Truck Crash Profile:

The National Picture 1996

Drafted by:
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Federal Highway Administration

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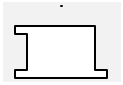

For more information:
Information on truck crashes and the nature and results of Office of Motor Carriers safety programs is available from the Office of Motor Carrier Information Analysis, Analysis Division (HIA-20), 400 Seventh Street, S.W., Washington, D.C. 20590.

Questions about this profile and the availability of other reports on OMC crash data should be directed to Ralph Craft, Analysis Division staff, at (202) 366-0324. The general number for the Analysis Division is (202) 366-1861. Send FAX messages to (202) 366-8842.

Executive Summary

- In 1996 in the United States there were 4,740 large trucks involved in **fatal** crashes, a six percent increase from the 4,472 involved in fatal crashes in 1995, but very close to the 1994 number of 4,644. There were an estimated 94,000 trucks involved in injury crashes, a 13 percent increase from 1995, and an estimated 296,000 involved in property-damage-only crashes, up two percent from 1995.

- Fifty-nine percent of the trucks and buses involved in 1996 **fatal** crashes, and slightly less than 50 percent involved in **non-fatal** crashes were tractors pulling single semi-trailers. About three-quarters of the trucks had gross vehicle weight ratings of more than 26,000 pounds. Only five percent were transporting hazardous materials.

- Of truck drivers involved in **fatal** crashes eight percent were under 26 years old, and only two percent were over 65. By contrast 24 percent of passenger vehicle drivers involved in **fatal** crashes with trucks were under 26, and 16 percent were over 65 years old.

- Among truck drivers involved in **fatal** crashes only one percent had a blood alcohol content of 0.10 grams per deciliter or greater, the level for intoxication in most States. By contrast 20 percent of passenger vehicle drivers in fatal crashes had a 0.10 alcohol level or greater.

- Driver-related crash factors were recorded for only 29 percent of truck drivers involved in **fatal** crashes with other vehicles. However, driver-related crash factors were recorded for 67 percent of the passenger vehicle drivers involved in **fatal** crashes with trucks.

- Driver-related crash factors were recorded for 67 percent of truck drivers where the truck was the only vehicle involved in the **fatal** crash. An even higher 84 percent of passenger vehicle drivers involved in single vehicle **fatal** crashes were coded for at least one driver- related factor.

- A large majority of 1996 **fatal** and **non-fatal** truck crashes occurred in good weather, during the day, and on weekdays.

- The first harmful event in three-fourths of **fatal** truck crashes was the collision of the truck with another moving vehicle. About sixty percent of the first crash events for trucks involved in **non-fatal** crashes was a collision with another vehicle in transport.

- The Office of Motor Carriers' Motor Carrier Management Information System (MCMIS) Crash File includes 95,027 trucks and buses that were involved in 1996 crashes, as of August 22, 1997. Of these, most were operated by interstate carriers and have been matched with carriers in the MCMIS Carrier Profile file.
- **None of the available data addresses crash causation or fault. Thus, the data can only**

be suggestive as to the reasons for truck and bus crashes.

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Introduction

This National Truck Crash Profile contains descriptive statistics about fatal and non-fatal (injury and property damage only) large truck crashes that occurred in 1996. In addition the profile includes limited data about buses involved in crashes. The profile includes only some of the major aspects of truck crashes. Additional crash data on trucks, buses, truck and bus drivers, and motor carriers can be obtained from the Office of Motor Carriers.

Profile Data Sources

The following are the major sources of the data included in the profile. Several other sources used sparingly are referred to in the profile text.

Fatal Analysis Reporting System (FARS) -- maintained by the National Highway Traffic Safety Administration (NHTSA). The FARS is a census of crashes involving any motor vehicle on a trafficway, *but only fatal crashes*. It is generally considered to be the most reliable national crash database. There were 4,755 large trucks involved in fatal crashes in 1996. A large truck is defined in the FARS as a truck with a gross vehicle weight rating (GVWR) of more than 10,000 pounds.

General Estimates System (GES) -- also maintained by the NHTSA. The GES is a probability-based, nationally-representative sample of all police-reported fatal, injury, and property-damage crashes. Frequencies from the GES file in the tables are national estimates, calculated using an appropriate weighting variable. The GES data cannot be broken down by States, since the crash cases drawn are aimed only at obtaining a valid national sample. Furthermore, since GES is a sample file, estimates are subject to sampling error. According to the GES there were an estimated 395,000 large trucks involved in crashes reported to police in 1996. Thus, fatal crashes were slightly more than one percent of total large truck crashes. The GES definition of a large truck is the same at the FARS definition.

Motor Carrier Management Information System (MCMIS) Crash File -- maintained by the Office of Motor Carriers (OMC) of the Federal Highway Administration. The MCMIS Crash File includes the National Governors' Association (NGA) recommended data elements collected on trucks and buses involved in crashes that meet the NGA recommended crash threshold. The crashes are reported by States to the OMC through the SAFETYNET computer reporting system. An NGA reportable crash must involve a truck (a vehicle designed, used, or maintained primarily for carrying property that has at least two axles and six tires) or a bus (a vehicle with seats for at least sixteen people, including the driver). The crash must result in at least one fatality; one injury where the person injured is taken to a medical facility for immediate medical attention; or one vehicle having been towed from the scene as a result of disabling damage suffered in the crash.

The Crash File is intended to be a census of trucks and buses involved in fatal, injury, and towaway

crashes, but some States do not report all NGA eligible crashes. For 1996, States reported 95,027 trucks involved in crashes. By taking the GES large truck total crash number of 395,000 and subtracting the injury and property damage crashes that do not meet the NGA crash criteria, there were an estimated 152,000 trucks involved in crashes that should have been reported to the OMC. Thus, the OMC received reports on about 61 percent of trucks involved in 1997 NGA reportable crashes.

Over half the MCMIS Crash File non-fatal truck cases are injury crashes. By contrast less than one-fourth of GES non-fatal crashes involved an injury. Over three-fourths of GES non-fatal crashes were property-damage-only crashes -- many where not even a vehicle was towed from the scene. Thus, it may be assumed that the typical GES crash is less severe than the typical MCMIS crash.

Profile Outline

The "fatal" columns of the profile tables usually include FARS data. In the few cases where there are no FARS data for a variable, MCMIS fatal crash data are used in the fatal column. The "non-fatal" columns include data from the MCMIS Crash File and GES. Some tables contain only FARS and MCMIS data, when GES data are not available. The profile has sections on Trends, Vehicles, Drivers, Environment, the Crash, Motor Carriers, and MCMIS Crash File Progress. **Truck and bus** data are given in the first two tables in the Vehicle section, while **only truck** data are presented in the other tables in the Vehicle Section and in the other sections.

Neither FARS, GES nor MCMIS databases contain information on crash causation or fault. The data can be only suggestive about why truck and bus crashes occur. Even so, the data can point toward problem areas that may need to be addressed, and toward possible countermeasures.

I. Trends

The number of large trucks involved in crashes from 1988 (the first year GES data were available) to 1996 is presented below. A large truck is defined in FARS and GES as a truck with a gross vehicle weight rating of more than 10,000 pounds. In the table, FARS data are presented in the fatal column, and GES data in the two non-fatal columns.

