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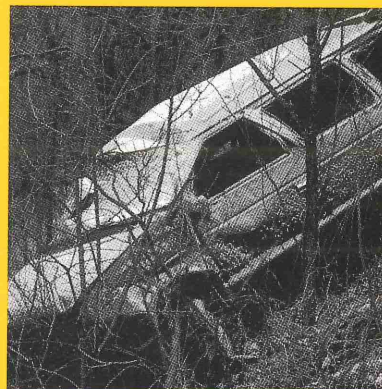
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# 1999 Minnesota Motor Vehicle Crash Facts



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*Minnesota Department of Public Safety*

March 14, 2001

## Minnesota Crash Facts Update

*Crash Facts Update* compares the preliminary current year statistics on traffic crashes with the corresponding statistics from the previous year and the previous five-year average. Due to the time period required for data entry and processing, detailed crash statistics are presented for the current year only through the most recent full month for which they are available. A tabulation of crash fatalities and the corresponding data for the prior year is maintained and updated daily. The data on fatalities shown at the end of the *Crash Facts Update* is taken from this manual tabulation. The current *Update* contains preliminary statistics for the entire year 2000.

A number of special factors, such as unusual weather variations or economic changes, can sometimes make it appear that there are dramatic changes in the preliminary crash figures reported. Given these circumstances, the figures shown here should be interpreted cautiously.

### Minnesota Traffic Crashes and Fatalities: January through December 2000

|                                   | Year<br>2000   | Year<br>1999  | Percent Change<br>From Prior Year | Prior Five<br>Year<br>Average | Percent Change<br>From Prior Five<br>Year Average |
|-----------------------------------|----------------|---------------|-----------------------------------|-------------------------------|---|
| <b>Total Crashes</b>              | <b>103,563</b> | <b>96,813</b> | <b>+6.97%</b>                     | <b>97,943.8</b>               | <b>+5.74%</b>                                     |
| Fatal Crashes                     | 558            | 567           | -1.59%                            | 537.6                         | +3.79%  |
| Severe Injury                     | 2,471          | 2,677         | -7.70%                            | 2,832.2                       | -12.75%   |
| Moderate Injury                   | 11,440         | 11,352        | +0.78%                            | 11,401.6                      | +0.34%  |
| Possible Injury                   | 16,906         | 16,250        | +4.04%                            | 17,172.8                      | -1.55%  |
| Property Damage Only              | 72,188         | 65,967        | +9.43%                            | 65,999.6                      | +9.38%  |
| <b>Fatalities</b>                 | <b>626</b>     | <b>626</b>    | <b>0.00%</b>                      | <b>609.8</b>                  | <b>+2.66%</b>                                     |
| Motor Vehicle (except motorcycle) | 536            | 538           | -0.37%                            | 517.4                         | +3.59%  |
| Motorcycle                        | 35             | 29            | +20.69%                           | 34                            | +2.94%  |
| Pedestrian                        | 41             | 51            | -19.61%                           | 52                            | -21.15%   |
| Bicyclist                         | 14             | 8             | +75.00%                           | 6.4                           | +118.75%  |
| <b>People Injured</b>             | <b>44,724</b>  | <b>44,538</b> | <b>+0.42%</b>                     | <b>46,367.8</b>               | <b>-3.55%</b>                                     |
| Severe Injury                     | 3,174          | 3,460         | -8.27%                            | 3,636.2                       | -12.71%   |
| Moderate Injury                   | 15,898         | 16,002        | -0.65%                            | 16,141.8                      | -1.51%  |
| Possible Injury                   | 25,652         | 25,076        | +2.30%                            | 26,589.8                      | -3.53%  |

### Current Preliminary Fatality Statistics Compared to Previous Year

|                   | Through<br>December 31, 2000 | Through<br>December 31, 1999 |
|-------------------|------------------------------|------------------------------|
| <b>Fatalities</b> | <b>626</b>                   | <b>626</b>                   |
| Motorcycle        | 35                           | 29                           |
| Pedestrian        | 41                           | 51                           |
| Bicyclist         | 14                           | 8                            |

*Crash Facts Update* is produced by the Office of Traffic Safety. For additional copies or other inquiries please contact Paula Coleman (651) 297-4860.

January 3, 2001

## Minnesota Crash Facts Update

*Crash Facts Update* compares the preliminary current year statistics on traffic crashes with the corresponding statistics from the previous year and the previous five-year average. Due to the time period required for data entry and processing, detailed crash statistics are presented for the current year only through the most recent full month for which they are available. A tabulation of crash fatalities and the corresponding data for the prior year is maintained and updated daily. The data on fatalities shown at the end of the *Crash Facts Update* is taken from this manual tabulation.

A number of special factors, such as unusual weather variations or economic changes, can sometimes make it appear that there are dramatic changes in the preliminary crash figures reported. Given these circumstances, the figures shown here should be interpreted cautiously.

### Minnesota Traffic Crashes and Fatalities: January through October 2000

|                                   | Current Year<br>Through<br>October | Prior Year<br>Through<br>October | Percent Change<br>From Prior Year | Prior Five<br>Year<br>Average | Percent Change<br>From Prior Five<br>Year Average |
|-----------------------------------|------------------------------------|----------------------------------|-----------------------------------|-------------------------------|---|
| <b>Total Crashes</b>              | <b>78,937</b>                      | <b>78,419</b>                    | <b>+0.66%</b>                     | <b>78,579.6</b>               | <b>+0.45%</b>                                     |
| Fatal Crashes                     | 450                                | 441                              | +2.04%                            | 443.6                         | +1.44%  |
| Severe Injury                     | 2,082                              | 2,229                            | -6.59%                            | 2,391.2                       | -12.93%   |
| Moderate Injury                   | 9,355                              | 9,455                            | -1.06%                            | 9,515.8                       | -1.69%  |
| Possible Injury                   | 13,420                             | 13,447                           | -0.20%                            | 14,058.2                      | -4.54%  |
| Property Damage Only              | 53,630                             | 52,847                           | +1.48%                            | 52,170.8                      | +2.80%  |
| <b>Fatalities</b>                 | <b>510</b>                         | <b>488</b>                       | <b>+4.51%</b>                     | <b>504.2</b>                  | <b>+1.15%</b>                                     |
| Motor Vehicle (except motorcycle) | 431                                | 420                              | +2.62%                            | 425.6                         | +1.27%  |
| Motorcycle                        | 35                                 | 28                               | +25.00%                           | 32.4                          | +8.02%  |
| Pedestrian                        | 32                                 | 32                               | 0.00%                             | 39.4                          | -18.78%   |
| Bicyclist                         | 12                                 | 8                                | +50.00%                           | 6.8                           | +76.47%   |
| <b>People Injured</b>             | <b>36,284</b>                      | <b>37,007</b>                    | <b>-1.95%</b>                     | <b>38,442.4</b>               | <b>-5.61%</b>                                     |
| Severe Injury                     | 2,647                              | 2,867                            | -7.67%                            | 3,070.2                       | -13.78%   |
| Moderate Injury                   | 13,051                             | 13,369                           | -2.38%                            | 13,506.4                      | -3.37%  |
| Possible Injury                   | 20,586                             | 20,771                           | -0.89%                            | 21,865.8                      | -5.85%  |

### Current Preliminary Fatality Statistics Compared to Previous Year

|                   | Through<br>December 27, 2000 | Through<br>December 27, 1999 |
|-------------------|------------------------------|------------------------------|
| <b>Fatalities</b> | <b>602</b>                   | <b>572</b>                   |
| Motorcycle        | 36                           | 29                           |
| Pedestrian        | 38                           | 51                           |
| Bicyclist         | 13                           | 8                            |

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# MINNESOTA MOTOR VEHICLE CRASH FACTS 1999

A summary of crashes occurring on Minnesota roadways based  
on crash reports submitted to the Minnesota Department of  
Public Safety by investigating police officers and drivers

Produced by:  
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Minnesota Department of Public Safety  
444 Cedar Street, Suite 150  
St. Paul, MN 55101-5150  
Phone (651) 296-9489  
or (651) 297-4516  
[TTY (651) 282-6555]  
< <http://www.dps.state.mn.us/trafsafe> >

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This material is available in alternative format, upon request.

(Special thanks to Office of Communications for cover design.)



# MINNESOTA DEPARTMENT OF PUBLIC SAFETY



## Office of the Commissioner

445 Minnesota Street, Suite 1000, North Central Life Tower, St. Paul, Minnesota 55101-5000

Phone: 651/296-6642 FAX: 651.297.5728 TTY: 651/282-6555

Internet: <http://www.dps.state.mn.us>

June, 2000

Minnesota is recognized as a leader in the area of traffic safety. Today, I am proud to present the 1999 report of Minnesota Motor Vehicle *Crash Facts*. The compilation and analysis of these crashes helps determine how much motor vehicle crashes cost Minnesotans and what we can do to prevent traffic crashes. *Crash Facts* is also a poignant expression of the Department of Public Safety's commitment to programs that promote traffic safety and its support for vigorous enforcement of traffic safety laws.

On the day you read this, there will be about 275 traffic crashes in Minnesota, costing about \$4.5 million – a daily cost that is in some way shared by the persons involved, their insurance companies and the citizens of Minnesota and the United States. Although Minnesota has one of the lowest traffic crash rates in the country, these crashes include:

- One or two fatal crashes, each with one or two deaths;
- Nine or ten people will sustain severe injuries, perhaps causing disfigurement, loss of limbs or paralysis;
- About 110 more people will be injured; and,
- 600 more will be involved in the crashes (although not injured will still have to bear the expense and inconvenience of car repair).

Crashes are not random events as suggested by the commonly used term-- accident. Traffic crashes remain the most preventable cause of death. Rarely are they a complex event. Most crashes stem from four major causes—speed, belts (lack of seatbelts), alcohol (driving under the influence of alcohol) and inattentive driving. These are areas that involve personal responsibility and making good choices.

As Commissioner of Public Safety, I urge you to do all you can to avoid being a statistic in this annual report. Buckle up, don't drink and drive, obey the speed limit, and be courteous to other drivers. Your life depends on it!

Sincerely,  


Charlie Weaver  
Commissioner

Alcohol &  
Gambling  
Enforcement

Bureau of  
Criminal  
Apprehension

Capitol Security

Driver & Vehicle  
Services

Drug Policy &  
Violence  
Prevention

Emergency  
Management/  
Emergency  
Response  
Commission

State Fire  
Marshal/  
Pipeline Safety

State Patrol

Traffic Safety

## **Minnesota Traffic Crashes in 1999 OVERVIEW**

Driving may be the most dangerous thing you do. This edition of *Minnesota Motor Vehicle Crash Facts* summarizes the crashes, deaths, and injuries that occurred in Minnesota during 1999. We hope that the information contained within this book will help you and others use our roadways more safely.

### **In 1999,**

- 96,813 traffic crashes occurred
- 177,262 motor vehicles were involved
- 261,610 people were involved
- 626 people died
- 44,538 people were injured
- \$1,635,376,800 estimated economic cost to Minnesota

### **On an average day in 1999,**

- 265 crashes
- 1.7 deaths
- 122 people injured
- \$4,500,000 average daily cost

### **1999 crashes that involved alcohol**

- 5,723 crashes
- 195 deaths
- 4,433 people injured
- \$282,491,200 estimated economic cost

### **Highlights from the 1999 Crash Facts edition**

- **Alcohol-related fatalities decreased, from 273 (42% of 650 total) to 195 (31% of 626 total).**  
We hope that the 1999 figure represents a return to a generally downward trend of the last two decades, and that the figures for 1998 were the exception.
- **Safety belt use increased to record high of 72% (from 64% in 1998).**  
This good news means that many more people, in 1999 compared to prior years, escaped severe injury or death because they were wearing their safety belts.
- **The fatality rate per 100 million vehicle miles traveled is at a record low.**  
The VMT-based fatality rate was 1.24, the lowest ever. This compares with a rate of 1.47 in 1990, 3.03 in 1980, and 4.41 in 1970. This means that, as more drivers travel more miles each year, the number of people killed in proportion to the number of miles driven continues to decrease. This is great news for the average driver, but it is no comfort to the families of the 626 people killed on our highways last year.

## **CRASH FACTS ORGANIZATION**

Crash Facts has a wealth of statistical information about traffic crashes in Minnesota. To help you find your way around the book, we've prepared this basic user's guide.

### **Introduction**

Starting on page 1, the introduction discusses the history, societal costs, and general cause of crashes. Use it to find the following information:

- How crash costs are estimated.

- Contributing factors in crashes
- Historical analysis of traffic deaths over the last 35 to 40 years.

### **Section I: All Crashes**

This section starts on page 4, and it describes the aggregate of all the crashes in the state last year. Information provided includes:

- Licensed drivers by age (Table 1.11)
- Registered vehicles by category (Table 1.12)
- Contributing factors to crashes (Tables 1.09, 1.10 and 1.19)
- Holiday crashes, deaths and injuries (Table 1.30)

### **Section II: Alcohol-Related Crashes**

Starting on page 35, you'll find data about impaired driving and traffic crashes. This section focuses on crashes involving alcohol and spells out answers to commonly-raised questions, including:

- Historical overview since 1980 (Table 2.01)
- "DWI" arrest statistics since 1985 (Tables 2.02 and 2.03)
- Persons killed and injured in alcohol-related crashes by age (2.04)

### **Section III: Safety Equipment Use by Vehicle Occupants in 1999 Crashes**

Seat belt and related information can be found starting on page 47. This section focuses on safety belt use by people in cars and trucks, and includes a table showing seat belt use rates since 1986.

### **Section IV: Motorcycle Crashes**

The motorcycle section starts on page 56; it focuses on crashes involving a motorcycle.

- This section does not include all-terrain vehicles, motorscooters, or motorized pedalcycles ("mopeds").

### **Section V: Truck Crashes**

This section, which starts on page 65, focuses on crashes that involved a truck, normally a "heavy commercial vehicle."

- Crashes involving pickup trucks are not included in this section.

### **Section VI: Pedestrian Crashes**

Pedestrian crash information starts on page 73. The section does not include crashes unless a motor vehicle was involved (so there are no data from pedestrian/train crashes or pedestrian/bicycle crashes).

### **Section VII: Bicycle Crashes**

This section focuses on motor-vehicle/bicycle crashes, and it starts on page 82.

- Does not include bicycle crashes not on public highways and roadways.
- Does not include bicycle crashes unless a motor vehicle was involved.

### **Section VIII: School Bus Crashes**

- School bus crash information starts on page 87. This section focuses on crashes that involved a school bus as a "contact vehicle."
- Does not include crashes where a school bus was indirectly involved.  
(This will be changed beginning in 2003.)

### **Section IX: Motor Vehicle/Train Crashes**

Information about train crashes starts on page 92. Crashes that do not involve a motor vehicle (that is, a crash between a pedestrian and a train) are not included in this book.

### **Definitions**

The definitions section at the end of the book attempts to succinctly define key terms.

## Hints for Navigating Crash Facts

Crash Facts is designed to meet the needs of different audiences. If you are unfamiliar with this book, here are some hints that may make it easier for you to find the information you are seeking.

### **Legislators:**

Section II through IX focus on particular traffic safety sub-areas (alcohol, seat belts, crashes involving motorcycles, pedestrians, and so on). Each section begins with a narrative that provides background, mentions highlights for the years, and discusses some legislative history (where appropriate). The first table in each section gives a ten-year history outlining key parameters of the problem.

### **Students studying traffic safety issues:**

Of all age groups, teenagers and young adults pay the heaviest price in traffic safety (in terms of deaths and injuries). Each section contains tables focusing on age of drivers and victims in crashes.

### **Law Enforcement Community:**

There are over 500 city, county, and state law enforcement agencies in Minnesota. Each agency has access to its own reports on traffic crashes, but the data are brought together here. Table 1.26 shows statistical information arranged by county. Table 1.27 reports on the traffic crash experience of almost 200 cities with populations over 2,500.

### **Public Health:**

Traffic crashes cause deaths and injuries; they are the leading cause of death to people from age 1 to 35 (people general thought of as "too young to die"). Crash Facts is filled with tables that show age and sex of drivers and victims, and many tables focus on the contributing factors in crashes. Section II is relevant to chemical dependency issues.

### **City and county government agencies:**

Information about your county will be found in Tables 1.26; your city's statistics may be listed in Table 1.27. The Office of Traffic Safety can provide additional information on traffic crashes in your county or city; just contact us at the address shown below.

### **Data Availability:**

This report presents a wide spectrum of information in more than 100 tables and figures, but it may not answer every question. You may request additional data. Each response usually requires from one day to two weeks, depending on the complexity of the request.

Such requests should be directed to:

Department of Public Safety  
Office of Traffic Safety  
444 Cedar Street, Suite 150  
St. Paul, MN 55101-5150  
(651) 297-4516 or 296-9489



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## INTRODUCTION

At the end of the 1999 calendar year, 3,542,439 people held Minnesota driver licenses and 3,918,871 motor vehicles were registered in the state. Vehicles traveled almost fifty-one billion miles on public roadways in the state. There were 96,813 traffic crashes; 625 people died and 44,538 people were injured in those crashes. This report provides a statistical summary of those crashes.

The purpose of *Crash Facts* is to provide summary statistical information about the crashes reported to the state each year. The term "crash" is used in preference to "accident." The latter term suggests there is a random, unavoidable quality about the events in question. In fact, though, the experience of the last two decades strongly demonstrates that advances in engineering and technology, coupled with changes in public policy and individual human behavior, can dramatically reduce the number and severity of traffic crashes.

### Cost of Traffic Crashes

The necessity of getting from one place to another and the efficiency of motor vehicles for this purpose result in significant costs to society. The National Safety Council reports that accidents (from all causes) are the leading cause of death among persons aged 1 to 34 and the fifth leading cause of death among all persons (*Accident Facts, 1997 Edition*, p. 10).

It is possible to estimate economic costs of traffic crashes, although the results can vary depending on definitions and estimating procedures. Many states use the National Safety Council's economic cost figures, the most recent of which are based on 1998 data. Based on those, the total economic loss from 1999 traffic crashes in Minnesota was \$1,635,376,800 a figure that is calculated as follows:

### Cost of Motor Vehicle Crashes in 1999

|        |                            |             |                   |
|--------|----------------------------|-------------|-------------------|
| 626    | deaths                     | @ \$980,000 | = \$613,480,000   |
| 3,460  | severe injuries            | @ \$44,000  | = \$152,240,200   |
| 16,002 | moderate injuries          | @ \$14,800  | = \$236,829,600   |
| 25,076 | minor injuries             | @ \$8,400   | = \$210,638,400   |
| 65,967 | property damage<br>crashes | @ \$6,400   | = \$422,188,800   |
| Total  |                            |             | = \$1,635,376,800 |

### Factors Affecting Traffic Crashes

Many factors may contribute to even a single crash. A domestic quarrel may lead to driver distraction, which together with wet, slippery pavement and high traffic congestion at an intersection causes a traffic crash. Public policy cannot address the infinite number of individual causes imaginable.

There are a more limited number of factors that significantly affect the aggregate of traffic crashes. These can be organized into logical groups, such as human behavior factors or vehicle safety factors. The following paragraphs outline some of the factors most frequently thought to affect crash incidence and severity.

*Vehicle Safety Factors:* Engineering and design standards for vehicle performance can help prevent crashes from occurring. When there is a crash, vehicles designed for safety can increase survivability. For example, the design of windshield glass and the location and durability of gas tanks can increase safety. The "passenger packaging" inside a vehicle can reduce injury severity through means such as padded dashboards and collapsible steering wheel columns. Passenger protection systems in vehicles (airbags, safety belts, etc.), if used, can eliminate injuries or reduce their severity.

*Behavior factors:* For all crashes, the driver behaviors police cite most often as contributing factors are, in order of frequency, driver inattention or distraction, failure to yield right of way, and illegal or unsafe speed. In fatal crashes, illegal or unsafe speed is cited most often, followed by physical impairment (usually by alcohol). Reducing these behaviors would reduce crashes. When there is a crash, using safety equipment will reduce severity. Motorcyclists and bicyclists should wear helmets. Vehicle occupants should use safety belts. Infants and toddlers should always be placed in child safety seats.

*Roadway characteristics:* Limited access highways carry about a fifth of the traffic volume in Minnesota, yet account for only about a twelfth of fatal accidents. They are built to high roadway engineering standards and are very safe, relatively speaking. In general, roadway characteristics conducive to safety include wide lanes, clearly visible striping, flared guardrails, wide shoulders of good quality, shoulders and roadsides free of obstacles, well-located crash attenuation devices, well-planned use of traffic signals, and effective communication to roadway users through clear and visible signing.

*Environmental factors:* Weather conditions affect crash incidence and severity. Clear dry roads are conducive to high speeds; consequently, fatal crashes have a pronounced seasonal variation, peaking in the warm summer months and falling in the winter months. The total number of crashes is driven by the incidence of the less serious property damage crashes, which tend to have a reverse seasonal variation, peaking in the winter months.

Volume of traffic, or vehicle miles traveled (VMT), is a predictor of crash incidence. All other things being equal, as VMT increases, so will traffic crashes. The relationship may not be simple, however; after a point, increasing congestion leads to reduced speeds, changing the proportion of crashes that occur at different severity levels.

The quality and availability of emergency medical services might be classified as an environmental factor. The first hour after a traumatic episode, such as a traffic crash, has been called the "golden hour." Victims who

receive emergency services within that time have markedly improved chances of survival.

The age structure of the population has a strong effect on crash incidence, although it is not generally thought about since demographic changes are so gradual. In Minnesota, about one in eight teenage drivers are involved in crashes each year. The involvement rate drops off for successive age groups. For example, it is about 1 in 25 for drivers in their forties. The aging of the baby boom has reduced crash incidence.

### **Historical Perspective**

In 1966, there were 53,041 traffic fatalities in the country, or 5.7 for every hundred million miles of travel. In Minnesota in 1968, there were 1,060 traffic fatalities, or 5.3 per hundred million miles of travel. Those were the worst years. Since then, both the rate and the number of fatalities have declined in a fairly steady pattern. Last year, there were 41,345 traffic fatalities (preliminary estimate) throughout the country and 626 in Minnesota. The respective rates per hundred million miles of travel were 1.5 and 1.2. A dramatic benefit has been achieved.

The benefit is in large part the result of conscious decision-making on traffic safety issues. The National Highway Traffic Safety Administration (originally called the National Safety Bureau) was established in the US Department of Transportation in 1967. Since then it has promoted, and Congress has passed, legislation mandating the manufacture of safer cars. At the same time, the federal interstate highway system has expanded, contributing to a safer roadway environment.

Simultaneously there has been an effort to change human behavior factors. Minnesota has been a leader among the states in the development of innovative drunk driving countermeasures. The Legislature made significant amendments to the DWI law in 1971, 1976, 1978, and in almost every year of the 1980s. It also passed the child passenger protection law in 1981, and the mandatory seat belt law in 1986. It subsequently amended those laws, closing loopholes, broadening their scope, and strengthening penalties.

The benefits of action in these areas are clear. The graph shown in Figure 1 is one illustration.

It shows a steady increase in the number of drivers and vehicles, but a steady decrease in the fatality rate per hundred million miles of travel.

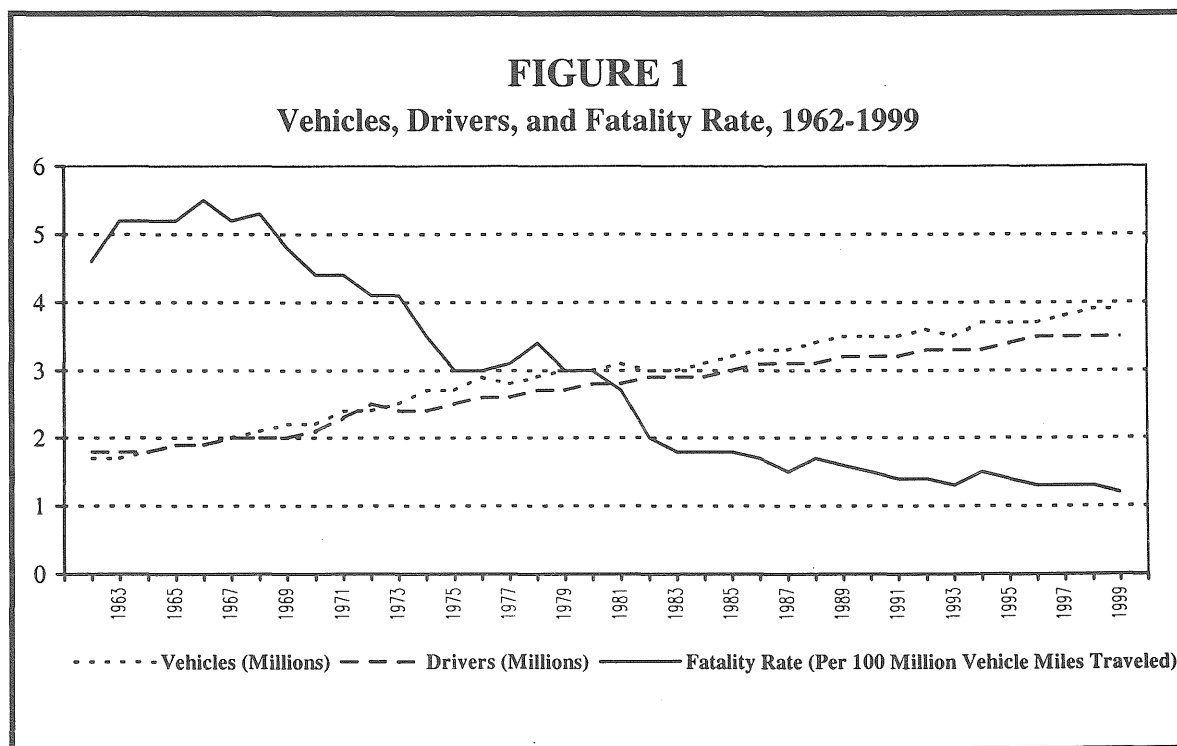
#### Legislative requirement

*Minnesota Motor Vehicle Crash Facts* is produced annually by the Office of Traffic Safety, Minnesota Department of Public Safety, in accordance with state law. Minnesota Statutes, Section 169.10, requires that traffic crashes be reported to the Department. Section 169.10 then requires the Department to "... tabulate ... all accident reports ... and publish annually ... statistical information based thereon as to the number and circumstances of traffic accidents."

Section 169.09 specifies that a driver involved in an accident that results in injury to or death of any person or total property damage of \$1,000 or more must submit a report within ten days of the crash. The law enforcement officer who investigates the crash must also submit a report within ten days.

The minimum dollar amount for crashes involving only property damage has changed over the years. The first minimum was set at \$50 in 1939. It was raised to \$100 in 1965, to \$300 on 8-1-77, and then to \$500 on 8-1-81. The current minimum of \$1,000 took effect August 1, 1994.

*Crash Facts* is divided into nine sections. The first presents information on the aggregate of all crashes reported to the state during the preceding calendar year. The remaining eight sections focus on specific areas of interest to policy makers and the public. Section II deals with alcohol-related crashes. Section III is about the use of safety equipment by occupants of vehicles required to be equipped with passenger protection systems, including child safety seats and safety belts. The following five sections focus on crashes that involved motorcycles (section IV), trucks (section V), pedestrians (section VI), bicycles (section VII), and school buses (section VIII). The final section (IX) summarizes information on collisions between motor vehicles and trains.



# I: ALL CRASHES

## Traffic crashes, in general

There are about 100,000 traffic crashes each year that get reported to the Minnesota Department of Public Safety. This is a very large number that is commensurate with the critical dependence we have on motor vehicles for all sorts of transportation needs. At the end of last year, over 3.9 million motor vehicles were registered in the state. There were just over 3.5 million licensed drivers. Vehicles thus outnumber licensed drivers by almost a half-million. Almost 51 billion miles were driven. That would average over 14,000 miles per licensed driver. When numbers are this big, they don't change dramatically from one year to the next. Thus, the 1999 calendar year was representative of years over the last two decades. Some changes occur, but usually they are gradual, and hard to see, except over a long time period. Thus, the characteristics of the 1999 crashes, discussed below, are similar to the characteristics of past years as well, though some changes will be highlighted

## Traffic Crashes in 1999

There were 96,813 crashes reported to the State last year. One-third of them involved just one vehicle (for example, veering off the road to the right or left, or overturning, or colliding with a fixed object such as a guardrail or sign). Two-thirds of the crashes were multi-vehicle crashes--usually involving just two vehicles, sometimes involving three vehicles, but seldom more than three.

In all, 177,262 vehicles were in crashes last year. Ninety percent of these were standard automobiles, pickup trucks, sport utility vehicles, or vans, normally privately owned. There were 5,387 trucks, of all sizes, but usually used for commercial purposes, in crashes. The other large categories included 6,960 "hit-and-run" vehicles, and 1,052 motorcycles. There were also 1,133 bicyclists and 1,384 pedestrians who were struck by motor vehicles.

Fully 261,610 people were involved in these crashes. That was just in a single year, and represents over five percent of the state's total population. In a sense this is an incredibly large number, but it is the case, fortunately, that most crashes are not severe. Sixty-eight percent of the crashes last year only involved property damage (of at least \$1,000); that is, no one was killed or injured. The remaining crashes did involve people getting killed or injured: 25,076 people sustained minor injuries, 16,002 had moderate injuries, 3,460 had severe injuries, and 626 people were killed.

## WHO were the people in crashes?

As noted, pedestrians and bicyclists together made up about 2,500 of the people in crashes--just less than 1%. People on motorcycles, snowmobiles, ATV's, farm equipment (like tractors), motorscooters, and motorized bicycles ("mopeds") made up another 1,545 (one-half of one percent). The remaining 98.5% were people inside

vehicles--that is, basically, car (including vans and sport utility vehicles), truck, and bus occupants.

If the number of people in different types of vehicles who get into crashes and sustain injuries is compared to the total number of people in the vehicles, it is possible to get a sense of the relative safety of different vehicle types. Doing this shows that motorcycle riders are among the least safe. Eighty-four percent of motorcyclists in crashes were injured. People in big, heavy vehicles are at the other end of the continuum. Using the same measure (the ratio of injured to total occupants), school bus occupants were the safest: 2% of them got injured. Other buses and large trucks also had very low ratios of injured-to-total occupants.

When a crash occurs, we may think spontaneously of the people involved in terms of two overlapping categories: who was driving, and who got hurt. Demographically, the two groups are similar, but they don't overlap completely. As far as drivers are concerned, there is an exceedingly strong relationship between age and crash involvement. Simply put, as age increases, crash involvement decreases. Teenagers are grossly over-represented in crashes, compared to their number in the population of licensed drivers. Last year, 26,474 teenagers were drivers in crashes, which was one out of eight licensed drivers in that age group. By contrast, 9,430 persons aged 50 to 54 were drivers in crashes, and that was one out of thirty-one drivers in that age group.

Another strong relationship is between the driver's gender and crash involvement. Male drivers get into crashes more. (However, national studies have found that this particular relationship disappears when allowance is made for the fact that males simply drive more than females.) Last year in Minnesota, 60% of the drivers in all crashes (setting aside those where gender was not reported) and 71% of the drivers in fatal crashes were males.

The people hurt in crashes are similar to the drivers with respect to age. That is, they are disproportionately young. Last year, 30% of the fatal injuries and 41% of the non-fatal injuries occurred to people in the 15-year age group from 15 through 29. With respect to gender, the people hurt are like drivers when it comes to who gets killed. In 1999, males outnumbered the females 393 to 233 in traffic deaths. But in the non-fatal crashes, females sustained injuries a little more often than males (51% to 49%).

## WHY crashes occur: the "contributing factors"

If we think spontaneously about why crashes occur, probably certain "causes" comes to mind right away: "speed" as a factor, or "not paying attention," or "people using cell phones," or "drinking and driving," or "drowsy driving." It is a problem, though, that some factors are much easier to detect than others are. For example, it is



contrast, once a crash has occurred, it can be hard to determine (unless a driver is honest) that a crash was due, for example, to driver fatigue, or to distraction caused by using a cell phone. Officers who complete the crash report therefore often resort to the contributing factor category "driver inattention or distraction." This category can cover a "multitude of sins." However, it usually means that one driver in a crash committed an error in driving that turned out to have very bad consequences. For example, the driver went through a stop sign, or the driver drove straight ahead as the road curved left. In general, the driver must have been distracted, or must have failed to be alert and pay attention. Whether that failure was due to cell phone use, or fatigue, or a pre-occupation with normal daily pressures, and so on, is hard to know.

A further caution is needed in interpreting the contributing factors that officers record on the police report. The likelihood that chemical impairment played a role in a crash increases as the severity of the crash increases. An officer reports suspected impairment by recording "physical impairment" as a contributing factor on the crash report. However, officers often, understandably, withhold final judgement about alcohol involvement until they receive alcohol concentration test results, which frequently is after they are required to submit the crash report. Thus the tables in Section I are known to under-report alcohol involvement, especially in the more severe crashes.

#### **Speed and inattention are the primary factors in single-vehicle crashes**

In the 32,446 single-vehicle crashes last year, "illegal or unsafe speed" was the factor cited most for drivers under 35. That was followed by "driver inattention/distraction," then by "physical impairment." For drivers over 35, "inattention/distraction" was cited most often, followed by either speed or physical impairment (depending on age group).

#### **Four causal factors lead the list in multi-vehicle crashes**

In the 64,367 crashes last year involving two or more vehicles, four factors were mentioned considerably more often than others. For drivers up to age 65, "driver inattention/distraction" was mentioned most often, followed in order by "failure to yield right of way," "following too closely," and then "illegal or unsafe speed." For the drivers over 65, "failure to yield right of way," was cited most, then "inattention/distraction." (For these older drivers, a number of other contributing factors were then cited with about equal frequency, including "disregard for traffic control device," "improper or unsafe lane use," "following too closely," "vision obscured," "improper turn," and "illegal or unsafe speed.")

#### **Contributing factors vary by crash severity**

When both single- and multi-vehicle crashes are combined, and examined by severity, the same four factors described above rise to the top as the ones mentioned most frequently, by a considerable margin. There is a difference, though, in that "inattention/distraction" leads the list in less severe crashes, while "illegal or unsafe speed" leads the list in the fatal crashes. Additionally, as noted earlier, physical impairment is a major factor in more severe crashes, though it is under-reported. For example, in 1999, officers cited "physical impairment" as a factor in fatal crashes in which 97 persons died. Section II will later show that 195 persons died in alcohol-related crashes in 1999.

#### **TWO CHANGES Over 20 Years**

Since 1980, two important and extremely beneficial changes have occurred. First, drinking and driving incidence has greatly decreased. Second, seat belt use has greatly increased. Each of these changes has greatly reduced traffic deaths and serious injuries from what they would have been if these changes had not occurred.

##### **1. Reduced drinking and driving.**

In the 1970s, over half the annual traffic deaths annually were alcohol-related. In 1999, 31% were alcohol-related. Here is a vivid illustration of this change. During the 1970s, a graph of fatal traffic crashes in Minnesota by hour of day always showed a dramatic peak between midnight and 1:00 AM. This midnight peak was almost twice as high as any other hour of the day. In marked contrast, in 1999, fatal crashes tended to follow the total crashes with respect to time of day when they occurred. That is, they have their highest peak when traffic is heaviest, during the afternoon rush hour, and have their second highest peak during the morning rush hour. (See the graph on page 33.)

##### **2. Increased seat belt use**

When a bad crash occurs, seat belts prevent the body from bouncing around inside a vehicle and from being ejected from the vehicle through the windshield or door. This protection dramatically reduces traffic deaths and injuries. Here is one example of this benefit. The first seat belt law took effect in 1986. Before that, belt use was estimated at about 20% statewide. In 1985, 6,454 people sustained severe injuries in traffic crashes. In 1999, with seat belt use at an estimated 72% statewide, 3,460 people sustained severe injuries in traffic crashes.

TABLE 1.01

## TRAFFIC SAFETY STATISTICS SUMMARY, 1965 - 1999

| Year | Total<br>Crashes | Persons |              | Licensed<br>Drivers<br>(million) | Motor<br>Vehicles<br>(MV)<br>(million) | State<br>Popu-<br>lation<br>(million) | Vehicle<br>Miles<br>Travelled<br>(VMT)<br>(billion) | Crash Rates          |                                   |                       | Fatality Rates       |                                   |                       |
|------|------------------|---------|--------------|----------------------------------|--|---------------------------------------|---|----------------------|-----------------------------------|-----------------------|----------------------|-----------------------------------|-----------------------|
|      |                  | Killed  | In-<br>jured |                                  |  |                                       |   | Per<br>100,000<br>MV | Per<br>100,000<br>Popu-<br>lation | Per<br>100 Mil<br>VMT | Per<br>100,000<br>MV | Per<br>100,000<br>Popu-<br>lation | Per<br>100 Mil<br>VMT |
|      |                  |         |              |                                  |  |                                       |   |                      |                                   |                       |                      |                                   |                       |
| (a)  | (b)              | (c)     | (d)          | (e)                              | (f)                                    | (g)                                   | (h)   | (i)                  | (j)                               | (k)                   | (l)                  | (m)                               | (n)                   |
| 1965 | 83,329           | 875     | 50,847       | 1.85                             | 1.86                                   | 3.57                                  | 16.8  | 4,480                | 2,334                             | 496                   | 47.0                 | 24.5                              | 5.2                   |
| 1970 | 99,404           | 987     | 38,538       | 2.05                             | 2.24                                   | 3.80                                  | 22.4  | 4,438                | 2,616                             | 444                   | 44.1                 | 26.0                              | 4.4                   |
| 1975 | 123,206          | 777     | 41,931       | 2.51                             | 2.69                                   | 3.92                                  | 25.6  | 4,580                | 3,143                             | 481                   | 28.9                 | 19.8                              | 3.0                   |
| 1980 | 103,612          | 863     | 45,227       | 2.77                             | 3.01                                   | 4.08                                  | 28.5  | 3,446                | 2,546                             | 364                   | 28.7                 | 21.2                              | 3.03                  |
| 1981 | 97,879           | 763     | 43,739       | 2.83                             | 3.09                                   | 4.10                                  | 28.6  | 3,163                | 2,387                             | 342                   | 24.7                 | 18.6                              | 2.67                  |
| 1982 | 89,443           | 581     | 38,692       | 2.87                             | 3.01                                   | 4.13                                  | 29.2  | 2,972                | 2,181                             | 304                   | 19.3                 | 14.2                              | 1.98                  |
| 1983 | 97,371           | 558     | 41,086       | 2.90                             | 3.03                                   | 4.15                                  | 30.5  | 3,214                | 2,356                             | 319                   | 18.4                 | 13.5                              | 1.83                  |
| 1984 | 93,741           | 584     | 41,808       | 2.91                             | 3.13                                   | 4.16                                  | 32.2  | 2,995                | 2,262                             | 291                   | 18.7                 | 14.1                              | 1.81                  |
| 1985 | 99,168           | 610     | 44,316       | 3.04                             | 3.22                                   | 4.19                                  | 33.1  | 3,080                | 2,380                             | 300                   | 18.9                 | 14.7                              | 1.84                  |
| 1986 | 95,460           | 572     | 42,130       | 3.07                             | 3.25                                   | 4.21                                  | 34.2  | 2,937                | 2,266                             | 279                   | 17.6                 | 13.6                              | 1.67                  |
| 1987 | 94,095           | 530     | 42,091       | 3.10                             | 3.31                                   | 4.25                                  | 35.1  | 2,840                | 2,233                             | 268                   | 16.0                 | 12.6                              | 1.51                  |
| 1988 | 102,094          | 615     | 44,415       | 3.13                             | 3.39                                   | 4.31                                  | 36.4  | 3,012                | 2,371                             | 280                   | 18.1                 | 14.3                              | 1.69                  |
| 1989 | 105,996          | 605     | 45,404       | 3.16                             | 3.46                                   | 4.35                                  | 37.6  | 3,060                | 2,435                             | 282                   | 17.5                 | 13.9                              | 1.61                  |
| 1990 | 99,236           | 568     | 44,634       | 3.18                             | 3.52                                   | 4.38                                  | 38.8  | 2,817                | 2,268                             | 256                   | 16.1                 | 13.0                              | 1.47                  |
| 1991 | 101,419          | 531     | 42,748       | 3.22                             | 3.51                                   | 4.43                                  | 39.3  | 2,890                | 2,288                             | 258                   | 15.1                 | 12.0                              | 1.35                  |
| 1992 | 96,808           | 581     | 43,249       | 3.27                             | 3.55                                   | 4.48                                  | 41.3  | 2,730                | 2,161                             | 235                   | 16.4                 | 13.0                              | 1.41                  |
| 1993 | 100,907          | 538     | 44,987       | 3.28                             | 3.48                                   | 4.52                                  | 42.3  | 2,899                | 2,234                             | 239                   | 15.5                 | 11.9                              | 1.27                  |
| 1994 | 99,701           | 644     | 46,403       | 3.34                             | 3.67                                   | 4.57                                  | 43.4  | 2,720                | 2,183                             | 230                   | 17.6                 | 14.1                              | 1.48                  |
| 1995 | 96,022           | 597     | 47,161       | 3.39                             | 3.68                                   | 4.61                                  | 44.1  | 2,606                | 2,083                             | 218                   | 16.2                 | 13.0                              | 1.35                  |
| 1996 | 105,332          | 576     | 48,963       | 3.46                             | 3.70                                   | 4.66                                  | 45.9  | 2,845                | 2,261                             | 230                   | 15.6                 | 12.4                              | 1.26                  |
| 1997 | 98,625           | 600     | 46,064       | 3.49                             | 3.77                                   | 4.69                                  | 46.9  | 2,065                | 2,105                             | 210                   | 12.6                 | 12.8                              | 1.28                  |
| 1998 | 92,926           | 650     | 45,115       | 3.53                             | 3.90                                   | 4.74                                  | 48.5  | 2,380                | 1,962                             | 192                   | 16.6                 | 13.7                              | 1.34                  |
| 1999 | 96,813           | 626     | 44,538       | 3.54                             | 3.92                                   | 4.78                                  | 50.7  | 2,470                | 2,027                             | 191                   | 16.0                 | 13.1                              | 1.24                  |

## Note:

(1) Statistics are susceptible to error from different sources. For example, the number of "total crashes" or "persons injured" cannot include the number of crashes or persons injured that by law should have been reported to the state but were not. Fatalities are not likely to be unreported, but even they are subject to error. Estimates of population and of miles travelled are subject to the errors of the estimating procedures, which may vary over time, and which will influence the rates shown, as well.

(2) The numbers shown for licensed drivers includes those who have only permits.

(3) Sources: Currently, estimates for miles traveled are provided by Minnesota Department of Transportation. Numbers of licensed drivers and registered motor vehicles are from the Driver and Vehicle Services Division, Minnesota Department of Public Safety.

TABLE 1.02  
TRAFFIC CRASH TRENDS  
1994 - 1999

|                                       | 1994          | 1995          | 1996           | 1997          | 1998          | 1994-<br>1998<br>Average | 1999          | % change<br>from 5 Yr<br>Average | Record High    |                     |
|---------------------------------------|---------------|---------------|----------------|---------------|---------------|--------------------------|---------------|----------------------------------|----------------|---------------------|
| <b>Total Crashes</b>                  | <b>99,701</b> | <b>96,022</b> | <b>105,332</b> | <b>98,626</b> | <b>92,926</b> | <b>98,521.4</b>          | <b>96,813</b> | <b>-1.7</b>                      | <b>123,106</b> | <b>(1975)</b>       |
| <b>Fatal Crashes</b>                  | <b>550</b>    | <b>515</b>    | <b>503</b>     | <b>528</b>    | <b>575</b>    | <b>534.2</b>             | <b>567</b>    | <b>+6.1</b>                      | <b>878</b>     | <b>(1973)</b>       |
| <b>Injury Crashes</b>                 | <b>31,307</b> | <b>31,611</b> | <b>33,283</b>  | <b>31,290</b> | <b>30,571</b> | <b>31,612.4</b>          | <b>30,279</b> | <b>-4.2</b>                      | <b>33,686</b>  | <b>(1978)</b>       |
| Severe                                | 3,172         | 2,967         | 2,960          | 2,855         | 2,702         | 2,931.2                  | 2,677         | -8.7                             | 5,109          | (1984) <sup>1</sup> |
| Moderate                              | 11,057        | 11,294        | 11,745         | 11,277        | 11,391        | 11,352.8                 | 11,352        | -0.0                             | 12,326         | (1985) <sup>1</sup> |
| Minor                                 | 17,078        | 17,350        | 18,578         | 17,208        | 16,478        | 17,338.4                 | 16,250        | -6.3                             | 18,578         | (1996) <sup>1</sup> |
| <b>Property Damage<br/>  Crashes</b>  | <b>67,844</b> | <b>63,896</b> | <b>71,546</b>  | <b>66,808</b> | <b>61,780</b> | <b>66,374.8</b>          | <b>65,967</b> | <b>-0.6</b>                      | <b>94,810</b>  | <b>(1975)</b>       |
| <b>Total Injuries</b>                 | <b>46,403</b> | <b>47,161</b> | <b>48,963</b>  | <b>46,064</b> | <b>45,115</b> | <b>46,741.2</b>          | <b>44,538</b> | <b>-4.7</b>                      | <b>50,332</b>  | <b>(1978)</b>       |
| Severe                                | 4,105         | 3,826         | 3,813          | 3,673         | 3,409         | 3,765.2                  | 3,460         | -8.1                             | 6,573          | (1984) <sup>1</sup> |
| Moderate                              | 15,618        | 16,053        | 16,519         | 15,948        | 16,189        | 16,065.4                 | 16,002        | -0.4                             | 17,670         | (1985) <sup>1</sup> |
| Minor                                 | 26,680        | 27,282        | 28,631         | 26,443        | 25,517        | 26,910.6                 | 25,076        | -6.8                             | 28,631         | (1996) <sup>1</sup> |
| <b>Total Fatalities</b>               | <b>644</b>    | <b>597</b>    | <b>576</b>     | <b>600</b>    | <b>650</b>    | <b>613.4</b>             | <b>626</b>    | <b>+2.1</b>                      | <b>1,060</b>   | <b>(1968)</b>       |
| Pedestrian                            | 53            | 49            | 46             | 58            | 56            | 52.4                     | 51            | -2.7                             | 157            | (1971)              |
| Motor Vehicle/Train <sup>2</sup>      | 17            | 16            | 8              | 6             | 11            | 11.6                     | 10            | -13.8                            | 62             | (1932)              |
| Bicycle                               | 16            | 5             | 6              | 7             | 9             | 8.6                      | 8             | -7.0                             | 24             | (1977)              |
| Motorcycle                            | 43            | 35            | 42             | 24            | 40            | 36.8                     | 29            | -21.2                            | 121            | (1980)              |
| All Terrain Vehicle                   | 0             | 2             | 1              | 6             | 7             | 3.2                      | 7             | +118.8                           | 9              | (1986)              |
| Snowmobile                            | 3             | 7             | 5              | 5             | 2             | 4.4                      | 8             | +81.8                            | 9              | (1984)              |
| Motor Vehicle Occupants               | 519           | 495           | 462            | 488           | 532           | 499.2                    | 516           | +3.4                             | 519            | (1994) <sup>1</sup> |
| Fatality Rate <sup>3</sup>            | 1.48          | 1.35          | 1.26           | 1.28          | 1.34          | 1.34                     | 1.24          | -7.5                             | 23.6           | (1934)              |
| U.S. Fatality Rate <sup>3</sup>       | 1.7           | 1.7           | 1.7            | 1.6           | 1.6           | 1.66                     | 1.5           | -9.6                             | 18.0           | (1925)              |
| Minnesota Economic<br>Loss (millions) | \$1,656.6     | \$1,611.8     | 1,578.1        | \$1,456.8     | \$1,620.7     | \$1,584.8                | \$1,635.4     | +2.3                             | \$1,656.6      | (1994) <sup>4</sup> |

<sup>1</sup> The available records on which these "record highs" are based only go back to 1984.

<sup>2</sup> Fatalities occurring in motor vehicle/train crashes are included in other categories as well.

<sup>3</sup> Rate is based on 100 million vehicle miles of travel.

<sup>4</sup> Economic loss is a function of health care costs, inflation, and other factors, in addition to trends in traffic crashes.

