%	457	60%	3,154	69%	139	72%
Unknown	888	3%	27	4%	60	1%	7	3%
Total	37,043	100%	765	100%	4,542	100%	194	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 (60% and 72%, respectively).

Table 10
Fatal Crashes by Traffic Flow and Work Zone, 1999

Traffic Flow	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Not Divided	24,374	66%	349	46%	2,535	56%	86	44%
Median-No Barrier	9,138	25%	263	34%	1,450	32%	69	36%
Median w/Barrier	2,715	7%	132	17%	484	11%	36	19%
Unknown	816	2%	21	3%	73	2%	3	2%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- Although the majority of fatal large truck crashes occurred on roads that are not divided (56%), the majority of fatal large truck work zone crashes occurred on roads that are divided (36% + 19%=55%).

Table 11
Fatal Crashes by Roadway Alignment and Work Zone, 1999

Roadway Alignment	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Straight	27,580	75%	610	80%	3,750	83%	171	88%
Curve	9,280	25%	152	20%	783	17%	23	12%
Unknown	183	0%	3	0%	9	0%	0	0%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- The vast majority of fatal crashes occurred on straight roads (75%). The same is true for all work zone crashes, (80%), large truck involved crashes (83%), and large truck work zone crashes (88%).

Table 12
Fatal Crashes by Roadway Profile and Work Zone, 1999

Roadway Profile	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Level	25,973	70%	576	75%	3,156	69%	140	72%
Grade	9,350	25%	173	23%	1,229	27%	50	26%
Other /Unk	1,720	5%	16	2%	157	4%	4	2%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- About three times as many fatal crashes occurred on level roadways than on non-level roads, 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, 1999

Relation to Roadway	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
On Roadway	21,843	59%	496	65%	3,967	87%	171	88%
Off Roadway	15,080	41%	265	35%	568	13%	23	12%
Unknown	120	0%	4	0%	7	0%	0	0%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- 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 (88% vs. 12%).

Table 14
Fatal Crashes by Number of Vehicles Involved and Work Zone, 1999

Number of Vehicles Involved	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
One	20,859	56%	385	50%	808	18%	36	19%
Two	13,674	37%	290	38%	2,996	66%	106	55%
More than 2	2,510	7%	90	12%	738	16%	52	27%
Total	37,043	100%	765	100%	4,542	100%	194	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 (82%).
- More than 82% 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, 1999

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	15,291	41%	346	45%	3,544	78%	147	76%
Fixed Object	10,967	30%	158	21%	335	7%	11	6%
Pedestrian	4,578	12%	106	14%	284	6%	16	8%
Non-Collision	4,373	12%	94	12%	233	5%	8	4%
Not Fixed Object	1,799	5%	61	8%	144	3%	12	6%
Unknown	35	0%	0	0%	2	0%	0	0%
Total	37,043	100%	765	100%	4,542	100%	194	100%

Source: NHTSA's Fatality Analysis Reporting System

- Most 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, 1999

Manner of Collision	Fatal Crashes	%	Fatal Work Zone Crashes	%	Fatal Large Truck Crashes	%	Fatal Large Truck Work Zone Crashes	%
Rear-end	1,324	10%	69	24%	513	17%	41	39%
Head-on	4,474	33%	82	28%	867	29%	23	22%
Angle	6,716	49%	103	36%	1,342	45%	30	28%
Side-Swipe: Same direction	260	2%	6	2%	71	2%	2	2%
Side-Swipe: Opposition direction	156	1%	4	1%	65	2%	3	3%
Not Applicable/Unknown	744	5%	26	9%	138	5%	7	7%
Total	13,674	100%	290	100%	2,996	100%	106	100%

Source: NHTSA's Fatality Analysis Reporting System

- The most common manner of collision for all two-vehicle fatal work zone crashes was an angle collision (36%), followed by head-on (28%) and rear-end (24%).
- For two-vehicle fatal work zone crashes where one of the vehicles was a large truck, the most common manner of collision was rear-end (39%), followed by angle (28%) and head-on (22%).