Table 1
Vehicle Involvement Rates for Large Trucks in Crashes

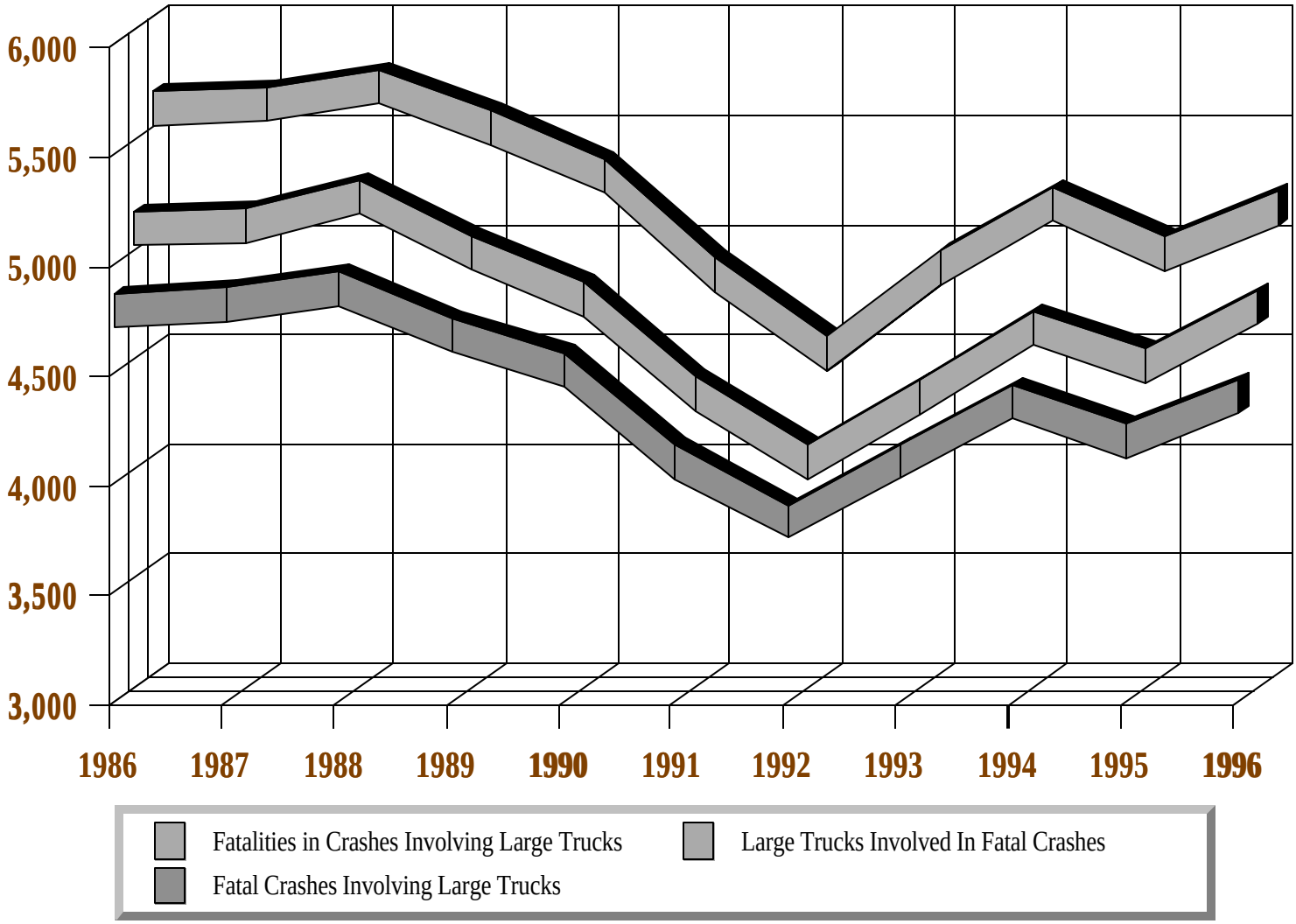
Year	Fatal		Injury		Property Damage Only	
	Number of Trucks	Per 100 million VMT	Number of Trucks	Per 100 million VMT	Number of Trucks	Per 100 million VMT
1988	5,241	3.7	96,000	68	297,000	210
1989	4,984	3.4	110,000	74	300,000	203
1990	4,776	3.2	107,000	72	273,000	182
1991	4,347	2.9	78,000	52	248,000	165
1992	4,035	2.6	95,000	62	277,000	182
1993	4,328	2.7	97,000	61	294,000	184
1994	4,644	2.7	95,000	56	361,000	212
1995	4,453	2.5	83,000	47	290,000	162
1996	4,740	2.6	94,000	51	296,000	162

Sources: FARS, GES, and FHWA Highway Statistics

The number of trucks involved in fatal crashes in 1996 is close to the 1990 figure, based on FARS data in Table 1. However, the fatal crash rate has dropped from a high of 3.7 trucks involved in a fatal crash per 100 million truck miles traveled in 1988 to a low of 2.5 in 1995. The number of trucks involved in injury and property-damage-only crashes, based on GES data, has remained in a fairly narrow range from 1992 through 1996 -- except for a drop in injury crashes in 1995 and a spike in property crashes in 1994. The 1995 rate of 47 trucks involved in injury crashes per 100 million vehicle miles traveled and the 1995-96 property damage rate of 162 are the lowest on record in those categories.

Large Trucks in Fatal Crashes

(1986-1996)



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Fatalities	5,579	5,598	5,679	5,490	5,272	4,821	4,462	4,856	5,144	4,918	5,126
Trucks	5,097	5,108	5,241	4,984	4,776	4,347	4,035	4,328	4,644	4,472	4,740
Crashes	4,785	4,813	4,885	4,674	4,518	4,097	3,825	4,101	4,373	4,194	4,398

Source: NHTSA 1986-1996 Fatality Analysis Reporting System (FARS)
Prepared by Analysis Division (HIA-20) 09-10-97
Illustrator: Duke Sienicki

The lines on the chart on the previous page represent three ways to measure large truck fatal crash data. They are:

- **Fatalities** in Crashes involving Large Trucks -- This number is a count of **People** sustaining fatal injuries in crashes involving large trucks. Fatalities are always the largest number, since in some crashes involving large trucks more than one person dies. The fatalities may be occupants of the truck, occupants of the other vehicle, or pedestrians.

- Large **Trucks** Involved in Fatal Crashes -- This number is a count of **Vehicles**. Every year the number will always be in the middle in terms of size of the three ways to total the FARS data relating to large trucks.

- Fatal **Crashes** Involving Large Trucks -- This number is a count of **Crashes**, and will be the smallest number. It will be smaller than the truck number, because in a some fatal crashes there will be more than one large truck involved. Thus, the number of "trucks" every year will be slightly larger than the number of "crashes."

As can be seen on the chart, these three numbers are closely related and move in the same direction from year to year. The three lines on the chart have a low point in 1992. From 1986 through 1988 the number of large trucks involved in fatal crashes was slightly over 5,000 each year. From 1988 to 1992 there was a four-year decline in all three measures, followed by a two- year rise to 1994. The number of trucks involved in fatal crashes may have reached another stable level at around the 4,500 level.

Crash rates for trucks involved in fatal, injury, and property-damage-only crashes also reached a low point in 1992 and then began rising (Table 1). However, in 1995 all three crash rates reached their lowest point in the whole 1988-1996 period covered by the crash rate data in Table 1.

