

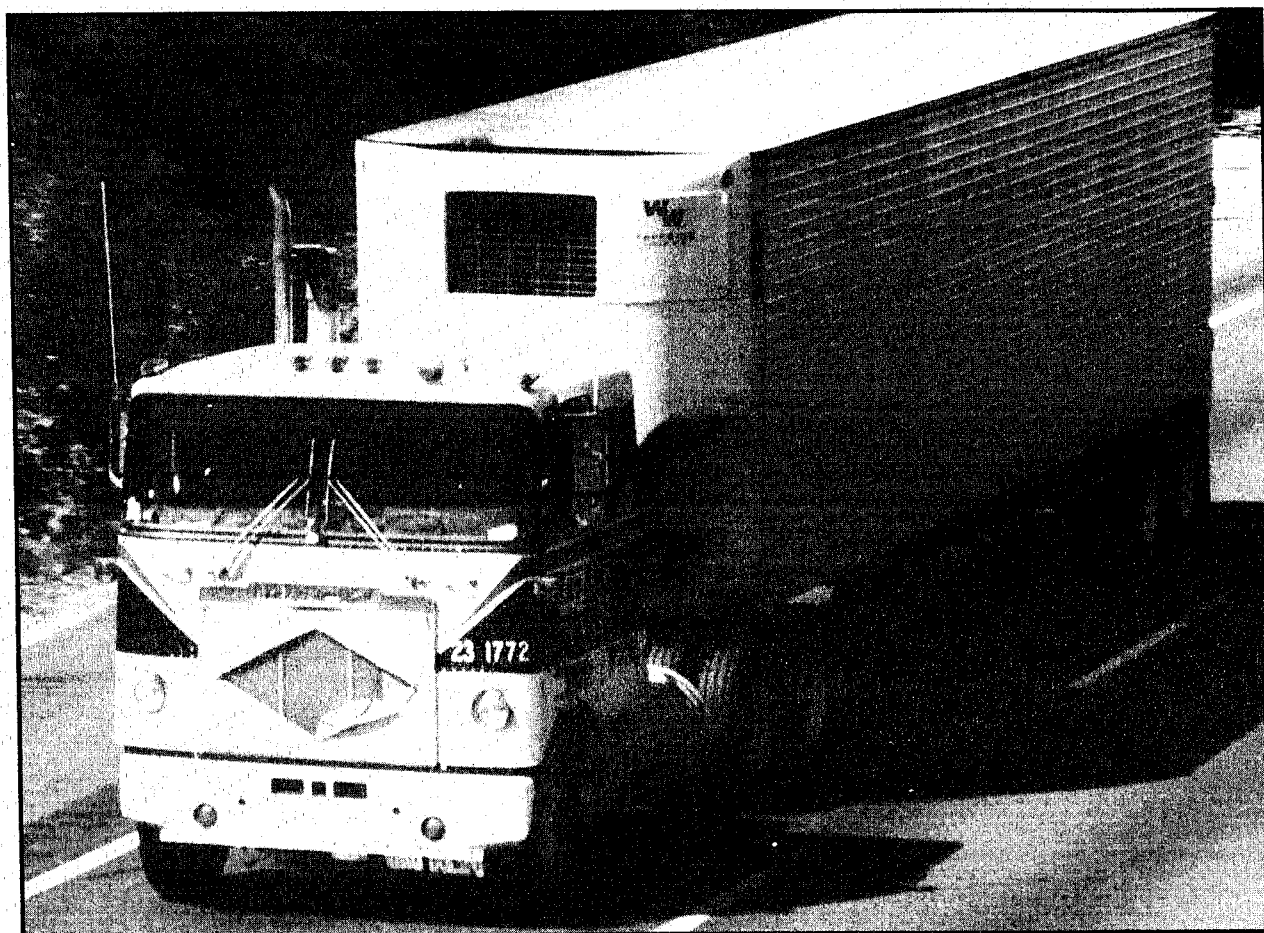


U.S. Department  
of Transportation

**Federal Highway  
Administration**

# **Accidents Reported by Motor Carriers of Property 1990**

**Office of Motor Carriers**



**Publication No. FHWA/MC-93/011**

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# **Accidents Reported by Motor Carriers of Property 1990**

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**Publication No. FHWA/MC-**

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Federal Highway Administration  
U.S. Department of Transportation  
Washington, D.C. 20590**

**November 1992**

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## OMC/FARS TRUCK ACCIDENT STATISTICS 1981 TO 1990

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The table below presents the most complete data available on accidents involving commercial trucks. The data from the Office of Motor Carriers (OMC) are compiled for all accidents (fatal, injury, and property damage only) involving trucks in *interstate* travel, and only those accidents reported to OMC by the carriers and operators of the trucks as outlined in Federal regulation (49 CFR 394). The data from the National Highway Traffic Safety Administration (NHTSA) are from the Fatal Accident Reporting System (FARS), which consists of all fatal crashes occurring nationwide as compiled from police accident reports and reported by States to NHTSA. Truck-involved crash data pertaining to those trucks in both *intrastate* and *interstate* travel are included in this table. The FARS uses the following definition of trucks:

- Medium/Heavy Truck—Any straight truck or combination truck with a gross vehicle weight rating (GVWR) of more than 10,000 pounds.
- Combination Truck—A bobtail tractor or any truck or tractor pulling any number of trailers.

| OMC/FARS<br>Ten-Year Truck Accident Statistics |        |        |        |        |        |        |        |        |        |        |
|------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                                                | 1981   | 1982   | 1983   | 1984   | 1985   | 1986   | 1987   | 1988   | 1989   | 1990   |
| OMC STATISTICS                                 |        |        |        |        |        |        |        |        |        |        |
| FATAL ACCIDENTS                                | 2,181  | 1,978  | 2,031  | 2,195  | 2,161  | 2,101  | 2,410  | 2,675  | 2,642  | 2,619  |
| FATALITIES                                     | 2,810  | 2,456  | 2,528  | 2,721  | 2,646  | 2,616  | 2,907  | 3,309  | 3,451  | 3,309  |
| INJURY ACCI-<br>DENTS                          | 17,082 | 16,354 | 16,022 | 17,792 | 18,135 | 15,084 | 16,734 | 18,504 | 19,556 | 19,533 |
| INJURIES                                       | 28,533 | 26,117 | 26,692 | 29,149 | 28,888 | 25,106 | 28,018 | 31,295 | 34,653 | 34,348 |
| PROPERTY<br>DAMAGE                             |        |        |        |        |        |        |        |        |        |        |
| ACCIDENTS                                      | 8,519  | 8,669  | 7,979  | 9,592  | 8,772  | 9,044  | 8,335  | 11,599 | 13,143 | 13,733 |
| TOTAL ACCIDENTS                                | 27,772 | 27,001 | 26,032 | 29,579 | 29,068 | 26,229 | 27,479 | 32,778 | 35,341 | 35,885 |
| FARS STATISTICS                                |        |        |        |        |        |        |        |        |        |        |
| FATAL CRASHES:<br>COMBINATION<br>TRUCKS        | 3,863  | 3,519  | 3,645  | 3,907  | 3,892  | 3,825  | 3,746  | 3,939  | 3,678  | 3,583  |
| TOTAL FATALITIES:<br>COMBINATION<br>TRUCKS     | 4,584  | 4,226  | 4,365  | 4,605  | 4,855  | 4,493  | 4,403  | 4,609  | 4,370  | 3,631  |
| FATAL CRASHES:<br>MEDIUM/HEAVY<br>TRUCKS       | 4,928  | 4,396  | 4,615  | 4,831  | 4,841  | 4,785  | 4,813  | 4,885  | 4,672  | 4,518  |
| TOTAL FATALITIES:<br>MEDIUM/HEAVY<br>TRUCKS    | 5,806  | 5,229  | 5,491  | 5,640  | 5,734  | 5,579  | 5,598  | 5,679  | 5,488  | 5,272  |

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# HIGHLIGHTS OF THE 1990 REPORT

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## 1990 OVERVIEW

- This document profiles 1990 accidents reported by *interstate* commercial carriers of property subject to regulation by the U.S. Department of Transportation. It is suspected that accidents involving interstate carriers were significantly *under-reported*; actions are underway to correct this in the future.
- 35,885 accidents were reported by commercial carriers of property in 1990, 2 percent more than in 1989.
- Approximately 1 in 14 accidents in 1990 resulted in fatalities; however, more than 1 in 2 accidents produced non-fatal injuries.
- Reported accidents involved 3,309 fatalities, 34,348 non-fatal injuries, and over \$507 million in property damage.
- Three out of every 10 accidents oc-

curred in just five states: Texas, Illinois, California, Ohio, and Pennsylvania.

- Four out of every 10 reported fatalities occurred in eight states: Texas, Ohio, Tennessee, California, Indiana, Pennsylvania, Georgia, and North Carolina.

## THE DRIVER

- Only 2 of every 10 persons killed — and 3 of every 10 persons non-fatally injured — in truck accidents were truck drivers or occupants.
- Drivers under 21 tended to be involved in accidents which were decidedly more severe than accidents involving drivers of other age groups.
- When accidents occurred, truck drivers not wearing seat belts were 75 percent more likely to be killed than those wearing belts.

## **THE VEHICLE**

- Seven out of every 10 reported truck accidents involved tractor-semi-trailers.
- Heavier trucks tended to be involved in accidents with fewer fatalities/injuries than lighter trucks. Heavy truck accidents did, however, tend to produce higher property damage totals than light truck accidents.
- Mechanical defects contributed to very few accidents, according to the carriers reporting the accidents.

## **THE ACCIDENT SETTING**

- Reported accidents were more numerous on divided highways, but more likely to be fatal on undivided highways.
- Seven out of 10 reported accidents

occurred under favorable weather and favorable road conditions.

## **THE ACCIDENT**

- Four out of 5 accidents involved collisions between a truck and one or more other vehicles. These accidents generated 91 percent of the fatalities, 84 percent of the injuries, and 71 percent of the property damage reported during 1990.
- Collision accidents were more than three times as likely to result in fatalities than non-collision accidents.
- In 6 out of 7 non-collision accidents, the trucks reportedly overturned, ran off the road, or jackknifed.

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# INTRODUCTION

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This document presents aggregate statistics derived from the *1990 Motor Carriers of Property Accident Database*. The database was compiled from reports of applicable accidents filed by commercial carriers of property subject to the Department of Transportation Act (49 U.S.C. 1651-60). The database is maintained by the Office of Motor Carriers (OMC), Federal Highway Administration, U.S. Department of Transportation.

The data presented in this publication are intended for use by individuals and organizations in the public and private sectors requiring information on accidents of motor carriers of property. Readers seeking general information will find that these materials satisfy many of their basic data requirements. Persons needing more specialized information than presented here are encouraged to contact OMC directly.

## ACCIDENT REPORTING

In 1990, motor carriers that operated commercial motor vehicles in interstate commerce were subject to the reporting requirements specified in the *Code of Federal Regulations*, Title 49, Part 394.

Additionally, the intrastate transportation performed by those interstate motor carriers was subject to the same reporting requirements. Accidents are reported using Federal Form MCS 50-T, *Motor Carrier Accident Report (Property-Carrying)*.

A "reportable" accident has occurred when one or more of the following conditions results:

- At least one person dies.
- At least one person experiences bodily injury which requires immediate medical treatment away from the scene of the accident.
- Property is damaged in the amount of \$4,400 or more, based on actual or estimated costs.

The MCS 50-T report contains over 60 data elements pertaining to the motor carrier, driver, vehicles, and circumstances of the accident. Accident reports, when received by OMC, are entered into the Accident Database for Motor Carriers of Property.

## NATURE OF THE DATA

Readers should be aware of several important limitations in the 1990 data. First, the database used to compile this report is limited to those accident occurrences for which MCS 50-T's were filed. This is significant because there is substantial evidence to suggest that carriers are not reporting all accident occurrences. Secondly, the circumstances of the accidents are entered into the database precisely as that information is reported by the carriers. Consequently, it is possible that commercial carriers' accounts of accidents, as recorded in the database, are biased and deviate from the accounts of the same accidents compiled by police, courts, insurance companies, etc.

Finally, users of this report should remember that this publication is a summary of accident statistics presented without benefit of *exposure* factors. Exposure refers to the potential opportunity for a given event to occur. Suppose, for instance, that two interstate carriers, A and B, experienced 12 and 18 reportable accidents, respectively. Carrier A logged 5 million miles of travel during the year, while Carrier B travelled 10 million miles. Initially, it might look as though Carrier B was less safe than Carrier A, since B had 18 accidents and A had only 12. However, when one considers the exposure—in this case, *total vehicle miles driven*—a very different picture emerges. Now it is seen that Carrier A experienced 2.4 accidents per million miles travelled, whereas Carrier B experienced only 1.8 accidents per million miles of travel. Perhaps Carrier B was really the safer of the two carriers.

Because this document is largely deprived of exposure data, one must exercise great caution in attempting to compare the probabilities of accidents occurring under various circumstances. For instance, while the data on accidents by time of day chronicled in Chapter 4 show that most accidents occurred during the day, one cannot necessarily conclude that the probability of accidents happening in the daytime was greater than at night. Before one could draw that conclusion, one would need to examine such exposure factors as the number of commercial vehicles on the roads in the daytime versus the nighttime.

One may, however, properly use the data in this document to compare the probable consequences of accidents under different circumstances. For example, one *can* make a valid determination about whether accidents were more severe on undivided versus divided highways.

## SPECIAL NOTE ON PROPERTY DAMAGE

OMC employs a variety of pre- and post-entry screening activities to help ensure that MCS 50-T reports entered into the Accident Database were complete and accurate. During 1990, post-entry screening included an automated search for those accident records in which Total Property Damage (Item 19A) had been left blank by carriers; a value of "\$4,401" was inserted in order to guarantee that all records in the database met Federal reporting criteria for property damage (see *Accident Reporting*, page ix, for a description of these criteria). The "\$4,401" value was added to each record

in which Total Property Damage was blank, including those records where Total Persons Killed or Injured (Items 17-19) were not blank.

Consequently, one should view references in this document to property damage with caution—actual property damage values could have been substantially higher or lower than those shown. It should be further noted that there is no mechanism on the MCS 50-T report for gauging whether the Total Property Damage recorded by a carrier represents an "actual" or "estimated" cost.

## ORGANIZATION OF THE DOCUMENT

This document contains five chapters:

- Chapter 1: 1990 Overview
- Chapter 2: The Driver
- Chapter 3: The Vehicle
- Chapter 4: The Accident Setting
- Chapter 5: The Accident

Within each chapter, data are organized under specific topics. A glossary of terms, a copy of Form MCS 50-T, and a depiction of common vehicle configurations are presented in the Appendix.

## DATA CONVENTIONS

The following conventions are used throughout this document:

- Percentages shown in tables and figures are rounded to the nearest one-tenth of 1 percent. Percentages do not always total 100 due to rounding.
- Items which motor carriers left blank on the 50-T report are noted in tables and figures under the "Not Reported" category.
- When the size of the sample from which the data shown in a given figure were drawn is not readily apparent, the sample size is identified at the base of the figure. For example, "N=35,885" means that the data shown were drawn from 35,885 accident reports.
- Accident consequences— notably fatality and injury rates—are usually expressed as a rate per 100 accidents.
- Specific parts of the *Federal Motor Carrier Safety Regulations (FMCSRs)* are referenced in the text of the document, as appropriate. For example, "49 CFR 394" means Title 49 of the *Code of Federal Regulations*, Part 394.

## ADDITIONAL INFORMATION

- For answers to questions not addressed in this publication, please contact the Federal Highway Administration, Office of Motor Carriers, HIA-10, at 400 Seventh Street, S.W., Washington, D.C. 20590. The telephone number is 202-366-4023.



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# Chapter 1

# 1990 OVERVIEW

## Accident Class Totals Accident Consequences State Accident Statistics Five-Year Trends

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In 1990, 35,885 accidents involving commercial interstate carriers of property were reported by the individuals and companies who operate commercial motor vehicles. These accidents resulted in 3,309 fatalities, 34,348 non-fatal injuries, and property damage estimated at \$507 million. Fewer than 1 in 14 accidents involved fatalities, though more than 1 in 2 produced non-fatal injuries. Accidents reported in 1990 increased by approximately 37 percent over the 1986 total. During the same period, the number of reported fatalities increased by nearly 26 percent; however, there were 4 percent fewer fatalities in 1990 than 1989.

### ACCIDENT CLASS TOTALS

The 35,885 accidents reported in 1990 fall into three classes:

- **Fatal Accidents.** This group includes all accidents for which at least one fatality was reported. These accidents may also have involved non-

fatal injuries and property damage.

- **Injury Accidents.** At least one injury, but no fatalities, was reported for each accident in this category. Property damage may also have been a consequence of "injury" accidents.
- **Property Damage Accidents.** Each of these accidents resulted in actual or estimated vehicle, cargo, and other property damage of \$4,400 or more, but involved no fatalities or injuries.

Accidents are grouped into these classes according to the highest accident severity. For example, accidents which resulted in both fatalities and injuries are classified as "fatal" accidents. Accidents involving both injuries and property damage fall into the "injury" category.

Table 1-1 summarizes 1990 accident data by the three accident classes.

*Accidents Reported by Motor Carriers of Property 1990*

| Table 1-1<br>1990 Accident Summary |        |         |
|------------------------------------|--------|---------|
|                                    | NUMBER | PERCENT |
| FATAL ACCIDENTS                    | 2,619  | 7.3     |
| INJURY ACCIDENTS                   | 19,533 | 54.4    |
| PROPERTY DAMAGE ACCIDENTS          | 13,733 | 38.3    |
| TOTAL ACCIDENTS                    | 35,885 | 100.0   |

In Table 1-2, class totals are broken down further by accident type, trip type, and carrier type. Accident type encompasses (1) collisions with moving, fixed, or parked objects; and (2) non-collisions, e.g., fires and jackknives. Trip type indicates whether the commercial vehicles were engaged in over-the-road or local transportation when the accidents occurred. Carrier type includes for-hire and private.

Four out of every 5 accidents reported in 1990 were the result of collisions; 3 out of 4 accidents occurred during over-the-road trips (i.e., on highways between two non-local destination points). In general, as accident severity increased — from property damage to injuries to

fatalities — the likelihood that the resultant accidents entailed collisions also increased.

For-hire carriers were involved in 98 percent of all accidents reported in 1990, suggesting that for-hire carriers, as a group, are (1) much less safe than private carriers, (2) travelling considerably more miles than private carriers or (3) much more likely to report their accidents than private carriers. Based on its long-term experience monitoring and regulating truck safety, OMC presumes the latter to be the case.

Table 1-3 breaks down accident class totals by type of for-hire carrier.

| Table 1-2<br>Accident Class Totals<br>By Carrier Type, Accident Type, and Trip Type |                 |       |                  |       |                           |       |                 |       |
|-------------------------------------------------------------------------------------|-----------------|-------|------------------|-------|---------------------------|-------|-----------------|-------|
|                                                                                     | FATAL ACCIDENTS |       | INJURY ACCIDENTS |       | PROPERTY DAMAGE ACCIDENTS |       | TOTAL ACCIDENTS |       |
|                                                                                     | #               | %     | #                | %     | #                         | %     | #               | %     |
| ACCIDENT TYPE                                                                       |                 |       |                  |       |                           |       |                 |       |
| COLLISION                                                                           | 2,417           | 92.3  | 16,195           | 82.9  | 10,035                    | 73.1  | 28,647          | 79.8  |
| NON-COLLISION                                                                       | 197             | 7.5   | 3,330            | 17.0  | 3,687                     | 26.8  | 7,214           | 20.1  |
| TYPE NOT RPTD.                                                                      | 5               | 0.2   | 8                | 0.0   | 11                        | 0.1   | 24              | 0.1   |
| TOTAL                                                                               | 2,619           | 100.0 | 19,533           | 99.9  | 13,733                    | 100.0 | 35,885          | 100.0 |
| TRIP TYPE                                                                           |                 |       |                  |       |                           |       |                 |       |
| OVER-THE-ROAD                                                                       | 1,933           | 73.8  | 13,648           | 69.9  | 10,557                    | 76.9  | 26,138          | 72.8  |
| LOCAL                                                                               | 651             | 24.9  | 5,623            | 28.8  | 2,996                     | 21.8  | 9,270           | 25.8  |
| TYPE NOT RPTD.                                                                      | 35              | 1.3   | 262              | 1.3   | 180                       | 1.3   | 477             | 1.3   |
| TOTAL                                                                               | 2,619           | 100.0 | 19,533           | 100.0 | 13,733                    | 100.0 | 35,885          | 99.9  |
| CARRIER TYPE                                                                        |                 |       |                  |       |                           |       |                 |       |
| FOR-HIRE                                                                            | 2,534           | 96.8  | 19,174           | 98.2  | 13,434                    | 97.8  | 35,142          | 97.9  |
| PRIVATE                                                                             | 84              | 3.2   | 341              | 1.7   | 284                       | 2.1   | 709             | 2.0   |
| TYPE NOT RPTD.                                                                      | 1               | 0.0   | 18               | 0.1   | 15                        | 0.1   | 34              | 0.1   |
| TOTAL                                                                               | 2,619           | 100.0 | 19,533           | 100.0 | 13,733                    | 100.0 | 35,885          | 100.0 |

**Table 1-3**  
**Breakdown of For-Hire Accidents**

|                   | FATAL ACCIDENTS |       | INJURY ACCIDENTS |       | PROPERTY DAMAGE ACCIDENTS |       | TOTAL ACCIDENTS |       |
|-------------------|-----------------|-------|------------------|-------|---------------------------|-------|-----------------|-------|
|                   | #               | %     | #                | %     | #                         | %     | #               | %     |
| FOR-HIRE CARRIERS |                 |       |                  |       |                           |       |                 |       |
| ICC AUTHORIZED    | 1,923           | 75.9  | 15,637           | 81.6  | 11,050                    | 82.3  | 28,610          | 81.4  |
| ICC EXEMPT        | 594             | 23.4  | 3,471            | 18.1  | 2,341                     | 17.4  | 6,406           | 18.2  |
| OTHER             | 17              | 0.7   | 66               | 0.3   | 43                        | 0.3   | 126             | 0.4   |
| TOTAL             | 2,534           | 100.0 | 19,174           | 100.0 | 13,434                    | 100.0 | 35,142          | 100.0 |

## ACCIDENT CONSEQUENCES

Fatalities, injuries, and property damage—the physical consequences of commercial vehicle accidents—are summarized in Tables 1-4 and 1-5. Table 1-4 shows that the majority of 1990 accident consequences were the result of (1) collision

accidents, (2) accidents occurring during over-the-road transportation, and (3) accidents involving for-hire carriers. As with the class totals, nearly all (97 percent) of the accident consequences reported involved for-hire carriers. Table 1-5 shows that most of these carriers were "ICC authorized."

**Table 1-4**  
**Accident Consequences**  
**By Carrier Type, Accident Type, and Trip Type**

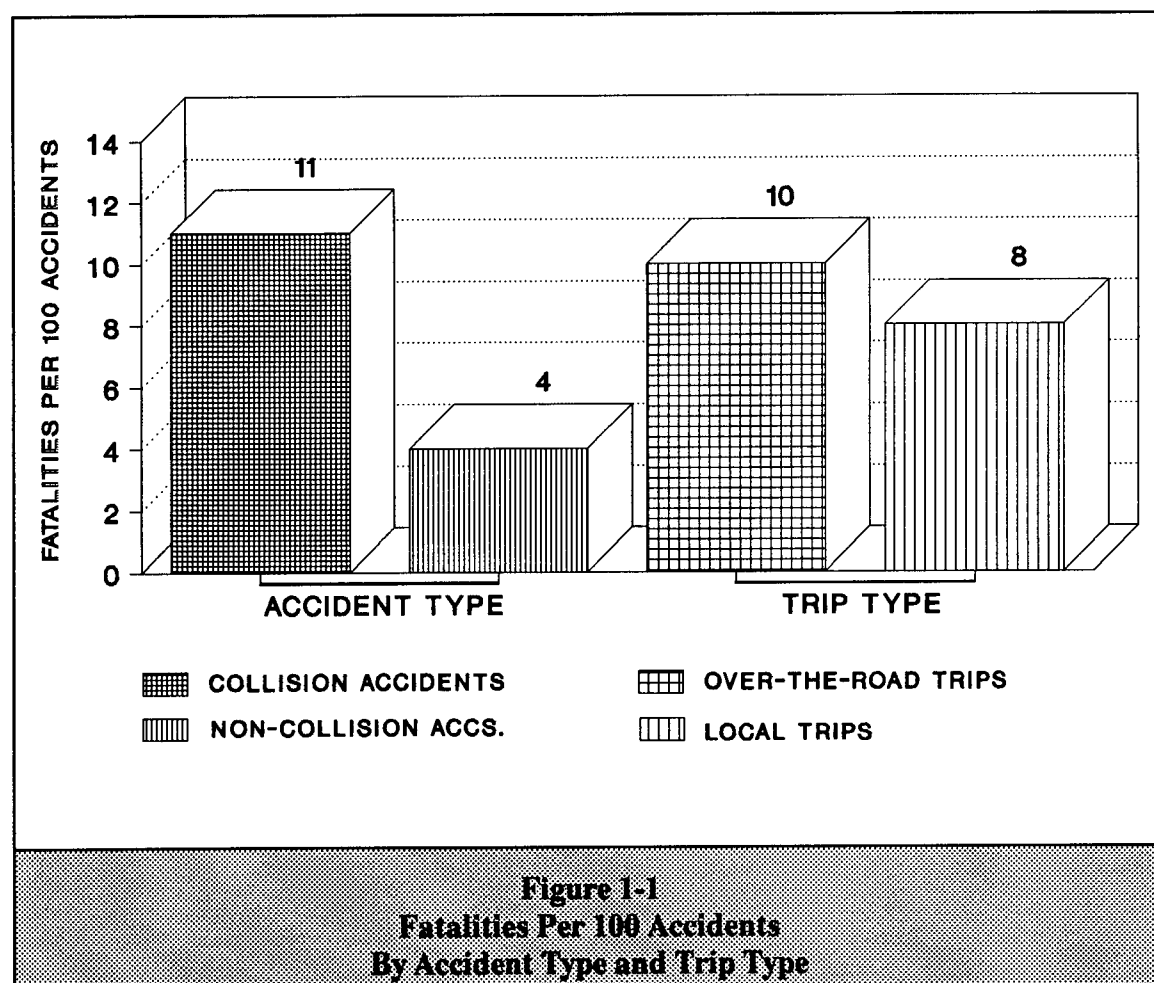
|                | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|----------------|------------|-------|----------|-------|-----------------|-------|
|                | #          | %     | #        | %     | \$              | %     |
| ACCIDENT TYPE  |            |       |          |       |                 |       |
| COLLISION      | 3,018      | 91.2  | 28,896   | 84.1  | 359,338,863     | 70.8  |
| NON-COLLISION  | 284        | 8.6   | 5,438    | 15.8  | 147,658,107     | 29.1  |
| TYPE NOT RPTD. | 7          | 0.2   | 14       | 0.0   | 334,415         | 0.1   |
| TOTAL          | 3,309      | 100.0 | 34,348   | 99.9  | 507,330,385     | 100.0 |
| TRIP TYPE      |            |       |          |       |                 |       |
| OVER-THE-ROAD  | 2,499      | 75.5  | 24,237   | 70.6  | 400,621,030     | 79.0  |
| LOCAL          | 765        | 23.1  | 9,644    | 28.1  | 101,072,430     | 19.9  |
| TYPE NOT RPTD. | 45         | 1.4   | 467      | 1.4   | 5,637,925       | 1.1   |
| TOTAL          | 3,309      | 100.0 | 34,348   | 100.1 | 507,330,385     | 100.0 |
| CARRIER TYPE   |            |       |          |       |                 |       |
| FOR-HIRE       | 3,208      | 96.9  | 33,654   | 98.0  | 495,037,741     | 97.6  |
| PRIVATE        | 100        | 3.0   | 662      | 1.9   | 12,030,201      | 2.4   |
| TYPE NOT RPTD. | 1          | 0.0   | 32       | 0.1   | 263,443         | 0.1   |
| TOTAL          | 3,309      | 99.9  | 34,348   | 100.0 | 507,330,385     | 100.1 |