Table 17
Drivers Involved in Multi-Vehicle Fatal Truck-Related Crashes
by Driver Type, Violations Charged and Work Zone, 1999

Violations Charged	Truck Drivers Fatal Crashes	%	Other Driver Fatal Crashes	%	Truck Driver Fatal Work Zone Crashes	%	Other Driver Fatal Work Zone Crashes	%
Yes	534	13%	269	6%	23	12%	18	9%
No	3,519	87%	4,251	94%	172	88%	182	91%

Source: NHTSA's Fatality Analysis Reporting System

- Only a minority of drivers involved in multiple-vehicle fatal truck-related crashes was charged with violations. The proportion of truck drivers involved in fatal crashes that was charged with violations was similar regardless of whether the crash occurred in a work zone (12%) or not (13%). The same was true for drivers of the other vehicle involved: 9% in fatal work zone crashes, 6% in all fatal crashes.

Table 18
Drivers Involved in Single-Vehicle Fatal Crashes
by Driver Type, Violations Charged and Work Zone, 1999

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	84	11%	2,701	14%	6	17%	53	15%
No	710	89%	17,259	86%	29	83%	295	85%

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 (11% vs. 14%), while the percentage of large truck drivers charged with a violation in fatal single vehicle work zone crashes was more than the percentage of non-truck drivers charged with a violation in single-vehicle fatal crashes (17% vs. 15%).

Table 19 1999 Fatalities by Work Zone and Large Truck Involvement (FARS)

STATE	TOTAL FATALITIES		FATALITIES IN LARGE TRUCK CRASHES	
	TOTAL	WORK ZONE	TOTAL	WORK ZONE
Alabama	1,138	18	161	4
Alaska	76	1	5	0
Arizona	1,024	29	108	5
Arkansas	604	18	96	3
California	3,559	112	363	10
Colorado	626	11	71	4
Connecticut	301	5	21	1
Delaware	100	5	11	0
Dist. of Columbia	41	0	2	0
Florida	2,918	30	350	8
Georgia	1,508	91	248	25
Hawaii	98	2	3	0
Idaho	278	2	31	0
Illinois	1,456	17	211	4
Indiana	1,013	30	205	11
Iowa	490	18	112	7
Kansas	537	15	96	10
Kentucky	814	13	94	2
Louisiana	924	16	128	5
Maine	181	2	25	0
Maryland	590	11	54	3
Massachusetts	414	2	37	0
Michigan	1,382	10	138	1
Minnesota	625	4	91	3
Mississippi	927	11	118	2
Missouri	1,094	14	178	3
Montana	220	1	19	1
Nebraska	295	22	59	6
Nevada	350	19	44	6
New Hampshire	141	0	11	0
New Jersey	727	5	60	2
New Mexico	460	9	66	1
New York	1,548	25	167	4
North Carolina	1,505	4	200	0
North Dakota	119	4	25	1
Ohio	1,430	19	216	3
Oklahoma	739	12	103	3
Oregon	414	9	49	3
Pennsylvania	1,549	20	227	13
Rhode Island	88	0	9	0
South Carolina	1,065	5	117	1
South Dakota	150	5	23	3
Tennessee	1,285	42	182	18
Texas	3,518	132	433	35
Utah	360	6	43	1
Vermont	90	3	11	0
Virginia	877	8	107	3
Washington	634	5	63	0
West Virginia	395	3	65	1
Wisconsin	745	15	81	4
Wyoming	189	8	25	5
Total	41,611	868	5,362	225

Source: NHTSA's Fatality Analysis Reporting System

SUMMARY:

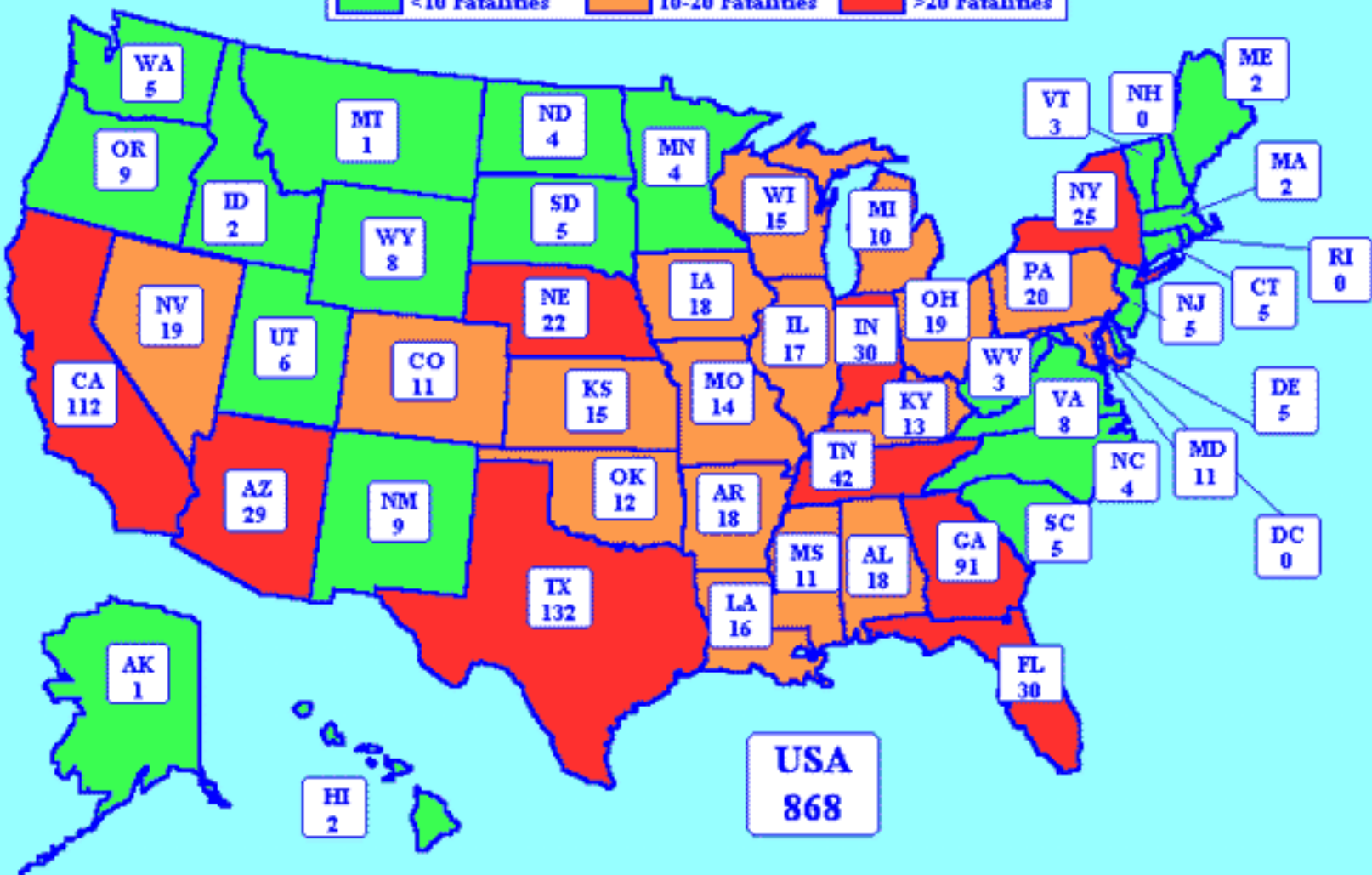
Of the 41,611 fatalities in motor vehicles crashes in 1999, about 2% occurred in work zone areas. However, 26% of the fatalities in work zone crashes involved large trucks, compared to 12% of fatalities in all crashes. Of the approximately 3.2 million people injured in non-fatal motor vehicle crashes in 1999, less than 2% of the injuries occurred in work zones 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>.

1999 Work Zone Traffic Fatalities by State



Work Zone Traffic Fatalities in Large Truck Crashes by State