Large trucks in fatal crashes in 1996 can be compared to all 1996 fatal crashes:

- The 5,126 people killed in crashes involving a large truck represented 12 percent of all people killed in traffic crashes.

- The 4,740 trucks involved were eight percent of all vehicles involved in fatal crashes.

- Finally, the 4,398 crashes in which at least one large truck was involved represented 12 percent of fatal crashes.

II. Vehicles

The typical commercial vehicle involved in a crash in 1996 in the United States was a truck-tractor pulling a single semi-trailer that was a van/enclosed box or flatbed. The truck was capable of carrying a large cargo load. Only a very small percent of the trucks were carrying hazardous materials at the time of the crash.

Table 2
Buses and Large Trucks Involved in Crashes
by Vehicle Configuration

Vehicle Configuration	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Bus (seats > than 15)	6.2%	8.0%	12.9%
Single Unit Truck, 2-axle	9.3%	12.1%	13.4%
Single Unit Truck, 3+axle	8.9%	8.3%	
Truck/Trailer(s)	3.1%	8.8%	0.9%
Truck Tractor (bobtail)	2.6%	2.6%	2.1%
Tractor/semi-trailer	59.3%	48.7%	44.7%
Tractor/double	3.1%	3.0%	1.3%
Tractor/triple	0.1%	0.1%	0.1%
Unknown	7.3%	3.3%	24.7%
Missing	---	5.1%	---
Totals	**5,060**	**96,787**	**447,000**

Sources: FARS, MCMIS Crash File, and GES

Fifty-nine percent of the trucks and buses involved in fatal crashes in crashes in 1996 were tractors pulling semi-trailers, usually an 18-wheeler (Table 2). For non-fatal crashes 49 percent of the trucks and buses in the MCMIS Crash File and 45 percent in the GES file were tractor semi-trailers. If buses are removed from the data, tractor semi-trailers make up close to two-thirds of the trucks involved in fatal crashes and over half of those involved in non-fatal crashes. In fact, the ratio of combination trucks (trucks pulling trailers and tractors pulling single trailers, double trailers, and triple trailers) to single-unit

trucks in fatal and non-fatal crashes is about three to one. These percentages have varied little in the past five years. Single unit trucks accounted for only 18 percent of the trucks and buses involved in fatal crashes in 1996. In the MCMIS Crash File single unit trucks account for 20 percent of the trucks and buses involved in non-fatal crashes, and 13 percent in the GES data. Buses accounted for only six percent of involvements in fatal crashes, eight percent of MCMIS non-fatals, and 13 percent of GES non-fatals. The truck and bus crash data are dominated by combination trucks.

Table 3
Buses and Large Trucks Involved
in Crashes by Cargo Body Type

Cargo Body	Fatal	Non-Fatal
Bus (seats for > 15)	6.2%	8.0%
Van/Enclosed Box	39.0%	33.2%
Cargo Tank	7.2%	4.7%
Flatbed	11.4%	10.4%
Dump	9.4%	8.0%
Concrete Mixer	1.1%	2.4%
Auto Transporter	0.6%	0.6%
Garbage/Refuse	2.0%	2.2%
Other	10.4%	21.3%
Unknown	12.8%	0.0%
Missing	---	9.0%
Totals	**5,060**	**96,787**

Sources: FARS and MCMIS Crash File

One-third of the trucks and buses involved in crashes (39 percent of the fatals, 33 percent of the non-fatals) had a van/enclosed box cargo body type (Table 3). The other three highest-ranking cargo body types account for less than another third of the total. These are flatbeds (11 percent of fatals, 10 percent of non-fatals); dump trucks (nine percent fatals, eight percent non-fatals); and cargo tank trucks (seven percent of fatals, five percent of non-fatals). Cargo tanks are those most likely to carry hazardous materials in bulk.

Buses accounted for only six percent of vehicles involved in fatal crashes and eight percent in non-fatal crashes. In the FARS file most of these are classified as either transit or school buses, as opposed to highway motor coaches. The MCMIS Crash File motor carrier identification variables confirm that most buses in crashes are operated by school districts or transit systems. Thus, since buses are less than ten percent of the vehicles involved in the crashes examined here, and the OMC has responsibility for regulating only a small percent of the buses involved in crashes -- inter-city bus companies that operate highway motor coaches most of the time -- bus data will be omitted from the remaining sections of this profile.

Gross Vehicle Weight Rating

The gross vehicle weight rating (GVWR) is the maximum manufacture's recommended total weight for the vehicle and its cargo. Trucks involved in crashes are overwhelmingly those that can carry heavy loads.

Table 4
Large Trucks Involved in Crashes
by Gross Vehicle Weight Rating

GVWR	Fatal	Non-Fatal
Under 10,000 lbs	0.4%	1.1%
10,000 - 26,000 lbs	8.2%	8.1%
Over 26,000 lbs	78.6%	73.3%
Unknown	6.9%	17.5%
Missing	5.9%	---
Totals	**4,740**	**89,066**

Sources: FARS and MCMIS Crash File

Over three-fourths of the trucks involved in fatal crashes (79 percent) and almost three-fourths of those involved in non-fatal crashes (73 percent) have GVWRs over 26,000 pounds. This compares to the average passenger car that has a GVWR in the 2,000-4,000 pound range. Only eight percent of the trucks involved in fatal and non-fatal crashes have GVWRs in the 10,000-26,000 pound range. Almost all these are single-unit trucks.

Hazardous Materials Cargo

One note should be mentioned about the following hazardous materials (HM) tables. In the FARS data, large trucks are counted as carrying hazardous materials, if they display an HM placard, or if later investigation shows that they were carrying HM without a placard. For the NGA crash data element, however, the reporting officer just records the presence of an HM placard on the truck. Some suspect that there are a significant number of trucks that carry hazardous materials without displaying the required HM placards.

Table 5
Large Trucks Involved in Crashes
Carrying Hazardous Materials

HazMat Placard	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Yes	4.7%	3.7%	1.5%
No	93.6%	44.5%	0.0%
Unknown	1.6%	---	98.5%
Missing	---	51.8%	---
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

With the caveats in mind, the data in Table 5 indicate that only a small percentage of trucks in crashes displayed an HM placard. With regard to fatal crashes, only five percent of the trucks displayed an HM placard, while in non-fatal crashes four percent of trucks in the MCMIS Crash File and two percent of trucks in GES displayed an HM placard. The large percent of missing data in MCMIS is disappointing. In most of these cases officers probably do not respond to this element on the police accident reports if no placard is present, as opposed to checking the "No" response. The even larger percent of unknown data in GES is also disappointing.

Table 6
Large Trucks Involved in Crashes
that Released Hazardous Materials Cargo

Cargo Release	Fatal	Non-fatal
Yes	33.6%	28.2%
No	66.4%	71.8%
Totals	**45**	**795**

Source: MCMIS Crash File

Hazardous materials were released from the cargo compartment in 34 percent of vehicles displaying an HM placard that were involved in fatal crashes and 28 percent of the non-fatal crashes, according to MCMIS Crash File data in Table 6. Neither FARS nor GES have HM cargo release data.

The Trucks Involved in Fatal Accidents (TIFA) database from the University of Michigan Transportation Research Institute is the most reliable fatal crash database for trucks. For the years 1992 through 1995 there was an average of 193 trucks a year carrying HM involved in fatal crashes. Of these an average of 28 percent released HM cargo as a result of the crash, a figure slightly lower than that recorded in the 1996 MCMIS Crash File. Final 1996 TIFA data will not be available for several months.

