Trends in Large Truck Crashes

DOT HS 808 690

Table of Contents

Introduction

Large trucks (commercial vehicles weighing more than 10,000 lbs.) have historically made an important contribution to the growth of the national economy by facilitating the distribution of a large portion of the nation's products. However, their contribution to this progress has not come without a price in terms of traffic crashes, injuries, and fatalities.

Because of their size, weight, and the amount of travel, large trucks play a major role in both the occurrence and consequences of traffic crashes. Large trucks account for about 3 percent of motor vehicles involved in police-reported crashes of all severities, about 8 percent of vehicles in total fatal crashes, and are associated with about 12 percent of the annual total traffic fatality count. Large trucks are also estimated to account for about 7 percent of the total number of vehicle miles traveled each year.

This study examines two aspects of trends in the involvement of large trucks in traffic crashes. First, general trends in vehicle registrations, travel, and crashes for large trucks during the years 1975-1995 are examined and contrasted with other major types of vehicles. Second, using three years of detailed crash data, trends in the involvement of drivers by age group are studied in an attempt to determine if drivers of a certain age appear to be more prone to being involved in crashes with large trucks, or more likely to die in these crashes.

The data sources for the study are:

* Driver Licenses - Federal Highway Administration (FHWA), 1993-1995
* Vehicle Registrations - FHWA, R. L. Polk, 1975-1995
* Average Annual Travel - National Personal Transportation Study (NPTS), 1995
* Traffic Crashes - General Estimates System (GES), 1993-1995
* Fatal Crashes and Fatalities - Fatality Analysis Reporting System (FARS), 1975-1995

General Trends in Large Trucks

Motor vehicle travel has increased steadily over time due to increases in both the number of vehicles and the amount of average annual travel. Between 1975 and 1995 the number of registered vehicles has increased from 126,153,000 to 197,065,000, an increase of 56 percent. The amount of total vehicle miles traveled during the same period has also increased, from approximately 1,328 billion vehicle miles of travel (VMT) to 2,403 billion miles, an increase of 81 percent. While both counts have increased gradually over time, the changes have not been uniform across the major classes of vehicles, i.e., passenger cars, light trucks and vans, motorcycles, and large trucks. Total traffic fatalities and large truck-related fatalities have also experienced changes during the same period of time, but the changes do not follow the same pattern of increases found in the number of vehicles registered and their annual travel.

These changes are presented in more detail in the following sections of the paper for two specific purposes. The first purpose is to document how changes in large truck registration and travel compare to those of other major types of vehicles, while the second purpose is to document what changes have occurred in the number and type of people killed in crashes involving large trucks during the same period. The results will focus on the changes in both the total fatality toll in large truck crashes and the partitioning of fatalities between the occupants of the truck and the occupants of other vehicles.

Vehicle Registrations

The number of total registered vehicles has grown steadily during the 1975-1995 period, from 126 million in 1975 to about 197 million in 1995, a 56 percent increase. Table 1 presents historical data on vehicle registration for the four major classes of vehicles, i.e., passenger cars, light trucks and vans, motorcycles, and large trucks. It is evident from this table that the growth pattern has not been the same for these four classes of vehicles.

The number of passenger car registrations increased from 95 to 123 million between 1975 and 1995, an increase of 30 percent. The increase in passenger car registrations has been fairly uniform over the years and at a lower rate than for all vehicles combined. Passenger cars accounted for about 75 percent of all registered vehicles in 1975, but their proportion has declined to about 63 percent of all registered vehicles in 1995.

The class of vehicles which has shown the largest increase is that of light trucks and vans. About 20 million light trucks and vans were registered in 1975 and this has increased to over 62 million registrations in 1995, a three-fold increase. Total registrations for passenger cars and light trucks and vans combined increased by 60 percent during the 21-year period, which matches the growth of all vehicles combined..

Large truck registrations were at the 5.4 million level in 1975, increased to 5.9 million by 1979, declined steadily to 5.3 million by 1986, and have increased by over 30 percent in the last 10 years, to a total of 6.9 million. This last increase is almost twice as large as for all other classes combined.

Motorcycle registrations follow yet another pattern. From the almost 5 million level in 1975, motorcycle registrations increased to over 5.8 million in 1981. The number of registered motorcycles has declined since 1981 and reached the 3.7 million level in 1995, a 35 percent decline during this last period.

Table 1
VEHICLE REGISTRATIONS, 1975 - 1995

YEAR	PASSENGER CARS	LIGHT TRUCKS &VANS	MOTORCYCLES	LARGE TRUCKS
1975	94,478,029	20,135,198	4,964,070	5,362,369
1976	97,011,684	22,732,418	4,933,332	5,575,185
1977	98,967,665	24,805,646	4,933,256	5,689,903
1978	101,855,551	27,889,014	4,867,864	5,859,807
1979	103,543,788	29,420,752	5,422,132	5,891,571
1980	104,770,998	30,060,754	5,693,940	5,790,653
1981	106,002,720	31,236,287	5,831,132	5,716,278
1982	106,936,590	32,307,692	5,753,858	5,590,415
1983	109,085,444	33,068,138	5,585,112	5,508,392
1984	112,177,361	35,257,788	5,479,822	5,401,075
1985	116,348,085	37,665,085	5,444,404	5,330,678
1986	117,268,114	39,763,446	5,262,322	5,249,102
1987	119,848,784	41,695,017	4,917,131	5,303,094
1988	121,519,139	44,599,500	4,584,284	5,433,560
1989	122,758,478	47,134,148	4,433,915	5,840,466
1990	123,276,600	49,916,497	4,259,462	5,854,337
1991	123,327,336	52,062,064	4,177,037	5,854,673
1992	120,346,747	53,836,046	4,065,118	5,970,925
1993	121,055,398	56,773,835	3,977,856	6,117,547
1994	121,996,580	59,485,995	3,718,127	6,303,313
1995	123,241,881	62,520,872	3,767,029	6,881,074
Percent Change 1975 - 1995	**30%**	**310%**	**-24%**	**28%**

Vehicle Miles Traveled

The amount of vehicle miles traveled for each class of vehicle is estimated and published by FHWA each year. Table 2 presents a summary of the travel estimates for the four classes of vehicles for the period 1975-1995. As seen in Table 2, all classes of vehicles experienced appreciable increases in the number of vehicle miles traveled each year. Passenger car, light truck and van, and large truck travel increased through the years but at different rates. For example, during the 21-year period, vehicle miles traveled increased by about 50 percent for passenger cars, more than doubled for large trucks, and more than tripled for light trucks and vans. Motorcycle travel increased by about 70 percent during the period.