TABLE 1.03

## 1999 FATALITIES BY TRAFFIC ROLE, GENDER, AND AGE

| Type of Vehicle       | Position in Vehicle | Gender | Age |       |       |       |       |       |       |            | Total |
|-----------------------|---------------------|--------|-----|-------|-------|-------|-------|-------|-------|------------|-------|
|                       |                     |        | 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70 & Older |       |
| Car or Truck          | Driver              | Male   | 0   | 27    | 48    | 46    | 30    | 28    | 21    | 51         | 251   |
|                       |                     | Female | 0   | 24    | 20    | 18    | 16    | 20    | 11    | 18         | 127   |
|                       | Passenger           | Male   | 6   | 20    | 10    | 2     | 7     | 2     | 3     | 4          | 54    |
|                       |                     | Female | 7   | 15    | 5     | 6     | 11    | 8     | 3     | 17         | 72    |
|                       | Unknown             | Male   | 0   | 1     | 1     | 2     | 0     | 1     | 0     | 0          | 5     |
|                       |                     | Female | 0   | 0     | 2     | 1     | 1     | 0     | 0     | 0          | 4     |
| Motorcycle            | Operator            | Male   | 0   | 2     | 8     | 4     | 9     | 4     | 0     | 0          | 27    |
|                       |                     | Female | 0   | 0     | 0     | 0     | 1     | 0     | 0     | 0          | 1     |
|                       | Passenger           | Male   | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       |                     | Female | 0   | 0     | 1     | 0     | 0     | 0     | 0     | 0          | 1     |
| Motorscooter or Moped | Driver              | Male   | 0   | 0     | 0     | 0     | 0     | 1     | 0     | 0          | 1     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       | Passenger           | Male   | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
| All Terrain Vehicle   | Driver              | Male   | 0   | 1     | 0     | 0     | 0     | 0     | 1     | 0          | 2     |
|                       |                     | Female | 0   | 1     | 1     | 1     | 0     | 0     | 0     | 0          | 3     |
|                       | Passenger           | Male   | 0   | 1     | 0     | 0     | 0     | 0     | 0     | 0          | 1     |
|                       |                     | Female | 0   | 0     | 0     | 1     | 0     | 0     | 0     | 0          | 1     |
| Snowmobile            | Driver              | Male   | 0   | 2     | 1     | 2     | 2     | 0     | 1     | 0          | 8     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       | Passenger           | Male   | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
| Other Motor Vehicle   | Driver              | Male   | 0   | 0     | 1     | 0     | 0     | 0     | 2     | 2          | 5     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 1     | 0          | 1     |
|                       | Passenger           | Male   | 1   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 1     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
|                       | Unknown             | Male   | 0   | 0     | 0     | 1     | 1     | 0     | 0     | 0          | 2     |
|                       |                     | Female | 0   | 0     | 0     | 0     | 0     | 0     | 0     | 0          | 0     |
| Bicyclist             | Male                | 2      | 3   | 0     | 0     | 1     | 0     | 0     | 1     | 7          |       |
|                       | Female              | 0      | 1   | 0     | 0     | 0     | 0     | 0     | 0     | 1          |       |
| Pedestrian            | Male                | 3      | 1   | 3     | 6     | 5     | 1     | 4     | 7     | 30         |       |
|                       | Female              | 1      | 0   | 3     | 4     | 0     | 5     | 1     | 7     | 21         |       |
| Total Fatalities      |                     | Male   | 12  | 58    | 72    | 63    | 55    | 36    | 32    | 65         | 393   |
|                       |                     | Female | 8   | 41    | 32    | 31    | 29    | 34    | 16    | 42         | 233   |
|                       |                     | Total  | 20  | 99    | 104   | 94    | 84    | 70    | 48    | 107        | 626   |

Note: The nine people who died who had been occupants of an "other motor vehicle" type included: a snowplow truck operator, an occupant of a military vehicle, a person in a "cherry picker" basket, two farm equipment operators, an occupant of a school bus, an occupant of a police department vehicle, and occupants of two vehicles that were described on the police report as "vehicle," without further definition.



TABLE 1.04

## AGE AND GENDER OF PERSONS KILLED OR INJURED IN 1999 CRASHES

| Age Group  | Persons Killed |        |       | Persons Injured |        |         |        |
|------------|----------------|--------|-------|-----------------|--------|---------|--------|
|            | Male           | Female | Total | Male            | Female | Unknown | Total  |
| 0 - 4      | 5              | 2      | 7     | 373             | 341    | 13      | 727    |
| 5 - 9      | 7              | 6      | 13    | 639             | 574    | 7       | 1,220  |
| 10 - 14    | 11             | 2      | 13    | 831             | 799    | 22      | 1,652  |
| 15 - 19    | 47             | 39     | 86    | 4,010           | 4,476  | 23      | 8,509  |
| 20 - 24    | 36             | 18     | 54    | 2,838           | 2,739  | 19      | 5,596  |
| 25 - 29    | 36             | 14     | 50    | 2,068           | 2,056  | 20      | 4,144  |
| 30 - 34    | 38             | 10     | 48    | 1,744           | 1,834  | 15      | 3,593  |
| 35 - 39    | 25             | 21     | 46    | 1,755           | 1,908  | 16      | 3,679  |
| 40 - 44    | 36             | 20     | 56    | 1,623           | 1,675  | 9       | 3,307  |
| 45 - 49    | 19             | 9      | 28    | 1,279           | 1,296  | 9       | 2,584  |
| 50 - 54    | 20             | 14     | 34    | 921             | 1,085  | 3       | 2,009  |
| 55 - 59    | 16             | 20     | 36    | 625             | 719    | 5       | 1,349  |
| 60 - 64    | 14             | 6      | 20    | 511             | 502    | 4       | 1,017  |
| 65 - 69    | 18             | 10     | 28    | 393             | 439    | 5       | 837    |
| 70 - 74    | 16             | 6      | 22    | 354             | 417    | 3       | 774    |
| 75 - 79    | 15             | 12     | 27    | 321             | 377    | 3       | 701    |
| 80 - 84    | 16             | 11     | 27    | 218             | 311    | 1       | 530    |
| 85 & Older | 18             | 13     | 31    | 161             | 159    | 0       | 320    |
| Not Stated | 0              | 0      | 0     | 547             | 815    | 628     | 1,990  |
| Total      | 393            | 233    | 626   | 21,211          | 22,522 | 805     | 44,538 |

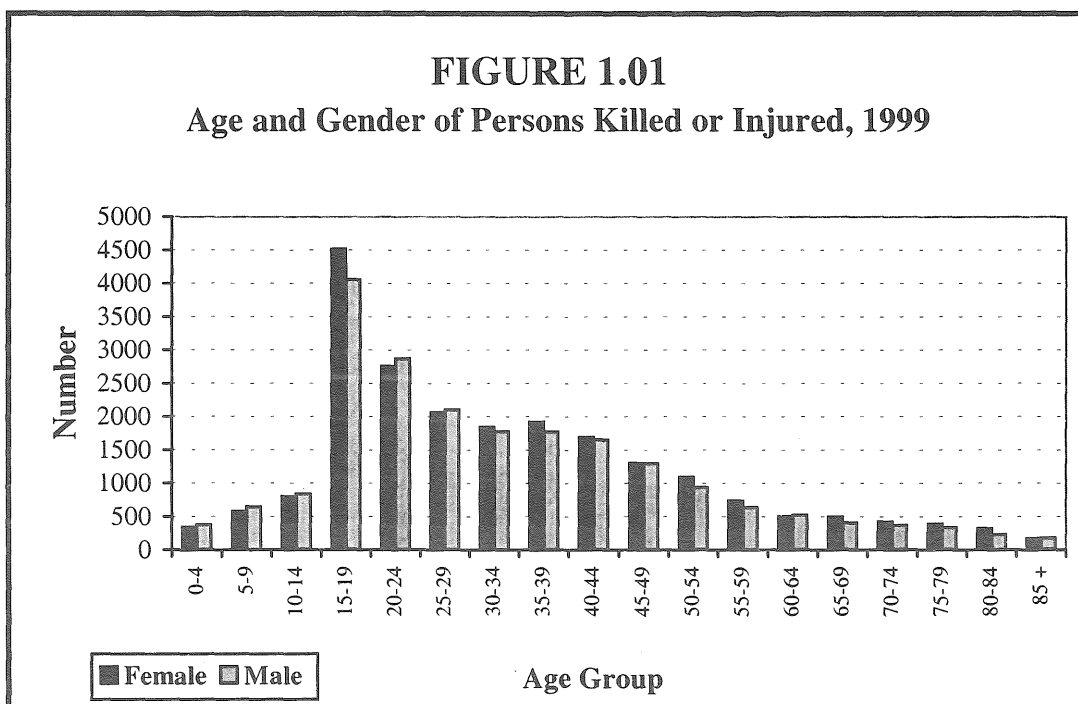


TABLE 1.05

## DRIVERS IN 1999 CRASHES BY PHYSICAL CONDITION\*

| Physical Condition   | Drivers<br>in Fatal<br>Crashes | Drivers<br>in Injury<br>Crashes | Drivers<br>in Property<br>Damage Crashes | Drivers<br>in All<br>Crashes |
|----------------------|--------------------------------|---------------------------------|--|------------------------------|
| Normal               | 501                            | 44,517                          | 80,023                                   | 125,041                      |
| Under the Influence  | 56                             | 1,844                           | 1,679                                    | 3,579                        |
| Had Been Drinking    | 63                             | 1,090                           | 911                                      | 2,064                        |
| Had Been Using Drugs | 2                              | 67                              | 45                                       | 114                          |
| Asleep               | 12                             | 343                             | 304                                      | 659                          |
| Fatigued             | 7                              | 126                             | 137                                      | 270                          |
| Ill                  | 3                              | 152                             | 65                                       | 220                          |
| Other                | 19                             | 286                             | 243                                      | 548                          |
| Unknown              | 254                            | 5,899                           | 31,225                                   | 37,378                       |
| Total                | 917                            | 54,324                          | 114,632                                  | 169,873                      |

\* As noted by police officer on accident report. Note that in the absence of alcohol or drug test results (not usually available at the time the crash report is completed), officers are conservative in reporting impairment. Compare these figures with those from Section II. Pedestrians and bicyclists are excluded from this table.

TABLE 1.06

## DRIVERS IN 1999 CRASHES BY AGE AND FIRST HARMFUL EVENT IN CRASH

| First Harmful Event     | Drivers<br>15-19 | Drivers<br>20-24 | Drivers<br>25-29 | Drivers<br>30-34 | Drivers<br>35-64 | Drivers<br>65-79 | Drivers<br>80 & Older |
|-------------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|
| <b>Collision With:</b>  |                  |                  |                  |                  |                  |                  |                       |
| Other Motor Vehicle     | 77.2             | 79.4             | 81.2             | 82.7             | 82.4             | 85.4             | 86.0                  |
| Parked Motor Vehicle    | 2.7              | 2.4              | 2.5              | 2.2              | 1.9              | 2.3              | 3.4                   |
| Railroad Train          | 0.1              | 0.0              | 0.1              | 0.0              | 0.1              | 0.1              | 0.0                   |
| Bicycle                 | 0.4              | 0.5              | 0.5              | 0.7              | 0.7              | 0.6              | 0.6                   |
| Pedestrian              | 0.6              | 0.7              | 0.7              | 0.6              | 0.7              | 0.8              | 1.2                   |
| Deer                    | 1.9              | 2.7              | 2.9              | 3.5              | 4.6              | 3.5              | 1.3                   |
| Other Animal            | 0.2              | 0.2              | 0.2              | 0.2              | 0.3              | 0.2              | 0.3                   |
| Fixed Object            | 9.5              | 8.5              | 7.4              | 5.7              | 5.2              | 4.5              | 4.7                   |
| Other Object            | 0.1              | 0.1              | 0.3              | 0.3              | 0.3              | 0.2              | 0.2                   |
| <b>Non-Collision:</b>   |                  |                  |                  |                  |                  |                  |                       |
| Overturn                | 5.7              | 3.7              | 2.8              | 2.6              | 2.3              | 1.2              | 1.2                   |
| Other Non-Collision     | 0.3              | 0.2              | 0.2              | 0.2              | 0.2              | 0.2              | 0.1                   |
| <b>Other or Unknown</b> | 1.3              | 1.5              | 1.3              | 1.2              | 1.4              | 1.1              | 1.0                   |
| Total Percent           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%                |
| Total Drivers           | 26,474           | 22,622           | 18,194           | 16,790           | 65,538           | 9,104            | 2,711                 |

Percentages are based on the number of crash-involved drivers in each age group. They may not sum to 100% due to rounding. Bicyclists and pedestrians are not included.

TABLE 1.07

## AGE AND GENDER OF DRIVERS IN 1999 CRASHES

| Age Group    | Drivers in Fatal Crashes |        |            |       | Drivers in All Crashes |        |            |         |
|--------------|--------------------------|--------|------------|-------|------------------------|--------|------------|---------|
|              | Male                     | Female | Not Stated | Total | Male                   | Female | Not Stated | Total   |
| 14 & Younger | 2                        | 2      | 0          | 4     | 116                    | 69     | 0          | 185     |
| 15 - 19      | 87                       | 45     | 0          | 132   | 15,215                 | 11,108 | 151        | 26,474  |
| 20 - 24      | 66                       | 26     | 1          | 93    | 13,274                 | 9,182  | 166        | 22,622  |
| 25 - 29      | 68                       | 24     | 1          | 93    | 10,824                 | 7,214  | 156        | 18,194  |
| 30 - 34      | 71                       | 12     | 0          | 83    | 9,976                  | 6,678  | 136        | 16,790  |
| 35 - 39      | 52                       | 34     | 0          | 86    | 10,232                 | 7,059  | 140        | 17,431  |
| 40 - 44      | 58                       | 25     | 0          | 83    | 9,036                  | 6,257  | 100        | 15,393  |
| 45 - 49      | 45                       | 20     | 0          | 65    | 7,213                  | 4,943  | 75         | 12,231  |
| 50 - 54      | 45                       | 19     | 0          | 64    | 5,723                  | 3,658  | 49         | 9,430   |
| 55 - 59      | 31                       | 14     | 0          | 45    | 3,991                  | 2,426  | 36         | 6,453   |
| 60 - 64      | 24                       | 10     | 0          | 34    | 2,964                  | 1,619  | 17         | 4,600   |
| 65 - 69      | 21                       | 9      | 0          | 30    | 2,244                  | 1,222  | 20         | 3,486   |
| 70 - 74      | 22                       | 7      | 0          | 29    | 1,903                  | 1,172  | 14         | 3,089   |
| 75 - 79      | 21                       | 6      | 0          | 27    | 1,501                  | 1,013  | 15         | 2,529   |
| 80 - 84      | 17                       | 8      | 0          | 25    | 989                    | 738    | 9          | 1,736   |
| 85 & Older   | 17                       | 4      | 0          | 21    | 614                    | 358    | 3          | 975     |
| Not Stated   | 2                        | 0      | 1          | 3     | 1,042                  | 481    | 6,732      | 8,255   |
| Total        | 649                      | 265    | 3          | 917   | 96,857                 | 65,197 | 7,819      | 169,873 |

Most crashes involve more than one driver, causing the total number of drivers to exceed the total number of crashes. (Pedestrians and bicyclists are not shown in this table.)

TABLE 1.08

## LICENSED VS. CRASH-INVOLVED DRIVERS BY AGE, 1999

| Age Group    | Percentage of All<br>Licensed Drivers | Percentage of Drivers in |                   |                            |                |
|--------------|---------------------------------------|--------------------------|-------------------|----------------------------|----------------|
|              |                                       | Fatal<br>Crashes         | Injury<br>Crashes | Property<br>Damage Crashes | All<br>Crashes |
| 14 & Younger | 0.0                                   | 0.4                      | 0.1               | 0.1                        | 0.1            |
| 15 - 19      | 6.0                                   | 14.4                     | 16.9              | 15.0                       | 15.6           |
| 20 - 24      | 8.9                                   | 10.1                     | 13.8              | 13.1                       | 13.3           |
| 25 - 29      | 8.9                                   | 10.1                     | 10.9              | 10.6                       | 10.7           |
| 30 - 34      | 9.8                                   | 9.1                      | 10.0              | 9.9                        | 9.9            |
| 35 - 39      | 11.3                                  | 9.4                      | 10.4              | 10.2                       | 10.3           |
| 40 - 44      | 11.2                                  | 9.1                      | 9.3               | 8.9                        | 9.1            |
| 45 - 49      | 10.0                                  | 7.1                      | 7.1               | 7.2                        | 7.2            |
| 50 - 54      | 8.2                                   | 7.0                      | 5.6               | 5.5                        | 5.6            |
| 55 - 59      | 6.2                                   | 4.9                      | 3.7               | 3.9                        | 3.8            |
| 60 - 64      | 4.8                                   | 3.7                      | 2.6               | 2.8                        | 2.7            |
| 65 - 69      | 4.1                                   | 3.3                      | 2.2               | 2.0                        | 2.1            |
| 70 - 74      | 3.8                                   | 3.2                      | 1.9               | 1.8                        | 1.8            |
| 75 - 79      | 3.2                                   | 2.9                      | 1.6               | 1.4                        | 1.5            |
| 80 - 84      | 2.1                                   | 2.7                      | 1.1               | 1.0                        | 1.0            |
| 85 & Older   | 1.5                                   | 2.3                      | 0.7               | 0.5                        | 0.6            |
| Not Stated   | 0.0                                   | 0.3                      | 2.2               | 6.2                        | 4.9            |

|                |           |        |        |        |       |
|----------------|-----------|--------|--------|--------|-------|
| Total Percent* | 100.0%    | 100.0% | 100.0% | 100.0% | 100.0 |
| Total Number** | 3,542,439 |        |        |        |       |

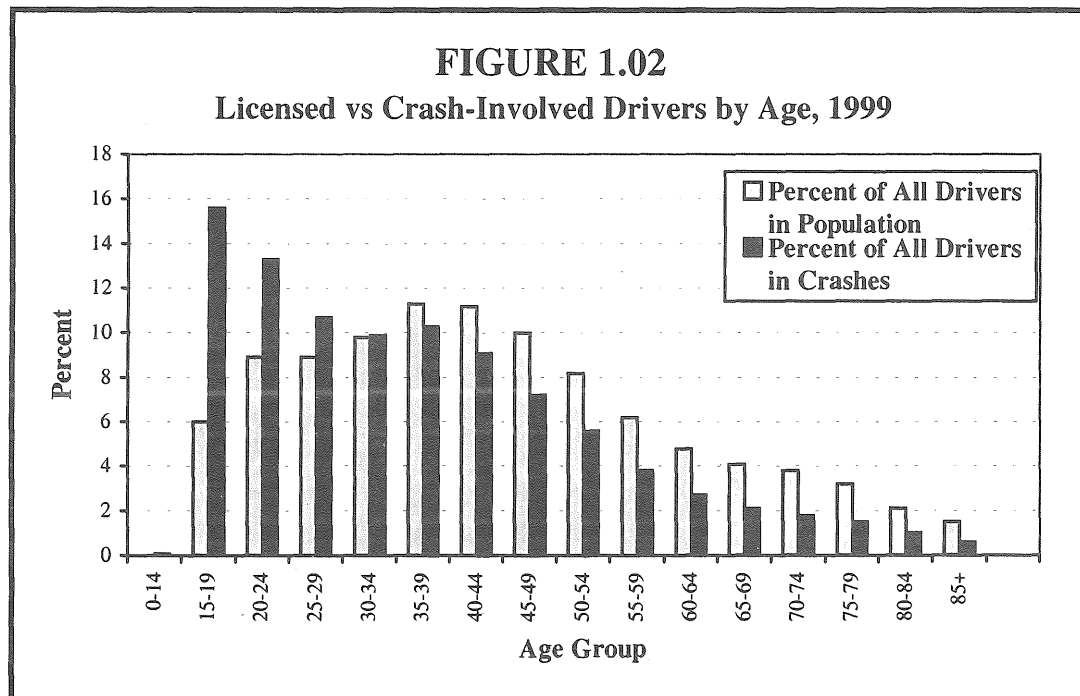


TABLE 1.09

**SINGLE-VEHICLE CRASHES:  
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1999**

| <b>Contributing Factors</b>          | <b>Drivers<br/>15-19</b> | <b>Drivers<br/>20-24</b> | <b>Drivers<br/>25-29</b> | <b>Drivers<br/>30-34</b> | <b>Drivers<br/>35-64</b> | <b>Drivers<br/>65-79</b> | <b>Drivers<br/>80 &amp; Older</b> |
|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|
| <b>Human Factors</b>                 |                          |                          |                          |                          |                          |                          |                                   |
| Illegal/Unsafe Speed                 | 24.2                     | 24.8                     | 23.4                     | 21.6                     | 18.3                     | 10.3                     | 5.3                               |
| Driver Inattention/Distracted        | 18.5                     | 18.2                     | 19.1                     | 19.2                     | 18.8                     | 25.6                     | 29.9                              |
| Physical Impairment                  | 5.4                      | 13.6                     | 13.4                     | 11.7                     | 11.5                     | 11.0                     | 8.0                               |
| Driver Inexperience                  | 18.4                     | 4.4                      | 3.0                      | 2.1                      | 1.9                      | 0.8                      | 1.9                               |
| Improper/Unsafe Lane Use             | 2.5                      | 3.8                      | 3.6                      | 4.4                      | 3.8                      | 5.0                      | 7.5                               |
| Failure to Yield Right of Way        | 1.5                      | 2.2                      | 2.4                      | 3.3                      | 3.6                      | 4.3                      | 5.8                               |
| Unsafe Backing                       | 1.5                      | 1.0                      | 1.0                      | 1.9                      | 1.7                      | 3.0                      | 3.3                               |
| Vision Obscured                      | 1.1                      | 1.2                      | 1.2                      | 1.6                      | 1.9                      | 2.9                      | 4.4                               |
| Driving Left of Center--Not Passing  | 1.0                      | 1.0                      | 1.0                      | 0.9                      | 1.1                      | 0.8                      | 1.1                               |
| Improper Turn                        | 0.9                      | 1.0                      | 1.0                      | 1.1                      | 1.5                      | 2.1                      | 1.7                               |
| Improper Parking/Starting/Stopping   | 0.5                      | 0.6                      | 0.6                      | 0.7                      | 0.8                      | 1.2                      | 3.3                               |
| Disregard for Traffic Control Device | 0.4                      | 0.6                      | 0.8                      | 0.8                      | 0.6                      | 0.9                      | 1.1                               |
| Improper Passing/Overtaking          | 0.6                      | 0.6                      | 0.3                      | 0.4                      | 0.5                      | 0.5                      | 0.8                               |
| Following Too Closely                | 0.3                      | 0.4                      | 0.8                      | 0.8                      | 0.6                      | 0.4                      | 0.6                               |
| Failure to Use Lights                | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.1                      | 0.0                               |
| Driver on CB Radio or Cell Phone     | 0.1                      | 0.1                      | 0.2                      | 0.3                      | 0.2                      | 0.0                      | 0.0                               |
| Impeding Traffic                     | 0.0                      | 0.1                      | 0.0                      | 0.1                      | 0.1                      | 0.0                      | 0.0                               |
| Other Human Factors                  | 2.3                      | 2.9                      | 2.7                      | 3.3                      | 3.1                      | 4.9                      | 8.9                               |
| <b>Vehicular Factors</b>             |                          |                          |                          |                          |                          |                          |                                   |
| Skidding                             | 7.5                      | 6.4                      | 7.3                      | 6.6                      | 7.7                      | 6.6                      | 3.1                               |
| Defective Equipment                  | 1.4                      | 1.5                      | 1.2                      | 1.2                      | 2.0                      | 1.6                      | 0.3                               |
| Other Vehicular Factor               | 0.8                      | 1.0                      | 1.2                      | 1.6                      | 2.0                      | 2.8                      | 1.4                               |
| <b>Miscellaneous Factors</b>         |                          |                          |                          |                          |                          |                          |                                   |
| Weather                              | 7.0                      | 9.7                      | 10.7                     | 10.6                     | 11.7                     | 9.3                      | 4.7                               |
| Other                                | 3.8                      | 4.7                      | 5.1                      | 5.6                      | 6.4                      | 5.8                      | 6.1                               |
| Total Percent                        | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                            |
| Total Contributing Factors Cited     | 7,418                    | 4,861                    | 3,267                    | 2,488                    | 8,228                    | 960                      | 361                               |
| <b>Drivers for Whom There Was</b>    |                          |                          |                          |                          |                          |                          |                                   |
| "No Clear Contributing Factor"       | 763                      | 832                      | 692                      | 697                      | 3,239                    | 350                      | 68                                |
| Total Number of Drivers              | 5,695                    | 4,288                    | 3,080                    | 2,582                    | 10,303                   | 1,214                    | 350                               |

Percentages are based on all contributing factors cited within each age group. Zero, one, or two contributing factors may be associated with each driver. The percentages may not sum to 100% due to rounding. Contributing factors for bicyclists and pedestrians are excluded.

For contributing factors in multiple-vehicle crashes, see Table 1.10. For contributing factors in crashes at different levels of severity, see Table 1.19.

TABLE 1.10

**MULTIPLE-VEHICLE CRASHES:  
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1999**

| Contributing Factors                    | Drivers<br>15-19 | Drivers<br>20-24 | Drivers<br>25-29 | Drivers<br>30-34 | Drivers<br>35-64 | Drivers<br>65-79 | Drivers<br>80 & Older |
|---|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|
| <b>Human Factors</b>                    |                  |                  |                  |                  |                  |                  |                       |
| Driver Inattention or Distraction       | 26.4             | 28.2             | 27.3             | 27.4             | 26.8             | 25.4             | 24.0                  |
| Failure to Yield Right of Way           | 19.5             | 17.0             | 16.4             | 16.2             | 18.4             | 30.7             | 35.4                  |
| Following Too Closely                   | 9.9              | 12.0             | 12.6             | 11.7             | 10.5             | 5.6              | 3.8                   |
| Illegal or Unsafe Speed                 | 9.0              | 10.4             | 10.1             | 9.0              | 7.6              | 3.4              | 2.7                   |
| Disregard of Traffic Control Device     | 3.6              | 4.9              | 4.8              | 4.4              | 4.7              | 6.3              | 7.5                   |
| Improper or Unsafe Lane Use             | 3.7              | 4.4              | 4.3              | 5.2              | 5.1              | 5.6              | 4.6                   |
| Vision Obscured                         | 2.7              | 2.6              | 2.5              | 4.0              | 3.1              | 3.9              | 3.6                   |
| Improper Turn                           | 2.3              | 2.5              | 2.1              | 2.3              | 2.8              | 3.9              | 4.8                   |
| Driver Inexperience                     | 7.8              | 1.5              | 1.0              | 0.7              | 0.4              | 0.1              | 0.1                   |
| Physical Impairment                     | 0.6              | 2.0              | 2.1              | 2.3              | 2.1              | 1.4              | 1.8                   |
| Improper Passing or Overtaking          | 1.5              | 1.5              | 1.6              | 1.7              | 1.8              | 1.4              | 1.0                   |
| Improper Parking, Starting, or Stopping | 1.1              | 1.1              | 1.2              | 1.4              | 1.4              | 1.4              | 1.8                   |
| Unsafe Backing                          | 0.8              | 0.8              | 0.9              | 1.1              | 1.5              | 1.1              | 0.6                   |
| Driving Left of Center (Not Passing)    | 1.0              | 1.0              | 0.9              | 0.7              | 0.9              | 1.0              | 1.0                   |
| Improper or No Signal                   | 0.3              | 0.3              | 0.4              | 0.3              | 0.5              | 0.6              | 0.6                   |
| Impeding Traffic                        | 0.1              | 0.2              | 0.2              | 0.2              | 0.3              | 0.6              | 0.4                   |
| Failure to Use Lights                   | 0.1              | 0.1              | 0.1              | 0.1              | 0.1              | 0.1              | 0.0                   |
| Driver on Cell Phone or CB Radio        | 0.1              | 0.1              | 0.2              | 0.2              | 0.1              | 0.0              | 0.1                   |
| Other Human Factors                     | 0.6              | 0.8              | 0.7              | 0.9              | 0.9              | 0.9              | 1.7                   |
| <b>Vehicular Factors</b>                |                  |                  |                  |                  |                  |                  |                       |
| Skidding                                | 2.7              | 2.3              | 2.5              | 2.8              | 2.5              | 1.3              | 0.9                   |
| Defective Equipment                     | 0.7              | 0.7              | 0.6              | 0.9              | 0.7              | 0.3              | 0.2                   |
| Other Vehicular Factor                  | 0.2              | 0.4              | 0.3              | 0.5              | 0.5              | 0.3              | 0.1                   |
| <b>Miscellaneous Factors</b>            |                  |                  |                  |                  |                  |                  |                       |
| Weather                                 | 3.4              | 3.4              | 4.2              | 4.1              | 4.4              | 2.3              | 1.5                   |
| Other                                   | 1.7              | 1.8              | 2.8              | 3.2              | 3.0              | 2.4              | 1.9                   |
| Total Percent                           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%           | 100.0%                |
| Total Contributing Factors Cited        | 18,680           | 13,236           | 9,449            | 8,183            | 29,474           | 5,300            | 2,266                 |
| Drivers for Whom There Was              |                  |                  |                  |                  |                  |                  |                       |
| "No Clear Contributing Factor"          | 6,129            | 6,684            | 6,237            | 6,267            | 25,622           | 2,971            | 542                   |
| Total Number of Drivers                 | 20,729           | 18,253           | 15,036           | 14,143           | 54,948           | 7,863            | 2,359                 |

Percentages are based on all contributing factors cited within each age group. Zero, one, or two contributing factors may be associated with each driver. The percentages may not sum to 100% due to rounding. Contributing factors for bicyclists and pedestrians are excluded.

For contributing factors in single-vehicle crashes, see Table 1.09. For contributing factors in crashes at different levels of severity, see Table 1.19.

TABLE 1.11

**PERSONS INVOLVED IN CRASHES BY TYPE OF  
VEHICLE OCCUPIED AND INJURY SEVERITY, 1999**

| Vehicle Type                       | Killed | Injured |           |        | Total  | Not Injured | Total Persons |
|------------------------------------|--------|---------|-----------|--------|--------|-------------|---------------|
|                                    |        | Severe  | Moder-ate | Minor  |        |             |               |
| Automobile                         | 367    | 2,038   | 10,572    | 17,772 | 30,382 | 133,161     | 163,910       |
| Pickup Truck                       | 93     | 457     | 2,058     | 2,838  | 5,353  | 31,785      | 37,231        |
| Van                                | 43     | 260     | 1,225     | 2,259  | 3,744  | 22,331      | 26,118        |
| Motorhome/Camper                   | 0      | 3       | 9         | 17     | 29     | 176         | 205           |
| Taxicab                            | 0      | 3       | 31        | 60     | 94     | 498         | 592           |
| Police Vehicle                     | 1      | 4       | 49        | 82     | 135    | 465         | 601           |
| Fire Department Vehicle            | 0      | 0       | 4         | 2      | 6      | 120         | 126           |
| School Bus                         | 1      | 3       | 38        | 112    | 153    | 7,774       | 7,928         |
| Other Bus                          | 0      | 3       | 23        | 58     | 84     | 2,350       | 2,434         |
| Ambulance                          | 0      | 4       | 11        | 10     | 25     | 150         | 175           |
| Military Vehicle                   | 1      | 1       | 2         | 2      | 5      | 28          | 34            |
| Snowmobile                         | 8      | 9       | 15        | 15     | 39     | 28          | 75            |
| All Terrain Vehicle                | 7      | 7       | 19        | 6      | 32     | 12          | 51            |
| Farm Tractor or Equipment          | 2      | 3       | 7         | 8      | 18     | 157         | 177           |
| Motorcycle*                        | 29     | 219     | 525       | 247    | 991    | 190         | 1,210         |
| Motorscooter/Motorbike*            | 0      | 1       | 12        | 3      | 16     | 1           | 17            |
| Motorized Bicycle (Moped)*         | 1      | 2       | 6         | 4      | 12     | 2           | 15            |
| Hit and Run Vehicle                | 0      | 17      | 95        | 114    | 226    | 8,221       | 8,447         |
| Road Maintenance Vehicle           | 1      | 0       | 2         | 2      | 4      | 158         | 163           |
| Single Truck (2-axle, 6-tire)      | 3      | 9       | 38        | 62     | 109    | 1,423       | 1,535         |
| Single Truck (3 or more axles)     | 0      | 11      | 33        | 22     | 66     | 563         | 629           |
| Single Truck with Trailer          | 0      | 0       | 9         | 18     | 27     | 545         | 572           |
| Truck Tractor with No Trailer      | 0      | 0       | 6         | 9      | 15     | 116         | 131           |
| Truck Tractor with Semi Trailer    | 7      | 17      | 79        | 115    | 211    | 2,722       | 2,940         |
| Truck Tractor with Double Trailers | 0      | 0       | 3         | 3      | 6      | 36          | 42            |
| Other or Unknown Truck Type        | 0      | 2       | 7         | 3      | 12     | 217         | 229           |
| Other or Unknown Motor Vehicle     | 3      | 27      | 117       | 210    | 354    | 3,149       | 3,506         |
| Bicycle                            | 8      | 112     | 499       | 449    | 1,060  | 65          | 1,133         |
| Pedestrian                         | 51     | 248     | 508       | 574    | 1,330  | 3           | 1,384         |
| Total                              | 626    | 3,460   | 16,002    | 25,076 | 44,538 | 216,446     | 261,610       |

\* On the accident report form, police may show that a vehicle is a "motorcycle," a "motorscooter/motorbike," or a "moped or motorized bicycle." Since 1986, however, the law recognizes just two categories. If the vehicle has an engine capacity of more than 50 cc, it is classified as a motorcycle; if it has 50 cc or smaller engine capacity, it is classified as a motorized bicycle. The term moped is short for motorized pedalcycle, which is the same as motorized bicycle.



TABLE 1.12

## DRIVER LICENSE\* SUMMARY BY AGE, 1990 - 1999

| Age        | 1990      | 1991      | 1992      | 1993      | 1994      | 1995      | 1996      | 1997      | 1998      | 1999      |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 15         | 12,832    | 15,075    | 16,626    | 18,047    | 16,031    | 20,660    | 24,783    | 27,514    | 24,610    | 23,483    |
| 16         | 42,885    | 43,708    | 45,744    | 47,600    | 48,754    | 52,205    | 54,657    | 55,564    | 50,028    | 21,981    |
| 17         | 48,496    | 51,161    | 50,796    | 51,688    | 54,960    | 57,426    | 60,864    | 61,052    | 60,389    | 38,214    |
| 18         | 52,070    | 51,293    | 54,442    | 53,894    | 55,472    | 58,307    | 61,788    | 63,711    | 64,337    | 60,177    |
| 19         | 58,230    | 53,876    | 53,307    | 55,417    | 55,793    | 57,139    | 61,058    | 63,460    | 66,023    | 67,779    |
| 20         | 63,375    | 57,902    | 54,591    | 53,645    | 56,765    | 56,902    | 58,964    | 61,875    | 64,484    | 67,816    |
| Under 21   | 277,888   | 273,015   | 275,506   | 280,291   | 287,775   | 302,639   | 322,114   | 333,176   | 329,871   | 279,450   |
| 15 - 19    | 214,513   | 215,113   | 220,915   | 226,646   | 231,010   | 245,737   | 263,150   | 271,301   | 265,387   | 211,634   |
| 20 - 24    | 316,504   | 312,463   | 307,139   | 297,918   | 290,752   | 283,027   | 284,532   | 291,004   | 302,019   | 316,452   |
| 25 - 29    | 372,178   | 357,464   | 345,255   | 336,007   | 330,676   | 331,259   | 330,844   | 325,020   | 318,360   | 316,642   |
| 30 - 34    | 398,645   | 402,273   | 404,717   | 401,155   | 393,253   | 381,403   | 368,340   | 356,278   | 347,382   | 346,159   |
| 35 - 39    | 364,385   | 371,856   | 383,109   | 386,805   | 396,206   | 402,366   | 407,794   | 407,334   | 405,914   | 401,755   |
| 40 - 44    | 316,265   | 324,986   | 335,328   | 342,988   | 355,845   | 364,629   | 373,405   | 381,214   | 389,126   | 398,519   |
| 45 - 49    | 234,494   | 252,944   | 266,872   | 276,715   | 296,176   | 313,384   | 323,114   | 330,259   | 340,673   | 352,585   |
| 50 - 54    | 189,266   | 197,122   | 210,453   | 216,632   | 225,468   | 230,114   | 248,979   | 260,406   | 273,059   | 290,428   |
| 55 - 59    | 164,023   | 165,779   | 169,769   | 173,423   | 178,920   | 183,763   | 191,853   | 201,963   | 210,483   | 218,555   |
| 60 - 64    | 159,799   | 158,552   | 157,248   | 156,044   | 156,192   | 156,652   | 158,537   | 160,789   | 165,519   | 170,263   |
| 65 - 69    | 148,161   | 148,934   | 149,867   | 149,118   | 148,961   | 149,004   | 148,228   | 146,590   | 144,903   | 145,284   |
| 70 - 74    | 122,965   | 126,115   | 128,653   | 128,828   | 132,442   | 132,842   | 134,127   | 133,750   | 134,081   | 134,225   |
| 75 - 79    | 92,378    | 96,235    | 98,605    | 98,970    | 101,494   | 103,558   | 107,144   | 107,838   | 108,977   | 111,888   |
| 80 - 84    | 55,000    | 58,863    | 60,829    | 60,181    | 65,022    | 68,506    | 71,501    | 71,267    | 73,848    | 76,147    |
| 85 & Older | 29,915    | 34,455    | 35,198    | 32,723    | 38,158    | 42,107    | 44,957    | 42,757    | 46,310    | 51,903    |
| Total      | 3,178,491 | 3,223,154 | 3,273,957 | 3,284,153 | 3,340,575 | 3,388,351 | 3,456,505 | 3,487,770 | 3,526,041 | 3,542,439 |

\* Information provided by Department of Public Safety, Driver and Vehicle Service Division. Counts of licensed drivers include drivers who only hold learner's permits.

TABLE 1.13

## MOTOR VEHICLE REGISTRATIONS, 1990 - 1999

| Type of Vehicle*       | 1990      | 1991      | 1992      | 1993      | 1994      | 1995      | 1996      | 1997      | 1998      | 1999      |
|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Passenger Cars         | 2,642,022 | 2,638,572 | 2,670,885 | 2,615,602 | 2,728,963 | 2,709,986 | 2,707,168 | 2,724,529 | 2,798,548 | 2,774,170 |
| Pickups                | 528,342   | 520,339   | 525,205   | 511,677   | 584,044   | 615,068   | 640,308   | 674,547   | 723,543   | 747,650   |
| Trucks                 | 140,874   | 139,263   | 141,144   | 144,367   | 145,413   | 151,188   | 156,511   | 159,939   | 165,491   | 172,487   |
| Recreational Vehicles  | 35,328    | 35,515    | 36,290    | 36,826    | 37,049    | 37,775    | 37,683    | 37,731    | 39,034    | 39,569    |
| Motorcycles            | 120,081   | 117,492   | 116,124   | 114,548   | 113,337   | 113,981   | 112,551   | 113,443   | 118,275   | 122,676   |
| Motorized Bicycles     | 9,306     | 8,703     | 7,947     | 7,304     | 6,752     | 6,441     | 6,088     | 5,784     | 5,643     | 5,656     |
| School Buses           | 5,037     | 5,109     | 5,058     | 5,052     | 5,168     | 5,319     | 5,474     | 5,788     | 5,887     | 6,012     |
| Buses                  | 3,780     | 3,822     | 3,804     | 4,039     | 4,103     | 4,282     | 4,145     | 4,260     | 4,648     | 4,860     |
| Van Pool               | 259       | 264       | 256       | 319       | 300       | 295       | 289       | 291       | 287       | 315       |
| Tax Exempt Vehicles    | 37,739    | 39,727    | 38,829    | 40,773    | 40,263    | 40,511    | 31,648    | 43,533    | 42,978    | 45,476    |
| Motor Vehicle Subtotal | 3,522,768 | 3,508,806 | 3,545,542 | 3,480,507 | 3,665,392 | 3,684,846 | 3,701,865 | 3,769,845 | 3,904,334 | 3,918,871 |
| Trailers               | 780,484   | 754,942   | 830,527   | 807,187   | 894,909   | 849,482   | 956,629   | 897,794   | 1,028,612 | 1,000,730 |
| Collectors' Vehicles   | 72,031    | 76,947    | 82,116    | 87,405    | 92,775    | 97,839    | 103,030   | 108,254   | 114,458   | 120,177   |
| Total Registrations    | 4,375,283 | 4,340,695 | 4,458,185 | 4,375,099 | 4,653,076 | 4,632,167 | 4,761,524 | 4,775,893 | 5,047,404 | 5,039,778 |

\* Information provided by Department of Public Safety, Driver and Vehicle Services Division.

Minnesota license plates on a vehicle signify that it has been registered with the state and that the owner has paid the registration fee. The vehicle classification used for registration purposes is similar, but not identical, to the vehicle classification (shown in Tables 1.11 and 1.14) police use in reporting accidents. Following are some notes on the registration categories shown above:

- Passenger cars include vans, except for "van pools." A van pool is a van used exclusively for car pooling purposes.
- Pickup trucks are rated three-fourths ton or less.
- Motorcycles have engines exceeding 50 cc; otherwise the vehicle is classified as a motorized bicycle.
- Tax exempt vehicles are vehicles owned by city, county, or state offices. They have license plates but no registration fees are paid on them. (Police and fire department vehicles are tax exempt but are not included since they do not have state license plates and are not registered.)
- Trailers (such as utility trailers pulled by cars, or semi or twin trailers pulled by trucks) are pulled by motorized vehicles and do not themselves have motors.
- Collectors' vehicles must be at least 20 years old and cannot be used for normal transportation purposes. They can only be driven, for example, to car shows.

TABLE 1.14

## TYPES OF MOTOR VEHICLES IN 1999 CRASHES

| Motor Vehicle Type*                | Vehicles in      |                   |                               |                |
|------------------------------------|------------------|-------------------|-------------------------------|----------------|
|                                    | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | All<br>Crashes |
| Automobile                         | 515              | 37,195            | 77,872                        | 115,582        |
| Pickup Truck                       | 168              | 8,440             | 19,766                        | 28,374         |
| Van                                | 83               | 4,753             | 10,215                        | 15,051         |
| Motorhome/Camper                   | 1                | 27                | 81                            | 109            |
| Taxicab                            | 2                | 126               | 265                           | 393            |
| Police Vehicle                     | 1                | 181               | 351                           | 533            |
| Fire Department Vehicle            | 0                | 9                 | 47                            | 56             |
| School Bus                         | 5                | 173               | 611                           | 789            |
| Other Bus                          | 0                | 104               | 232                           | 336            |
| Ambulance                          | 0                | 26                | 47                            | 73             |
| Military Vehicle                   | 1                | 3                 | 28                            | 32             |
| Snowmobile                         | 9                | 40                | 23                            | 72             |
| All Terrain Vehicle                | 7                | 26                | 10                            | 43             |
| Farm Tractor or Equipment          | 5                | 56                | 107                           | 168            |
| Motorcycle*                        | 31               | 889               | 132                           | 1,052          |
| Motorscooter/Motorbike*            | 0                | 17                | 1                             | 18             |
| Motorized Bicycle (Moped)*         | 1                | 13                | 2                             | 16             |
| Hit and Run Vehicle                | 7                | 1,121             | 5,832                         | 6,960          |
| Road Maintenance Vehicle           | 3                | 28                | 132                           | 163            |
| Single Truck (2-axle, 6-tire)      | 12               | 374               | 866                           | 1,252          |
| Single Truck (3 or more axles)     | 8                | 191               | 386                           | 585            |
| Single Truck with Trailer          | 6                | 97                | 312                           | 415            |
| Truck Tractor with No Trailer      | 0                | 27                | 96                            | 123            |
| Truck Tractor with Semi Trailer    | 58               | 710               | 1,994                         | 2,762          |
| Truck Tractor with Double Trailers | 2                | 10                | 27                            | 39             |
| Other or Unknown Truck Type        | 2                | 48                | 161                           | 211            |
| Other or Unknown Motor Vehicle     | 9                | 558               | 1,488                         | 2,055          |
| Total**                            | 936              | 55,242            | 121,084                       | 177,262        |

\* On the accident report form, police may show that a vehicle is a "motorcycle," a "motorscooter/motorbike," or a "moped or motorized bicycle." Since 1986, however, the law recognizes just two categories. If the vehicle has an engine capacity of more than 50 cc, it is classified as a motorcycle; if it has 50 cc or smaller engine capacity, it is classified as a motorized bicycle. The term moped is short for motorized pedalcycle, which is the same as motorized bicycle.

\*\* Most crashes involve more than one vehicle, causing total vehicles to exceed total crashes. Bicyclists and pedestrians are excluded from this table.