Table 7
Large Trucks Involved in Crashes
by Class of Hazardous Materials Leakage

Class of HM Leakage	Fatal	Non-Fatal
Explosives	7%	25.8%
Gases	9%	7.7%
Flammable Liquid	38%	22.5%
Flammable Solids	0%	0.3%
Oxidizing Substances	0%	0.3%
Poison & Infectious Substances	0%	1.5%
Radioactive Material	0%	0.1%
Corrosives	0%	1.9%
Miscellaneous Dangerous Goods	9%	25.9%
Missing	36%	14.1%
Totals	**45**	**795**

Source: MCMIS Crash File

For trucks involved in fatal crashes that released hazardous materials, the most common HM released from the truck was a flammable liquid (38 percent), almost always gasoline. The HM class was not recorded for 36 percent of the trucks that released HM in fatal crashes. None of the other classes accounted for more than nine percent of the releases in fatal crashes. The most important number in the fatal column is that only 45 trucks released HM in fatal crashes reported to the MCMIS Crash File in 1996.

In cases of trucks releasing HM in non-fatal crashes explosives accounted for 26 percent of the releases, flammable liquids 23 percent, and gases 8 percent. None of the other HM classes accounted for more than two percent of the cases. The total numbers at the bottom of the table show that out of the more than 92,000 MCMIS Crash File trucks in crashes in the 1996 file, HM were released in only 840 cases.

Thus, hazardous materials are a minor element in truck crashes. First, only a small percent of trucks involved in crashes carry hazardous materials. Second, the HM carried usually stays in the cargo

compartment. Therefore, HM releases rarely play a role in deaths or injuries. The Research and Special Programs Administration (RSPA) reported an average of only 11 deaths a year attributable to exposure to HM in highway crashes over the past ten years. Since RSPA data come only from interstate carriers, total fatalities are understated, perhaps by a multiple of three. In any event total fatalities related to exposure to HM in highway crashes would be a small percent of the 5,126 total fatalities in large truck crashes in 1996.

III. Drivers

The average age of truck drivers involved in 1996 crashes was between 26 and 45 years old. A large majority had valid drivers licenses at the time of the crash, and were in apparently normal condition. Most did not have any driver-related crash factors recorded when involved in a fatal crash. Drivers of the passenger vehicles in fatal collisions with trucks were more likely than the drivers of the trucks to be under 26 years old and over 65, have invalid drivers licenses, be legally drunk, and be cited for driver-related crash factors.

Driver Age

The FARS and GES databases have information on all drivers involved in fatal and non-fatal crashes, while the MCMIS Crash File only has data on the truck or bus driver. In over three-fourths of fatal and non-fatal truck crashes, the truck collides with a passenger vehicle -- a passenger car or light truck (pickup, van, or sport utility vehicle). Table 8 contains data on the ages of the drivers of large trucks and the drivers of passenger vehicles involved in fatal and non-fatal crashes between large trucks and passenger vehicles. The two columns of FARS data contain the ages for truck drivers and passenger vehicle drivers involved in fatal crashes with each other. The last two columns have GES data on the ages of the truck drivers and passenger vehicle drivers involved in non-fatal crashes with each other.

Table 8
Drivers in Crashes Involving Large Trucks
Colliding with Passenger Vehicles by Driver Age

Driver Age	Fatal		Non-Fatal	
	Large Trucks	Passenger Vehicles	Large Trucks	Passenger Vehicles
< 25	7.9%	23.9%	10.3%	23.3%
26-45	57.4%	38.0%	54.7%	44.7%
46-65	32.6%	21.6%	30.0%	22.2%
66-75	1.6%	8.7%	1.2%	6.6%
76 >	0.1%	7.4%	0.3%	3.2%
Unk/Miss.	0.4%	0.3%	---	---
Totals	**3,603**	**4,256**	**277,000**	**302,000**

Sources: FARS and GES

The age profiles of the truck drivers involved in fatal crashes with passenger vehicles, and the drivers of those cars and light trucks are very different (Table 8). Only eight percent of the truck drivers were younger than 26 years old and only two percent older than 65. By contrast 24 percent of the drivers of the passenger vehicles were younger than 26 and 16 percent older than 65. Thus, while 40 percent of the passenger vehicle drivers were either under 26 or over 65, only ten percent of the truck drivers were in these two age categories.

The age profiles are similar in non-fatal truck/passenger vehicle crashes. Only ten percent of truck drivers in these non-fatal crashes were under the age of 26, and two percent over 65. Twenty-three percent of passenger vehicle drivers in these crashes were under 25 years old, and ten percent were over 65 -- one-third at the two extremes of the age scale.

It should be noted that drivers must be at least 21 years old to obtain a commercial drivers license (CDL). A CDL is needed to operate a truck in commerce with a gross vehicle weight rating of over 26,000 pounds, or drive a truck of any GVWR carrying hazardous materials.

Driver License Status

The FARS database contains information on the status of each driver's license. A large majority of all drivers involved in fatal truck crashes held valid licenses. However, there are differences between the large truck and passenger vehicle drivers.

Of the drivers of large trucks involved in fatal crashes with passenger vehicles, 86 percent held valid CDLs and another nine percent held other valid licenses at the time of the crash, for a total of 95 percent. (NOTE: Since CDLs are not required to drive all large trucks, the presence of another valid license can be sufficient to comply with the law.) Among the remaining five percent of the truck drivers 84 had suspended, revoked, expired, or canceled licenses; 12 had other invalid licenses; 9 had no license; and the status of the final 86 was not known.

Among the drivers of the passenger vehicles involved in fatal crashes with large trucks, 90 percent had valid licenses, compared with 95 percent of truck drivers. Among the remaining ten percent of passenger vehicle drivers 123 had no license; 251 had a suspended, revoked, expired, or canceled license; and the license status of 45 was not known.

Thus, while 105 truck drivers out of the 3,603 (three percent) involved in a fatal crash with a passenger vehicle had an invalid license, 419 of the passenger vehicle drivers out of 4,255 (ten percent) involved in these crashes possessed invalid licenses or none at all. The proportion of passenger vehicle drivers with invalid or no licenses in these crashes was over three times higher than the proportion of truck drivers with invalid or no licenses.

Driver Condition

One NGA crash data element is apparent driver condition, and is based on the reporting police officer's opinion. Of the 3,174 truck drivers in fatal crashes in the MCMIS Crash File, "appeared normal" was checked 74 percent of the time, unknown 12 percent of the time, and 10 percent of the cases had no driver condition recorded. For the remaining four percent of the drivers, 64 were affected by fatigue or asleep, 41 had been drinking, 37 had used illegal drugs, and seven were sick. In non-fatal crashes 81 percent appeared normal, and the unknown and missing totaled 17 percent. Among the other two percent, 1,170 appeared to be affected by fatigue or were asleep, 523 had been drinking, 77 had been using drugs illegally, and 152 were sick.

According to FARS data only one percent of truck drivers involved in fatal crashes had a blood alcohol concentration of 0.10 grams per deciliter or greater. The 0.10 level is considered the standard level to determine intoxication, although some States now use 0.08 grams per deciliter. For passenger vehicle drivers in fatal crashes 20 percent had a blood alcohol content of 0.10 grams per deciliters or greater, 20 times higher than truck drivers.

