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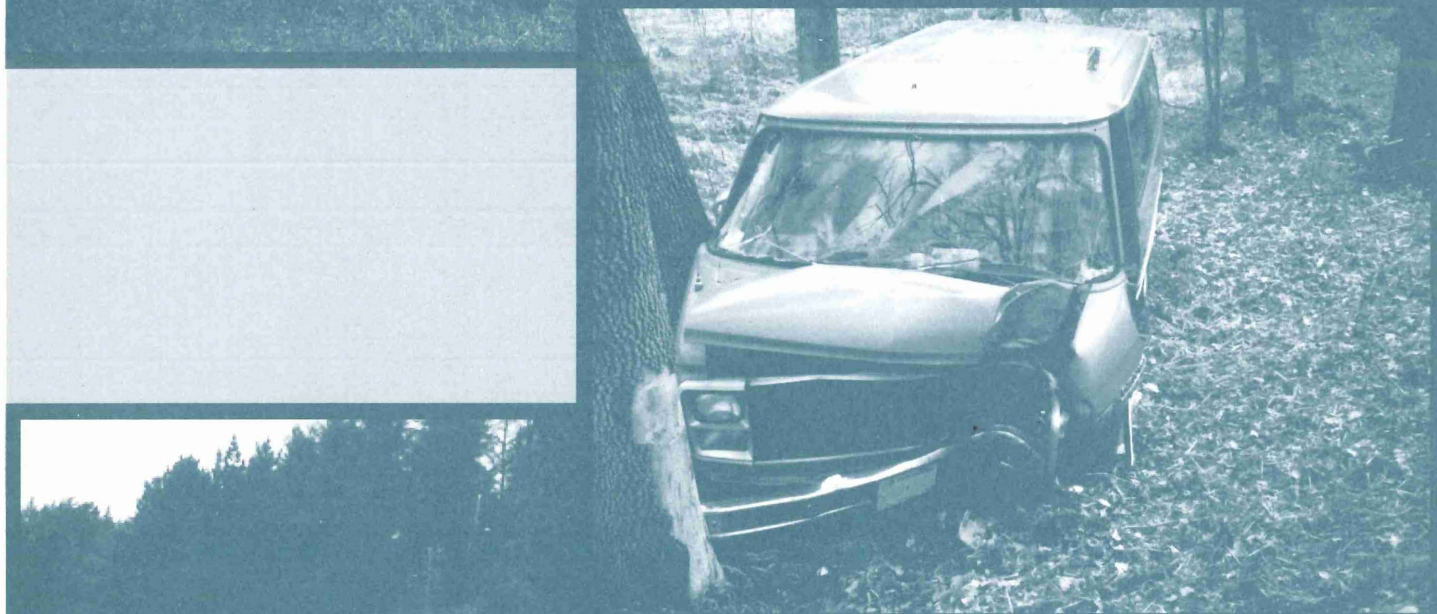
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1996 Minnesota Motor Vehicle

CRASH FACTS



On Minnesota public roads in 1996:

105,332 crashes
involving **193,067 motor vehicles**
and **288,281 persons**
resulted in **576 people killed**
and **48,963 people injured**

- Office of Traffic Safety

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Minnesota Department of Public Safety

State of Minnesota

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MINNESOTA MOTOR VEHICLE CRASH FACTS 1996

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

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STATE OF MINNESOTA DEPARTMENT OF PUBLIC SAFETY

June 1997

In 1996, Minnesota's roadways claimed the lives of 576 persons; nationally, 41,500 persons died in motor vehicle crashes. This figure approaches the total number of American combat deaths in twenty years of the Vietnam War. It is amazing -- and embarrassing -- that we live year after year seemingly taking for granted this remarkable toll in human suffering and death. Consider, for example, how we deal with the frequent demand to raise the speed limit. Studies of the 1987 ten-mile-per-hour speed limit increase on rural interstates -- our safest rural roads -- found a twenty to thirty percent increase in traffic deaths. Yet, when faced with additional speed limit increases in the name of perceived efficiency, society seems inexplicably docile about creating still another life threatening public health situation.