Table 2
VEHICLE MILES OF TRAVEL, 1975 -1995 (in Millions)

YEAR	PASSENGER CARS	LIGHT TRUCKS AND VANS	MOTORCYCLES	LARGE TRUCKS
1975	1,030,376	204,274	5,629	81,330
1976	1,070,667	233,382	6,003	86,070
1977	1,102,726	257,108	6,349	95,021
1978	1,136,459	289,463	7,158	105,731
1979	1,111,705	293,840	8,637	109,004
1980	1,107,056	295,475	10,214	108,491
1981	1,120,126	307,044	10,690	108,702
1982	1,149,375	323,022	9,910	106,880
1983	1,190,076	335,590	8,760	113,163
1984	1,224,812	358,106	8,784	123,927
1985	1,245,837	387,800	9,086	126,580
1986	1,274,668	415,593	9,397	130,141
1987	1,326,907	443,872	9,506	135,601
1988	1,381,270	487,450	10,024	141,397
1989	1,411,131	520,977	10,371	148,318
1990	1,424,615	554,661	9,557	149,810
1991	1,410,934	595,619	9,178	150,729
1992	1,436,449	642,583	9,557	152,803
1993	1,445,314	675,450	9,906	159,904
1994	1,460,673	712,229	10,251	170,415
1995	1,499,643	668,341	9,531	173,326
Percent Change 1975-1995	+45%	+227%	+69%	+113%

Large Truck Fatalities

Since 1975, the National Highway Traffic Safety Administration has maintained a reporting system for fatal traffic crashes, the Fatality Analysis Reporting System (FARS). FARS contains data on a census of fatal traffic crashes within the 50 states, the District of Columbia, and Puerto Rico (although Puerto Rico is not included in the national totals). To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway customarily open to the public, and must result in the death of an occupant of a vehicle or a nonmotorist within 30 days of the crash. Tables 3, 4, and 5 contain FARS data on the involvement of large trucks in fatal crashes.

Table 3
TRAFFIC FATALITIES, 1975 - 1995

YEAR	ALL CRASHES	LARGE TRUCK CRASHES	PERCENT
1975	44,525	4,483	10.1%
1976	45,523	5,008	11.0%
1977	47,878	5,723	12.0%
1978	50,331	6,356	12.6%
1979	51,093	6,702	13.1%
1980	51,091	5,971	11.7%
1981	49,301	5,806	11.8%
1982	43,945	5,229	11.9%
1983	42,589	5,491	12.9%
1984	44,257	5,640	12.7%
1985	43,825	5,734	13.1%
1986	46,087	5,579	12.1%
1987	46,390	5,598	12.1%
1988	47,087	5,679	12.1%
1989	45,582	5,490	12.0%
1990	44,599	5,272	11.8%
1991	41,508	4,821	11.6%
1992	39,235	4,462	11.4%
1993	40,115	4,856	12.1%
1994	40,676	5,144	12.6%
1995	41,798	4,903	11.7%
TOTAL	**947,435**	**113,947**	**12%**

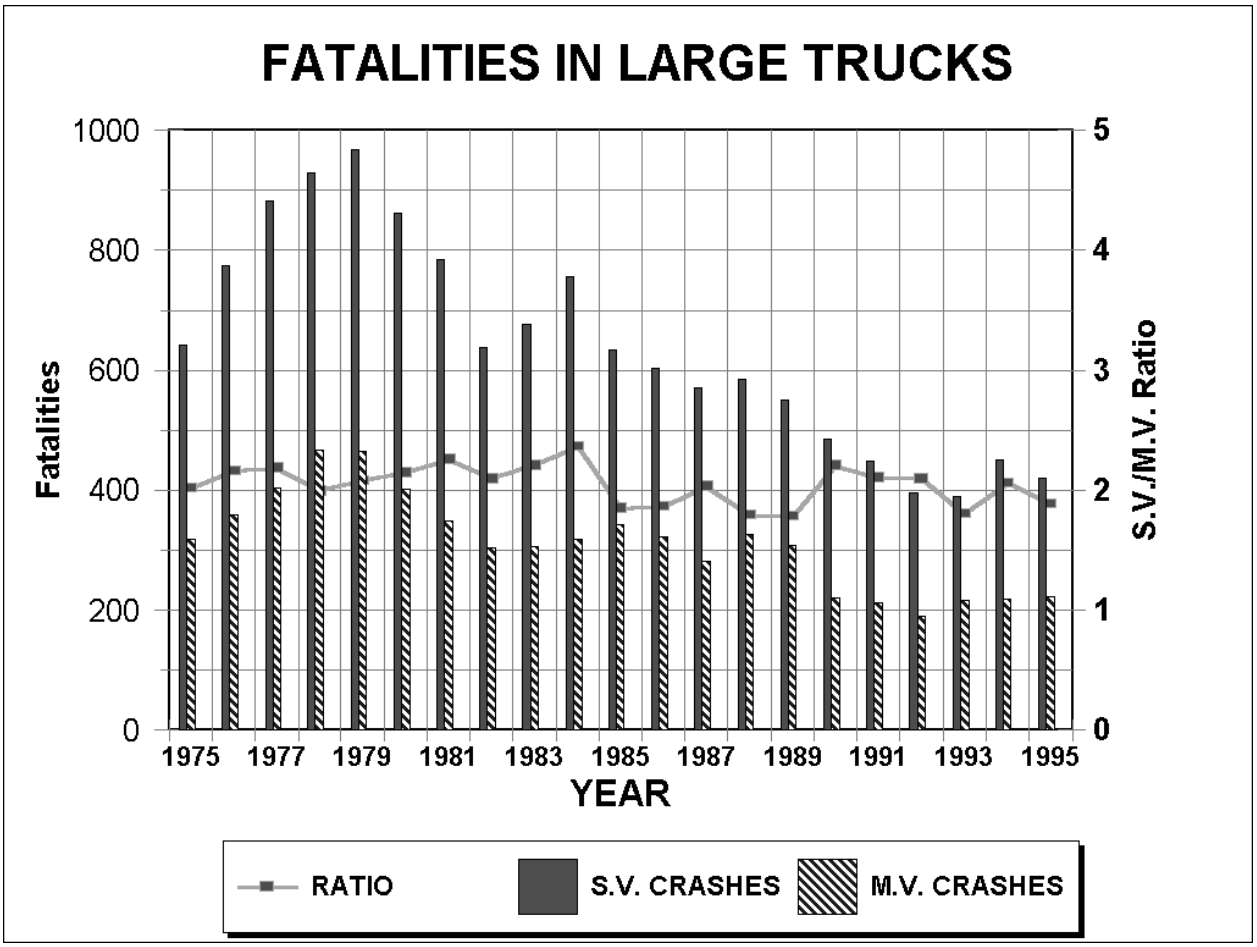
Table 3 contains the number of all traffic fatalities for the years 1975 - 1995 along with the number of fatalities in crashes involving a large truck. The fourth column in Table 3 represents the percentage of total fatalities represented by large truck crashes. From Table 3, it can be seen that the number of fatalities in large truck crashes appears to be highly correlated to the total number of fatalities, and that both counts show a poor relationship with their respective travel estimates. This seems to indicate that the trend in large truck-related fatalities, which account for approximately 12 percent of the total fatalities, has followed the same pattern as the trend for total fatalities, thus indicating little relative change since 1975.