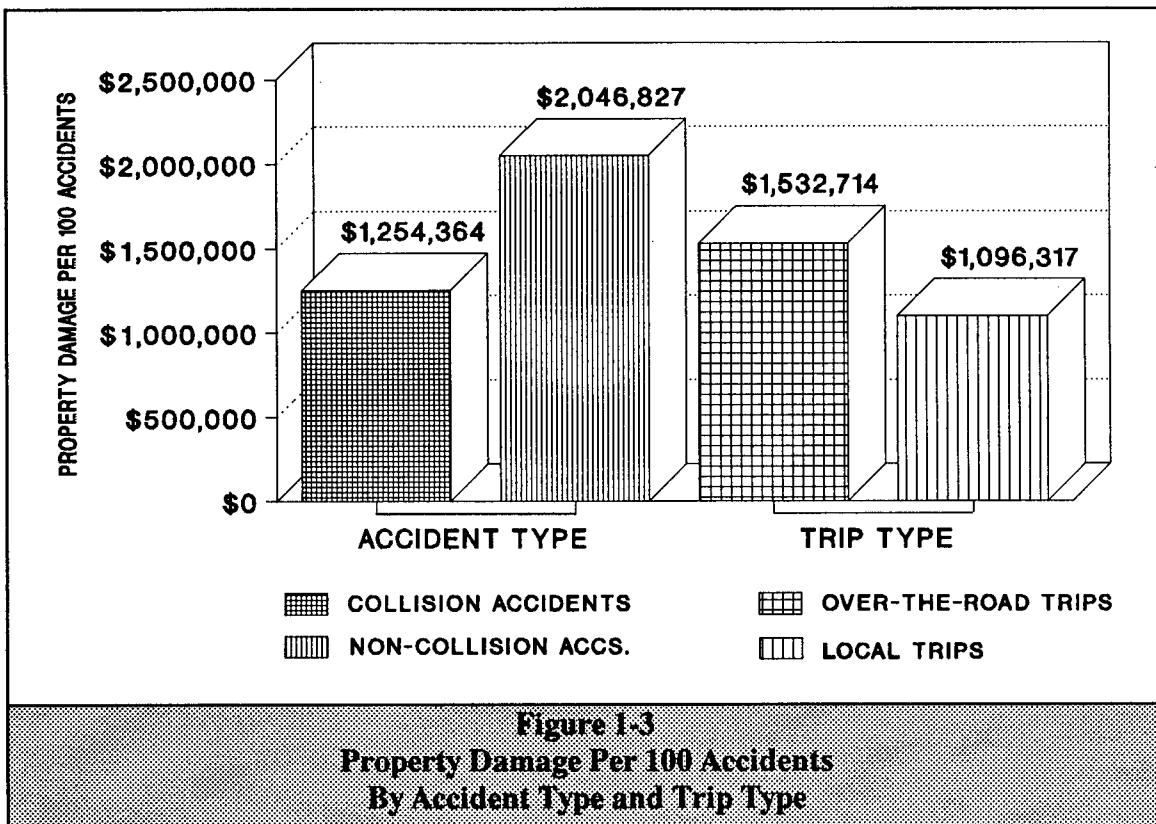
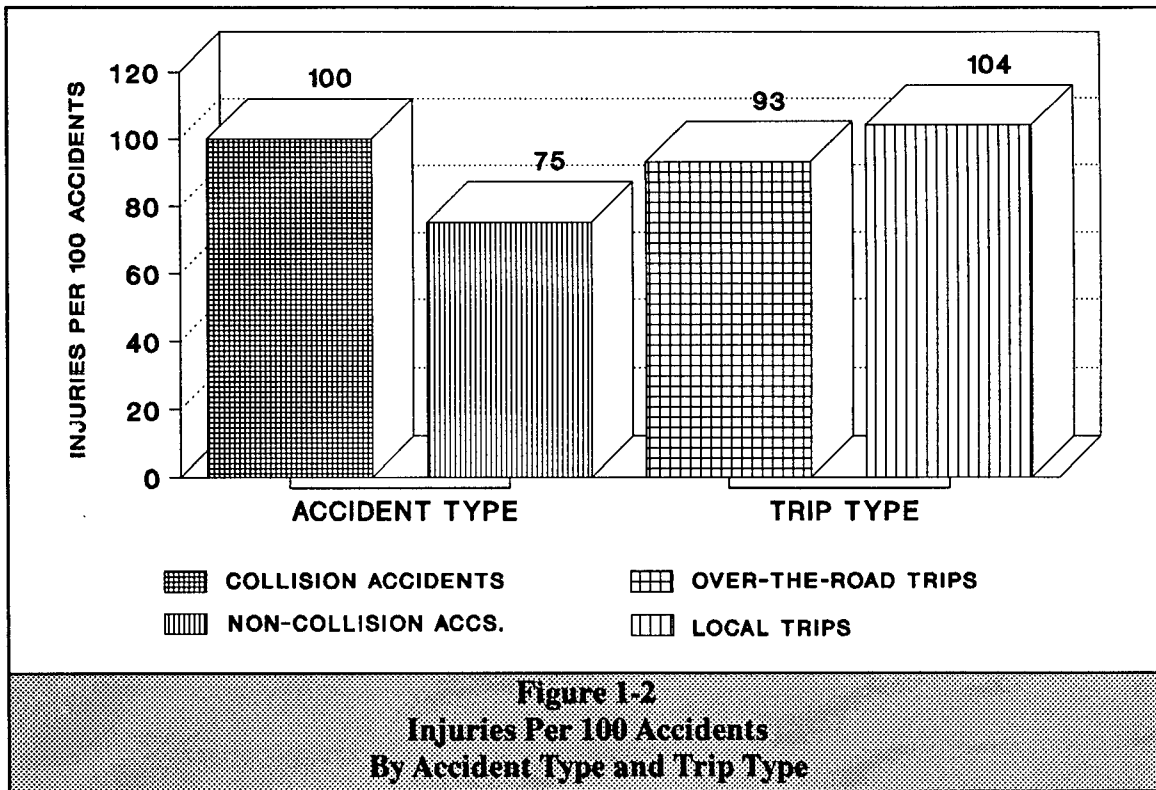
**Table 1-5**  
**Breakdown of For-Hire Accident Consequences**

|                   | FATALITIES |       | INJURIES |      | PROPERTY DAMAGE |       |
|-------------------|------------|-------|----------|------|-----------------|-------|
|                   | #          | %     | #        | %    | \$              | %     |
| FOR-HIRE CARRIERS |            |       |          |      |                 |       |
| ICC AUTHORIZED    | 2,459      | 76.7  | 27,098   | 80.5 | 405,517,316     | 81.9  |
| ICC EXEMPT        | 731        | 22.8  | 6,439    | 19.1 | 87,877,758      | 17.8  |
| OTHER             | 18         | 0.6   | 117      | 0.3  | 1,643,667       | 0.3   |
| TOTAL             | 3,208      | 100.1 | 33,654   | 99.9 | 495,037,741     | 100.0 |

In 1990, less than 1 out of every 14 (7.3 percent) commercial vehicle accidents produced fatalities. Fatal accidents averaged 1.3 deaths each. Figures 1-1, 1-2, and 1-3 show the rates at which fatalities, injuries, and property damage — by accident and trip type — were generated during 1990. In general, the fatality rate for collision accidents was 2.5 times higher than the rate for non-collision accidents (Figure 1-1). Non-fatal injuries also occurred more frequently in collisions than in non-collisions (Figure 1-2). Trip type — local versus over-the-

road — does not appear to have significantly affected fatality and injury rates (Figures 1-1 and 1-2). Property damage in non-collision accidents was produced at a rate over 60 percent higher than in collision accidents (Figure 1-3). This may have been the result of relatively high cargo losses sustained during non-collision accidents (e.g., when vehicles jackknifed). Also, property damage resulting from over-the-road accidents was generated at a rate nearly 40 percent higher than in accidents occurring during local trips.





## STATE ACCIDENT STATISTICS

During 1990, reported accidents occurred in every state, the District of Columbia, Puerto Rico, and the Virgin Islands. Additional accidents involving U.S. carriers in foreign commerce (in Canada and Mexico) were also reported.

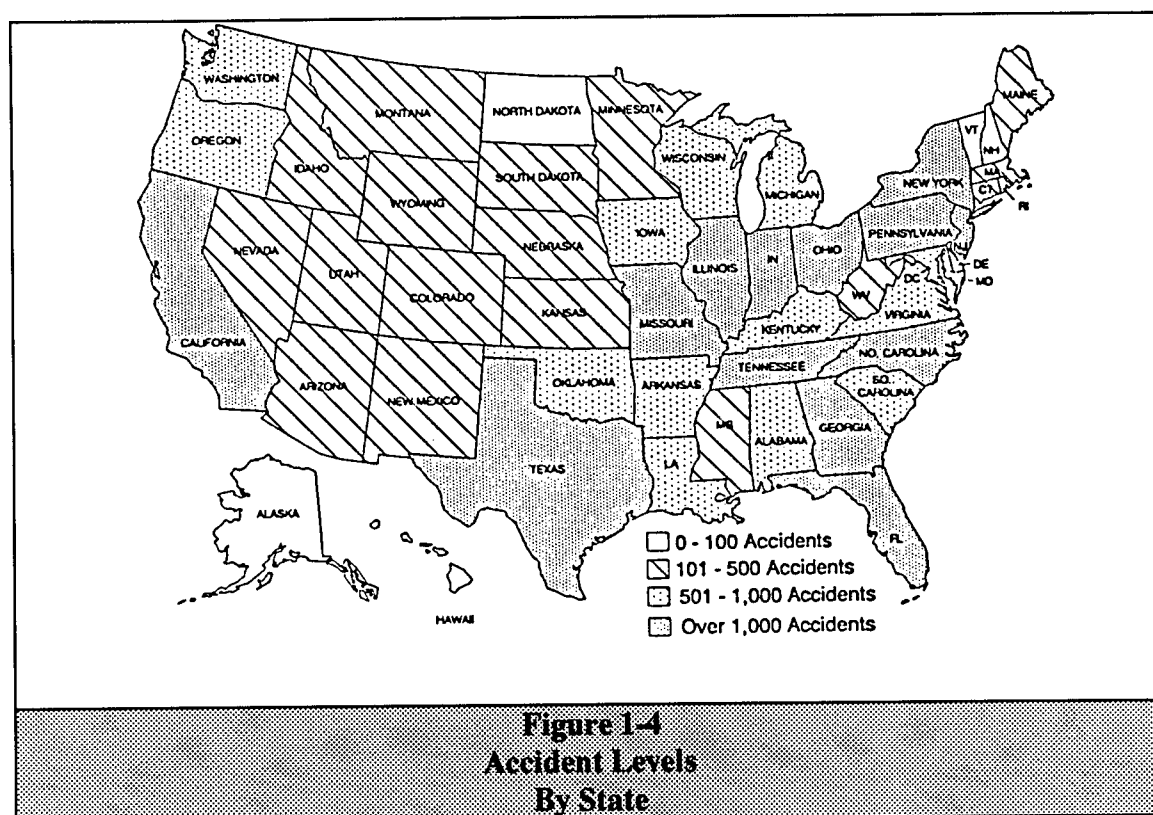
Figure 1-4 compares levels of accidents by state. The largest number of accidents were reported in the travel corridor extending northeast, from Missouri to New York. Large numbers of accidents also occurred in Texas, California, and several southeastern states. In general, accidents in a given state were experienced in proportion to the volume of commercial vehicle traffic in that state. Hence, more accidents occurred in states east of the Mississippi River than in

states west of the river.

Tables 1-6 and 1-7 summarize the statistics on accident classes and consequences by state. In 1990, reported accidents ranged from a low of 10 in Hawaii to a high of 2,220 in Texas (Table 1-6). Reported fatalities stretched from 1 in the Hawaii to 214 in Texas (Table 1-7).

Twenty-nine percent of all accidents reported during the year occurred in just five states: Texas, Illinois, California, Ohio, and Pennsylvania (Table 1-6). Thirty-nine percent of the reported fatalities occurred in eight states: Texas, Ohio, Tennessee, California, Indiana, Pennsylvania, Georgia, and North Carolina (Table 1-7).

Table 1-8 compares the percentage of accidents, by state, which were fatal.



**Table 1-6**  
**Accident Class Totals**  
**By State**

| STATE             | FATAL ACCIDENTS |       | INJURY ACCIDENTS |      | PROPERTY DAMAGE<br>ACCIDENTS |       | TOTAL ACCIDENTS |      |
|-------------------|-----------------|-------|------------------|------|------------------------------|-------|-----------------|------|
|                   | #               | %     | #                | %    | #                            | %     | #               | %    |
| ALABAMA           | 79              | 3.0   | 491              | 2.5  | 283                          | 2.1   | 853             | 2.4  |
| ALASKA            | 2               | 0.1   | 18               | 0.1  | 21                           | 0.2   | 41              | 0.1  |
| ARIZONA           | 41              | 1.6   | 242              | 1.2  | 179                          | 1.3   | 462             | 1.3  |
| ARKANSAS          | 48              | 1.8   | 332              | 1.7  | 243                          | 1.8   | 623             | 1.7  |
| CALIFORNIA        | 136             | 5.2   | 1,159            | 5.9  | 737                          | 5.4   | 2,032           | 5.7  |
| COLORADO          | 27              | 1.0   | 227              | 1.2  | 176                          | 1.3   | 430             | 1.2  |
| CONNECTICUT       | 24              | 0.9   | 214              | 1.1  | 198                          | 1.4   | 436             | 1.2  |
| DELAWARE          | 12              | 0.5   | 97               | 0.5  | 45                           | 0.3   | 154             | 0.4  |
| DIST. OF COLUMBIA | 4               | 0.2   | 49               | 0.3  | 21                           | 0.2   | 74              | 0.2  |
| FLORIDA           | 112             | 4.3   | 674              | 3.5  | 367                          | 2.7   | 1,153           | 3.2  |
| GEORGIA           | 110             | 4.2   | 751              | 3.8  | 424                          | 3.1   | 1,285           | 3.6  |
| HAWAII            | 1               | 0.0   | 5                | 0.0  | 4                            | 0.0   | 10              | 0.0  |
| IDAHO             | 13              | 0.5   | 75               | 0.4  | 100                          | 0.7   | 188             | 0.5  |
| ILLINOIS          | 108             | 4.1   | 1,141            | 5.8  | 916                          | 6.7   | 2,165           | 6.0  |
| INDIANA           | 118             | 4.5   | 780              | 4.0  | 566                          | 4.1   | 1,464           | 4.1  |
| IOWA              | 33              | 1.3   | 271              | 1.4  | 284                          | 2.1   | 588             | 1.6  |
| KANSAS            | 33              | 1.3   | 255              | 1.3  | 186                          | 1.4   | 474             | 1.3  |
| KENTUCKY          | 64              | 2.4   | 394              | 2.0  | 255                          | 1.9   | 713             | 2.0  |
| LOUISIANA         | 68              | 2.6   | 450              | 2.3  | 252                          | 1.8   | 770             | 2.1  |
| MAINE             | 12              | 0.5   | 56               | 0.3  | 59                           | 0.4   | 127             | 0.4  |
| MARYLAND          | 34              | 1.3   | 479              | 2.5  | 269                          | 2.0   | 782             | 2.2  |
| MASSACHUSETTS     | 34              | 1.3   | 258              | 1.3  | 150                          | 1.1   | 442             | 1.2  |
| MICHIGAN          | 74              | 2.8   | 503              | 2.6  | 314                          | 2.3   | 891             | 2.5  |
| MINNESOTA         | 38              | 1.5   | 236              | 1.2  | 217                          | 1.6   | 491             | 1.4  |
| MISSISSIPPI       | 48              | 1.8   | 265              | 1.4  | 174                          | 1.3   | 487             | 1.4  |
| MISSOURI          | 88              | 3.4   | 609              | 3.1  | 458                          | 3.3   | 1,155           | 3.2  |
| MONTANA           | 15              | 0.6   | 71               | 0.4  | 72                           | 0.5   | 158             | 0.4  |
| NEBRASKA          | 27              | 1.0   | 188              | 1.0  | 171                          | 1.2   | 386             | 1.1  |
| NEVADA            | 16              | 0.6   | 102              | 0.5  | 85                           | 0.6   | 203             | 0.6  |
| NEW HAMPSHIRE     | 11              | 0.4   | 47               | 0.2  | 27                           | 0.2   | 85              | 0.2  |
| NEW JERSEY        | 45              | 1.7   | 553              | 2.8  | 420                          | 3.1   | 1,018           | 2.8  |
| NEW MEXICO        | 27              | 1.0   | 181              | 0.9  | 120                          | 0.9   | 328             | 0.9  |
| NEW YORK          | 85              | 3.2   | 791              | 4.0  | 646                          | 4.7   | 1,522           | 4.2  |
| NORTH CAROLINA    | 109             | 4.2   | 691              | 3.5  | 402                          | 2.9   | 1,202           | 3.3  |
| NORTH DAKOTA      | 2               | 0.1   | 24               | 0.1  | 41                           | 0.3   | 67              | 0.2  |
| OHIO              | 155             | 5.9   | 1,118            | 5.7  | 752                          | 5.5   | 2,025           | 5.6  |
| OKLAHOMA          | 43              | 1.6   | 265              | 1.4  | 200                          | 1.5   | 508             | 1.4  |
| OREGON            | 31              | 1.2   | 306              | 1.6  | 276                          | 2.0   | 613             | 1.7  |
| PENNSYLVANIA      | 115             | 4.4   | 1,130            | 5.8  | 750                          | 5.5   | 1,995           | 5.6  |
| RHODE ISLAND      | 3               | 0.1   | 40               | 0.2  | 23                           | 0.2   | 66              | 0.2  |
| SOUTH CAROLINA    | 71              | 2.7   | 387              | 2.0  | 230                          | 1.7   | 688             | 1.9  |
| SOUTH DAKOTA      | 6               | 0.2   | 50               | 0.3  | 55                           | 0.4   | 111             | 0.3  |
| TENNESSEE         | 93              | 3.6   | 580              | 3.0  | 378                          | 2.8   | 1,051           | 2.9  |
| TEXAS             | 167             | 6.4   | 1,237            | 6.3  | 816                          | 5.9   | 2,220           | 6.2  |
| UTAH              | 13              | 0.5   | 111              | 0.6  | 103                          | 0.8   | 227             | 0.6  |
| VERMONT           | 3               | 0.1   | 37               | 0.2  | 48                           | 0.3   | 88              | 0.2  |
| VIRGINIA          | 68              | 2.6   | 531              | 2.7  | 296                          | 2.2   | 895             | 2.5  |
| WASHINGTON        | 39              | 1.5   | 273              | 1.4  | 213                          | 1.6   | 525             | 1.5  |
| WEST VIRGINIA     | 33              | 1.3   | 224              | 1.1  | 155                          | 1.1   | 412             | 1.1  |
| WISCONSIN         | 54              | 2.1   | 349              | 1.8  | 287                          | 2.1   | 690             | 1.9  |
| WYOMING           | 16              | 0.6   | 146              | 0.7  | 173                          | 1.3   | 335             | 0.9  |
| U.S. TERRITORIES  |                 |       |                  |      |                              |       |                 |      |
| AMER. SAMOA       | 0               | 0.0   | 0                | 0.0  | 0                            | 0.0   | 0               | 0.0  |
| CANAL ZONE        | 0               | 0.0   | 0                | 0.0  | 0                            | 0.0   | 0               | 0.0  |
| GUAM              | 0               | 0.0   | 0                | 0.0  | 0                            | 0.0   | 0               | 0.0  |
| PUERTO RICO       | 2               | 0.1   | 0                | 0.0  | 1                            | 0.0   | 3               | 0.0  |
| VIRGIN ISLANDS    | 0               | 0.0   | 1                | 0.0  | 0                            | 0.0   | 1               | 0.0  |
| CANADA            | 9               | 0.3   | 68               | 0.3  | 92                           | 0.7   | 169             | 0.5  |
| MEXICO            | 0               | 0.0   | 1                | 0.0  | 2                            | 0.0   | 3               | 0.0  |
| STATE NOT RPTD.   | 0               | 0.0   | 0                | 0.0  | 1                            | 0.0   | 1               | 0.0  |
| TOTAL             | 2,619           | 100.1 | 19,533           | 99.9 | 13,733                       | 100.5 | 35,885          | 99.6 |

*Accidents Reported by Motor Carriers of Property 1990*

| Table 1-7<br>Accident Consequences<br>By State |            |       |          |       |                 |      |
|------------------------------------------------|------------|-------|----------|-------|-----------------|------|
| STATE                                          | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |      |
|                                                | #          | %     | #        | %     | \$              | %    |
| ALABAMA                                        | 99         | 3.0   | 838      | 2.4   | 11,767,254      | 2.3  |
| ALASKA                                         | 2          | 0.1   | 21       | 0.1   | 962,195         | 0.2  |
| ARIZONA                                        | 52         | 1.6   | 460      | 1.3   | 6,940,489       | 1.4  |
| ARKANSAS                                       | 58         | 1.8   | 591      | 1.7   | 10,323,954      | 2.0  |
| CALIFORNIA                                     | 159        | 4.8   | 2,079    | 6.1   | 25,489,827      | 5.0  |
| COLORADO                                       | 31         | 0.9   | 410      | 1.2   | 7,702,829       | 1.5  |
| CONNECTICUT                                    | 27         | 0.8   | 340      | 1.0   | 4,975,348       | 1.0  |
| DELAWARE                                       | 17         | 0.5   | 180      | 0.5   | 1,629,433       | 0.3  |
| DIST. OF COLUMBIA                              | 4          | 0.1   | 72       | 0.2   | 583,862         | 0.1  |
| FLORIDA                                        | 128        | 3.9   | 1,182    | 3.4   | 14,212,404      | 2.8  |
| GEORGIA                                        | 138        | 4.2   | 1,306    | 3.8   | 16,387,729      | 3.2  |
| HAWAII                                         | 1          | 0.0   | 7        | 0.0   | 147,022         | 0.0  |
| IDAHO                                          | 20         | 0.6   | 125      | 0.4   | 4,541,538       | 0.9  |
| ILLINOIS                                       | 126        | 3.8   | 1,916    | 5.6   | 32,250,529      | 6.4  |
| INDIANA                                        | 146        | 4.4   | 1,461    | 4.3   | 24,514,059      | 4.8  |
| IOWA                                           | 38         | 1.1   | 491      | 1.4   | 9,516,244       | 1.9  |
| KANSAS                                         | 41         | 1.2   | 460      | 1.3   | 8,100,792       | 1.6  |
| KENTUCKY                                       | 83         | 2.5   | 736      | 2.1   | 9,264,339       | 1.8  |
| LOUISIANA                                      | 86         | 2.6   | 852      | 2.5   | 9,467,527       | 1.9  |
| MAINE                                          | 13         | 0.4   | 93       | 0.3   | 1,923,825       | 0.4  |
| MARYLAND                                       | 40         | 1.2   | 782      | 2.3   | 8,741,015       | 1.7  |
| MASSACHUSETTS                                  | 41         | 1.2   | 408      | 1.2   | 4,253,157       | 0.8  |
| MICHIGAN                                       | 89         | 2.7   | 810      | 2.4   | 12,425,443      | 2.4  |
| MINNESOTA                                      | 43         | 1.3   | 414      | 1.2   | 7,111,216       | 1.4  |
| MISSISSIPPI                                    | 65         | 2.0   | 487      | 1.4   | 7,703,400       | 1.5  |
| MISSOURI                                       | 114        | 3.4   | 1,141    | 3.3   | 16,086,999      | 3.2  |
| MONTANA                                        | 16         | 0.5   | 134      | 0.4   | 2,984,166       | 0.6  |
| NEBRASKA                                       | 33         | 1.0   | 335      | 1.0   | 6,018,722       | 1.2  |
| NEVADA                                         | 21         | 0.6   | 196      | 0.6   | 3,317,431       | 0.7  |
| NEW HAMPSHIRE                                  | 14         | 0.4   | 87       | 0.3   | 784,433         | 0.2  |
| NEW JERSEY                                     | 55         | 1.7   | 974      | 2.8   | 11,848,737      | 2.3  |
| NEW MEXICO                                     | 46         | 1.4   | 310      | 0.9   | 5,852,052       | 1.2  |
| NEW YORK                                       | 101        | 3.1   | 1,328    | 3.9   | 20,348,094      | 4.0  |
| NORTH CAROLINA                                 | 138        | 4.2   | 1,295    | 3.8   | 17,007,288      | 3.4  |
| NORTH DAKOTA                                   | 3          | 0.1   | 39       | 0.1   | 1,119,585       | 0.2  |
| OHIO                                           | 191        | 5.8   | 1,878    | 5.5   | 26,863,202      | 5.3  |
| OKLAHOMA                                       | 52         | 1.6   | 483      | 1.4   | 8,456,537       | 1.7  |
| OREGON                                         | 40         | 1.2   | 534      | 1.6   | 9,023,721       | 1.8  |
| PENNSYLVANIA                                   | 141        | 4.3   | 1,945    | 5.7   | 27,672,296      | 5.5  |
| RHODE ISLAND                                   | 3          | 0.1   | 57       | 0.2   | 474,123         | 0.1  |
| SOUTH CAROLINA                                 | 87         | 2.6   | 682      | 2.0   | 10,292,523      | 2.0  |
| SOUTH DAKOTA                                   | 6          | 0.2   | 84       | 0.2   | 1,525,673       | 0.3  |
| TENNESSEE                                      | 167        | 5.0   | 1,106    | 3.2   | 14,359,103      | 2.8  |
| TEXAS                                          | 214        | 6.5   | 2,082    | 6.1   | 28,938,669      | 5.7  |
| UTAH                                           | 17         | 0.5   | 224      | 0.7   | 6,269,679       | 1.2  |
| VERMONT                                        | 3          | 0.1   | 62       | 0.2   | 1,251,715       | 0.2  |
| VIRGINIA                                       | 90         | 2.7   | 954      | 2.8   | 12,419,521      | 2.4  |
| WASHINGTON                                     | 45         | 1.4   | 483      | 1.4   | 7,828,870       | 1.5  |
| WEST VIRGINIA                                  | 58         | 1.8   | 398      | 1.2   | 6,485,542       | 1.3  |
| WISCONSIN                                      | 66         | 2.0   | 604      | 1.8   | 9,098,016       | 1.8  |
| WYOMING                                        | 25         | 0.8   | 276      | 0.8   | 7,059,278       | 1.4  |
| U.S. TERRITORIES                               |            |       |          |       |                 |      |
| AMERICAN SAMOA                                 | 0          | 0.0   | 0        | 0.0   | 0               | 0.0  |
| CANAL ZONE                                     | 0          | 0.0   | 0        | 0.0   | 0               | 0.0  |
| GUAM                                           | 0          | 0.0   | 0        | 0.0   | 0               | 0.0  |
| PUERTO RICO                                    | 3          | 0.1   | 0        | 0.0   | 51,600          | 0.0  |
| VIRGIN ISLANDS                                 | 0          | 0.0   | 1        | 0.0   | 0               | 0.0  |
| CANADA                                         | 13         | 0.4   | 134      | 0.4   | 2,910,380       | 0.6  |
| MEXICO                                         | 0          | 0.0   | 1        | 0.0   | 40,000          | 0.0  |
| STATE NOT RPTD.                                | 0          | 0.0   | 0        | 0.0   | 7,000           | 0.0  |
| TOTAL                                          | 3,309      | 100.2 | 34,348   | 100.4 | 507,330,385     | 99.9 |