Traffic deaths are much more numerous than suicides (30,000 per year), and homicides (25,000 per year), but still rank behind diseases such as heart, cancer, stroke, and some kinds of accidents like falls, which are primarily dangerous for the elderly. And while any death is an unhappy event, a cause of grief, somehow motor vehicle deaths seem particularly tragic and wasteful. Unlike deaths from "natural causes," traffic crashes more often claim younger rather than older people. They are the leading cause of death for people from age 5 to 27. They cause horrendous injury and are the leading cause of paraplegia, quadriplegia, traumatic brain injury and disfigurement, to name just a few. They are also one of the leading causes of epilepsy.

But traffic deaths are tragic and wasteful in yet other ways. Unlike deaths from "natural causes," most traffic deaths are totally preventable. Typical scenarios: A young person, normally hard-working and responsible, drinks excessively at a graduation party, makes the mistake of driving home, loses control of the vehicle and crashes into a tree, killing both self and friend. Or, an habitual offender, a chemically dependent person who has not held a valid driver license for years, drives drunk and kills a pedestrian on a dark and lonely rural road. Or, a tired vacationer with her family is distracted when the family pet gets sick on the back seat. The distraction causes her to lose control, cross the center line into the path of an oncoming vehicle, resulting in several deaths. These are not just "accidents;" they are tragic but preventable incidents.

The Department of Public Safety is responsible for reducing crashes, injuries and fatalities, and the tremendous cost of all motor vehicle crashes, which is estimated at \$1,578,139,000 in 1996. We aggressively pursue these objectives. We inform and educate the public with regard to traffic safety hazards. For those who refuse to heed the messages, we reinforce them by citing speeders and seat belt law violators. We arrest alcohol and drug impaired drivers and revoke their driver licenses to make it tougher for them to hurt others or themselves. But individual drivers can do more than anyone else to save their own lives. Don't drive when impaired, regardless of the substance. Always drive at safe and legal speeds. And always use seat belts. Drive defensively rather than aggressively, assuming the other driver will make a mistake. Be patient and make every allowance for other erring drivers. And most of all, if you should err, hope that all you get is a reminder ticket, not a place in this booklet.

Sincerely,

A handwritten signature in cursive script that reads "Donald E. Davis".

Donald E. Davis
Commissioner

AN EQUAL OPPORTUNITY EMPLOYER

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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 -- A non-fatal injury 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 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 \$500.00 in property damage. (On August 1st, 1994 the reporting threshold for property damage crashes rose to \$1,000.)

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.

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.

INTRODUCTION

At the end of the 1996 calendar year, 3,456,505 people held Minnesota driver licenses and 3,701,865 motor vehicles were registered in the state. Vehicles traveled over 45.2 billion miles on public roadways in the state. There were 105,332 traffic crashes; 576 people died and 48,963 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 37 and the fifth leading cause of death among all persons (*Accident Facts, 1994 Edition, p. 6*).

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 1995 data. Based on those, the total economic loss from 1996 traffic crashes in Minnesota was \$1,578,139,800, a figure which is calculated as follows:

Cost of Motor Vehicle Crashes in 1996

576	deaths	@ \$810,000	= \$466,560,000
3,813	severe injuries	@ \$43,000	= \$163,959,000
16,519	moderate injuries	@ \$15,000	= \$247,785,000
28,631	minor injuries	@ \$9,200	= \$263,405,200
71,546	property damage crashes	@ \$6,100	= \$436,430,600
Total			= \$1,578,139,800

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 is 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 40,200 traffic fatalities throughout the country and 644 in Minnesota. The respective rates per hundred million miles of travel were 1.7 and 1.5. 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.