Table 4
LARGE TRUCK OCCUPANT FATALITIES, 1975 - 1995

YEAR	SINGLE VEHICLE CRASHES	MULTI-VEHICLE CRASHES	TOTAL	RATIO S.V. to M.V.
1975	643	318	961	2.02
1976	774	358	1,132	2.16
1977	883	404	1,287	2.18
1978	929	466	1,395	1.99
1979	967	465	1,432	2.07
1980	861	401	1,262	2.14
1981	785	348	1,133	2.25
1982	639	305	944	2.09
1983	676	306	982	2.21
1984	755	319	1,074	2.36
1985	634	343	977	1.84
1986	603	323	926	1.86
1987	571	281	852	2.03
1988	585	326	911	1.79
1989	550	308	858	1.78
1990	485	220	705	2.20
1991	448	213	661	2.10
1992	396	189	585	2.09
1993	389	216	605	1.80
1994	451	219	670	2.05
1995	421	223	644	1.88
TOTAL	**13,445**	**6,551**	**19,996**	**2.05**

Table 4 and Figure 1 reflect the number of large truck occupant fatalities. Fatalities in Table 4 are separated into two groups, those occurring in single-vehicle crashes and those in crashes in which another vehicle was involved. Table 4 indicates that, after a rise in the late seventies, the number of large truck occupant fatalities has decreased steadily. The number of large truck occupant fatalities decreased from 1,432 in 1979 to 644 in 1995. This decrease is substantial in comparison to the smaller change in the total number of truck-related fatalities during the same period. For the entire period, 1975-1995, twice as many truck occupant fatalities occurred in single-vehicle crashes as in crashes with other vehicles. Given the large change in the number of total truck occupant fatalities over the years, it is surprising that this ratio has remained almost constant.

Figure 1



The finding that large truck occupant fatalities have declined while no appreciable change has occurred in the total number of truck-related fatalities, has led to the compilation of Table 5, which presents the number of fatalities in crashes between a large truck and another vehicle. Large truck occupant fatalities resulting from collisions involving more than one large truck have been excluded. By separating these fatalities into two groups, large truck occupants and other vehicle occupants, it is possible to determine how the ratio of these two counts has changed over the years.

Table 5
OCCUPANT FATALITIES IN LARGE TRUCK-OTHER VEHICLE CRASHES, 1975 - 1995

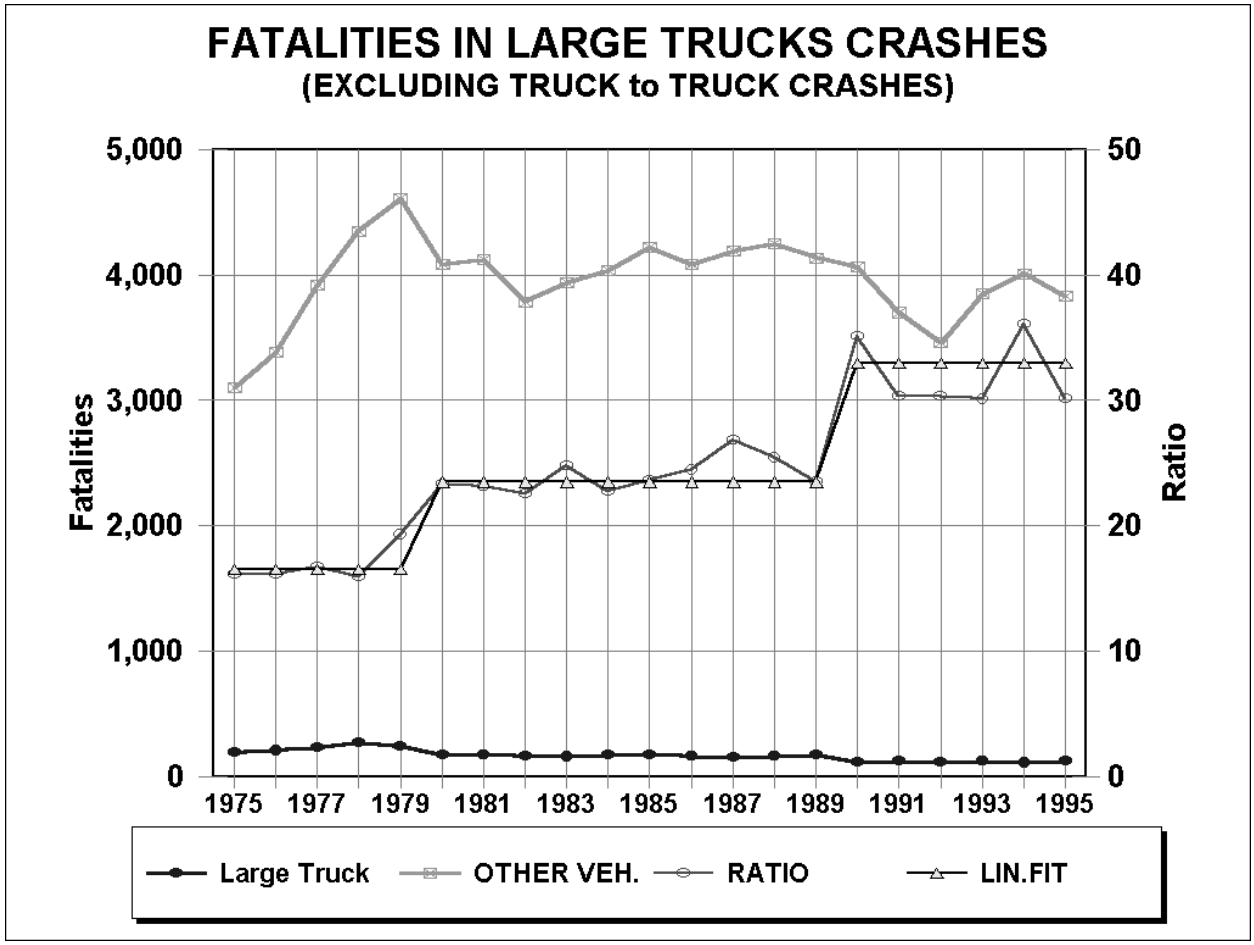
YEAR	OCCUPANTS OF OTHER VEHICLE	OCCUPANTS OF LARGE TRUCK	RATIO
1975	3,106	192	16
1976	3,384	209	16
1977	3,925	235	17
1978	4,354	273	16
1979	4,615	239	19
1980	4,084	175	23
1981	4,126	178	23
1982	3,790	168	23
1983	3,941	159	25
1984	4,036	177	23
1985	4,227	179	24
1986	4,088	167	24
1987	4,194	156	27
1988	4,250	167	25
1989	4,142	176	24
1990	4,071	116	35
1991	3,705	122	30
1992	3,460	114	30
1993	3,855	128	30
1994	4,013	111	36
1995	3,835	127	30