**Table 1-8**  
**Percent Fatal Accidents**  
**By State**

| STATE             | FATAL<br>ACCIDENTS | TOTAL<br>ACCIDENTS | % FATAL<br>ACCIDENTS |
|-------------------|--------------------|--------------------|----------------------|
| ALABAMA           | 79                 | 853                | 9.3                  |
| ALASKA            | 2                  | 41                 | 4.9                  |
| ARIZONA           | 41                 | 462                | 8.9                  |
| ARKANSAS          | 48                 | 623                | 7.7                  |
| CALIFORNIA        | 136                | 2,032              | 6.7                  |
| COLORADO          | 27                 | 430                | 6.3                  |
| CONNECTICUT       | 24                 | 436                | 5.5                  |
| DELAWARE          | 12                 | 154                | 7.8                  |
| DIST. OF COLUMBIA | 4                  | 74                 | 5.4                  |
| FLORIDA           | 112                | 1,153              | 9.7                  |
| GEORGIA           | 110                | 1,285              | 8.6                  |
| HAWAII            | 1                  | 10                 | 10.0                 |
| IDAHO             | 13                 | 188                | 6.9                  |
| ILLINOIS          | 108                | 2,165              | 5.0                  |
| INDIANA           | 118                | 1,464              | 8.1                  |
| IOWA              | 33                 | 588                | 5.6                  |
| KANSAS            | 33                 | 474                | 7.0                  |
| KENTUCKY          | 64                 | 713                | 9.0                  |
| LOUISIANA         | 68                 | 770                | 8.8                  |
| MAINE             | 12                 | 127                | 9.4                  |
| MARYLAND          | 34                 | 782                | 4.3                  |
| MASSACHUSETTS     | 34                 | 442                | 7.7                  |
| MICHIGAN          | 74                 | 891                | 8.3                  |
| MINNESOTA         | 38                 | 491                | 7.7                  |
| MISSISSIPPI       | 48                 | 487                | 9.9                  |
| MISSOURI          | 88                 | 1,155              | 7.6                  |
| MONTANA           | 15                 | 158                | 9.5                  |
| NEBRASKA          | 27                 | 386                | 7.0                  |
| NEVADA            | 16                 | 203                | 7.9                  |
| NEW HAMPSHIRE     | 11                 | 85                 | 12.9                 |
| NEW JERSEY        | 45                 | 1,018              | 4.4                  |
| NEW MEXICO        | 27                 | 328                | 8.2                  |
| NEW YORK          | 85                 | 1,522              | 5.6                  |
| NORTH CAROLINA    | 109                | 1,202              | 9.1                  |
| NORTH DAKOTA      | 2                  | 67                 | 3.0                  |
| OHIO              | 155                | 2,025              | 7.7                  |
| OKLAHOMA          | 43                 | 508                | 8.5                  |
| OREGON            | 31                 | 613                | 5.1                  |
| PENNSYLVANIA      | 115                | 1,995              | 5.8                  |
| RHODE ISLAND      | 3                  | 66                 | 4.5                  |
| SOUTH CAROLINA    | 71                 | 688                | 10.3                 |
| SOUTH DAKOTA      | 6                  | 111                | 5.4                  |
| TENNESSEE         | 93                 | 1,051              | 8.8                  |
| TEXAS             | 167                | 2,220              | 7.5                  |
| UTAH              | 13                 | 227                | 5.7                  |
| VERMONT           | 3                  | 88                 | 3.4                  |
| VIRGINIA          | 68                 | 895                | 7.6                  |
| WASHINGTON        | 39                 | 525                | 7.4                  |
| WEST VIRGINIA     | 33                 | 412                | 8.0                  |
| WISCONSIN         | 54                 | 690                | 7.8                  |
| WYOMING           | 16                 | 335                | 4.8                  |
| U.S. TERRITORIES  |                    |                    |                      |
| AMERICAN SAMOA    | 0                  | 0                  | 0.0                  |
| CANAL ZONE        | 0                  | 0                  | 0.0                  |
| GUAM              | 0                  | 0                  | 0.0                  |
| PUERTO RICO       | 2                  | 3                  | 66.7                 |
| VIRGIN ISLANDS    | 0                  | 1                  | 0.0                  |
| CANADA            | 9                  | 169                | 5.3                  |
| MEXICO            | 0                  | 3                  | 0.0                  |
| STATE NOT RPTD.   | 0                  | 1                  | 0.0                  |
| TOTAL             | 2,619              | 35,885             | 7.3                  |

## FIVE-YEAR TRENDS

Figures 1-5 through 1-8 summarize accident trends for the five-year period, 1986–1990. In reviewing these data, note that the property damage thresholds (i.e., the lower-end dollar boundaries at which accidents are reportable according to the Federal property damage criterion) have been adjusted for inflation in terms of 1975 dollars. Hence, those accidents which were reported, but which did not meet the adjusted thresholds, have been excluded from the figures and tables.

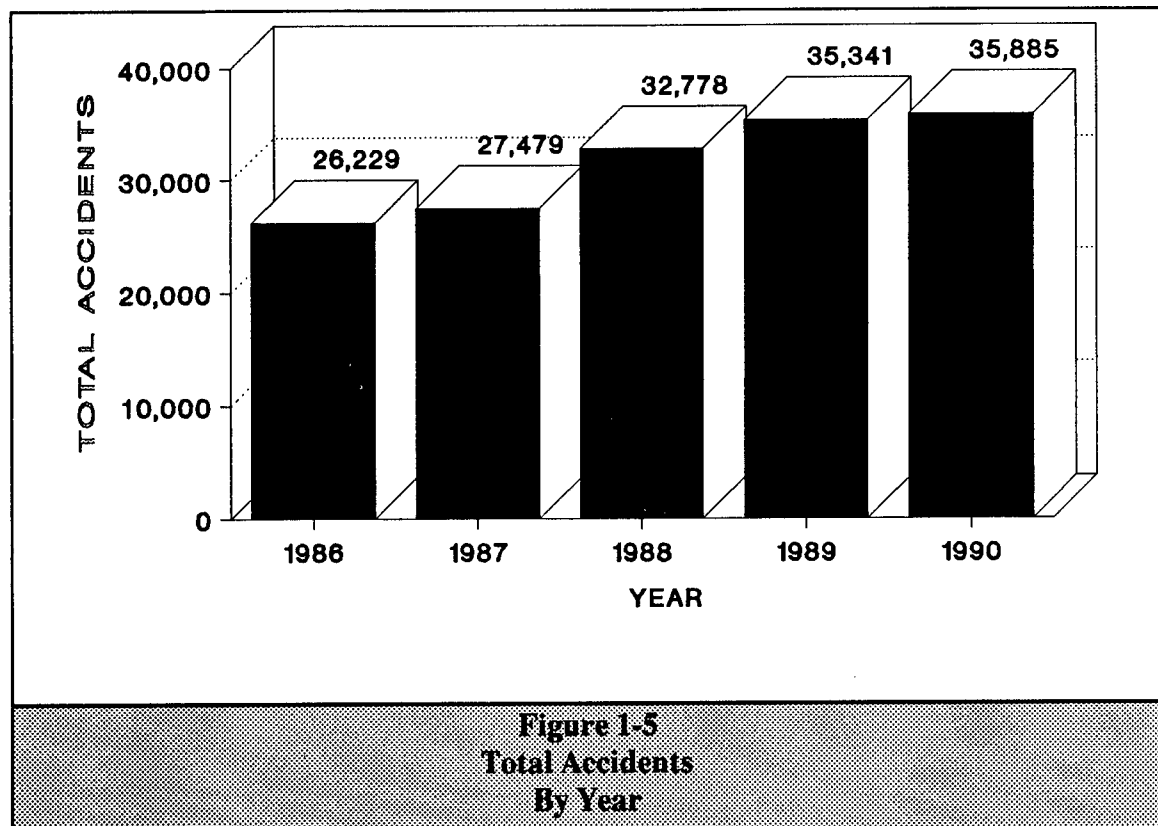
Key trends during the five-year period included the following:

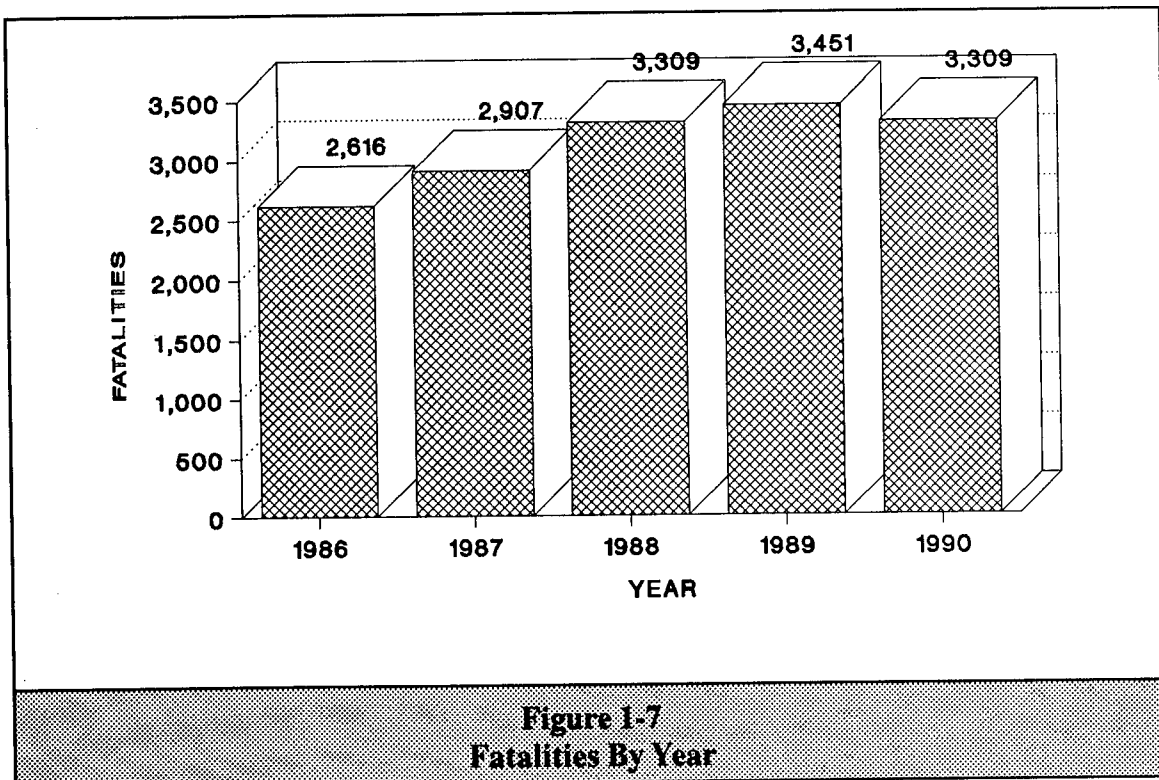
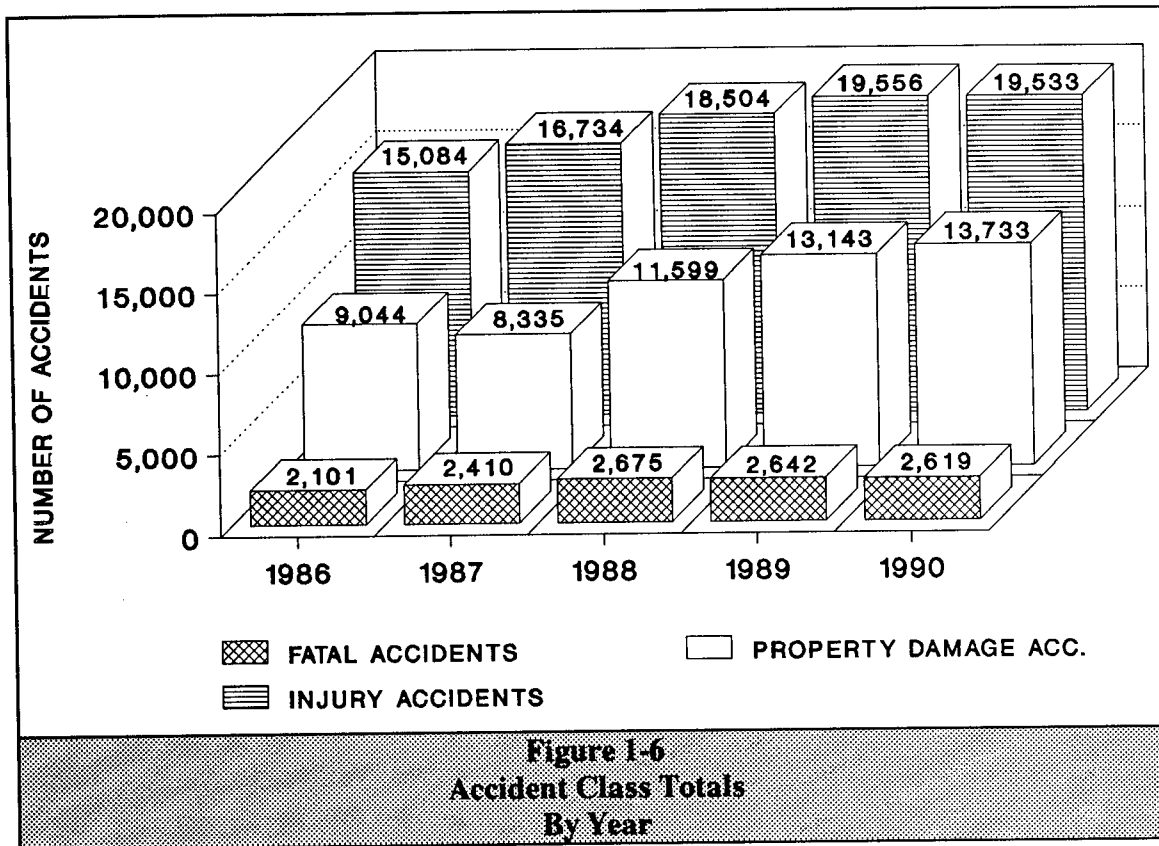
- Accidents reported in 1990 increased 37 percent over total acci-

dents reported in 1986 (Figure 1-5).

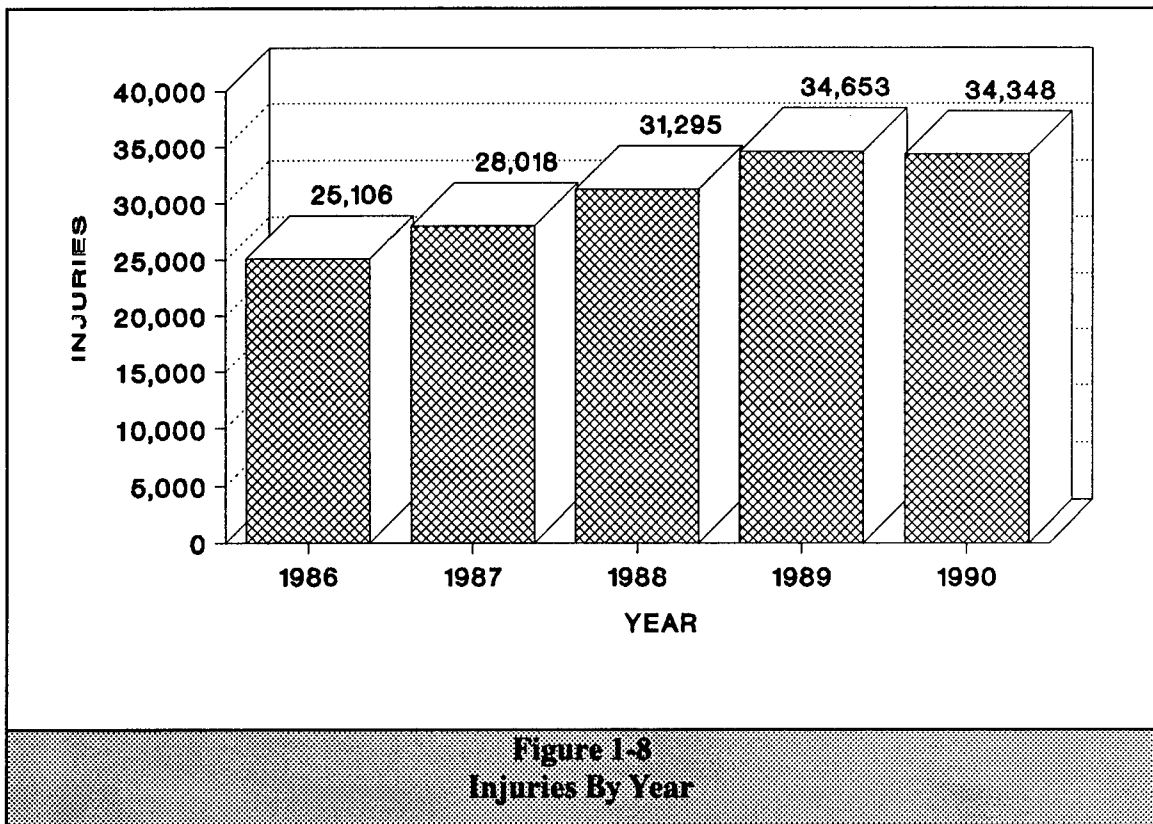
- Fatal accidents increased 25 percent over the 1986 total, to reach 2,619 in 1990 (Figure 1-6). Total fatalities increased by 26 percent to 3,309 in 1990 (Figure 1-7).
- Total injuries, exclusive of fatalities, increased nearly 37 percent over the 1986 value, to 34,348 in 1990 (Figure 1-8).

Table 1-9 summarizes the statistical data for the five-year period. Percentage changes from year to year are shown for each statistic. In general, accidents, fatalities, injuries, and property damage, after declining in 1986, tended to increase significantly each year until 1990.





*Accidents Reported by Motor Carriers of Property 1990*



| Table 1-9<br>Annual Percentage Change in Accident Statistics |           |           |           |           |           |
|--------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
|                                                              | 1986-1987 | 1987-1988 | 1988-1989 | 1989-1990 | 1986-1990 |
| ACCIDENTS                                                    |           |           |           |           |           |
| FATAL                                                        | +14.7     | +11.0     | -1.2      | -0.9      | +24.7     |
| INJURY                                                       | +10.9     | +10.6     | +5.7      | -0.1      | +29.5     |
| PROPERTY DAMAGE                                              | -7.8      | +39.2     | +13.3     | +4.5      | +51.8     |
| TOTAL                                                        | +4.8      | +19.3     | +7.8      | +1.5      | +36.8     |
| CONSEQUENCES                                                 |           |           |           |           |           |
| FATALITIES                                                   | +11.1     | +13.8     | +4.3      | -4.1      | +26.5     |
| INJURIES                                                     | +11.6     | +11.7     | +10.7     | -0.9      | +36.8     |

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## Chapter 2

## THE DRIVER

### **Physical Condition of Drivers Accidents and Driver Age Accidents and Hours Driven Use of Seat Belts**

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**A**t the time of the accident, the typical professional driver was male, between the ages of 25 and 45, and reported to be in good physical condition. Driver age appeared to impact accident severity most significantly when drivers were under 21 and over 64 years of age; in general, drivers over 45 tended to be involved in accidents resulting in slightly more fatalities than those under 45. The majority of accidents occurred within the first four hours of vehicle operation. When accidents occurred, truck drivers who had not worn seat belts were more likely to be killed than drivers who used their belts.

#### **PHYSICAL CONDITION OF DRIVERS**

In 9 out of 10 accidents, physical impairment of the commercial vehicle driver was not a causal factor, according to carriers' accounts of the accidents reported in 1990. As shown in Table 2-1, driver's condition just prior to the accident was reported as "apparently normal" in 97 percent of the accidents; 2 percent of the drivers were acknowledged to have "dozed at the wheel"; and 1 percent of the drivers were reported to have "been drinking." A very small number of drivers (11) involved in accidents were said to have been granted "waiver of certain physical defects" (49 CFR 391.49).

| <b>Table 2-1</b><br><b>Accidents, Fatalities, Injuries, and Property Damage</b><br><b>By Reported Condition of Driver at Time of Accident</b> |           |      |            |       |          |       |                 |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------------|-------|----------|-------|-----------------|-------|
| CONDITION OF DRIVER                                                                                                                           | ACCIDENTS |      | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|                                                                                                                                               | #         | %    | #          | %     | #        | %     | \$              | %     |
| APPARENTLY NORMAL                                                                                                                             | 34,728    | 96.8 | 3,174      | 95.9  | 33,177   | 96.6  | 478,011,333     | 94.2  |
| SICK                                                                                                                                          | 80        | 0.2  | 16         | 0.5   | 70       | 0.2   | 1,375,352       | 0.3   |
| HAD BEEN DRINKING                                                                                                                             | 230       | 0.6  | 21         | 0.6   | 229      | 0.7   | 4,876,237       | 1.0   |
| DOZED AT WHEEL                                                                                                                                | 616       | 1.7  | 36         | 1.1   | 639      | 1.9   | 18,527,646      | 3.7   |
| MEDICAL WAIVER                                                                                                                                | 11        | 0.0  | 2          | 0.1   | 6        | 0.0   | 184,829         | 0.0   |
| OTHER                                                                                                                                         | 211       | 0.6  | 58         | 1.8   | 216      | 0.6   | 4,129,929       | 0.8   |
| CONDITION NOT RPTD.                                                                                                                           | 9         | 0.0  | 2          | 0.1   | 11       | 0.0   | 225,059         | 0.0   |
| TOTAL                                                                                                                                         | 35,885    | 99.9 | 3,309      | 100.1 | 34,348   | 100.0 | 507,330,385     | 100.0 |

In reviewing the data on driver condition, it should be noted that carrier officials actually reporting the accidents to DOT were not usually present at the accident sites to observe the conditions of their drivers firsthand. Also, police reports which could help substantiate carriers' accounts of their drivers' conditions were not routinely available to DOT analysts in 1990.

Table 2-2 reveals that persons killed or injured in commercial vehicle accidents were more likely to be non-occupants of trucks (e.g., drivers and passengers in other vehicles, bicyclists, or pedestrians) than truck occupants. In 1990, 8 out of every 10 persons killed in commercial vehicle accidents were non-occupants of

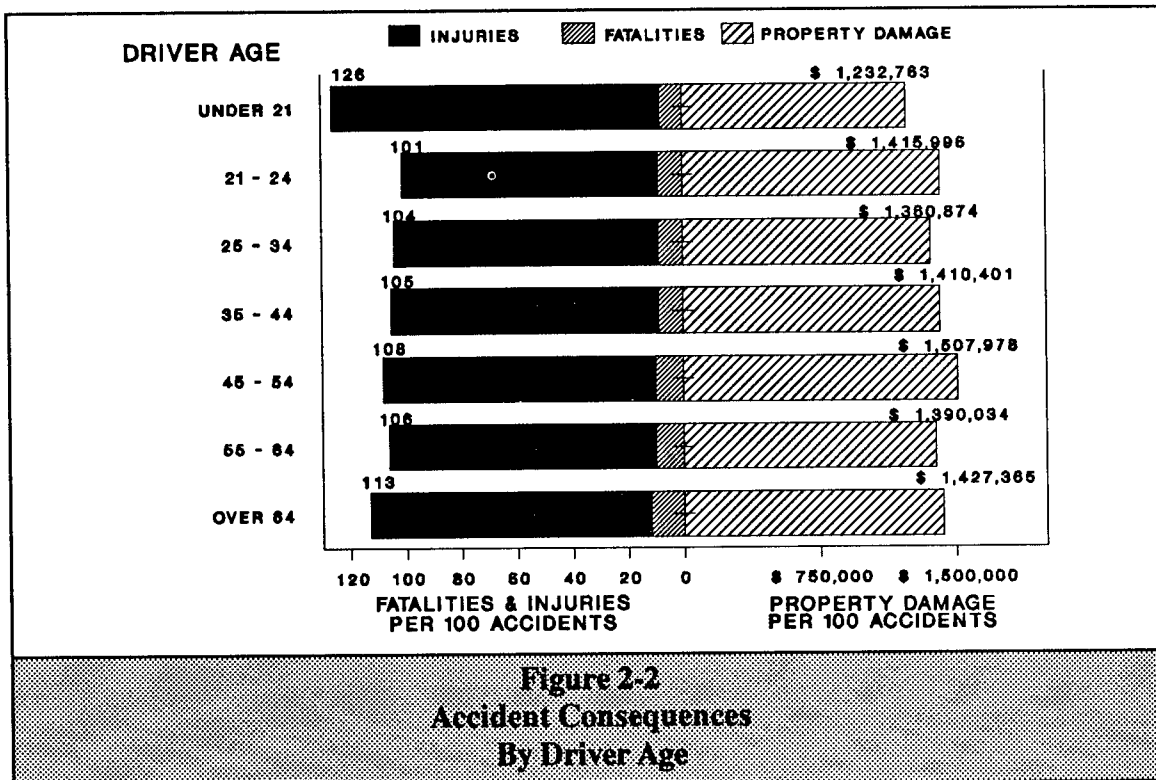
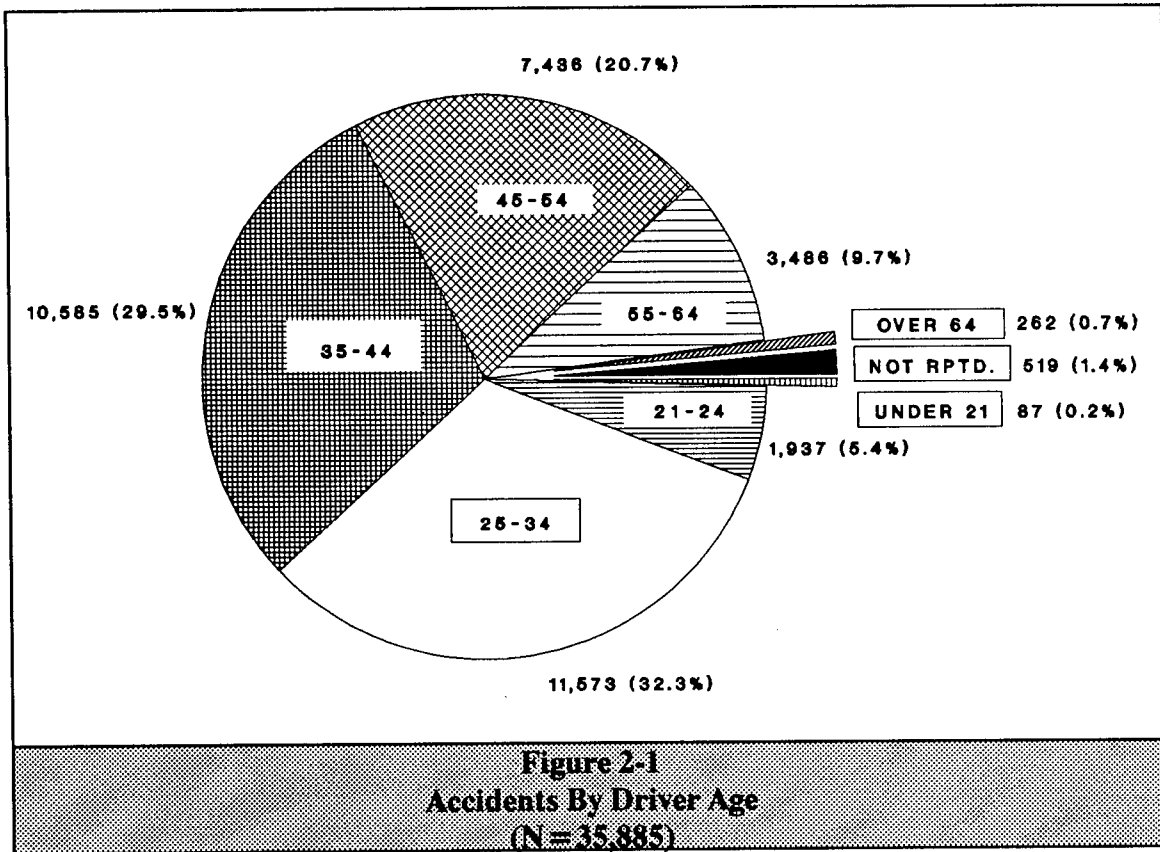
the trucks; nearly 7 out of every 10 persons injured were also non-occupants.