Driver Crash Factors

Driver-related crash factors recorded by police officers at the scene are included in FARS. The three tables below have: (1) a comparison between the driver factors for large trucks versus passenger vehicles where fatal large truck-passenger vehicle(s) collisions take place, (2) a comparison between large truck and passenger driver factors for each type of vehicle when involved in single-vehicle fatal crashes, and (3) a list of passenger vehicle driver-related crash factors when passenger vehicles collide with other passenger vehicles in fatal crashes. Passenger vehicles include automobiles, vans, mini-vans, pickup trucks, sport utility vehicles, etc.

The FARS database includes 98 different driver-related crash factors. In each of the three tables only 12 factors are listed. In Tables 8 and 9 the top 12 factors for the truck drivers are listed, and the corresponding percentages for the passenger vehicle drivers. In Table 10 the top 12 factors for the passenger vehicle drivers are recorded. The FARS coders include up to three driver- related factors for each driver involved in a crash. The tables include the percent of drivers cited for each factor, whether that factor was the only one listed for the driver, or was the second or third factor. Thus, when adding the percentages for the major driver factors cited for large trucks or passenger vehicles, the number will usually exceed the percent of total drivers recorded with factors. For example, only 29 percent of truck drivers involved in fatal crashes with passenger vehicles were assigned driver-related factors. However, the number of truck drivers cited for the top 12 factors totals 33 percent. Clearly many truck drivers were cited for more than one factor.

The following is a list of the factors presented in the three tables, and information about each from the FARS coding manual, if additional explanation was given. Further questions about the factors should be

directed to the NHTSA.

- Driving Too Fast -- Driving too fast for conditions, or in excess of posted maximum speed limit
- Ran Off Road/Lane -- Failure to keep in proper lane or running off road
- Failure to Yield Right of Way -- Failure to yield to pedestrian, other vehicles, streetcar already in intersection
- Failure to Obey Traffic Devices -- Failure to obey actual traffic sign, traffic control device, or traffic officer; failure to obey safety zone traffic laws
- Inattentive -- Driver distracted by cigarette, children, adjusting radio and other devices, reading, talking, television, etc.
- Manslaughter, Homicide -- Non-traffic violation charged (manslaughter or other homicide offense committed without malice)
- Erratic/Reckless Driving -- Operating a vehicle in an erratic, reckless, careless or negligent manner; operating at erratic or suddenly changing speeds
- Following Improperly -- Following too closely; vehicles in caravan too close to allow entry
- Vision Obscured by Weather -- Vision obscured by rain, snow, fog, smoke, sand dust
- Ice, Water, Snow on Road -- Ice, snow, slush, water, sand, dirt, oil, wet leaves on road
- Vehicle in Road -- Vehicle includes both contact and non-contact vehicles that remain at the scene
- Driving Wrong Side of Road -- Driving on wrong side of road intentionally or unintentionally
- Drowsy/Asleep -- Drowsy, sleepy, asleep, fatigued not due to other factors, such as drugs
- Over Correcting -- Based police officer judgment, with knowledge of driver's intention
- Hit and Run Vehicle Driver -- (no explanation given)
- Making Improper Turn -- Too wide a right or left turn; unsafe U-turn

Passing with Insufficient Distance -- Passing with insufficient distance or inadequate visibility or failing to

yield to overtaking vehicle

Table 9
Driver-Related Factors in Fatal Crashes
between Large Trucks and Passenger Vehicles

Driver-Related Factors	Large Trucks	Passenger Vehicles
Driver Factor(s) Recorded?		
Yes	28.9%	66.6%
No	71.1%	33.4%
Total Drivers	**3,603**	**4,256**
Selected Factors		
Driving Too Fast	5.9%	14.1%
Ran Off Road/Lane	5.1%	19.9%
Failure to Yield Right of Way	4.6%	14.4%
Failure to Obey Traffic Devices	3.2%	8.4%
Inattentive	2.9%	8.7%
Manslaughter, Homicide	2.7%	1.3%
Erratic/Reckless Driving	2.1%	4.3%
Following Improperly	2.1%	2.7%
Vision Obscured by Weather	1.8%	2.1%
Ice, Water, Snow on Road	0.9%	2.8%
Vehicle in Road	0.9%	1.0%
Driving Wrong Side of Road	0.8%	3.9%

Source: FARS

Truck driver-related factors were cited by officers at the scene in 29 percent of fatal truck crashes where the truck collided with a passenger vehicle or vehicles. Among the individual factors cited the

three most common were driving too fast (six percent), ran off road or lane (five percent), and failure to yield the right-of-way (also five percent).

The picture is radically different for passenger vehicle drivers involved in fatal crashes with trucks. Police officers cited passenger vehicle driver factors in 67 percent of the cases nationwide, over twice as often as that for truck drivers. The top three factors for these drivers also were ran off road or out of traffic lane (20 percent), failure to yield right-of-way (14 percent), and driving too fast (also 14 percent). However, inattentive (9 percent) and failure to obey traffic control devices (8 percent) were also frequently noted. Compared to truck drivers a higher percent of passenger vehicle drivers were recorded for 10 of the 12 factors, the exceptions being manslaughter/homicide and vehicle in the road, and the differences were not large in these cases.

Table 10
Driver-Related Factors
in Single-Vehicle Fatal Crashes

Driver-Related Factors	Large Trucks	Passenger Vehicles
Driver Factor(s) Recorded?		
Yes	67.2%	84.1%
No	32.8%	15.9%
Total Drivers	**750**	**18,579**
Selected Factors		
Ran off Road/Lane	36.9%	54.9%
Driving too Fast	18.5%	37.1%
Inattentive	9.9%	8.8%
Drowsy/Asleep	7.7%	5.4%
Erratic/Reckless Driving	4.9%	8.1%
Failure to Yield Right-of-Way	3.7%	2.5%
Over Correcting	3.3%	7.0%
Failure to Obey	2.9%	2.2%
Hit and Run Vehicle Driver	2.8%	3.3%
Making Improper Turn	2.8%	3.8%
Manslaughter, Homicide	2.4%	4.8%
Vision Obscured by Weather	1.1%	0.6%

Source: FARS

Police cited 67 percent of truck drivers in single-vehicle fatals with driver-related factors, with 84 percent of passenger vehicle drivers cited. Ran off road and driving too fast were the most common factors for both groups, with passenger vehicle drivers cited more often. Inattentive (10 percent) and drowsy/asleep (8 percent) rank third and fourth for truck drivers, with numbers higher than those for

passenger vehicle drivers.

Table 11
Passenger Vehicle Driver-Related Factors:
Fatal Crashes Between Passenger Vehicles

Driver-Related Factors	Passenger Vehicles
Driver Factor(s) Recorded?	
Yes	51.1%
No	48.9%
Total Drivers	**25,685**
Selected Factors	
Failure to Yield Right-of-Way	14.1%
Ran off Road/Lane	13.4%
Driving Too Fast	10.1%
Failure to Obey	8.0%
Inattentive	5.0%
Homicide	3.9%
Erratic/Reckless Driving	3.5%
Wrong Side of Road	3.4%
Making Improper Turn	1.8%
Ice, Water, Snow on Road	1.8%
Passing with Insufficient Distance	1.2%
Hit and Run	1.1%

Source: FARS

Fifty-one percent of passenger vehicle drivers were recorded for driver-related crash factors when only passenger vehicles were involved in the multi-vehicle fatal crashes (Table 11). But an even higher 68 percent of passenger vehicle drivers were cited with driver related factors when their vehicles were involved in fatal crashes with trucks (Table 9), a difference of 17 percentage points.