From Table 5, it can be seen that the ratio of occupant fatalities in other vehicles to large truck occupant fatalities has changed significantly, from a value of 16 in 1975 to 30 or greater since 1990. The increase in this ratio is entirely due to a decrease in the number of truck occupant fatalities, since fatalities in the other vehicles have not changed appreciably.

Finally, Figure 2 suggests that the ratio did not increase gradually but appears to have occurred at two specific points in time, i.e., in 1980 and again in 1990. While it is not the purpose of this paper to explain why this change occurred, one might speculate that it might be due to an increased disparity in the size and weight of the two types of vehicles, and to the better protection for the truck driver due to improved crashworthiness of the tractor.

Figure 2

Trends in Large Truck Crashes by Age of Driver



This part of the study focuses on drivers of passenger vehicles (passenger cars, light trucks, and vans) involved in collisions with another vehicle, with focus on large trucks. These collisions are separated into two groups: crashes between passenger vehicles and large trucks are in the first group, and multi-vehicle crashes not involving a large truck are placed in the second group. The second group includes mostly collisions between passenger vehicles. Data from the three most recent years available, 1993 - 1995, have been compiled to determine if differences exist among groups of drivers of passenger vehicles in these two types of crashes, by the age of the driver.

The questions being asked are:

* Are drivers of a certain age more likely to be involved in a large truck crash?

* Does the age of the driver appear to have any bearing on the fatal consequences of large truck crashes?

Both questions are addressed by comparing the statistics of the two groups of crashes during the period 1993 - 1995. Three years of data are used in order to obtain more stable results, especially for those age groups with smaller numbers of licensed drivers. The 1995 NPTS survey is the source of drivers' annual travel and estimates derived from that survey have been utilized in compiling travel estimates for 1993 through 1995.

In analyzing crashes between passenger vehicles and large trucks, it is necessary to provide a reasonable basis for comparison. Since passenger car crashes with large trucks by definition involve two or more vehicles, a logical contrasting counterpart would be all multiple-vehicle crashes that do not involve a large truck. By far the largest proportion of these crashes involve only passenger vehicles colliding with one another. This study, therefore, analyzes only drivers of passenger vehicles and separates them into two groups. One group consists of those drivers involved in crashes with "non-large-truck" vehicles, mostly drivers involved in two passenger vehicle crashes. The other group consists of drivers of passenger vehicles involved in crashes with large trucks.

Four basic measures are examined in this portion of the study:

Age distribution of drivers in police-reported crashes;

Age distribution of driver fatalities;

Driver Fatality Rate (per crash) by age group of driver; and

Driver Fatality Rate (per VMT) by age group of driver.

By comparing these measures for the two groups of crashes, it may be possible to determine whether

differences exist among the various age groups of drivers in both the occurrence and the fatal consequences of these two types of crashes.

Large Truck Crashes and Fatalities

In analyzing crash and fatality data, it is important to take into account any differences that may exist in the amount and type of travel performed by various groups of drivers. In this case, it would by helpful to know whether some driver age groups of passenger vehicles are more likely to share the same driving environment as large trucks. Unfortunately, no such measure is available that would give some indication of disparity, among drivers of passenger vehicles, in the likelihood of experiencing a crash with a large truck. The results that follow are based only on crash data, and could, therefore, change if measures of exposure to large trucks become available.

Data from NHTSA's General Estimates System (GES) are used to study possible differences in driver involvement in large truck crashes by age of the driver. GES, operational since 1988, collects data using a nationally representative probability sample of all police-reported crashes. To be eligible for inclusion in the GES sample, a police accident report (PAR) must be completed for the crash and the crash must involve at least one motor vehicle traveling on a trafficway and result in property damage, injury, or death. As the data in GES are obtained from a sample of all police-reported crashes, the GES statistics are estimates of persons injured and injury crashes and are subject to sampling and nonsampling errors. (For more information, see *National Accident Sampling System GES Technical Note*, DOT HS 807-796.)

GES data for the period 1993 - 1995 estimate that approximately 26 million drivers of passenger vehicles were involved in collisions with another passenger vehicle. An additional 900,000 drivers of passenger vehicles were involved in collisions with large trucks during this period. Table 6 contains the number of passenger vehicle drivers involved in the two groups of crashes together with their respective age distributions, based upon GES. Younger drivers, i.e., 16 to 20 years of age, account for a significantly lower percentage of the drivers involved in large truck crashes as compared to other multiple-vehicle crashes. Drivers aged 75 and above account for the same proportion in both groups of crashes.