## ACCIDENTS AND DRIVER AGE

Figure 2-1 breaks down total accidents by driver age. Not surprisingly, the bulk of the accidents (82 percent) involved drivers between the ages of 25 and 54, which is consistent with the age spread of most of the nation's professional drivers. Approximately 1 percent of the accidents involved drivers under 21 and over 64.

Figure 2-2 compares accident severity by driver age. In general, when driver age was between 21 and 44, age did not appear to significantly impact the severity of accidents (fatalities and injuries per

| <b>Table 2-2</b><br><b>Fatalities and Injuries Among</b><br><b>Truck Occupants and Truck Non-Occupants</b> |            |       |          |      |
|------------------------------------------------------------------------------------------------------------|------------|-------|----------|------|
|                                                                                                            | FATALITIES |       | INJURIES |      |
|                                                                                                            | #          | %     | #        | %    |
| DRIVER                                                                                                     | 399        | 12.1  | 7,866    | 22.9 |
| RELIEF DRIVER                                                                                              | 41         | 1.2   | 631      | 1.8  |
| OTHER AUTHORIZED TRUCK OCCUPANT                                                                            | 93         | 2.8   | 1,810    | 5.3  |
| UNAUTHORIZED TRUCK OCCUPANT                                                                                | 20         | 0.6   | 187      | 0.5  |
| PERSON NOT IN TRUCK                                                                                        | 2,756      | 83.3  | 23,854   | 69.4 |
| TOTAL                                                                                                      | 3,309      | 100.0 | 34,348   | 99.9 |



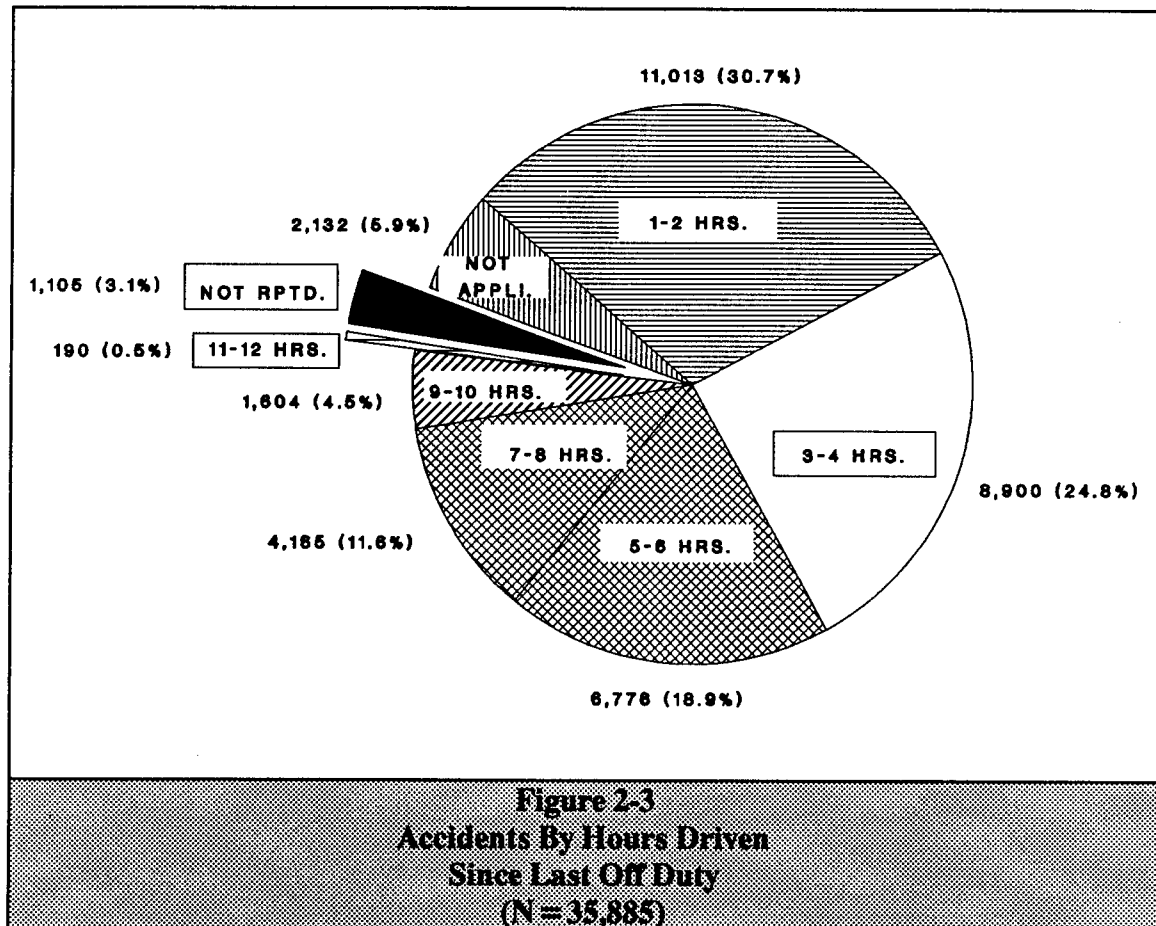
100 accidents ranged from 101 to 105). In contrast, accidents involving drivers under 21 and over 44 were, at least on the surface, more severe (fatalities/injuries per 100 accidents ranged from 108 to 126). However, it should be noted that this apparent difference in accident severity by driver age was not tested for statistical significance. Also, drivers under 21 were generally prohibited from operating commercial vehicles subject to Federal regulation (see 49 CFR 391.2 and 391.67 for exceptions).

The 1990 data, viewed in isolation, do not reveal whether drivers in some age groups are more accident-prone than

drivers in other groups. To make such a determination, data on accident occurrences by age group would need to be examined in relation to the total number of drivers within each age category.

## ACCIDENTS AND HOURS DRIVEN

As driving time increased, total accidents reported declined (Figure 2-3). Hence, 31 percent of all accidents occurred within 1-2 hours after the last eight-hour period off-duty, 25 percent within 3-4 hours, 19 percent within 5-6 hours, etc.



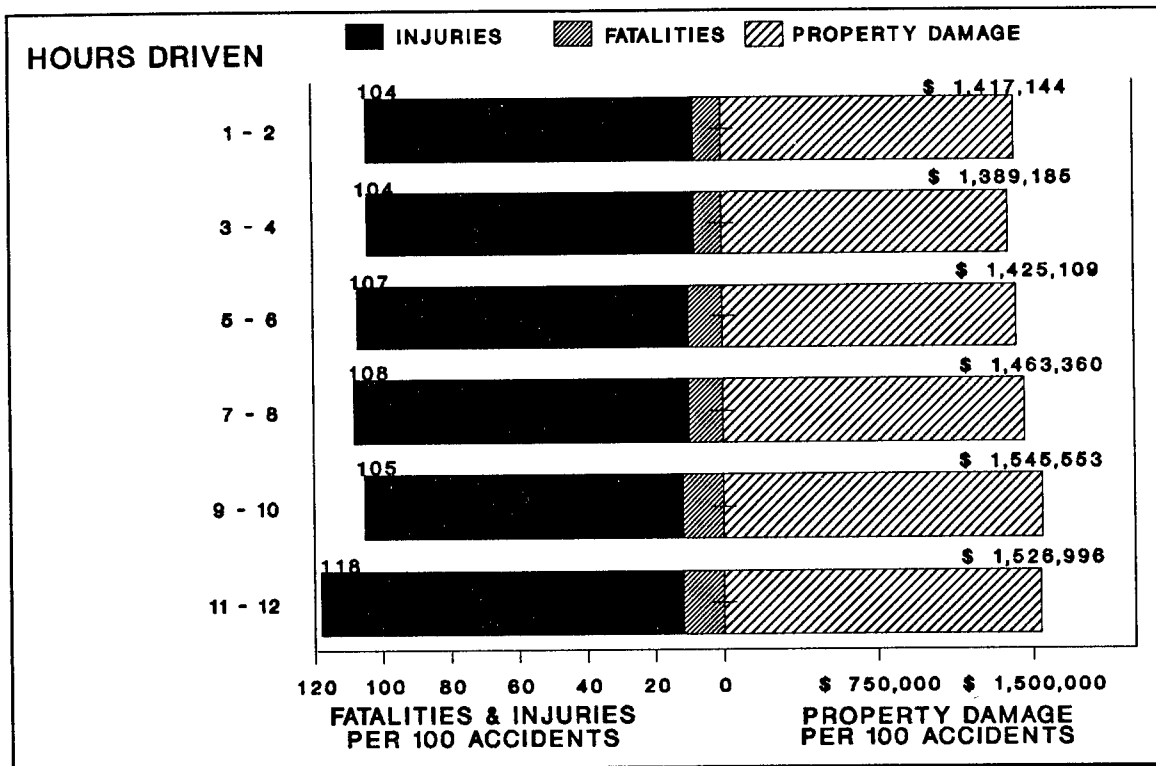
Accidents were included in the "Not Applicable" category (Figure 2-3) if the last eight hours off-duty were accumulated in two separate rest periods (49 CFR 394.20(a), Item 11E).

Figure 2-4 compares the effect of hours driven on accident severity. In general, fatality rates increased as hours driven escalated: accidents involving truck drivers on the road for 4 hours or less resulted in 8 fatalities per 100 accidents; the fatality rate increased to 10 fatalities per 100 accidents when driving time stretched from 4-8 hours, and to 12 fatalities when driving time went from 8-12 hours. In other words, accidents were 50 percent more likely to be fatal when truck hours driven exceeded 8 than

when driving time was 4 hours or less.

Even though the relationship between hours driven and the incidence of injuries was much less pronounced, it cannot be totally ignored; accidents were 10 percent more likely to result in non-fatal injuries when truck hours driven exceeded 10 than when driving time was 4 hours or less.

Table 2-3 compares the incidence of collision and non-collision accidents relative to hours driven. In 1990, the incidence of non-collision accidents increased by 14 percent as hours driven grew from two hours or less to 11 hours or more.



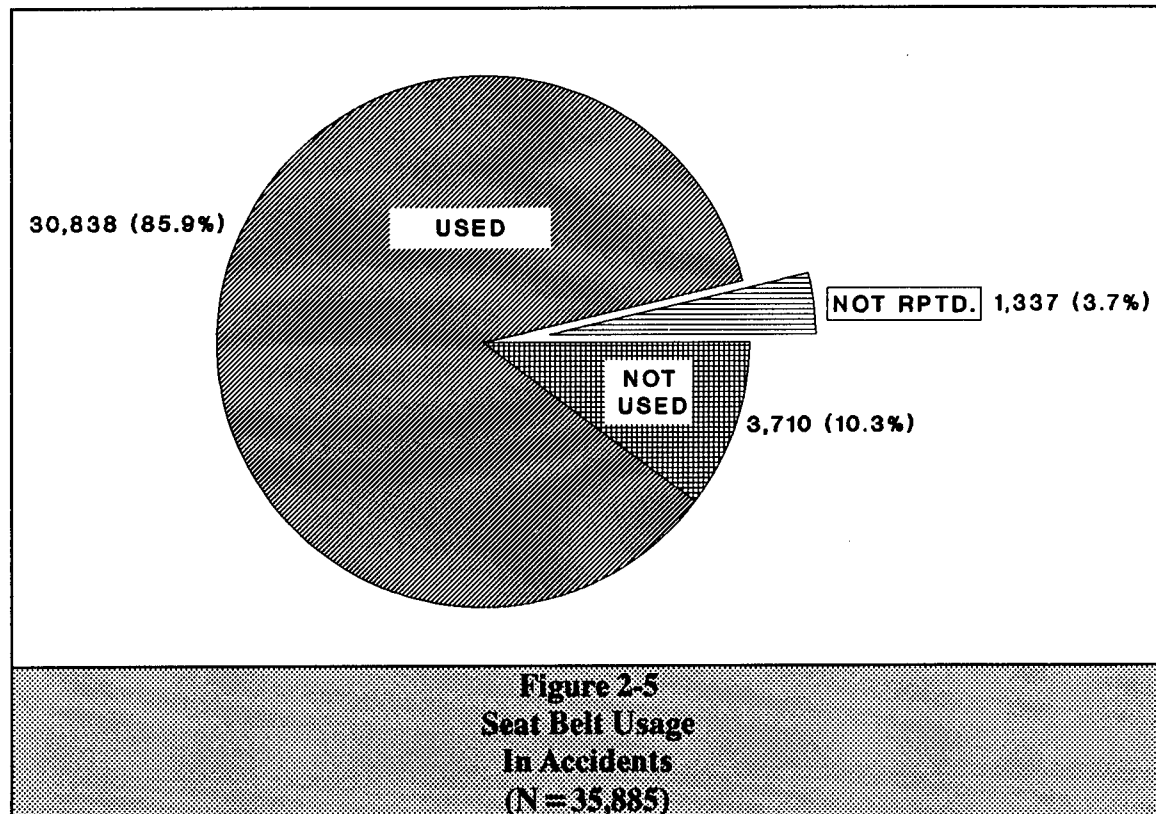
**Figure 2-4**  
**Accident Consequences**  
**By Hours Driven**

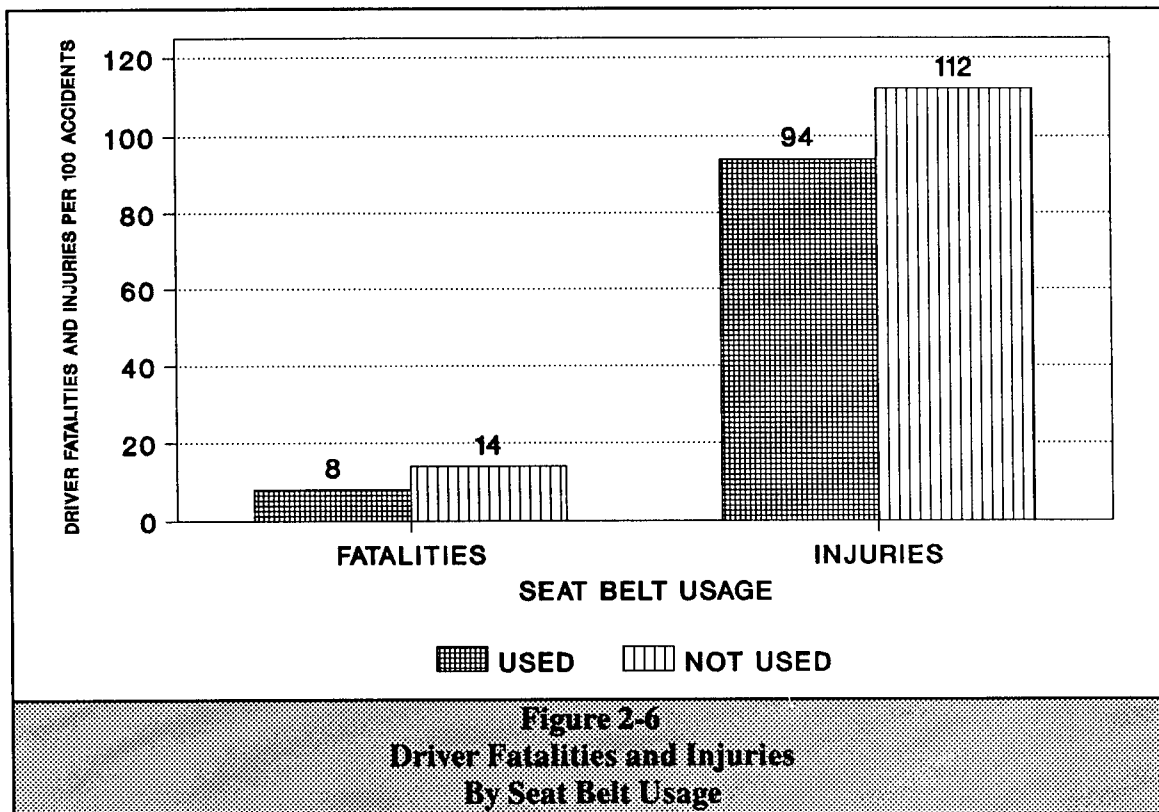
| Table 2-3<br>Accident Type<br>By Hours Driven |                        |      |                            |      |              |     |                 |       |
|-----------------------------------------------|------------------------|------|----------------------------|------|--------------|-----|-----------------|-------|
| HOURS DRIVEN                                  | COLLISION<br>ACCIDENTS |      | NON-COLLISION<br>ACCIDENTS |      | NOT REPORTED |     | TOTAL ACCIDENTS |       |
|                                               | #                      | %    | #                          | %    | #            | %   | #               | %     |
| 1-2 HOURS                                     | 8,866                  | 80.5 | 2,142                      | 19.4 | 5            | 0.0 | 11,013          | 100.0 |
| 3-4 HOURS                                     | 7,082                  | 79.6 | 1,813                      | 20.4 | 5            | 0.1 | 8,900           | 100.0 |
| 5-6 HOURS                                     | 5,392                  | 79.6 | 1,379                      | 20.4 | 5            | 0.1 | 6,776           | 100.0 |
| 7-8 HOURS                                     | 3,333                  | 80.0 | 828                        | 19.9 | 4            | 0.1 | 4,165           | 100.0 |
| 9-10 HOURS                                    | 1,271                  | 79.2 | 332                        | 20.7 | 1            | 0.1 | 1,604           | 100.0 |
| 11-12 HOURS                                   | 148                    | 77.9 | 42                         | 22.1 | 0            | 0.0 | 190             | 100.0 |
| NOT APPLICABLE                                | 1,720                  | 80.7 | 410                        | 19.2 | 2            | 0.1 | 2,132           | 100.0 |
| HOURS NOT RPTD.                               | 835                    | 75.6 | 268                        | 24.3 | 2            | 0.2 | 1,105           | 100.0 |
| TOTAL                                         | 28,647                 | 79.8 | 7,214                      | 20.1 | 24           | 0.1 | 35,885          | 100.0 |

## USE OF SEAT BELTS

While 98 percent of the commercial vehicles involved in reported accidents in 1990 were equipped with seat belts – and while use of seat belts by commercial drivers was mandated by Federal regulation (49 CFR 392.16) – belts were not worn in at least 10 percent of the acci-

dents, according to the carrier officials who reported the accidents (Figure 2-5). The impact of not wearing seat belts was straightforward – truck drivers who did not use the belts were 75 percent more likely to be killed. Also, drivers not using seat belts were 19 percent more likely to be injured than drivers who used their belts (Figure 2-6).







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## Chapter 3

## THE VEHICLE

### Vehicle Type and Length Gross Vehicle Weight Cargo Types Hazardous Materials Mechanical Defects

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The typical commercial vehicle involved in reportable accidents was a tractor-semitrailer. The vehicle was between 55 and 69 feet long, had a gross vehicle weight between 10,000 and 80,000 pounds, and was either hauling "general freight" or reported to be empty at the time of the accident. Vehicle defects were rarely cited as the cause of the accident. When defects were acknowledged, however, brake and wheel/tire failures were most often said to have been the problem.

#### VEHICLE TYPE AND LENGTH

Seventy-one percent of all accidents reported in 1990 involved the tractor-semitrailer configuration (Table 3-1). These accidents accounted for 72 percent of all fatalities, 69 percent of the injuries, and 74 percent of the property damage reported during the year. In contrast, single-unit trucks accounted for 14 percent of all accidents. The tractor-semi-

trailer-full trailer configuration was involved in 4 percent of the accidents. (A visual depiction of common commercial vehicle configurations is shown in the Appendix.)

Table 3-2 summarizes the variance in total accidents and accident consequences by vehicle length. Almost half of the accidents (49 percent) involved vehicles between 55 and 64 feet in length, and approximately 1 out of 4 (25 percent) of the accidents involved vehicles under 55 feet. Vehicle configurations in excess of 64 feet accounted for just over 1 in 5 accidents (22 percent).

Figure 3-1 examines the relationship between the length of commercial vehicles involved in accidents and accident severity. Interestingly, shorter vehicles tended to be involved in accidents which produced the highest frequency of fatalities and injuries.

**Table 3-1**  
**Accidents, Fatalities, Injuries, and Property Damage**  
**By Vehicle Configuration**

| VEHICLE CONFIGURATION | ACCIDENTS |       | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|-----------------------|-----------|-------|------------|-------|----------|-------|-----------------|-------|
|                       | #         | %     | #          | %     | #        | %     | \$              | %     |
| TRUCK                 | 5,062     | 14.1  | 428        | 12.9  | 5,496    | 16.0  | 52,207,994      | 10.3  |
| TRUCK-FULL TRAILER    | 422       | 1.2   | 62         | 1.9   | 391      | 1.1   | 6,309,714       | 1.2   |
| TRUCK-OTHER           | 145       | 0.4   | 14         | 0.4   | 114      | 0.3   | 2,036,916       | 0.4   |
| TRACTOR               | 2,255     | 6.3   | 197        | 6.0   | 2,353    | 6.9   | 30,836,891      | 6.1   |
| TRACTOR-SEMI-TRAILER  | 25,439    | 70.9  | 2,382      | 72.0  | 23,590   | 68.7  | 376,697,318     | 74.3  |
| TRACTOR-SEMI-FULL     | 1,420     | 4.0   | 106        | 3.2   | 1,199    | 3.5   | 21,961,481      | 4.3   |
| TRACTOR-SEMI-FL-FL*   | 77        | 0.2   | 3          | 0.1   | 64       | 0.2   | 1,413,715       | 0.3   |
| TRACTOR-OTHER         | 544       | 1.5   | 70         | 2.1   | 628      | 1.8   | 9,442,837       | 1.9   |
| OTHER                 | 433       | 1.2   | 33         | 1.0   | 415      | 1.2   | 5,007,686       | 1.0   |
| CONFIG. NOT RPTD.     | 88        | 0.2   | 14         | 0.4   | 98       | 0.3   | 1,415,833       | 0.3   |
| TOTAL                 | 35,885    | 100.0 | 3,309      | 100.0 | 34,348   | 100.0 | 507,330,385     | 100.1 |

\*FL = FULL

**Table 3-2**  
**Accident Class Totals**  
**By Vehicle Length**

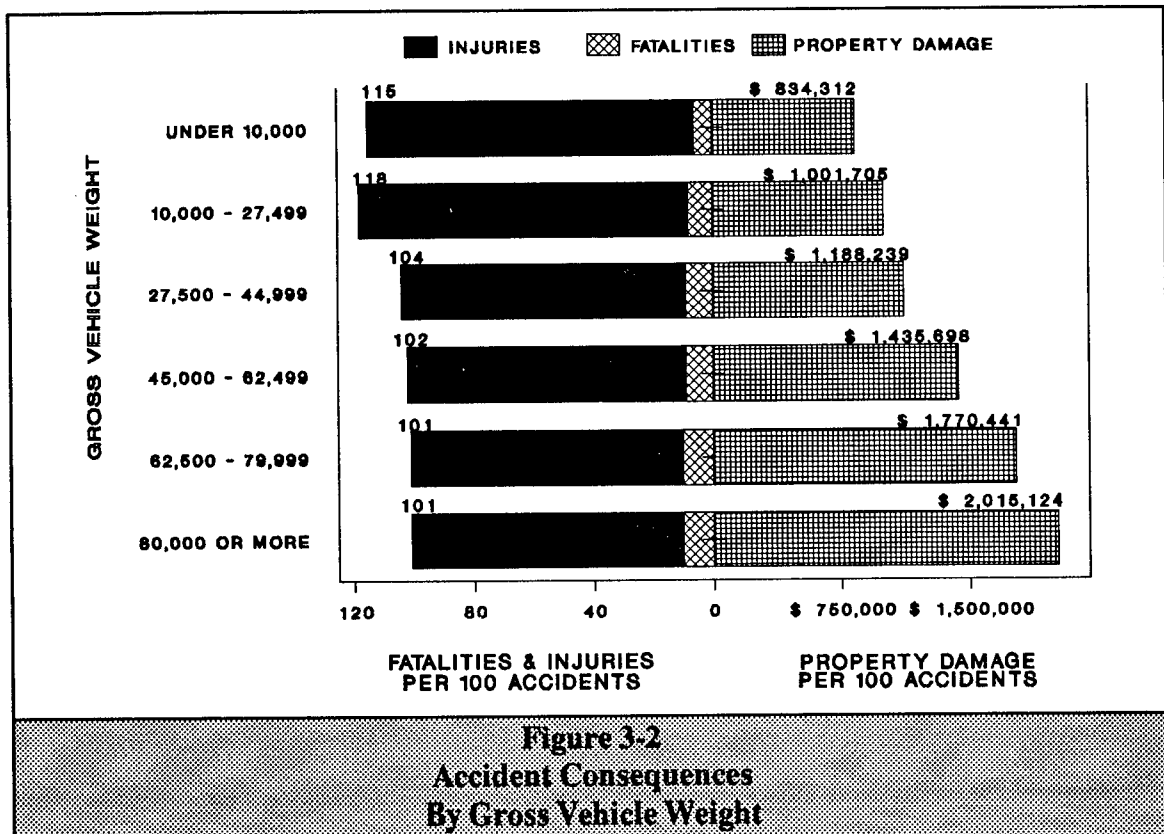
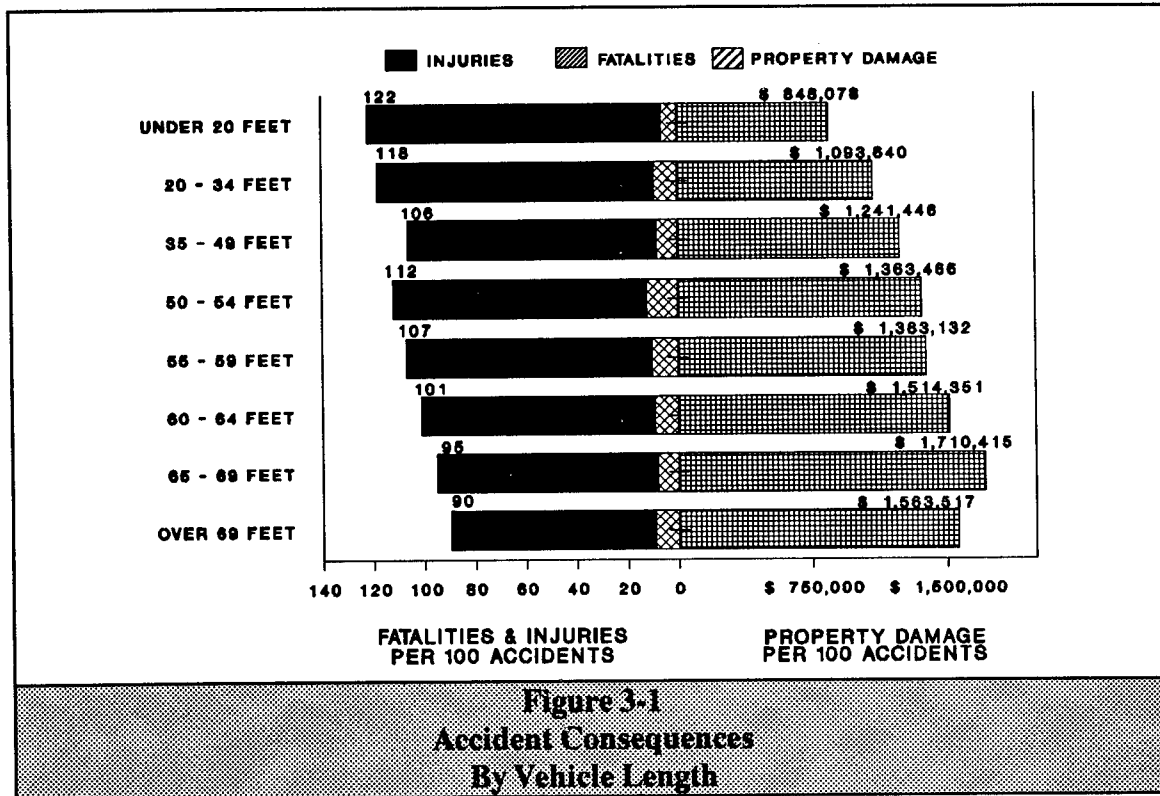
| VEHICLE LENGTH   | FATAL ACCIDENTS |       | INJURY ACCIDENTS |      | PROPERTY DAMAGE<br>ACCIDENTS |      | TOTAL ACCIDENTS |      |
|------------------|-----------------|-------|------------------|------|------------------------------|------|-----------------|------|
|                  | #               | %     | #                | %    | #                            | %    | #               | %    |
| UNDER 20 FEET    | 90              | 3.4   | 1,279            | 6.5  | 511                          | 3.7  | 1,880           | 5.2  |
| 20 - 34 FEET     | 256             | 9.8   | 2,213            | 11.3 | 1,085                        | 7.9  | 3,554           | 9.9  |
| 35 - 49 FEET     | 129             | 4.9   | 1,121            | 5.7  | 682                          | 5.0  | 1,932           | 5.4  |
| 50 - 54 FEET     | 158             | 6.0   | 920              | 4.7  | 590                          | 4.3  | 1,668           | 4.6  |
| 55 - 59 FEET     | 602             | 23.0  | 4,128            | 21.1 | 2,671                        | 19.4 | 7,401           | 20.6 |
| 60 - 64 FEET     | 735             | 28.1  | 5,266            | 27.0 | 4,204                        | 30.6 | 10,205          | 28.4 |
| 65 - 69 FEET     | 414             | 15.8  | 3,151            | 16.1 | 2,832                        | 20.6 | 6,397           | 17.8 |
| OVER 69 FEET     | 105             | 4.0   | 795              | 4.1  | 767                          | 5.6  | 1,667           | 4.6  |
| LENGTH NOT RPTD. | 130             | 5.0   | 660              | 3.4  | 391                          | 2.8  | 1,181           | 3.3  |
| TOTAL            | 2,619           | 100.0 | 19,533           | 99.9 | 13,733                       | 99.9 | 35,885          | 99.8 |

## GROSS VEHICLE WEIGHT

The gross vehicle weight (GVW) of commercial vehicles involved in accidents reported in 1990 ranged from under 10,000 pounds to more than 80,000 pounds. Table 3-3 shows that more than 39 percent of all accidents involved vehicles having GVWs between 62,500 and 80,000 pounds; another 22 percent involved GVWs between 27,500 and 45,000 pounds. The data do not reveal whether vehicles in these two weight categories were actually more accident prone, or whether the majority of com-

mercial vehicles (when loaded) fell into these weight categories, and thus would be expected to be involved in a disproportionate number of total accidents.