TABLE 1.15

## 1999 CRASHES BY FIRST HARMFUL EVENT

| First Harmful Event     | Fatal Crashes | Personal Injury Crashes | Property Damage Crashes | Total Crashes | Killed     | Injured       | Fatality Rate Per 1,000 Crashes |
|-------------------------|---------------|-------------------------|-------------------------|---------------|------------|---------------|---------------------------------|
| <b>Collision With:</b>  |               |                         |                         |               |            |               |                                 |
| Another Motor Vehicle   | 295           | 20,104                  | 43,968                  | 64,367        | 344        | 31,718        | 5.3                             |
| Parked Motor Vehicle    | 6             | 527                     | 5,154                   | 5,687         | 7          | 686           | 1.4                             |
| Railroad Train          | 8             | 32                      | 44                      | 84            | 10         | 50            | 119.0                           |
| Bicycle                 | 8             | 1,015                   | 52                      | 1,075         | 8          | 1,039         | 7.4                             |
| Pedestrian              | 45            | 1,213                   | 0                       | 1,258         | 45         | 1,282         | 35.8                            |
| Deer                    | 2             | 451                     | 5,143                   | 5,596         | 2          | 537           | 0.4                             |
| Other Animal            | 1             | 98                      | 318                     | 417           | 1          | 132           | 2.3                             |
| Fixed Object            | 88            | 3,507                   | 7,480                   | 11,075        | 91         | 4,531         | 8.2                             |
| Other Object            | 0             | 45                      | 177                     | 222           | 0          | 60            | 0.0                             |
| <b>Non-Collision:</b>   |               |                         |                         |               |            |               |                                 |
| Overturn                | 104           | 2,734                   | 2,115                   | 4,953         | 108        | 3,823         | 21.8                            |
| Fire/Explosion          | 0             | 8                       | 287                     | 295           | 0          | 8             | 0.0                             |
| Submersion              | 2             | 26                      | 63                      | 91            | 2          | 34            | 22.0                            |
| <b>Other or Unknown</b> | 8             | 519                     | 1,166                   | 1,693         | 8          | 638           | 4.7                             |
| <b>Total</b>            | <b>567</b>    | <b>30,279</b>           | <b>65,967</b>           | <b>96,813</b> | <b>626</b> | <b>44,538</b> | <b>6.5</b>                      |

TABLE 1.16

## 1999 "HIT-AND-RUN" CRASHES BY FIRST HARMFUL EVENT

| First Harmful Event     | Fatal Crashes | Personal Injury Crashes | Property Damage Crashes | Total Crashes | Killed   | Injured      |
|-------------------------|---------------|-------------------------|-------------------------|---------------|----------|--------------|
| <b>Collision With:</b>  |               |                         |                         |               |          |              |
| Other Motor Vehicle     | 1             | 677                     | 2,564                   | 3,242         | 2        | 921          |
| Parked Motor Vehicle    | 1             | 50                      | 2,387                   | 2,438         | 1        | 55           |
| Railroad Train          | 0             | 0                       | 0                       | 0             | 0        | 0            |
| Bicycle                 | 0             | 106                     | 8                       | 114           | 0        | 108          |
| Pedestrian              | 5             | 176                     | 0                       | 181           | 5        | 185          |
| Deer                    | 0             | 0                       | 0                       | 0             | 0        | 0            |
| Other Animal            | 0             | 1                       | 7                       | 8             | 0        | 1            |
| Fixed Object            | 0             | 79                      | 704                     | 783           | 0        | 105          |
| Other Object            | 0             | 0                       | 15                      | 15            | 0        | 0            |
| <b>Non-Collision:</b>   |               |                         |                         |               |          |              |
| Overturn                | 0             | 16                      | 52                      | 68            | 0        | 28           |
| Fire/Explosion          | 0             | 0                       | 3                       | 3             | 0        | 0            |
| <b>Other or Unknown</b> | 0             | 10                      | 62                      | 72            | 0        | 10           |
| <b>Total</b>            | <b>7</b>      | <b>1,115</b>            | <b>5,802</b>            | <b>6,924</b>  | <b>8</b> | <b>1,413</b> |

TABLE 1.17

## 1999 CRASHES BY TRAFFIC CONTROL DEVICE

| Traffic Control Device             | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|------------------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Not Applicable                     | 386              | 16,440                        | 36,051                        | 52,877           | 422    | 23,602  |
| Traffic Signal                     | 34               | 7,117                         | 12,181                        | 19,332           | 38     | 10,509  |
| Overhead Flashers                  | 0                | 87                            | 163                           | 250              | 0      | 150     |
| Stop Sign-All Approaches           | 2                | 551                           | 1,182                         | 1,735            | 2      | 768     |
| Other Stop Sign                    | 90               | 4,157                         | 6,972                         | 11,219           | 102    | 6,704   |
| Yield Sign                         | 15               | 487                           | 905                           | 1,407            | 17     | 822     |
| Flagman, Officer, or School Patrol | 1                | 36                            | 82                            | 119              | 1      | 48      |
| School Bus Stop Arm                | 0                | 23                            | 58                            | 81               | 0      | 33      |
| School Zone Sign                   | 0                | 10                            | 24                            | 34               | 0      | 14      |
| No Passing Zone                    | 20               | 227                           | 316                           | 563              | 22     | 356     |
| RR Crossing Gate                   | 1                | 11                            | 42                            | 54               | 1      | 15      |
| RR Flashing Lights                 | 0                | 14                            | 22                            | 36               | 0      | 25      |
| RR Crossing Stop Sign              | 4                | 6                             | 17                            | 27               | 6      | 17      |
| RR Other                           | 2                | 28                            | 42                            | 72               | 2      | 37      |
| Other                              | 4                | 314                           | 1,789                         | 2,107            | 5      | 434     |
| Unknown                            | 8                | 771                           | 6,121                         | 6,900            | 8      | 1,004   |
| Total                              | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

TABLE 1.18

## 1999 CRASHES BY WEATHER CONDITION

| Weather Condition        | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|--------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Clear                    | 343              | 17,723                        | 36,791                        | 54,857           | 378    | 26,154  |
| Cloudy                   | 143              | 7,541                         | 14,869                        | 22,553           | 158    | 11,261  |
| Rain                     | 28               | 2,167                         | 4,447                         | 6,642            | 30     | 3,203   |
| Snow                     | 16               | 1,655                         | 5,320                         | 6,991            | 18     | 2,262   |
| Sleet/Hail/Freezing Rain | 6                | 373                           | 1,030                         | 1,409            | 7      | 519     |
| Fog/Smog/Smoke           | 8                | 147                           | 241                           | 396              | 10     | 225     |
| Blowing Sand/Dust        | 8                | 191                           | 597                           | 796              | 8      | 284     |
| Severe Crosswinds        | 2                | 30                            | 58                            | 90               | 2      | 42      |
| Other                    | 3                | 46                            | 158                           | 207              | 3      | 62      |
| Not Stated/Unknown       | 10               | 406                           | 2,456                         | 2,872            | 12     | 526     |
| Total                    | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

TABLE 1.19

## CONTRIBUTING FACTORS IN 1999 CRASHES

| Contributing Factors                    | Percent of Factors Cited in<br>Crashes by Severity of Crash |                   |                               | Number of Crashes in<br>which the Factor was Cited |                   |                               | Number of<br>People Affected |         |
|---|---|-------------------|-------------------------------|--|-------------------|-------------------------------|------------------------------|---------|
|   | Fatal<br>Crashes  | Injury<br>Crashes | Property<br>Damage<br>Crashes | Fatal<br>Crashes                                   | Injury<br>Crashes | Property<br>Damage<br>Crashes | Killed                       | Injured |
| <b>Human Factors</b>                    |   |                   |                               |  |                   |                               |                              |         |
| Driver Inattention/Distracted           | 13.7  | 24.7              | 24.2                          | 119  | 10,670            | 17,432                        | 135                          | 16,092  |
| Failure to Yield Right of Way           | 14.3  | 16.7              | 13.8                          | 130  | 7,390             | 10,234                        | 150                          | 11,945  |
| Illegal/Unsafe Speed                    | 16.0  | 11.6              | 11.5                          | 145  | 5,050             | 8,361                         | 163                          | 7,805   |
| Following Too Closely                   | 0.8   | 6.8               | 8.5                           | 7  | 2,757             | 5,890                         | 8                            | 3,999   |
| Improper/Unsafe Lane Use                | 5.3   | 3.5               | 5.7                           | 48   | 1,524             | 4,175                         | 59                           | 2,215   |
| Disregard Traf Contr Device             | 5.0   | 5.1               | 2.9                           | 46   | 2,288             | 2,155                         | 59                           | 3,833   |
| Physical Impairment                     | 9.8   | 5.5               | 2.5                           | 87   | 2,450             | 1,916                         | 97                           | 3,526   |
| Driver Inexperience                     | 2.7   | 3.5               | 3.2                           | 25   | 1,552             | 2,386                         | 30                           | 2,442   |
| Vision Obscured                         | 1.2   | 2.7               | 2.4                           | 10   | 1,103             | 1,698                         | 10                           | 1,626   |
| Improper Turn                           | 1.2   | 1.8               | 2.7                           | 11   | 819               | 2,018                         | 11                           | 1,258   |
| Improper Passing/Overtaking             | 1.3   | 0.9               | 1.8                           | 12   | 410               | 1,310                         | 14                           | 631     |
| Unsafe Backing                          | 0.3   | 0.4               | 1.9                           | 3  | 171               | 1,401                         | 4                            | 215     |
| Improper Parking/Starting/<br>Stopping  | 0.6   | 1.1               | 1.5                           | 5  | 509               | 1,088                         | 6                            | 754     |
| Driving Left of Center<br>(Not Passing) | 6.7   | 1.1               | 0.9                           | 60   | 510               | 641                           | 65                           | 969     |
| Pedestrian Violation or Error           | 2.6   | 0.9               | 0.0                           | 23   | 406               | 0                             | 23                           | 429     |
| Improper or No Signal                   | 0.1   | 0.2               | 0.4                           | 1  | 97                | 282                           | 1                            | 160     |
| Impeding Traffic                        | 0.2   | 0.2               | 0.2                           | 2  | 85                | 157                           | 2                            | 141     |
| Failure to Use Lights                   | 0.2   | 0.2               | 0.1                           | 2  | 86                | 64                            | 2                            | 130     |
| Driver on CB radio /<br>Cellular phone  | 0.1   | 0.1               | 0.1                           | 1  | 50                | 88                            | 1                            | 67      |
| Other Human Factor                      | 2.3   | 1.6               | 1.3                           | 21   | 682               | 890                           | 23                           | 914     |
| <b>Vehicular Factors</b>                |   |                   |                               |  |                   |                               |                              |         |
| Skidding                                | 4.0   | 3.0               | 3.7                           | 37   | 1,308             | 2,617                         | 39                           | 1,850   |
| Defective Equipment                     | 0.7   | 0.8               | 0.8                           | 7  | 369               | 679                           | 7                            | 525     |
| Other Vehicular Factor                  | 0.0   | 0.4               | 0.7                           | 0  | 182               | 543                           | 0                            | 244     |
| <b>Miscellaneous Factors</b>            |   |                   |                               |  |                   |                               |                              |         |
| Weather                                 | 3.8   | 4.0               | 5.6                           | 26   | 1,534             | 3,610                         | 33                           | 2,093   |
| Other                                   | 6.9   | 3.2               | 3.8                           | 51   | 1,217             | 2,342                         | 54                           | 1,703   |
| Total Percent                           | 100.0%  | 100.0%            | 100.0%                        |  |                   |                               |                              |         |
| Total Contributing Factors              | 917   | 45,353            | 76,022                        |  |                   |                               |                              |         |
| Vehicles Where There Was "No            |   |                   |                               |  |                   |                               |                              |         |
| Clear Contributing Factor"              | 360   | 22,748            | 43,877                        |  |                   |                               |                              |         |
| Total Number of Vehicles                | 997   | 57,630            | 121,134                       |  |                   |                               |                              |         |

Zero, one, or two contributing factors may be associated with a vehicle, causing the number of factors cited to vary from the number of crashes, vehicles, and persons affected by the factors. Note that in the absence of alcohol or drug test results (not usually available at the time the crash report is completed), officers are conservative in reporting impairment. Compare these figures with those from Section II. Bicyclists and pedestrians are considered as vehicles in this table, and factors associated with them are included. For contributing factors by age of drivers, see tables 1.09 and 1.10.

TABLE 1.20

## 1999 CRASHES BY LIGHT CONDITION

| Light Condition       | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|-----------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Daylight              | 316              | 20,497                        | 41,643                        | 62,456           | 348    | 30,320  |
| Dawn/Dusk             | 38               | 1,948                         | 4,741                         | 6,727            | 44     | 2,774   |
| Dark/Street Lights On | 58               | 4,448                         | 10,191                        | 14,697           | 64     | 6,447   |
| Dark/No Street Lights | 143              | 2,915                         | 6,517                         | 9,575            | 157    | 4,357   |
| Other/Unknown         | 12               | 471                           | 2,875                         | 3,358            | 13     | 640     |
| Total                 | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

TABLE 1.21

## 1999 CRASHES BY ROAD SURFACE CONDITION

| Road<br>Surface Condition | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|---------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Dry                       | 444              | 21,844                        | 43,245                        | 65,533           | 490    | 32,552  |
| Wet                       | 48               | 3,860                         | 7,804                         | 11,712           | 53     | 5,683   |
| Snow/Slush                | 13               | 1,322                         | 4,092                         | 5,427            | 14     | 1,788   |
| Ice or Packed Snow        | 43               | 2,641                         | 8,250                         | 10,934           | 47     | 3,659   |
| Other                     | 8                | 339                           | 626                           | 973              | 9      | 495     |
| Not Stated/Unknown        | 11               | 273                           | 1,950                         | 2,234            | 13     | 361     |
| Total                     | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

TABLE 1.22

## 1999 CRASHES BY ROAD DESIGN

| Road Design               | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|---------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Freeway (Including Ramps) | 56               | 3,307                         | 9,067                         | 12,430           | 63     | 4,668   |
| Other Divided Highway     | 77               | 4,451                         | 7,122                         | 11,650           | 91     | 6,877   |
| One-Way Street            | 5                | 978                           | 1,297                         | 2,280            | 6      | 1,424   |
| 4-6 Lanes Undivided       | 34               | 5,668                         | 8,870                         | 14,572           | 34     | 8,251   |
| 3 Lanes                   | 5                | 287                           | 541                           | 833              | 6      | 448     |
| 2-Lane--2-Way             | 368              | 13,093                        | 24,476                        | 37,937           | 402    | 19,556  |
| Alley/Driveway            | 0                | 187                           | 452                           | 639              | 0      | 223     |
| Other                     | 14               | 559                           | 1,113                         | 1,686            | 15     | 813     |
| Not Stated/Unknown        | 8                | 1,749                         | 13,029                        | 14,786           | 9      | 2,278   |
| Total                     | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |



TABLE 1.23

## 1999 CRASHES BY DIAGRAM

| Diagram                            | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|------------------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Rear End                           | 23               | 7,599                         | 14,022                        | 21,644           | 24     | 11,266  |
| Sideswipe Passing                  | 13               | 776                           | 5,228                         | 6,017            | 15     | 1,026   |
| Left Turn -- Oncoming Traffic      | 17               | 1,988                         | 2,746                         | 4,751            | 19     | 3,162   |
| Ran Off Road - Left                | 82               | 2,139                         | 2,839                         | 5,060            | 83     | 2,882   |
| Right Angle                        | 140              | 7,254                         | 10,210                        | 17,604           | 163    | 11,680  |
| Right Turn -- Cross Street Traffic | 1                | 157                           | 374                           | 532              | 1      | 212     |
| Ran Off Road - Right               | 100              | 2,877                         | 4,133                         | 7,110            | 105    | 3,852   |
| Head On                            | 96               | 1,179                         | 1,387                         | 2,662            | 115    | 2,153   |
| Sideswipe Opposing                 | 8                | 395                           | 1,046                         | 1,449            | 8      | 599     |
| Other / Unknown / Incomplete       | 87               | 5,915                         | 23,982                        | 29,984           | 93     | 7,706   |
| Total                              | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

Note: It is known that there is significant error in the "diagram" field on the Police Accident Report. Two specific types of error are most common: First, the field is often left blank. Second, a large proportion (estimated by some traffic engineers to be as high as one-half) of crashes coded as "right-angle" are not right angle crashes, but are some other type of crash--most frequently "left turn into oncoming traffic."

TABLE 1.24

## 1999 CRASHES BY POPULATION OF AREA

| Population of<br>City or Township | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|-----------------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| 100,000 & Over                    | 27               | 6,292                         | 15,776                        | 22,095           | 28     | 8,863   |
| 50,000 - 99,999                   | 19               | 3,088                         | 5,842                         | 8,949            | 23     | 4,415   |
| 25,000 - 49,999                   | 32               | 4,392                         | 9,446                         | 13,870           | 32     | 6,315   |
| 10,000 - 24,999                   | 34               | 4,393                         | 9,861                         | 14,288           | 37     | 6,333   |
| 5,000 - 9,999                     | 27               | 2,030                         | 4,471                         | 6,528            | 29     | 2,924   |
| 2,500 - 4,999                     | 15               | 889                           | 2,116                         | 3,020            | 16     | 1,335   |
| 1,000 - 2,499                     | 13               | 596                           | 1,404                         | 2,013            | 13     | 879     |
| Under 1,000                       | 400              | 8,599                         | 17,051                        | 26,050           | 448    | 13,474  |
| Total                             | 567              | 30,283                        | 65,967                        | 96,813           | 626    | 44,538  |

TABLE 1.25

## 1999 CRASHES BY TYPE OF ROADWAY

| Type of Roadway          | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|--------------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| <b>Urban</b>             |                  |                               |                               |                  |        |         |
| Interstate               | 24               | 2,039                         | 6,332                         | 8,395            | 28     | 2,831   |
| Trunk Highway            | 41               | 4,946                         | 10,271                        | 15,258           | 45     | 7,211   |
| County State Aid Highway | 35               | 5,899                         | 10,736                        | 16,670           | 36     | 8,643   |
| County Road              | 4                | 194                           | 360                           | 558              | 4      | 292     |
| Local Street             | 35               | 7,117                         | 17,697                        | 24,849           | 36     | 9,873   |
| Total                    | 139              | 20,195                        | 45,396                        | 65,730           | 149    | 28,850  |
| <b>Rural</b>             |                  |                               |                               |                  |        |         |
| Interstate               | 30               | 730                           | 1,994                         | 2,754            | 33     | 1,135   |
| Trunk Highway            | 199              | 4,229                         | 8,525                         | 12,953           | 225    | 6,919   |
| County State Aid Highway | 144              | 2,973                         | 5,084                         | 8,201            | 159    | 4,440   |
| County Road              | 17               | 455                           | 730                           | 1,202            | 18     | 677     |
| Township Road            | 24               | 772                           | 1,211                         | 2,007            | 26     | 1,223   |
| Local Street             | 8                | 703                           | 2,142                         | 2,853            | 9      | 1,005   |
| Other Road               | 6                | 222                           | 885                           | 1,113            | 7      | 289     |
| Total                    | 428              | 10,084                        | 20,571                        | 31,083           | 477    | 15,688  |
| <b>All Roadways</b>      |                  |                               |                               |                  |        |         |
| Interstate               | 54               | 2,769                         | 8,326                         | 11,149           | 61     | 3,966   |
| Trunk Highway            | 240              | 9,175                         | 18,796                        | 28,211           | 270    | 14,130  |
| County State Aid Highway | 179              | 8,872                         | 15,820                        | 24,871           | 195    | 13,083  |
| County Road              | 21               | 649                           | 1,090                         | 1,760            | 22     | 969     |
| Township Road            | 24               | 772                           | 1,211                         | 2,007            | 26     | 1,223   |
| Local Street             | 43               | 7,820                         | 19,838                        | 27,701           | 45     | 10,878  |
| Other Road               | 6                | 222                           | 886                           | 1,114            | 7      | 289     |
| Total                    | 567              | 30,279                        | 65,967                        | 96,813           | 626    | 44,538  |

("Urban" refers to an area having a population of 5,000 or more; "rural" refers to an area of less than 5,000.)

TABLE 1.26 CONTINUED

## 1999 COUNTY CRASH REPORT

| County          | 1999 Crashes     |                               |                               |                  | Average<br>Crashes<br>1993-1997 | Number<br>Killed<br>1999 | Average<br>Killed<br>1993-1997 | Number<br>Injured<br>1999 | Average<br>Injured<br>1993-1997 |
|-----------------|------------------|-------------------------------|-------------------------------|------------------|---------------------------------|--------------------------|--------------------------------|---------------------------|---------------------------------|
|                 | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes |                                 |                          |                                |                           |                                 |
| Pope            | 2                | 53                            | 98                            | 153              | 138                             | 2                        | 3                              | 81                        | 58                              |
| Ramsey          | 27               | 3,779                         | 10,093                        | 13,899           | 13,795                          | 30                       | 28                             | 5,312                     | 5,636                           |
| Red Lake        | 4                | 17                            | 47                            | 68               | 65                              | 5                        | 2                              | 26                        | 30                              |
| Redwood         | 6                | 73                            | 116                           | 195              | 238                             | 6                        | 4                              | 123                       | 143                             |
| Renville        | 1                | 95                            | 135                           | 231              | 248                             | 1                        | 6                              | 150                       | 129                             |
| Rice            | 8                | 332                           | 722                           | 1,062            | 1,055                           | 8                        | 7                              | 492                       | 522                             |
| Rock            | 2                | 59                            | 171                           | 232              | 233                             | 2                        | 1                              | 101                       | 95                              |
| Roseau          | 2                | 54                            | 130                           | 186              | 199                             | 3                        | 3                              | 76                        | 88                              |
| St. Louis       | 24               | 1,086                         | 1,688                         | 2,798            | 3,121                           | 24                       | 28                             | 1,576                     | 1,645                           |
| Scott           | 9                | 479                           | 949                           | 1,437            | 1,376                           | 13                       | 16                             | 675                       | 685                             |
| Sherburne       | 7                | 345                           | 645                           | 997              | 889                             | 7                        | 12                             | 528                       | 470                             |
| Sibley          | 1                | 76                            | 163                           | 240              | 233                             | 1                        | 4                              | 113                       | 105                             |
| Stearns         | 17               | 954                           | 1,482                         | 2,453            | 2,747                           | 19                       | 18                             | 1,481                     | 1,498                           |
| Steele          | 6                | 164                           | 545                           | 715              | 765                             | 8                        | 8                              | 240                       | 288                             |
| Stevens         | 1                | 40                            | 73                            | 114              | 140                             | 1                        | 1                              | 58                        | 62                              |
| Swift           | 2                | 37                            | 54                            | 93               | 136                             | 2                        | 3                              | 61                        | 71                              |
| Todd            | 7                | 109                           | 269                           | 385              | 408                             | 8                        | 5                              | 181                       | 187                             |
| Traverse        | 0                | 13                            | 20                            | 33               | 42                              | 0                        | 1                              | 16                        | 27                              |
| Wabasha         | 9                | 112                           | 219                           | 340              | 357                             | 9                        | 5                              | 178                       | 174                             |
| Wadena          | 2                | 79                            | 136                           | 217              | 257                             | 2                        | 4                              | 116                       | 128                             |
| Waseca          | 3                | 94                            | 194                           | 291              | 303                             | 3                        | 4                              | 134                       | 135                             |
| Washington      | 10               | 880                           | 2,260                         | 3,150            | 2,948                           | 11                       | 12                             | 1,284                     | 1,345                           |
| Watonwan        | 1                | 48                            | 130                           | 179              | 156                             | 1                        | 2                              | 82                        | 79                              |
| Wilkin          | 1                | 41                            | 95                            | 137              | 189                             | 1                        | 2                              | 60                        | 90                              |
| Winona          | 16               | 311                           | 739                           | 1,066            | 1,124                           | 16                       | 9                              | 448                       | 448                             |
| Wright          | 16               | 488                           | 889                           | 1,393            | 1,368                           | 16                       | 15                             | 786                       | 787                             |
| Yellow Medicine | 5                | 51                            | 89                            | 145              | 153                             | 6                        | 2                              | 77                        | 84                              |
| Total           | 567              | 30,279                        | 65,967                        | 96,813           | 98,521                          | 626                      | 613                            | 44,538                    | 46,741                          |

TABLE 1.26 CONTINUED  
1999 COUNTY CRASH REPORT

| County            | 1999 Crashes     |                               |                               |                  | Average<br>Crashes<br>1993-1997 | Number<br>Killed<br>1999 | Average<br>Killed<br>1993-1997 | Number<br>Injured<br>1999 | Average<br>Injured<br>1993-1997 |
|-------------------|------------------|-------------------------------|-------------------------------|------------------|---------------------------------|--------------------------|--------------------------------|---------------------------|---------------------------------|
|                   | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes |                                 |                          |                                |                           |                                 |
| Itasca            | 6                | 267                           | 465                           | 738              | 734                             | 6                        | 7                              | 407                       | 389                             |
| Jackson           | 4                | 55                            | 116                           | 175              | 209                             | 4                        | 4                              | 89                        | 97                              |
| Kanabec           | 4                | 87                            | 185                           | 276              | 227                             | 5                        | 4                              | 145                       | 139                             |
| Kandiyohi         | 11               | 275                           | 472                           | 758              | 854                             | 12                       | 10                             | 465                       | 494                             |
| Kittson           | 1                | 13                            | 69                            | 83               | 93                              | 1                        | 1                              | 18                        | 33                              |
| Koochiching       | 1                | 74                            | 97                            | 172              | 225                             | 1                        | 3                              | 105                       | 132                             |
| Lac Qui Parle     | 3                | 29                            | 48                            | 80               | 94                              | 3                        | 2                              | 46                        | 51                              |
| Lake              | 1                | 68                            | 157                           | 226              | 216                             | 1                        | 2                              | 98                        | 89                              |
| Lake of The Woods | 3                | 13                            | 36                            | 52               | 55                              | 3                        | 3                              | 23                        | 26                              |
| Le Sueur          | 3                | 134                           | 302                           | 439              | 489                             | 3                        | 4                              | 198                       | 231                             |
| Lincoln           | 3                | 20                            | 64                            | 87               | 99                              | 3                        | 1                              | 31                        | 35                              |
| Lyon              | 6                | 145                           | 263                           | 414              | 471                             | 8                        | 5                              | 242                       | 207                             |
| McLeod            | 10               | 208                           | 399                           | 617              | 668                             | 12                       | 9                              | 331                       | 339                             |
| Mahnomen          | 3                | 31                            | 26                            | 60               | 68                              | 4                        | 3                              | 57                        | 64                              |
| Marshall          | 1                | 27                            | 54                            | 82               | 109                             | 1                        | 3                              | 39                        | 60                              |
| Martin            | 2                | 95                            | 266                           | 363              | 393                             | 2                        | 5                              | 136                       | 181                             |
| Meeker            | 6                | 111                           | 148                           | 265              | 327                             | 7                        | 4                              | 178                       | 201                             |
| Mille Lacs        | 7                | 143                           | 233                           | 383              | 408                             | 7                        | 6                              | 241                       | 254                             |
| Morrison          | 5                | 155                           | 290                           | 450              | 519                             | 7                        | 8                              | 250                       | 279                             |
| Mower             | 5                | 159                           | 444                           | 608              | 679                             | 5                        | 5                              | 230                       | 279                             |
| Murray            | 2                | 29                            | 101                           | 132              | 115                             | 2                        | 2                              | 45                        | 53                              |
| Nicollet          | 3                | 128                           | 351                           | 482              | 464                             | 3                        | 3                              | 191                       | 195                             |
| Nobles            | 4                | 131                           | 283                           | 418              | 433                             | 4                        | 3                              | 189                       | 187                             |
| Norman            | 1                | 25                            | 67                            | 93               | 111                             | 1                        | 2                              | 42                        | 60                              |
| Olmsted           | 22               | 822                           | 1,470                         | 2,314            | 2,327                           | 24                       | 14                             | 1,221                     | 1,134                           |
| Otter Tail        | 12               | 290                           | 570                           | 872              | 930                             | 13                       | 10                             | 427                       | 471                             |
| Pennington        | 1                | 87                            | 137                           | 225              | 262                             | 1                        | 2                              | 128                       | 171                             |
| Pine              | 10               | 186                           | 332                           | 528              | 550                             | 10                       | 6                              | 274                       | 295                             |
| Pipestone         | 2                | 45                            | 75                            | 122              | 144                             | 3                        | 3                              | 77                        | 62                              |
| Polk              | 3                | 151                           | 311                           | 465              | 533                             | 6                        | 6                              | 233                       | 272                             |

TABLE 1.26

## 1999 COUNTY CRASH REPORT

| County     | 1999 Crashes     |                               |                               |                  | Average<br>Crashes<br>1994-1998 | Number<br>Killed<br>1999 | Average<br>Killed<br>1994-1998 | Number<br>Injured<br>1999 | Average<br>Injured<br>1994-1998 |
|------------|------------------|-------------------------------|-------------------------------|------------------|---------------------------------|--------------------------|--------------------------------|---------------------------|---------------------------------|
|            | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes |                                 |                          |                                |                           |                                 |
| Aitkin     | 4                | 82                            | 231                           | 317              | 295                             | 5                        | 5                              | 139                       | 149                             |
| Anoka      | 22               | 1,806                         | 3,092                         | 4,920            | 4,852                           | 24                       | 25                             | 2,653                     | 2,689                           |
| Becker     | 8                | 138                           | 231                           | 377              | 408                             | 9                        | 10                             | 209                       | 248                             |
| Beltrami   | 9                | 220                           | 534                           | 763              | 775                             | 12                       | 7                              | 354                       | 327                             |
| Benton     | 6                | 199                           | 415                           | 620              | 707                             | 7                        | 9                              | 311                       | 407                             |
| Big Stone  | 1                | 29                            | 62                            | 92               | 94                              | 1                        | 1                              | 40                        | 35                              |
| Blue Earth | 4                | 354                           | 898                           | 1,256            | 1,415                           | 5                        | 11                             | 494                       | 603                             |
| Brown      | 6                | 146                           | 307                           | 459              | 476                             | 6                        | 4                              | 210                       | 232                             |
| Carlton    | 7                | 152                           | 276                           | 435              | 429                             | 7                        | 6                              | 222                       | 228                             |
| Carver     | 11               | 320                           | 753                           | 1,084            | 1,097                           | 11                       | 10                             | 479                       | 558                             |
| Cass       | 6                | 182                           | 255                           | 443              | 442                             | 7                        | 9                              | 310                       | 261                             |
| Chippewa   | 2                | 64                            | 104                           | 170              | 210                             | 2                        | 5                              | 99                        | 120                             |
| Chisago    | 9                | 253                           | 530                           | 792              | 730                             | 11                       | 9                              | 389                       | 343                             |
| Clay       | 9                | 234                           | 709                           | 952              | 1,159                           | 10                       | 8                              | 359                       | 429                             |
| Clearwater | 4                | 36                            | 69                            | 109              | 103                             | 5                        | 5                              | 59                        | 62                              |
| Cook       | 2                | 39                            | 95                            | 136              | 148                             | 2                        | 1                              | 54                        | 73                              |
| Cottonwood | 7                | 53                            | 119                           | 179              | 172                             | 7                        | 3                              | 99                        | 99                              |
| Crow Wing  | 10               | 407                           | 803                           | 1,220            | 1,177                           | 12                       | 11                             | 616                       | 610                             |
| Dakota     | 21               | 1,798                         | 3,634                         | 5,453            | 5,200                           | 22                       | 24                             | 2,557                     | 2,537                           |
| Dodge      | 5                | 78                            | 162                           | 245              | 256                             | 5                        | 4                              | 118                       | 137                             |
| Douglas    | 7                | 210                           | 606                           | 823              | 892                             | 8                        | 7                              | 316                       | 371                             |
| Faribault  | 3                | 60                            | 120                           | 183              | 192                             | 3                        | 2                              | 95                        | 105                             |
| Fillmore   | 4                | 94                            | 222                           | 320              | 321                             | 5                        | 4                              | 153                       | 154                             |
| Freeborn   | 5                | 222                           | 487                           | 714              | 711                             | 6                        | 5                              | 353                       | 296                             |
| Goodhue    | 11               | 277                           | 715                           | 1,003            | 1,061                           | 13                       | 8                              | 445                       | 485                             |
| Grant      | 1                | 29                            | 63                            | 93               | 99                              | 2                        | 0                              | 42                        | 46                              |
| Hennepin   | 38               | 8,521                         | 19,737                        | 28,296           | 28,469                          | 40                       | 60                             | 12,136                    | 13,026                          |
| Houston    | 1                | 98                            | 228                           | 327              | 328                             | 1                        | 3                              | 150                       | 158                             |
| Hubbard    | 6                | 114                           | 160                           | 280              | 249                             | 6                        | 5                              | 173                       | 160                             |
| Isanti     | 4                | 192                           | 367                           | 563              | 564                             | 5                        | 5                              | 293                       | 303                             |

TABLE 1.27

## 1999 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

| City             | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Afton            | 1                | 9                             | 26                            | 36               | 1      | 10      |
| Albert Lea       | 1                | 119                           | 265                           | 385              | 2      | 183     |
| Alexandria       | 0                | 90                            | 285                           | 375              | 0      | 122     |
| Andover          | 2                | 85                            | 154                           | 241              | 2      | 123     |
| Anoka            | 0                | 164                           | 344                           | 508              | 0      | 235     |
| Apple Valley     | 4                | 208                           | 276                           | 488              | 4      | 313     |
| Arden Hills      | 1                | 115                           | 244                           | 360              | 3      | 167     |
| Aurora           | 0                | 8                             | 25                            | 33               | 0      | 9       |
| Austin           | 1                | 71                            | 288                           | 360              | 1      | 101     |
| Baxter           | 0                | 48                            | 96                            | 144              | 0      | 63      |
| Bayport          | 0                | 8                             | 18                            | 26               | 0      | 12      |
| Belle Plaine     | 0                | 17                            | 52                            | 69               | 0      | 27      |
| Bemidji          | 1                | 102                           | 297                           | 400              | 1      | 153     |
| Benson           | 0                | 12                            | 7                             | 19               | 0      | 19      |
| Big Lake         | 0                | 21                            | 32                            | 53               | 0      | 27      |
| Blaine           | 6                | 314                           | 502                           | 822              | 6      | 478     |
| Bloomington      | 4                | 711                           | 1,809                         | 2,524            | 4      | 1,016   |
| Blue Earth       | 0                | 14                            | 24                            | 38               | 0      | 25      |
| Brainerd         | 0                | 150                           | 388                           | 538              | 0      | 195     |
| Breckenridge     | 0                | 14                            | 42                            | 56               | 0      | 17      |
| Brooklyn Center  | 0                | 258                           | 535                           | 793              | 0      | 402     |
| Brooklyn Park    | 2                | 416                           | 563                           | 981              | 3      | 618     |
| Buffalo          | 0                | 51                            | 114                           | 165              | 0      | 76      |
| Burnsville       | 0                | 331                           | 680                           | 1,011            | 0      | 448     |
| Byron            | 0                | 13                            | 16                            | 29               | 0      | 15      |
| Caledonia        | 0                | 9                             | 26                            | 35               | 0      | 12      |
| Cambridge        | 0                | 43                            | 141                           | 184              | 0      | 57      |
| Cannon Falls     | 0                | 8                             | 43                            | 51               | 0      | 14      |
| Champlin         | 0                | 61                            | 93                            | 154              | 0      | 99      |
| Chanhassen       | 0                | 91                            | 246                           | 337              | 0      | 138     |
| Chaska           | 1                | 64                            | 162                           | 227              | 1      | 102     |
| Chisholm         | 0                | 11                            | 35                            | 46               | 0      | 15      |
| Circle Pines     | 0                | 20                            | 35                            | 55               | 0      | 39      |
| Cloquet          | 0                | 63                            | 94                            | 157              | 0      | 89      |
| Cold Spring      | 0                | 6                             | 19                            | 25               | 0      | 9       |
| Columbia Heights | 0                | 97                            | 162                           | 259              | 0      | 119     |
| Coon Rapids      | 3                | 444                           | 782                           | 1,229            | 4      | 672     |
| Corcoran         | 0                | 31                            | 53                            | 84               | 0      | 55      |
| Cottage Grove    | 1                | 61                            | 244                           | 306              | 1      | 86      |
| Crookston        | 0                | 26                            | 73                            | 99               | 0      | 31      |
| Crystal          | 0                | 119                           | 117                           | 236              | 0      | 177     |
| Dayton           | 1                | 20                            | 76                            | 97               | 1      | 32      |
| Deephaven        | 0                | 9                             | 22                            | 31               | 0      | 10      |
| Delano           | 0                | 9                             | 31                            | 40               | 0      | 13      |
| Detroit Lakes    | 1                | 37                            | 77                            | 115              | 1      | 56      |
| Dilworth         | 0                | 7                             | 25                            | 32               | 0      | 18      |
| Duluth           | 1                | 434                           | 517                           | 952              | 1      | 599     |
| Eagan            | 1                | 299                           | 649                           | 949              | 1      | 434     |
| East Bethel      | 0                | 38                            | 60                            | 98               | 0      | 53      |

TABLE 1.27 CONTINUED

## 1999 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

| City                | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|---------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| East Grand Forks    | 0                | 30                            | 94                            | 124              | 0      | 52      |
| Eden Prairie        | 2                | 230                           | 708                           | 940              | 2      | 310     |
| Edina               | 1                | 240                           | 602                           | 843              | 1      | 323     |
| Elk River           | 3                | 133                           | 202                           | 338              | 3      | 207     |
| Ely                 | 0                | 15                            | 35                            | 50               | 0      | 19      |
| Eveleth             | 0                | 14                            | 48                            | 62               | 0      | 19      |
| Excelsior           | 0                | 18                            | 30                            | 48               | 0      | 20      |
| Fairmont            | 0                | 46                            | 151                           | 197              | 0      | 70      |
| Falcon Heights      | 0                | 31                            | 56                            | 87               | 0      | 39      |
| Faribault           | 1                | 146                           | 301                           | 448              | 1      | 220     |
| Farmington          | 2                | 35                            | 77                            | 114              | 2      | 57      |
| Fergus Falls        | 0                | 62                            | 197                           | 259              | 0      | 85      |
| Forest Lake         | 2                | 72                            | 157                           | 231              | 2      | 111     |
| Fridley             | 2                | 220                           | 332                           | 554              | 2      | 298     |
| Gilbert             | 0                | 5                             | 23                            | 28               | 0      | 6       |
| Glencoe             | 0                | 20                            | 46                            | 66               | 0      | 34      |
| Glenwood            | 0                | 10                            | 36                            | 46               | 0      | 12      |
| Golden Valley       | 0                | 167                           | 418                           | 585              | 0      | 242     |
| Goodview            | 0                | 7                             | 23                            | 30               | 0      | 9       |
| Grand Rapids        | 0                | 81                            | 205                           | 286              | 0      | 110     |
| Granite Falls       | 0                | 10                            | 26                            | 36               | 0      | 16      |
| Ham Lake            | 3                | 71                            | 101                           | 175              | 3      | 108     |
| Hastings            | 1                | 94                            | 238                           | 333              | 1      | 128     |
| Hermantown          | 1                | 50                            | 47                            | 98               | 1      | 85      |
| Hibbing             | 4                | 124                           | 232                           | 360              | 4      | 188     |
| Hopkins             | 0                | 105                           | 191                           | 296              | 0      | 154     |
| Hoyt Lakes          | 0                | 4                             | 10                            | 14               | 0      | 5       |
| Hugo                | 1                | 28                            | 49                            | 78               | 1      | 44      |
| Hutchinson          | 0                | 66                            | 140                           | 206              | 0      | 98      |
| Independence        | 2                | 18                            | 44                            | 64               | 2      | 26      |
| International Falls | 0                | 39                            | 53                            | 92               | 0      | 54      |
| Inver Grove Heights | 2                | 130                           | 304                           | 436              | 2      | 181     |
| Jackson             | 0                | 11                            | 21                            | 32               | 0      | 13      |
| Jordan              | 0                | 16                            | 39                            | 55               | 0      | 24      |
| Kasson              | 0                | 5                             | 28                            | 33               | 0      | 9       |
| La Crescent         | 0                | 21                            | 54                            | 75               | 0      | 37      |
| Lake City           | 2                | 12                            | 57                            | 71               | 2      | 14      |
| Lake Elmo           | 0                | 48                            | 127                           | 175              | 0      | 87      |
| Lakeville           | 3                | 154                           | 322                           | 479              | 3      | 209     |
| Lauderdale          | 0                | 18                            | 45                            | 63               | 0      | 22      |
| Le Sueur            | 0                | 10                            | 46                            | 56               | 0      | 12      |
| Lindstrom           | 0                | 9                             | 32                            | 41               | 0      | 10      |
| Lino Lakes          | 1                | 71                            | 151                           | 223              | 1      | 102     |
| Litchfield          | 0                | 24                            | 59                            | 83               | 0      | 32      |
| Little Canada       | 1                | 107                           | 295                           | 403              | 1      | 151     |
| Little Falls        | 0                | 33                            | 82                            | 115              | 0      | 44      |
| Long Prairie        | 1                | 11                            | 25                            | 37               | 1      | 19      |
| Luverne             | 0                | 19                            | 69                            | 88               | 0      | 37      |
| Mahtomedi           | 0                | 12                            | 34                            | 46               | 0      | 20      |



**TABLE 1.27 CONTINUED**  
**1999 CRASHES IN CITIES OF 2,500 OR MORE POPULATION**

| <b>City</b>      | <b>Fatal<br/>Crashes</b> | <b>Personal<br/>Injury<br/>Crashes</b> | <b>Property<br/>Damage<br/>Crashes</b> | <b>Total<br/>Crashes</b> | <b>Killed</b> | <b>Injured</b> |
|------------------|--------------------------|--|--|--------------------------|---------------|----------------|
| Mankato          | 0                        | 249                                    | 619                                    | 868                      | 0             | 350            |
| Maple Grove      | 2                        | 189                                    | 483                                    | 674                      | 2             | 282            |
| Maplewood        | 1                        | 314                                    | 566                                    | 881                      | 1             | 470            |
| Marshall         | 2                        | 86                                     | 150                                    | 238                      | 3             | 141            |
| Medina           | 0                        | 33                                     | 83                                     | 116                      | 0             | 50             |
| Melrose          | 0                        | 9                                      | 33                                     | 42                       | 0             | 13             |
| Mendota Heights  | 1                        | 77                                     | 201                                    | 279                      | 1             | 105            |
| Minneapolis      | 12                       | 4,147                                  | 9,800                                  | 13,959                   | 13            | 5,867          |
| Minnetonka       | 2                        | 272                                    | 591                                    | 865                      | 2             | 381            |
| Minnetrista      | 1                        | 23                                     | 65                                     | 89                       | 1             | 39             |
| Montevideo       | 1                        | 26                                     | 52                                     | 79                       | 1             | 41             |
| Monticello       | 1                        | 57                                     | 145                                    | 203                      | 1             | 101            |
| Moorhead         | 0                        | 143                                    | 490                                    | 633                      | 0             | 207            |
| Mora             | 0                        | 18                                     | 39                                     | 57                       | 0             | 25             |
| Morris           | 0                        | 13                                     | 50                                     | 63                       | 0             | 15             |
| Mound            | 0                        | 27                                     | 44                                     | 71                       | 0             | 36             |
| Mounds View      | 0                        | 51                                     | 95                                     | 146                      | 0             | 72             |
| Mountain Iron    | 0                        | 19                                     | 36                                     | 55                       | 0             | 35             |
| New Brighton     | 0                        | 78                                     | 235                                    | 313                      | 0             | 111            |
| New Hope         | 0                        | 70                                     | 129                                    | 199                      | 0             | 104            |
| Newport          | 0                        | 65                                     | 175                                    | 240                      | 0             | 89             |
| New Prague       | 0                        | 20                                     | 32                                     | 52                       | 0             | 31             |
| New Ulm          | 0                        | 80                                     | 165                                    | 245                      | 0             | 104            |
| North Branch     | 2                        | 49                                     | 84                                     | 135                      | 2             | 79             |
| Northfield       | 0                        | 33                                     | 106                                    | 139                      | 0             | 53             |
| North Mankato    | 1                        | 34                                     | 87                                     | 122                      | 1             | 47             |
| North Oaks       | 0                        | 12                                     | 26                                     | 38                       | 0             | 19             |
| North St. Paul   | 0                        | 72                                     | 133                                    | 205                      | 0             | 112            |
| Oakdale          | 0                        | 91                                     | 188                                    | 279                      | 0             | 144            |
| Oak Park Heights | 0                        | 17                                     | 40                                     | 57                       | 0             | 31             |
| Olivia           | 0                        | 4                                      | 20                                     | 24                       | 0             | 5              |
| Orono            | 0                        | 41                                     | 122                                    | 163                      | 0             | 49             |
| Ortonville       | 0                        | 8                                      | 30                                     | 38                       | 0             | 8              |
| Osseo            | 0                        | 30                                     | 48                                     | 78                       | 0             | 42             |
| Otsego           | 0                        | 0                                      | 0                                      | 0                        | 0             | 0              |
| Owatonna         | 0                        | 97                                     | 330                                    | 427                      | 0             | 129            |
| Park Rapids      | 0                        | 15                                     | 49                                     | 64                       | 0             | 20             |
| Pine City        | 0                        | 12                                     | 38                                     | 50                       | 0             | 23             |
| Pipestone        | 0                        | 20                                     | 33                                     | 53                       | 0             | 37             |
| Plainview        | 1                        | 6                                      | 21                                     | 28                       | 1             | 8              |
| Plymouth         | 2                        | 260                                    | 665                                    | 927                      | 2             | 351            |
| Princeton        | 0                        | 22                                     | 56                                     | 78                       | 0             | 27             |
| Prior Lake       | 0                        | 62                                     | 51                                     | 113                      | 0             | 89             |
| Proctor          | 0                        | 4                                      | 19                                     | 23                       | 0             | 11             |
| Ramsey           | 2                        | 79                                     | 147                                    | 228                      | 2             | 121            |
| Red Wing         | 1                        | 103                                    | 276                                    | 380                      | 1             | 146            |
| Redwood Falls    | 0                        | 26                                     | 53                                     | 79                       | 0             | 41             |
| Richfield        | 3                        | 353                                    | 793                                    | 1,149                    | 3             | 508            |
| Robbinsdale      | 0                        | 99                                     | 178                                    | 277                      | 0             | 145            |
| Rochester        | 8                        | 590                                    | 1,068                                  | 1,666                    | 10            | 845            |

TABLE 1.27 CONTINUED

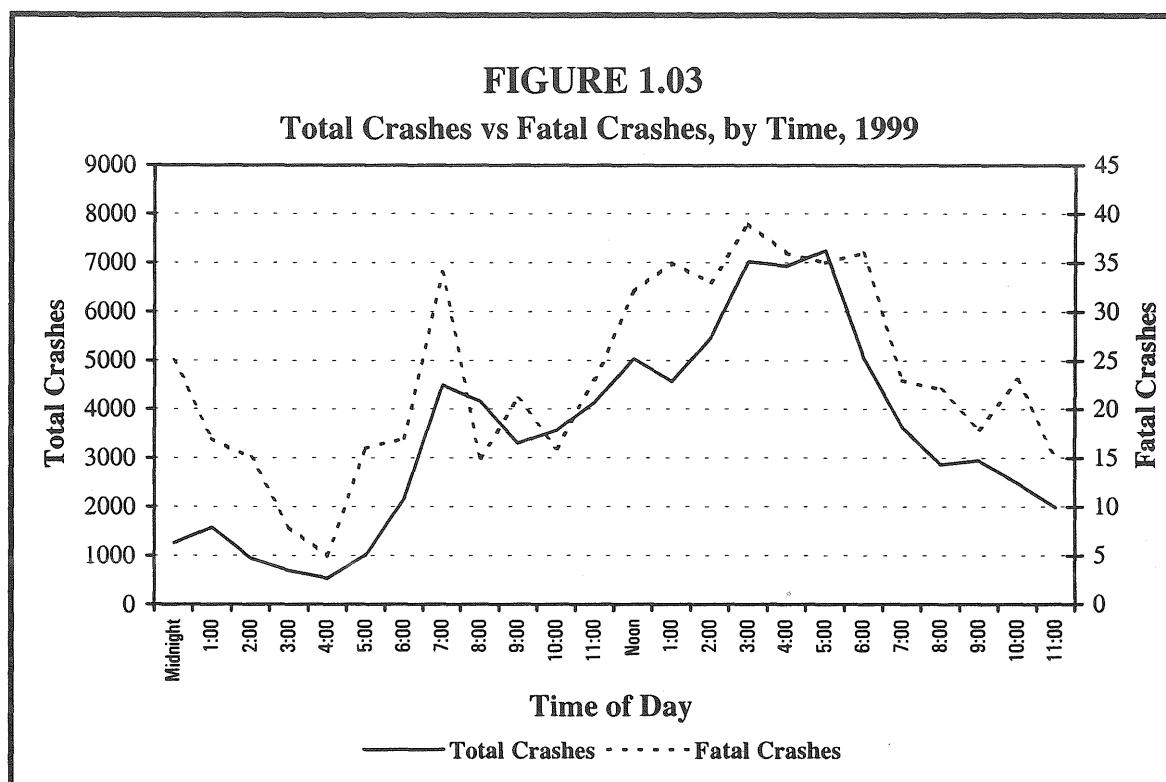
## 1999 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

| City              | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|-------------------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| Rockford          | 0                | 12                            | 26                            | 38               | 0      | 16      |
| Roseau            | 0                | 5                             | 20                            | 25               | 0      | 5       |
| Rosemount         | 1                | 83                            | 146                           | 230              | 1      | 112     |
| Roseville         | 4                | 258                           | 834                           | 1,096            | 4      | 339     |
| St. Anthony       | 1                | 26                            | 46                            | 73               | 1      | 34      |
| St. Charles       | 0                | 7                             | 14                            | 21               | 0      | 11      |
| St. Cloud         | 3                | 575                           | 696                           | 1,274            | 3      | 868     |
| St. Francis       | 0                | 18                            | 37                            | 55               | 0      | 24      |
| St. James         | 0                | 16                            | 45                            | 61               | 0      | 26      |
| St. Joseph        | 0                | 12                            | 21                            | 33               | 0      | 18      |
| St. Louis Park    | 0                | 279                           | 737                           | 1,016            | 0      | 386     |
| St. Michael       | 0                | 25                            | 43                            | 68               | 0      | 45      |
| St. Paul          | 15               | 2,340                         | 6,582                         | 8,937            | 15     | 3,245   |
| St. Paul Park     | 0                | 15                            | 32                            | 47               | 0      | 21      |
| St. Peter         | 0                | 14                            | 81                            | 95               | 0      | 17      |
| Sartell           | 0                | 17                            | 41                            | 58               | 0      | 23      |
| Sauk Centre       | 1                | 16                            | 67                            | 84               | 1      | 26      |
| Sauk Rapids       | 1                | 38                            | 86                            | 125              | 1      | 50      |
| Savage            | 1                | 96                            | 204                           | 301              | 1      | 128     |
| Shakopee          | 1                | 122                           | 259                           | 382              | 1      | 167     |
| Shoreview         | 1                | 105                           | 267                           | 373              | 2      | 140     |
| Shorewood         | 0                | 31                            | 79                            | 110              | 0      | 38      |
| Silver Bay        | 0                | 0                             | 8                             | 8                | 0      | 0       |
| Sleepy Eye        | 0                | 18                            | 46                            | 64               | 0      | 26      |
| South St. Paul    | 0                | 115                           | 290                           | 405              | 0      | 148     |
| Spring Lake Park  | 1                | 54                            | 85                            | 140              | 1      | 73      |
| Spring Valley     | 0                | 7                             | 26                            | 33               | 0      | 13      |
| Staples           | 1                | 11                            | 39                            | 51               | 1      | 19      |
| Stewartville      | 0                | 11                            | 18                            | 29               | 0      | 14      |
| Stillwater        | 0                | 63                            | 206                           | 269              | 0      | 83      |
| Thief River Falls | 0                | 67                            | 93                            | 160              | 0      | 96      |
| Two Harbors       | 0                | 16                            | 53                            | 69               | 0      | 20      |
| Vadnais Heights   | 2                | 84                            | 252                           | 338              | 2      | 131     |
| Victoria          | 1                | 14                            | 48                            | 63               | 1      | 17      |
| Virginia          | 0                | 63                            | 122                           | 185              | 0      | 87      |
| Waconia           | 0                | 19                            | 43                            | 62               | 0      | 27      |
| Wadena            | 1                | 29                            | 52                            | 82               | 1      | 45      |
| Waite Park        | 4                | 48                            | 160                           | 212              | 4      | 79      |
| Waseca            | 0                | 35                            | 84                            | 119              | 0      | 43      |
| Wayzata           | 1                | 58                            | 106                           | 165              | 1      | 72      |
| Wells             | 0                | 3                             | 22                            | 25               | 0      | 3       |
| West St. Paul     | 0                | 108                           | 162                           | 270              | 0      | 146     |
| White Bear Lake   | 1                | 170                           | 401                           | 572              | 1      | 250     |
| Willmar           | 0                | 136                           | 311                           | 447              | 0      | 210     |
| Windom            | 0                | 18                            | 72                            | 90               | 0      | 28      |
| Winona            | 2                | 180                           | 425                           | 607              | 2      | 245     |
| Woodbury          | 2                | 169                           | 429                           | 600              | 2      | 226     |
| Worthington       | 2                | 65                            | 166                           | 233              | 2      | 89      |