This difference of 17 percentage points perhaps illustrates that passenger vehicle drivers may not be as knowledgeable or careful about driving around trucks, as they are when driving around other non-commercial vehicles. However, the major factors recorded by police for passenger vehicles are similar, whether they collide with trucks or other passenger vehicles. The three most cited factors for passenger vehicle drivers -- in either type of fatal crash -- are failure to yield right-of-way, running off the road or out of the traffic lane, and driving too fast. Most of the other major passenger vehicle driver-related crash factors recorded in Table 9 also show up in Table 11.

A Note of Caution

"Related Factor" does not necessarily mean fault or crash cause. As noted in the second edition of the MCSAFE safety update, published by the OMC Analysis Division in November 1996, related factors are merely the judgment of the officer at the scene and are **not** based on a thorough evaluation of the crash in an attempt to determine the cause of the crash or crash contributing factors. Some of the factors in the tables, such as manslaughter/homicide and hit and run driver, are charges assessed to drivers after the crash, not descriptions of pre-crash behavior that lead to crashes.

Given this caveat, the data presented in this section in Tables 9, 10, and 11 merely suggest that more comprehensive crash evaluations might lead to the conclusion that drivers of passenger vehicles are at fault in more fatal large truck-passenger vehicle crashes than the drivers of the large trucks.

A final caution is that fatal crashes account for less than two percent of total truck crashes. There are no national data on driver-related crash factors in injury and property-damage-only crashes.

IV. Environment

Most truck crashes occur in favorable weather conditions, on dry pavement, during the day, and on a weekday. Passenger vehicle crashes are more likely to take place at night and on weekends.

Weather and Road Surface Conditions

Weather problems are present in only a small minority of truck crashes, according to the data in the following two tables.

Table 12
Large Trucks Involved in Crashes
by Weather Condition

Weather Condition	Fatal: FARS	Non-Fatal	
		MCMIS	GES
No Adverse Conditions	81.8%	67.0%	83.7%
Rain	9.4%	11.9%	11.3%
Sleet, Hail	0.7%	1.2%	0.4%
Snow	4.6%	5.6%	3.8%
Fog	2.7%	1.7%	0.3%
Other	0.8%	6.0%	0.5%
Unknown	0.1%	0.6%	0.0%
Missing	0.0%	6.0%	---
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

For 82 percent of the trucks involved in fatal crashes, there were no adverse water conditions at the time of the crash. According to GES data there were no adverse weather conditions for a similar 84 percent of trucks involved in non-fatal crashes, while the MCMIS Crash File number was a lower 67 percent of trucks. The fact that six percent of the MCMIS data is missing probably accounts for some of the difference between MCMIS results and the other two databases on this response category. Rain is the most prevalent adverse condition by far, but was present in only nine percent of the cases where a truck was involved in a fatal crash and 11

to 12 percent of the involvements in non-fatal crashes. Snow ranks second as an adverse condition, but was present in only about five percent of the fatal and non-fatal truck crash cases.

Table 13
Large Trucks Involved in Crashes
by Road Surface Condition

Road Surface Condition	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Dry	78.1%	65.9%	74.0%
Wet	15.1%	16.9%	17.9%
Snow or Slush	3.1%	4.4%	2.7%
Ice	3.2%	5.9%	4.7%
Sand, Mud, Dirt, or Oil	0.1%	0.2%	0.4%
Other	0.2%	0.2%	0.2%
Unknown	0.2%	0.5%	0.0%
Missing	---	6.0%	0.0%
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

Table 13 data are consistent with that in Table 12. Almost four-fifths of trucks involved in fatal crashes and non-fatal crashes (according to GES) occurred on dry pavement. According to the MCMIS Crash File two-thirds of the cases of trucks involved in non-fatal crashes took place on dry pavement. Here again the six percent missing data in MCMIS probably accounts for much of the difference with the FARS and GES results. Wet pavement was cited for 15 percent of trucks involved in fatal crashes, 17 percent of trucks involved in non-fatals in the MCMIS data, and 18 percent in non-fatals in GES. Ice was in second place for non-dry road surfaces, accounting for three percent of trucks involved in fatal crashes, six percent in non-fatal crashes according to MCMIS, and five percent involved in non-fatals according to GES.

Light, Time of Day, and Day of Week

The following three tables provide data on light conditions when the crash occurred, the time of day, and the day of the week. While a large majority of fatal truck crashes take place during the day, about half of passenger vehicle fatal crashes occur at night. Passenger vehicle fatal crashes are also more

likely to occur on weekend days than truck fatal crashes.

Table 14
Large Trucks Involved in Crashes
by Light Condition

Light Condition	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Daylight	64.5%	68.3%	79.9%
Dark - not lighted	23.0%	13.9%	9.1%
Dark - lighted	8.0%	7.2%	7.5%
Dawn	3.0%	2.3%	1.6%
Dusk	1.5%	1.6%	1.8%
Unknown/Missing	0.0%	6.6%	---
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

Table 15
Large Trucks Involved in Crashes by Time of Day

Time	Fatal: FARS	Non-Fatal	
		MCMIS	GES
12:00am- 2:59am	7.9%	5.0%	2.6%
3:00 - 5:59	7.9%	6.6%	3.5%
6:00 - 8:59	14.2%	16.7%	16.3%
9:00 - 11:59	16.9%	20.1%	23.7%
12:00pm- 2:59pm	18.7%	20.0%	22.7%
3:00 - 5:59	16.8%	17.5%	20.0%
6:00 - 8:59	9.2%	8.0%	6.8%
9:00 - 11:59	7.5%	6.0%	4.3%
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

For 65 percent of the trucks involved in fatal crashes the crash takes place during daylight conditions, while for non-fatal involvements daytime accounts for 68 percent of the trucks in MCMIS and 80 percent of the cases in GES (Table 14). The data in Table 15 are consistent with Table 14 -- for 67 percent of the trucks involved in fatal crashes the crash occurred between 6:00 a.m. and 6:00 p.m., daytime business hours, plus commuting time. For non-fatal truck crash involvements the daytime figures are higher -- 74 percent of the trucks involved in crashes in the MCMIS Crash File and 83 percent in the GES file occurred between 6:00 a.m. and 6:00 p.m.

The time pattern of truck crashes contrasts sharply with that of passenger vehicles. The NHTSA defines night as being 6:00 p.m. to 5:59 a.m. While the crashes for only 33 percent of trucks involved in fatal crashes took place during the 12 hours of night, the crashes for 46 percent of passenger vehicles were involved in fatal crashes occurred at night. A considerable amount of truck freight moves at night, but trucking is a business where most pickups and deliveries are made during normal business hours.