There appears to be an inverse relationship between GVW and accident fatalities and injuries. In 1990, as GVW increased, the fatality/injury ratio tended to decrease (see Figure 3-2). For instance, accidents involving commercial vehicles with GVWs over 80,000 pounds resulted in 17 percent fewer fatalities/injuries (91 per 100 accidents) than accidents of vehicles under 10,000 pounds (109 per 100 accidents).



| Table 3-3<br>Accident Class Totals<br>By Gross Vehicle Weight |                 |       |                  |      |                              |       |                 |      |
|---------------------------------------------------------------|-----------------|-------|------------------|------|------------------------------|-------|-----------------|------|
| GROSS VEHICLE<br>WEIGHT IN LBS.                               | FATAL ACCIDENTS |       | INJURY ACCIDENTS |      | PROPERTY DAMAGE<br>ACCIDENTS |       | TOTAL ACCIDENTS |      |
|                                                               | #               | %     | #                | %    | #                            | %     | #               | %    |
| UNDER 10,000                                                  | 60              | 2.3   | 799              | 4.1  | 334                          | 2.4   | 1,193           | 3.3  |
| 10,000-27,499                                                 | 294             | 11.2  | 3,005            | 15.4 | 1,413                        | 10.3  | 4,712           | 13.1 |
| 27,500-44,999                                                 | 608             | 23.2  | 4,338            | 22.2 | 3,099                        | 22.6  | 8,045           | 22.4 |
| 45,000-62,499                                                 | 364             | 13.9  | 2,762            | 14.1 | 2,050                        | 14.9  | 5,176           | 14.4 |
| 62,500-79,999                                                 | 830             | 31.7  | 5,610            | 28.7 | 4,557                        | 33.2  | 10,997          | 30.6 |
| 80,000 OR MORE                                                | 193             | 7.4   | 1,279            | 6.5  | 1,087                        | 7.9   | 2,559           | 7.1  |
| WEIGHT NOT RPTD.                                              | 270             | 10.3  | 1,740            | 8.9  | 1,193                        | 8.7   | 3,203           | 8.9  |
| TOTAL                                                         | 2,619           | 100.0 | 19,533           | 99.9 | 13,733                       | 100.0 | 35,885          | 99.8 |

## CARGO TYPES

Table 3-4 displays accident class totals by cargo type. In 1990, 33 percent of the commercial vehicles involved in reported accidents were carrying "general freight" at the time of the accidents; 19 percent of the vehicles were empty. Accident class totals, when examined by cargo type, tended to mirror the percentage breakdown of total accidents by cargo type. For example, "solids

in bulk" were involved in 2.3 percent of all accidents and 1.9, 2.3, and 2.4 percent of all fatal, injury, and property damage accidents, respectively.

When accidents did occur, the likelihood that these accidents would result in fatalities appeared to vary by cargo classification (Table 3-5). For instance, commercial vehicles carrying liquids or gases in bulk, explosives, or farm products were each involved in accidents

| Table 3-4<br>Accident Class Totals<br>By Cargo Classification |                 |       |                  |      |                                 |      |                 |       |
|---------------------------------------------------------------|-----------------|-------|------------------|------|---------------------------------|------|-----------------|-------|
| CARGO CLASSIFICATION                                          | FATAL ACCIDENTS |       | INJURY ACCIDENTS |      | PROPERTY<br>DAMAGE<br>ACCIDENTS |      | TOTAL ACCIDENTS |       |
|                                                               | #               | %     | #                | %    | #                               | %    | #               | %     |
| GENERAL FREIGHT                                               | 680             | 26.0  | 6,360            | 32.6 | 4,704                           | 34.3 | 11,744          | 32.7  |
| HOUSEHOLD GOODS                                               | 60              | 2.3   | 471              | 2.4  | 418                             | 3.0  | 949             | 2.6   |
| METAL PRODUCTS                                                | 125             | 4.8   | 821              | 4.2  | 590                             | 4.3  | 1,536           | 4.3   |
| HEAVY MACHINERY                                               | 37              | 1.4   | 257              | 1.3  | 284                             | 2.1  | 578             | 1.6   |
| MOTOR VEHICLES                                                | 21              | 0.8   | 189              | 1.0  | 203                             | 1.5  | 413             | 1.2   |
| DRIVEAWAY-TOWAWAY                                             | 5               | 0.2   | 64               | 0.3  | 47                              | 0.3  | 116             | 0.3   |
| GASES IN BULK                                                 | 13              | 0.5   | 67               | 0.3  | 47                              | 0.3  | 127             | 0.4   |
| SOLIDS IN BULK                                                | 51              | 1.9   | 458              | 2.3  | 332                             | 2.4  | 841             | 2.3   |
| LIQUIDS IN BULK                                               | 161             | 6.1   | 872              | 4.5  | 544                             | 4.0  | 1,577           | 4.4   |
| EXPLOSIVES                                                    | 5               | 0.2   | 26               | 0.1  | 16                              | 0.1  | 47              | 0.1   |
| LOGS/POLES/LUMBER                                             | 64              | 2.4   | 398              | 2.0  | 276                             | 2.0  | 738             | 2.1   |
| EMPTY                                                         | 515             | 19.7  | 3,760            | 19.2 | 2,505                           | 18.2 | 6,780           | 18.9  |
| REFRIGERATED FOODS                                            | 218             | 8.3   | 1,329            | 6.8  | 1,158                           | 8.4  | 2,705           | 7.5   |
| MOBILE HOME                                                   | 5               | 0.2   | 35               | 0.2  | 50                              | 0.4  | 90              | 0.3   |
| FARM PRODUCTS                                                 | 61              | 2.3   | 282              | 1.4  | 260                             | 1.9  | 603             | 1.7   |
| OTHER                                                         | 557             | 21.3  | 3,897            | 20.0 | 2,132                           | 15.5 | 6,586           | 18.4  |
| CARGO NOT RPTD.                                               | 41              | 1.6   | 247              | 1.3  | 167                             | 1.2  | 455             | 1.3   |
| TOTAL                                                         | 2,619           | 100.0 | 19,533           | 99.9 | 13,733                          | 99.9 | 35,885          | 100.1 |

**Table 3-5**  
**Percent Fatal Accidents**  
**By Cargo Classification**

| CARGO CLASSIFICATION | FATAL ACCIDENTS | TOTAL ACCIDENTS | % FATAL ACCIDENTS |
|----------------------|-----------------|-----------------|-------------------|
| GENERAL FREIGHT      | 680             | 11,744          | 5.8               |
| HOUSEHOLD GOODS      | 60              | 949             | 6.3               |
| METAL PRODUCTS       | 125             | 1,536           | 8.1               |
| HEAVY MACHINERY      | 37              | 578             | 6.4               |
| MOTOR VEHICLES       | 21              | 413             | 5.1               |
| DRIVEAWAY-TOWAWAY    | 5               | 116             | 4.3               |
| GASES IN BULK        | 13              | 127             | 10.2              |
| SOLIDS IN BULK       | 51              | 841             | 6.1               |
| LIQUIDS IN BULK      | 161             | 1,577           | 10.2              |
| EXPLOSIVES           | 5               | 47              | 10.6              |
| LOGS/POLES/LUMBER    | 64              | 738             | 8.7               |
| EMPTY                | 515             | 6,780           | 7.6               |
| REFRIGERATED FOODS   | 218             | 2,705           | 8.1               |
| MOBILE HOME          | 5               | 90              | 5.6               |
| FARM PRODUCTS        | 61              | 603             | 10.1              |
| OTHER                | 557             | 6,586           | 8.5               |
| CARGO NOT RPTD.      | 41              | 455             | 9.0               |
| TOTAL                | 2,619           | 35,885          | 7.3               |

approximately 10 percent of the time. In contrast, commercial vehicles carrying driveaway/towaway vehicles were involved in accidents which resulted in fatalities about 4 percent of the time.

## HAZARDOUS MATERIALS

Approximately 5 percent of the accidents reported during 1990 involved commercial vehicles transporting hazardous materials, as defined by the *Hazardous Materials Regulations* (49 CFR 170 – 177). Table 3-6 shows that accidents in which hazardous materials were present resulted in 217 fatalities, 1,798 injuries, and property damage estimated at \$37

million. Nearly all the reported accidents involved for-hire carriers—private carriers reported only 19 accidents in which hazardous materials were present, down by nearly 50 percent from 1989.

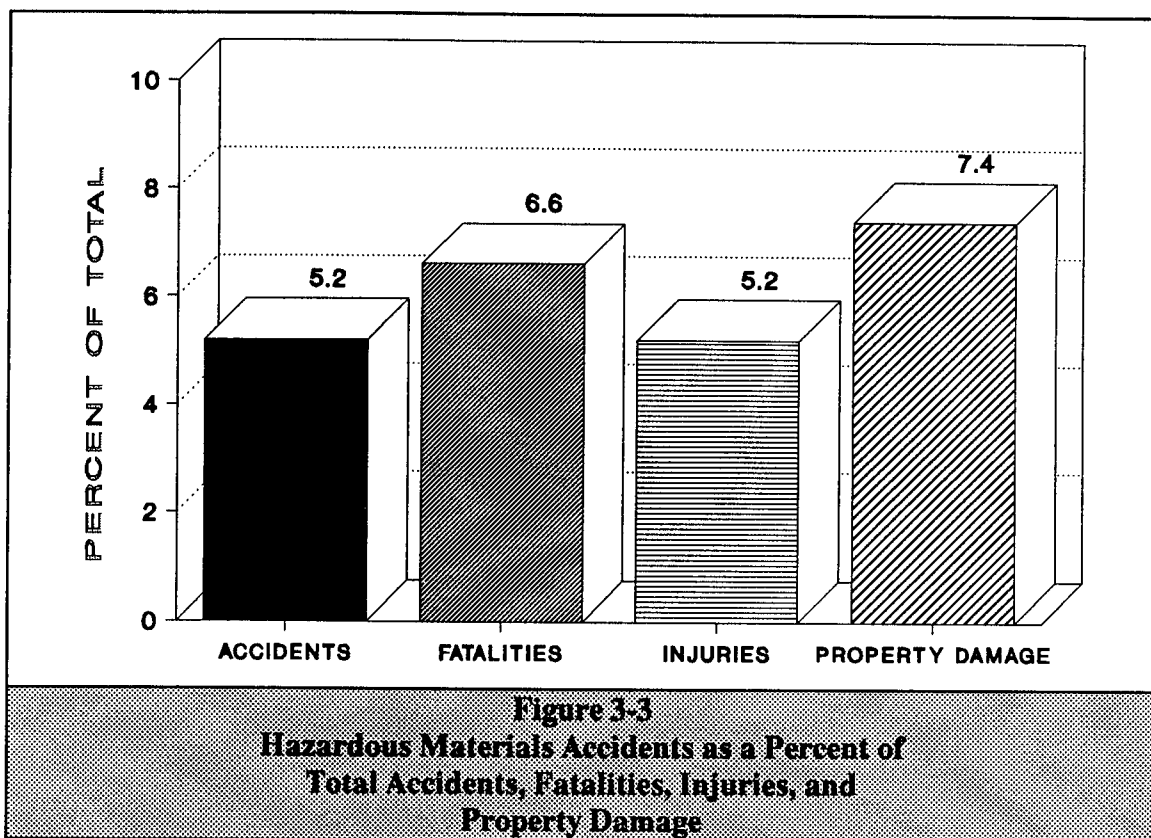
Figure 3-3 compares the proportion of 1990 accidents, fatalities, injuries, and property damage involving hazardous materials.

## MECHANICAL DEFECTS

Three percent of all carriers reporting accidents during 1990 said that their vehicles exhibited mechanical defects or failures at the time of the accidents

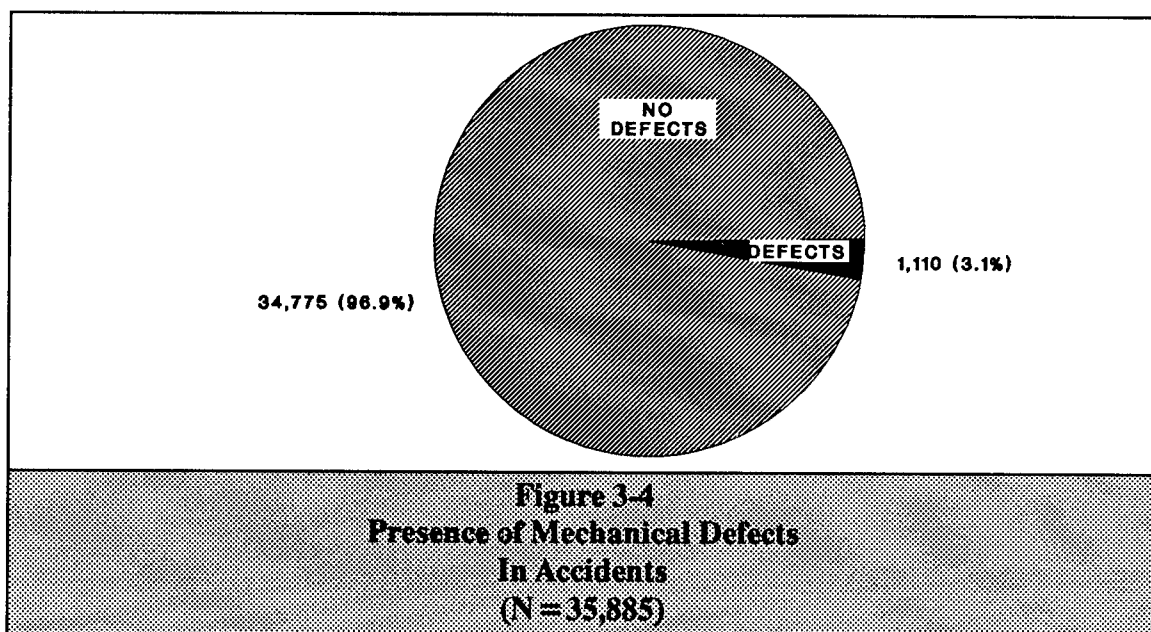
**Table 3-6**  
**Accidents, Fatalities, Injuries, and Property Damage**  
**Involving Hazardous Materials By Carrier Type**

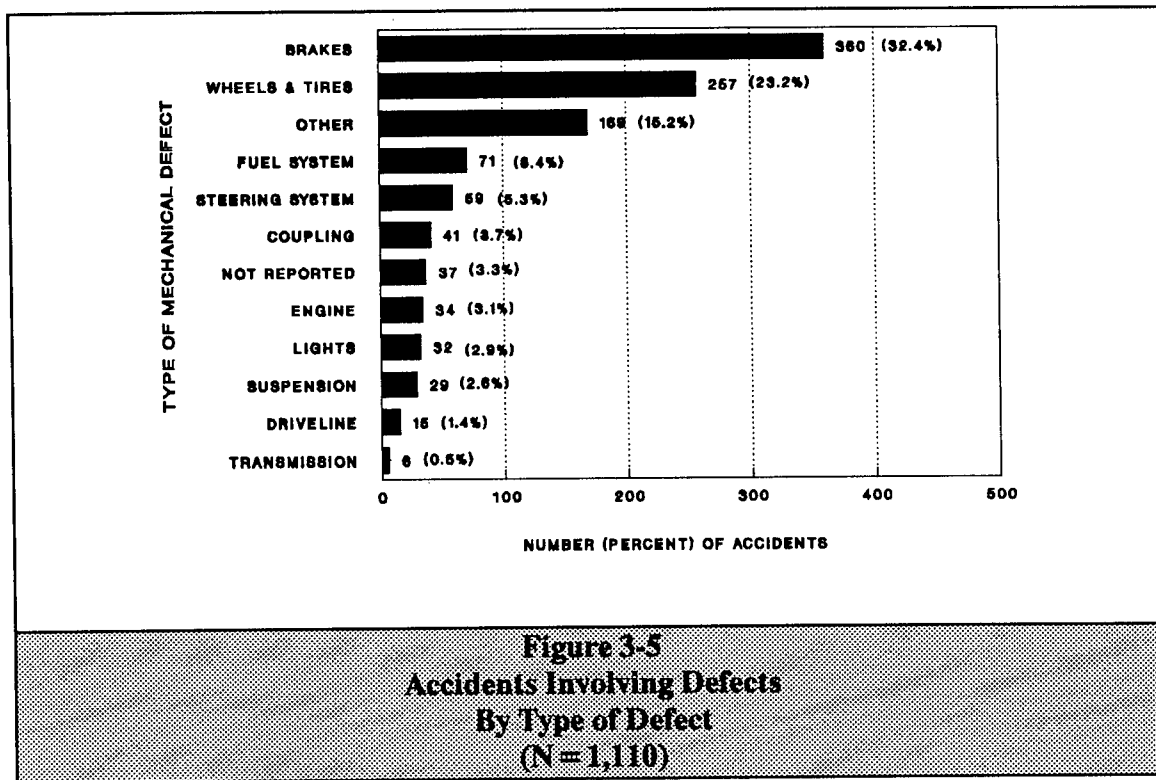
| CARRIER TYPE   | ACCIDENTS |       | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|----------------|-----------|-------|------------|-------|----------|-------|-----------------|-------|
|                | #         | %     | #          | %     | #        | %     | \$              | %     |
| FOR-HIRE       | 1,832     | 98.8  | 215        | 99.1  | 1,769    | 98.4  | 37,015,855      | 98.9  |
| PRIVATE        | 19        | 1.0   | 1          | 0.5   | 24       | 1.3   | 398,203         | 1.1   |
| TYPE NOT RPTD. | 3         | 0.2   | 1          | 0.5   | 5        | 0.3   | 18,400          | 0.0   |
| TOTAL          | 1,854     | 100.0 | 217        | 100.1 | 1,798    | 100.0 | 37,432,458      | 100.0 |



(Figure 3-4). Figure 3-5 indicates that when mechanical defects were cited, brake failures were most often said to be

the cause of the accidents (32 percent), followed by problems with wheels and tires (23 percent).







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## Chapter 4 THE ACCIDENT SETTING

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### Accident Locale Environmental Conditions Time of Day Day of Week and Month of Year

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The typical accident occurred in winter, on a weekday afternoon. At the time of the accident, weather and road conditions were favorable. The accident happened while the truck was travelling on a divided highway through a rural district. When the accident occurred, the truck driver was probably not seriously hurt, but one person not in the truck was injured or, even occasionally, killed.

#### ACCIDENT LOCALE

Figure 4-1 shows that a larger proportion of the commercial vehicle accidents reported in 1990 occurred in rural districts (53 percent) than in business districts (38 percent). Table 4-1 similarly indicates that more accidents happened on divided highways (49 percent) than on undivided highways (42 percent).

Table 4-1 also reveals, however, that a larger proportion of fatal accidents occurred on undivided highways (49 percent) than on divided highways (46 percent). Furthermore, the data indicate

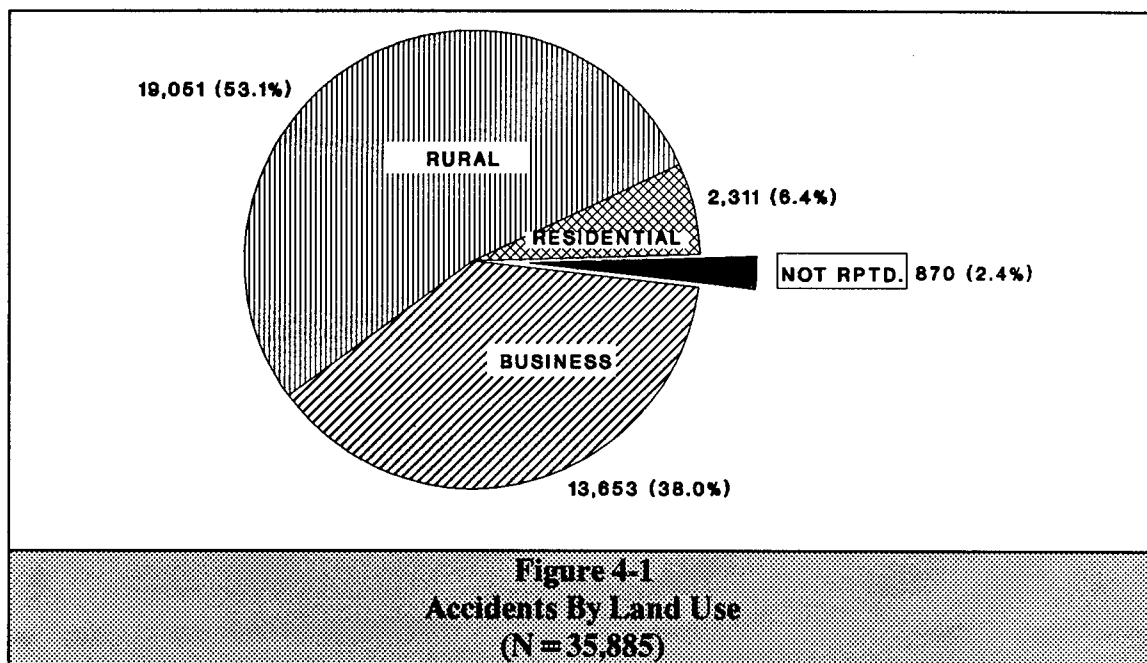
that accidents, when they occurred, were more likely to be fatal on undivided highways than on divided highways. In 1990, 9 percent of all commercial vehicle accidents on undivided highways were fatal; less than 7 percent of the accidents on divided highways were fatal.

Six percent of the reported accidents occurred on expressway entrance and exit ramps (Table 4-2). Whereas 7.3 percent of all commercial vehicle accidents were fatal, only 4.3 percent of all ramp accidents were fatal. Hence, ramp accidents were 43 percent less likely to generate fatalities than commercial vehicle accidents generally.

#### ENVIRONMENTAL CONDITIONS

Figure 4-2 examines the relationship between light, weather, and road surface conditions. When a carrier reported rain, snow, sleet, fog, or smog at the time of the accident, the weather conditions were classified as "unfavorable." Similarly,

*Accidents Reported by Motor Carriers of Property 1990*



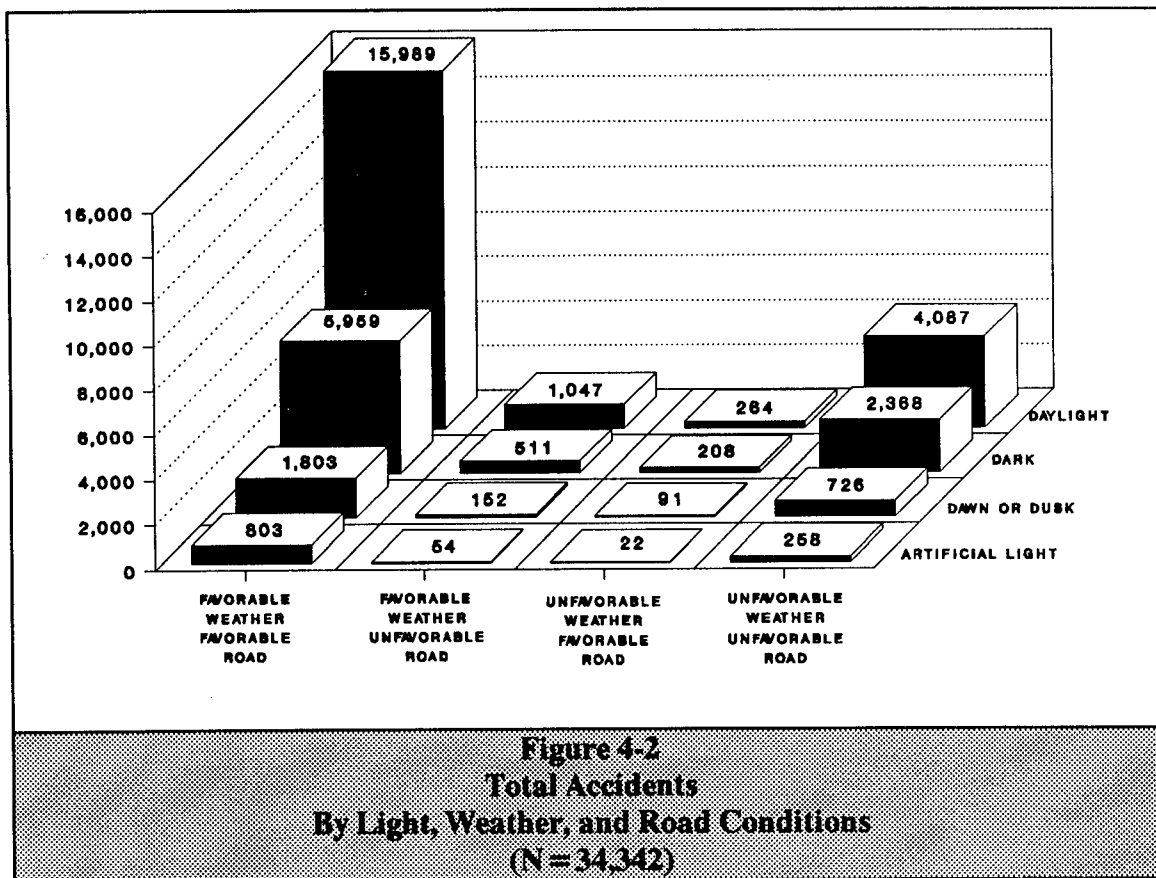
| Table 4-1<br>Accident Class Totals<br>By Highway Type |                 |      |                  |       |                           |       |                 |       |
|-------------------------------------------------------|-----------------|------|------------------|-------|---------------------------|-------|-----------------|-------|
| HIGHWAY TYPE                                          | FATAL ACCIDENTS |      | INJURY ACCIDENTS |       | PROPERTY DAMAGE ACCIDENTS |       | TOTAL ACCIDENTS |       |
|                                                       | #               | %    | #                | %     | #                         | %     | #               | %     |
| DIVIDED                                               | 1,195           | 45.6 | 10,018           | 51.3  | 6,513                     | 47.4  | 17,726          | 49.4  |
| UNDIVIDED                                             | 1,271           | 48.5 | 8,343            | 42.7  | 5,316                     | 38.7  | 14,930          | 41.6  |
| TYPE NOT RPTD.                                        | 153             | 5.8  | 1,172            | 6.0   | 1,904                     | 13.9  | 3,229           | 9.0   |
| TOTAL                                                 | 2,619           | 99.9 | 19,533           | 100.0 | 13,733                    | 100.0 | 35,885          | 100.0 |

| Table 4-2<br>Expressway Ramp Accidents |                 |     |                  |      |                           |      |                 |       |
|----------------------------------------|-----------------|-----|------------------|------|---------------------------|------|-----------------|-------|
|                                        | FATAL ACCIDENTS |     | INJURY ACCIDENTS |      | PROPERTY DAMAGE ACCIDENTS |      | TOTAL ACCIDENTS |       |
|                                        | #               | %   | #                | %    | #                         | %    | #               | %     |
| ENTRANCE RAMP                          | 51              | 4.4 | 652              | 56.0 | 461                       | 39.6 | 1,164           | 100.0 |
| EXIT RAMP                              | 47              | 4.3 | 618              | 56.7 | 425                       | 39.0 | 1,090           | 100.0 |
| TOTAL RAMP                             | 98              | 4.3 | 1,270            | 56.3 | 886                       | 39.3 | 2,254           | 99.9  |
| ALL ACCIDENTS                          | 2,619           | 7.3 | 19,533           | 54.4 | 13,733                    | 38.3 | 35,885          | 100.0 |

when a carrier characterized roads as wet, snowy, or icy, road surface conditions were classified as "unfavorable."