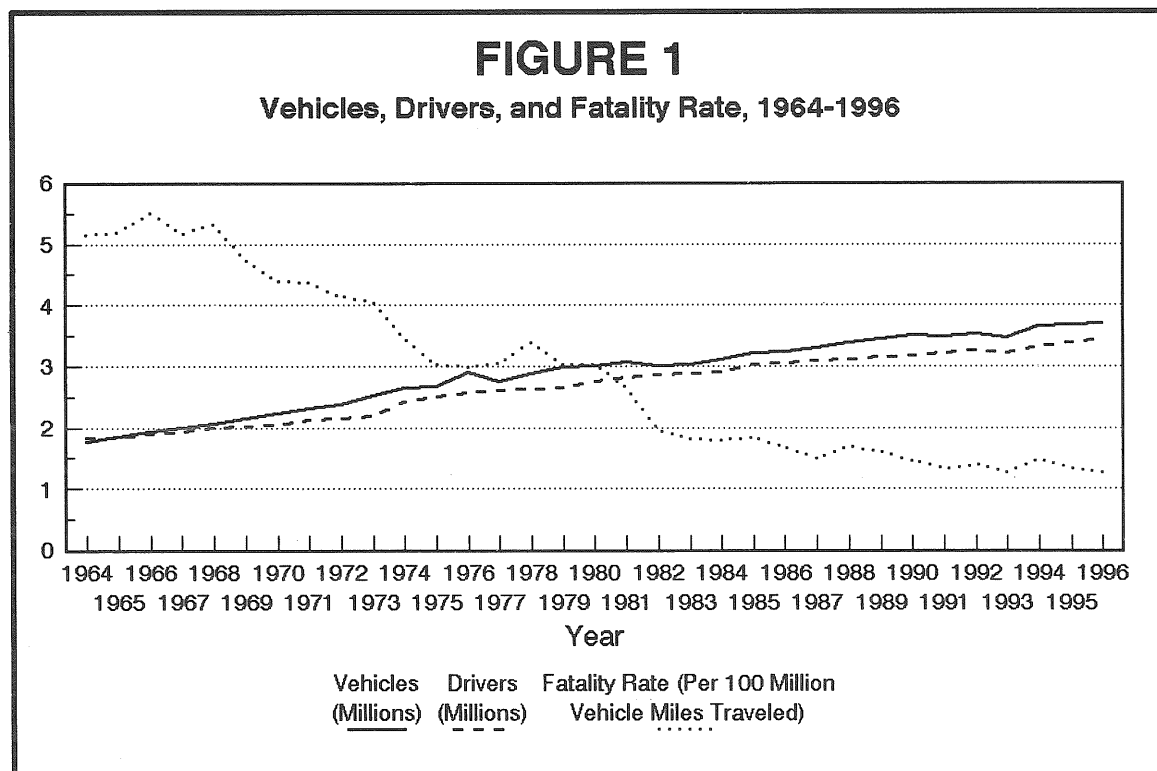
Legislative requirement

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 was just put into 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

General characteristics of traffic crashes

For almost two decades (since 1980), the total number of reported traffic crashes in Minnesota has hovered around 100,000. A characteristic of large numbers is that, in the absence of some dramatic change in the environment, they don't change very much or very abruptly. There are about 1.85 motor vehicles per crash, or about 185,000 total vehicles in crashes each year. Beginning in 1991 everyone involved in a crash was tabulated on the police accident report, rather than only those injured, as had been the practice before 1991. Since 1991, therefore, we know that there are about 1.45 persons per vehicle in a crash. That's about 2.7 persons per crash, or about 270,000 persons in crashes each year. About 575 people die each year, and about 45,000 are injured. These numbers include about 1,400 pedestrians each year, about 50 of whom die, and about 1,300 bicyclists, about 10 of whom die. About two-thirds of crashes each year involve two or more vehicles in transport colliding with one another. The remaining third involve a single moving vehicle hitting a fixed object such as a utility pole or guard rail (about 10% of the time), or a parked vehicle (about 6% of the time), or a deer (about 5%) or a pedestrian (1%) or bicyclist (1%), or they involve the single vehicle not hitting anything, but overturning instead (about 7%).