Table 6
Drivers of Passenger Vehicles Involved in Crashes
(GES 1993, 1994, 1995 Combined)

Age Group (Years)	Multiple-Vehicle Crashes (Excluding Large Truck Crashes)		Large Truck Crashes	
	Drivers (000's)	% Distribution	Drivers	% Distribution
16 to 20	4,125	15.9%	103,738	11.5%
21 to 24	3,050	11.8%	95,965	10.6%
25 to 34	6,686	25.8%	236,040	26.1%
35 to 44	5,227	20.1%	200,225	22.2%
45 to 54	3,077	11.9%	121,564	13.5%
55 to 64	1,729	6.7%	66,345	7.3%
65 to 69	701	2.7%	28,451	3.2%
70 to 74	591	2.3%	24,403	2.7%
75 to 79	415	1.6%	14,220	1.6%
80 and over	346	1.3%	11,776	1.3%
Total	**25,947**	**100%**	**902,727**	**100%**

Figure 3 presents a graph of the number of drivers involved in the two types of crashes. (The scale for drivers in all crashes has been reduced by a factor of 30 in order to make the comparison between the two sets of counts easier to interpret.) A ratio of the two counts is also shown in Figure 3, which could be interpreted as the odds of a driver of a passenger vehicle being involved in a collision with a large truck. The ratio is lowest for the youngest group of drivers, rises steadily until age 45, remains at that value through age 74, and drops for older drivers.

Figure 3

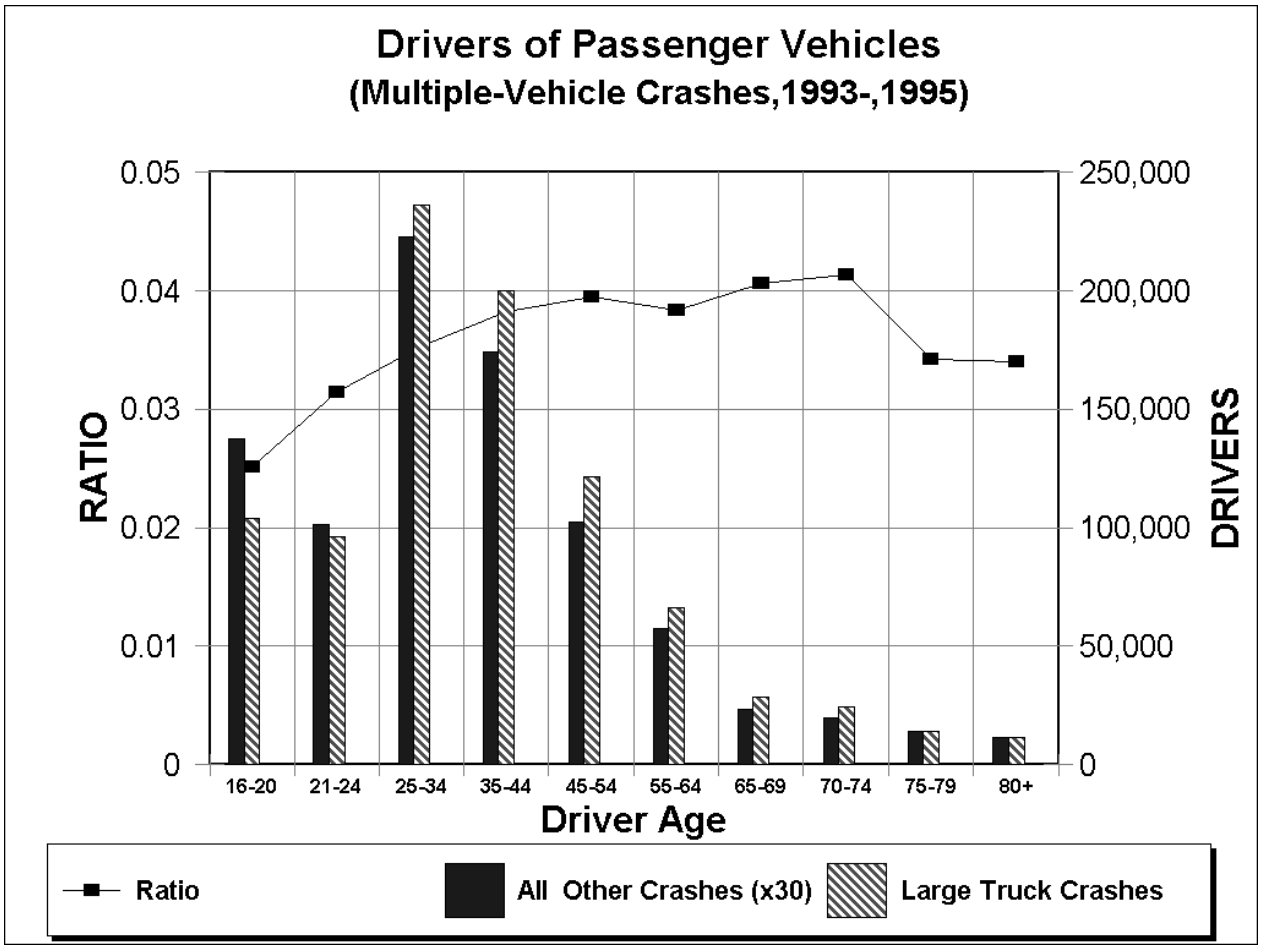
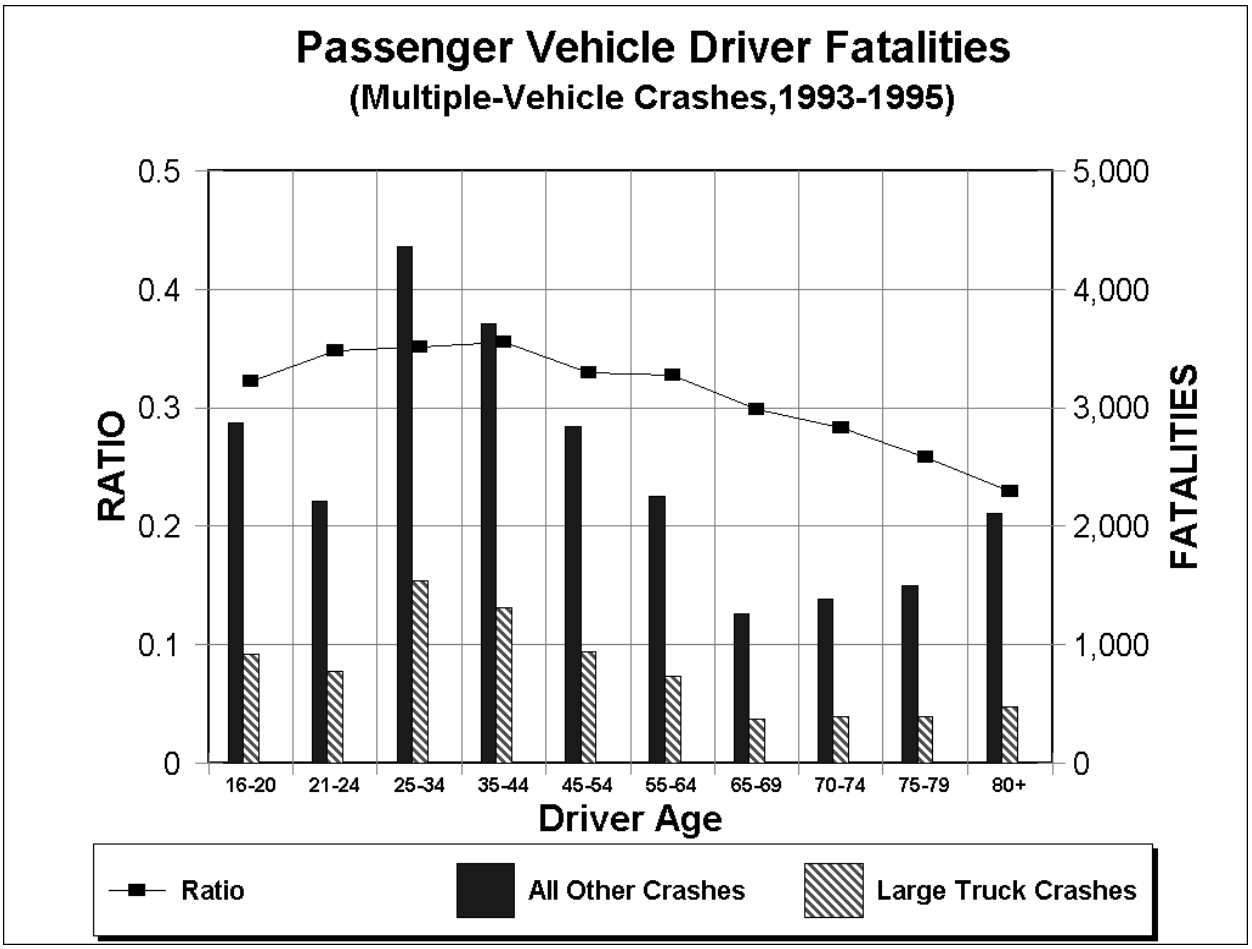