Of all commercial vehicle accidents for which environmental conditions were

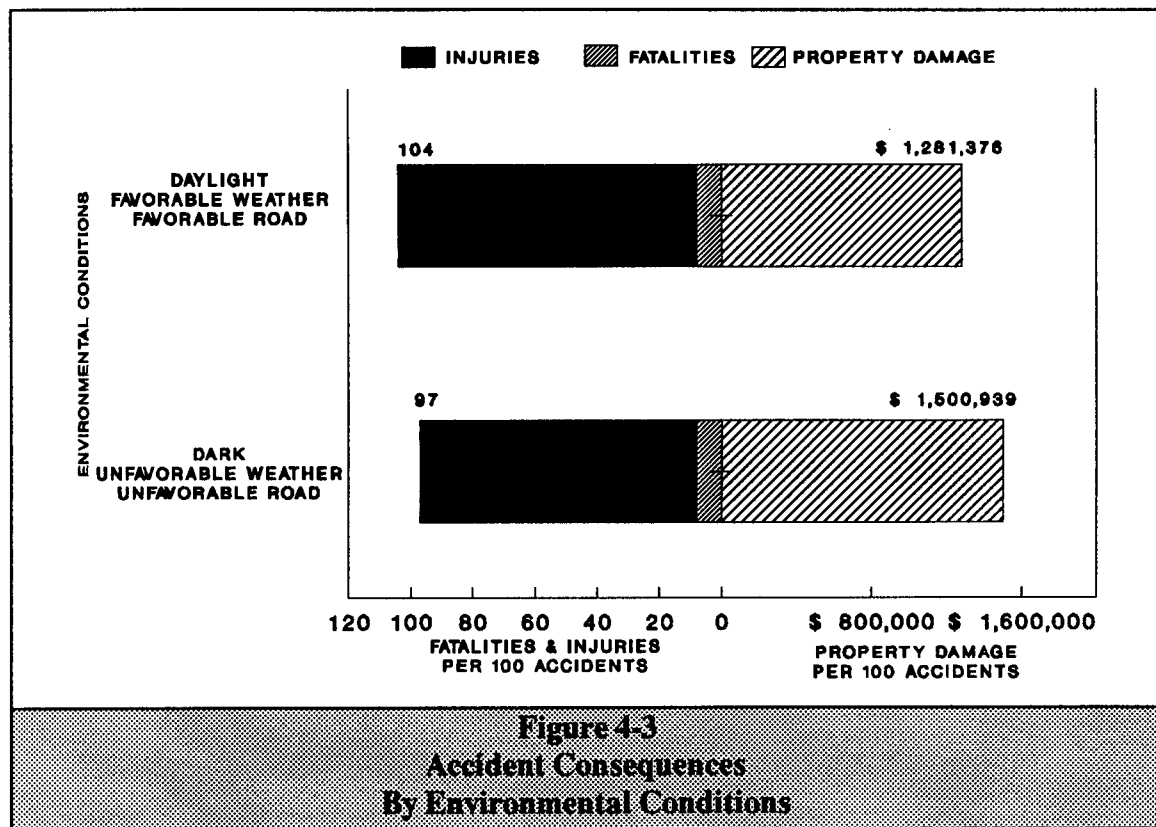
reported in 1990, 62 percent occurred in daylight, 26 percent in the dark, 8 percent at dawn or dusk, and 3 percent under artificial light. Approximately 7 out of 10 accidents occurred under favorable weather/favorable road conditions.



In fact, nearly 1 out of every 2 reported accidents took place in daylight under favorable weather/favorable road conditions.

Figure 4-3 compares accident consequences generated during daylight under favorable weather/favorable road conditions to those produced in the dark under unfavorable weather/unfavorable road conditions. Interestingly, accidents which occurred under ideal environmental conditions resulted in more fatalities/injuries (104 per 100 accidents) than did accidents which happened under adverse conditions (97 per 100 accidents). Was this because drivers were more cautious—and drove slower—

under adverse environmental conditions so that accidents, even when they occurred, were less severe? Or was it simply that there was less traffic on the highways—and consequently fewer opportunities for collisions—when environmental conditions were poorest? In examining these data, it should be remembered that they are based on the environmental conditions occurring at the time of the accidents, as reported by the carriers themselves. There is, of course, the possibility that reports of favorable weather/favorable road conditions were exaggerated, given that the *FMCSRs* (49 CFR 392.14) specifically prohibit the operation of commercial vehicles under "sufficiently dangerous" conditions.



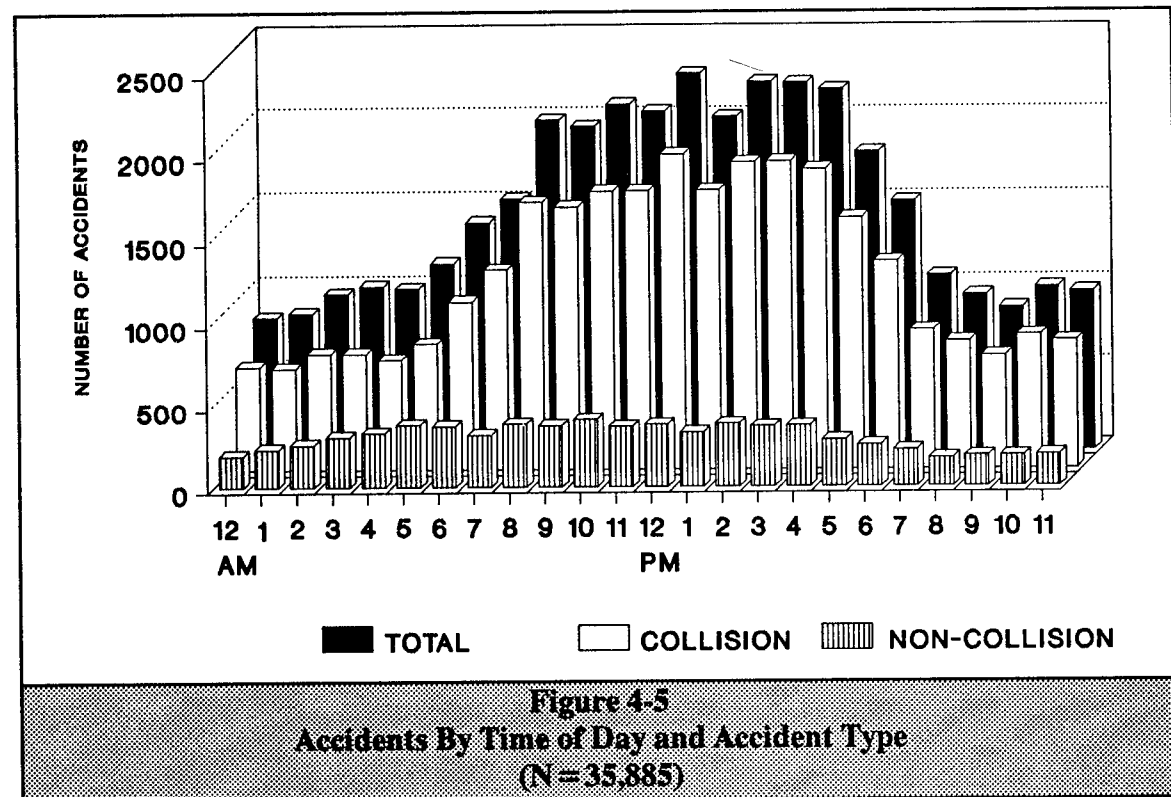
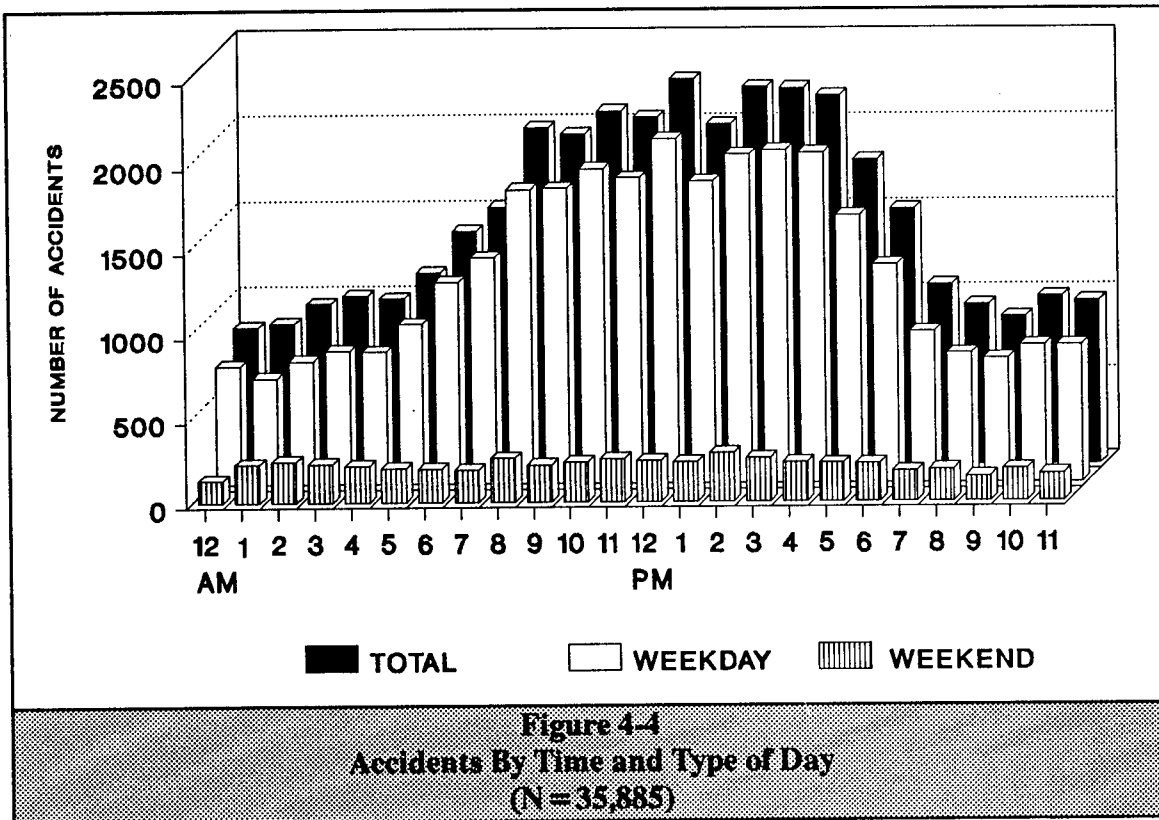
## TIME OF DAY

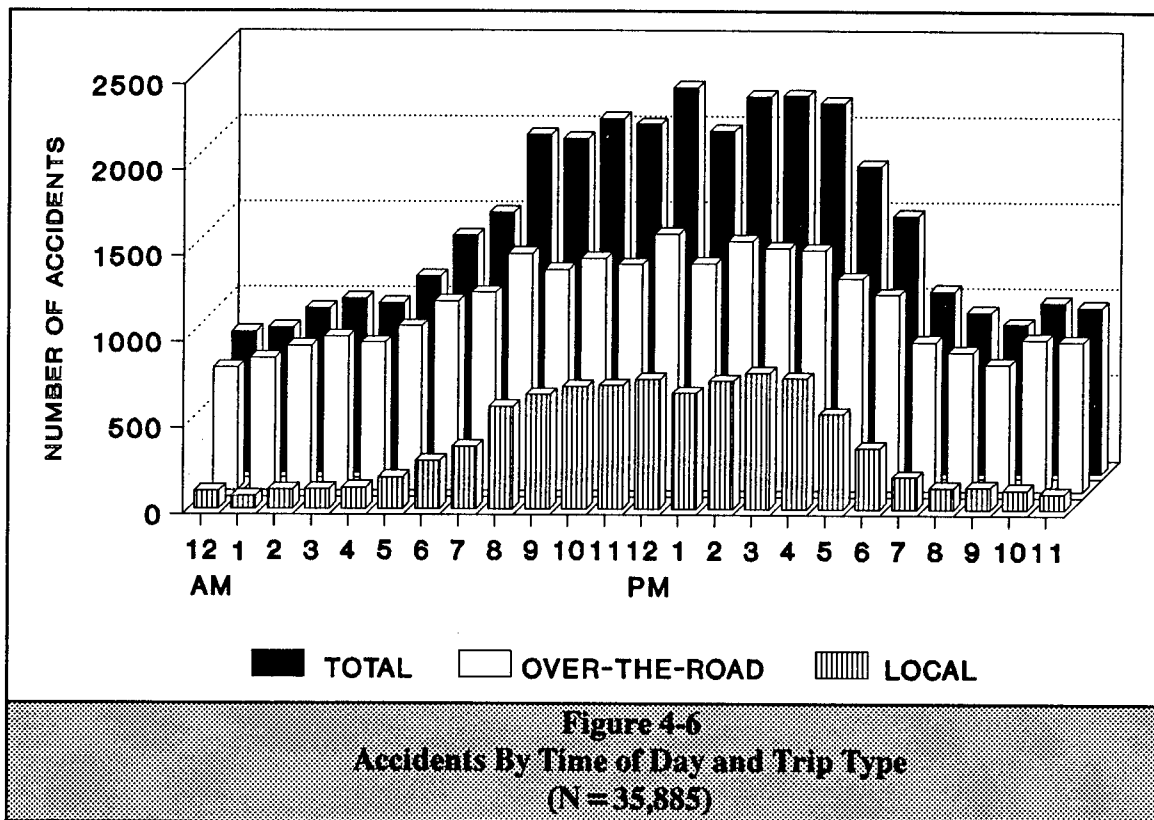
Nearly 4 out of every 5 commercial vehicle accidents reported in 1990 occurred between 5 a.m. and 8 p.m., the hours during which traffic normally flowed its heaviest. The fewest accidents occurred during the evening and early morning hours, 8 p.m to 5 a.m.

Figures 4-4 through 4-6 compare accident experience by time of day. On weekdays, total accidents appeared to fluctuate with the general flow of traffic, peaking at noon and again from 2-4 p.m. (Figure 4-4); not surprisingly, counts of weekend accidents showed less variability, regardless of time of day. Collision accidents (Figure 4-5) peaked between 12 noon and 4 p.m., whereas non-collision accident counts were

uniformly high from 5 a.m. to 4 p.m. Reported accidents involving both over-the-road vehicles and vehicles transporting goods locally occurred in much greater numbers during the day than at night (Figure 4-6). This was less true for over-the-road accidents, however. While the number of accidents involving local vehicles was over seven times higher at noon than at midnight, over-the-road accidents were two times higher at noon than at midnight. This lower variability in over-the-road accidents may reflect the round-the-clock orientation of long-distance haulers.

Figure 4-7 examines fatalities/injuries for truck occupants and truck non-occupants by time of day. In general, the data show that truck occupants were most likely to be killed or injured in accidents which





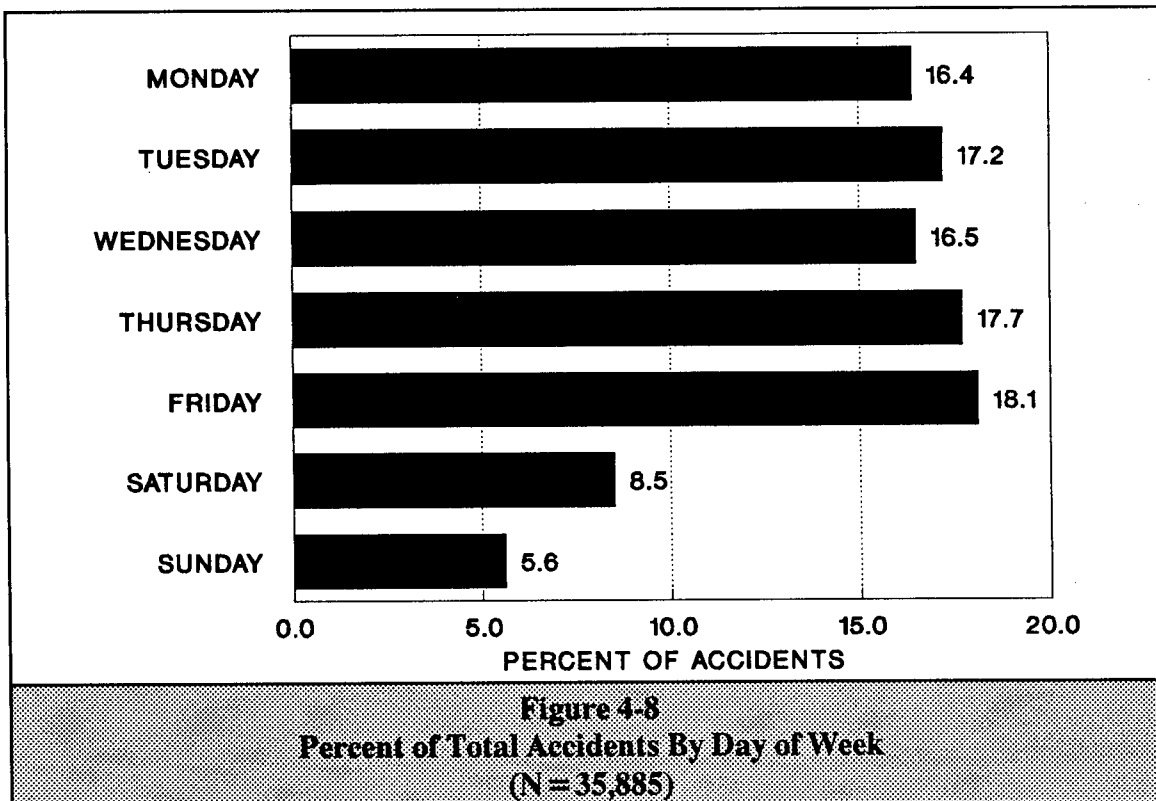
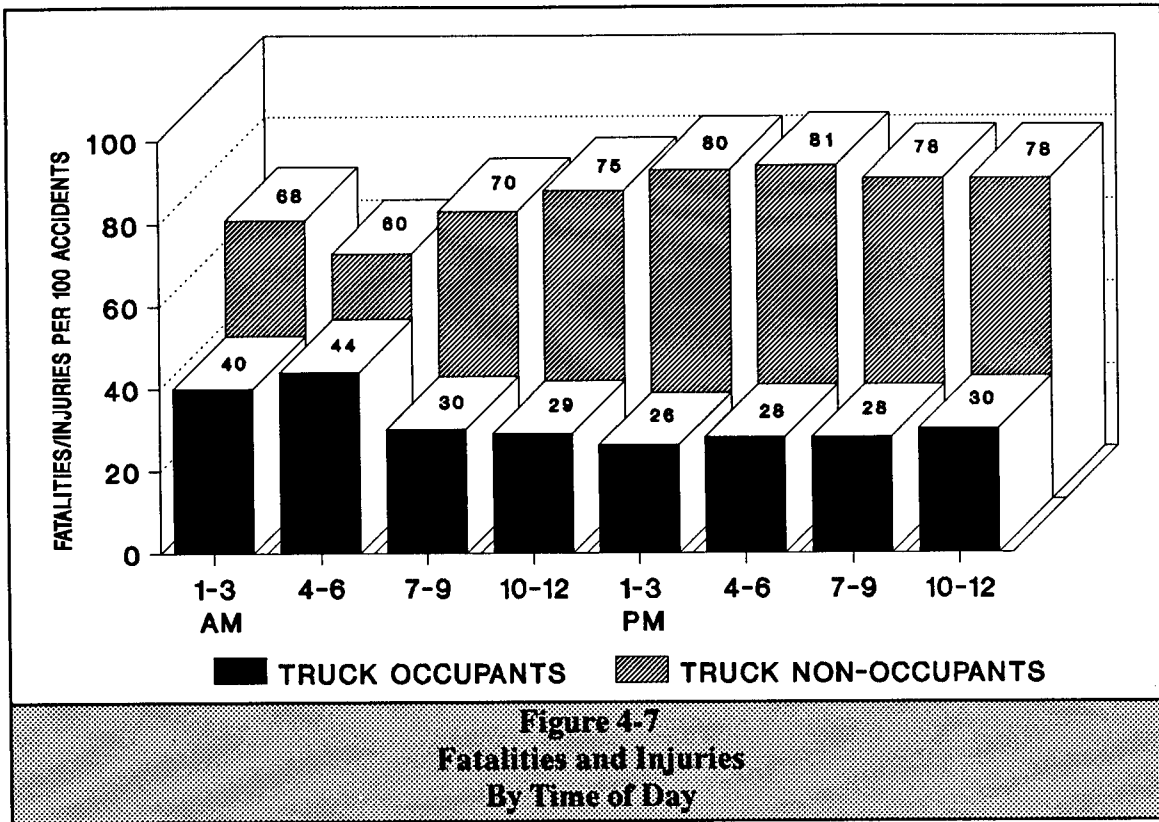
occurred during the predawn hours when, percentage-wise, there were more non-collision accidents. For instance, truck drivers were 56 percent more likely to be killed or injured in accidents which happened between 1 and 6 a.m. than between 1 and 6 p.m. The pattern for truck non-occupants was different: persons not in the truck at the time of the accident were killed or injured at a rate 26 percent higher between 1 and 6 p.m. than between 1 and 6 a.m.

commercial vehicles occurred on Saturdays and Sundays than on other days of the week (Figure 4-8). Also, the greatest numbers of accidents were reported for the months of January, August, and December; the fewest accidents occurred in April and September (Figure 4-9).

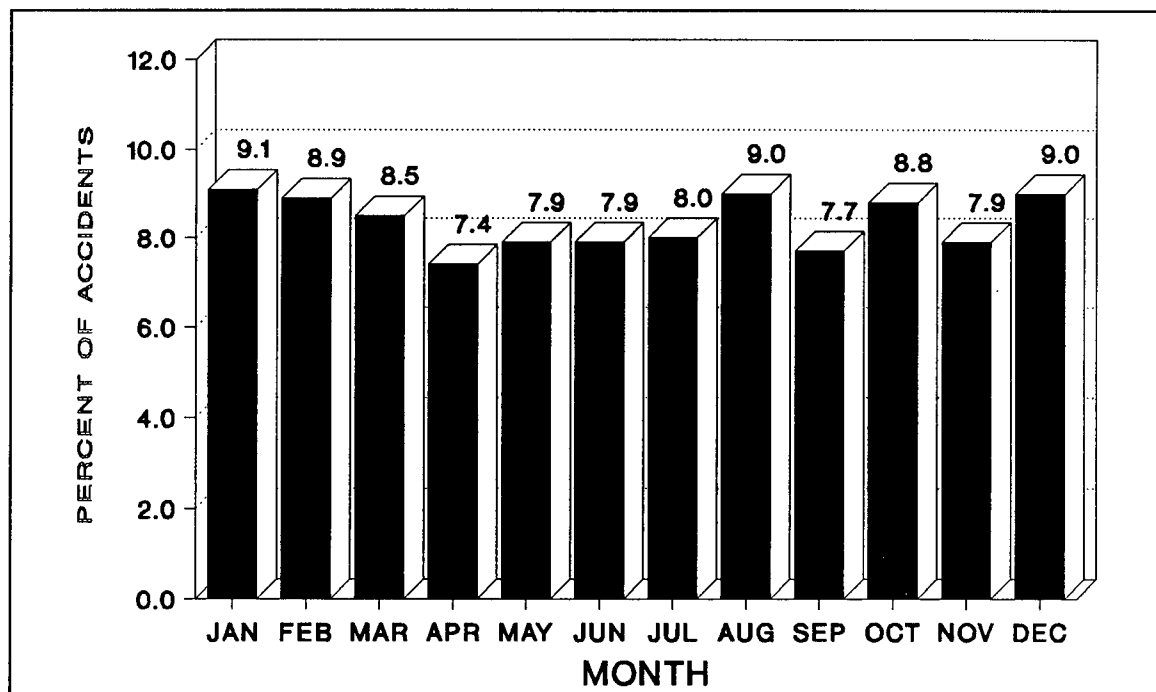
Table 4-3 displays total accidents, fatalities, injuries, and property damage by carrier type and month.