TABLE 1.28

## 1999 CRASHES BY TIME AND DAY

| Hour<br>Beginning | Total<br>Crashes | Fatal<br>Crashes | <u>Sunday</u> |       | <u>Monday</u> |       | <u>Tuesday</u> |       | <u>Wednesday</u> |       | <u>Thursday</u> |       | <u>Friday</u> |       | <u>Saturday</u> |       |
|-------------------|------------------|------------------|---------------|-------|---------------|-------|----------------|-------|------------------|-------|-----------------|-------|---------------|-------|-----------------|-------|
|                   |                  |                  | All           | Fatal | All           | Fatal | All            | Fatal | All              | Fatal | All             | Fatal | All           | Fatal | All             | Fatal |
| Midnight          | 1,264            | 25               | 265           | 5     | 122           | 1     | 113            | 4     | 123              | 3     | 128             | 1     | 197           | 3     | 103             | 8     |
| 1:00              | 1,587            | 17               | 402           | 3     | 133           | 3     | 115            | 2     | 127              | 1     | 162             | 1     | 239           | 4     | 148             | 3     |
| 2:00              | 949              | 15               | 229           | 2     | 58            | 0     | 78             | 2     | 92               | 3     | 97              | 1     | 152           | 3     | 69              | 4     |
| 3:00              | 702              | 8                | 182           | 1     | 65            | 0     | 60             | 1     | 57               | 0     | 66              | 1     | 109           | 2     | 66              | 3     |
| 4:00              | 543              | 5                | 107           | 2     | 59            | 1     | 50             | 0     | 61               | 0     | 65              | 1     | 76            | 1     | 51              | 0     |
| 5:00              | 1,016            | 16               | 129           | 1     | 167           | 5     | 146            | 0     | 135              | 3     | 150             | 1     | 166           | 3     | 40              | 3     |
| 6:00              | 2,165            | 17               | 134           | 2     | 403           | 4     | 410            | 3     | 390              | 3     | 353             | 4     | 309           | 0     | 52              | 1     |
| 7:00              | 4,499            | 34               | 144           | 3     | 795           | 4     | 946            | 6     | 895              | 9     | 839             | 6     | 691           | 5     | 59              | 1     |
| 8:00              | 4,147            | 15               | 162           | 2     | 761           | 1     | 741            | 3     | 792              | 2     | 737             | 3     | 626           | 2     | 117             | 2     |
| 9:00              | 3,310            | 21               | 283           | 1     | 551           | 4     | 502            | 2     | 476              | 2     | 592             | 5     | 459           | 5     | 143             | 2     |
| 10:00             | 3,573            | 16               | 359           | 1     | 539           | 2     | 532            | 4     | 465              | 2     | 555             | 1     | 573           | 2     | 166             | 4     |
| 11:00             | 4,143            | 23               | 431           | 3     | 604           | 2     | 574            | 2     | 540              | 5     | 665             | 5     | 629           | 3     | 230             | 3     |
| Noon              | 5,031            | 32               | 533           | 3     | 777           | 6     | 728            | 6     | 698              | 1     | 758             | 6     | 811           | 4     | 255             | 6     |
| 1:00              | 4,573            | 35               | 509           | 8     | 672           | 3     | 649            | 1     | 568              | 4     | 687             | 4     | 827           | 8     | 248             | 7     |
| 2:00              | 5,459            | 33               | 508           | 4     | 814           | 8     | 800            | 2     | 757              | 5     | 882             | 3     | 984           | 3     | 233             | 8     |
| 3:00              | 7,017            | 39               | 520           | 3     | 1,109         | 2     | 1,149          | 6     | 1,037            | 6     | 1,195           | 11    | 1,310         | 5     | 278             | 6     |
| 4:00              | 6,928            | 36               | 554           | 3     | 1,058         | 3     | 1,157          | 5     | 1,030            | 6     | 1,154           | 4     | 1,303         | 4     | 226             | 11    |
| 5:00              | 7,253            | 35               | 482           | 2     | 1,093         | 7     | 1,265          | 1     | 1,179            | 6     | 1,237           | 5     | 1,347         | 8     | 206             | 6     |
| 6:00              | 5,060            | 36               | 489           | 6     | 708           | 3     | 764            | 4     | 744              | 6     | 778             | 9     | 971           | 4     | 187             | 4     |
| 7:00              | 3,638            | 23               | 469           | 4     | 459           | 4     | 493            | 1     | 479              | 4     | 521             | 4     | 684           | 3     | 166             | 3     |
| 8:00              | 2,871            | 22               | 359           | 1     | 341           | 5     | 439            | 3     | 403              | 3     | 415             | 2     | 484           | 2     | 153             | 6     |
| 9:00              | 2,954            | 18               | 348           | 2     | 343           | 4     | 452            | 1     | 379              | 1     | 415             | 3     | 556           | 4     | 132             | 3     |
| 10:00             | 2,497            | 23               | 296           | 4     | 283           | 0     | 331            | 3     | 278              | 3     | 317             | 4     | 538           | 4     | 131             | 5     |
| 11:00             | 1,989            | 15               | 199           | 1     | 204           | 2     | 226            | 2     | 199              | 0     | 276             | 3     | 484           | 3     | 140             | 4     |
| Unknown           | 13,645           | 8                | 1,900         | 2     | 2,047         | 0     | 1,602          | 0     | 2,150            | 1     | 1,979           | 0     | 2,118         | 2     | 549             | 3     |
| Total             | 96,813           | 567              | 9,993         | 69    | 14,165        | 74    | 14,322         | 64    | 14,054           | 79    | 15,023          | 88    | 16,643        | 87    | 4148            | 106   |



**TABLE 1.29**  
**1999 CRASHES, FATALITIES, AND INJURIES BY MONTH**

| Month        | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed     | Injured       |
|--------------|---------------|----------------|-------------------------|---------------|------------|---------------|
| January      | 38            | 2,830          | 8,606                   | 11,474        | 41         | 3,923         |
| February     | 44            | 1,765          | 4,272                   | 6,081         | 46         | 2,581         |
| March        | 40            | 2,015          | 4,514                   | 6,569         | 43         | 2,917         |
| April        | 29            | 2,127          | 4,152                   | 6,308         | 31         | 3,151         |
| May          | 44            | 2,625          | 5,104                   | 7,773         | 52         | 3,937         |
| June         | 50            | 2,911          | 5,266                   | 8,227         | 53         | 4,346         |
| July         | 46            | 2,727          | 5,006                   | 7,779         | 52         | 4,065         |
| August       | 57            | 2,782          | 4,976                   | 7,815         | 64         | 4,134         |
| September    | 52            | 2,645          | 5,118                   | 7,815         | 62         | 3,954         |
| October      | 41            | 2,704          | 5,833                   | 8,578         | 44         | 3,999         |
| November     | 55            | 2,321          | 5,696                   | 8,072         | 59         | 3,407         |
| December     | 71            | 2,827          | 7,424                   | 10,322        | 79         | 4,124         |
| <b>Total</b> | <b>567</b>    | <b>30,279</b>  | <b>65,967</b>           | <b>96,813</b> | <b>626</b> | <b>44,538</b> |

TABLE 1.30

## HOLIDAY CRASH SUMMARY, 1994 - 1999

| Holiday Period             | Year      | Hours* | Fatal<br>Crashes | Personal<br>Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|----------------------------|-----------|--------|------------------|-------------------------------|-------------------------------|------------------|--------|---------|
| <b>Memorial Day</b>        | 1994      | 78     | 7                | 258                           | 398                           | 663              | 8      | 431     |
| (For 1999, the holiday     | 1995      | 78     | 7                | 312                           | 470                           | 789              | 9      | 507     |
| period was 6 PM Fri.,      | 1996      | 78     | 9                | 208                           | 330                           | 547              | 13     | 346     |
| May 28 - midnight          | 1997      | 78     | 4                | 223                           | 353                           | 580              | 4      | 357     |
| Monday, May 31.)           | 1998      | 78     | 6                | 214                           | 356                           | 576              | 8      | 332     |
|                            | 1999      | 78     | 5                | 215                           | 375                           | 595              | 8      | 347     |
| <b>July 4<sup>th</sup></b> | 1994      | 78     | 5                | 283                           | 444                           | 732              | 6      | 468     |
| (For 1999, the holiday     | 1995      | 102    | 13               | 365                           | 532                           | 910              | 20     | 588     |
| period was 6 PM Fri.,      | 1996      | 102    | 13               | 389                           | 554                           | 956              | 17     | 649     |
| July 2 - midnight          | 1997      | 78     | 3                | 228                           | 390                           | 621              | 3      | 358     |
| Monday, July 5.)           | 1998      | 78     | 8                | 287                           | 432                           | 727              | 10     | 473     |
|                            | 1999      | 78     | 5                | 236                           | 376                           | 617              | 6      | 358     |
| <b>Labor Day</b>           | 1994      | 78     | 6                | 267                           | 441                           | 714              | 6      | 435     |
| (For 1999, the holiday     | 1995      | 78     | 4                | 248                           | 343                           | 595              | 5      | 413     |
| period was 6 PM Fri.,      | 1996      | 78     | 10               | 243                           | 365                           | 618              | 12     | 395     |
| Sep 3 - midnight           | 1997      | 78     | 6                | 264                           | 364                           | 634              | 6      | 455     |
| Monday, Sep. 6.)           | 1998      | 78     | 7                | 212                           | 344                           | 563              | 10     | 360     |
|                            | 1999      | 78     | 7                | 212                           | 344                           | 563              | 7      | 348     |
| <b>Thanksgiving</b>        | 1994      | 102    | 12               | 383                           | 1,018                         | 1,413            | 18     | 584     |
| (For 1999, the holiday     | 1995      | 102    | 8                | 360                           | 896                           | 1,264            | 9      | 579     |
| period was 6 PM Wed.,      | 1996      | 102    | 7                | 345                           | 998                           | 1,350            | 8      | 537     |
| Nov. 24 - midnight         | 1997      | 102    | 7                | 307                           | 652                           | 966              | 7      | 474     |
| Sunday, Nov. 28.)          | 1998      | 102    | 11               | 292                           | 637                           | 940              | 17     | 447     |
|                            | 1999      | 102    | 6                | 309                           | 729                           | 1,044            | 6      | 564     |
| <b>Christmas</b>           | 1994      | 78     | 6                | 164                           | 357                           | 527              | 6      | 255     |
| (For 1999, the holiday     | 1995      | 78     | 5                | 166                           | 364                           | 535              | 6      | 260     |
| period was 6 PM Thur.,     | 1996      | 30     | 1                | 80                            | 281                           | 362              | 1      | 123     |
| Dec 23 - midnight          | 1997      | 102    | 4                | 293                           | 625                           | 922              | 7      | 455     |
| Sunday, Dec. 26.)          | 1998      | 78     | 6                | 227                           | 514                           | 747              | 8      | 365     |
|                            | 1999      | 78     | 12               | 285                           | 854                           | 1,151            | 14     | 435     |
| <b>New Year's</b>          | 1994/95   | 78     | 3                | 193                           | 476                           | 672              | 4      | 286     |
| (For 1999-2000, the        | 1995/96   | 78     | 13               | 392                           | 1,017                         | 1,422            | 18     | 646     |
| holiday period was         | 1996/97   | 30     | 1                | 95                            | 220                           | 316              | 1      | 141     |
| 6 PM Thur., Dec. 30        | 1997/98   | 102    | 10               | 362                           | 872                           | 1,244            | 11     | 528     |
| - midnight Sunday,         | 1998/99   | 78     | 2                | 296                           | 937                           | 1,235            | 3      | 419     |
| Jan 2, 2000.)              | 1999/2000 | 78     | 6                | 240                           | 564                           | 810              | 6      | 380     |

\* Holiday period hours vary depending on the day of the week on which the holiday falls. Also note that 1999 Labor Day crashes were identical to 1998 Labor Day crashes due to coincidence, not to error.

## II: ALCOHOL - RELATED CRASHES

The prominent role of alcohol in traffic crashes has long been recognized. This section focuses on alcohol-related crashes, injuries, and fatalities. Several clarifying issues should be noted:

*1. A crash is classified as alcohol-related or not.*

Though individual drivers and victims come first to mind, it is the event of the motor vehicle crash that is classified as alcohol-related or not. Once a crash is so classified, then anyone who died or was injured in the crash is classified as an alcohol-related death or injury. Thus, for example, the number of alcohol-related fatalities is always greater than or equal to the number of alcohol-related fatal crashes.

*2. Data on alcohol tests performed is only available for some drivers in fatal crashes.*

For the approximately 900 drivers involved in fatal crashes in Minnesota each year, much effort is made to obtain results for any alcohol tests that were performed. Thus, for fatal crashes, the crash is classified as alcohol-related or not on the basis of chemical test data, when available, or on the basis of the investigating officer's reported perception, when the test results are not available. The figures that result can tell us how many fatal crashes were known or perceived to be alcohol-related. But every year there will be some crashes that were alcohol-related but no test was performed and the officer made no report of suspected alcohol involvement.

The National Highway Traffic Safety Administration (NHTSA) developed a statistical technique to estimate alcohol involvement for fatal crashes where data are missing. Their estimates (shown in Tables 2.01 and 2.05) of alcohol-related fatalities for Minnesota have consistently ranged from two to four percentage points higher than the estimates based on known information.

For non-fatal crashes, only the investigating officer's reported perception of possible alcohol involvement is used as a basis to classify the crash as alcohol-related or not. Evidence from fatal crashes suggests that using only officers' perceptions will produce quite conservative estimates of the extent of alcohol involvement.

*3. Alcohol-related crashes are usually, but not always, due to impaired driving.*

Again, while it comes first to mind, intoxicated driving is not always involved in alcohol-related crashes, though it

usually is. If a drinking pedestrian or bicyclist is involved in a crash, the crash will also be classified as alcohol related. In 1999, 16 pedestrians who died from traffic crashes tested positive for alcohol. Also it may be the case that in a collision between a sober and a drinking driver, the sober driver was at fault in causing the crash. Though this occurs, experts believe it is almost always the drinking driver who is at fault in crashes classified as alcohol-related. Lastly, sometimes a crash is classified as alcohol-related even though the drinking driver (or pedestrian or bicyclist) had a low alcohol concentration. Again, this occurs, but is infrequent. In 1999, 426 drivers died; 370 were tested; 3 had alcohol concentrations from .01 to .04; 13 were from .05 to .09, and 100 (exactly) were over .10%.

**1999 incidence appears to decline from the prior year**

Alcohol-related deaths had "soared" from 30% of the total, in 1997, to 42% of the total in 1998. Even though 1998 alcohol-related injury and property damage crashes did not show a similar increase, concern was great that impaired driving incidence in the population may have been rising. Fortunately, 1999 statistics do not clearly reinforce this fear. Last year, alcohol-related deaths dropped to 31% of the total (or 195 out of 626). This is the second lowest that number has been over the time period for which records are available (since 1982). Additionally, alcohol-related injuries dropped below 11% -- to 10% -- for the first time.

**Alcohol involvement increases with crash severity**

In 1999, 4% of property damage crashes were reported to have involved alcohol. Overall, as noted, 10% of injuries involved alcohol. However, that figure masks the relationship between alcohol involvement and crash severity. The likelihood that alcohol was involved increases with severity. Last year, alcohol was a factor in 6% of minor injuries, 13% of moderate injuries, 20% of severe injuries, and (as noted), 31% of fatalities.

**Arrests continue to increase, especially among young**

Arrests for driving while impaired increased for the fifth year in a row. In 1998, there were 30,892 arrests. Then last year there were 32,690, a 6% increase. The increase was mostly fueled by an increase in arrests of drivers in the 15 to 24 year-old age group. This is to be expected, to some extent, as the children of the baby boom generation move into this young-adult age group, which is the most at risk for impaired driving.

TABLE 2.01

## IMPAIRED DRIVING FATALITY SUMMARY, 1980 - 1999

| Year | Alcohol Concentration Test Results<br>on Fatally Injured Drivers Only |                    |               |                           |                |                    |                |                       |                | All Traffic Fatalities |                            |               |             |               |
|------|---|--------------------|---------------|---------------------------|----------------|--------------------|----------------|-----------------------|----------------|------------------------|----------------------------|---------------|-------------|---------------|
|      | Drivers Killed  |                    |               | Results on Drivers Tested |                |                    |                |                       |                | Total                  | Alcohol-Related Fatalities |               |             |               |
|      | Total   | Tested for Alcohol |               | Negative for alcohol      |                | .01 to .09 alcohol |                | .10 or higher alcohol |                |                        | Known *                    |               | Estimated * |               |
|      |   | num-<br>ber        | % of<br>total | num-<br>ber               | % of<br>tested | num-<br>ber        | % of<br>tested | num-<br>ber           | % of<br>tested |                        | num-<br>ber                | % of<br>total | num-<br>ber | % of<br>total |
| 1980 | 519   | 337                | 65            | 103                       | 31             | 37                 | 11             | 197                   | 58             | 863                    |                            |               |             |               |
| 1981 | 437   | 288                | 66            | 110                       | 38             | 28                 | 10             | 150                   | 52             | 763                    |                            |               |             |               |
| 1982 | 321   | 232                | 72            | 106                       | 46             | 14                 | 6              | 112                   | 48             | 581                    |                            |               | 317         | 55            |
| 1983 | 345   | 258                | 75            | 113                       | 44             | 28                 | 11             | 117                   | 45             | 558                    |                            |               | 307         | 55            |
| 1984 | 383   | 318                | 83            | 133                       | 42             | 36                 | 11             | 149                   | 47             | 584                    | 305                        | 52            | 326         | 56            |
| 1985 | 372   | 295                | 79            | 156                       | 53             | 31                 | 10             | 108                   | 37             | 610                    | 261                        | 43            | 283         | 46            |
| 1986 | 347   | 281                | 81            | 143                       | 51             | 24                 | 8              | 114                   | 41             | 572                    | 264                        | 46            | 278         | 49            |
| 1987 | 297   | 265                | 89            | 132                       | 50             | 18                 | 7              | 115                   | 43             | 530                    | 224                        | 42            | 240         | 45            |
| 1988 | 361   | 313                | 87            | 163                       | 52             | 32                 | 10             | 118                   | 38             | 615                    | 277                        | 45            | 289         | 47            |
| 1989 | 368   | 313                | 85            | 158                       | 51             | 26                 | 8              | 129                   | 41             | 605                    | 275                        | 45            | 291         | 48            |
| 1990 | 334   | 260                | 78            | 129                       | 50             | 23                 | 9              | 108                   | 41             | 568                    | 235                        | 41            | 254         | 45            |
| 1991 | 327   | 242                | 74            | 135                       | 56             | 22                 | 9              | 85                    | 35             | 531                    | 212                        | 40            | 231         | 43            |
| 1992 | 344   | 237                | 69            | 135                       | 57             | 13                 | 5              | 89                    | 38             | 581                    | 229                        | 39            | 237         | 41            |
| 1993 | 355   | 283                | 80            | 174                       | 61             | 19                 | 7              | 90                    | 32             | 538                    | 196                        | 36            | 212         | 39            |
| 1994 | 377   | 303                | 80            | 183                       | 60             | 23                 | 8              | 97                    | 32             | 644                    | 226                        | 35            | 244         | 38            |
| 1995 | 383   | 343                | 90            | 198                       | 58             | 30                 | 9              | 115                   | 34             | 597                    | 246                        | 41            | 265         | 44            |
| 1996 | 359   | 314                | 87            | 209                       | 67             | 22                 | 7              | 83                    | 26             | 576                    | 205                        | 36            | 218         | 38            |
| 1997 | 384   | 345                | 90            | 226                       | 66             | 19                 | 6              | 100                   | 29             | 600                    | 178                        | 30            | 193         | 32            |
| 1998 | 406   | 369                | 91            | 218                       | 59             | 29                 | 8              | 122                   | 33             | 650                    | 273                        | 42            | 280         | 43            |
| 1999 | 426   | 370                | 87            | 254                       | 69             | 16                 | 4              | 100                   | 27             | 626                    | 195                        | 31            | NA          | NA            |

\* The difference between "known" and "estimated" alcohol-related traffic fatalities is explained in some detail on page 39. In brief, a traffic death is categorized as a known alcohol-related fatality if data collected make it appear that any driver, pedestrian, or bicyclist involved in the crash had any amount of alcohol in his or her system. Reliable data to indicate presence of alcohol are sometimes not available, however. Therefore, statisticians at the National Highway Traffic Safety Administration developed a complex procedure to impute likely blood alcohol concentration (BAC) levels to drivers, pedestrians, and bicyclists in fatal crashes when actual BAC data are not available. The column showing the "estimated" number has the effect of adding (to the "known" number) those deaths that occurred in crashes where the imputation procedure assigned a positive BAC level to a driver, pedestrian, or bicyclist in the crash. The estimated number thus will probably always be higher (and closer to reality) than the known number. The estimated number is available beginning with calendar year 1982. It is not available until late in the year following the calendar year for which this report is produced, and so is not reported for the latest calendar year.



## DEFINING DWI ARRESTS

The Department of Public Safety has several divisions. One, the Bureau of Criminal Apprehension (BCA), compiles statistics annually on crimes and arrests in the state. Another division, the Office of Traffic Safety, compiles traffic crash statistics and produces this "Crash Facts" report annually. Beginning in the 1970s, the Office of Traffic Safety obtained DWI arrest statistics from the BCA and reported them here. When the 1997 Crash Facts book was being compiled, it was learned that the BCA defines "arrests" more in the sense of *offenses reported* than in the sense of the single act of taking a person into custody. However, one episode of impaired driving often involves more than one criminal offense. For example, a drunken driver who gets in a crash and injures two people will likely be charged with at least three criminal offenses: driving while impaired, plus two counts of criminal vehicular operation resulting in injury. The additional criminal offenses have especially become more numerous in the last decade. (For example, in 1989, the Legislature made alcohol test refusal a crime

for certain categories of repeat offenders. Then, in 1992, refusal became a crime for all persons stopped for DWI.) In short, currently, an officer will report that that the person arrested committed one, two, three, or even more DWI offenses. Following established conventions, the BCA counts each offense reported as an arrest.

For 1997, the Office of Traffic Safety requested special reports on DWI arrests, where "arrest" was defined as a taking into custody of a person for having committed one or more criminal offenses, at least one of which was covered under the criminal DWI statutes. The 1997 Crash Facts book then reported DWI arrests, defined in this new sense, for the years 1992 through 1997. This created confusion. Starting this year, arrests counted in the two different ways are both reported. Column (2) in Table 2.02 shows the arrest numbers compiled by the BCA. Columns (3) through (7) of Table 2.02, and all of Table 2.03, are based on the new special reports created at request of the Office of Traffic Safety.

Table 2.02

### DWI ARRESTS: OFFENSES REPORTED AND INCIDENTS, 1985 - 1999

| Year | Arrests<br>(Defined as<br>Offenses<br>Reported) | Arrests (Defined as Incidents<br>Involving One or More DWI Offenses) |        |         |        |         |
|------|---|--|--------|---------|--------|---------|
|      |   | Total  | Male   |         | Female |         |
| (1)  | (2)   | (3)  | number | percent | number | percent |
|      |   |  | (4)    | (5)     | (6)    | (7)     |
| 1985 | 35,383  | 33,620   | 28,567 | 85.0    | 5,053  | 15.0    |
| 1986 | 36,390  | 34,394   | 29,069 | 84.5    | 5,325  | 15.5    |
| 1987 | 34,664  | 32,725   | 27,520 | 84.1    | 5,205  | 15.9    |
| 1988 | 32,627  | 30,591   | 25,720 | 84.1    | 4,871  | 15.9    |
| 1989 | 34,562  | 32,299   | 27,011 | 83.6    | 5,288  | 16.4    |
| 1990 | 37,261  | 32,758   | 27,223 | 83.1    | 5,535  | 16.9    |
| 1991 | 33,574  | 31,397   | 26,103 | 83.1    | 5,294  | 16.9    |
| 1992 | 31,973  | 27,511   | 22,510 | 81.8    | 5,001  | 18.2    |
| 1993 | 32,518  | 27,712   | 22,686 | 81.9    | 5,026  | 18.1    |
| 1994 | 32,391  | 27,635   | 22,602 | 81.8    | 5,033  | 18.2    |
| 1995 | 33,355  | 27,339   | 22,295 | 81.6    | 5,044  | 18.4    |
| 1996 | 38,925  | 28,962   | 23,656 | 81.7    | 5,306  | 18.3    |
| 1997 | 42,523  | 30,168   | 24,319 | 80.6    | 5,849  | 19.4    |
| 1998 | 44,078  | 30,892   | 24,764 | 80.2    | 6,128  | 19.8    |
| 1999 | 47,426  | 32,690   | 26,186 | 80.1    | 6,504  | 19.9    |

**TABLE 2.03**  
**DWI ARRESTS BY AGE, 1985 - 1999**

|      | Under 21 |    |     |     |       |       |       |       | All Ages |       |       |       |       |       |       |       |       |       |       |     |        |
|------|----------|----|-----|-----|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|--------|
| Year | 0-14     | 15 | 16  | 17  | 18    | 19    | 20    | Total | 0-14     | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65+ | Total  |
| 1985 | 7        | 23 | 165 | 423 | 1,049 | 1,765 | 1,911 | 5,343 | 7        | 3,425 | 9,696 | 7,219 | 4,659 | 3,079 | 1,979 | 1,263 | 882   | 667   | 384   | 360 | 33,620 |
| 1986 | 7        | 24 | 241 | 517 | 1,095 | 1,726 | 1,880 | 5,490 | 7        | 3,603 | 9,679 | 7,759 | 4,734 | 3,153 | 1,991 | 1,219 | 827   | 609   | 388   | 425 | 34,394 |
| 1987 | 8        | 10 | 192 | 454 | 1,016 | 1,298 | 1,608 | 4,586 | 8        | 2,970 | 8,802 | 7,623 | 4,834 | 3,168 | 1,994 | 1,239 | 797   | 568   | 343   | 379 | 32,725 |
| 1988 | 4        | 14 | 148 | 462 | 982   | 1,142 | 1,202 | 3,954 | 4        | 2,748 | 7,382 | 7,284 | 4,809 | 3,061 | 1,967 | 1,289 | 746   | 530   | 388   | 383 | 30,591 |
| 1989 | 7        | 21 | 161 | 411 | 1,012 | 1,211 | 1,341 | 4,164 | 7        | 2,816 | 7,579 | 7,655 | 5,177 | 3,342 | 2,266 | 1,345 | 842   | 546   | 362   | 362 | 32,299 |
| 1990 | 3        | 11 | 146 | 397 | 879   | 1,175 | 1,336 | 3,947 | 3        | 2,608 | 7,473 | 7,560 | 5,623 | 3,580 | 2,340 | 1,351 | 893   | 534   | 388   | 405 | 32,758 |
| 1991 | 5        | 11 | 117 | 276 | 681   | 1,001 | 1,234 | 3,325 | 5        | 2,086 | 6,995 | 6,824 | 5,843 | 3,842 | 2,533 | 1,276 | 807   | 462   | 351   | 373 | 31,397 |
| 1992 | 2        | 5  | 117 | 236 | 518   | 752   | 937   | 2,567 | 2        | 1,628 | 6,246 | 5,624 | 5,192 | 3,499 | 2,182 | 1,322 | 752   | 461   | 316   | 287 | 27,511 |
| 1993 | 5        | 9  | 85  | 209 | 472   | 679   | 783   | 2,242 | 5        | 1,454 | 5,871 | 5,477 | 5,331 | 3,971 | 2,368 | 1,386 | 807   | 474   | 264   | 304 | 27,712 |
| 1994 | 5        | 15 | 96  | 219 | 504   | 602   | 725   | 2,166 | 5        | 1,436 | 5,406 | 5,198 | 5,348 | 3,968 | 2,654 | 1,641 | 824   | 519   | 319   | 317 | 27,635 |
| 1995 | 6        | 19 | 91  | 203 | 496   | 657   | 737   | 2,209 | 6        | 1,466 | 5,334 | 4,970 | 5,205 | 4,061 | 2,742 | 1,577 | 879   | 497   | 297   | 305 | 27,339 |
| 1996 | 7        | 13 | 134 | 313 | 605   | 776   | 762   | 2,610 | 7        | 1,841 | 5,435 | 5,270 | 5,081 | 4,467 | 2,937 | 1,804 | 943   | 530   | 306   | 341 | 28,962 |
| 1997 | 11       | 32 | 153 | 417 | 814   | 943   | 1,027 | 3,397 | 11       | 2,359 | 5,623 | 5,322 | 4,812 | 4,578 | 3,145 | 1,983 | 1,086 | 588   | 311   | 350 | 30,168 |
| 1998 | 10       | 33 | 213 | 483 | 943   | 1,175 | 1,163 | 4,020 | 10       | 2,847 | 6,019 | 5,096 | 4,461 | 4,715 | 3,319 | 2,057 | 1,086 | 616   | 316   | 350 | 30,892 |
| 1999 | 14       | 23 | 242 | 518 | 1,164 | 1,399 | 1,323 | 4,683 | 14       | 3,346 | 6,947 | 5,215 | 4,381 | 4,660 | 3,442 | 2,167 | 1,203 | 640   | 350   | 325 | 32,690 |

\* In this table, the term "arrest" is used in the sense of "incident." For example, in 1999, there were 32,690 times when a police officer stopped and arrested a person for an incident of driving while impaired, and that stop caused an entry to be made on the person's driving record. The incident may have included more than one offense under the different statutes making it a crime to operate a motor vehicle while impaired by alcohol or by various other substances.

## "ALCOHOL - RELATED"

The term "alcohol-related" requires explanation. If data show that any motor vehicle driver, pedestrian, or bicyclist in a traffic crash had any amount of alcohol in their system, then the crash is classified as alcohol related, and anyone who died or was injured in the crash is classified as an alcohol-related fatality or injury. For non-fatal crashes, the reporting officer's perception is the only information entered in the database. If the officer indicates on the Police Accident Report that the "apparent physical condition" was "had been drinking," or "under the influence," then the crash is classified as alcohol-related. This is a conservative measure. Officers base their perceptions on physical observation, or on the results of tests performed on the blood, breath, or urine of the person. If the accident was not discovered till hours after it occurred, or if a person in the accident was taken to a hospital, the officer may have to indicate that the apparent physical condition was "unknown." For fatal crashes, the officer's perception is again used as data, but special effort is also made to obtain the results of alcohol tests performed. If the results for any driver, pedestrian or bicyclist are positive, then the crash is also classified as alcohol related.

The procedure described above is the basis for most of the information in this section.. However, there is a problem when

data are missing. As noted, officers sometimes indicate "unknown" for the "apparent physical condition." Also, while alcohol testing is high (about 80% or higher) for killed drivers, it is not as good for surviving drivers. Completeness of data collection also varies from year to year, making comparisons over several years unreliable. To address the problem of missing data, a procedure was developed that classifies a driver, pedestrian, or bicyclist on whom actual alcohol test data are missing into one of three categories: (1) negative, (2) .01 to .09, or (3) .10 or higher. If a person is classified into the second or third category, then the crash is classified as alcohol-related. The classification (based on other characteristics of the crash, such as driver age, time of day, and so on) involves a sophisticated statistical procedure, which of course is still subject to error. The procedure was developed by Mr. Terry Klein, currently Chief of the Mathematical Analysis section of the National Center for Statistics and Analysis of the National Highway Traffic Safety Administration. It is especially valuable since it is consistent over years. Results from this procedure were provided by NHTSA and are used in the tables (2.01 and 2.05) that show alcohol-related fatalities across several years.

TABLE 2.04

### AGE OF PERSONS KILLED AND INJURED IN ALL CRASHES AND IN ALCOHOL - RELATED CRASHES, 1999

| Age Group  | Persons Killed |                              | Persons Injured by Severity |                              |          |                              |        |                              | Total Persons Injured |                              |
|------------|----------------|------------------------------|-----------------------------|------------------------------|----------|------------------------------|--------|------------------------------|-----------------------|------------------------------|
|            | All            | Alcohol-Related <sup>1</sup> | Severe                      |                              | Moderate |                              | Minor  |                              | All                   | Alcohol-Related <sup>2</sup> |
|            |                |                              | All                         | Alcohol-Related <sup>2</sup> | All      | Alcohol-Related <sup>2</sup> | All    | Alcohol-Related <sup>2</sup> |                       |                              |
| 0 - 4      | 7              | 1                            | 47                          | 1                            | 234      | 12                           | 446    | 18                           | 727                   | 31                           |
| 5 - 9      | 13             | 3                            | 95                          | 5                            | 478      | 23                           | 647    | 16                           | 1,220                 | 44                           |
| 10 - 14    | 13             | 1                            | 128                         | 6                            | 695      | 31                           | 829    | 30                           | 1,652                 | 67                           |
| 15 - 19    | 86             | 17                           | 674                         | 115                          | 3,665    | 409                          | 4,170  | 209                          | 8,509                 | 733                          |
| 20 - 24    | 54             | 37                           | 428                         | 139                          | 2,114    | 439                          | 3,054  | 323                          | 5,596                 | 901                          |
| 25 - 29    | 50             | 26                           | 300                         | 81                           | 1,431    | 280                          | 2,413  | 219                          | 4,144                 | 580                          |
| 30 - 34    | 48             | 31                           | 253                         | 65                           | 1,178    | 208                          | 2,162  | 176                          | 3,593                 | 449                          |
| 35 - 39    | 46             | 14                           | 300                         | 89                           | 1,203    | 200                          | 2,176  | 163                          | 3,679                 | 452                          |
| 40 - 44    | 56             | 22                           | 285                         | 68                           | 1,114    | 194                          | 1,908  | 130                          | 3,307                 | 392                          |
| 45 - 49    | 28             | 11                           | 195                         | 32                           | 863      | 117                          | 1,526  | 80                           | 2,584                 | 229                          |
| 50 - 54    | 34             | 9                            | 175                         | 25                           | 633      | 64                           | 1,201  | 57                           | 2,009                 | 146                          |
| 55 - 59    | 36             | 6                            | 94                          | 12                           | 445      | 35                           | 810    | 41                           | 1,349                 | 88                           |
| 60 - 64    | 20             | 4                            | 81                          | 14                           | 354      | 27                           | 582    | 30                           | 1,017                 | 71                           |
| 65 - 69    | 28             | 8                            | 64                          | 1                            | 323      | 16                           | 450    | 11                           | 837                   | 28                           |
| 70 - 74    | 22             | 0                            | 88                          | 9                            | 273      | 9                            | 413    | 14                           | 774                   | 32                           |
| 75 - 79    | 27             | 3                            | 66                          | 4                            | 252      | 8                            | 383    | 8                            | 701                   | 20                           |
| 80 - 84    | 27             | 0                            | 61                          | 0                            | 196      | 6                            | 273    | 3                            | 530                   | 9                            |
| 85 & Older | 31             | 2                            | 37                          | 0                            | 121      | 2                            | 162    | 2                            | 320                   | 4                            |
| Not Stated | 0              | 0                            | 89                          | 16                           | 430      | 42                           | 1,471  | 99                           | 1,990                 | 157                          |
| Total *    | 626            | 195                          | 3,460                       | 682                          | 16,002   | 2,122                        | 25,076 | 1,629                        | 44,538                | 4,433                        |

<sup>1</sup> Based on alcohol test results plus officer's perception of possible alcohol involvement as noted on crash report.

<sup>2</sup> Based only on officer's perception of possible alcohol involvement as noted on crash report.

\* As shown, there were 195 "alcohol-related traffic deaths" in 1999. Sixteen of these deaths occurred to pedestrians, and each of these 16 pedestrians were shown (either by test results, or by the officer's judgement) to have been drinking. In 5 of the 16 alcohol-related fatal pedestrian crashes, the motor vehicle driver was also shown to have been drinking.

TABLE 2.05

**1999 ALCOHOL - RELATED FATALITIES'  
LEVEL OF ALCOHOL CONCENTRATION BY TRAFFIC ROLE**

| Traffic Role           | Killed | Tested | Alcohol Concentration |             |               |
|------------------------|--------|--------|-----------------------|-------------|---------------|
|                        |        |        | (.00)                 | (.01 - .09) | (.10 or more) |
| Car or Truck Driver    | 124    | 117    | 14                    | 13          | 90            |
| Car or Truck Passenger | 34     | 15     | 6                     | 1           | 8             |
| Motorcycle Driver      | 10     | 10     | 0                     | 2           | 8             |
| Motorcycle Passenger   | 1      | 0      | 0                     | 0           | 0             |
| Snowmobile Driver      | 3      | 2      | 0                     | 1           | 1             |
| ATV Driver             | 1      | 1      | 0                     | 0           | 1             |
| Pedestrian             | 16     | 14     | 0                     | 3           | 11            |
| Bicyclist              | 1      | 1      | 1                     | 0           | 0             |
| Other/Unknown          | 5      | 2      | 1                     | 0           | 1             |
| Total                  | 195    | 162    | 22                    | 20          | 120           |

TABLE 2.06

**PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES  
DETERMINED TO BE ALCOHOL - RELATED, 1990- 1999**

|                              | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|------------------------------|------|------|------|------|------|------|------|------|------|------|
| Deaths* (Known)              | 41%  | 40%  | 39%  | 36%  | 35%  | 41%  | 36%  | 30%  | 42%  | 31%  |
| (Estimated)                  | 45%  | 43%  | 41%  | 39%  | 38%  | 44%  | 38%  | 32%  | 43%  | NA   |
| Injuries**                   | 15%  | 13%  | 13%  | 12%  | 11%  | 11%  | 11%  | 11%  | 11%  | 10%  |
| Property Damage<br>Crashes** | 6%   | 5%   | 5%   | 4%   | 4%   | 4%   | 4%   | 4%   | 4%   | 4%   |

\* Based on alcohol test information plus officer's perception of possible alcohol involvement as noted on crash report. See note above Table 2.03 regarding known and estimated alcohol-related fatalities. Estimated deaths are not available for 1999.

\*\* Based only police officer's perception of possible alcohol involvement as noted on crash report.

TABLE 2.07

**FIRST HARMFUL EVENT IN ALCOHOL-RELATED  
FATAL CRASHES AND ALL FATAL CRASHES, 1999**

| First Harmful Event    | Alcohol-Related<br>Fatal Crashes* |         | All<br>Fatal Crashes |         |
|------------------------|-----------------------------------|---------|----------------------|---------|
|                        | Number                            | Percent | Number               | Percent |
| <b>Collision with:</b> |                                   |         |                      |         |
| Another Motor Vehicle  | 53                                | 29.9    | 295                  | 52.1    |
| Parked Motor Vehicle   | 2                                 | 1.1     | 6                    | 1.1     |
| Railroad Train         | 1                                 | 0.6     | 8                    | 1.4     |
| Bicycle                | 2                                 | 1.1     | 8                    | 1.4     |
| Pedestrian             | 15                                | 8.5     | 45                   | 7.9     |
| Deer                   | 0                                 | 0.0     | 2                    | 0.4     |
| Other Animal           | 0                                 | 0.0     | 1                    | 0.2     |
| Fixed Object           | 38                                | 21.5    | 88                   | 15.5    |
| <b>Non-Collision:</b>  |                                   |         |                      |         |
| Overtake               | 63                                | 35.6    | 104                  | 18.3    |
| Fire/Explosion         | 0                                 | 0.0     | 0                    | 0.0     |
| Submersion             | 1                                 | 0.6     | 2                    | 0.4     |
| <b>Other/Unknown</b>   | 3                                 | 1.7     | 8                    | 1.4     |
| Total                  | 178                               | 100.0   | 567                  | 100.0   |

\* Based on alcohol test information as well as officer's perception of possible alcohol involvement as noted on crash report.

TABLE 2.08

## TEST RESULTS OF DRIVERS KILLED, 1990 - 1999

| Year | Killed | Tested | Alcohol Concentration* |             |               |
|------|--------|--------|------------------------|-------------|---------------|
|      |        |        | (.00)                  | (.01 - .09) | (.10 or more) |
| 1990 | 334    | 260    | 129 (50%)              | 23 (9%)     | 108 (42%)     |
| 1991 | 327    | 242    | 135 (56%)              | 22 (9%)     | 85 (35%)      |
| 1992 | 344    | 237    | 135 (57%)              | 13 (5%)     | 89 (38%)      |
| 1993 | 355    | 283    | 174 (61%)              | 19 (7%)     | 90 (32%)      |
| 1994 | 377    | 303    | 183 (60%)              | 23 (8%)     | 97 (32%)      |
| 1995 | 383    | 343    | 198 (58%)              | 30 (9%)     | 115 (34%)     |
| 1996 | 359    | 314    | 209 (67%)              | 22 (7%)     | 83 (26%)      |
| 1997 | 384    | 345    | 226 (66%)              | 19 (5%)     | 100 (29%)     |
| 1998 | 406    | 369    | 218 (59%)              | 29 (8%)     | 122 (33%)     |
| 1999 | 426    | 370    | 254 (69%)              | 16 (4%)     | 100 (27%)     |

\* Percentages are based on number of motor vehicle drivers tested.

TABLE 2.09

DRIVERS KILLED WHO TESTED .01 OR HIGHER, 1990 - 1999  
("Any Alcohol")

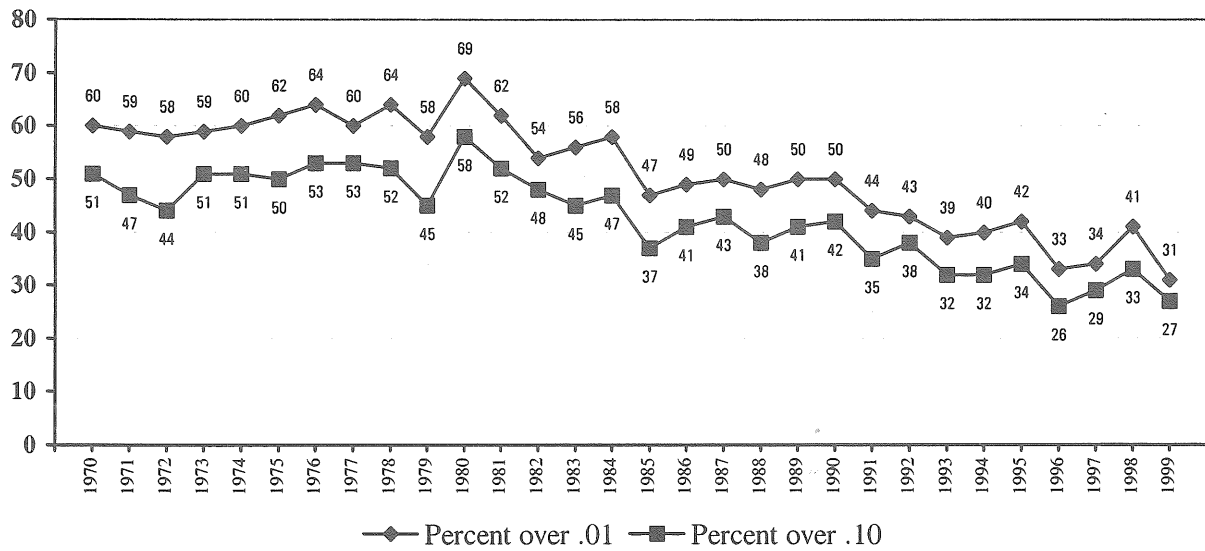
| Year | Total | Male      |          | Female   |          | Occurred Between<br>Midnight - 3 AM |  | Under<br>Legal Age |  |
|------|-------|-----------|----------|----------|----------|-------------------------------------|--|--------------------|--|
|      |       |           |          |          |          |                                     |  |                    |  |
| 1990 | 131   | 110 (84%) | 21 (16%) | 48 (37%) | 28 (21%) |                                     |  |                    |  |
| 1991 | 107   | 98 (92%)  | 9 (8%)   | 37 (35%) | 23 (21%) |                                     |  |                    |  |
| 1992 | 102   | 82 (80%)  | 20 (20%) | 39 (38%) | 13 (13%) |                                     |  |                    |  |
| 1993 | 109   | 92 (84%)  | 17 (16%) | 35 (32%) | 11 (10%) |                                     |  |                    |  |
| 1994 | 120   | 100 (83%) | 20 (17%) | 24 (20%) | 15 (13%) |                                     |  |                    |  |
| 1995 | 145   | 121 (83%) | 24 (17%) | 43 (30%) | 12 (8%)  |                                     |  |                    |  |
| 1996 | 105   | 81 (77%)  | 24 (23%) | 31 (30%) | 16 (15%) |                                     |  |                    |  |
| 1997 | 119   | 102 (86%) | 17 (14%) | 32 (27%) | 13 (11%) |                                     |  |                    |  |
| 1998 | 151   | 126 (83%) | 25 (17%) | 41 (27%) | 26 (17%) |                                     |  |                    |  |
| 1999 | 116   | 98 (84%)  | 16 (16%) | 30 (26%) | 16 (14%) |                                     |  |                    |  |

TABLE 2.10

DRIVERS KILLED WHO TESTED .10 OR HIGHER, 1990 - 1999  
("Over Limit")

| Year | Total | Male      |          | Female   |          | Occurred Between<br>Midnight - 3 AM |  | Under<br>Legal Age |  |
|------|-------|-----------|----------|----------|----------|-------------------------------------|--|--------------------|--|
|      |       |           |          |          |          |                                     |  |                    |  |
| 1990 | 108   | 92 (85%)  | 16 (15%) | 42 (39%) | 22 (20%) |                                     |  |                    |  |
| 1991 | 85    | 79 (93%)  | 6 (7%)   | 30 (35%) | 13 (15%) |                                     |  |                    |  |
| 1992 | 89    | 77 (87%)  | 12 (13%) | 36 (40%) | 12 (13%) |                                     |  |                    |  |
| 1993 | 90    | 75 (83%)  | 15 (17%) | 32 (36%) | 7 (8%)   |                                     |  |                    |  |
| 1994 | 97    | 83 (86%)  | 14 (14%) | 20 (21%) | 8 (8%)   |                                     |  |                    |  |
| 1995 | 115   | 97 (84%)  | 18 (16%) | 38 (33%) | 6 (5%)   |                                     |  |                    |  |
| 1996 | 83    | 65 (78%)  | 18 (22%) | 25 (30%) | 13 (16%) |                                     |  |                    |  |
| 1997 | 100   | 89 (89%)  | 11 (11%) | 32 (32%) | 13 (13%) |                                     |  |                    |  |
| 1998 | 122   | 104 (85%) | 18 (15%) | 36 (30%) | 19 (16%) |                                     |  |                    |  |
| 1999 | 100   | 87 (87%)  | 13 (13%) | 26 (26%) | 14 (14%) |                                     |  |                    |  |

**Figure 2.01**  
**Killed Drivers Tested for Alcohol: Percent over .01**  
**Alcohol Level and Percent over .10 Alcohol Level, 1970 - 1999**



**FIGURE 2.02**  
**Percent of Drivers Killed Who Had Been Drinking, by Age, 1999**

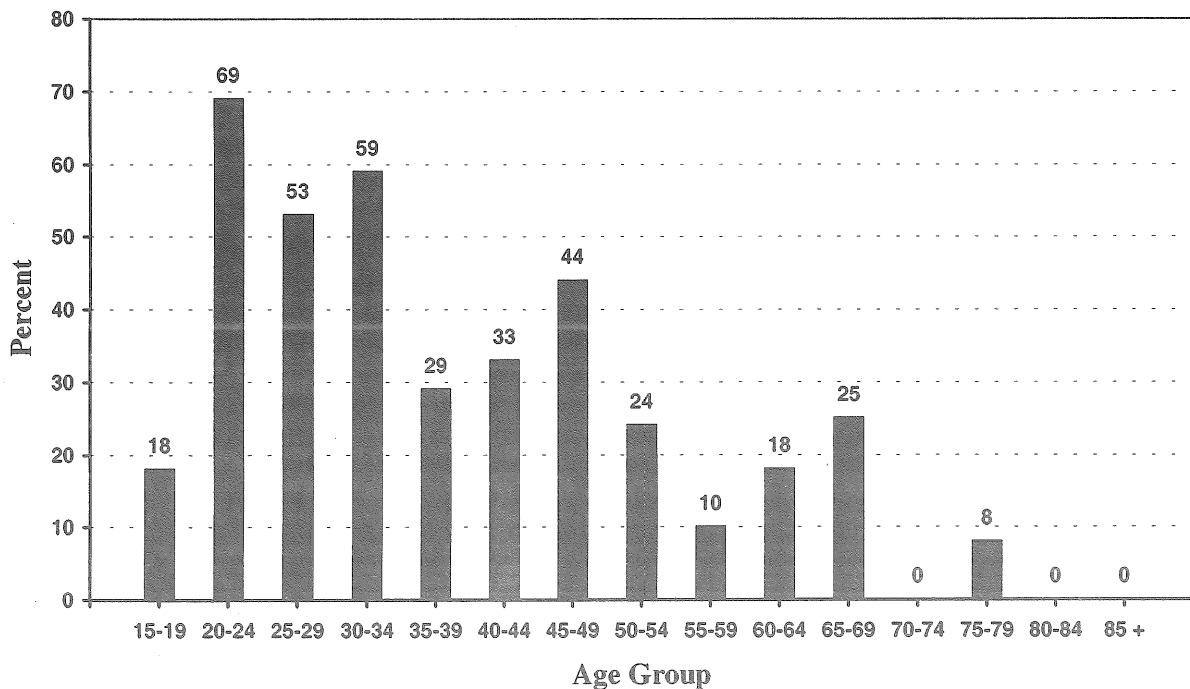


TABLE 2.11

## 1999 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

| Age          | Killed | Tested | Alcohol Concentration* |             |    |               |     |     | Alcohol Concentration |             |             |             |             |             |               |
|--------------|--------|--------|------------------------|-------------|----|---------------|-----|-----|-----------------------|-------------|-------------|-------------|-------------|-------------|---------------|
|              |        |        | (.00)                  | (.01 - .09) |    | (.10 or more) |     |     | .00                   | .01-<br>.04 | .05-<br>.09 | .10-<br>.14 | .15-<br>.19 | .20-<br>.24 | .25 &<br>Over |
| 14 & Younger | 0      | 0      | 0                      | 0           | 0  | 0             | 0   | 0   | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| 15           | 1      | 1      | 1                      | 0           | 0  | 0             | 0   | 1   | 0                     | 0           | 0           | 0           | 0           | 0           | 1             |
| 16           | 9      | 7      | 7                      | 0           | 0  | 0             | 0   | 7   | 0                     | 0           | 0           | 0           | 0           | 0           | 7             |
| 17           | 14     | 13     | 13                     | 0           | 0  | 0             | 0   | 13  | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| 18           | 16     | 14     | 11                     | 1           | 2  | 2             | 11  | 11  | 1                     | 0           | 0           | 1           | 1           | 1           | 0             |
| 19           | 17     | 14     | 8                      | 0           | 6  | 6             | 8   | 8   | 0                     | 0           | 2           | 3           | 1           | 1           | 0             |
| 20           | 9      | 9      | 2                      | 1           | 6  | 6             | 2   | 2   | 0                     | 1           | 1           | 2           | 2           | 2           | 1             |
| Under 21     | 66     | 58     | 42                     | 2           | 14 | 14            | 42  | 42  | 1                     | 1           | 3           | 6           | 4           | 4           | 9             |
| 14 & Younger | 0      | 0      | 0                      | 0.0         | 0  | 0.0           | 0   | 0   | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| 15 - 19      | 57     | 49     | 40                     | 81.6        | 1  | 2.0           | 8   | 40  | 1                     | 0           | 2           | 4           | 2           | 2           | 0             |
| 20 - 24      | 39     | 36     | 11                     | 30.6        | 4  | 11.1          | 21  | 11  | 0                     | 4           | 3           | 4           | 7           | 7           | 7             |
| 25 - 29      | 40     | 36     | 17                     | 47.2        | 4  | 11.1          | 15  | 17  | 0                     | 4           | 3           | 3           | 4           | 4           | 5             |
| 30 - 34      | 32     | 29     | 12                     | 41.4        | 0  | 0.0           | 17  | 32  | 0                     | 0           | 5           | 3           | 6           | 6           | 3             |
| 35 - 39      | 39     | 35     | 25                     | 71.4        | 1  | 2.9           | 9   | 25  | 1                     | 0           | 2           | 2           | 4           | 4           | 1             |
| 40 - 44      | 39     | 36     | 24                     | 66.7        | 0  | 0.0           | 12  | 24  | 0                     | 0           | 2           | 1           | 4           | 4           | 5             |
| 45 - 49      | 19     | 18     | 10                     | 55.6        | 1  | 5.6           | 7   | 10  | 0                     | 1           | 1           | 0           | 1           | 1           | 5             |
| 50 - 54      | 29     | 25     | 19                     | 76.0        | 0  | 0.0           | 6   | 19  | 0                     | 0           | 3           | 0           | 0           | 0           | 3             |
| 55 - 59      | 24     | 20     | 18                     | 90.0        | 0  | 0.0           | 2   | 18  | 0                     | 0           | 0           | 1           | 1           | 1           | 0             |
| 60 - 64      | 18     | 17     | 14                     | 82.4        | 1  | 5.9           | 2   | 14  | 0                     | 1           | 0           | 0           | 2           | 2           | 0             |
| 65 - 69      | 19     | 16     | 12                     | 75.0        | 4  | 25.0          | 0   | 12  | 1                     | 3           | 0           | 0           | 0           | 0           | 0             |
| 70 - 74      | 19     | 16     | 16                     | 100.0       | 0  | 0.0           | 0   | 16  | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| 75 - 79      | 18     | 11     | 10                     | 91.9        | 0  | 0.0           | 1   | 10  | 0                     | 0           | 0           | 1           | 0           | 0           | 0             |
| 80 - 84      | 17     | 13     | 13                     | 100.0       | 0  | 0.0           | 0   | 13  | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| 85 & Older   | 17     | 13     | 13                     | 100.0       | 0  | 0.0           | 0   | 13  | 0                     | 0           | 0           | 0           | 0           | 0           | 0             |
| Total        | 426    | 370    | 254                    | 68.6        | 16 | 4.3.          | 100 | 274 | 3                     | 13          | 21          | 19          | 31          | 31          | 29            |

\* Percentages are based on number of motor vehicle drivers tested. They may not add to 100 due to rounding.