Table 7
Driver Fatalities in Passenger Vehicles
(GES 1993, 1994, 1995 Combined)

Age Group	Driver Fatalities (Excl. Large Truck Crashes)	Percent Distribution	Driver Fatalities in Large Truck Crashes	Percent Distribution
16-20	2,868	11.7%	925	11.8%
21-24	2,216	9.0%	772	9.8%
25-34	4,365	17.8%	1,534	19.5%
35-44	3,705	15.1%	1,319	16.8%
45-54	2,845	11.6%	937	11.9%
55-64	2,255	9.2%	739	9.4%
65-69	1,259	5.1%	376	4.8%
70-74	1,388	5.7%	393	5.0%
75-79	1,497	6.1%	387	4.9%
80+	2,104	8.6%	482	6.1%
All	24,502	100.0%	7,864	100.0%

Figure 4 shows the number of driver fatalities in the two types of crashes. The ratio of the two, also shown, reflects the odds of a passenger vehicle driver being killed in a collision with a large truck. The ratio is at the highest level, 0.34, for drivers between the ages of 16 and 64 combined, and declines steadily for the older groups, reaching a value of 0.23 for drivers 80 and over. These statistics on driver crashes and fatalities indicate that the youngest and the oldest age groups of drivers are, relative to the remaining age groups, involved in a lower proportion of large truck crashes, and that drivers older than 64 years of age account for a lower proportion of fatalities in large truck collisions than they do in crashes with another passenger vehicle.

Figure 4


Passenger Vehicle Driver Fatalities
(Multiple-Vehicle Crashes,1993-1995)
RATIO
FATALITIES
0.5
0.4
0.3
0.2
0.1
0
5,000
4,000
3,000
2,000
1,000
0
16-20
21-24
25-34
35-44
45-54
55-64
65-69
70-74
75-79
80+
Driver Age
Ratio
All Other Crashes
Large Truck Crashes