Specific characteristics of 1996 crashes

Over the last two decades, the statistics for a given year primarily represent small variations on these general patterns, though 1996 showed a slightly larger than usual variation in total crashes. Last year, there were 105,332 traffic crashes involving 193,067 motor vehicles (1.83 per crash) and 288,281 persons (2.74 per crash), including 1,388 pedestrians (46 of whom died) and 1,281 bicyclists (6 of whom died). There were 576 total fatalities and 48,963 persons injured. The high number of crashes last year seems related to unusually inclement weather in January and December 1996. January had the second highest number of crashes in a single month since 1979. (The highest number--14,899--occurred in December 1983.) December 1996 also had an especially high number (12,679) of crashes. Last year, 70,675 crashes (67%) involved two or more moving vehicles colliding with one another. The remaining 34,657 were single-vehicle crashes, including 10,745 collisions with fixed objects, 6,449 collisions with parked vehicles, 4,943 car-deer crashes, and 7,159 overturn crashes.

WHO was involved

Drivers and victims are disproportionately young

Few relationships in human behavior are as simple and clear as that between age and motor vehicle crash involvement. Crash involvement decreases with age and driving experience and, in a word, teenagers tend to be terrible drivers. In 1996, one in ten licensed teenage drivers was in a reported motor vehicle crash. Among 20-to-24 year-olds, the number was one in twelve. The number declines steadily across successive five-year age groups: 1 in 15 for 25-to-29 year-olds, 1 in 28 for 30-to-34 year-olds, and 1 in 56 among those over 35. For the oldest driver age groups, experts recognize that the low crash involvement rate comes more from reduced driving than from increased driving skill.

In the event of a crash, young people gain an advantage owing to their normally good health, but even so they suffer a large portion of the deaths and injuries each year. In 1996, one in six (or 96) of the 576 traffic deaths occurred to a 15-to-19 year-old. There were 68 deaths among 20-to-24 year-olds, and 43 among 25-to-29 year-olds. The pattern is the same among those injured: 15-to-19 year-olds made up almost 1 in 5 of the injured.

With respect to gender, there is an interesting difference. Males are much more likely to be the drivers in crashes: they made up 73% of the drivers in fatal crashes and about 60% of the drivers in non-fatal crashes. Males also were killed more often--almost twice as often as females (374 to 202). But females suffered injury slightly more often: about 51% to 49%.

WHY the crashes occurred

Inattention/distraction, failing to yield, and speed

The three contributing factors that investigating officers check off most frequently, considering all crashes together, are driver inattention or distraction, cited in 25% of crashes, failing to yield right-of-way, cited in 18% of crashes, and illegal or unsafe speed, cited in 16% of crashes. The likelihood that a particular factor was involved varies however with the age of the driver, the severity of the crash, and whether the crash was a single-vehicle or multiple-vehicle crash.

In single-vehicle crashes, speed is cited more often than any other factor, except among drivers over age 65, for whom inattention/distraction is cited most

often, then physical impairment, then speed. For the under-65 drivers (excluding teens) in these single vehicle crashes, inattention/distraction is cited second most often, then physical impairment. For the teenagers, speed is cited most, then driver inexperience, then inattention/distraction.

In multiple-vehicle crashes, officers most often check off inattention/distraction for under-65 drivers, then failing to yield right-of-way, then speed, then following too closely. For the over-65 drivers, two factors predominate over all the others: most often, failure to yield right-of-way and, second most often, driver inattention or distraction.

Overlaying these variations is a relationship between crash severity and contributing factors. For the less severe injury and property damage crashes, driver inattention or distraction is cited most often, then failing to yield right-of-way, then speed. For the fatal crashes, speed is cited most, then physical impairment, then failing to yield-of-way and inattention/distraction. It is important to note that police can cite up to two contributing factors for each driver in a crash and in multiple vehicle crashes, they will frequently associate one or two factors with one vehicle and none with the other vehicles. Also, especially in fatal crashes, alcohol, as reflected in the factor "physical impairment," will be associated with other factors such as speed and failing to yield right-of-way.