## DAY OF WEEK AND MONTH OF YEAR

Figures 4-8 and 4-9 compare the percentages of 1990 accidents by day of week and month of year, respectively. As expected, considerably fewer accidents involving



*Accidents Reported by Motor Carriers of Property 1990*



**Figure 4-9**  
**Percent of Total Accidents**  
**By Month**  
**(N=35,885)**

**Table 4-3**  
**Accidents, Fatalities, Injuries, and Property Damage**  
**By Carrier Type and Month**

|                         | JAN           | FEB           | MAR           | APR           | MAY           | JUN           | JUL           | AUG           | SEP           | OCT           | NOV           | DEC           | TOTAL          |
|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| <b>ACCIDENTS</b>        |               |               |               |               |               |               |               |               |               |               |               |               |                |
| FOR-HIRE                | 3,208         | 3,128         | 3,009         | 2,597         | 2,766         | 2,771         | 2,821         | 3,145         | 2,697         | 3,083         | 2,745         | 3,172         | 35,142         |
| PRIVATE                 | 55            | 59            | 54            | 47            | 58            | 46            | 60            | 69            | 59            | 72            | 79            | 51            | 709            |
| TYPE NOT RPTD.          | 0             | 2             | 3             | 1             | 4             | 1             | 1             | 3             | 4             | 9             | 0             | 6             | 34             |
| <b>TOTAL</b>            | <b>3,263</b>  | <b>3,189</b>  | <b>3,066</b>  | <b>2,645</b>  | <b>2,828</b>  | <b>2,818</b>  | <b>2,882</b>  | <b>3,217</b>  | <b>2,760</b>  | <b>3,164</b>  | <b>2,824</b>  | <b>3,229</b>  | <b>35,885</b>  |
| <b>FATALITIES</b>       |               |               |               |               |               |               |               |               |               |               |               |               |                |
| FOR-HIRE                | 284           | 235           | 243           | 222           | 257           | 257           | 292           | 305           | 257           | 298           | 249           | 341           | 3,208          |
| PRIVATE                 | 4             | 11            | 6             | 10            | 5             | 10            | 11            | 7             | 5             | 12            | 12            | 7             | 100            |
| TYPE NOT RPTD.          | 0             | 0             | 1             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 1              |
| <b>TOTAL</b>            | <b>288</b>    | <b>246</b>    | <b>250</b>    | <b>232</b>    | <b>262</b>    | <b>267</b>    | <b>303</b>    | <b>312</b>    | <b>262</b>    | <b>278</b>    | <b>261</b>    | <b>348</b>    | <b>3,309</b>   |
| <b>INJURIES</b>         |               |               |               |               |               |               |               |               |               |               |               |               |                |
| FOR-HIRE                | 2,887         | 2,905         | 2,700         | 2,485         | 2,678         | 2,782         | 2,854         | 3,195         | 2,838         | 2,958         | 2,531         | 2,963         | 33,854         |
| PRIVATE                 | 53            | 50            | 40            | 44            | 69            | 48            | 76            | 73            | 61            | 43            | 64            | 41            | 662            |
| TYPE NOT RPTD.          | 0             | 4             | 6             | 0             | 7             | 0             | 0             | 1             | 4             | 10            | 0             | 0             | 32             |
| <b>TOTAL</b>            | <b>3,040</b>  | <b>2,959</b>  | <b>2,746</b>  | <b>2,509</b>  | <b>2,752</b>  | <b>2,830</b>  | <b>2,930</b>  | <b>3,269</b>  | <b>2,703</b>  | <b>3,011</b>  | <b>2,595</b>  | <b>3,004</b>  | <b>34,348</b>  |
| <b>PROPERTY DAMAGE*</b> |               |               |               |               |               |               |               |               |               |               |               |               |                |
| FOR-HIRE                | 47,518        | 42,069        | 44,254        | 36,867        | 39,206        | 38,403        | 39,026        | 41,482        | 40,787        | 42,743        | 37,590        | 45,093        | 495,036        |
| PRIVATE                 | 799           | 937           | 636           | 875           | 1,296         | 965           | 890           | 1,534         | 711           | 1,239         | 1,207         | 840           | 12,029         |
| TYPE NOT RPTD.          | 0             | 16            | 32            | 5             | 26            | 8             | 22            | 21            | 29            | 67            | 0             | 38            | 264            |
| <b>TOTAL</b>            | <b>48,315</b> | <b>43,022</b> | <b>44,922</b> | <b>37,747</b> | <b>40,528</b> | <b>39,376</b> | <b>39,938</b> | <b>43,037</b> | <b>41,527</b> | <b>44,049</b> | <b>38,797</b> | <b>46,071</b> | <b>507,329</b> |

\* In thousands (000's) of dollars.

## Chapter 5

## THE ACCIDENT

### Accident Type Overview Collision Accidents Non-Collision Accidents

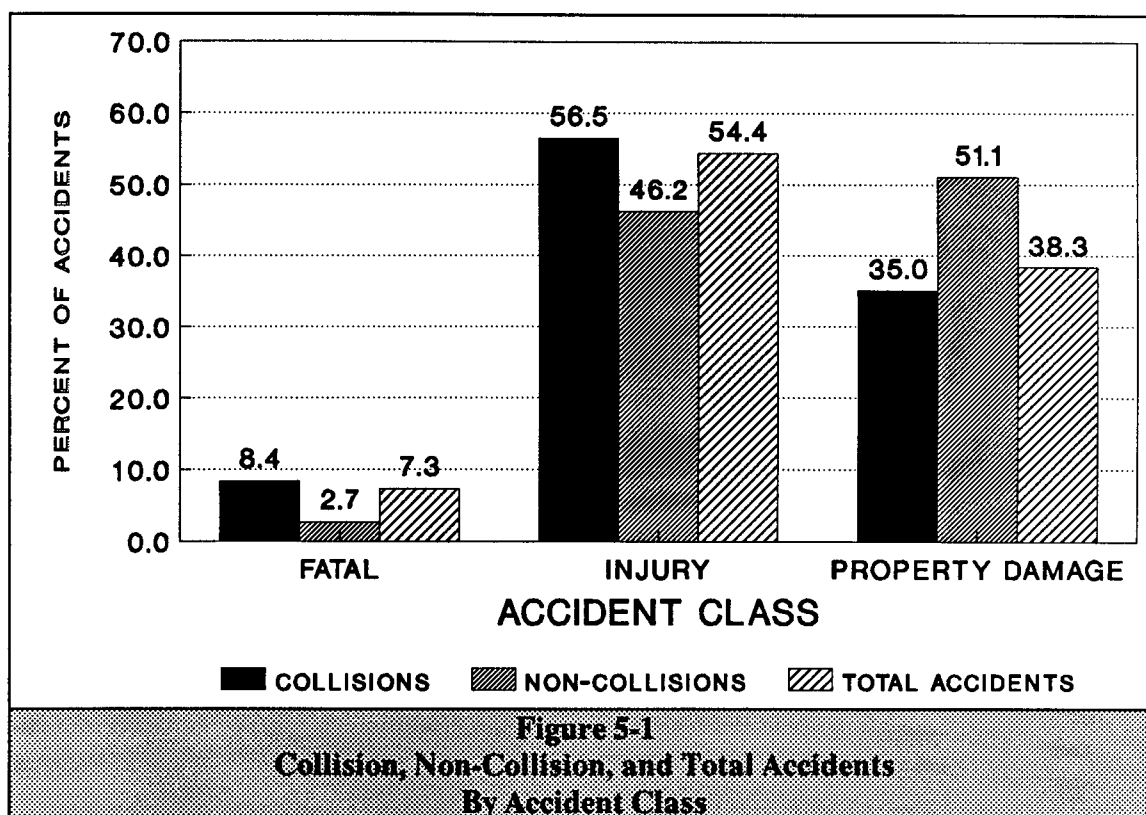
The typical accident entailed a collision between a commercial vehicle and automobile. More than 6 out of every 10 collisions resulted in one or more fatalities or injuries. In general, accident severity appeared to be determined by a variety of factors, including what the commercial vehicle was doing just prior to the accident. For instance, when the truck ventured into an opposing lane of traffic, the ensuing collision tended to be the most severe.

### ACCIDENT TYPE OVERVIEW

Almost 80 percent of the accidents reported in 1990 involved collisions. Overall, collision accidents were responsible for 91 percent of the fatalities, 84 percent of the injuries, and 71 percent of the property damage reported. Table 5-1 breaks down accidents and their consequences by accident type.

Percentage breakdowns of collision, non-collision, and total accidents by accident class are shown in Figure 5-1.

| Table 5-1<br>Accidents, Fatalities, Injuries, and Property Damage<br>By Accident Type |               |      |                |      |              |     |               |       |
|---------------------------------------------------------------------------------------|---------------|------|----------------|------|--------------|-----|---------------|-------|
|                                                                                       | COLLISIONS    |      | NON-COLLISIONS |      | NOT REPORTED |     | TOTAL         |       |
|                                                                                       | #             | %    | #              | %    | #            | %   | #             | %     |
| ACCIDENTS                                                                             |               |      |                |      |              |     |               |       |
| FATAL                                                                                 | 2,417         | 92.3 | 197            | 7.5  | 5            | 0.2 | 2,619         | 100.0 |
| INJURY                                                                                | 16,195        | 82.9 | 3,330          | 17.0 | 8            | 0.0 | 19,533        | 99.9  |
| PROPERTY DAMAGE                                                                       | 10,035        | 73.1 | 3,687          | 26.8 | 11           | 0.1 | 13,733        | 100.0 |
| TOTAL                                                                                 | 28,647        | 79.8 | 7,214          | 20.1 | 24           | 0.1 | 35,885        | 100.0 |
| FATALITIES                                                                            | 3,018         | 91.2 | 284            | 8.6  | 7            | 0.2 | 3,309         | 100.0 |
| INJURIES                                                                              | 28,896        | 84.1 | 5,438          | 15.8 | 14           | 0.0 | 34,348        | 99.9  |
| PROPERTY DAMAGE                                                                       | \$359,337,863 | 70.8 | \$147,658,107  | 29.1 | \$334,415    | 0.1 | \$507,330,385 | 100.0 |



| Table 5-2<br>Accident Consequences<br>By Accident Type |                 |               |                       |
|--------------------------------------------------------|-----------------|---------------|-----------------------|
|                                                        | FATALITIES<br># | INJURIES<br># | PROPERTY DAMAGE<br>\$ |
| PER 100 COLLISION ACCIDENTS                            | 11              | 101           | 1,254,365             |
| PER 100 NON-COLLISION ACCIDENTS                        | 4               | 75            | 2,046,827             |
| PER 100 ACCIDENTS                                      | 9               | 96            | 1,413,767             |

Sixty-five percent of the collision accidents resulted in fatalities or injuries, while only 49 percent of the non-collision accidents were as severe. Collisions were more than three times more likely to result in fatalities, and 22 percent more likely to result in injuries.

Accident severity rates are compared by accident type in Table 5-2. While fatalities and injuries were greater in collisions, the property damage rate was 1.6

times higher in non-collision accidents.

## COLLISION ACCIDENTS

Table 5-3 indicates that, in 1990, 62 percent of all collision accidents occurred when commercial vehicles and automobiles collided. In fact, truck/automobile accidents accounted for 66 percent of all collision-induced fatalities, 69 percent of the injuries, and

48 percent of the property damage. Although truck/pedestrian accidents comprised less than 2 percent of all collisions, they resulted in more than 6 percent of

the collision-induced fatalities. Similarly, truck/bus accidents accounted for less than 1 percent of collisions, but nearly 2 percent of the collision-induced injuries.

**Table 5-3**  
**Collision Accidents, Fatalities, Injuries, and Property Damage**  
**By Type of Collision**

|                       | ACCIDENTS |       | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|-----------------------|-----------|-------|------------|-------|----------|-------|-----------------|-------|
|                       | #         | %     | #          | %     | #        | %     | \$              | %     |
| OTHER OBJECT INVOLVED |           |       |            |       |          |       |                 |       |
| COMMERCIAL TRUCK      | 4,875     | 17.0  | 364        | 12.1  | 4,402    | 15.2  | 96,954,262      | 27.0  |
| FIXED OBJECT          | 3,225     | 11.3  | 142        | 4.7   | 1,609    | 5.6   | 54,346,422      | 15.1  |
| AUTOMOBILE            | 17,624    | 61.5  | 2,000      | 66.3  | 19,969   | 69.1  | 173,732,034     | 48.3  |
| PEDESTRIAN            | 423       | 1.5   | 183        | 6.1   | 273      | 0.9   | 2,103,075       | 0.6   |
| BUS                   | 143       | 0.5   | 21         | 0.7   | 460      | 1.6   | 2,017,994       | 0.6   |
| TRAIN                 | 191       | 0.7   | 21         | 0.7   | 147      | 0.5   | 4,882,550       | 1.4   |
| BICYCLIST             | 113       | 0.4   | 28         | 0.9   | 84       | 0.3   | 503,763         | 0.1   |
| ANIMAL                | 210       | 0.7   | 6          | 0.2   | 122      | 0.4   | 3,113,046       | 0.9   |
| MOTORCYCLE            | 209       | 0.7   | 72         | 2.4   | 161      | 0.6   | 1,196,142       | 0.3   |
| OTHER                 | 1,559     | 5.4   | 175        | 5.8   | 1,612    | 5.6   | 19,717,793      | 5.5   |
| OBJECT NOT RPTD.      | 75        | 0.3   | 6          | 0.2   | 57       | 0.2   | 770,782         | 0.2   |
| TOTAL                 | 28,647    | 100.0 | 3,018      | 100.1 | 28,896   | 100.0 | 359,337,863     | 100.0 |

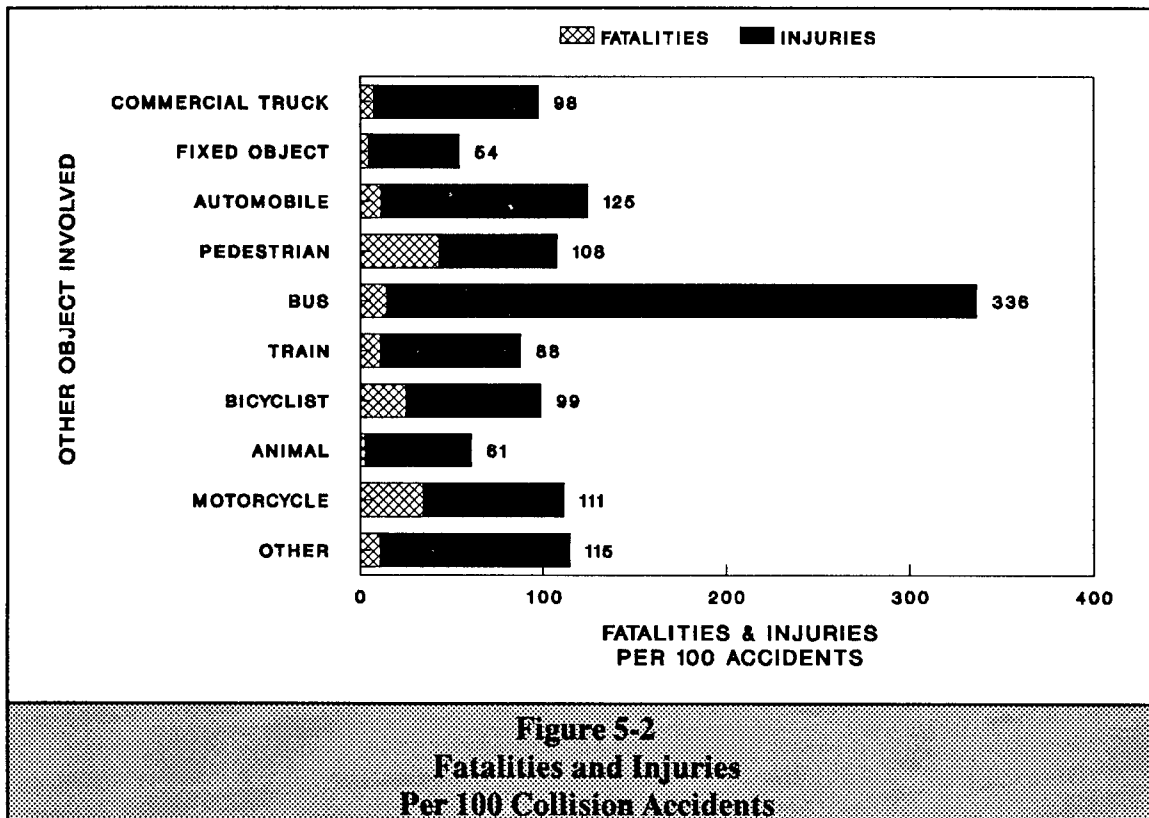
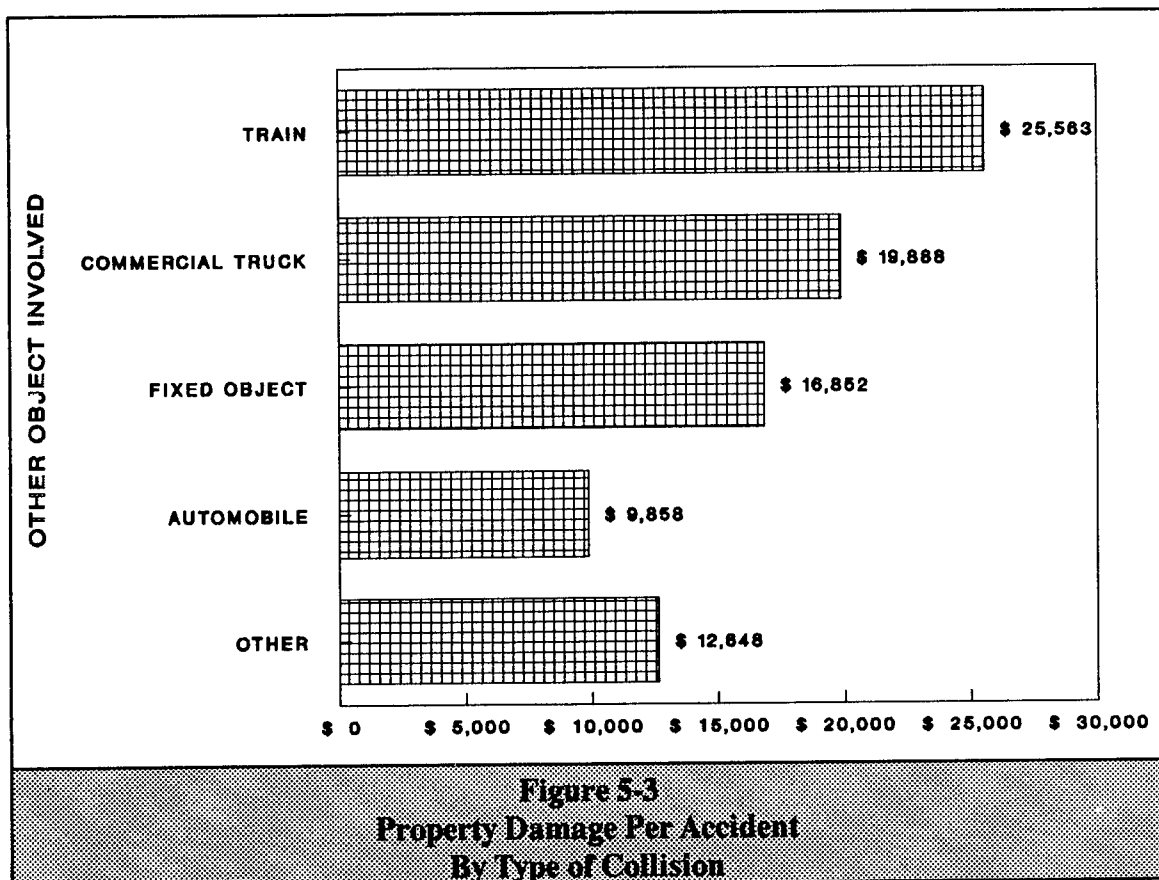


Figure 5-2 examines fatalities/injuries per 100 accidents for collisions involving different combinations of vehicles, persons, and objects. Truck/bus accidents were the most severe, generating 336 fatalities/injuries per 100 accidents. One might reasonably infer that this was due largely to the disproportionately high number of bus passengers potentially exposed whenever truck/bus accidents occurred.

Accidents were frequently the most severe when commercial vehicles collided with pedestrians and other persons not protected inside vehicles. Hence, truck collisions with pedestrians,

bicyclists, and motorcyclists generally resulted in higher rates of fatalities per accident than did truck collisions with other trucks, automobiles, or buses.

The estimated value of property damaged in collisions tended to vary according to the value of the property potentially exposed in each accident. Thus, the average value of property damaged in truck/train collisions was considerably higher than the value of property damaged in truck/truck collisions (Figure 5-3). Similarly, the average value of property damaged in truck/truck collisions was more than that damaged in truck/automobile collisions.



Accident severity by the types of "movement" in which commercial vehicles were engaged just before the collisions occurred is summarized in Figure 5-4. In general, accidents were most severe when the commercial vehicles were reported to have crossed into opposing lanes of traffic. The head-on collision resulting from lane crossings produced, on average, 187 fatalities/injuries per 100 accidents.

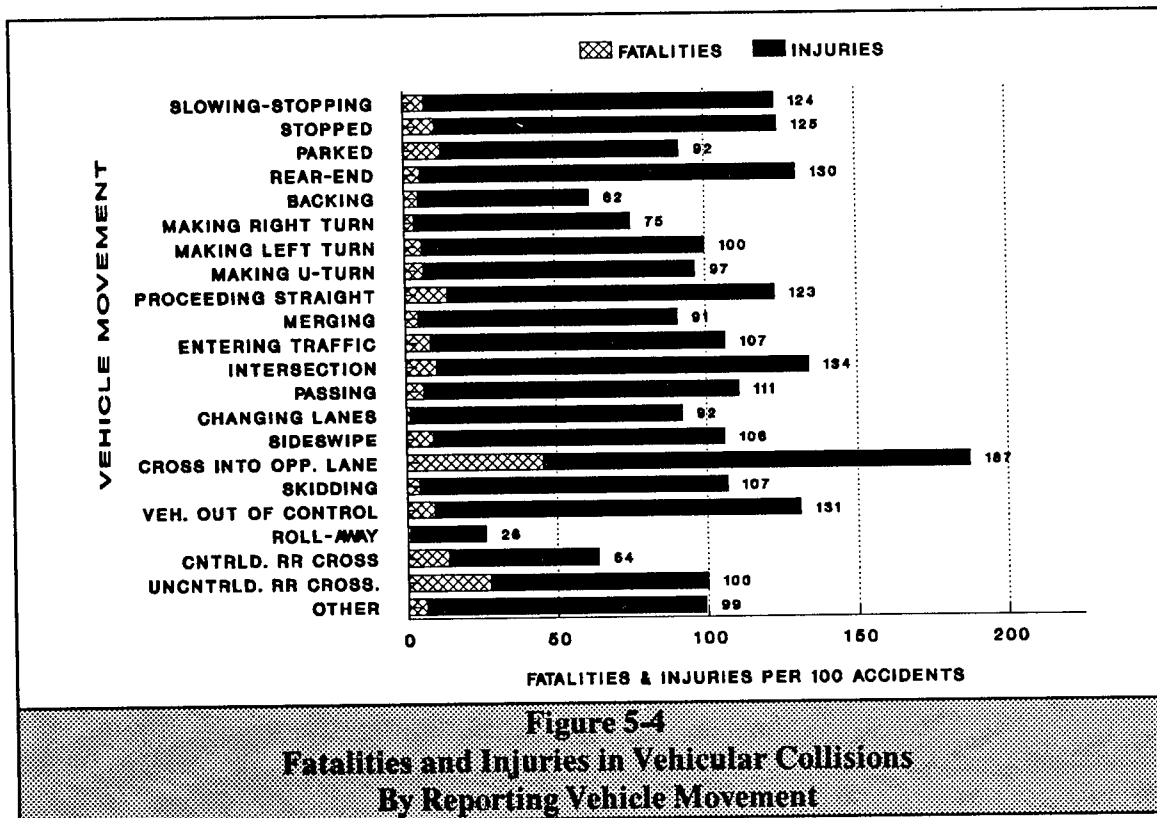
In reviewing the data in figure 5-4, note that the vehicle movements shown pertain to the commercial vehicles only; the movements of other vehicles involved in the accidents are not presented.

collision accidents were the result of one of three actions: truck overturns (46.7 percent), trucks running off the road (24.6 percent), and truck jackknives (14.6 percent). Overturns and trucks running off the road accounted for 4 out of every 5 non-collision fatalities and injuries.

Non-collision accident severity rates ranged from 25 fatalities/injuries per 100 accidents when separation of units was the primary accident event, to 92 fatalities/injuries per 100 accidents when trucks ran off the road (Figure 5-5). Fires were the most costly type of non-collision accident, in terms of property damage, averaging \$28,000 per accident (Figure 5-6).