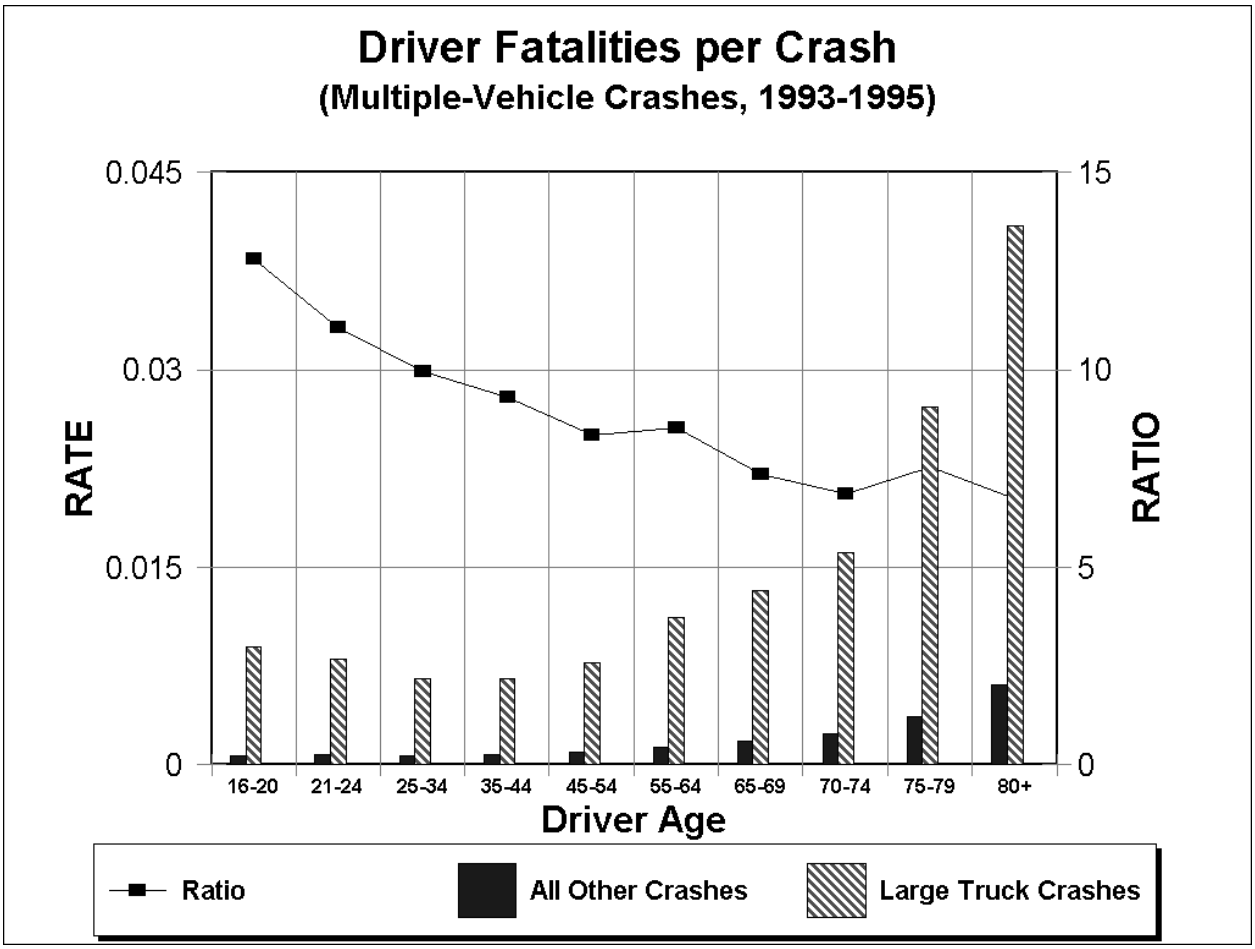
Large Truck Fatality Rates and Driver Age

Another way to assess the effect of driver age in large truck crashes is by comparing the risk of a driver fatality in the two types of crashes. There are various ways of determining fatality risk depending on the choice of measure. In this case, two measures of risk are considered, i.e., the number of fatalities per crash and the number of fatalities per vehicle miles traveled (VMT).

The fatality rate per crash is provided by the ratio of the number of fatalities from Table 7 and the number of drivers involved from Table 6. The rate obtained for each of the two groups of crashes shows a clear pattern for the age of involved drivers. For both groups, the fatality rate per crash remains almost flat for all ages under 55 and increases rapidly for older drivers. For the purpose of this study the focus is on the ratio of the fatality rate in crashes with large trucks vs. crashes with another passenger vehicle. In general, it is known that the fatality risk varies by driver age in both types of crashes, and that the fatality risk for the driver of a passenger vehicle is greater, about nine times as great, in crashes with a large truck as in collisions between passenger vehicles. What is of interest here is to determine if this increased risk is constant across all age groups.

Figure 5 shows how the fatality rate per crash increases rapidly for drivers in the older age groups. This increase, although at different levels, is present in both types of crashes. The ratio of the two rates, also shown in Figure 5, provides a measure of the greater severity of crashes with large trucks for each age group. The results show that crashes with large trucks are 13 times as lethal for the youngest group of drivers, and that the disparity decreases gradually to a value of less than 7 for the oldest drivers. This indicates that the risk of being fatally injured in large truck crashes, as compared to collisions between passenger vehicles, increases by a greater amount for the younger drivers than for the older group. These results also show that the risk of being fatally injured in a crash increases with the age of the driver involved, but the presence of a large truck in the crash results in a greater increase in the fatality risk for young drivers than the much older ones.