WHAT the conditions were

Deaths in summer, property damage crashes in winter

Over many years two seasonal patters appeared to become evident. Specifically, the numbers of fatal traffic crashes and people killed were highest in the warm summer months, while the less severe injury and property damage crashes (which are much more numerous and thus drive statistics on total crashes) peaked in the inclement-weather months of the winter. The pattern does not always hold, but it generally does. For example, in 1996, the most deaths (76) occurred in August, then September (69), then July (62), then October (53), then June (52), while the most total crashes occurred in January (13,570), then December (12,679), then November (10,422), then February (8,882).

The consistency of these patterns over years leads to one interpretation: that although bad weather and bad road-surface conditions are unpleasant, they at

least have the benefit of greatly slowing down traffic so that--although there are more minor crashes--there are fewer fatal crashes. However, another interpretation is possible. Bad weather and road surface conditions may depress driving volume so much (compared to a warm summer day) that the number of fatal crashes goes down substantially. The vehicles still driving continue to get into many more crashes than they would in good conditions. Bad road surface conditions in winter may still cause many fatal crashes that would not otherwise have occurred. This interpretation avoids the rather counter-intuitive concept that bad driving conditions can paradoxically have the benefit of reducing traffic deaths. In 1996, 84 deaths (15% of the total) resulted from crashes that occurred on roads shown to be covered with snow or slush, or with ice or packed snow. January 1, 1996 was an especially bad day: There were five fatal traffic crashes causing nine deaths. All five crashes were on roads that were covered with ice or packed snow.

WHERE they occurred

Total crashes follow population density, fatal crashes just the reverse

An urban area is defined as a town or city with a population of 5,000 or more people. A rural area is any other area, and often designates open country outside of any city or town. In 1996, 70% of all crashes occurred in urban areas. Minneapolis and St. Paul accounted for 23% of the total 105,332 crashes, Hennepin and Ramsey County for 40%. It's just the reverse for fatal crashes: Thirty percent occurred in urban areas, the remainder in rural areas. And when fatal crashes do occur, it is usually on two-lane, two-way highways. In 1996, 413 out of 576 deaths occurred on such roadways.

WHEN they occurred

Twenty years ago there were two distinctly different patterns for traffic crashes across the hours of the day. In 1976, fatal traffic crashes rose to a peak between 1:00 to 2:00 AM, while total traffic crashes rose to their main peak between 4:00 and 5:00 PM, and had a second, but much lower, peak between 1:00 and 2:00 AM. In 1996, fatal crashes had a minor peak from 1:00 to 2:00 AM, but mostly they followed the same pattern across the day as total traffic crashes, with a pronounced main peak during the afternoon rush hour (5:00 to 6:00 PM).

TABLE 1.01

CRASH, FATALITY, AND INJURY SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Traffic Crashes	94,095	102,094	105,996	99,236	101,419	96,808	100,907	99,701	96,022	105,332
Persons Killed	530	615	605	568	531	581	538	644	597	576
Persons Injured	42,091	44,415	45,404	44,634	42,748	43,249	44,987	46,403	47,161	48,963
Registered Motor Vehicles (Millions of Vehicles)	3.31	3.39	3.46	3.52	3.51	3.55	3.48	3.67	3.68	3.70
Licensed Drivers ¹ (Millions of Drivers)	3.10	3.13	3.16	3.18	3.22	3.27	3.28	3.34	3.39	3.46
Vehicular Miles Traveled (Billions of Miles)	35.1	36.4	37.6	38.8	39.3	41.3	42.3	43.4	44.1	45.2 ²
Fatality Rate Per Hundred Million Vehicle Miles Traveled	1.51	1.69	1.61	1.47	1.35	1.41	1.27	1.48	1.35	1.27 ²
Fatality Rate Per 100,000 Registered Motor Vehicles	16.0	18.1	17.5	16.1	15.1	16.4	15.5	17.6	16.2	15.6
Fatality Rate Per 100,000 Population	12.6	14.3	13.9	13.0	12.0	13.0	11.9	14.1	13.0	12.4
Crash Rate Per Hundred Million Vehicle Miles Traveled	268	280	282	256	258	235	239	230	218	233 ²
Crash Rate Per 100,000 Registered Vehicles	2,840	3,012	3,060	2,817	2,890	2,730	2,899	2,720	2,606	2,845
Crash Rate Per 100,000 Population	2,233	2,371	2,435	2,268	2,288	2,161	2,234	2,183	2,083	2,261