TABLE 2.12

## 1999 ALCOHOL - RELATED CRASHES BY MONTH

| Month     | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|-----------|------------------|-------------------|-------------------------------|------------------|--------|---------|
| January   | 10               | 196               | 269                           | 475              | 11     | 298     |
| February  | 11               | 172               | 158                           | 341              | 11     | 246     |
| March     | 20               | 217               | 179                           | 416              | 22     | 331     |
| April     | 8                | 253               | 183                           | 444              | 8      | 358     |
| May       | 14               | 246               | 216                           | 476              | 16     | 362     |
| June      | 15               | 240               | 200                           | 455              | 15     | 359     |
| July      | 18               | 288               | 187                           | 493              | 19     | 427     |
| August    | 23               | 283               | 229                           | 535              | 26     | 436     |
| September | 11               | 276               | 207                           | 494              | 15     | 443     |
| October   | 15               | 284               | 234                           | 533              | 16     | 420     |
| November  | 14               | 251               | 209                           | 474              | 16     | 355     |
| December  | 18               | 294               | 275                           | 587              | 20     | 398     |
| Total     | 177              | 3,000             | 2,546                         | 5,723            | 195    | 4,433   |

TABLE 2.13

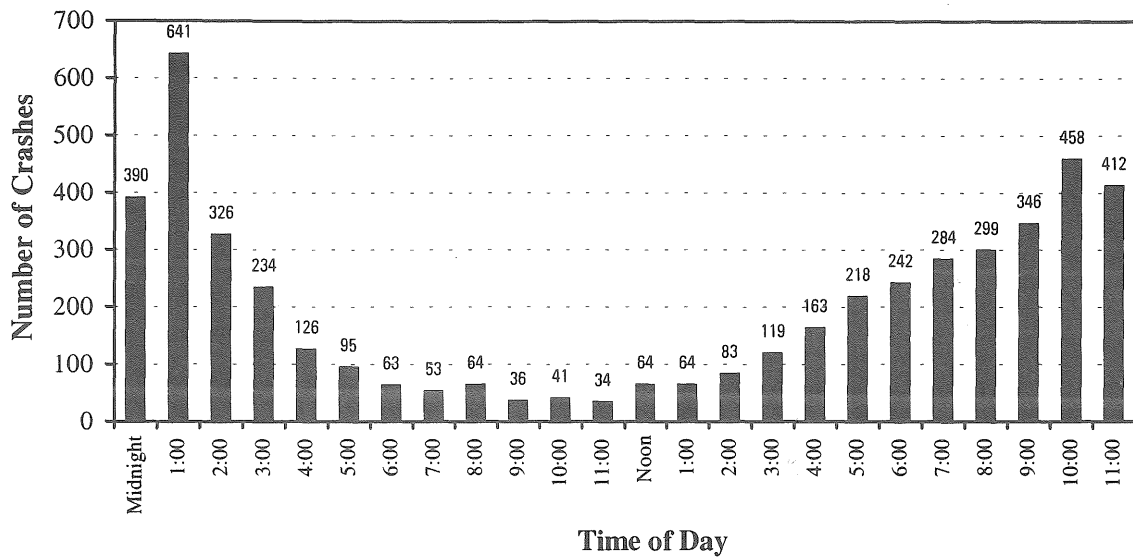
## 1999 ALCOHOL - RELATED CRASHES BY ROADWAY TYPE

| Roadway Type         | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|----------------------|------------------|-------------------|-------------------------------|------------------|--------|---------|
| Urban Interstate     | 7                | 178               | 232                           | 417              | 8      | 249     |
| Rural Interstate     | 4                | 53                | 56                            | 113              | 4      | 89      |
| Urban Trunk Hwy      | 11               | 374               | 346                           | 731              | 11     | 536     |
| Rural Trunk Hwy      | 50               | 522               | 319                           | 891              | 57     | 805     |
| County State Aid Hwy | 73               | 936               | 599                           | 1,608            | 81     | 1,371   |
| County Road          | 8                | 119               | 69                            | 196              | 8      | 182     |
| Township Road        | 6                | 148               | 88                            | 242              | 6      | 256     |
| Local Street         | 13               | 650               | 798                           | 1,461            | 14     | 907     |
| Other                | 5                | 20                | 39                            | 64               | 6      | 38      |
| Total                | 177              | 3,000             | 2,546                         | 5,723            | 195    | 4,433   |



**FIGURE 2.03**

**1999 Alcohol-Related Crashes by Time of Day**



**FIGURE 2.04**

**1999 Alcohol-Related Crashes by Day of Week**

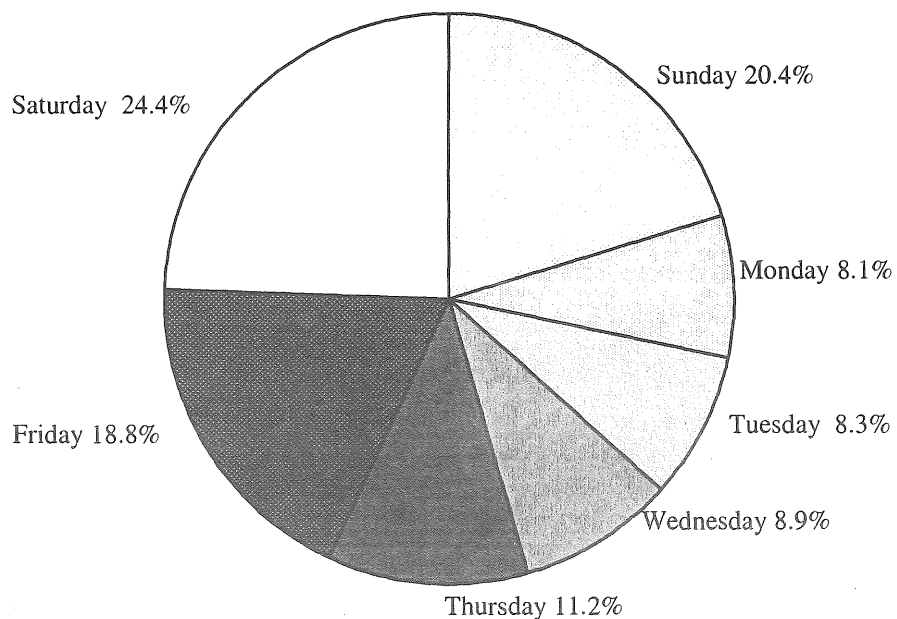


TABLE 2.14

## 1999 ALCOHOL - RELATED CRASHES BY TIME OF DAY AND DAY OF WEEK

| Hour<br>Beginning | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Total<br>Crashes | Total<br>Killed | Total<br>Injured |
|-------------------|--------|--------|---------|-----------|----------|--------|----------|------------------|-----------------|------------------|
| Midnight          | 91     | 24     | 28      | 29        | 40       | 71     | 107      | 390              | 23              | 303              |
| 1:00 AM           | 167    | 35     | 36      | 46        | 68       | 106    | 183      | 641              | 15              | 465              |
| 2:00 AM           | 85     | 10     | 25      | 23        | 37       | 52     | 94       | 326              | 13              | 213              |
| 3:00 AM           | 73     | 15     | 10      | 12        | 19       | 38     | 67       | 234              | 7               | 176              |
| 4:00 AM           | 41     | 6      | 4       | 5         | 10       | 18     | 42       | 126              | 2               | 98               |
| 5:00 AM           | 36     | 5      | 4       | 2         | 5        | 15     | 28       | 95               | 8               | 78               |
| 6:00 AM           | 27     | 3      | 1       | 2         | 7        | 5      | 18       | 63               | 2               | 52               |
| 7:00 AM           | 16     | 5      | 4       | 9         | 3        | 4      | 12       | 53               | 9               | 36               |
| 8:00 AM           | 15     | 3      | 3       | 3         | 7        | 12     | 21       | 64               | 1               | 51               |
| 9:00 AM           | 11     | 1      | 3       | 6         | 2        | 7      | 6        | 36               | 2               | 21               |
| 10:00 AM          | 8      | 6      | 3       | 1         | 4        | 11     | 8        | 41               | 0               | 42               |
| 11:00 AM          | 7      | 2      | 3       | 3         | 4        | 7      | 8        | 34               | 0               | 17               |
| Noon              | 13     | 8      | 5       | 3         | 6        | 15     | 14       | 64               | 7               | 44               |
| 1:00 PM           | 9      | 4      | 11      | 7         | 8        | 11     | 14       | 64               | 5               | 48               |
| 2:00 PM           | 5      | 9      | 7       | 8         | 13       | 18     | 23       | 83               | 3               | 65               |
| 3:00 PM           | 18     | 16     | 16      | 11        | 16       | 17     | 25       | 119              | 9               | 121              |
| 4:00 PM           | 30     | 22     | 13      | 14        | 18       | 32     | 34       | 163              | 8               | 128              |
| 5:00 PM           | 30     | 23     | 29      | 20        | 28       | 41     | 47       | 218              | 4               | 158              |
| 6:00 PM           | 39     | 25     | 35      | 22        | 25       | 53     | 43       | 242              | 5               | 205              |
| 7:00 PM           | 48     | 25     | 33      | 37        | 35       | 51     | 55       | 284              | 16              | 242              |
| 8:00 PM           | 37     | 32     | 29      | 36        | 37       | 60     | 68       | 299              | 14              | 253              |
| 9:00 PM           | 37     | 33     | 40      | 43        | 51       | 77     | 65       | 346              | 8               | 281              |
| 10:00 PM          | 44     | 45     | 54      | 49        | 65       | 107    | 94       | 458              | 18              | 369              |
| 11:00 PM          | 49     | 34     | 39      | 46        | 49       | 91     | 104      | 412              | 10              | 303              |
| Unknown           | 230    | 70     | 40      | 71        | 85       | 157    | 215      | 868              | 6               | 664              |
| Total             | 1,166  | 461    | 475     | 508       | 642      | 1,076  | 1,395    | 5,723            | 195             | 4,433            |

### III: SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS IN 1999 CRASHES

#### **Safety benefits and legislation**

Studies estimate that using safety restraint devices reduces the risk of death and serious injury by 40% to 60%. In view of this, the Minnesota Legislature enacted laws mandating safety equipment use. The Child Passenger Protection Act took effect in 1982, and was amended in 1983 and 1987. It requires children under the age of four to be properly restrained in a federally approved child car seat. In 1993, the Legislature increased the fine for not using a child car seat from \$25 to \$50. The state's safety belt law went into effect in 1986 and was amended in 1988 and 1991. It requires all front seat occupants (and children ages four through ten, regardless of seating position) to wear safety belts.

Tables in this section focus on the use of safety equipment by people in crashes who were occupants of vehicles normally equipped with safety equipment (e.g., passenger cars and trucks rather than motorcycles). The data are problematic in that safety equipment use could not be determined by the reporting officer for almost one-fifth of the persons killed or injured. In addition, the accuracy of the remaining data (reported use and non-use) is uncertain. Assuming that reporting behavior does not change radically from year to year, the data can be useful in indicating general trends in usage.

#### **Safety belt use responds to legislation**

Observational surveys of safety belt use conducted yearly at random sites in the state provide strong evidence that legislation affects safety-belt wearing behavior -- thus saving lives and preventing injuries. In June 1986, before the first safety belt law took effect, 20% of vehicle occupants used belts. The use rate jumped to 33% after the 1986 law took effect, to 47% after a \$10 fine was added in 1988, and to 53% after the fine was increased to \$25 in 1991. Educational and special traffic enforcement strategies may also have benefits. After the introduction of *Safe & Sober* (an intensive traffic safety enforcement and public information campaign), the use rate jumped from about 57% in 1994 to 65% in 1995. The *Safe & Sober* program continues, and the restraint use rate in Minnesota jumped to 72% in 1999! Other states--especially those with primary seat belt laws--have still higher rates.

#### **Occupant fatalities decrease slightly**

In 1999, 516 people who were occupants of motor vehicles died in crashes. This number represents a 3% decrease from the previous year. Also, the total number of vehicle occupants injured (40,223) decreased slightly (1%) from 1998. But these figures conceal a very powerful, dramatic, and beneficial trend in evidence since the mid-1980s. Specifically, severe injuries have been "trading off" with moderate and minor injuries. They have steadily declined as the less severe injuries have increased in the decade since the seat belt legislation of the mid-1980s. In 1987, 4,176 motor vehicle occupants suffered severe injuries. In 1999, that number decreased to 2,809. This is especially beneficial. By definition, minor (or "possible") and moderate (or "non-incapacitating") injuries do not produce long-term and severe suffering, while severe injuries may often have such impacts, including consequences such as severe and permanent brain damage, paralysis, dismemberment, or epilepsy.

#### **Belt use increases in Minnesota!**

According to the August 1999 observational survey, belt use among front-seat occupants averaged 72% across all of Minnesota. This is a welcome result, as this percentage had remained unchanged at 64% to 65% over the four years from 1995 through 1998. However, it appears that without a primary seat belt law, the percentage of Minnesotans who buckle-up will continue to rise, but very slowly. This may be especially true in rural Minnesota. In 1999, the percentage of people who buckled-up in the non-metro area was only 67%, as compared to 73% in the seven county metro area.

#### **Airbag update: always wear your seat belt**

In 1999, airbag deployment was recorded 3,493 times when the occupant was also wearing a seat belt. Fifty-one percent of these incidents resulted in no apparent injury. Airbags deployed 344 times when the occupant was not wearing a seat belt. Only 25% of these cases resulted in no apparent injury. The message is clear: always buckle up!

TABLE 3.01

**PERCENT OF FRONT SEAT OCCUPANTS WEARING SAFETY BELTS,  
BY DATE OF OBSERVATION STUDY**

| Date of Survey | Area of State |       |           | Class of Roadway |             |
|----------------|---------------|-------|-----------|------------------|-------------|
|                | Whole State   | Metro | Non-Metro | Major Roads      | Local Roads |
| June 1986      | 20%           | 30%   | 15%       | 23%              | 17%         |
| August 1986    | 33            | 43    | 26        | 35               | 31          |
| August 1987    | 32            | 40    | 28        | 35               | 29          |
| August 1988    | 47            | 51    | 45        | 48               | 46          |
| August 1989    | 44            | 52    | 40        | 44               | 45          |
| August 1990    | 47            | 54    | 42        | 49               | 46          |
| August 1991    | 53            | 62    | 47        | 53               | 52          |
| August 1992    | 51            | 62    | 46        | 55               | 48          |
| August 1993    | 55            | 59    | 52        | 57               | 53          |
| August 1994    | 57            | 58    | 54        | 65               | 54          |
| August 1995    | 65            | 68    | 56        | 68               | 64          |
| August 1996    | 64            | 67    | 58        | 68               | 62          |
| August 1997    | 65            | 67    | 59        | 69               | 63          |
| August 1998    | 64            | 67    | 56        | 68               | 63          |
| August 1999    | 72            | 73    | 68        | 72               | 68          |

The seat belt law, which requires all front seat passengers and all passengers under the age of eleven to wear safety belts, became effective in Minnesota on August 1, 1986. Only the use of shoulder belts could be observed in the observation studies. The June 1986 survey was conducted prior to the implementation of this law; all other studies were conducted after the law went into effect. The August 1988 study was conducted after the amendment adding a \$10.00 fine went into effect. The August 1991 study was conducted after an amendment increasing the fine to \$25.00 went into effect.

The usage rate is not a simple ratio of the number of persons observed belted to the total number of people observed. It is, instead, the ratio of estimated time on the road that front seat occupants are using safety belts to the total estimated time on the road for these occupants.

\* A new survey design was initiated in August 1994. The new survey design uses different sites and is not strictly comparable to the prior design.

TABLE 3.02

**MOTOR VEHICLE OCCUPANTS KILLED OR INJURED  
BY EJECTION STATUS AND INJURY SEVERITY, 1999**

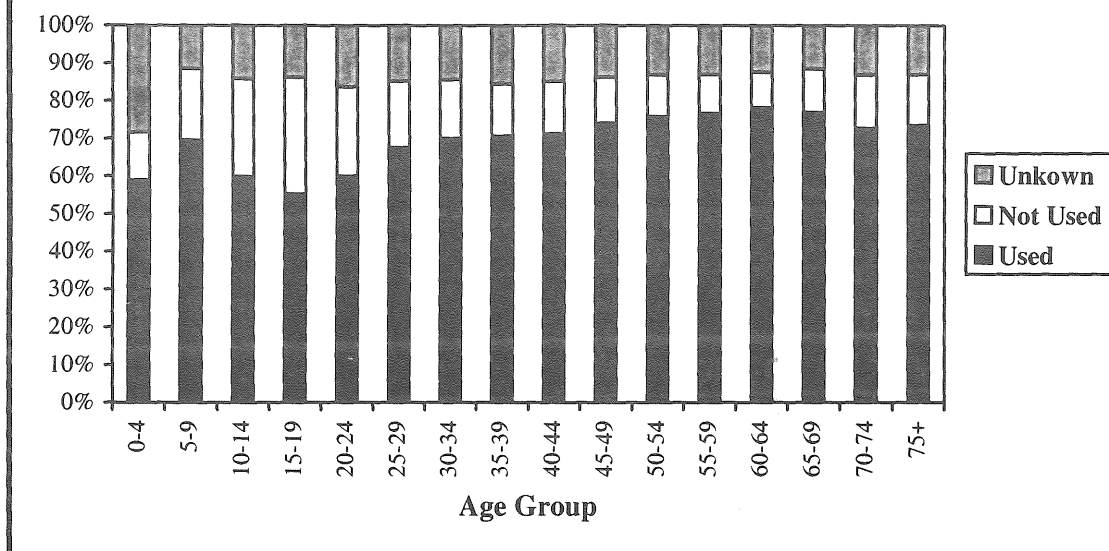
| Ejection Status | Killed     |            | Severe Injury |            | Moderate Injury |             | Minor Injury  |             | Total Persons Killed or Injured |              |
|-----------------|------------|------------|---------------|------------|-----------------|-------------|---------------|-------------|---------------------------------|--------------|
|                 | Num-ber    | Per-cent   | Num-ber       | Per-cent   | Num-ber         | Per-cent    | Num-ber       | Per-cent    | Num-ber                         | Per-cent     |
| Not Ejected     | 320        | 1.1        | 1,908         | 6.6        | 10,790          | 37.0        | 16,125        | 55.3        | 29,143                          | 100.0        |
| Partly Ejected  | 40         | 19.8       | 44            | 21.8       | 77              | 38.1        | 41            | 20.3        | 202                             | 100.0        |
| Ejected         | 126        | 16.6       | 231           | 30.5       | 252             | 33.2        | 149           | 19.7        | 758                             | 100.0        |
| Not Stated      | 30         | 0.3        | 626           | 5.9        | 3,019           | 28.4        | 6,961         | 65.4        | 10,636                          | 100.0        |
| <b>Total</b>    | <b>516</b> | <b>1.3</b> | <b>2,809</b>  | <b>6.9</b> | <b>14,138</b>   | <b>34.7</b> | <b>23,276</b> | <b>57.1</b> | <b>40,739</b>                   | <b>100.0</b> |

TABLE 3.03

**MOTOR VEHICLE OCCUPANTS KILLED OR INJURED,  
BY AGE AND INJURY SEVERITY, 1999**

| Age Group    | Killed     | Injured      |               |               | Total         |
|--------------|------------|--------------|---------------|---------------|---------------|
|              |            | Severe       | Moderate      | Minor         |               |
| 0 - 4        | 6          | 31           | 209           | 413           | 653           |
| 5 - 9        | 8          | 55           | 351           | 491           | 897           |
| 10 - 14      | 9          | 76           | 458           | 621           | 1,155         |
| 15 - 19      | 78         | 616          | 3,374         | 3,969         | 7,959         |
| 20 - 24      | 47         | 352          | 1,915         | 2,894         | 5,161         |
| 25 - 29      | 40         | 251          | 1,280         | 2,292         | 3,823         |
| 30 - 34      | 36         | 201          | 1,049         | 2,037         | 3,287         |
| 35 - 39      | 39         | 241          | 1,072         | 2,051         | 3,364         |
| 40 - 44      | 42         | 205          | 962           | 1,784         | 2,951         |
| 45 - 49      | 23         | 153          | 756           | 1,425         | 2,334         |
| 50 - 54      | 28         | 139          | 547           | 1,136         | 1,822         |
| 55 - 59      | 31         | 75           | 398           | 761           | 1,234         |
| 60 - 64      | 15         | 64           | 318           | 561           | 943           |
| 65 - 69      | 24         | 57           | 304           | 433           | 794           |
| 70 - 74      | 18         | 82           | 256           | 393           | 731           |
| 75 - 79      | 25         | 55           | 236           | 371           | 662           |
| 80 - 84      | 23         | 52           | 186           | 258           | 496           |
| 85 & Older   | 24         | 37           | 118           | 157           | 312           |
| Not Stated   | 0          | 67           | 349           | 1,229         | 1,645         |
| <b>Total</b> | <b>516</b> | <b>2,809</b> | <b>14,138</b> | <b>23,276</b> | <b>40,223</b> |

**FIGURE 3.01**  
**Safety Equipment Use Among Motor Vehicle**  
**Occupants Killed and Injured, by Age, 1999**



*TABLE 3.04*

**SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS,  
 BY GENDER AND INJURY SEVERITY, 1999**

|          | Injured |      |       |        |       |          |       |        |       |        |
|----------|---------|------|-------|--------|-------|----------|-------|--------|-------|--------|
|          | Killed  |      |       | Severe |       | Moderate |       | Minor  |       | Total  |
|          | Female  | Male | Total | Female | Male  | Female   | Male  | Female | Male  |        |
| Used     | 85      | 78   | 163   | 725    | 533   | 4,698    | 3,908 | 9,703  | 6,815 | 26,444 |
| Not Used | 82      | 176  | 258   | 356    | 602   | 1,459    | 2,016 | 1,447  | 1,497 | 7,393  |
| Unknown  | 36      | 59   | 95    | 229    | 352   | 907      | 1,076 | 1,651  | 1,648 | 6,386  |
| Total    | 203     | 313  | 516   | 1,310  | 1,487 | 7,064    | 7,000 | 12,801 | 9,960 | 40,223 |

Note: Gender was not reported for 601 persons injured (mostly those with minor injuries), causing the "Total" to be 601 greater than the sum of the "severe," "moderate," and "minor" injury columns.

TABLE 3.05

# SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE AND INJURY SEVERITY, 1999

| Age<br>Group     | Restraint<br>Use | Injured   |             |            |             |            |             |            |             |              |             |
|------------------|------------------|-----------|-------------|------------|-------------|------------|-------------|------------|-------------|--------------|-------------|
|                  |                  | Killed    |             | Severe     |             | Moderate   |             | Minor      |             | Total        |             |
|                  |                  | #         | %           | #          | %           | #          | %           | #          | %           | #            | %           |
| 0 – 3<br>Years   | Used             | 3         | 50.0        | 10         | 55.6        | 84         | 59.6        | 215        | 72.6        | 309          | 67.9        |
|                  | Not Used         | 2         | 33.3        | 3          | 16.7        | 23         | 16.3        | 39         | 13.2        | 65           | 14.3        |
|                  | Unknown          | <u>1</u>  | <u>16.7</u> | <u>5</u>   | <u>27.8</u> | <u>34</u>  | <u>24.1</u> | <u>42</u>  | <u>14.2</u> | <u>81</u>    | <u>17.8</u> |
|                  | Subtotal         | 6         | 100.0       | 18         | 100.0       | 141        | 100.0       | 296        | 100.0       | 455          | 100.0       |
| 4 – 10<br>Years  | Used             | 3         | 37.5        | 41         | 51.2        | 288        | 60.0        | 486        | 68.7        | 815          | 64.1        |
|                  | Not Used         | 4         | 50.0        | 19         | 23.8        | 106        | 21.9        | 103        | 14.6        | 228          | 17.9        |
|                  | Unknown          | <u>1</u>  | <u>12.5</u> | <u>20</u>  | <u>25.0</u> | <u>90</u>  | <u>18.6</u> | <u>118</u> | <u>16.7</u> | <u>228</u>   | <u>17.9</u> |
|                  | Subtotal         | 8         | 100.0       | 80         | 100.0       | 484        | 100.0       | 707        | 100.0       | 1,271        | 100.0       |
| Total            | Used             | 6         | 42.9        | 51         | 52.0        | 372        | 59.5        | 701        | 69.9        | 1,124        | 65.1        |
| 0 – 10<br>Years  | Not Used         | 6         | 42.9        | 22         | 22.4        | 129        | 20.6        | 142        | 14.2        | 293          | 17.0        |
|                  | Unknown          | <u>2</u>  | <u>14.3</u> | <u>25</u>  | <u>25.5</u> | <u>124</u> | <u>19.8</u> | <u>160</u> | <u>16.0</u> | <u>309</u>   | <u>17.9</u> |
|                  | Subtotal         | 14        | 100.0       | 98         | 100.0       | 625        | 100.0       | 1,003      | 100.0       | 1,726        | 100.0       |
| 0 – 4<br>Years   | Used             | 3         | 50.0        | 14         | 45.2        | 109        | 52.2        | 263        | 63.7        | 386          | 59.1        |
|                  | Not Used         | 2         | 33.3        | 3          | 9.7         | 26         | 12.4        | 52         | 12.6        | 81           | 12.4        |
|                  | Unknown          | <u>1</u>  | <u>16.7</u> | <u>14</u>  | <u>45.2</u> | <u>74</u>  | <u>35.4</u> | <u>98</u>  | <u>23.7</u> | <u>186</u>   | <u>28.5</u> |
|                  | Subtotal         | 6         | 100.0       | 31         | 100.0       | 209        | 100.0       | 413        | 100.0       | 653          | 100.0       |
| 5 – 9<br>Years   | Used             | 3         | 37.5        | 34         | 61.8        | 227        | 64.7        | 365        | 74.3        | 626          | 69.8        |
|                  | Not Used         | 4         | 50.0        | 13         | 23.6        | 81         | 23.1        | 73         | 14.9        | 167          | 18.6        |
|                  | Unknown          | <u>1</u>  | <u>12.5</u> | <u>8</u>   | <u>14.6</u> | <u>43</u>  | <u>12.2</u> | <u>53</u>  | <u>10.8</u> | <u>104</u>   | <u>11.6</u> |
|                  | Subtotal         | 8         | 100.0       | 55         | 100.0       | 351        | 100.0       | 491        | 100.0       | 897          | 100.0       |
| 10 – 14<br>Years | Used             | 2         | 22.2        | 26         | 34.2        | 248        | 54.2        | 421        | 67.8        | 695          | 60.2        |
|                  | Not Used         | 6         | 66.7        | 32         | 42.1        | 152        | 33.2        | 111        | 17.9        | 295          | 25.5        |
|                  | Unknown          | <u>1</u>  | <u>11.1</u> | <u>18</u>  | <u>23.7</u> | <u>58</u>  | <u>12.7</u> | <u>89</u>  | <u>14.3</u> | <u>165</u>   | <u>14.3</u> |
|                  | Subtotal         | 9         | 100.0       | 76         | 100.0       | 458        | 100.0       | 621        | 100.0       | 1,155        | 100.0       |
| 15 – 19<br>Years | Used             | 27        | 34.6        | 212        | 34.4        | 1,727      | 51.2        | 2,475      | 62.4        | 4,414        | 55.5        |
|                  | Not Used         | 37        | 47.4        | 292        | 47.4        | 1,219      | 36.1        | 933        | 23.5        | 2,444        | 30.7        |
|                  | Unknown          | <u>14</u> | <u>18.0</u> | <u>112</u> | <u>18.2</u> | <u>428</u> | <u>12.7</u> | <u>561</u> | <u>14.1</u> | <u>1,101</u> | <u>13.8</u> |
|                  | Subtotal         | 78        | 100.0       | 616        | 100.0       | 3,374      | 100.0       | 3,969      | 100.0       | 7,959        | 100.0       |
| 20 – 24<br>Years | Used             | 7         | 14.9        | 132        | 37.5        | 1,037      | 54.2        | 1,956      | 67.6        | 3,125        | 60.6        |
|                  | Not Used         | 30        | 63.8        | 144        | 40.9        | 591        | 30.9        | 463        | 16.0        | 1,198        | 23.2        |
|                  | Unknown          | <u>10</u> | <u>21.3</u> | <u>76</u>  | <u>21.6</u> | <u>287</u> | <u>15.0</u> | <u>475</u> | <u>16.4</u> | <u>838</u>   | <u>16.2</u> |
|                  | Subtotal         | 47        | 100.0       | 352        | 100.0       | 1,915      | 100.0       | 2,894      | 100.0       | 5,161        | 100.0       |
| 25 – 29<br>Years | Used             | 11        | 27.5        | 106        | 42.2        | 803        | 62.7        | 1,695      | 74.0        | 2,604        | 68.1        |
|                  | Not Used         | 24        | 60.0        | 85         | 33.9        | 303        | 23.7        | 262        | 11.4        | 650          | 17.0        |
|                  | Unknown          | <u>5</u>  | <u>12.5</u> | <u>60</u>  | <u>23.9</u> | <u>174</u> | <u>13.6</u> | <u>335</u> | <u>14.6</u> | <u>569</u>   | <u>14.9</u> |
|                  | Subtotal         | 40        | 100.0       | 251        | 100.0       | 1,280      | 100.0       | 2,292      | 100.0       | 3,823        | 100.0       |
| 30 – 34<br>Years | Used             | 4         | 11.1        | 94         | 46.8        | 675        | 64.4        | 1,555      | 76.3        | 2,324        | 70.7        |
|                  | Not Used         | 24        | 66.7        | 68         | 33.8        | 211        | 20.1        | 212        | 10.4        | 491          | 14.9        |
|                  | Unknown          | <u>8</u>  | <u>22.2</u> | <u>39</u>  | <u>19.4</u> | <u>163</u> | <u>15.5</u> | <u>270</u> | <u>13.2</u> | <u>472</u>   | <u>14.4</u> |
|                  | Subtotal         | 36        | 100.0       | 201        | 100.0       | 1,049      | 100.0       | 2,037      | 100.0       | 3,287        | 100.0       |
| 35 – 39<br>Years | Used             | 11        | 28.2        | 107        | 44.4        | 718        | 67.0        | 1,571      | 76.6        | 2,396        | 71.2        |
|                  | Not Used         | 25        | 64.1        | 72         | 29.9        | 203        | 18.9        | 165        | 8.0         | 440          | 13.1        |
|                  | Unknown          | <u>3</u>  | <u>7.7</u>  | <u>62</u>  | <u>25.7</u> | <u>151</u> | <u>14.1</u> | <u>315</u> | <u>15.4</u> | <u>528</u>   | <u>15.7</u> |
|                  | Subtotal         | 39        | 100.0       | 241        | 100.0       | 1,072      | 100.0       | 2,051      | 100.0       | 3,364        | 100.0       |

TABLE 3.05 CONTINUED

**SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS KILLED  
OR INJURED, BY AGE AND INJURY SEVERITY, 1999**

| Age Group            | Restraint Use | <u>Killed</u> |             | <u>Severe</u> |             | <u>Moderate</u> |             | <u>Minor</u> |             | <u>Total</u> |             |
|----------------------|---------------|---------------|-------------|---------------|-------------|-----------------|-------------|--------------|-------------|--------------|-------------|
|                      |               | #             | %           | #             | %           | #               | %           | #            | %           | #            | %           |
| 40 – 44<br>Years     | Used          | 10            | 23.8        | 105           | 51.2        | 642             | 66.7        | 1,376        | 77.1        | 2,123        | 71.9        |
|                      | Not Used      | 20            | 47.6        | 60            | 29.3        | 194             | 20.2        | 138          | 7.7         | 392          | 13.3        |
|                      | Unknown       | <u>12</u>     | <u>28.6</u> | <u>40</u>     | <u>19.5</u> | <u>126</u>      | <u>13.1</u> | <u>270</u>   | <u>15.1</u> | <u>436</u>   | <u>14.8</u> |
|                      | Subtotal      | 42            | 100.0       | 205           | 100.0       | 962             | 100.0       | 1,784        | 100.0       | 2,951        | 100.0       |
| 45 – 49<br>Years     | Used          | 8             | 34.8        | 78            | 51.0        | 526             | 69.6        | 1,134        | 79.6        | 1,738        | 74.5        |
|                      | Not Used      | 10            | 43.5        | 44            | 28.8        | 118             | 15.6        | 112          | 7.9         | 274          | 11.7        |
|                      | Unknown       | <u>5</u>      | <u>21.7</u> | <u>31</u>     | <u>20.3</u> | <u>112</u>      | <u>14.8</u> | <u>179</u>   | <u>12.6</u> | <u>322</u>   | <u>13.8</u> |
|                      | Subtotal      | 23            | 100.0       | 153           | 100.0       | 756             | 100.0       | 1,425        | 100.0       | 2,334        | 100.0       |
| 50 – 54<br>Years     | Used          | 13            | 46.4        | 74            | 53.2        | 394             | 72.0        | 921          | 81.1        | 1,389        | 76.2        |
|                      | Not Used      | 11            | 39.3        | 37            | 26.6        | 78              | 14.3        | 77           | 6.8         | 192          | 10.5        |
|                      | Unknown       | <u>4</u>      | <u>14.3</u> | <u>28</u>     | <u>20.1</u> | <u>75</u>       | <u>13.7</u> | <u>138</u>   | <u>12.2</u> | <u>241</u>   | <u>13.2</u> |
|                      | Subtotal      | 28            | 100.0       | 139           | 100.0       | 547             | 100.0       | 1,136        | 100.0       | 1,822        | 100.0       |
| 55 – 59<br>Years     | Used          | 11            | 35.5        | 49            | 65.3        | 300             | 75.4        | 610          | 80.2        | 959          | 77.7        |
|                      | Not Used      | 10            | 32.3        | 11            | 14.7        | 55              | 13.8        | 53           | 7.0         | 119          | 9.6         |
|                      | Unknown       | <u>10</u>     | <u>32.3</u> | <u>15</u>     | <u>20.0</u> | <u>43</u>       | <u>10.8</u> | <u>98</u>    | <u>12.9</u> | <u>156</u>   | <u>12.6</u> |
|                      | Subtotal      | 31            | 100.0       | 75            | 100.0       | 398             | 100.0       | 761          | 100.0       | 1,234        | 100.0       |
| 60 – 64<br>Years     | Used          | 5             | 33.3        | 44            | 68.8        | 243             | 76.4        | 457          | 81.5        | 744          | 78.9        |
|                      | Not Used      | 8             | 53.3        | 11            | 17.2        | 33              | 10.4        | 37           | 6.6         | 81           | 8.6         |
|                      | Unknown       | <u>2</u>      | <u>13.3</u> | <u>9</u>      | <u>14.1</u> | <u>42</u>       | <u>13.2</u> | <u>67</u>    | <u>11.9</u> | <u>118</u>   | <u>12.5</u> |
|                      | Subtotal      | 15            | 100.0       | 64            | 100.0       | 318             | 100.0       | 561          | 100.0       | 943          | 100.0       |
| 65 – 69<br>Years     | Used          | 11            | 45.8        | 35            | 61.4        | 222             | 73.0        | 362          | 83.6        | 619          | 78.0        |
|                      | Not Used      | 11            | 45.8        | 12            | 21.0        | 39              | 12.8        | 31           | 7.2         | 82           | 10.3        |
|                      | Unknown       | <u>2</u>      | <u>8.3</u>  | <u>10</u>     | <u>17.5</u> | <u>43</u>       | <u>14.1</u> | <u>40</u>    | <u>9.2</u>  | <u>93</u>    | <u>11.7</u> |
|                      | Subtotal      | 24            | 100.0       | 57            | 100.0       | 304             | 100.0       | 433          | 100.0       | 794          | 100.0       |
| 70 – 74<br>Years     | Used          | 10            | 55.6        | 47            | 57.3        | 182             | 71.1        | 306          | 77.9        | 535          | 73.2        |
|                      | Not Used      | 8             | 44.4        | 21            | 25.6        | 38              | 14.8        | 38           | 9.7         | 97           | 13.3        |
|                      | Unknown       | <u>0</u>      | <u>0.0</u>  | <u>14</u>     | <u>17.1</u> | <u>36</u>       | <u>14.1</u> | <u>49</u>    | <u>12.5</u> | <u>99</u>    | <u>13.5</u> |
|                      | Subtotal      | 18            | 100.0       | 82            | 100.0       | 256             | 100.0       | 393          | 100.0       | 731          | 100.0       |
| 75 &<br>Older        | Used          | 27            | 37.5        | 79            | 54.9        | 412             | 76.3        | 616          | 78.4        | 1,107        | 75.3        |
|                      | Not Used      | 28            | 38.9        | 39            | 27.1        | 68              | 12.6        | 71           | 9.0         | 178          | 12.1        |
|                      | Unknown       | <u>17</u>     | <u>23.6</u> | <u>26</u>     | <u>18.1</u> | <u>60</u>       | <u>11.1</u> | <u>99</u>    | <u>12.6</u> | <u>185</u>   | <u>12.6</u> |
|                      | Subtotal      | 72            | 100.0       | 144           | 100.0       | 540             | 100.0       | 786          | 100.0       | 1,470        | 100.0       |
| Age<br>Not<br>Stated | Used          | 0             | 0.0         | 24            | 35.8        | 164             | 47.0        | 472          | 38.4        | 660          | 40.1        |
|                      | Not Used      | 0             | 0.0         | 17            | 25.4        | 68              | 19.5        | 127          | 10.3        | 212          | 12.9        |
|                      | Unknown       | <u>0</u>      | <u>0.0</u>  | <u>26</u>     | <u>38.8</u> | <u>117</u>      | <u>33.5</u> | <u>630</u>   | <u>51.3</u> | <u>773</u>   | <u>47.0</u> |
|                      | Subtotal      | 0             | 0.0         | 67            | 100.0       | 349             | 100.0       | 1,229        | 100.0       | 1,645        | 100.0       |
| All<br>Ages          | Used          | 163           | 31.6        | 1,260         | 44.9        | 8,629           | 61.0        | 16,555       | 71.1        | 26,444       | 65.7        |
|                      | Not Used      | 258           | 50.0        | 961           | 34.2        | 3,477           | 24.6        | 2,955        | 12.7        | 7,393        | 18.4        |
|                      | Unknown       | <u>95</u>     | <u>18.4</u> | <u>588</u>    | <u>20.9</u> | <u>2,032</u>    | <u>14.4</u> | <u>3,766</u> | <u>16.2</u> | <u>6,386</u> | <u>15.9</u> |
|                      | Total         | 516           | 100.0       | 2,809         | 100.0       | 14,138          | 100.0       | 23,276       | 100.0       | 40,223       | 100.0       |

(Persons aged 0 through 3 and 4 through 10 years old are categorized in separate groups because Minnesota law makes special provisions for these age groups. Percentages may not sum to 100.0% due to rounding.)



TABLE 3.06

**PERCENT OF INJURED OR KILLED MOTOR VEHICLE OCCUPANTS WHO  
USED SAFETY EQUIPMENT, BY INJURY SEVERITY AND YEAR, 1990 - 1999**

|                          | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Killed</b>            |      |      |      |      |      |      |      |      |      |      |
| Used                     | 20.9 | 24.4 | 27.5 | 32.1 | 25.4 | 27.1 | 30.3 | 37.5 | 30.3 | 31.6 |
| Not Used                 | 65.9 | 57.0 | 58.5 | 52.6 | 56.3 | 48.3 | 52.6 | 45.9 | 48.7 | 50.0 |
| Unknown                  | 13.2 | 18.5 | 14.0 | 15.3 | 18.3 | 24.6 | 17.1 | 16.6 | 21.0 | 18.4 |
| <b>Injured</b>           |      |      |      |      |      |      |      |      |      |      |
| <b>Severe Injuries</b>   |      |      |      |      |      |      |      |      |      |      |
| Used                     | 32.6 | 35.7 | 36.6 | 40.7 | 43.0 | 41.7 | 44.8 | 45.4 | 43.8 | 44.9 |
| Not Used                 | 48.4 | 40.7 | 41.7 | 37.4 | 37.6 | 37.2 | 35.9 | 35.2 | 36.0 | 34.2 |
| Unknown                  | 18.9 | 23.6 | 21.7 | 21.9 | 19.4 | 21.1 | 19.3 | 19.4 | 20.1 | 20.9 |
| <b>Moderate Injuries</b> |      |      |      |      |      |      |      |      |      |      |
| Used                     | 41.1 | 45.9 | 48.5 | 51.8 | 54.5 | 55.3 | 57.5 | 59.0 | 59.3 | 61.0 |
| Not Used                 | 40.2 | 33.7 | 34.0 | 31.9 | 29.6 | 28.4 | 27.4 | 25.7 | 26.0 | 24.6 |
| Unknown                  | 18.7 | 20.4 | 17.5 | 16.3 | 15.9 | 16.2 | 15.1 | 15.3 | 14.7 | 14.4 |
| <b>Minor Injuries</b>    |      |      |      |      |      |      |      |      |      |      |
| Used                     | 45.3 | 54.3 | 61.4 | 64.8 | 65.0 | 66.8 | 67.9 | 69.5 | 69.9 | 71.1 |
| Not Used                 | 23.1 | 19.8 | 19.9 | 17.0 | 16.0 | 15.2 | 14.6 | 13.1 | 13.4 | 12.7 |
| Unknown                  | 31.6 | 25.9 | 18.8 | 18.1 | 19.0 | 18.0 | 17.5 | 17.4 | 16.7 | 16.2 |
| <b>Total Injured</b>     |      |      |      |      |      |      |      |      |      |      |
| Used                     | 42.7 | 49.8 | 55.0 | 58.7 | 59.9 | 61.1 | 62.9 | 64.2 | 64.4 | 65.7 |
| Not Used                 | 31.2 | 26.3 | 26.4 | 23.5 | 22.1 | 21.2 | 20.3 | 18.9 | 19.4 | 18.4 |
| Unknown                  | 26.1 | 23.9 | 18.6 | 17.9 | 18.0 | 17.6 | 16.8 | 16.8 | 16.2 | 15.9 |

TABLE 3.07

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS  
KILLED AND INJURED, BY ROADWAY TYPE, 1999**

| <b>Roadway Type</b>          | <b>Used</b>   |                | <b>Not Used</b> |                | <b>Unknown</b> |                | <b>Total</b>  |                |
|------------------------------|---------------|----------------|-----------------|----------------|----------------|----------------|---------------|----------------|
|                              | <b>Number</b> | <b>Percent</b> | <b>Number</b>   | <b>Percent</b> | <b>Number</b>  | <b>Percent</b> | <b>Number</b> | <b>Percent</b> |
| Interstate                   | 2,925         | 75.9           | 513             | 13.3           | 416            | 10.8           | 3,854         | 100.0          |
| Trunk Highway                | 9,277         | 68.8           | 2,556           | 19.0           | 1,652          | 12.2           | 13,485        | 100.0          |
| County State-<br>Aid Highway | 7,665         | 63.7           | 2,239           | 18.6           | 2,133          | 17.7           | 12,037        | 100.0          |
| County Road                  | 474           | 52.0           | 265             | 29.1           | 172            | 18.9           | 911           | 100.0          |
| Township Road                | 494           | 42.8           | 436             | 37.8           | 223            | 19.3           | 1,153         | 100.0          |
| Local Street                 | 5,673         | 62.4           | 1,592           | 17.5           | 1,833          | 20.2           | 9,098         | 100.0          |
| Other Road                   | 99            | 49.2           | 50              | 24.9           | 52             | 25.9           | 201           | 100.0          |
| <b>Total</b>                 | <b>26,607</b> | <b>65.3</b>    | <b>7,651</b>    | <b>18.8</b>    | <b>6,481</b>   | <b>15.9</b>    | <b>40,739</b> | <b>100.0</b>   |

TABLE 3.08

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS  
KILLED AND INJURED, BY REGION OF THE STATE, 1999**

| <b>EMS Region</b> | <b>Percent<br/>Used</b> | <b>Percent<br/>Not Used</b> | <b>Percent<br/>Unknown</b> | <b>Number<br/>of People</b> |
|-------------------|-------------------------|-----------------------------|----------------------------|-----------------------------|
| Metropolitan      | 70.4                    | 13.3                        | 16.3                       | 22,388                      |
| Central           | 60.8                    | 24.1                        | 15.2                       | 5,579                       |
| Northeast         | 64.5                    | 21.9                        | 13.6                       | 2,461                       |
| Northwest         | 45.8                    | 33.9                        | 20.3                       | 1,199                       |
| South Central     | 59.8                    | 25.0                        | 15.2                       | 1,513                       |
| Southeast         | 61.2                    | 22.9                        | 15.9                       | 3,748                       |
| Southwest         | 55.3                    | 29.2                        | 15.5                       | 2,344                       |
| West Central      | 54.4                    | 30.7                        | 14.9                       | 1,507                       |
| Statewide         | 65.3                    | 18.8                        | 15.9                       | 40,739                      |

\*The regions of the state are shown in the map at right.