Table 16
Large Trucks Involved in Crashes
by Day of Week

Day	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Sunday	6.4%	5.0%	3.4%
Monday	17.6%	17.5%	16.8%
Tuesday	16.9%	17.6%	18.8%
Wednesday	16.5%	17.0%	18.7%
Thursday	16.7%	17.4%	17.2%
Friday	17.1%	18.0%	18.4%
Saturday	8.8%	7.6%	6.7%
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

Truck crashes were concentrated during the five working days of the week. For 85 percent of trucks involved in fatal crashes the crash took place during the workweek. In contrast for 67 percent of passenger vehicles involved in fatal crashes the crash occurred on Monday through Friday -- a difference of 18 percentage points. Only 13 percent of the trucks involved in non-fatal crashes on the MCMIS Crash File and 10 percent on the GES file were involved on the weekend.

V. The Crash

Most fatal truck crashes took place in rural areas. The first event and first harmful event in the majority of fatal and non-fatal truck crashes is a collision with another vehicle in traffic. While the impact area for most fatal crashes was the front of the truck, the impact area in non-fatal crashes was more evenly distributed to all sides of the truck. Most fatal truck crashes took place on Interstate Highways or other principal arterial highways, but most fatal crashes also occurred on undivided highways.

This section will cover crash location in terms of the areas and jurisdictions that have the highest number of crashes, the events that happened during the crashes, the point of crash impact on the trucks, and the class and type of roadways where crashes occur.

Geographic Location

For two-thirds of the trucks involved in fatal crashes, the crash took place in rural areas in 1996. In most States, however, the individual counties with the highest number of fatal crashes are predominantly urban in character. This is possible because rural counties outnumber urban counties in a large majority of States. For example, in Texas the counties with the most fatal crashes are those that include the major cities of Houston, Dallas, Forth Worth, San Antonio, Austin, and El Paso. However, most fatal crashes take place in the 200 rural counties of the State.

Crash Events

The first harmful and most harmful events are coded in the FARS and GES databases for each crash. The MCMIS Crash File records the first and up to three subsequent events (not necessarily harmful) that happened to the truck or bus involved in the crash. The first and most harmful events from FARS and GES are, therefore, defined differently from the first and subsequent events from MCMIS. To decide on first and most harmful events the reporting officer or FARS analyst must make a judgment on which crash events were significant and which were not. Asking the reporting officer to record the first, second, third, and fourth event that happened to the truck or bus involved in the crash usually does not require the officer to make a judgment call. The officer only has to record the events that happened to the truck or bus in the sequence they happened. Even so, there are strong similarities between the data results from the two approaches, as recorded in the following table.

Table 17
Large Trucks Involved in Crashes
by First Harmful or First Crash Event

First Event	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Collision With Vehicle in Transport	78.9%	59.8%	74.3%
Ran Off Road	*	10.3%	*
Collision With Pedestrian	6.4%	0.4%	0.3%
Collision With Fixed Object	6.1%	3.4%	9.3%
Overturn (Rollover)	4.1%	3.1%	2.9%
Collision With Pedalcycle	1.2%	0.1%	0.1%
Collision With Parked Motor Vehicle	0.9%	1.7%	6.0%
Collision With Train	0.5%	0.2%	0.0%
Collision With Animal	0.3%	0.6%	1.4%
Collision With Other Object	0.7%	1.0%	0.7%
Jackknife	*	2.8%	1.1%
Cargo Loss or Shift	*	1.2%	*
Explosion/Fire	0.0%	0.4%	0.1%
Other	1.0%	6.9%	3.9%
Missing	0.0%	8.1%	0.0%
Totals	**4,740**	**89,066**	**390,000**

* -- These crash events are not coded in FARS or GES
Sources: FARS, MCMIS Crash File, and GES

For almost four-fifths (79 percent) of large trucks involved in fatal crashes and almost three-fourths (74 percent) of large trucks involved in non-fatal crashes, the first harmful event is a collision between the truck and another vehicle, according to the FARS and GES databases respectively. According to the MCMIS Crash File in 60 percent of the cases where a truck is involved in a non-fatal crash the first

crash event also is a collision between a truck and another vehicle in transit.

The main reason that the MCMIS percent for collision with a vehicle in transport is much lower than the FARS and GES numbers is that the first event codes in MCMIS include ran off road and cargo load or shift, neither of which are counted as harmful events in FARS and GES. However, these events, and jackknife which is also counted as a first harmful event in FARS, may be the first in a chain that leads to a crash. Together these three first events account for 14 percent of the cases in the MCMIS Crash File. Ran off the road alone accounts for ten percent of the MCMIS cases, second behind collision with a vehicle in transport, and much more common than the third place event which is collision with a fixed object (three percent of the trucks involved in non-fatal crashes). For GES non-fatal crashes collision with a fixed object ranked second (nine percent) behind collision with a vehicle in transport, and collision with a parked vehicle was third (six percent).

For trucks involved in fatal crashes the second ranked first harmful event is collision with pedestrian (six percent), according to FARS. When a truck collides with a pedestrian, there is fairly good chance the result will be a fatality or serious injury. In these crashes the pedestrian killed is usually walking in the road, improperly crossing the trafficway, or darting into the road. Collision with a fixed object was the third ranked first harmful event in fatal crashes (also six percent).

Type of Crash

The point of impact on vehicles involved in crashes can shed important light on crashes, and is one area where fatal and non-fatal data differ dramatically.

Table 18
Large Trucks Involved in Crashes
by Initial Impact Area

Impact Area	Fatal	Non-Fatal
Front	61.7%	27.9%
Rear	15.8%	16.2%
Left Side	9.1%	20.0%
Right Side	5.7%	27.3%
Non Collision	2.9%	7.4%
Other/Unknown	5.0%	1.1%
Total	**4,740**	**390,000**

Sources: FARS and GES

Unlike most other tables in this profile where fatal and non-fatal data are similar, there is a marked contrast between the two columns in Table 18. The front of the truck was the initial impact area for almost two-thirds (62 percent) of trucks involved in fatal crashes. By contrast the front of the truck was the initial impact area for only 28 percent of the trucks involved in non-fatal crashes. Side impact crashes are much more prevalent in non-fatal truck crashes, accounting for almost half of all the trucks involved (47 percent). Rear impact crashes are about the same for fatal and non-fatal crashes, and non-collision crashes are more common in non-fatal crashes.

For passenger vehicles in fatal crashes the percentage of vehicles where the front was the initial impact area was an almost identical 64 percent. Thus, in a majority of fatal crashes for both large trucks and passenger vehicles the crash takes place in the forward vision of the drivers. In almost 16 percent of fatal truck crashes the initial point of impact on the truck is the rear. For passenger vehicles the rear end impact number is only five percent, a difference of 11 percentage points. Thus, trucks are hit from behind three times more often in fatal crashes than passenger vehicles.

Crash Roadways

The FARS database contains information on the types of roadway and trafficway where fatal crashes occur. The MCMIS Crash File contains data only on the type of trafficway. The following two tables present data on these two variables.

Table 19
Large Trucks involved in Fatal Crashes
by Roadway Type

Roadway Type	Large Trucks
Interstate Highway	24.5%
Other Principal Arterial	37.0%
Minor Arterial	17.6%
Collector	12.7%
Local Road/Street	6.2%
Unknown/Missing	2.1%
Totals	**4,740**

Source: FARS

According to Highway Statistics 1995 40 percent of all truck miles are driven on Interstate highways. By contrast, the crashes of only 25 percent of trucks involved in fatal crashes occurred on interstate highways in 1996. Interstate highways are the safest roadways in the nation, both for trucks and for other vehicles. Other principal arterial highways accounted for almost four of ten (37 percent) trucks in fatal crashes. Many of these highways are not divided and there is no control over access to the trafficway, both conditions that are less safe than interstate roadways.