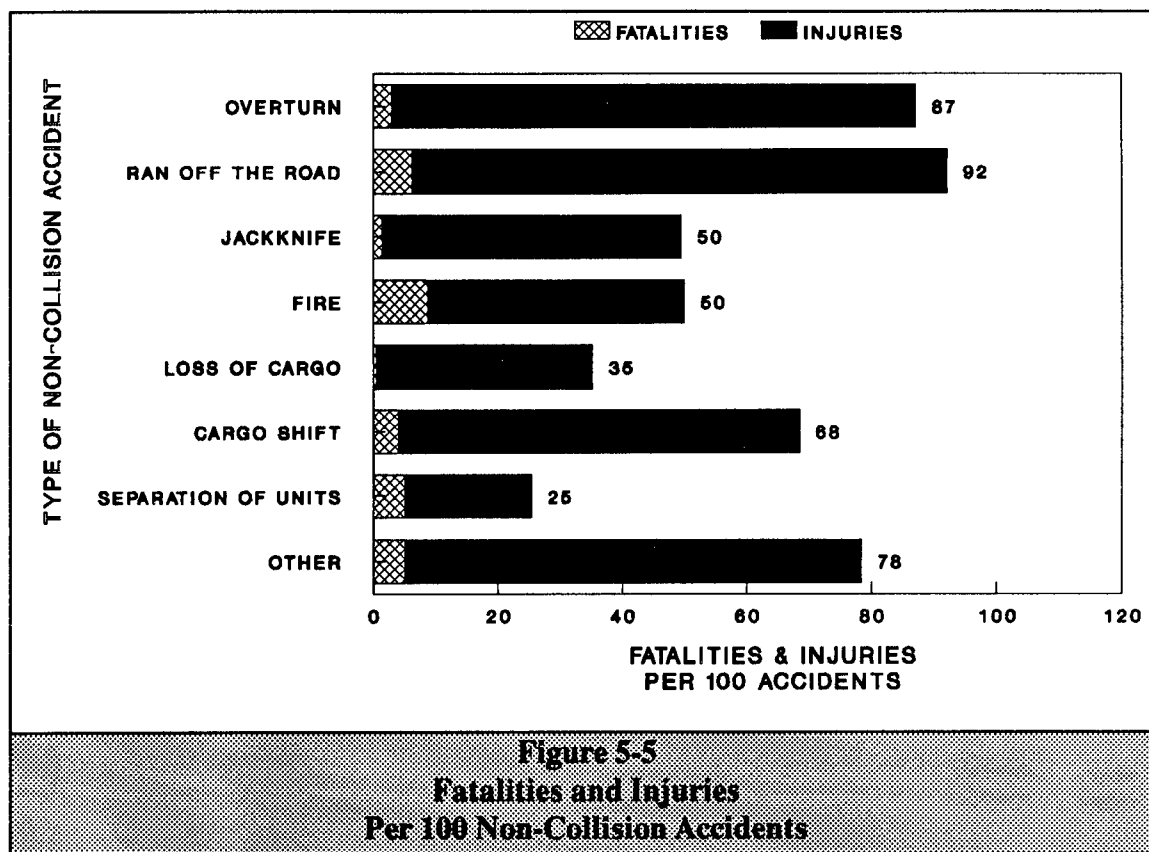
## NON-COLLISION ACCIDENTS

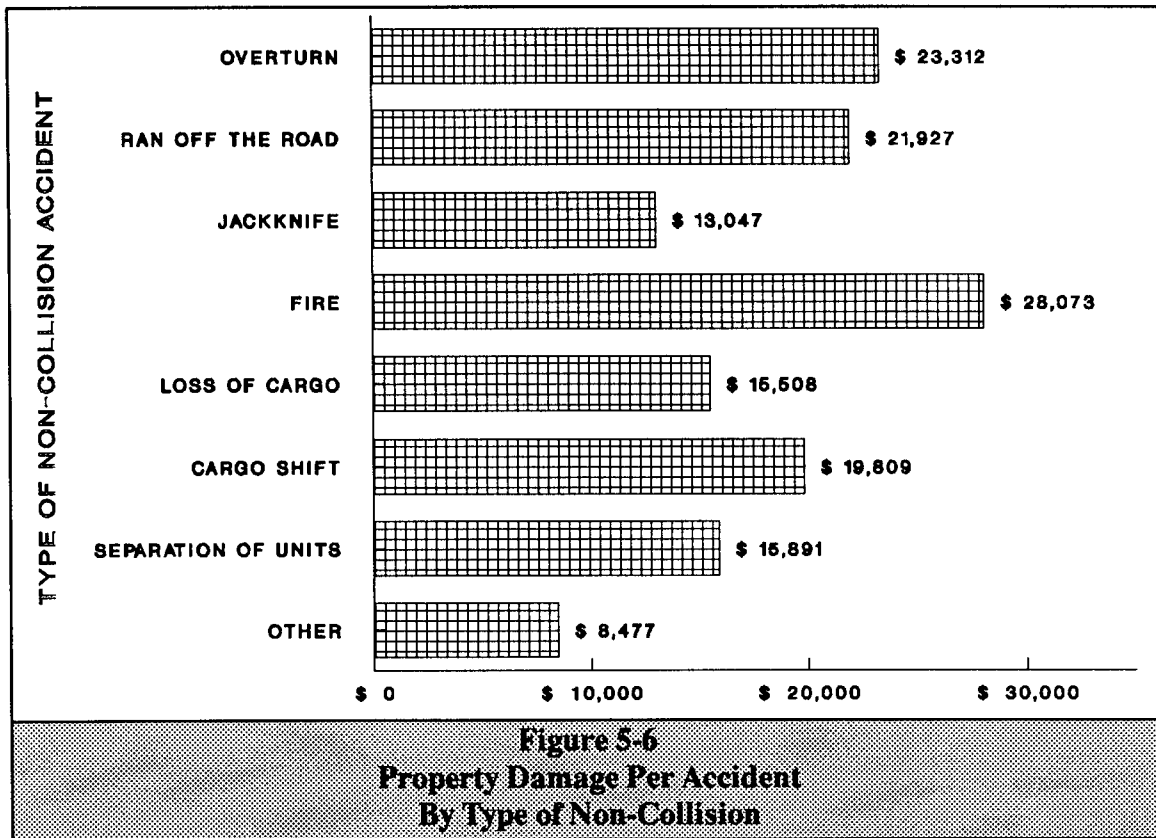
As indicated in Table 5-4, most 1990 non-



**Table 5-4**  
**Non-Collision Accidents, Fatalities, Injuries, and Property Damage**  
**By Type of Non-Collision**

| TYPE OF NON-COLLISION | ACCIDENTS |       | FATALITIES |       | INJURIES |       | PROPERTY DAMAGE |       |
|-----------------------|-----------|-------|------------|-------|----------|-------|-----------------|-------|
|                       | #         | %     | #          | %     | #        | %     | \$              | %     |
| OVERTURN              | 3,366     | 46.7  | 99         | 34.9  | 2,834    | 52.1  | 78,466,688      | 53.1  |
| RAN OFF THE ROAD      | 1,775     | 24.6  | 112        | 39.4  | 1,523    | 28.0  | 38,919,756      | 26.4  |
| JACKKNIFE             | 1,050     | 14.6  | 16         | 5.6   | 504      | 9.3   | 13,699,077      | 9.3   |
| FIRE                  | 216       | 3.0   | 19         | 6.7   | 89       | 1.6   | 6,063,690       | 4.1   |
| LOSS OF CARGO         | 202       | 2.8   | 1          | 0.4   | 70       | 1.3   | 3,132,686       | 2.1   |
| CARGO SHIFT           | 101       | 1.4   | 4          | 1.4   | 65       | 1.2   | 2,000,683       | 1.4   |
| SEPARATION OF UNITS   | 79        | 1.1   | 4          | 1.4   | 16       | 0.3   | 1,255,410       | 0.9   |
| OTHER                 | 236       | 3.3   | 12         | 4.2   | 173      | 3.2   | 2,000,559       | 1.4   |
| TYPE NOT RPTD.        | 189       | 2.6   | 17         | 6.0   | 164      | 3.0   | 2,119,558       | 1.4   |
| TOTAL                 | 7,214     | 100.1 | 284        | 100.0 | 5,438    | 100.0 | 147,658,107     | 100.1 |







## **APPENDIX**

### **Glossary MCS 50-T Accident Report Form Common Vehicle Configurations**

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## **GLOSSARY**

**Accident Classes.** Used to categorize commercial vehicle accidents according to accident severity. The three classes referred to in this report are: fatal accidents, injury accidents, and property damage accidents.

**Accident Consequences.** The physical results of motor vehicle accidents. Consequences include fatalities, injuries, and property damage.

**Accident Severity.** Measures the seriousness of an accident according to the type and quantity of the accident's consequences. In this report, fatalities are more severe than injuries, and injuries are more severe than property damage. See also "Fatalities/Injuries."

**Accident Type.** "Collision" or "non-collision."

**Carrier Type.** "For-hire" or "private."

**Collision Accident.** An accident involving a collision between a commercial motor vehicle and another object. Collision objects include trains, other motor vehicles, pedestrians, bicyclists, animals, and fixed objects.

**Driveaway-Towaway.** Refers to a carrier operation, such as a fleet of tow trucks, used to transport other vehicles, when some or all wheels of the vehicles being transported touch the road surface (49 CFR 390.9).

**Fatal Accident.** An accident for which at least one fatality was reported.

**Fatalities/Injuries.** Refers to the average

number of fatalities and injuries which occurred per one hundred accidents. Frequently used in this report as an index of accident severity.

**Fatality.** A death resulting from a motor vehicle accident.

**Fatality Rate.** The average number of fatalities which occurred per accident or per one hundred accidents.

**50-T Report.** Form MCS 50-T, the *Motor Carrier Accident Report (Property-Carrying)*. Commercial carriers subject to the Department of Transportation Act are required to submit a 50-T report to the Federal Highway Administration on each reportable accident in which they are involved.

**FMCSRs.** *Federal Motor Carrier Safety Regulations*. The FMCSRs are contained in the *Code of Federal Regulations*, Title 49, Chapter III, Subchapter B.

**For-Hire Carrier.** A commercial motor carrier whose primary business activity is the transportation of property by motor vehicle for compensation.

**ICC Authorized Carrier.** A for-hire motor carrier engaged in interstate or foreign commerce, subject to economic regulation by the Interstate Commerce Commission.

**ICC Exempt Carrier.** A for-hire motor carrier transporting commodities or conducting operations not subject to economic regulation by the Interstate Commerce Commission.

**Injury.** Bodily injury resulting from a motor vehicle accident. To qualify as an

"injury," the injured person must require and receive medical treatment away from the accident scene.

**Injury Accident.** An accident for which at least one injury, but no fatalities, was reported.

**Injury Rate.** The average number of non-fatal injuries per accident or per one hundred accidents.

**Jackknife.** A non-collision accident in which a tractor and its trailer slide together, forming a V-shaped angle of 90 degrees or less.

**Local Trip.** An intracity or short mileage trip by commercial motor vehicle.

**Non-Collision Accident.** A motor vehicle accident which does not involve a collision. Non-collision accidents include jackknives, overturns, fires, cargo shifts and spills, and incidents in which trucks run off the road.

**Over-the-Road Trip.** An intercity movement by commercial motor vehicle.

**Private Carrier.** A commercial motor carrier whose highway transportation activities are incidental to, and in furtherance of, its primary business activity.

**Property Damage.** The actual or estimated dollar value of vehicle, cargo, and other property damage incurred in motor vehicle accidents.

**Property Damage Accident.** An accident for which property damage of \$4,400 or more, but no fatalities or injuries, was reported.

**Property Damage Rate.** The average amount of property damage per accident or per one hundred accidents.

**Property Damage Threshold.** The amount of property damage used to determine whether an accident not involving fatalities or injuries is reportable under the *FMCSRs*. In 1989, the property damage threshold was \$4,400.

**Reportable Accident.** A motor vehicle accident involving a carrier subject to the Department of Transportation Act, which results in a fatality, injury, or property damage of \$4,400 or more (49 CFR 394.3).

**Trip Type.** "Local" or "over-the-road."

**Vehicle Configuration.** The combination of vehicular units comprising a commercial motor vehicle. The most common vehicle configurations are depicted on page 50.

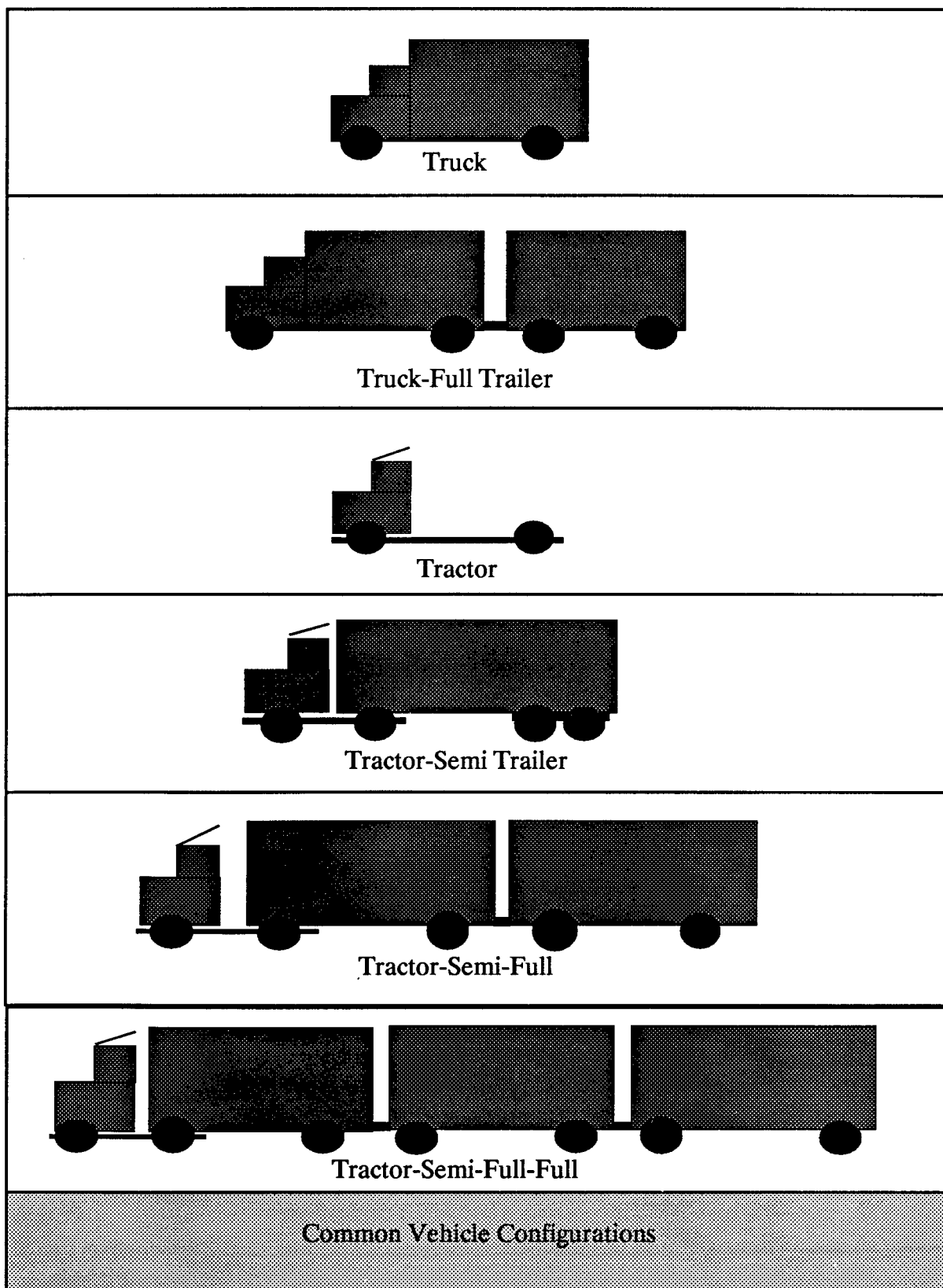
# Accidents Reported by Motor Carriers of Property 1990

OMB NO. 2125-0526  
(Average completion time for this form is 1 hour)

| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | MOTOR CARRIER ACCIDENT REPORT                                                                                                                                         |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Original and two copies of MCS 50-T shall be filed with the Director, Regional Motor Carrier Safety Office, FHWA, as required by 394.9. Copy shall be retained in carrier's file. Circle or (x) appropriate boxes below.                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                       |  |
| 1. Name of carrier (Corporate business name)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 2. Principal Place of Business (Street & No., City, State, Zip Code)                                                                                                  |  |
| 3. Type of carrier <input checked="" type="checkbox"/> Private, Employer ID No. (IRS) _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | <input checked="" type="checkbox"/> ICC authorized, MC _____ Employer ID No. (IRS) _____                                                                              |  |
| 4. Type of trip <input checked="" type="checkbox"/> Over-the-road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | <input checked="" type="checkbox"/> Local pick-up and delivery operation                                                                                              |  |
| 5. Place accident occurred (Nearest Town or City, State)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 5A. Type of district <input checked="" type="checkbox"/> Rural <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Primarily business |  |
| 6. Street or highway (Route or Name)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | 6A. Location if off highway                                                                                                                                           |  |
| 7. Day of week <input checked="" type="checkbox"/> M <input checked="" type="checkbox"/> T <input checked="" type="checkbox"/> W <input checked="" type="checkbox"/> TH <input checked="" type="checkbox"/> F <input checked="" type="checkbox"/> S <input checked="" type="checkbox"/> S                                                                                                                                                                                                                                                                                                                                                                        |  | 8. Date accident occurred ...../...../.....                                                                                                                           |  |
| 9. Time accident occurred (Military time to nearest hour)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                       |  |
| 10. ACCIDENT TYPE (Primary Event)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                       |  |
| 10A. Collision (Check appropriate box)<br><input checked="" type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Collision with moving object <input checked="" type="checkbox"/> Collision with fixed or parked object                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                       |  |
| 10B. Collision (Check other object involved)<br><input checked="" type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Pedestrian <input checked="" type="checkbox"/> Animal <input checked="" type="checkbox"/> Commercial truck <input checked="" type="checkbox"/> Bus <input checked="" type="checkbox"/> Motorcycle <input checked="" type="checkbox"/> Fixed object <input checked="" type="checkbox"/> Train <input checked="" type="checkbox"/> Other (Specify) _____ <input checked="" type="checkbox"/> Automobile <input checked="" type="checkbox"/> Bicyclist                                                                       |  |                                                                                                                                                                       |  |
| 10C. Collision with another vehicle—Accident Classification (Check appropriate box) zzz <input checked="" type="checkbox"/> not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                                                                                       |  |
| VEHICLES (Your's is #1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | ACTION                                                                                                                                                                |  |
| 1 2 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | 1 2 3                                                                                                                                                                 |  |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Slowing—Stopping                                                                                                                                                      |  |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Stopped                                                                                                                                                               |  |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Parked                                                                                                                                                                |  |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Rear-ended Other Vehicle                                                                                                                                              |  |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Backing                                                                                                                                                               |  |
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Making Right Turn                                                                                                                                                     |  |
| G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Making Left Turn                                                                                                                                                      |  |
| H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Making U-Turn                                                                                                                                                         |  |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Proceeding Straight                                                                                                                                                   |  |
| J                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Merging                                                                                                                                                               |  |
| K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Entering Traffic From Shoulder, Median, Parking Strip or Private Drive                                                                                                |  |
| L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Intersection                                                                                                                                                          |  |
| M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Passing                                                                                                                                                               |  |
| N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Changing Lanes                                                                                                                                                        |  |
| O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Sideswipe—Opposite Direction                                                                                                                                          |  |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Head-On—Crossed Into Opposing Lane                                                                                                                                    |  |
| Q                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Skidding                                                                                                                                                              |  |
| R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Vehicle Out-Of-Control                                                                                                                                                |  |
| S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Unattended Vehicle Rolled Away                                                                                                                                        |  |
| T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Controlled Railroad Crossing                                                                                                                                          |  |
| U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Uncontrolled Railroad Crossing                                                                                                                                        |  |
| V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Other (Specify) _____                                                                                                                                                 |  |
| 10D. Non-collision (Check primary event) <input checked="" type="checkbox"/> Jackknife <input checked="" type="checkbox"/> Fire <input checked="" type="checkbox"/> Other (Specify) _____<br><input checked="" type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Overturn <input checked="" type="checkbox"/> Loss or spillage of cargo _____<br><input checked="" type="checkbox"/> Ran off road <input checked="" type="checkbox"/> Separation of units <input checked="" type="checkbox"/> Cargo shift                                                                                                                                     |  |                                                                                                                                                                       |  |
| 10E. If not primary event, did accident result in <input checked="" type="checkbox"/> Spillage of hazardous cargo <input checked="" type="checkbox"/> Spillage of non-hazardous cargo<br><input checked="" type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Fire <input checked="" type="checkbox"/> Explosion                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                       |  |
| 11. DRIVER INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                       |  |
| 11A. Name of your driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 11B. Age                                                                                                                                                              |  |
| 11C. Carrier USDOT Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                       |  |
| 11D. How long employed as your driver (To nearest year)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                       |  |
| 11E. Hours actually driving since last period of 8 consecutive hours off duty<br><input checked="" type="checkbox"/> 1 hr. <input checked="" type="checkbox"/> 3 hrs. <input checked="" type="checkbox"/> 5 hrs. <input checked="" type="checkbox"/> 7 hrs. <input checked="" type="checkbox"/> 9 hrs. <input checked="" type="checkbox"/> 11-12 hrs.<br><input checked="" type="checkbox"/> 2 hrs. <input checked="" type="checkbox"/> 4 hrs. <input checked="" type="checkbox"/> 6 hrs. <input checked="" type="checkbox"/> 8 hrs. <input checked="" type="checkbox"/> 10 hrs. <input checked="" type="checkbox"/> Not applicable                              |  |                                                                                                                                                                       |  |
| 11F. Anticipated driving time between periods of 8 consecutive hours off duty if accident had not occurred<br><input checked="" type="checkbox"/> 1 hr. <input checked="" type="checkbox"/> 3 hrs. <input checked="" type="checkbox"/> 5 hrs. <input checked="" type="checkbox"/> 7 hrs. <input checked="" type="checkbox"/> 9 hrs. <input checked="" type="checkbox"/> 11-12 hrs.<br><input checked="" type="checkbox"/> 2 hrs. <input checked="" type="checkbox"/> 4 hrs. <input checked="" type="checkbox"/> 6 hrs. <input checked="" type="checkbox"/> 8 hrs. <input checked="" type="checkbox"/> 10 hrs. <input checked="" type="checkbox"/> Not applicable |  |                                                                                                                                                                       |  |
| 11G. Condition of driver<br><input checked="" type="checkbox"/> Apparently normal <input checked="" type="checkbox"/> Had been drinking <input checked="" type="checkbox"/> Medical waiver<br><input checked="" type="checkbox"/> Sick <input checked="" type="checkbox"/> Dozed at wheel <input checked="" type="checkbox"/> Other (Specify) _____                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                       |  |
| 11H. Date of last medical certificate ...../...../.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                       |  |

Form MCS 50-T (Property-Carrying) (Rev. 8-89) Previous editions of this form are obsolete  
(over)

| 12. CARRIER'S VEHICLE(S)                                                                                                                                                                           |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------|--------------|-----------------|
| Type                                                                                                                                                                                               | Year | No. of Axles                                                 | Make                                                                               | Model No.                                                                                   | Company No.              | TYPE OF BODY                                                                                                                   |      |                                                  |              |                 |
|                                                                                                                                                                                                    |      |                                                              |                                                                                    |                                                                                             |                          | Van                                                                                                                            | Flat | Tank                                             | Auto Carrier | Other (Specify) |
| <input type="checkbox"/> A Truck                                                                                                                                                                   |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> B Tractor                                                                                                                                                                 |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> C Semi-trailer                                                                                                                                                            |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> D Full trailer                                                                                                                                                            |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> E Full trailer (2nd)                                                                                                                                                      |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> F Other<br>(Specify) _____                                                                                                                                                |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 13. Total length of vehicle/comb. Ft.                                                                                                                                                              |      | 13A. Total width of vehicle or cargo Ft.                     |                                                                                    |                                                                                             | 13B. Weight (cargo) Lbs. |                                                                                                                                |      | 13C. Weight (gross) Lbs.                         |              |                 |
| 14. Type of fuel <input type="checkbox"/> A Gasoline <input type="checkbox"/> B Diesel <input type="checkbox"/> C L.P.G. <input type="checkbox"/> D Other (Specify) _____                          |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 15. Cargo at time of accident (Your vehicle)<br><input type="checkbox"/> A Hazardous materials in cargo (Specify classification) _____ <input type="checkbox"/> B Non-hazardous materials in cargo |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 16. Check one of the following as principal type of cargo                                                                                                                                          |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> A General freight                                                                                                                                                         |      |                                                              | <input type="checkbox"/> E Motor vehicles                                          |                                                                                             |                          | <input type="checkbox"/> Liquids in bulk                                                                                       |      | <input type="checkbox"/> Mobile home             |              |                 |
| <input type="checkbox"/> B Household goods or uncrated furniture/fixtures                                                                                                                          |      |                                                              | <input type="checkbox"/> F Driveaway-towaway                                       |                                                                                             |                          | <input type="checkbox"/> Explosives                                                                                            |      | <input type="checkbox"/> Farm products           |              |                 |
| <input type="checkbox"/> C Metal: Coils, sheets, rods, plates, etc.                                                                                                                                |      |                                                              | <input type="checkbox"/> G Gases in bulk                                           |                                                                                             |                          | <input type="checkbox"/> Logs, poles, lumber                                                                                   |      | <input type="checkbox"/> Other (Specify) _____   |              |                 |
| <input type="checkbox"/> D Heavy machinery or other large objects                                                                                                                                  |      |                                                              | <input type="checkbox"/> H Solids in bulk                                          |                                                                                             |                          | <input type="checkbox"/> Empty                                                                                                 |      | <input type="checkbox"/> Refrigerated foods      |              |                 |
| 17. Was your driver killed?                                                                                                                                                                        |      | 17A. Was driver injured?                                     |                                                                                    | 17B. Was your relief driver killed?                                                         |                          | 17C. Was relief driver injured?                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> A Yes <input type="checkbox"/> B No                                                                                                                                       |      | <input type="checkbox"/> A Yes <input type="checkbox"/> B No |                                                                                    | <input type="checkbox"/> A Yes <input type="checkbox"/> B No <input type="checkbox"/> C N/A |                          | <input type="checkbox"/> A Yes <input type="checkbox"/> B No <input type="checkbox"/> C N/A                                    |      |                                                  |              |                 |
| 18. Number of other authorized persons in your vehicle<br>Killed _____ Injured _____                                                                                                               |      |                                                              |                                                                                    | 18A. Number of unauthorized persons in your vehicle<br>Killed _____ Injured _____           |                          |                                                                                                                                |      |                                                  |              |                 |
| 19. Total number of other persons killed _____ injured _____                                                                                                                                       |      |                                                              |                                                                                    | 19A. Amount of total property damage in dollars \$ _____                                    |                          |                                                                                                                                |      |                                                  |              |                 |
| 20. Were mechanical defects or failures apparent on your vehicle at time of accident? <input type="checkbox"/> A Yes <input type="checkbox"/> B No                                                 |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 21. Check appropriate boxes (Mechanical defects or failures)                                                                                                                                       |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| <input type="checkbox"/> A Not applicable                                                                                                                                                          |      |                                                              | <input type="checkbox"/> D Steering system                                         |                                                                                             |                          | <input type="checkbox"/> G Driveline                                                                                           |      | <input type="checkbox"/> J Lights                |              |                 |
| <input type="checkbox"/> B Fuel system                                                                                                                                                             |      |                                                              | <input type="checkbox"/> E Suspension                                              |                                                                                             |                          | <input type="checkbox"/> H Engine                                                                                              |      | <input type="checkbox"/> K Coupling              |              |                 |
| <input type="checkbox"/> C Wheels and tires                                                                                                                                                        |      |                                                              | <input type="checkbox"/> F Transmission                                            |                                                                                             |                          | <input type="checkbox"/> I Brakes                                                                                              |      | <input type="checkbox"/> L Other (Specify) _____ |              |                 |
| 22. Was your vehicle equipped with seat belts? <input type="checkbox"/> A Yes <input type="checkbox"/> B No                                                                                        |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 23. Were seat belts in use by your driver(s) at time of accident? <input type="checkbox"/> A Yes <input type="checkbox"/> B No                                                                     |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 24. OTHER VEHICLES INVOLVED                                                                                                                                                                        |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 24A. Company name or operator (Vehicle #2)                                                                                                                                                         |      |                                                              |                                                                                    | 24B. Address                                                                                |                          |                                                                                                                                |      | 24C. Type of vehicle                             |              |                 |
| 24D. Company name or operator (Vehicle #3)                                                                                                                                                         |      |                                                              |                                                                                    | 24E. Address                                                                                |                          |                                                                                                                                |      | 24F. Type of vehicle                             |              |                 |
| 25. Weather                                                                                                                                                                                        |      |                                                              |                                                                                    |                                                                                             |                          | 25A. Light                                                                                                                     |      |                                                  |              |                 |
| <input type="checkbox"/> A Rain <input type="checkbox"/> C Snow <input type="checkbox"/> E Cloudy/overcast                                                                                         |      |                                                              |                                                                                    |                                                                                             |                          | <input type="checkbox"/> A Day <input type="checkbox"/> C Dawn <input type="checkbox"/> E Dusk <input type="checkbox"/> F Dark |      |                                                  |              |                 |
| <input type="checkbox"/> B Clear <input type="checkbox"/> D Fog/Smog <input type="checkbox"/> F Sleet <input type="checkbox"/> G Other (Specify) _____                                             |      |                                                              |                                                                                    |                                                                                             |                          | <input type="checkbox"/> B Artificial lights <input type="checkbox"/> D Other (Specify) _____                                  |      |                                                  |              |                 |
| 26. Road surface                                                                                                                                                                                   |      |                                                              | 26A. Total number of lanes                                                         |                                                                                             |                          | 26B. Type of highway                                                                                                           |      |                                                  |              |                 |
| <input type="checkbox"/> A Dry <input type="checkbox"/> C Snowy <input type="checkbox"/> E Other                                                                                                   |      |                                                              | <input type="checkbox"/> A One lane <input type="checkbox"/> C Three lanes         |                                                                                             |                          | <input type="checkbox"/> A Divided <input type="checkbox"/> B Undivided                                                        |      |                                                  |              |                 |
| <input type="checkbox"/> B Wet <input type="checkbox"/> D Icy (Specify) _____                                                                                                                      |      |                                                              | <input type="checkbox"/> B Two lanes <input type="checkbox"/> D Four or more lanes |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 26C. Check appropriate box <input type="checkbox"/> A Entrance ramp (Expressway) <input type="checkbox"/> B Exit ramp (Expressway) <input type="checkbox"/> C Not applicable                       |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 27. Account of accident by carrier official (Please type or print clearly.)                                                                                                                        |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
|                                                                                                                                                                                                    |      |                                                              |                                                                                    |                                                                                             |                          |                                                                                                                                |      |                                                  |              |                 |
| 28. Name and title of person signing report                                                                                                                                                        |      |                                                              |                                                                                    |                                                                                             |                          | 29. Signature                                                                                                                  |      |                                                  |              |                 |
| 30. Telephone Number<br>Area Code                                                                                                                                                                  |      |                                                              |                                                                                    |                                                                                             |                          | 31. Date report submitted<br>...../...../.....                                                                                 |      |                                                  |              |                 |









U.S. Department  
of Transportation

**Federal Highway  
Administration**

400 Seventh St., S.W.  
Washington, D.C. 20590

Official Business  
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