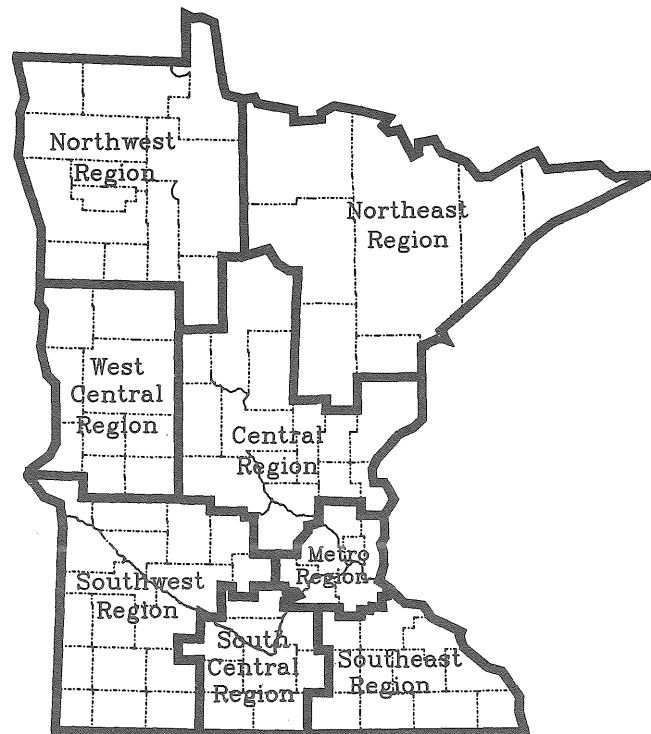


TABLE 3.09

## AIRBAG DEPLOYMENTS, 1992 - 1999

| Year | Injury Severity    | Airbag Deployed |               | Deployment Not Indicated |               | Belt Use Unknown | Total          |
|------|--------------------|-----------------|---------------|--------------------------|---------------|------------------|----------------|
|      |                    | Belt Used       | Belt Not Used | Belt Used                | Belt Not Used |                  |                |
| 1992 | Killed             | 4               | 2             | 129                      | 281           | 68               | 484            |
|      | Severe Injury      | 17              | 4             | 1,253                    | 1,440         | 752              | 3,466          |
|      | Moderate Injury    | 63              | 11            | 6,008                    | 4,239         | 2,193            | 12,514         |
|      | Minor Injury       | 85              | 11            | 13,746                   | 4,471         | 4,228            | 22,541         |
|      | No Apparent Injury | <u>173</u>      | <u>11</u>     | <u>74,716</u>            | <u>12,008</u> | <u>106,957</u>   | <u>193,865</u> |
|      | Total              | 342             | 39            | 95,852                   | 22,439        | 114,198          | 232,870        |
| 1993 | Killed             | 1               | 3             | 140                      | 228           | 67               | 439            |
|      | Severe Injury      | 18              | 9             | 1,337                    | 1,236         | 728              | 3,328          |
|      | Moderate Injury    | 116             | 15            | 6,618                    | 4,125         | 2,122            | 12,996         |
|      | Minor Injury       | 124             | 16            | 15,518                   | 4,093         | 4,375            | 24,126         |
|      | No Apparent Injury | <u>274</u>      | <u>22</u>     | <u>85,736</u>            | <u>10,508</u> | <u>106,902</u>   | <u>203,442</u> |
|      | Total              | 533             | 65            | 109,349                  | 20,190        | 114,194          | 244,331        |
| 1994 | Killed             | 5               | 5             | 127                      | 287           | 95               | 519            |
|      | Severe Injury      | 33              | 5             | 1,367                    | 1,217         | 632              | 3,254          |
|      | Moderate Injury    | 160             | 16            | 7,172                    | 3,971         | 2,133            | 13,452         |
|      | Minor Injury       | 179             | 17            | 15,920                   | 3,949         | 4,692            | 24,757         |
|      | No Apparent Injury | <u>465</u>      | <u>28</u>     | <u>95,102</u>            | <u>9,189</u>  | <u>96,345</u>    | <u>201,129</u> |
|      | Total              | 842             | 71            | 119,688                  | 18,613        | 103,897          | 243,111        |
| 1995 | Killed             | 7               | 4             | 127                      | 235           | 122              | 495            |
|      | Severe Injury      | 38              | 14            | 1,242                    | 1,126         | 647              | 3,067          |
|      | Moderate Injury    | 241             | 46            | 7,537                    | 3,953         | 2,281            | 14,058         |
|      | Minor Injury       | 285             | 24            | 16,534                   | 3,817         | 4,533            | 25,193         |
|      | No Apparent Injury | <u>668</u>      | <u>32</u>     | <u>93,028</u>            | <u>8,393</u>  | <u>89,646</u>    | <u>191,767</u> |
|      | Total              | 1,239           | 120           | 118,468                  | 17,524        | 97,229           | 234,580        |
| 1996 | Killed             | 11              | 8             | 129                      | 235           | 79               | 462            |
|      | Severe Injury      | 67              | 21            | 1,298                    | 1,074         | 590              | 3,050          |
|      | Moderate Injury    | 356             | 62            | 7,964                    | 3,897         | 2,188            | 14,467         |
|      | Minor Injury       | 401             | 47            | 17,699                   | 3,851         | 4,653            | 26,651         |
|      | No Apparent Injury | <u>973</u>      | <u>51</u>     | <u>103,909</u>           | <u>8,574</u>  | <u>98,418</u>    | <u>211,925</u> |
|      | Total              | 1,808           | 189           | 130,999                  | 17,631        | 105,928          | 256,555        |
| 1997 | Killed             | 12              | 15            | 171                      | 209           | 81               | 488            |
|      | Severe Injury      | 73              | 30            | 1,273                    | 1,012         | 576              | 2,964          |
|      | Moderate Injury    | 443             | 63            | 7,785                    | 3,524         | 2,140            | 13,955         |
|      | Minor Injury       | 457             | 44            | 16,549                   | 3,164         | 4,250            | 24,464         |
|      | No Apparent Injury | <u>1,142</u>    | <u>66</u>     | <u>98,069</u>            | <u>7,600</u>  | <u>89,634</u>    | <u>196,511</u> |
|      | Total              | 2,127           | 218           | 123,847                  | 15,509        | 96,681           | 238,382        |
| 1998 | Killed             | 17              | 8             | 144                      | 251           | 112              | 532            |
|      | Severe Injury      | 88              | 26            | 1,129                    | 974           | 559              | 2,776          |
|      | Moderate Injury    | 565             | 113           | 7,841                    | 3,572         | 2,079            | 14,170         |
|      | Minor Injury       | 640             | 75            | 15,815                   | 3,082         | 3,934            | 23,546         |
|      | No Apparent Injury | <u>1,436</u>    | <u>89</u>     | <u>93,842</u>            | <u>7,044</u>  | <u>83,677</u>    | <u>186,088</u> |
|      | Total              | 2,746           | 311           | 118,771                  | 14,923        | 90,361           | 227,112        |
| 1999 | Killed             | 20              | 13            | 143                      | 245           | 95               | 516            |
|      | Severe Injury      | 117             | 47            | 1,143                    | 914           | 588              | 2,809          |
|      | Moderate Injury    | 746             | 124           | 7,883                    | 3,353         | 2,032            | 14,138         |
|      | Minor Injury       | 833             | 73            | 15,722                   | 2,882         | 3,766            | 23,276         |
|      | No Apparent Injury | <u>1,777</u>    | <u>87</u>     | <u>101,556</u>           | <u>6,597</u>  | <u>84,477</u>    | <u>194,494</u> |
|      | Total              | 3,493           | 344           | 126,447                  | 13,991        | 90,958           | 235,233        |

Note: "Belt use" is used as a shorthand term for safety restraint use. Safety restraint devices are normally lap and shoulder belts, but they can also be child safety seats or booster seats.

## IV: MOTORCYCLE CRASHES

### **Motorcycle crashes decrease slightly**

In 1999, there were 1,024 crashes that involved at least one motorcycle. This number represents a 4% decrease from the previous year. Motorcycle crashes have been declining throughout the 1990's. In fact, the average number of motorcycle crashes per year from 1990 through 1998 was 1,275.

### **Fatalities also decrease**

In 1999, there were 29 motorcyclists killed in traffic crashes. This number is a large decrease from 1998 when there were 40 recorded fatalities. Motorcyclist injuries did not decrease in 1999, however. There were 991 injuries, a slight increase from 1998 when there were 987.

### **Greater crash severity**

When a motorcycle is involved in a traffic crash, the chances of a severe injury are greatly increased. In fact, for every 100 motorcycle crashes in 1999, 2.9 of them were fatal crashes. For all crashes in 1999, 0.6 of every 100 were fatal. Also, in 1999, 84% of motorcycle crashes resulted in a non-fatal injury. This compares with 31% for all types of motor vehicle crashes.

### **Risk factors: alcohol and no helmet**

State law requires that drivers who die in traffic crashes be tested for blood alcohol level. In 1999, 28 motorcycle operators were killed and 22 of them were tested. Ten of the 22 drivers (45%) tested positive for alcohol. And, 8 of those 10 tested at .10 or greater. A second risk factor is helmet non-use.

Currently, Minnesota does not have a mandatory helmet use law for motorcycle operators. The need for helmet laws may be debated, but the benefits

helmets offer are clear: they protect the head in the event of a collision. In 1999, only eight of the 29 motorcycle riders killed were known to be wearing a helmet. And, of the 991 motorcyclists injured, only 282 (28%) were recorded as wearing a helmet.

### **Operator training is essential**

In 1999, 54% of all motorcycle crashes did not involve a collision with another moving motor vehicle. This may indicate that further training is needed for a large segment of the motorcycle driver population. Indeed, of the 31 motorcycle drivers that were involved in fatal crashes in 1999, 10% of them did not have a driver's license or a valid endorsement to drive a motorcycle.

### **Young males are most often victims**

In 1999, 27 out of the 29 motorcyclists killed, and 813 out of the 991 injured were male. Males account for a full 82% of all motorcyclists killed or injured.

### **Contributing factors:**

#### **Speed by motorcyclists**

#### **Failing to yield by other vehicles**

As noted, about half of motorcycle crashes are single-vehicle crashes. They do not involve another moving vehicle. In these crashes, the factors that reporting officers cite most often are illegal or unsafe speed (24%), driver inexperience (15%), driver inattention or distraction (14%), and physical impairment (11%). In crashes that do involve another motor vehicle, the reporting officers more often associate contributing factors with the other driver than with the motorcyclist. For the other drivers, failure to yield right of way is cited most commonly (34% of all factors cited), then driver inattention or distraction (26%).

TABLE 4.01

## MOTORCYCLE CRASH SUMMARY, 1990 - 1999

|  | 1990         | 1991         | 1992         | 1993         | 1994         | 1995         | 1996         | 1997       | 1998         | 1999         | Record High<br>(since 1970) |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|-----------------------------|
| <b>Total Crashes</b>                                   | <b>1,735</b> | <b>1,461</b> | <b>1,361</b> | <b>1,245</b> | <b>1,381</b> | <b>1,126</b> | <b>1,131</b> | <b>971</b> | <b>1,065</b> | <b>1,024</b> | <b>3,308 (1980)</b>         |
| Fatal Crashes  | 46           | 38           | 29           | 33           | 41           | 32           | 39           | 23         | 41           | 30           | 112 (1980)                  |
| Personal Injury Crashes                                | 1,446        | 1,198        | 1,133        | 1,022        | 1,151        | 941          | 934          | 821        | 883          | 867          | 2,728 (1980)                |
| Property Damage Crashes                                | 243          | 225          | 199          | 190          | 189          | 153          | 158          | 127        | 141          | 127          | 537 (1976)                  |
| <b>Persons Killed:</b>                                 |              |              |              |              |              |              |              |            |              |              |                             |
| Motorcyclists  | 50           | 40           | 28           | 34           | 43           | 35           | 42           | 24         | 40           | 29           | 121 (1980)                  |
| Non-Motorcyclists/Unknown                              | 2            | 0            | 3            | 3            | 0            | 2            | 0            | 1          | 1            | 2            | 9 (1975)                    |
| <b>Persons Injured:</b>                                |              |              |              |              |              |              |              |            |              |              |                             |
| Motorcyclists  | 1,605        | 1,357        | 1,288        | 1,151        | 1,324        | 1,063        | 1,046        | 916        | 987          | 991          | 3,359 (1980)                |
| Non-Motorcyclists/Unknown                              | 126          | 104          | 60           | 104          | 66           | 76           | 71           | 65         | 69           | 64           | N/A                         |
| Licensed Operators                                     | 292,074      | 296,624      | 290,722      | 291,756      | 293,164      | 295,849      | 297,102      | 298,863    | 301,992      | 307,009      | 307,009 (1999)              |
| Registered Motorcycles                                 | 120,081      | 117,492      | 116,124      | 114,548      | 113,337      | 113,981      | 112,551      | 113,443    | 118,275      | 122,676      | 166,151 (1981)              |
| <b>Rates:</b>  |              |              |              |              |              |              |              |            |              |              |                             |
| Fatal Motorcycle Crashes Per<br>100 Motorcycle Crashes | 2.7          | 2.6          | 2.1          | 2.7          | 3.0          | 2.8          | 3.4          | 2.4        | 3.8          | 2.9          | 3.8 (1998)                  |
| Fatal Crashes Per 100 Crashes<br>(All Vehicles)        | 0.5          | 0.5          | 0.5          | 0.5          | 0.6          | 0.5          | 0.5          | 0.5        | 0.6          | 0.6          | 0.8 (1970)                  |

TABLE 4.02

## 1999 MOTORCYCLE CRASHES BY FIRST HARMFUL EVENT

| First Harmful Event    | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Motorcyclists Killed | Motorcyclists Injured |
|------------------------|---------------|----------------|-------------------------|---------------|----------------------|-----------------------|
| <b>Collision With:</b> |               |                |                         |               |                      |                       |
| Other Motor Vehicle    | 16            | 387            | 70                      | 473           | 15                   | 450                   |
| Parked Motor Vehicle   | 0             | 8              | 19                      | 27            | 0                    | 8                     |
| Bicycle                | 0             | 5              | 0                       | 5             | 0                    | 5                     |
| Pedestrian             | 0             | 4              | 0                       | 4             | 0                    | 2                     |
| Deer                   | 1             | 54             | 5                       | 60            | 1                    | 66                    |
| Other Animal           | 0             | 12             | 0                       | 12            | 0                    | 14                    |
| Fixed Object           | 7             | 87             | 3                       | 97            | 7                    | 98                    |
| Other Object           | 0             | 2              | 0                       | 2             | 0                    | 2                     |
| <b>Non-Collision:</b>  |               |                |                         |               |                      |                       |
| Overturn               | 5             | 193            | 14                      | 212           | 5                    | 216                   |
| <b>Other / Unknown</b> | 1             | 115            | 16                      | 132           | 1                    | 130                   |
| <b>Total</b>           | <b>30</b>     | <b>867</b>     | <b>127</b>              | <b>1,024</b>  | <b>29</b>            | <b>991</b>            |

TABLE 4.03

## 1999 MOTORCYCLE CRASHES BY POPULATION OF AREA

| Population of City or Township | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Motorcyclists Killed | Motorcyclists Injured |
|--------------------------------|---------------|----------------|-------------------------|---------------|----------------------|-----------------------|
| 100,000 and Over               | 2             | 137            | 38                      | 177           | 2                    | 153                   |
| 50,000 - 99,999                | 1             | 85             | 11                      | 97            | 1                    | 91                    |
| 25,000 - 49,999                | 3             | 117            | 9                       | 129           | 2                    | 128                   |
| 10,000 - 24,999                | 3             | 111            | 29                      | 143           | 3                    | 122                   |
| 5,000 - 9,999                  | 1             | 49             | 5                       | 55            | 1                    | 54                    |
| 2,500 - 4,999                  | 3             | 34             | 3                       | 40            | 3                    | 45                    |
| 1,000 - 2,499                  | 0             | 20             | 4                       | 24            | 0                    | 20                    |
| Under 1,000                    | 17            | 314            | 28                      | 359           | 17                   | 378                   |
| <b>Total</b>                   | <b>30</b>     | <b>867</b>     | <b>127</b>              | <b>1,024</b>  | <b>29</b>            | <b>991</b>            |

TABLE 4.04

## 1999 MOTORCYCLE CRASHES BY MONTH

| Month     | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Motorcyclists<br>Killed | Motorcyclists<br>Injured |
|-----------|------------------|-------------------|-------------------------------|------------------|-------------------------|--------------------------|
| January   | 0                | 0                 | 0                             | 0                | 0                       | 0                        |
| February  | 0                | 1                 | 0                             | 1                | 0                       | 1                        |
| March     | 0                | 18                | 3                             | 21               | 0                       | 19                       |
| April     | 3                | 68                | 13                            | 84               | 3                       | 77                       |
| May       | 2                | 100               | 16                            | 118              | 2                       | 113                      |
| June      | 7                | 182               | 19                            | 208              | 7                       | 214                      |
| July      | 7                | 164               | 29                            | 200              | 7                       | 191                      |
| August    | 3                | 123               | 15                            | 141              | 3                       | 140                      |
| September | 6                | 106               | 16                            | 128              | 5                       | 122                      |
| October   | 1                | 68                | 9                             | 78               | 1                       | 74                       |
| November  | 1                | 34                | 7                             | 42               | 1                       | 37                       |
| December  | 0                | 3                 | 0                             | 3                | 0                       | 3                        |
| Total     | 30               | 867               | 127                           | 1,024            | 29                      | 991                      |

**FIGURE 4.01**  
1999 Motorcycle Crashes by Time of Day

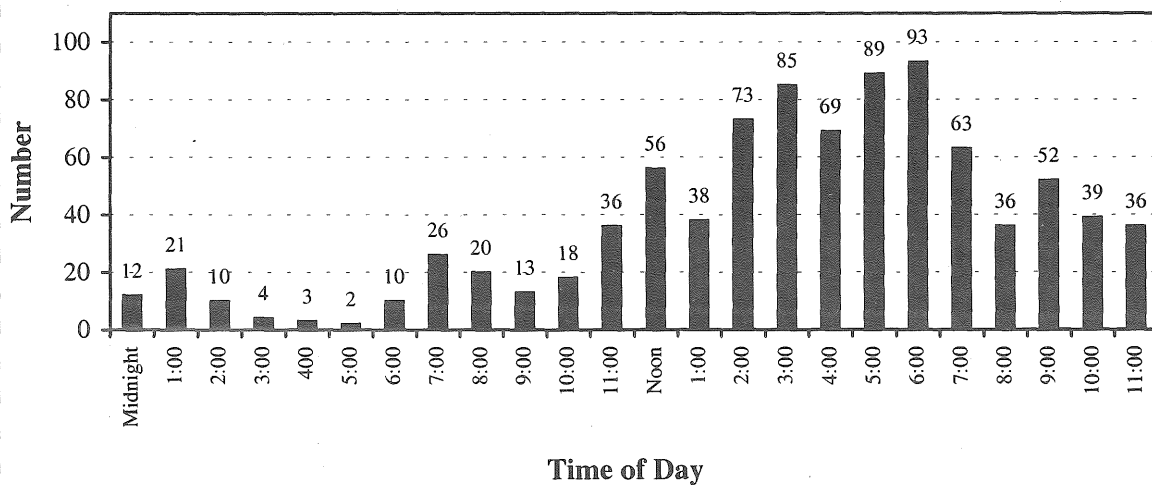


TABLE 4.05

## 1999 MOTORCYCLE CRASHES BY TIME AND DAY

| Hour<br>Beginning | Total<br>Crashes | Fatal<br>Crashes | Sunday |       | Monday |       | Tuesday |       | Wednesday |       | Thursday |       | Friday |       | Saturday |       |
|-------------------|------------------|------------------|--------|-------|--------|-------|---------|-------|-----------|-------|----------|-------|--------|-------|----------|-------|
|                   |                  |                  | All    | Fatal | All    | Fatal | All     | Fatal | All       | Fatal | All      | Fatal | All    | Fatal | All      | Fatal |
| Midnight          | 12               | 0                | 1      | 0     | 0      | 0     | 1       | 0     | 0         | 0     | 1        | 0     | 2      | 0     | 7        | 0     |
| 1:00              | 21               | 2                | 4      | 1     | 4      | 0     | 0       | 0     | 1         | 0     | 2        | 0     | 2      | 0     | 8        | 1     |
| 2:00              | 10               | 1                | 3      | 1     | 1      | 0     | 0       | 0     | 1         | 0     | 1        | 0     | 2      | 0     | 2        | 0     |
| 3:00              | 4                | 1                | 1      | 0     | 0      | 0     | 0       | 0     | 1         | 0     | 1        | 1     | 0      | 0     | 1        | 0     |
| 4:00              | 3                | 0                | 1      | 0     | 0      | 0     | 0       | 0     | 1         | 0     | 0        | 0     | 1      | 0     | 0        | 0     |
| 5:00              | 2                | 1                | 0      | 0     | 1      | 1     | 1       | 0     | 0         | 0     | 0        | 0     | 0      | 0     | 0        | 0     |
| 6:00              | 10               | 0                | 1      | 0     | 1      | 0     | 1       | 0     | 4         | 0     | 1        | 0     | 2      | 0     | 0        | 0     |
| 7:00              | 26               | 1                | 0      | 0     | 5      | 0     | 6       | 0     | 6         | 0     | 3        | 0     | 6      | 1     | 0        | 0     |
| 8:00              | 20               | 0                | 3      | 0     | 3      | 0     | 2       | 0     | 3         | 0     | 0        | 0     | 5      | 0     | 4        | 0     |
| 9:00              | 13               | 0                | 0      | 0     | 1      | 0     | 1       | 0     | 3         | 0     | 4        | 0     | 1      | 0     | 3        | 0     |
| 10:00             | 18               | 1                | 1      | 0     | 1      | 0     | 2       | 1     | 1         | 0     | 2        | 0     | 2      | 0     | 9        | 0     |
| 11:00             | 36               | 0                | 8      | 0     | 2      | 0     | 4       | 0     | 3         | 0     | 3        | 0     | 4      | 0     | 12       | 0     |
| Noon              | 56               | 5                | 11     | 2     | 6      | 1     | 8       | 0     | 1         | 0     | 9        | 1     | 12     | 0     | 9        | 1     |
| 1:00              | 38               | 1                | 7      | 0     | 5      | 0     | 2       | 0     | 8         | 0     | 1        | 0     | 6      | 1     | 9        | 0     |
| 2:00              | 73               | 3                | 21     | 0     | 3      | 0     | 5       | 0     | 5         | 1     | 9        | 1     | 13     | 0     | 17       | 1     |
| 3:00              | 85               | 2                | 11     | 1     | 8      | 0     | 9       | 0     | 8         | 0     | 12       | 0     | 20     | 0     | 17       | 1     |
| 4:00              | 69               | 1                | 13     | 0     | 7      | 0     | 8       | 0     | 8         | 0     | 9        | 0     | 9      | 0     | 15       | 1     |
| 5:00              | 89               | 2                | 10     | 1     | 11     | 1     | 11      | 0     | 12        | 0     | 10       | 0     | 18     | 0     | 17       | 0     |
| 6:00              | 93               | 3                | 10     | 0     | 7      | 0     | 10      | 1     | 16        | 1     | 13       | 0     | 25     | 0     | 12       | 1     |
| 7:00              | 63               | 0                | 12     | 0     | 8      | 0     | 7       | 0     | 5         | 0     | 7        | 0     | 12     | 0     | 12       | 0     |
| 8:00              | 36               | 2                | 3      | 0     | 6      | 1     | 7       | 0     | 2         | 0     | 7        | 1     | 5      | 0     | 6        | 0     |
| 9:00              | 52               | 2                | 8      | 0     | 5      | 0     | 7       | 0     | 5         | 0     | 4        | 0     | 12     | 2     | 11       | 0     |
| 10:00             | 39               | 1                | 4      | 0     | 5      | 0     | 4       | 0     | 7         | 1     | 6        | 0     | 5      | 0     | 8        | 0     |
| 11:00             | 36               | 0                | 5      | 0     | 5      | 0     | 1       | 0     | 2         | 0     | 6        | 0     | 10     | 0     | 7        | 0     |
| Not Stated        | 120              | 1                | 31     | 0     | 7      | 0     | 12      | 0     | 11        | 0     | 17       | 0     | 24     | 0     | 18       | 1     |
| Total             | 1,024            | 30               | 169    | 6     | 102    | 4     | 109     | 2     | 114       | 3     | 128      | 4     | 198    | 4     | 204      | 7     |



TABLE 4.06

## MOTORCYCLISTS KILLED OR INJURED BY AGE AND GENDER, 1999

| Age Group  | Killed |   |       | Severe |    |       | Moderate |    |       | Injured<br>Minor |    |        | Total |     |        |
|------------|--------|---|-------|--------|----|-------|----------|----|-------|------------------|----|--------|-------|-----|--------|
|            | M      | F | Total | M      | F  | Total | M        | F  | Total | M                | F  | Total* | M     | F   | Total* |
| 0 - 4      | 0      | 0 | 0     | 0      | 0  | 0     | 0        | 0  | 0     | 0                | 2  | 2      | 0     | 2   | 2      |
| 5 - 9      | 0      | 0 | 0     | 0      | 1  | 1     | 1        | 1  | 2     | 0                | 0  | 0      | 1     | 2   | 3      |
| 10 - 14    | 0      | 0 | 0     | 0      | 1  | 1     | 2        | 2  | 4     | 1                | 0  | 1      | 3     | 3   | 6      |
| 15 - 19    | 2      | 0 | 2     | 7      | 0  | 7     | 64       | 12 | 76    | 22               | 1  | 23     | 93    | 13  | 106    |
| 20 - 24    | 2      | 0 | 2     | 25     | 6  | 31    | 69       | 12 | 81    | 19               | 4  | 23     | 113   | 22  | 135    |
| 25 - 29    | 6      | 1 | 7     | 21     | 5  | 26    | 46       | 9  | 55    | 25               | 1  | 26     | 92    | 15  | 107    |
| 30 - 34    | 3      | 0 | 3     | 19     | 3  | 22    | 40       | 5  | 45    | 26               | 4  | 31     | 85    | 12  | 98     |
| 35 - 39    | 1      | 0 | 1     | 21     | 10 | 31    | 41       | 11 | 52    | 25               | 4  | 29     | 87    | 25  | 112    |
| 40 - 44    | 5      | 1 | 6     | 31     | 5  | 36    | 55       | 19 | 74    | 27               | 4  | 31     | 113   | 28  | 141    |
| 45 - 49    | 4      | 0 | 4     | 21     | 5  | 26    | 46       | 15 | 61    | 31               | 3  | 34     | 98    | 23  | 121    |
| 50 - 54    | 3      | 0 | 3     | 16     | 1  | 17    | 30       | 9  | 39    | 12               | 4  | 16     | 58    | 14  | 72     |
| 55 - 59    | 1      | 0 | 1     | 7      | 2  | 9     | 14       | 0  | 14    | 9                | 2  | 11     | 30    | 4   | 34     |
| 60 - 64    | 0      | 0 | 0     | 6      | 1  | 7     | 10       | 0  | 10    | 5                | 0  | 5      | 21    | 1   | 22     |
| 65 - 69    | 0      | 0 | 0     | 0      | 0  | 0     | 4        | 0  | 4     | 2                | 0  | 2      | 6     | 0   | 6      |
| 70 & Older | 0      | 0 | 0     | 3      | 0  | 3     | 5        | 0  | 5     | 4                | 1  | 5      | 12    | 1   | 13     |
| Not Stated | 0      | 0 | 0     | 1      | 1  | 2     | 0        | 3  | 3     | 0                | 6  | 8      | 1     | 10  | 13     |
| Total      | 27     | 2 | 29    | 178    | 41 | 219   | 427      | 98 | 525   | 208              | 36 | 247    | 813   | 175 | 991    |

\* Where columns do not add across to total, gender was not reported on the accident report form.

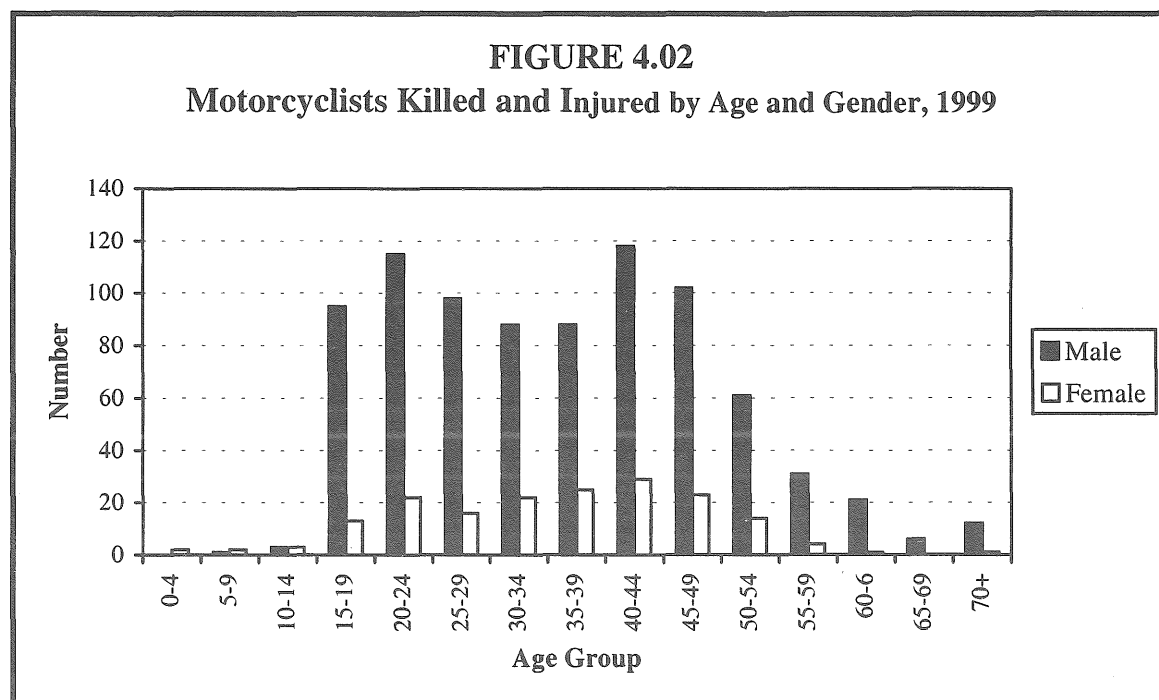


TABLE 4.07

## HELMET USE BY MOTORCYCLISTS KILLED OR INJURED, 1991 - 1999

|                | <u>Helmet Used</u> |         | <u>Helmet Not Used</u> |         | <u>Helmet Use Unknown</u> |         | <u>Total</u> |         |
|----------------|--------------------|---------|------------------------|---------|---------------------------|---------|--------------|---------|
|                | Number             | Percent | Number                 | Percent | Number                    | Percent | Number       | Percent |
| <b>Killed</b>  |                    |         |                        |         |                           |         |              |         |
| 1991           | 11                 | 27.5%   | 24                     | 60.0%   | 5                         | 12.5%   | 40           | 100.0%  |
| 1992           | 2                  | 7.1     | 23                     | 82.1    | 3                         | 10.7    | 28           | 100.0   |
| 1993           | 2                  | 5.9     | 30                     | 88.2    | 2                         | 5.9     | 34           | 100.0   |
| 1994           | 3                  | 7.0     | 30                     | 69.8    | 10                        | 23.3    | 43           | 100.0   |
| 1995           | 1                  | 2.9     | 30                     | 85.7    | 4                         | 11.4    | 35           | 100.0   |
| 1996           | 9                  | 21.4    | 29                     | 69.1    | 4                         | 9.5     | 42           | 100.0   |
| 1997           | 3                  | 12.5    | 17                     | 70.8    | 4                         | 16.7    | 24           | 100.0   |
| 1998           | 3                  | 7.5     | 27                     | 67.5    | 10                        | 25.0    | 40           | 100.0   |
| 1999           | 8                  | 27.6    | 18                     | 62.1    | 3                         | 10.3    | 29           | 100.0   |
| <b>Injured</b> |                    |         |                        |         |                           |         |              |         |
| 1991           | 310                | 22.8%   | 594                    | 43.8%   | 453                       | 33.4%   | 1,357        | 100.0%  |
| 1992           | 349                | 27.1    | 678                    | 52.6    | 261                       | 20.3    | 1,288        | 100.0   |
| 1993           | 298                | 25.9    | 599                    | 52.0    | 254                       | 22.1    | 1,151        | 100.0   |
| 1994           | 375                | 28.3    | 641                    | 48.4    | 308                       | 23.3    | 1,342        | 100.0   |
| 1995           | 279                | 26.3    | 544                    | 51.2    | 240                       | 22.6    | 1,063        | 100.0   |
| 1996           | 269                | 25.7    | 546                    | 52.2    | 231                       | 22.1    | 1,046        | 100.0   |
| 1997           | 225                | 24.5    | 470                    | 51.3    | 221                       | 24.1    | 916          | 100.0   |
| 1998           | 310                | 31.4    | 483                    | 48.9    | 194                       | 19.7    | 987          | 100.0   |
| 1999           | 282                | 28.4    | 533                    | 53.8    | 176                       | 17.8    | 991          | 100.0   |

TABLE 4.08

## ENDORSEMENT STATUS OF MOTORCYCLE OPERATORS INVOLVED IN FATAL CRASHES, 1989 - 1999

| Year | <u>Valid Endorsement*</u> |         | <u>Permit Only</u> |         | <u>Canceled, Suspended, Revoked</u> |         | <u>No Endorsement</u> |         | <u>Total** For Year</u> |         |
|------|---------------------------|---------|--------------------|---------|-------------------------------------|---------|-----------------------|---------|-------------------------|---------|
|      | Number                    | Percent | Number             | Percent | Number                              | Percent | Number                | Percent | Number                  | Percent |
| 1989 | 22                        | 56.4    | 0                  | 0.0     | 8                                   | 20.5    | 9                     | 23.1    | 39                      | 100.0   |
| 1990 | 25                        | 53.2    | 2                  | 4.3     | 9                                   | 19.1    | 11                    | 23.4    | 47                      | 100.0   |
| 1991 | 28                        | 71.8    | 1                  | 2.6     | 4                                   | 10.3    | 5                     | 12.8    | 39                      | 100.0   |
| 1992 | 17                        | 60.7    | 0                  | 0.0     | 5                                   | 17.9    | 4                     | 14.3    | 28                      | 100.0   |
| 1993 | 21                        | 65.6    | 1                  | 3.1     | 4                                   | 12.5    | 4                     | 12.5    | 32                      | 100.0   |
| 1994 | 33                        | 75.0    | 0                  | 0.0     | 3                                   | 6.8     | 7                     | 15.9    | 44                      | 100.0   |
| 1995 | 21                        | 65.6    | 0                  | 0.0     | 5                                   | 15.6    | 6                     | 18.8    | 32                      | 100.0   |
| 1996 | 27                        | 64.3    | 0                  | 0.0     | 4                                   | 9.5     | 9                     | 21.4    | 42                      | 100.0   |
| 1997 | 21                        | 91.3    | 0                  | 0.0     | 0                                   | 0.0     | 2                     | 8.7     | 23                      | 100.0   |
| 1998 | 34                        | 75.6    | 1                  | 2.2     | 4                                   | 8.9     | 6                     | 13.3    | 45                      | 100.0   |
| 1999 | 28                        | 90.3    | 0                  | 0.0     | 0                                   | 0.0     | 3                     | 9.7     | 31                      | 100.0   |

\* A valid endorsement means that the driver's license has been "endorsed" to permit operation of a motorcycle.

\*\* Rows may not add to total due to the unknown status of some motorcycle operators.

TABLE 4.09

## ALCOHOL USE BY MOTORCYCLE DRIVERS, 1987 - 1999

| Year | Killed | Tested | Alcohol Concentration* |             |               |
|------|--------|--------|------------------------|-------------|---------------|
|      |        |        | (.00)                  | (.01 - .09) | (.10 or more) |
| 1987 | 45     | 42     | 17 (40%)               | 3 (7%)      | 22 (52%)      |
| 1988 | 52     | 45     | 20 (44%)               | 8 (18%)     | 17 (38%)      |
| 1989 | 31     | 30     | 9 (30%)                | 3 (10%)     | 18 (60%)      |
| 1990 | 43     | 35     | 10 (29%)               | 5 (14%)     | 20 (57%)      |
| 1991 | 36     | 30     | 13 (43%)               | 3 (10%)     | 14 (47%)      |
| 1992 | 23     | 21     | 10 (48%)               | 0 (0%)      | 11 (52%)      |
| 1993 | 29     | 26     | 9 (35%)                | 3 (12%)     | 14 (54%)      |
| 1994 | 36     | 27     | 17 (63%)               | 2 (7%)      | 8 (30%)       |
| 1995 | 25     | 22     | 7 (32%)                | 2 (9%)      | 13 (59%)      |
| 1996 | 38     | 36     | 22 (61%)               | 4 (11%)     | 10 (28%)      |
| 1997 | 22     | 19     | 7 (37%)                | 3 (16%)     | 9 (47%)       |
| 1998 | 36     | 35     | 15 (43%)               | 2 (6%)      | 18 (51%)      |
| 1999 | 28     | 22     | 12 (55%)               | 2 (9%)      | 8 (36%)       |

\*Percentages are based on those motorcycle drivers tested.

TABLE 4.10

1999 MOTORCYCLE DRIVER FATALITIES'  
LEVEL OF ALCOHOL CONCENTRATION BY AGE

| Age          | Killed | Tested | Alcohol Concentration* |               | Alcohol Concentration |         |         |         |         |         |            |
|--------------|--------|--------|------------------------|---------------|-----------------------|---------|---------|---------|---------|---------|------------|
|              |        |        | (.01 - .09)            | (.10 or more) | .00                   | .01-.04 | .05-.09 | .10-.14 | .15-.19 | .20-.24 | .25 & Over |
| 14 & Younger | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 15           | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 16           | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 17           | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 18           | 1      | 1      | 0                      | 1             | 0                     | 0       | 0       | 0       | 0       | 1       | 0          |
| 19           | 1      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 20           | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| Under 21     | 2      | 1      | 0                      | 1             | 0                     | 0       | 0       | 0       | 0       | 1       | 0          |
| 14 & Younger | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 15 - 19      | 2      | 1      | 0                      | 1             | 0                     | 0       | 0       | 0       | 0       | 1       | 0          |
| 20 - 24      | 2      | 2      | 0                      | 1             | 1                     | 0       | 0       | 1       | 0       | 0       | 0          |
| 25 - 29      | 6      | 5      | 1                      | 1             | 3                     | 0       | 1       | 1       | 0       | 0       | 0          |
| 30 - 34      | 3      | 2      | 0                      | 1             | 1                     | 0       | 0       | 1       | 0       | 0       | 0          |
| 35 - 39      | 1      | 1      | 0                      | 0             | 1                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 40 - 44      | 6      | 5      | 0                      | 2             | 3                     | 0       | 0       | 1       | 0       | 0       | 1          |
| 45 - 49      | 4      | 4      | 1                      | 2             | 1                     | 0       | 1       | 1       | 0       | 1       | 0          |
| 50 - 54      | 3      | 2      | 0                      | 0             | 2                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 55 - 59      | 1      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| 60 & Older   | 0      | 0      | 0                      | 0             | 0                     | 0       | 0       | 0       | 0       | 0       | 0          |
| Total        | 28     | 22     | 2                      | 8             | 12                    | 0       | 2       | 5       | 0       | 2       | 1          |

\* Percentages are based on those motorcycle drivers tested.

TABLE 4.11

## CONTRIBUTING FACTORS IN 1999 MOTORCYCLE CRASHES

| Contributing Factors             | Single Vehicle Crashes    |               | Multi-Vehicle Crashes     |               |                      |               |
|----------------------------------|---------------------------|---------------|---------------------------|---------------|----------------------|---------------|
|                                  | Attributed to             |               | Attributed to             |               | Attributed to        |               |
|                                  | <u>Motorcycle Drivers</u> |               | <u>Motorcycle Drivers</u> |               | <u>Other Drivers</u> |               |
|                                  | Number                    | Percent       | Number                    | Percent       | Number               | Percent       |
| <b>Human Factors:</b>            |                           |               |                           |               |                      |               |
| Illegal/Unsafe Speed             | 129                       | 24.1%         | 41                        | 13.8%         | 11                   | 2.2%          |
| Driver Inexperience              | 78                        | 14.6          | 18                        | 6.1           | 11                   | 2.2           |
| Driver Inattention/Distracted    | 74                        | 13.8          | 73                        | 24.6          | 130                  | 25.5          |
| Physical Impairment              | 57                        | 10.6          | 12                        | 4.0           | 10                   | 2.0           |
| Improper/Unsafe Lane Use         | 26                        | 4.9           | 21                        | 7.1           | 30                   | 5.9           |
| Following Too Closely            | 13                        | 2.4           | 36                        | 12.1          | 27                   | 5.3           |
| Improper Passing / Overtaking    | 10                        | 1.9           | 11                        | 3.7           | 3                    | 0.6           |
| Failure to Yield Right of Way    | 7                         | 1.3           | 20                        | 6.7           | 172                  | 33.7          |
| Improper Turn                    | 6                         | 1.1           | 7                         | 2.4           | 29                   | 5.7           |
| Vision Obscured                  | 5                         | 0.9           | 4                         | 1.3           | 23                   | 4.5           |
| Improper Park/Start/Stop         | 3                         | 0.6           | 5                         | 1.7           | 9                    | 1.8           |
| Disregard Traffic Control Device | 2                         | 0.4           | 8                         | 2.7           | 21                   | 4.1           |
| Driving Left of Center           | 2                         | 0.4           | 5                         | 1.7           | 3                    | 0.6           |
| Unsafe Backing                   | 1                         | 0.2           | 0                         | 0.0           | 7                    | 1.4           |
| Improper or No Signal            | 0                         | 0.0           | 0                         | 0.0           | 3                    | 0.6           |
| Impeding Traffic                 | 0                         | 0.0           | 0                         | 0.0           | 1                    | 0.2           |
| Failure to Use Lights            | 0                         | 0.0           | 4                         | 1.3           | 0                    | 0.0           |
| Other Human Factor               | 15                        | 2.8           | 5                         | 1.7           | 2                    | 0.4           |
| <b>Vehicular Factors:</b>        |                           |               |                           |               |                      |               |
| Skidding                         | 31                        | 5.8           | 4                         | 1.3           | 0                    | 0.0           |
| Defective Brakes                 | 7                         | 1.3           | 4                         | 1.3           | 2                    | 0.4           |
| Other Vehicular Factors          | 10                        | 1.9           | 1                         | 0.3           | 2                    | 0.4           |
| <b>Miscellaneous Factors:</b>    |                           |               |                           |               |                      |               |
| Weather Conditions               | 11                        | 2.1           | 2                         | 0.7           | 1                    | 0.2           |
| Other                            | 49                        | 9.1           | 16                        | 5.4           | 13                   | 2.5           |
| <b>Total</b>                     | <b>536</b>                | <b>100.0%</b> | <b>297</b>                | <b>100.0%</b> | <b>510</b>           | <b>100.0%</b> |
| Vehicles for Which There Was     |                           |               |                           |               |                      |               |
| “No Clear Contributing Factor”   | 125                       |               | 301                       |               | 155                  |               |
| Total Number Drivers             | 505                       |               | 547                       |               | 534                  |               |

Zero, one, or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to differ from the number of drivers. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding.

## V: TRUCK CRASHES

This section summarizes data on crashes involving trucks. On the crash report form, trucks are identified as any of the following eight types of vehicles: (1) two-axle, six-tire single unit truck or stepvan, (2) three-or-more-axle single unit truck, (3) single-unit truck with trailer, (4) truck tractor with no trailer, (5) truck tractor with semi-trailer, (6) truck tractor with double trailers, (7) truck tractor with triple trailers, (8) heavy truck of other or unknown type. A crash involving any of these vehicles is classified as a truck crash. Pickup trucks and vans are not counted as trucks in this section.

### **Truck crashes increase**

In the nine-year period from 1990 through 1998, Minnesota averaged 5,139 truck crashes per year. In 1998, there were 4,761 truck crashes. Thus the 1999 total of 5,156 represented an 8% increase from the previous year.

### **Deaths and injuries remain high**

There were 84 fatal crashes involving a truck in 1999, resulting in 94 fatalities. In addition, 2,026 people were injured. From 1990 through 1998, the average number of deaths and injuries per year was 88 and 1,950 respectively.

### **Persons killed or injured usually in other vehicles**

In a two-vehicle collision, relative vehicle weight is a recognized safety advantage. Of the 94 people killed in truck-involved crashes, only 10 were truck occupants. And, of the 2,026 people injured, only 446 (22%) were truck occupants.

### **Contributing factors similar for truck and non-truck drivers**

Reporting officers indicated they could determine no clear contributing factor for 39% of the truck drivers and for 45% of the other vehicle drivers. Otherwise, contributing factors were similar for the two groups.

Driver inattention or distraction (24% for truck drivers and 23% for non-truck drivers) was the top factor cited for both.

Defective equipment and other vehicular factors were far more common on trucks than on the other vehicles. Not including "skidding", vehicular factors were reported 284 times compared to just 40 times for the other vehicles.

Truck drivers were less likely to be alcohol-impaired than non-truck drivers. For the truck drivers, 32 were reported to have been drinking at the time of the crash, as compared to 97 for the non-truck drivers.

### **Truck crashes are workday-related**

Truck crashes appear about equally distributed across warm-weather and cold-weather months, but they are very strongly tied to the workday. In 1999, Monday through Friday averaged 937 truck crashes per day, compared to just 235 on the average per day for Saturday or Sunday.

### **Driving conditions**

Driving conditions are usually good in Minnesota, and most truck crashes occurred on dry roads in clear weather. However, 18% of the fatal crashes and 24% of the 1,400 injury crashes occurred on road surfaces reported to be wet, or to be covered with snow or slush, or with ice or packed snow.

### **Truck crashes in rural areas**

For this report, rural is defined as an area that has less than 5,000 population. Seventy-five percent of the fatal truck crashes, and 45% of the injury crashes occurred in rural areas. A majority (64%) of the fatal truck crashes occurred on U.S. Trunk or State Trunk Highways.