Table 20
Large Trucks Involved in Crashes
by Type of Trafficway

Trafficway	Fatal: FARS	Non-Fatal	
		MCMIS	GES
Not Physically Divided	56.5%	39.6%	45.6%
Divided Highway-**without** barrier	31.8%	24.1%	33.7%
Divided Highway-**with** barrier	10.4%	17.5%	
One-Way Trafficway	0.6%	4.3%	4.1%
Missing/Unknown	0.7%	14.5%	16.7%
Totals	**4,740**	**89,066**	**390,000**

Sources: FARS, MCMIS Crash File, and GES

For over half of all trucks involved in fatal crashes (57 percent) the crash takes place on an undivided highway. Since the point of impact on sixty percent of trucks involved in fatal crashes was the front (Table 18 above), it makes sense that most of the fatal crashes involving trucks took place on undivided highways where head-on collisions can occur without barriers or median strips between opposing lanes.

Thus, even though close to half of truck traffic takes place on interstate highways which are all divided highways, and many of the principal arterial highways on which trucks operate are also divided, most fatal crashes still occur on undivided roadways. By contrast the MCMIS Crash File data shows that the crashes of 40 percent of all trucks involved in non-fatal crashes had crashes on highways that were not physically divided. The GES figure for undivided highways was 46 percent of trucks involved in non-fatal crashes.

VI. Motor Carriers

The only national crash database that identifies truck and bus motor carriers is the MCMIS Crash File. As of August 22, 1997 the MCMIS database contained information on 101,102 trucks and buses involved in crashes that occurred in 1996 as reported by the States. The file also contains over 90,000 vehicles involved in crashes for 1995, over 80,000 for 1994, and fewer for 1993 and 1992. Nearly all vehicles are identified by the operating motor carrier at the time of the crash. Seventy-one percent of the vehicles involved in crashes in 1996 were operated by interstate carriers. The MCMIS Crash File database can generate crash data on both interstate **and** intrastate carriers.

Crash data plays a vital role in measuring motor carrier safety. The OMC is building a new data-based motor carrier ranking system, SafeStat, to guide carrier and vehicle selection for compliance reviews and roadside inspections. All interstate motor carriers will receive a SafeStat score. Forty percent of the score will be based on crashes in the MCMIS Crash File. OMC field staff will conduct safety compliance reviews on the motor carriers with the highest SafeStat scores.

To guide roadside vehicle and driver inspections an Inspection Selection System (ISS) has been developed. The ISS is now being revised so that it will match the SafeStat scores which, as noted above, rely heavily on MCMIS Crash File data. The only difference is the addition of a factor for any carrier that has not had a roadside inspection in a long time. When trucks and buses pull into roadside inspection stations, State personnel will be able to enter the carrier identification number into a computer and receive an ISS score for the carrier. The vehicles and drivers of those carriers with high ISS scores, indicating a bad safety record, will be selected more often for a roadside safety inspection than those vehicles of carriers with low scores.

VII. MCMIS Crash File Progress

As noted in the Introduction, the OMC received crash reports on an estimated 58 percent of the trucks and buses that were involved in crashes in 1996 that met the NGA criteria for a reportable crash. One way to estimate how well States are doing in reporting crashes to the OMC is to compare the FARS numbers for large trucks involved in fatal crashes with the MCMIS Crash File numbers of trucks involved in fatal crashes. The FARS is considered a reliable data source for all fatal crashes, including fatal truck crashes. If the number of trucks involved in fatal crashes in the MCMIS Crash File is close to the FARS number for a State, that State is at least reporting to the OMC almost all fatal crashes.

The FARS and MCMIS numbers need not match exactly. The two databases use slightly different definitions for a truck. For FARS a vehicle is a large truck if it has a gross vehicle weight rating of more than 10,000 pounds. For the MCMIS Crash File a truck must be designed, used, or maintained primarily for carrying property, and have at least two axles and six tires. Even with this difference in definitions, the FARS and the MCMIS Crash File numbers should be very close.

The following table provides a State-by-State comparison of the MCMIS Crash File numbers for trucks involved in fatal crashes with FARS numbers for large trucks involved in fatal crashes. The table includes the 50 States and the District of Columbia, but excludes the five United States territories -- Puerto Rico, the Virgin Islands, Guam, the Northern Marianas, and American Somoa.

Table 21
Large Trucks in 1996 Fatal Crashes by State: FARS vs. MCMIS Totals

State	FARS	MCMIS	State	FARS	MCMIS
Alabama	140	135	Montana	19	18
Alaska	7	3	Nebraska	48	52
Arizona	79	28	Nevada	40	14
Arkansas	98	63	New Hampshire	12	6
California	366	169	New Jersey	81	70
Colorado	55	45	New Mexico	53	23
Connecticut	32	33	New York	150	97
Delaware	16	17	North Carolina	166	112
District of Columbia	4	4	North Dakota	10	11
Florida	279	142	Ohio	206	5
Georgia	213	193	Oklahoma	89	62
Hawaii	11	17	Oregon	58	70
Idaho	37	38	Pennsylvania	184	182
Illinois	147	66	Rhode Island	6	1
Indiana	160	79	South Carolina	98	112
Iowa	85	64	South Dakota	18	15
Kansas	62	63	Tennessee	165	120
Kentucky	92	87	Texas	411	408
Louisiana	77	60	Utah	32	41
Maine	13	7	Vermont	9	6
Maryland	66	30	Virginia	117	76
Massachusetts	34	7	Washington	69	40
Michigan	159	122	West Virginia	58	26
Minnesota	65	36	Wisconsin	94	102
Mississippi	89	12	Wyoming	11	9
Missouri	150	203	**Totals**	**4,740**	**3,431**

Sources: FARS and MCMIS Crash File

While the OMC received reports of about 61 percent of all trucks involved in NGA reportable crashes, States reported about 72 percent of trucks involved in fatal crashes, according to a FARS-MCMIS comparison. Only 12 States reported MCMIS Crash File fatal numbers that were within ten percent of

FARS numbers. These included some very big States, such as Pennsylvania and Texas, and some very small States, such as Delaware and Montana. A few States, such as Missouri and South Carolina, reported much higher MCMIS numbers than FARS. Most States, however, reported much lower MCMIS numbers than FARS. In fact 12 States (Alaska, Arizona, California, Illinois, Indiana, Massachusetts, Mississippi, Nevada, New Mexico, Ohio, Rhode Island, and West Virginia) reported numbers less than 50 percent of the FARS totals for their States.

Concluding Comments

For the OMC the most important questions involving motor carrier crashes are what are the crash problems, why crashes happen, and how OMC programs and State programs and activities relate to ameliorating the conditions that lead to crashes. Unless OMC knows why crashes happen the agency can only guess when we design programs to prevent them. None of the current truck and bus databases provide in-depth data on the causes or reasons for truck and bus crashes. There is much data in the several databases that is suggestive of crash causes. The OMC Analysis Division relies on OMC field staff and our State partners to suggest ways to break down and analyze the data so it will be most useful for analysis and enforcement efforts in the field. The tables and comments presented here are examples of the ways the Analysis Division can examine the existing data.