Figure 5

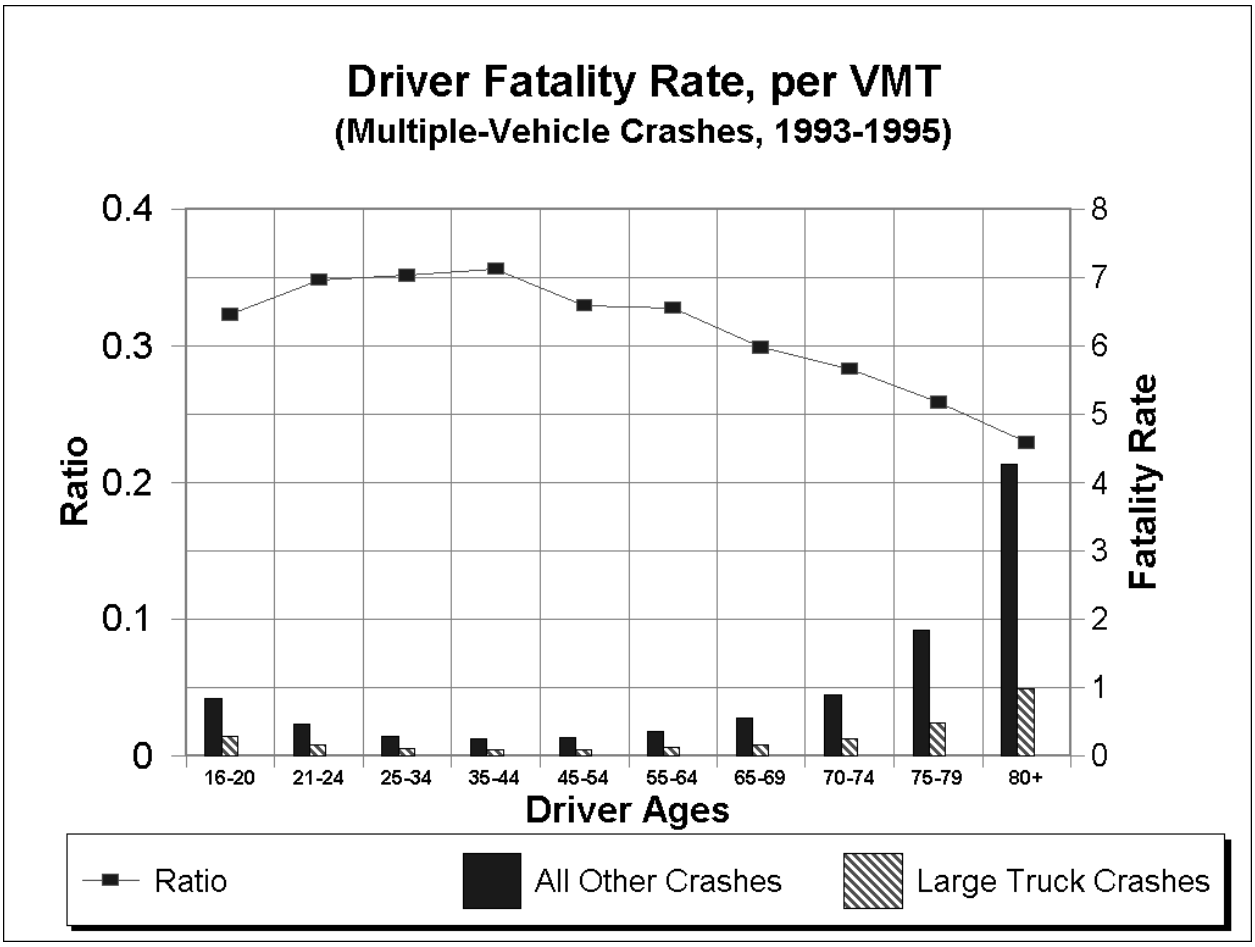

Driver Fatalities per Crash
(Multiple-Vehicle Crashes, 1993-1995)
RATE
RATIO
0.045
0.03
0.015
0
15
10
5
0
16-20
21-24
25-34
35-44
45-54
55-64
65-69
70-74
75-79
80+
Driver Age
Ratio
All Other Crashes
Large Truck Crashes

The other measure or risk, fatality rate per VMT, requires the use of travel estimates over the three year period. Table 8 contains these estimates based on the 1995 NPTS survey, combined with driver licensing data. The analysis yields a pattern for the ratio which, although different than that shown in Figure 5, still confirms that the increase in the fatality risk for large truck crashes is not as large for the older drivers as for younger drivers. Figure 6 indicates that the ratio of the two rates remains at the same level for drivers less than 65 years of age and drops gradually for older groups.

Table 8
Estimated (1993-1995) Travel by Driver Age
(Derived from NPTS, 1995)

Age Group (Years)	Vehicle Miles of Travel (in Millions)
16-20	340,130
21-24	472,426
25-34	1,539,976
35-44	1,556,328
45-54	1,090,175
55-64	632,408
65-69	231,520
70-74	156,617
75-79	81,893
80+	49,346
Total	6,150,817

Figure 6



These results support two major conclusions. The first states that older drivers do not seem to be over involved in collisions with large trucks. This may be due to the possibility that older drivers, because of their driving patterns, are less exposed to conflicts with large trucks. Older drivers may be less likely to share the same driving environment of drivers of large trucks, i.e. type of highways, time of day, etc. The second conclusion is that the increase in the risk of fatal injury, per crash and per VMT, to drivers of passenger vehicles, when they collide with a large truck as compared to when they collide with another passenger vehicle, is considerably lower for older drivers than for much younger drivers. This result does not reflect a lower risk for older drivers in large truck collisions, it reflects only the fact that the greater survival probability that young drivers have relative to older drivers in passenger vehicle collisions is appreciably reduced in collisions with large trucks.

Summary of Findings and Conclusions

Large trucks account for about 3.5 percent of all vehicles and for approximately 7 percent of all motor vehicle travel. Large trucks account for about 3 percent of all vehicles involved in crashes, are involved in less than 6 percent of all reported crashes in which 12 percent of all traffic fatalities occur.

The trend in the number of fatalities in crashes involving large trucks has followed essentially the same pattern as the trend for total traffic fatalities. These crashes have accounted for essentially the same percentage of the total fatalities during the 1975-1995 period (about 12 percent).

The trend in the number of fatalities in crashes involving large trucks does not appear to be similar to the trend in travel for large trucks. Large truck travel has more than doubled during the 1975 - 1995 period while the number of truck-related fatalities has not changed appreciably during the same period.

Although the number of large truck occupant fatalities has varied from a high of 1,432 in 1979 to a low of 585 fatalities in 1992, almost two thirds of these fatalities occurred in single-vehicle crashes in each year during the 1975 - 1995 period.

In crashes between passenger vehicles and large trucks, the ratio of occupant fatalities has increased from 16 to 1 in the late seventies to about 32 to 1 in the early nineties. This change reflects only minor changes in passenger vehicle occupant fatalities but an almost 50 percent reduction in the number of large truck occupant fatalities. This change could possibly be associated with the decrease in the size and weight of passenger vehicles, and to improvements to the crashworthiness of the truck cab.

In assessing the effects of the age of drivers of passenger vehicles involved in large truck crashes, it is necessary, when selecting a basis for comparison, to take into account that these are multiple-vehicle crashes, and therefore should be compared only to other types of multiple-vehicle crashes.

In comparing the age distribution of drivers involved in crashes with large trucks to the distribution of those involved in crashes among passenger vehicles, the results show that younger drivers are under-represented in large truck crashes while the remaining age groups show no differences.

Being involved in a collision with a large truck increases the probability of fatal injury to the driver of a passenger vehicle by nine fold, on the average, when compared to collisions between passenger vehicles. This increase in risk is not uniform across all ages. The number of fatalities per crash is 13 times as great for the youngest age group of drivers in large truck crashes and 7 times as great for the oldest group than in multiple vehicle crashes between passenger vehicles. The ratio of the fatality rate per vehicle miles of travel, between the two types of crashes, also declines for older age groups.

These findings on driver age and involvement in crashes with large trucks are based on crash data and gross estimates of travel and do not take into account that older drivers, because of their driving patterns, may encounter relatively fewer large trucks in their travel. Furthermore, crashes of older drivers with large trucks may occur under more forgiving conditions, i.e., lower speeds, daytime hours, urban settings, etc. More detailed studies, based on finer measures of exposure, are needed in order to better understand the underlying statistics on large truck crashes.

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