TABLE 5.01

## TRUCK CRASH SUMMARY, 1990 - 1999

|                            | 1990         | 1991         | 1992         | 1993         | 1994         | 1995         | 1996         | 1997         | 1998         | 1999         |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Total Crashes</b>       | <b>6,712</b> | <b>5,152</b> | <b>4,463</b> | <b>4,931</b> | <b>5,132</b> | <b>4,752</b> | <b>5,358</b> | <b>4,991</b> | <b>4,761</b> | <b>5,156</b> |
| Fatal Crashes              | 70           | 72           | 65           | 63           | 81           | 77           | 60           | 90           | 85           | 84           |
| Persons Killed             | 83           | 85           | 84           | 77           | 94           | 86           | 79           | 105          | 97           | 94           |
| Injury Crashes             | 1,652        | 1,250        | 1,213        | 1,268        | 1,369        | 1,277        | 1,473        | 1,389        | 1,408        | 1,400        |
| Severe                     | 225          | 137          | 167          | 148          | 151          | 153          | 176          | 163          | 180          | 150          |
| Moderate                   | 617          | 477          | 418          | 452          | 481          | 470          | 516          | 505          | 492          | 567          |
| Minor                      | 810          | 636          | 628          | 668          | 737          | 654          | 781          | 721          | 736          | 683          |
| Persons Injured            | 2,390        | 1,762        | 1,721        | 1,764        | 1,902        | 1,869        | 2,074        | 2,042        | 2,031        | 2,026        |
| Severe                     | 285          | 179          | 222          | 198          | 203          | 196          | 217          | 215          | 219          | 212          |
| Moderate                   | 876          | 667          | 560          | 598          | 630          | 645          | 708          | 721          | 700          | 782          |
| Minor                      | 1,229        | 916          | 939          | 968          | 1,069        | 1,028        | 1,149        | 1,106        | 1,112        | 1,032        |
| Property Damage<br>Crashes | 4,990        | 3,830        | 3,185        | 3,600        | 3,682        | 3,398        | 3,825        | 3,512        | 3,268        | 3,672        |

TABLE 5.02

PERSONS KILLED OR INJURED IN 1999 TRUCK CRASHES  
BY VEHICLE OCCUPIED

| Vehicle Type  | Killed    | Injured    |            |              | Total        |
|---|-----------|------------|------------|--------------|--------------|
|   |           | Severe     | Moderate   | Minor        |              |
| Automobile  | 55        | 97         | 392        | 558          | 1,047        |
| Pickup Truck  | 13        | 35         | 116        | 124          | 275          |
| Van   | 8         | 29         | 61         | 80           | 170          |
| Police or Fire Department Vehicle                   | 0         | 0          | 1          | 1            | 2            |
| School Bus  | 1         | 0          | 8          | 6            | 14           |
| Snowmobile  | 0         | 0          | 0          | 1            | 1            |
| Farm Equipment                                      | 0         | 0          | 1          | 1            | 2            |
| Motorcycle  | 0         | 3          | 6          | 2            | 11           |
| Hit and Run Vehicle                                 | 0         | 1          | 1          | 1            | 3            |
| Two-Axle, Six-Tire, Single<br>Unit Truck or Stepvan | 3         | 9          | 38         | 62           | 109          |
| Three or More Axle Single Unit Truck                | 0         | 11         | 33         | 22           | 66           |
| Single Unit Truck with Trailer                      | 0         | 0          | 9          | 18           | 27           |
| Truck Tractor with No Trailer                       | 0         | 0          | 6          | 9            | 15           |
| Truck Tractor with Semi Trailer                     | 7         | 17         | 79         | 115          | 211          |
| Truck Tractor with Twin Trailers                    | 0         | 0          | 3          | 3            | 6            |
| Heavy Truck--Other or Unknown Type                  | 0         | 2          | 7          | 3            | 12           |
| Other or Unknown Vehicle Type                       | 1         | 1          | 6          | 16           | 23           |
| Bicycle   | 0         | 3          | 4          | 2            | 9            |
| Pedestrian  | 6         | 4          | 11         | 8            | 23           |
| <b>Total</b>  | <b>94</b> | <b>212</b> | <b>782</b> | <b>1,032</b> | <b>2,026</b> |

TABLE 5.03

## CONTRIBUTING FACTORS IN 1999 TRUCK CRASHES

| <b>Contributing Factors</b>             | <b>Attributed to<br/>Truck Vehicles</b> |                | <b>Attributed to<br/>Non-Truck Vehicles</b> |                |
|---|---|----------------|---|----------------|
|   | <b>Number</b>                           | <b>Percent</b> | <b>Number</b>                               | <b>Percent</b> |
| <b>Human Factors</b>                    |   |                |   |                |
| Driver Inattention/Distracted           | 1,075                                   | 24.4%          | 826   | 23.1%          |
| Illegal/Unsafe Speed                    | 419                                     | 9.5            | 415   | 11.6           |
| Failure to Yield Right of Way           | 353                                     | 8.0            | 458   | 12.8           |
| Improper or Unsafe Lane Use             | 348                                     | 7.9            | 320   | 8.9            |
| Following Too Closely                   | 327                                     | 7.4            | 241   | 6.7            |
| Improper Turn                           | 182                                     | 4.1            | 81  | 2.3            |
| Unsafe Backing                          | 173                                     | 3.9            | 19  | 0.5            |
| Vision Obscured                         | 172                                     | 3.9            | 67  | 1.9            |
| Disregard for Traffic Control Device    | 96                                      | 2.2            | 111   | 3.1            |
| Improper Passing or Overtaking          | 70                                      | 1.6            | 165   | 4.6            |
| Driver Inexperience                     | 69                                      | 1.6            | 102   | 2.8            |
| Improper Parking, Starting, or Stopping | 67                                      | 1.5            | 52  | 1.5            |
| Physical Impairment                     | 52                                      | 1.2            | 100   | 2.8            |
| Driving Left of Center (Not Passing)    | 38                                      | 0.9            | 60  | 1.7            |
| Improper/No Signal                      | 32                                      | 0.7            | 10  | 0.3            |
| Impeding Traffic                        | 10                                      | 0.2            | 12  | 0.3            |
| Driver on Phone/CB/2-Way Radio          | 6                                       | 0.1            | 5   | 0.1            |
| Failure to Use Lights                   | 4                                       | 0.1            | 3   | 0.1            |
| Pedestrian Error/Violation              | 0                                       | 0.0            | 8   | 0.2            |
| Other Human Factors                     | 66                                      | 1.5            | 37  | 1.0            |
| <b>Vehicular Factors</b>                |   |                |   |                |
| Skidding                                | 104                                     | 2.4            | 108   | 3.0            |
| Defective Brakes                        | 90                                      | 2.0            | 9   | 0.3            |
| Oversize/Overweight Vehicle             | 48                                      | 1.1            | 3   | 0.1            |
| Defective Tire                          | 29                                      | 0.7            | 8   | 0.2            |
| Defective Lights                        | 14                                      | 0.3            | 3   | 0.1            |
| Other Vehicular Factor                  | 103                                     | 2.3            | 17  | 0.5            |
| <b>Miscellaneous Factors</b>            |   |                |   |                |
| Weather                                 | 244                                     | 5.5            | 204   | 5.7            |
| Other                                   | 218                                     | 4.9            | 138   | 3.9            |
| Total Contributing Factors Cited        | 4,409                                   | 100%           | 3,582                                       | 100%           |
| Vehicles for Which There Was            |   |                |   |                |
| "No Clear Contributing Factor"          | 2,103                                   |                | 2,116                                       |                |
| Total Number of Vehicles                | 5,387                                   |                | 4,714                                       |                |

Zero, one, or two contributing factors may be associated with each vehicle. This may cause the sum of the factors cited to differ from the number of vehicles. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding. Bicyclists and pedestrians are included in the "non-truck vehicles" columns in this table. Human factors with a frequency of less than one-tenth of one percent are merged into the category "other human factors."

TABLE 5.04

## AGE OF TRUCK DRIVERS IN 1999 CRASHES

| Driver Age | Truck or<br>Truck Tractor | Truck with<br>Semi-Trailer | Truck with<br>Twin Trailer | Truck with<br>Other Trailer | Total |
|------------|---------------------------|----------------------------|----------------------------|-----------------------------|-------|
| 10 - 14    | 1                         | 0                          | 0                          | 0                           | 1     |
| 15 - 19    | 98                        | 19                         | 0                          | 22                          | 139   |
| 20 - 24    | 257                       | 199                        | 3                          | 40                          | 499   |
| 25 - 29    | 288                       | 308                        | 3                          | 34                          | 633   |
| 30 - 34    | 284                       | 354                        | 2                          | 44                          | 684   |
| 35 - 39    | 319                       | 411                        | 6                          | 61                          | 797   |
| 40 - 44    | 261                       | 394                        | 7                          | 61                          | 723   |
| 45 - 49    | 183                       | 322                        | 5                          | 44                          | 554   |
| 50 - 54    | 134                       | 288                        | 6                          | 32                          | 460   |
| 55 - 59    | 109                       | 224                        | 5                          | 24                          | 362   |
| 60 - 64    | 78                        | 115                        | 1                          | 16                          | 210   |
| 65 & Older | 54                        | 64                         | 0                          | 20                          | 138   |
| Not Stated | 16                        | 28                         | 1                          | 1                           | 46    |
| Total*     | 2,082                     | 2,726                      | 39                         | 399                         | 5,246 |

\* There were 5,387 trucks in crashes in 1999. However, 132 of these were parked vehicles. The driver could not be identified for an additional 9 of these trucks. This table tabulates the ages of drivers for the remaining 5,246 trucks where it was possible to identify a driver.

TABLE 5.05

DRIVERS IN 1999 TRUCK CRASHES  
BY PHYSICAL CONDITION\*

| Physical Condition   | Truck Driver |         | Other Driver |         |
|----------------------|--------------|---------|--------------|---------|
|                      | Number       | Percent | Number       | Percent |
| Normal               | 4,880        | 93.0%   | 3,990        | 89.4%   |
| Under the Influence  | 13           | 0.2     | 69           | 1.5     |
| Had Been Drinking    | 11           | 0.2     | 28           | 0.6     |
| Driver >.04 BAC      | 8            | 0.2     | 0            | 0.0     |
| Had Been Using Drugs | 1            | 0.0     | 1            | 0.0     |
| Asleep               | 22           | 0.4     | 16           | 0.4     |
| Fatigued             | 19           | 0.4     | 9            | 0.2     |
| Ill                  | 1            | 0.0     | 3            | 0.1     |
| Other                | 10           | 0.2     | 21           | 0.5     |
| Unknown              | 281          | 5.4     | 327          | 7.3     |
| Total **             | 5,246        | 100%    | 4,464        | 100%    |

\* As noted by police officer on accident report.

\*\* There were 5,387 trucks in crashes in 1999. However, 132 were parked. The driver could not be identified for an additional 9. This table tabulates the apparent physical condition of drivers for the remaining 5,246 trucks where it was possible to identify a driver. Also, there were 4,714 non-truck motor vehicles in 1999 truck crashes. However, 197 of them were parked, and there were 53 more for which a driver could not be identified, leaving 4,464 for which an apparent physical condition was recorded.



TABLE 5.06

## 1999 TRUCK CRASHES BY FIRST HARMFUL EVENT

| First Harmful Event    | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed    | Injured      |
|------------------------|------------------|-------------------|-------------------------------|------------------|-----------|--------------|
| <b>Collision With:</b> |                  |                   |                               |                  |           |              |
| Other Motor Vehicle    | 69               | 1,115             | 2,689                         | 3,873            | 78        | 1,690        |
| Parked Motor Vehicle   | 1                | 35                | 185                           | 221              | 2         | 52           |
| Railroad Train         | 0                | 4                 | 10                            | 14               | 0         | 4            |
| Bicycle                | 0                | 8                 | 0                             | 8                | 0         | 8            |
| Pedestrian             | 4                | 14                | 0                             | 18               | 4         | 16           |
| Deer                   | 0                | 2                 | 50                            | 52               | 0         | 2            |
| Other Animal           | 0                | 1                 | 23                            | 24               | 0         | 4            |
| Fixed Object           | 5                | 60                | 334                           | 399              | 5         | 71           |
| Other Object           | 0                | 6                 | 37                            | 43               | 0         | 7            |
| <b>Non-Collision:</b>  |                  |                   |                               |                  |           |              |
| Overturn               | 5                | 134               | 171                           | 310              | 5         | 149          |
| Fire or Explosion      | 0                | 0                 | 14                            | 14               | 0         | 0            |
| <b>Other</b>           | 0                | 21                | 159                           | 180              | 0         | 23           |
| <b>Total</b>           | <b>84</b>        | <b>1,400</b>      | <b>3,672</b>                  | <b>5,156</b>     | <b>94</b> | <b>2,026</b> |

TABLE 5.07

## 1999 TRUCK CRASHES BY MONTH

| Month        | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed    | Injured      |
|--------------|------------------|-------------------|-------------------------------|------------------|-----------|--------------|
| January      | 2                | 127               | 458                           | 587              | 2         | 158          |
| February     | 11               | 96                | 248                           | 355              | 11        | 141          |
| March        | 6                | 88                | 225                           | 319              | 7         | 134          |
| April        | 4                | 80                | 251                           | 335              | 4         | 114          |
| May          | 5                | 105               | 280                           | 390              | 5         | 168          |
| June         | 8                | 135               | 344                           | 487              | 10        | 187          |
| July         | 7                | 140               | 304                           | 451              | 7         | 193          |
| August       | 9                | 138               | 326                           | 473              | 11        | 212          |
| September    | 6                | 130               | 327                           | 463              | 7         | 179          |
| October      | 7                | 146               | 348                           | 501              | 7         | 197          |
| November     | 8                | 110               | 256                           | 374              | 9         | 170          |
| December     | 11               | 105               | 305                           | 421              | 14        | 173          |
| <b>Total</b> | <b>84</b>        | <b>1,400</b>      | <b>3,672</b>                  | <b>5,156</b>     | <b>94</b> | <b>2,026</b> |

TABLE 5.08

**1999 TRUCK CRASHES BY TIME AND DAY**

| <b>Time of Day</b> | <b>Total</b> | <b>Sunday</b> | <b>Monday</b> | <b>Tuesday</b> | <b>Wednesday</b> | <b>Thursday</b> | <b>Friday</b> | <b>Saturday</b> |
|--------------------|--------------|---------------|---------------|----------------|------------------|-----------------|---------------|-----------------|
| Midnight - 2:59 AM | 106          | 14            | 11            | 12             | 19               | 9               | 23            | 18              |
| 3:00 - 5:59 AM     | 118          | 6             | 20            | 19             | 24               | 20              | 18            | 11              |
| 6:00 - 8:59 AM     | 762          | 8             | 141           | 145            | 152              | 154             | 131           | 31              |
| 9:00 - 11:59 AM    | 988          | 25            | 197           | 199            | 175              | 181             | 158           | 53              |
| Noon - 2:59 PM     | 1,098        | 24            | 229           | 179            | 176              | 203             | 213           | 74              |
| 3:00 - 5:59 PM     | 931          | 30            | 157           | 181            | 183              | 173             | 162           | 45              |
| 6:00 - 8:59 PM     | 330          | 19            | 56            | 59             | 47               | 56              | 71            | 22              |
| 9:00 - 11:59 PM    | 192          | 13            | 33            | 46             | 34               | 30              | 26            | 10              |
| Unknown            | 631          | 35            | 120           | 103            | 121              | 116             | 104           | 32              |
| <b>Total</b>       | <b>5,156</b> | <b>174</b>    | <b>964</b>    | <b>943</b>     | <b>931</b>       | <b>942</b>      | <b>906</b>    | <b>296</b>      |

**FIGURE 5.01**  
**1999 Truck Crashes by Time of Day**

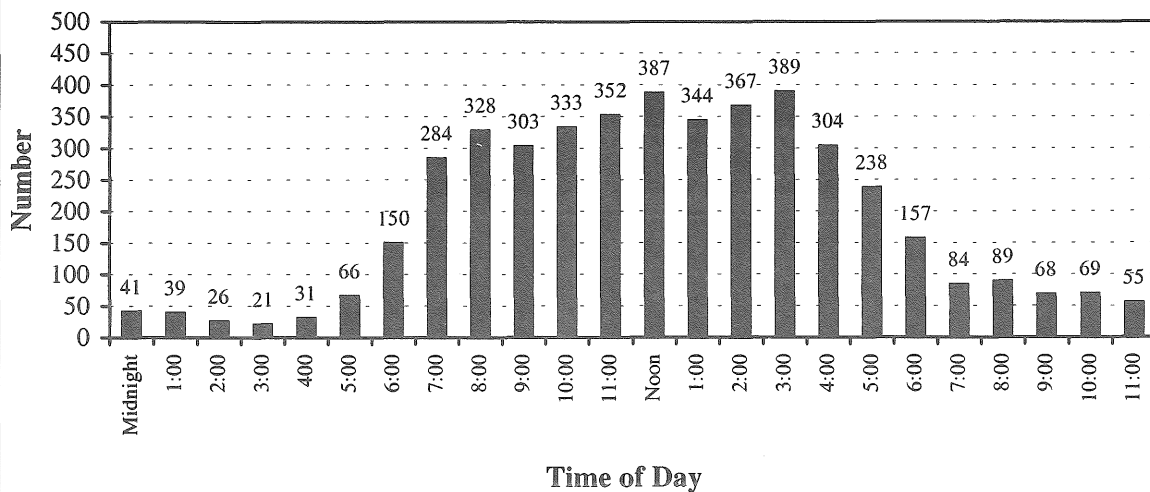


TABLE 5.09

## 1999 TRUCK CRASHES BY ROAD SURFACE CONDITION

| Road Surface Condition | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed | Injured |
|------------------------|---------------|----------------|-------------------------|---------------|--------|---------|
| Dry                    | 69            | 1,044          | 2,575                   | 3,688         | 79     | 1,522   |
| Wet                    | 8             | 155            | 422                     | 585           | 8      | 240     |
| Snow or Slush          | 4             | 61             | 202                     | 267           | 4      | 78      |
| Ice or Packed Snow     | 3             | 118            | 410                     | 531           | 3      | 158     |
| Other                  | 0             | 13             | 30                      | 43            | 0      | 18      |
| Unknown                | 0             | 9              | 33                      | 42            | 0      | 10      |
| Total                  | 84            | 1,400          | 3,672                   | 5,156         | 94     | 2,026   |

TABLE 5.10

## 1999 TRUCK CRASHES BY WEATHER CONDITION

| Weather Condition        | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed | Injured |
|--------------------------|---------------|----------------|-------------------------|---------------|--------|---------|
| Clear                    | 51            | 844            | 2,082                   | 2,977         | 58     | 1,208   |
| Cloudy                   | 19            | 316            | 870                     | 1,205         | 22     | 470     |
| Rain                     | 6             | 90             | 252                     | 348           | 6      | 134     |
| Snow                     | 4             | 85             | 265                     | 354           | 4      | 116     |
| Sleet/Hail/Freezing Rain | 0             | 17             | 60                      | 77            | 0      | 23      |
| Fog/Smog/Smoke           | 0             | 14             | 13                      | 27            | 0      | 27      |
| Blowing Sand/Dust/Snow   | 2             | 21             | 68                      | 91            | 2      | 31      |
| Severe Cross Winds       | 0             | 6              | 17                      | 23            | 0      | 9       |
| Other                    | 2             | 0              | 4                       | 6             | 2      | 1       |
| Unknown                  | 0             | 7              | 41                      | 48            | 0      | 7       |
| Total                    | 84            | 1,400          | 3,672                   | 5,156         | 94     | 2,026   |

TABLE 5.11

## 1999 TRUCK CRASHES BY POPULATION OF AREA

| <u>Population of<br/>City or Township</u> | <u>Fatal<br/>Crashes</u> | <u>Injury<br/>Crashes</u> | <u>Property<br/>Damage<br/>Crashes</u> | <u>Total<br/>Crashes</u> | <u>Killed</u> | <u>Injured</u> |
|---|--------------------------|---------------------------|--|--------------------------|---------------|----------------|
| 100,000 & Over                            | 5                        | 176                       | 613                                    | 794                      | 5             | 243            |
| 50,000 - 99,999                           | 3                        | 117                       | 311                                    | 431                      | 5             | 159            |
| 25,000 - 49,999                           | 1                        | 190                       | 532                                    | 723                      | 1             | 250            |
| 10,000 - 24,999                           | 4                        | 194                       | 529                                    | 727                      | 5             | 270            |
| 5,000 - 9,999                             | 8                        | 93                        | 279                                    | 380                      | 10            | 133            |
| 2,500 - 4,999                             | 3                        | 51                        | 146                                    | 200                      | 3             | 77             |
| 1,000 - 2,499                             | 4                        | 33                        | 104                                    | 141                      | 4             | 59             |
| Under 1,000                               | 56                       | 546                       | 1,158                                  | 1,760                    | 61            | 835            |
| Total                                     | 84                       | 1,400                     | 3,672                                  | 5,156                    | 94            | 2,026          |

TABLE 5.12

## 1999 TRUCK CRASHES BY TYPE OF ROADWAY

| <u>Roadway Type</u>      | <u>Fatal<br/>Crashes</u> | <u>Injury<br/>Crashes</u> | <u>Property<br/>Damage<br/>Crashes</u> | <u>Total<br/>Crashes</u> | <u>Killed</u> | <u>Injured</u> |
|--------------------------|--------------------------|---------------------------|--|--------------------------|---------------|----------------|
| Interstate Highway       | 14                       | 292                       | 913                                    | 1,219                    | 17            | 423            |
| US Trunk Highway         | 30                       | 264                       | 586                                    | 880                      | 35            | 418            |
| State Trunk Highway      | 24                       | 347                       | 704                                    | 1,075                    | 24            | 521            |
| County State-Aid Highway | 13                       | 306                       | 625                                    | 944                      | 15            | 431            |
| County Road              | 0                        | 19                        | 44                                     | 63                       | 0             | 23             |
| Township Road            | 0                        | 15                        | 51                                     | 66                       | 0             | 15             |
| Local Street             | 3                        | 152                       | 704                                    | 859                      | 3             | 189            |
| Other Road               | 0                        | 5                         | 45                                     | 50                       | 0             | 6              |
| Total                    | 84                       | 1,400                     | 3,672                                  | 5,156                    | 94            | 2,026          |

## **VI: PEDESTRIAN CRASHES**

This section deals with motor vehicle crashes that injure or kill pedestrians. Prior to 1984, a crash was defined as a pedestrian crash only if the pedestrian was the first "object" struck by a motor vehicle. Beginning in 1984, any crash where a pedestrian is struck and injured is defined as a pedestrian crash.

### **Pedestrian crashes decline**

In 1999, there were 1,329 crashes in which a pedestrian was injured or killed by a motor vehicle. This figure represents the lowest number of pedestrian crashes since traffic crash records have been kept. Also, the number of pedestrian crashes in 1999 represents a 5% decrease from the previous year.

### **Decrease in deaths and injuries**

The number of pedestrians killed and injured decreased in 1999. Fifty-one pedestrians were killed, a 9% decrease, and 1,330 were injured, a 6% decrease from the previous year. In 1999, four percent of pedestrian crashes resulted in a death, compared to about one-half of one percent for all traffic crashes.

### **Young people at greater risk**

In all pedestrian crashes, persons less than 25 years of age accounted for 44% of the persons killed or injured. The numbers of people injured mostly decreased as age increased. Males were more likely than females to be injured, as male pedestrians outnumbered females as victims by almost 25%.

### **Urban areas and rush-hours**

In 1999, 81% of pedestrian crashes occurred in urban areas. However, 19 of the 51 fatalities (37%) occurred in rural areas (defined as less

than 5,000 population). In 1999, almost one out of every three pedestrian crashes occurred during the weekday rush hour driving time periods. These time periods are defined as from 6:00-9:00 am, and from 3:00-6:00 pm.

### **Prior actions of vehicles and pedestrians**

Regarding the motor vehicles that were involved in pedestrian crashes in 1999, 55% of them were simply going straight ahead on the roadway prior to the crash. An additional 21% of the motor vehicles involved were making a right or left turn. As might be expected, a high percentage (25%) of the pedestrians involved in a crash were trying to cross a road where there was no crosswalk and no signal.

### **Contributing factors**

For 36% of the motor vehicle drivers in pedestrian crashes, the reporting officer indicated that there had been "no clear contributing factor" to the crash. For those where a factor was cited, two were mentioned much more than the others: driver inattention or distraction (30%), and failure to yield the right of way (24%).

### **Pedestrians and alcohol**

Of the 51 pedestrians killed, 37 were tested for alcohol. Of those tested, roughly four out of ten (38%) tested positive. Thirty percent had concentrations over the legal driving limit of .10.

TABLE 6.01

## PEDESTRIAN CRASH SUMMARY, 1990 - 1999

|                     | 1990  | 1991  | 1992  | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Pedestrian Crashes  | 1,512 | 1,338 | 1,420 | 1,383 | 1,409 | 1,458 | 1,378 | 1,419 | 1,400 | 1,329 |
| Pedestrians Killed  | 65    | 61    | 46    | 47    | 53    | 49    | 46    | 58    | 56    | 51    |
| Pedestrians Injured | 1,499 | 1,339 | 1,424 | 1,390 | 1,400 | 1,471 | 1,388 | 1,434 | 1,410 | 1,330 |

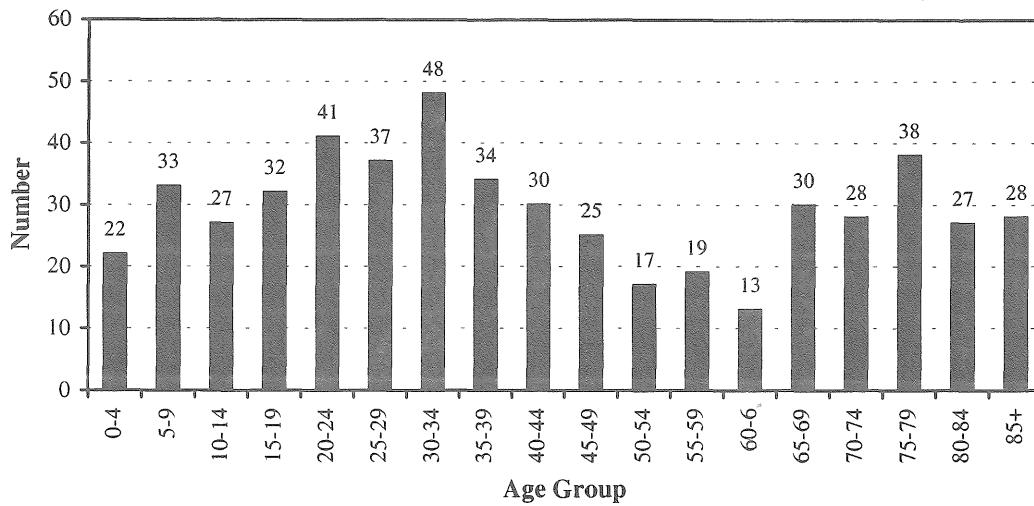
TABLE 6.02

## PEDESTRIANS KILLED OR INJURED BY AGE AND GENDER, 1999

| Age Group  | Killed |    |        | Severe |     |        | Moderate |     |        | Minor |     |        | Total |     |        |
|------------|--------|----|--------|--------|-----|--------|----------|-----|--------|-------|-----|--------|-------|-----|--------|
|            | M      | F  | Total* | M      | F   | Total* | M        | F   | Total* | M     | F   | Total* | M     | F   | Total* |
| 0 - 4      | 1      | 0  | 1      | 7      | 5   | 12     | 8        | 9   | 18     | 12    | 10  | 22     | 27    | 24  | 52     |
| 5 - 9      | 2      | 1  | 3      | 18     | 9   | 27     | 29       | 19  | 48     | 41    | 25  | 67     | 88    | 53  | 142    |
| 10 - 14    | 1      | 0  | 1      | 7      | 10  | 18     | 32       | 31  | 64     | 25    | 27  | 53     | 64    | 68  | 135    |
| 15 - 19    | 0      | 0  | 0      | 15     | 9   | 25     | 24       | 40  | 65     | 30    | 26  | 60     | 69    | 75  | 150    |
| 20 - 24    | 2      | 3  | 5      | 16     | 8   | 24     | 19       | 19  | 40     | 23    | 21  | 46     | 58    | 48  | 110    |
| 25 - 29    | 1      | 0  | 1      | 7      | 4   | 11     | 12       | 12  | 28     | 20    | 18  | 38     | 39    | 34  | 77     |
| 30 - 34    | 3      | 2  | 5      | 10     | 5   | 15     | 19       | 16  | 37     | 18    | 10  | 28     | 47    | 31  | 80     |
| 35 - 39    | 3      | 2  | 5      | 13     | 6   | 19     | 23       | 13  | 37     | 19    | 16  | 37     | 55    | 35  | 93     |
| 40 - 44    | 5      | 0  | 5      | 16     | 9   | 25     | 25       | 12  | 37     | 19    | 16  | 36     | 60    | 37  | 98     |
| 45 - 49    | 0      | 0  | 0      | 6      | 5   | 11     | 13       | 7   | 20     | 16    | 6   | 24     | 35    | 18  | 55     |
| 50 - 54    | 0      | 3  | 3      | 5      | 4   | 9      | 12       | 13  | 25     | 16    | 9   | 25     | 33    | 26  | 59     |
| 55 - 59    | 1      | 2  | 3      | 3      | 3   | 6      | 9        | 8   | 17     | 7     | 7   | 16     | 19    | 18  | 39     |
| 60 - 64    | 2      | 0  | 2      | 6      | 4   | 10     | 4        | 7   | 12     | 3     | 2   | 5      | 13    | 13  | 27     |
| 65 - 69    | 2      | 1  | 3      | 1      | 4   | 5      | 5        | 1   | 6      | 6     | 4   | 12     | 12    | 9   | 23     |
| 70 - 74    | 1      | 0  | 1      | 1      | 5   | 6      | 3        | 5   | 8      | 3     | 7   | 12     | 7     | 17  | 26     |
| 75 - 79    | 1      | 1  | 2      | 5      | 3   | 8      | 2        | 4   | 7      | 4     | 3   | 8      | 11    | 10  | 23     |
| 80 - 84    | 2      | 2  | 4      | 2      | 6   | 8      | 6        | 3   | 9      | 4     | 4   | 8      | 12    | 13  | 25     |
| 85 & Older | 3      | 4  | 7      | 0      | 0   | 0      | 2        | 1   | 3      | 3     | 1   | 4      | 5     | 2   | 7      |
| Not Stated | 0      | 0  | 0      | 5      | 3   | 9      | 10       | 9   | 27     | 27    | 14  | 73     | 42    | 26  | 109    |
| Total      | 30     | 21 | 51     | 143    | 102 | 248    | 257      | 229 | 508    | 296   | 226 | 574    | 696   | 557 | 1,330  |

\* Where columns do not add across, gender was not stated on accident report.

**FIGURE 6.01**  
**Pedestrian Fatalities by Age Group, 1990-1999 Combined**



**FIGURE 6.02**  
**Pedestrians Killed and Injured by Age and Gender, 1999**

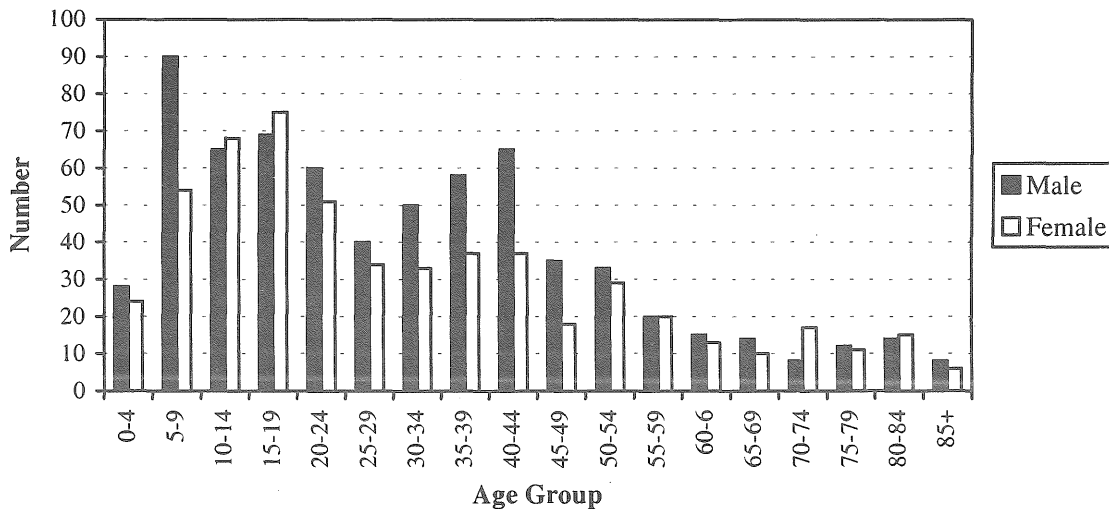


TABLE 6.03

## 1999 PEDESTRIAN CRASHES BY MONTH

| Month     | Fatal<br>Crashes | Injury<br>Crashes | Total<br>Crashes | Pedestrians<br>Killed | Pedestrians<br>Injured |
|-----------|------------------|-------------------|------------------|-----------------------|------------------------|
| January   | 5                | 92                | 97               | 5                     | 95                     |
| February  | 9                | 91                | 100              | 9                     | 97                     |
| March     | 2                | 95                | 97               | 2                     | 98                     |
| April     | 1                | 101               | 102              | 1                     | 105                    |
| May       | 3                | 101               | 104              | 3                     | 102                    |
| June      | 0                | 113               | 113              | 0                     | 116                    |
| July      | 2                | 89                | 91               | 2                     | 91                     |
| August    | 3                | 111               | 114              | 3                     | 112                    |
| September | 6                | 139               | 145              | 6                     | 149                    |
| October   | 1                | 130               | 131              | 1                     | 137                    |
| November  | 13               | 102               | 115              | 13                    | 109                    |
| December  | 6                | 114               | 120              | 6                     | 119                    |
| Total     | 51               | 1,278             | 1,329            | 51                    | 1,330                  |

TABLE 6.04

## 1999 PEDESTRIAN CRASHES BY POPULATION OF AREA

| Population of<br>City or Township | Fatal<br>Crashes | Injury<br>Crashes | Total<br>Crashes | Pedestrians<br>Killed | Pedestrians<br>Injured |
|-----------------------------------|------------------|-------------------|------------------|-----------------------|------------------------|
| 100,000 and Over                  | 10               | 620               | 630              | 10                    | 642                    |
| 50,000 - 99,999                   | 5                | 81                | 86               | 6                     | 84                     |
| 25,000 - 49,999                   | 10               | 119               | 129              | 10                    | 124                    |
| 10,000 - 24,999                   | 4                | 165               | 169              | 4                     | 170                    |
| 5,000 - 9,999                     | 3                | 63                | 66               | 3                     | 66                     |
| 2,500 - 4,999                     | 2                | 37                | 39               | 2                     | 41                     |
| 1,000 - 2,499                     | 1                | 17                | 18               | 1                     | 19                     |
| Under 1,000                       | 16               | 176               | 192              | 15                    | 184                    |
| Total                             | 51               | 1,278             | 1,329            | 51                    | 1,330                  |



TABLE 6.05

## 1999 PEDESTRIAN CRASHES BY TIME AND DAY

| Time of Day      | Fatal<br>Crashes | Total<br>Crashes | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|------------------|------------------|------------------|--------|--------|---------|-----------|----------|--------|----------|
| Midnight 2:59 AM | 8                | 51               | 19     | 4      | 8       | 2         | 6        | 8      | 4        |
| 3:00 - 5:59 AM   | 5                | 29               | 3      | 4      | 2       | 4         | 6        | 5      | 5        |
| 6:00 - 8:59 AM   | 8                | 118              | 2      | 20     | 23      | 22        | 25       | 22     | 4        |
| 9:00 - 11:59 AM  | 2                | 115              | 11     | 13     | 25      | 19        | 12       | 18     | 17       |
| Noon - 2:59 PM   | 6                | 187              | 18     | 33     | 18      | 33        | 33       | 37     | 15       |
| 3:00 - 5:59 PM   | 5                | 319              | 18     | 56     | 52      | 56        | 49       | 47     | 41       |
| 6:00 - 8:59 PM   | 10               | 198              | 18     | 25     | 21      | 39        | 31       | 35     | 29       |
| 9:00 - 11:59 PM  | 7                | 102              | 15     | 10     | 14      | 9         | 17       | 18     | 19       |
| Unknown          | 0                | 210              | 29     | 23     | 32      | 39        | 33       | 25     | 29       |
| Total            | 51               | 1,329            | 133    | 188    | 195     | 223       | 212      | 215    | 163      |

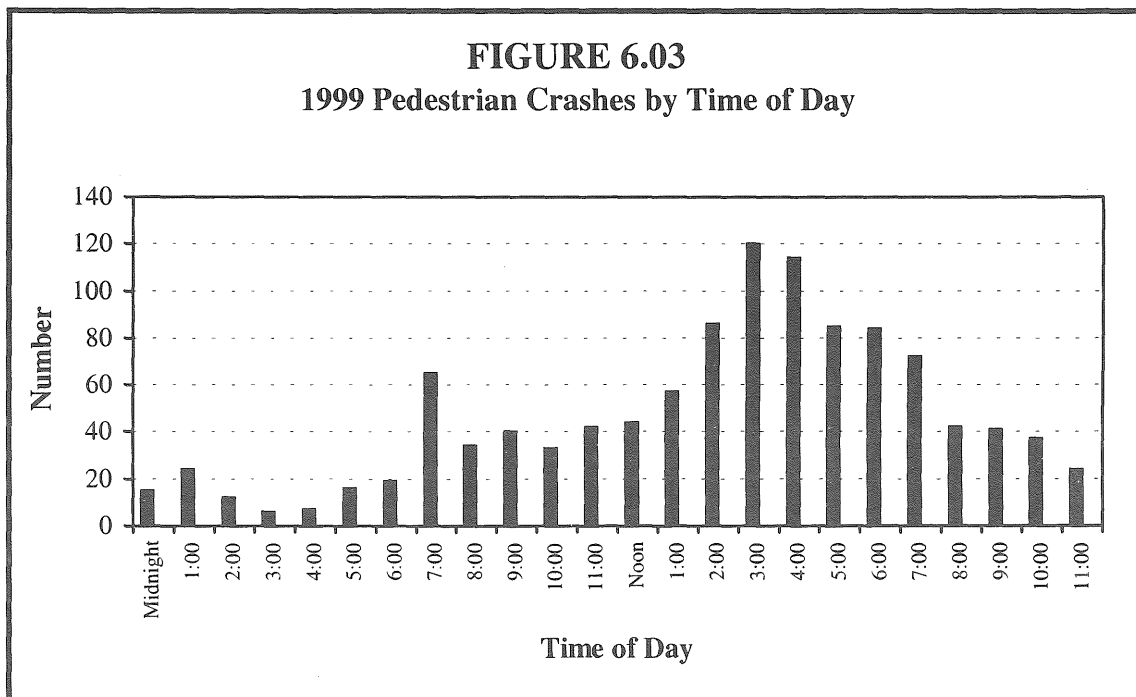


TABLE 6.06

## PRIOR ACTION OF VEHICLES IN 1999 PEDESTRIAN CRASHES

| <u>Action</u>              | <u>Vehicles<br/>in Fatal<br/>Crashes</u> | <u>Vehicles<br/>in Injury<br/>Crashes</u> | <u>Vehicles<br/>in All<br/>Crashes*</u> |
|----------------------------|--|---|---|
| Going Straight             | 41                                       | 740                                       | 781                                     |
| Wrong Way Opposing Traffic | 1  | 3   | 4                                       |
| Turning Right on Red       | 0  | 28  | 28                                      |
| Turning Left on Red        | 0  | 2   | 2                                       |
| Turning Right              | 0  | 102                                       | 102                                     |
| Turning Left               | 4  | 195                                       | 199                                     |
| Making U Turn              | 0  | 2   | 2                                       |
| Starting From Parked       | 1  | 25  | 26                                      |
| Starting in Traffic        | 0  | 32  | 32                                      |
| Slowing in Traffic         | 0  | 8   | 8                                       |
| Parking                    | 0  | 4   | 4                                       |
| Avoiding Object in Road    | 3  | 12  | 15                                      |
| Changing Lanes             | 0  | 8   | 8                                       |
| Passing                    | 0  | 6   | 6                                       |
| Backing                    | 0  | 45  | 45                                      |
| All Others                 | 11                                       | 98  | 109                                     |
| Unknown                    | 2  | 46  | 48                                      |
| Total                      | 63                                       | 1,356                                     | 1,419                                   |

\* The number of vehicles in total crashes exceeds the number of crashes because some crashes involved more than one vehicle.

TABLE 6.07

## PRIOR ACTION OF PEDESTRIANS KILLED OR INJURED IN 1999

| <u>Action</u>                              | <u>Pedestrians Killed</u> |                | <u>Pedestrians Injured</u> |                |
|--|---------------------------|----------------|----------------------------|----------------|
|  | <u>Number</u>             | <u>Percent</u> | <u>Number</u>              | <u>Percent</u> |
| Crossing Road (No Crosswalk and No Signal) | 13                        | 25.5%          | 330                        | 24.8%          |
| Crossing Against Signal                    | 4                         | 7.8            | 79                         | 5.9            |
| Crossing With Signal                       | 2                         | 3.9            | 169                        | 12.7           |
| Crossing In Crosswalk (No Signal)          | 4                         | 7.8            | 131                        | 9.8            |
| Walking In Road With Traffic               | 2                         | 3.9            | 77                         | 5.8            |
| Walking In Road Against Traffic            | 4                         | 7.8            | 56                         | 4.2            |
| Standing In Road                           | 6                         | 11.8           | 54                         | 4.1            |
| Emerging From Front/Behind                 |                           |                |                            |                |
| Parked Vehicle                             | 1                         | 2.0            | 69                         | 5.2            |
| Child Getting On/Off School Bus            | 0                         | 0.0            | 5                          | 0.4            |
| Pushing/Working On Vehicle                 | 3                         | 5.9            | 5                          | 0.4            |
| Working In Road                            | 0                         | 0.0            | 7                          | 0.5            |
| Getting On/Off Vehicle                     | 2                         | 3.9            | 20                         | 1.5            |
| Playing In Road                            | 1                         | 2.0            | 21                         | 1.6            |
| Not In Road                                | 2                         | 3.9            | 38                         | 2.8            |
| Other Pedestrian Action                    | 1                         | 2.0            | 93                         | 7.0            |
| Unknown                                    | 6                         | 11.8           | 176                        | 13.2           |
| Total*                                     | 51                        | 100.0%         | 1,330                      | 100.0%         |

\* Percent totals may not sum to 100% due to rounding.

TABLE 6.08

## CONTRIBUTING FACTORS IN 1999 PEDESTRIAN CRASHES

| Contributing Factors   | Attributed to<br>Motor Vehicle Drivers |               |
|--|--|---------------|
|  | Number                                 | Percent       |
| <b>Human Factors</b>   |  |               |
| Driver Inattention / Distraction                               | 337                                    | 29.8%         |
| Failure to Yield Right of Way                                  | 279                                    | 24.6          |
| Vision Obscured  | 111                                    | 9.8           |
| Illegal or Unsafe Speed  | 55                                     | 4.9           |
| Improper / Unsafe Lane Use                                     | 37                                     | 3.3           |
| Unsafe Backing   | 28                                     | 2.5           |
| Physical Impairment  | 26                                     | 2.3           |
| Improper Parking / Starting / Stopping                         | 25                                     | 2.2           |
| Driver Inexperience  | 23                                     | 2.0           |
| Disregard for Traffic Control Device                           | 21                                     | 1.9           |
| Improper Turn  | 20                                     | 1.8           |
| Improper Passing / Overtaking                                  | 10                                     | 0.9           |
| Driving Left of Center   | 8                                      | 0.7           |
| Following Too Closely  | 8                                      | 0.7           |
| Impeding Traffic   | 4                                      | 0.4           |
| Failure To Use Lights  | 2                                      | 0.2           |
| Driver on Phone/CB Radio                                       | 1                                      | 0.1           |
| Other Human Factors  | 29                                     | 2.6           |
| <b>Vehicular Factors</b>                                       |  |               |
| Skidding   | 16                                     | 1.4           |
| Defective Brakes   | 5                                      | 0.4           |
| Other Vehicular Factors  | 3                                      | 0.3           |
| <b>Miscellaneous Factors</b>                                   |  |               |
| Weather Conditions   | 28                                     | 2.5           |
| Other  | 56                                     | 4.9           |
| <b>Total Contributing Factors Cited</b>                        | <b>1,132</b>                           | <b>100.0%</b> |
| Vehicles for Which There Was<br>"No Clear Contributing Factor" | 510                                    |               |
| <b>Total Number of Drivers</b>                                 | <b>1,419</b>                           |               |

Zero, one, or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to differ from the number of drivers. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding.

TABLE 6.09

**PEDESTRIAN FATALITIES'  
LEVEL OF ALCOHOL CONCENTRATION, 1990 - 1999**

| Year | Killed | Tested | Alcohol Concentration* |             |               |
|------|--------|--------|------------------------|-------------|---------------|
|      |        |        | (.00)                  | (.01 - .09) | (.10 or more) |
| 1990 | 65     | 41     | 25 (61%)               | 1 (2%)      | 15 (37%)      |
| 1991 | 61     | 32     | 20 (63%)               | 1 (3%)      | 11 (34%)      |
| 1992 | 46     | 24     | 17 (71%)               | 1 (4%)      | 6 (25%)       |
| 1993 | 47     | 17     | 9 (53%)                | 0 (0%)      | 8 (47%)       |
| 1994 | 53     | 26     | 18 (69%)               | 1 (4%)      | 7 (27%)       |
| 1995 | 49     | 38     | 24 (63%)               | 2 (5%)      | 12 (32%)      |
| 1996 | 46     | 34     | 23 (68%)               | 0 (0%)      | 11 (32%)      |
| 1997 | 58     | 40     | 29 (73%)               | 2 (5%)      | 9 (23%)       |
| 1998 | 56     | 43     | 21 (49%)               | 2 (5%)      | 20 (47%)      |
| 1999 | 51     | 37     | 23 (62%)               | 3 (8%)      | 11 (30%)      |

\* The percentage figures shown are based on the number of fatally injured pedestrians who were tested for alcohol concentration. (The law requires testing of all drivers and pedestrians, 16 years of age or older, who die within four hours as a result of a motor vehicle crash.)

TABLE 6.10

**1999 PEDESTRIAN FATALITIES'  
LEVEL OF ALCOHOL CONCENTRATION BY AGE**

| Age Group    | Killed | Tested | Alcohol Concentration |             |               |
|--------------|--------|--------|-----------------------|-------------|---------------|
|              |        |        | (.00)                 | (.01 - .09) | (.10 or more) |
| 14 & Younger | 5      | 2      | 2                     | 0           | 0             |
| 15 - 19      | 0      | 0      | 0                     | 0           | 0             |
| 20 - 24      | 5      | 5      | 2                     | 0           | 3             |
| 25 - 29      | 1      | 1      | 0                     | 0           | 1             |
| 30 - 34      | 5      | 4      | 2                     | 1           | 1             |
| 35 - 39      | 5      | 3      | 1                     | 0           | 2             |
| 40 - 44      | 5      | 5      | 1                     | 1           | 3             |
| 45 - 49      | 0      | 0      | 0                     | 0           | 0             |
| 50 - 54      | 3      | 2      | 2                     | 0           | 0             |
| 55 - 59      | 3      | 3      | 2                     | 0           | 1             |
| 60 - 64      | 2      | 0      | 0                     | 0           | 0             |
| 65 - 69      | 3      | 3      | 3                     | 0           | 0             |
| 70 - 74      | 1      | 1      | 1                     | 0           | 0             |
| 75 - 79      | 2      | 2      | 1                     | 1           | 0             |
| 80 - 84      | 4      | 1      | 1                     | 0           | 0             |
| 85 & Older   | 7      | 5      | 5                     | 0           | 0             |
| Total        | 51     | 37     | 23                    | 3           | 11            |

TABLE 6.11

**1999 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL  
CONCENTRATION BY TIME OF DAY**

| <b>Time of Day</b> | <b>Killed</b> | <b>Tested</b> | <b>Alcohol Concentration</b> |                    |                      |
|--------------------|---------------|---------------|------------------------------|--------------------|----------------------|
|                    |               |               | <b>(.00)</b>                 | <b>(.01 - .09)</b> | <b>(.10 or more)</b> |
| Midnight - 2:59 AM | 7             | 6             | 0                            | 1                  | 5                    |
| 3:00 - 5:59 AM     | 5             | 5             | 4                            | 0                  | 1                    |
| 6:00 - 8:59 AM     | 8             | 5             | 5                            | 0                  | 0                    |
| 9:00 - 11:59 AM    | 2             | 2             | 1                            | 1                  | 0                    |
| Noon - 2:59 PM     | 6             | 4             | 4                            | 0                  | 0                    |
| 3:00 - 5:59 PM     | 5             | 2             | 2                            | 0                  | 0                    |
| 6:00 - 8:59 PM     | 10            | 9             | 6                            | 1                  | 2                    |
| 9:00 - 11:59 PM    | 8             | 4             | 1                            | 0                  | 3                    |
| Unknown            | 0             | 0             | 0                            | 0                  | 0                    |
| <b>Total</b>       | <b>51</b>     | <b>37</b>     | <b>23</b>                    | <b>3</b>           | <b>11</b>            |

## VII: BICYCLE CRASHES

Bicycles are subject to the same traffic laws as motor vehicles, but bicycle crashes are reported to the Minnesota Department of Public Safety only if they involve collision with a motor vehicle. Therefore, this section represents only a portion of the total number of bicycle crashes.

Data collected before 1984 counted crashes as bicycle crashes only if the bicycle was the first "object" struck by the motor vehicle. Beginning in 1984, all crashes that involved a motor vehicle in transport and a bicycle in any way are reported as bicycle crashes. The number of crashes reported here rose slightly as a result.

### **Number of bicycle crashes decline**

In 1999, there were 1,106 bicycle crashes in Minnesota. This number represents a 19% decrease from the previous year. Also, it is the lowest number of crashes reported since 1991 when there were 1,208 recorded.

### **Injuries also drop in 1999**

Because of the decline in bicycle crashes, the number of bicyclists injured also decreased in 1999. Only 1,060 injuries were reported, with just 112 of these (10%) being severe. However, there were 8 bicyclist fatalities in 1999. From 1995 through 1998, the average number of bicyclist fatalities per year was seven.

### **Young people at risk**

Of all the bicyclists in 1999 who were injured or killed in a bicycle/motor vehicle traffic crash, 56% were less than 20 years of age. This percentage includes 6 out of the 8 bicyclist fatalities.

### **Warm weather**

As expected, bicycle crashes are mostly a warm weather occurrence. In 1999, 5 of the 8 fatalities, 72% of the crashes, and 73% of the injuries occurred in the five-month period of May through September.

### **Afternoon rush-hour**

Bicycle crashes in 1999 were most prevalent in the three-hour time period of 3:00-6:00 p.m. Almost one-third (31%) of all bicycle crashes occurred during this period.

### **Big cities**

As a general rule, traffic crashes involving a bicycle and a motor vehicle occur in high population areas. This rule applied once again in 1999. Almost 40% of all bicycle crashes occurred in cities where the population was over 100,000 people. Only 17% of all bicycle crashes occurred in rural areas. (Less than 5,000 people).

### **Males injured most often**

In 1999, 7 of the 8 bicyclist fatalities, and 75% of bicyclist injuries were male. In other words, males were injured or killed three times as often as females (774 to 253).

### **Actions by bicyclists prior to crash**

Bicyclists are supposed to ride with traffic. The most commonly occurring action by bicyclists prior to the crash (for 409, or 37% of the total) was attempting to ride across the trafficway. (However, the prior action was indicated as "other" or "unknown" for almost 41% of the bicyclists.)

### **Contributing factors**

There were two contributing factors for both the bicyclists and the other motor vehicle drivers that were significant in 1999. These were failure to yield the right of way, and driver inattention or distraction. For the bicyclists, two other factors were cited often. These were disregard for traffic control device, and improper/unsafe lane use. For the motor vehicle drivers, one other factor was cited often; vision obscured.

TABLE 7.01

## BICYCLE CRASH SUMMARY, 1990 - 1999

|                    | 1990  | 1991  | 1992  | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Bicycle Crashes    | 1,357 | 1,208 | 1,343 | 1,321 | 1,436 | 1,333 | 1,337 | 1,384 | 1,363 | 1,106 |
| Bicyclists Killed  | 8     | 8     | 11    | 9     | 16    | 5     | 6     | 7     | 9     | 8     |
| Bicyclists Injured | 1,327 | 1,157 | 1,249 | 1,240 | 1,359 | 1,283 | 1,281 | 1,348 | 1,310 | 1,060 |

TABLE 7.02

## 1999 BICYCLE CRASHES BY MONTH

| Month     | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Bicyclists Killed | Bicyclists Injured |
|-----------|---------------|----------------|-------------------------|---------------|-------------------|--------------------|
| January   | 0             | 5              | 1                       | 6             | 0                 | 5                  |
| February  | 0             | 15             | 1                       | 16            | 0                 | 16                 |
| March     | 1             | 44             | 1                       | 46            | 1                 | 46                 |
| April     | 1             | 65             | 3                       | 69            | 1                 | 65                 |
| May       | 1             | 127            | 6                       | 134           | 1                 | 128                |
| June      | 1             | 163            | 2                       | 166           | 1                 | 164                |
| July      | 1             | 200            | 8                       | 209           | 1                 | 203                |
| August    | 2             | 139            | 10                      | 151           | 2                 | 138                |
| September | 0             | 134            | 6                       | 140           | 0                 | 138                |
| October   | 1             | 78             | 4                       | 83            | 1                 | 79                 |
| November  | 0             | 60             | 4                       | 64            | 0                 | 60                 |
| December  | 0             | 18             | 4                       | 22            | 0                 | 18                 |
| Total     | 8             | 1,048          | 50                      | 1,106         | 8                 | 1,060              |

FIGURE 7.01

## 1999 Bicycle Crashes by Time of Day

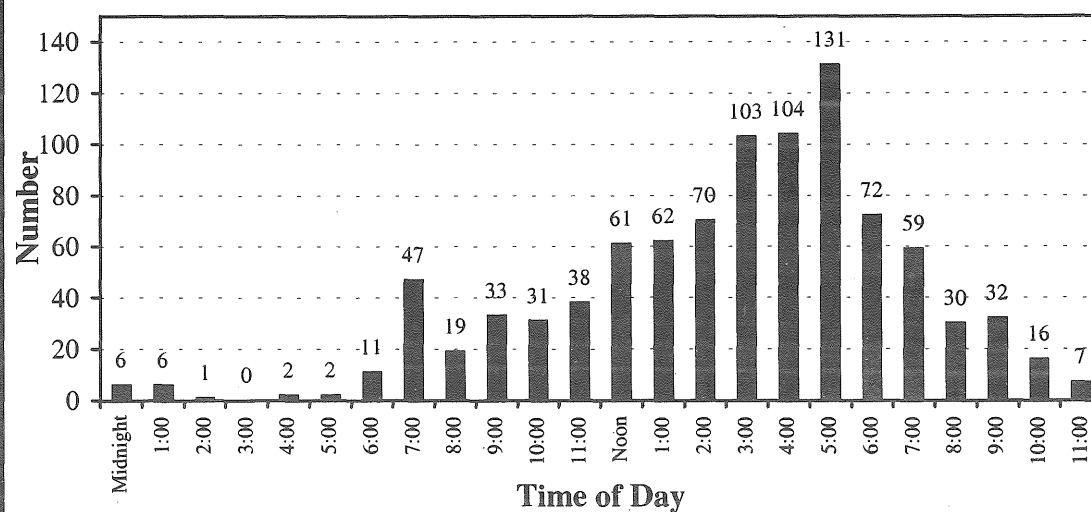


TABLE 7.03

## 1999 BICYCLE CRASHES BY TIME AND DAY

| Time of Day        | Total | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------------------|-------|--------|--------|---------|-----------|----------|--------|----------|
| Midnight - 2:59 AM | 13    | 2      | 0      | 0       | 2         | 1        | 4      | 4        |
| 3:00 - 5:59 AM     | 4     | 1      | 0      | 1       | 0         | 1        | 0      | 1        |
| 6:00 - 8:59 AM     | 77    | 2      | 14     | 9       | 16        | 15       | 20     | 1        |
| 9:00 - 11:59 AM    | 102   | 7      | 12     | 25      | 20        | 13       | 8      | 17       |
| Noon - 2:59 PM     | 193   | 19     | 27     | 37      | 34        | 24       | 26     | 26       |
| 3:00 - 5:59 PM     | 338   | 24     | 47     | 53      | 52        | 65       | 64     | 33       |
| 6:00 - 8:59 PM     | 161   | 18     | 27     | 22      | 28        | 23       | 29     | 14       |
| 9:00 - 11:59 PM    | 55    | 6      | 4      | 8       | 14        | 7        | 8      | 8        |
| Unknown            | 163   | 18     | 24     | 25      | 27        | 31       | 22     | 16       |
| Total              | 1,106 | 97     | 155    | 180     | 193       | 180      | 181    | 120      |

TABLE 7.04

## 1999 BICYCLE CRASHES BY POPULATION OF AREA

| Population of<br>City or Township | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Bicyclists<br>Killed | Bicyclists<br>Injured |
|-----------------------------------|------------------|-------------------|-------------------------------|------------------|----------------------|-----------------------|
| 100,000 and Over                  | 0                | 402               | 31                            | 433              | 0                    | 404                   |
| 50,000 - 99,999                   | 1                | 72                | 1                             | 74               | 1                    | 72                    |
| 25,000 - 49,999                   | 1                | 142               | 3                             | 146              | 1                    | 145                   |
| 10,000 - 24,999                   | 1                | 201               | 7                             | 209              | 1                    | 206                   |
| 5,000 - 9,999                     | 1                | 54                | 2                             | 57               | 1                    | 55                    |
| 2,500 - 4,999                     | 0                | 22                | 1                             | 23               | 0                    | 22                    |
| 1,000 - 2,499                     | 0                | 19                | 0                             | 19               | 0                    | 20                    |
| Under 1,000                       | 4                | 136               | 5                             | 145              | 4                    | 136                   |
| Total                             | 8                | 1,048             | 50                            | 1,106            | 8                    | 1,060                 |

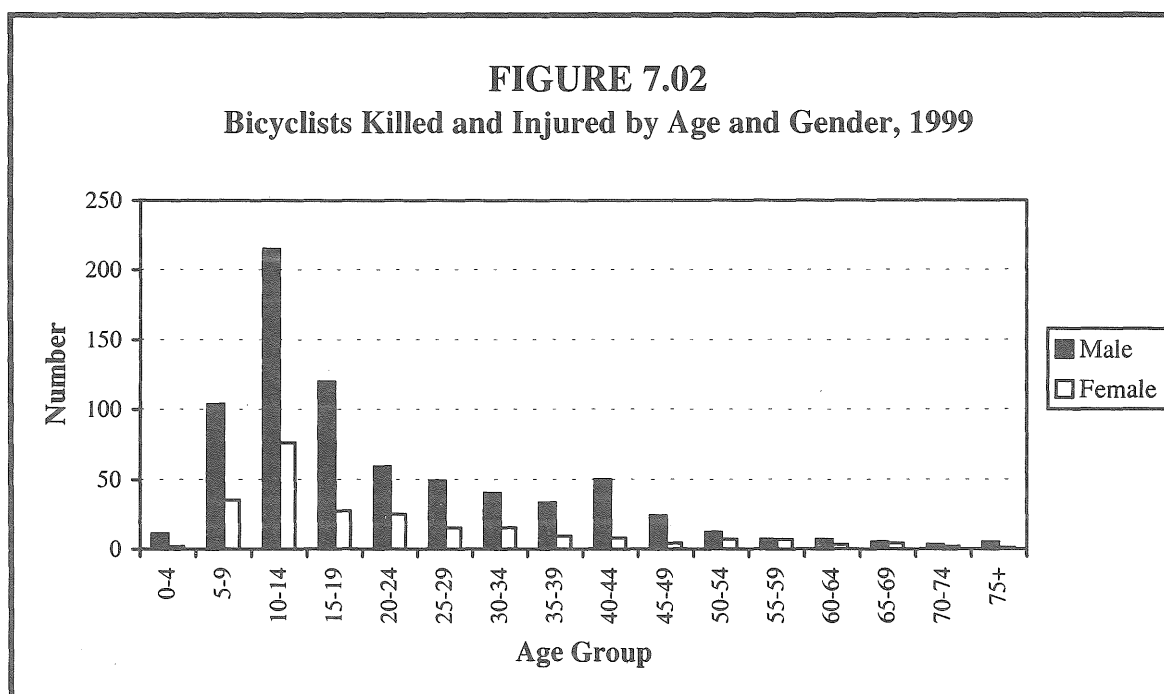




TABLE 7.05

## BICYCLISTS KILLED OR INJURED BY AGE AND GENDER, 1999

| Age Group  | Killed |   |       | Injured |    |     |          |     |     |       |     |     | Total |     |        |
|------------|--------|---|-------|---------|----|-----|----------|-----|-----|-------|-----|-----|-------|-----|--------|
|            | M      | F | Total | Severe  |    |     | Moderate |     |     | Minor |     |     | M     | F   | Total* |
| 0-4        | 0      | 0 | 0     | 4       | 0  | 4   | 4        | 1   | 5   | 3     | 1   | 4   | 11    | 2   | 13     |
| 5-9        | 2      | 0 | 2     | 11      | 1  | 12  | 44       | 20  | 64  | 47    | 14  | 61  | 102   | 35  | 137    |
| 10-14      | 1      | 1 | 2     | 21      | 6  | 27  | 102      | 46  | 149 | 91    | 23  | 121 | 214   | 75  | 297    |
| 15-19      | 2      | 0 | 2     | 10      | 0  | 10  | 67       | 11  | 78  | 41    | 16  | 59  | 118   | 27  | 147    |
| 20-24      | 0      | 0 | 0     | 6       | 1  | 7   | 29       | 9   | 38  | 24    | 15  | 40  | 59    | 25  | 85     |
| 25-29      | 0      | 0 | 0     | 5       | 2  | 7   | 28       | 8   | 36  | 16    | 5   | 21  | 49    | 15  | 64     |
| 30-34      | 0      | 0 | 0     | 5       | 4  | 10  | 21       | 4   | 25  | 14    | 7   | 21  | 40    | 15  | 56     |
| 35-39      | 0      | 0 | 0     | 4       | 2  | 6   | 9        | 3   | 12  | 20    | 4   | 25  | 33    | 9   | 43     |
| 40-44      | 0      | 0 | 0     | 14      | 0  | 14  | 18       | 2   | 21  | 18    | 6   | 24  | 50    | 8   | 59     |
| 45-49      | 1      | 0 | 1     | 1       | 1  | 2   | 10       | 2   | 12  | 12    | 1   | 13  | 23    | 4   | 27     |
| 50-54      | 0      | 0 | 0     | 2       | 3  | 5   | 6        | 2   | 8   | 4     | 2   | 6   | 12    | 7   | 19     |
| 55-59      | 0      | 0 | 0     | 0       | 2  | 2   | 4        | 1   | 6   | 3     | 4   | 7   | 7     | 7   | 15     |
| 60-64      | 0      | 0 | 0     | 0       | 0  | 0   | 6        | 1   | 8   | 1     | 2   | 4   | 7     | 3   | 12     |
| 65-69      | 0      | 0 | 0     | 1       | 0  | 1   | 3        | 2   | 5   | 1     | 2   | 3   | 5     | 4   | 9      |
| 70-74      | 1      | 0 | 1     | 0       | 0  | 0   | 2        | 1   | 3   | 0     | 1   | 2   | 2     | 2   | 5      |
| 75 & Older | 0      | 0 | 0     | 0       | 0  | 0   | 4        | 1   | 5   | 1     | 0   | 1   | 5     | 1   | 6      |
| Not Stated | 0      | 0 | 0     | 1       | 2  | 5   | 15       | 8   | 24  | 14    | 3   | 37  | 30    | 13  | 66     |
| Total      | 7      | 1 | 8     | 85      | 24 | 112 | 372      | 122 | 499 | 310   | 106 | 449 | 767   | 252 | 1,060  |

\* Where columns do not add across to total, gender was not stated on the accident report.

TABLE 7.06

## PRIOR ACTION OF BICYCLISTS INVOLVED IN 1999 CRASHES

| Prior Action           | Bicyclists<br>In Fatal<br>Crashes | Bicyclists<br>In Injury<br>Crashes | Bicyclists<br>In Property<br>Damage<br>Crashes | Bicyclists<br>In All<br>Crashes* |
|------------------------|-----------------------------------|------------------------------------|--|----------------------------------|
| Riding With Traffic    | 3                                 | 99                                 | 7  | 109                              |
| Riding Against Traffic | 0                                 | 112                                | 2  | 114                              |
| Making Left Turn       | 0                                 | 15                                 | 0  | 15                               |
| Making Right Turn      | 0                                 | 5                                  | 0  | 5                                |
| Making U Turn          | 0                                 | 2                                  | 0  | 2                                |
| Riding Across Road     | 5                                 | 388                                | 16   | 409                              |
| Other/Unknown          | 0                                 | 436                                | 25   | 461                              |
| Total                  | 8                                 | 1,057                              | 50   | 1,115                            |

\* The total number of bicyclist actions exceeds the number of bicycle crashes because some crashes involved more than one bicycle.

TABLE 7.07

## CONTRIBUTING FACTORS IN 1999 BICYCLE CRASHES

| Contributing Factors               | Attributed to<br><u>Bicyclists</u> |         | Attributed to<br><u>Motor Vehicle Drivers</u> |         |
|------------------------------------|------------------------------------|---------|---|---------|
|                                    | Number                             | Percent | Number  | Percent |
| <b>Human Factors</b>               |                                    |         |   |         |
| Failure to Yield Right of Way      | 187                                | 22.3%   | 227   | 32.4%   |
| Driver Inattention/Distracted      | 146                                | 17.4    | 226   | 32.3    |
| Disregard/Traffic Cntrl Device     | 99                                 | 11.8    | 15  | 2.1     |
| Improper/Unsafe Lane Use           | 89                                 | 10.6    | 18  | 2.6     |
| Driver Inexperience                | 41                                 | 4.9     | 7   | 1.0     |
| Vision Obscured                    | 31                                 | 3.7     | 76  | 10.9    |
| Illegal or Unsafe Speed            | 23                                 | 2.7     | 19  | 2.7     |
| Failure to Use Lights              | 19                                 | 2.3     | 1   | 0.1     |
| Physical Impairment                | 18                                 | 2.1     | 6   | 0.9     |
| Driving Left of Center             | 17                                 | 2.0     | 0   | 0.0     |
| Improper Turn                      | 13                                 | 1.5     | 15  | 2.1     |
| Improper Passing/Overtaking        | 6                                  | 0.7     | 6   | 0.9     |
| Impeding Traffic                   | 6                                  | 0.7     | 0   | 0.0     |
| Improper Park/Start/Stop           | 5                                  | 0.6     | 18  | 2.6     |
| Following Too Closely              | 4                                  | 0.5     | 2   | 0.3     |
| Improper/No Signal                 | 2                                  | 0.2     | 0   | 0.0     |
| Unsafe Backing                     | 1                                  | 0.1     | 9   | 1.3     |
| Driver on Phone/CB Radio           | 0                                  | 0.0     | 1   | 0.1     |
| Other Human Factors                | 27                                 | 3.2     | 11  | 1.6     |
| <b>Vehicular Factors</b>           |                                    |         |   |         |
| Defective Brakes                   | 23                                 | 2.7     | 0   | 0.0     |
| Skidding                           | 7                                  | 0.8     | 4   | 0.6     |
| Oversize/Overweight Vehicle        | 0                                  | 0.0     | 1   | 0.1     |
| Other Vehicular Factors            | 0                                  | 0.0     | 2   | 0.3     |
| <b>Miscellaneous Factors</b>       |                                    |         |   |         |
| Weather Conditions                 | 7                                  | 0.8     | 7   | 1.0     |
| Other                              | 68                                 | 8.1     | 29  | 4.1     |
| Total                              | 839                                | 100.0%  | 700   | 100.0%  |
| Vehicles for Which There Was       |                                    |         |   |         |
| "No Clear Contributing Factor"     | 306                                |         | 502   |         |
| Total Number of Bicyclists/Drivers | 1,115                              |         | 1,104   |         |

Zero, one, or two contributing factors may be attributed to a single driver or bicyclist. This may cause the sum of the factors cited to differ from the number of drivers or bicyclists. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding.

## VIII: SCHOOL BUS CRASHES

As a general rule, school bus travel is very safe. The school bus is usually a large and heavy vehicle that provides good protection for its occupants. However, since buses can carry many passengers, serious crashes could potentially cause many injuries. Crashes included in this section are those in which at least one school bus was physically involved. Note that in some cases, a crash could be seen as involving a school bus, yet not be counted as a school bus crash. For example, one such case would be a crash in which a person gets off the bus, crosses a street, and is struck by another vehicle.

### **Number of crashes remain the same**

There were 782 traffic crashes involving at least one school bus in Minnesota in 1999. This is the same number that occurred the previous year. Worth noting is the fact that this number of school bus crashes represents the lowest number since 1992 when 741 were recorded.

### **Five deaths in 1999**

In 1999, there were five fatal school bus crashes, which resulted in five deaths. Of the 5 deaths, one was a school bus driver, and the other 4 were the drivers of other vehicles that collided with school buses. There were no child fatalities in 1999.

### **Number of injuries drop**

Fortunately, there were fewer people injured this year than last. In 1999, 328 people were injured in school bus crashes, which represents a 12%

decrease from 1998. Of the 328 total injuries in 1999, 153 were occupants of a school bus, 167 were occupants of other motor vehicles, and 8 were pedestrians.

### **Morning and Afternoon Rush Hours**

As expected, school bus crashes in 1999 mostly (55%) occurred during the time periods of 6:00-9:00am and 3:00-6:00pm. In addition, all of the fatalities and 53% of the injuries occurred during these two time periods. And, only 63 (8%) of the crashes occurred during the summer months (June, July, and August).

### **No traffic control device**

Many (45%) of the school bus crashes occurred where there was no traffic control device. Only 3% of the crashes occurred when the school bus stop arm was deployed.

### **Contributing factors**

Though there were 782 school bus crashes in 1999, a few involved more than one school bus. In all, there were 789 school buses in crashes. For 50% of the school buses, police showed there was "no clear contributing factor." This compares favorably to the 34% of other motor vehicle drivers for whom there was "no clear contributing factor." For the school bus drivers, the two contributing factors mentioned most often were driver inattention or distraction (24%), and failure to yield the right of way (17%). Third on the list was improper turn at 9%.

TABLE 8.01

## SCHOOL BUS CRASH SUMMARY, 1990 - 1999

|                         | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996  | 1997 | 1998 | 1999 |
|-------------------------|------|------|------|------|------|------|-------|------|------|------|
| Total Crashes           | 674  | 857  | 741  | 894  | 821  | 898  | 1,041 | 961  | 782  | 782  |
| Fatal Crashes           | 5    | 4    | 1    | 3    | 2    | 2    | 6     | 4    | 3    | 5    |
| Persons Killed          | 6    | 4    | 1    | 3    | 2    | 2    | 8     | 7    | 3    | 5    |
| Injury Crashes          | 149  | 181  | 169  | 212  | 210  | 216  | 241   | 211  | 197  | 172  |
| Persons Injured         | 329  | 383  | 425  | 432  | 401  | 457  | 472   | 408  | 371  | 328  |
| Property Damage Crashes | 520  | 672  | 571  | 679  | 609  | 680  | 794   | 746  | 582  | 605  |
| School Buses Involved   | 680  | 867  | 756  | 909  | 844  | 906  | 1,050 | 979  | 790  | 789  |

TABLE 8.02

## 1999 SCHOOL BUS CRASHES BY TIME OF DAY

| Time of Day        | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed | Injured |
|--------------------|---------------|----------------|-------------------------|---------------|--------|---------|
| Midnight - 2:59 AM | 0             | 0              | 2                       | 2             | 0      | 0       |
| 3:00 - 5:59 AM     | 0             | 0              | 0                       | 0             | 0      | 0       |
| 6:00 - 8:59 AM     | 3             | 44             | 170                     | 217           | 3      | 78      |
| 9:00 - 11:59 AM    | 0             | 21             | 75                      | 96            | 0      | 38      |
| Noon - 2:59 PM     | 0             | 31             | 98                      | 129           | 0      | 49      |
| 3:00 - 5:59 PM     | 2             | 49             | 160                     | 211           | 2      | 95      |
| 6:00 - 8:59 PM     | 0             | 3              | 7                       | 10            | 0      | 8       |
| 9:00 - 11:59 PM    | 0             | 0              | 4                       | 4             | 0      | 0       |
| Unknown            | 0             | 24             | 89                      | 113           | 0      | 60      |
| Total              | 5             | 172            | 605                     | 782           | 5      | 328     |

TABLE 8.03

## 1999 SCHOOL BUS CRASHES BY MONTH

| Month     | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed | Injured |
|-----------|---------------|----------------|-------------------------|---------------|--------|---------|
| January   | 1             | 22             | 116                     | 139           | 1      | 33      |
| February  | 0             | 19             | 86                      | 105           | 0      | 33      |
| March     | 0             | 21             | 70                      | 91            | 0      | 28      |
| April     | 0             | 15             | 51                      | 66            | 0      | 36      |
| May       | 0             | 20             | 57                      | 77            | 0      | 35      |
| June      | 0             | 9              | 28                      | 37            | 0      | 13      |
| July      | 0             | 9              | 11                      | 20            | 0      | 17      |
| August    | 0             | 2              | 4                       | 6             | 0      | 2       |
| September | 1             | 19             | 38                      | 58            | 1      | 54      |
| October   | 1             | 16             | 43                      | 60            | 1      | 27      |
| November  | 1             | 10             | 47                      | 58            | 1      | 31      |
| December  | 1             | 10             | 54                      | 65            | 1      | 19      |
| Total     | 5             | 172            | 605                     | 782           | 5      | 328     |

TABLE 8.04

**AGE AND GENDER OF PERSONS INJURED  
IN 1999 SCHOOL BUS CRASHES**

| Age Group  | Total* | In Other |            |         | Male | Female |
|------------|--------|----------|------------|---------|------|--------|
|            |        | In Bus   | Pedestrian | Vehicle |      |        |
| 0 - 4      | 2      | 2        | 0          | 0       | 0    | 2      |
| 5 - 9      | 39     | 32       | 0          | 7       | 16   | 20     |
| 10 - 14    | 36     | 26       | 3          | 7       | 17   | 16     |
| 15 - 19    | 47     | 6        | 2          | 39      | 27   | 20     |
| 20 - 24    | 25     | 4        | 0          | 21      | 9    | 15     |
| 25 - 29    | 10     | 1        | 0          | 9       | 5    | 4      |
| 30 - 34    | 28     | 7        | 0          | 21      | 8    | 18     |
| 35 - 39    | 13     | 4        | 0          | 9       | 5    | 8      |
| 40 - 44    | 22     | 9        | 1          | 12      | 12   | 10     |
| 45 - 54    | 38     | 10       | 1          | 27      | 19   | 19     |
| 55 - 64    | 7      | 4        | 0          | 3       | 2    | 5      |
| 65 & Older | 12     | 1        | 1          | 10      | 5    | 7      |
| Unknown    | 49     | 47       | 0          | 2       | 8    | 16     |
| Total      | 328    | 153      | 8          | 167     | 133  | 160    |

\* There were 35 cases where the gender of the person was not stated.

TABLE 8.05

**PERSONS KILLED OR INJURED  
IN 1999 SCHOOL BUS CRASHES BY POPULATION OF AREA**

| Population of<br>City or Township | Killed | Injured |          |       | Total |
|-----------------------------------|--------|---------|----------|-------|-------|
|                                   |        | Severe  | Moderate | Minor |       |
| 100,000 and Over                  | 0      | 8       | 19       | 85    | 112   |
| 50,000 - 99,999                   | 1      | 5       | 17       | 21    | 43    |
| 25,000 - 49,999                   | 0      | 0       | 15       | 8     | 23    |
| 10,000 - 24,999                   | 0      | 5       | 16       | 27    | 48    |
| 5,000 - 9,999                     | 1      | 1       | 10       | 8     | 19    |
| 2,500 - 4,999                     | 0      | 1       | 2        | 2     | 5     |
| 1,000 - 2,499                     | 0      | 0       | 0        | 3     | 3     |
| Under 1,000                       | 3      | 10      | 20       | 45    | 75    |
| Total                             | 5      | 30      | 99       | 199   | 328   |

TABLE 8.06

## 1999 SCHOOL BUS CRASHES BY FIRST HARMFUL EVENT

| First Harmful Event    | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed   | Injured    |
|------------------------|---------------|----------------|-------------------------|---------------|----------|------------|
| <b>Collision With:</b> |               |                |                         |               |          |            |
| Other Motor Vehicle    | 5             | 146            | 496                     | 647           | 5        | 283        |
| Parked Motor Vehicle   | 0             | 3              | 80                      | 83            | 0        | 8          |
| Bicycle                | 0             | 5              | 0                       | 5             | 0        | 5          |
| Pedestrian             | 0             | 7              | 0                       | 7             | 0        | 7          |
| Deer or Other Animal   | 0             | 0              | 3                       | 3             | 0        | 0          |
| Fixed Object           | 0             | 4              | 16                      | 20            | 0        | 4          |
| <b>Non-collision:</b>  |               |                |                         |               |          |            |
| Overturn               | 0             | 5              | 1                       | 6             | 0        | 16         |
| Other/Unknown          | 0             | 2              | 9                       | 11            | 0        | 5          |
| <b>Total</b>           | <b>5</b>      | <b>172</b>     | <b>605</b>              | <b>782</b>    | <b>5</b> | <b>328</b> |

TABLE 8.07

## 1999 SCHOOL BUS CRASHES BY TRAFFIC CONTROL DEVICE

| Traffic Control Device    | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed   | Injured    |
|---------------------------|---------------|----------------|-------------------------|---------------|----------|------------|
| Not Applicable            | 3             | 69             | 280                     | 352           | 3        | 125        |
| Traffic Signal            | 1             | 49             | 89                      | 139           | 1        | 78         |
| Overhead Flashers         | 0             | 0              | 1                       | 1             | 0        | 0          |
| Stop Sign--All Approaches | 0             | 7              | 28                      | 35            | 0        | 9          |
| Other Stop Sign           | 1             | 37             | 111                     | 149           | 1        | 96         |
| Yield Sign                | 0             | 3              | 5                       | 8             | 0        | 8          |
| School Zone Sign          | 0             | 0              | 3                       | 3             | 0        | 0          |
| School Bus Stop Arm       | 0             | 3              | 22                      | 25            | 0        | 5          |
| No Passing Zone           | 0             | 0              | 2                       | 2             | 0        | 0          |
| Railroad Crossing Device  | 0             | 2              | 6                       | 8             | 0        | 5          |
| Other                     | 0             | 2              | 17                      | 19            | 0        | 2          |
| Unknown                   | 0             | 0              | 41                      | 41            | 0        | 0          |
| <b>Total</b>              | <b>5</b>      | <b>172</b>     | <b>605</b>              | <b>782</b>    | <b>5</b> | <b>328</b> |

TABLE 8.08

## CONTRIBUTING FACTORS IN 1999 SCHOOL BUS CRASHES

| Contributing Factors   | Attributed to<br>School Bus Drivers |         | Attributed to<br>Drivers of<br>Other Vehicles |         |
|--|-------------------------------------|---------|---|---------|
|  | Number                              | Percent | Number  | Percent |
| <b>Human Factors</b>   |                                     |         |   |         |
| Driver Inattention /Distraction                                | 97                                  | 24.4%   | 162   | 24.2%   |
| Failure to Yield Right of Way                                  | 69                                  | 17.4    | 83  | 12.4    |
| Improper Turn  | 37                                  | 9.3     | 11  | 1.6     |
| Unsafe Backing   | 21                                  | 5.3     | 13  | 1.9     |
| Following Too Closely  | 19                                  | 4.8     | 56  | 8.4     |
| Illegal/Unsafe Speed   | 17                                  | 4.3     | 72  | 10.8    |
| Improper Park/Start/Stop                                       | 15                                  | 3.8     | 15  | 2.2     |
| Improper/Unsafe Lane Use                                       | 13                                  | 3.3     | 26  | 3.9     |
| Disregard/Traffic Cntrl Device                                 | 12                                  | 3.0     | 28  | 4.2     |
| Vision Obscured  | 12                                  | 3.0     | 15  | 2.2     |
| Driver Inexperience  | 7                                   | 1.8     | 27  | 4.0     |
| Improper Passing/Overtaking                                    | 5                                   | 1.3     | 13  | 1.9     |
| Driving Left of Center   | 4                                   | 1.0     | 9   | 1.3     |
| Impeding Traffic   | 3                                   | 0.8     | 2   | 0.3     |
| Improper or No Signal  | 0                                   | 0.0     | 2   | 0.3     |
| Physical Impairment  | 0                                   | 0.0     | 8   | 1.2     |
| Failure to Use Lights  | 0                                   | 0.0     | 1   | 0.1     |
| Other Human Factors  | 3                                   | 0.8     | 9   | 1.3     |
| <b>Vehicular Factors</b>                                       |                                     |         |   |         |
| Skidding   | 12                                  | 3.0     | 46  | 6.9     |
| Defective Brakes   | 3                                   | 0.8     | 7   | 1.0     |
| Other Vehicular Factors  | 3                                   | 0.8     | 0   | 0.0     |
| <b>Miscellaneous Factors</b>                                   |                                     |         |   |         |
| Weather Conditions   | 34                                  | 8.6     | 46  | 6.9     |
| Other  | 11                                  | 2.8     | 18  | 2.7     |
| Total  | 397                                 | 100.0%  | 669   | 100.0%  |
| Vehicles for Which There Was<br>"No Clear Contributing Factor" | 391                                 |         | 280   |         |
| Total Number of Drivers  | 789                                 |         | 830   |         |

Zero, one, or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to differ from the number of drivers. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding. Bicyclists and pedestrians are included as other drivers in this table.

## **IX: MOTOR VEHICLE/TRAIN CRASHES**

Each crash reported in this section involves a motor vehicle and a train. Train collisions with pedestrians or bicyclists are not counted as traffic crashes for the purpose of this publication.

Statewide, about one-half of one percent of all motor vehicle crashes result in a fatality. In 1999, about 9.5% of all motor-vehicle/train crashes in Minnesota resulted in a fatality. That's approximately nineteen times the rate for all crashes. Motor vehicle/train crashes may be few in numbers, but they are more likely to be serious. Thus, these types of crashes are a cause for concern.

### **Number of train crashes decline**

Over the years, the number of motor-vehicle/train crashes in Minnesota has been declining. The calendar year 1999 was no exception. Only 84 crashes were reported, which is a healthy 22% decline from the previous year.

### **Number of injuries also drop**

In 1999, only 50 people were injured in motor-vehicle/train crashes. Sixty-four people were injured in 1998. Unfortunately, the number of fatalities did not experience a similar decline. Ten people were killed in 1999 as compared to 11 in 1998.

### **January had the most crashes**

In 1999, motor vehicle/train crashes were most numerous in the month of January. A full 25% of the crashes occurred in that month, with 5 people being killed and another 16 injured.

### **Railroad crossbuck sites remain dangerous**

Thirty-five of the 84 motor-vehicle/train crashes, including 2 of the 10 fatalities and 25 of the 50 injuries, occurred at a crossing signed by a railroad crossbuck. An additional 16 crashes, including 6 fatalities and 15 injuries, occurred at a railroad crossing stop sign. Combined, those two types of traffic control devices were present for 60% of the total number of crashes, 80% of the fatalities, and 80% of the injuries.

### **15-to-19-year-olds at higher risk**

In 1999, three persons from the 15-19 age group were killed in motor-vehicle/train crashes. This figure represents 30% of all fatalities. Also, 5 out of the 50 injuries came from this age group.

### **Most crashes occurred in rural areas**

Motor vehicle crashes involving a train are a predominantly rural phenomenon. (Defined as an area with less than 5,000 population). In 1999, 68% of the total crashes, 68% of the injuries, and 9 of the 10 fatalities occurred in rural areas.

### **Contributing Factors**

For the motor vehicles involved in train crashes, failure to yield the right of way, driver inattention or distraction, and disregard for traffic control device, were the three most often cited contributing factors listed by officers at the scene. These three accounted for 62% of all contributing factors cited.



TABLE 9.01

## MOTOR VEHICLE / TRAIN CRASH SUMMARY, 1990 - 1999

|                         | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Total Crashes           | 116  | 147  | 111  | 128  | 144  | 132  | 124  | 107  | 108  | 84   |
| Fatal Crashes           | 13   | 10   | 7    | 11   | 14   | 15   | 8    | 6    | 9    | 8    |
| Persons Killed          | 17   | 10   | 9    | 15   | 17   | 16   | 8    | 6    | 11   | 10   |
| Injury Crashes          | 35   | 49   | 39   | 45   | 51   | 30   | 45   | 36   | 47   | 32   |
| Persons Injured         | 67   | 70   | 54   | 63   | 75   | 34   | 50   | 46   | 64   | 50   |
| Property Damage Crashes | 68   | 88   | 65   | 72   | 79   | 87   | 71   | 65   | 52   | 44   |

TABLE 9.02

## 1999 MOTOR VEHICLE / TRAIN CRASHES BY MONTH

| Month     | Fatal Crashes | Injury Crashes | Property Damage Crashes | Total Crashes | Killed | Injured |
|-----------|---------------|----------------|-------------------------|---------------|--------|---------|
| January   | 4             | 6              | 11                      | 21            | 5      | 16      |
| February  | 0             | 2              | 4                       | 6             | 0      | 2       |
| March     | 0             | 2              | 1                       | 3             | 0      | 2       |
| April     | 0             | 3              | 3                       | 6             | 0      | 3       |
| May       | 0             | 1              | 2                       | 3             | 0      | 1       |
| June      | 2             | 2              | 3                       | 7             | 3      | 4       |
| July      | 1             | 4              | 1                       | 6             | 1      | 4       |
| August    | 0             | 1              | 7                       | 8             | 0      | 1       |
| September | 0             | 2              | 7                       | 9             | 0      | 2       |
| October   | 0             | 4              | 2                       | 6             | 0      | 8       |
| November  | 1             | 4              | 1                       | 6             | 1      | 5       |
| December  | 0             | 1              | 2                       | 3             | 0      | 2       |
| Total     | 8             | 32             | 44                      | 84            | 10     | 50      |

TABLE 9.03

## 1999 MOTOR VEHICLE / TRAIN CRASHES BY TIME AND DAY

| Time of Day        | Total | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------------------|-------|--------|--------|---------|-----------|----------|--------|----------|
| Midnight - 2:59 AM | 2     | 1      | 0      | 0       | 0         | 1        | 0      | 0        |
| 3:00 - 5:59 AM     | 2     | 0      | 0      | 0       | 0         | 0        | 2      | 0        |
| 6:00 - 8:59 AM     | 6     | 0      | 0      | 1       | 1         | 2        | 1      | 1        |
| 9:00 - 11:59 AM    | 17    | 2      | 4      | 2       | 1         | 2        | 3      | 3        |
| Noon - 2:59 PM     | 17    | 2      | 5      | 1       | 2         | 1        | 3      | 3        |
| 3:00 - 5:59 PM     | 13    | 1      | 2      | 3       | 3         | 1        | 1      | 2        |
| 6:00 - 8:59 PM     | 12    | 1      | 0      | 2       | 5         | 0        | 2      | 2        |
| 9:00 - 11:59 PM    | 6     | 0      | 1      | 0       | 1         | 1        | 2      | 1        |
| Unknown            | 9     | 2      | 2      | 0       | 4         | 0        | 1      | 0        |
| Total              | 84    | 9      | 14     | 9       | 17        | 8        | 15     | 12       |

TABLE 9.04

**1999 MOTOR VEHICLE / TRAIN CRASHES  
BY TRAFFIC CONTROL DEVICE**

| <b>Traffic<br/>Control Device</b> | <b>Fatal<br/>Crashes</b> | <b>Injury<br/>Crashes</b> | <b>Property<br/>Damage<br/>Crashes</b> | <b>Total<br/>Crashes</b> | <b>Killed</b> | <b>Injured</b> |
|-----------------------------------|--------------------------|---------------------------|--|--------------------------|---------------|----------------|
| RR Crossbuck                      | 2                        | 18                        | 15                                     | 35                       | 2             | 25             |
| RR Crossing Stop Sign             | 4                        | 4                         | 8                                      | 16                       | 6             | 15             |
| RR Flashing Lights                | 0                        | 2                         | 5                                      | 7                        | 0             | 2              |
| RR Overhead Flashers              |                          |                           |  |                          |               |                |
| Plus Gate                         | 0                        | 2                         | 3                                      | 5                        | 0             | 2              |
| RR Overhead Flashers              | 0                        | 1                         | 0                                      | 1                        | 0             | 1              |
| RR Crossing Gate                  | 1                        | 2                         | 3                                      | 6                        | 1             | 2              |
| Stop Sign                         | 0                        | 1                         | 6                                      | 7                        | 0             | 1              |
| Unknown                           | 0                        | 0                         | 1                                      | 1                        | 0             | 0              |
| Not Applicable                    | 1                        | 2                         | 3                                      | 6                        | 1             | 2              |
| <b>Total</b>                      | <b>8</b>                 | <b>32</b>                 | <b>44</b>                              | <b>84</b>                | <b>10</b>     | <b>50</b>      |

TABLE 9.05

**AGE OF PERSONS KILLED OR INJURED IN 1999  
MOTOR VEHICLE / TRAIN CRASHES**

| <b>Age Group</b> | <b>Killed</b> | <b>Injured</b> |                 |              | <b>Total</b> |
|------------------|---------------|----------------|-----------------|--------------|--------------|
|                  |               | <b>Severe</b>  | <b>Moderate</b> | <b>Minor</b> |              |
| 0-4              | 1             | 1              | 1               | 1            | 3            |
| 5-9              | 0             | 4              | 1               | 0            | 5            |
| 10-14            | 1             | 2              | 0               | 1            | 3            |
| 15-19            | 3             | 0              | 2               | 3            | 5            |
| 20-24            | 0             | 3              | 1               | 3            | 7            |
| 25-29            | 0             | 2              | 1               | 1            | 4            |
| 30-34            | 1             | 0              | 1               | 0            | 1            |
| 35-39            | 0             | 1              | 1               | 0            | 2            |
| 40-44            | 2             | 0              | 4               | 1            | 5            |
| 45-49            | 1             | 2              | 2               | 2            | 6            |
| 50-54            | 0             | 1              | 3               | 0            | 4            |
| 55-59            | 0             | 0              | 0               | 1            | 1            |
| 60-69            | 0             | 1              | 1               | 0            | 2            |
| 70-79            | 1             | 1              | 0               | 0            | 1            |
| 80 & Older       | 0             | 0              | 0               | 0            | 0            |
| Not Stated       | 0             | 0              | 0               | 1            | 1            |
| <b>Total</b>     | <b>10</b>     | <b>18</b>      | <b>18</b>       | <b>14</b>    | <b>50</b>    |

TABLE 9.06

## 1999 MOTOR VEHICLE/TRAIN CRASHES BY POPULATION OF AREA

| Population of<br>City or Township | Fatal<br>Crashes | Injury<br>Crashes | Property<br>Damage<br>Crashes | Total<br>Crashes | Killed | Injured |
|-----------------------------------|------------------|-------------------|-------------------------------|------------------|--------|---------|
| 100,000 and Over                  | 0                | 0                 | 5                             | 5                | 0      | 0       |
| 50,000 - 99,999                   | 0                | 1                 | 2                             | 3                | 0      | 1       |
| 25,000 - 49,999                   | 0                | 5                 | 3                             | 8                | 0      | 6       |
| 10,000 - 24,999                   | 1                | 3                 | 4                             | 8                | 1      | 9       |
| 5,000 - 9,999                     | 0                | 0                 | 3                             | 3                | 0      | 0       |
| 2,500 - 4,999                     | 1                | 1                 | 0                             | 2                | 2      | 2       |
| 1,000 - 2,499                     | 0                | 2                 | 0                             | 2                | 0      | 2       |
| Under 1,000                       | 6                | 20                | 27                            | 53               | 7      | 30      |
| Total                             | 8                | 32                | 44                            | 84               | 10     | 50      |

TABLE 9.07

CONTRIBUTING FACTORS  
IN 1999 MOTOR VEHICLE/TRAIN CRASHES

| Contributing Factor  | Number | Percent |
|--|--------|---------|
| <b>Human Factors</b>   |        |         |
| Failure to Yield Right of Way                                  | 31     | 26.1%   |
| Driver Inattention / Distraction                               | 31     | 26.1    |
| Disregard for Traffic Control Device                           | 12     | 10.1    |
| Illegal or Unsafe Speed  | 9      | 7.6     |
| Physical Impairment  | 7      | 5.9     |
| Improper Parking/Stopping/Starting                             | 6      | 5.0     |
| Vision Obscured  | 5      | 4.2     |
| Other Human Factor   | 3      | 2.5     |
| Driver Inexperience  | 1      | 0.8     |
| <b>Vehicular Factors</b>                                       |        |         |
| Skidding   | 4      | 3.4     |
| <b>Miscellaneous Factors</b>                                   |        |         |
| Other  | 5      | 4.2     |
| Weather Conditions   | 5      | 4.2     |
| Total  | 119    | 100.0%  |
| Vehicles for Which There Was<br>"No Clear Contributing Factor" | 4      |         |
| Number of Drivers  | 89     |         |

Zero, one, or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to differ from the number of drivers. Percentages are based on all contributing factors cited. They may not sum to 100 due to rounding. No contributing factors are cited for train operators.

## DEFINITIONS

**Accident** -- See motor vehicle crash.

**Alcohol Concentration** -- The level of alcohol in a person's body as measured by blood, breath, or urine.

**Alcohol-Related Fatal Crash** -- A crash that results in one or more deaths and in which the investigating officer suspected alcohol involvement or in which the results of an alcohol concentration test were positive for any driver, pedestrian, or bicyclist involved in the crash.

**Alcohol-Related Fatality** -- A death resulting from an alcohol-related crash.

**Alcohol-Related Injury Crash** -- A non-fatal crash in which one or more persons are injured and in which the investigating officer suspected alcohol involvement for any driver, pedestrian, or bicyclist involved in the crash. (Since only the officer's perception is used in this definition, alcohol-related injury crashes and injuries are probably underestimated.)

**Alcohol-Related Injury** -- A non-fatal injury resulting from an alcohol-related crash.

**Alcohol-Related Property Damage Crash** -- A crash in which no one is killed or injured and the investigating officer suspected alcohol involvement for any driver, pedestrian, or bicyclist involved in the crash.

**Bicycle Crash** -- A motor vehicle crash involving one or more bicycles.

**Child Safety Seats** -- Safety devices designed to fit in motor vehicles that keep children securely in place. The seats are required by law for children under four years of age.

**Crash** -- See motor vehicle crash.

**Driver** -- The occupant of a motor vehicle who is in actual physical control of the vehicle in transit or, for an out-of-control vehicle, the occupant who was in control before control was lost.

**Economic Loss** -- An approximation of the costs associated with crashes, based upon current National Safety Council estimates of the loss to society for each fatality, injury, and property damage crash.

**Fatal Crash** -- A motor vehicle crash on a public traffic-way in which at least one person dies unintentionally as a result of the crash. The death must occur within 30 days of the crash.

**First Harmful Event** -- The first event during a crash that caused injury or property damage.

### **Injury Severity**

**Fatal Injury** -- An injury that results in an unintentional death within 30 days of the crash.

**Severe or Incapacitating Injury** -- An injury (other than fatal) that prevents the injured person from walking, driving or normally continuing the activities he or she was capable of performing before the injury occurred. Includes severe lacerations, broken or distorted limbs, skull fracture, crushed chest, internal injuries, unconsciousness, etc. Hospitalization is usually required.

**Moderate/Non-Incapacitating injury** -- An injury (other than fatal or severe) that is evident to the officer at the scene of the crash. Includes abrasions, minor lacerations, bleeding, etc. May require medical treatment, but hospitalization is usually not required.

**Minor or Possible Injury** -- An injury (other than fatal, severe, or moderate) that is reported by a person involved in the crash. Includes complaint of physical pain when no cause is evident, momentary unconsciousness, limping, nausea, hysteria, etc.

**Motorcycle** -- A two-wheeled or three-wheeled motor vehicle having one or more riding saddles and having an engine of more than 50 cc. If it has a 50 cc or smaller engine, it is classified as a motorized bicycle or motorscooter/motorbike.

**Motorcycle Crash** -- A motor vehicle crash involving one or more motorcycles.

**Motor Vehicle** -- A self-propelled vehicle, including attached trailers and semitrailers designed for use with such vehicles.

**Motor Vehicle Crash** -- A crash that involves a motor vehicle in transport on a public traffic-way in Minnesota and results in injury, death, or at least \$1,00.00 in property damage.

**Occupant** -- Any person who is in or on a vehicle, including the driver, passenger, and persons riding on the outside of the vehicle.

**Occupant Restraints** -- Protective devices used in motor vehicles to keep the driver and passengers in their seats and prevent them from being ejected from the motor vehicle in a crash. Restraint devices include lap belts, lap/shoulder harness combinations, air bags, and child safety seats.

**Passenger** -- Any occupant of a motor vehicle other than the driver.

**Pedestrian** -- Any person not in or on a motor vehicle or other vehicle (e.g., a bicycle).

**Pedestrian Crash** -- A motor vehicle crash involving one or more pedestrians.

**Restraint Usage** -- An occupant's use of available vehicle restraints including lap belt, lap/shoulder combination harness, or child safety seats.

**Rural** -- Having a population of under 5,000.

**School Bus Crash** -- A crash involving one or more school buses. The school bus must collide with another vehicle, or pedestrian, or object, for the crash to be classified as a school bus crash.

**Trafficway** -- Any land way open to the public as a matter of right or custom for moving persons or property from one place to another.

**Train/Motor Vehicle Crash** -- A motor vehicle crash involving a motor vehicle in transport and a railway train. Presently, the only crashes classified as train crashes are those in which the first harmful event is collision with a train.

**Truck Crash** -- A motor vehicle crash involving one or more vehicles of the following types: (1) 2-axle, 6-tire single unit truck or stepvan, (2) 3-or-more-axle single unit truck, (3) single-unit truck with trailer, (4) truck tractor with no trailer, (5) truck tractor with semi-trailer, (6) truck tractor with double trailers, (7) truck tractor with triple trailers, (8) heavy truck of other or unknown type. Pickup trucks and vans are not counted as trucks.

**Urban** -- Having a population of 5,000 or more.

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