¹ Permits included.² Estimates of miles traveled are usually provided by the Minnesota Department of Transportation. However, the number shown for 1996 is an estimate made by the Department of Public Safety since the MNDOT estimate is not available in time for this report.

TABLE 1.02
TRAFFIC CRASH TRENDS
1991 - 1996

	1991	1992	1993	1994	1995	1991- 1995 Average	1996	%change from 5 Yr Average	Record High	
Total Crashes	101,419	96,808	100,907	99,701	96,022	98,971.4	105,332	+6.4	123,106	(1975)
Fatal Crashes	469	494	477	550	515	501	503	+0.4	878	(1973)
Injury Crashes	28,890	29,117	30,257	31,307	31,611	30,236.4	33,283	+10.1	33,686	(1978)
Severe	3,356	3,387	3,206	3,172	2,967	3,217.6	2,960	-8.0	5,109	(1984) ¹
Moderate	10,421	10,204	10,503	11,057	11,294	10,695.8	11,745	+9.8	12,326	(1985) ¹
Minor	15,113	15,526	16,548	17,078	17,350	16,323.0	18,578	+13.8	18,578	(1996) ¹
Property Damage Crashes	72,060	67,197	70,173	67,844	63,896	68,234.0	71,546	+4.9	94,810	(1975)
Total Injuries	42,748	43,249	44,987	46,403	47,161	44,909.6	48,963	+9.0	50,332	(1978)
Severe	4,302	4,391	4,139	4,105	3,826	4,152.6	3,813	-8.2	6,573	(1984) ¹
Moderate	14,725	14,554	14,902	15,618	16,053	15,170.4	16,519	+8.9	17,670	(1985) ¹
Minor	23,721	24,304	25,946	26,680	27,282	25,586.6	28,631	+11.9	28,631	(1996) ¹
Total Fatalities	531	581	538	644	597	578.2	576	-0.4	1,060	(1968)
Pedestrian	61	46	47	53	49	51.2	46	-10.2	157	(1971)
Motor Vehicle/Train ²	10	9	15	17	16	13.0	8	-38.5	62	(1932)
Bicycle	8	11	9	16	5	9.8	6	-38.8	24	(1977)
Motorcycle	40	28	34	43	35	36.0	42	+16.7	121	(1980)
All Terrain Vehicle	6	1	1	0	2	2.0	1	-50.0	9	(1986)
Snowmobile	2	4	4	3	7	4.0	5	+25.0	9	(1984)
Motor Vehicle Occupants	405	484	439	519	495	468.4	462	-1.4	519	(1994) ¹
Fatality Rate ³	1.35	1.41	1.27	1.48	1.35	1.37	1.27 ⁵	-7.3	23.6	(1934)
U.S. Fatality Rate ³	1.9	1.8	1.7	1.7	1.7	1.8	1.7	-5.6	18.0	(1925)
Minnesota Economic Loss (millions)	\$834.1	\$965.8	\$1,397.8	\$1,656.6	\$1,611.8	\$1,293.2	1,578.1	+22.0	\$1,656.6	(1994) ⁴

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

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

³ Rate is based upon per 100 million vehicle miles of travel.

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

⁵ See footnote 2 on page 6.

TABLE 1.03

1996 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	33	37	30	29	20	12	35	196	
		Female	0	18	22	14	19	9	11	16	109	
	Passenger	Male	4	21	18	13	7	2	4	4	74	
		Female	4	15	9	4	11	6	10	12	71	
	Unknown	Male	0	3	2	2	0	0	0	0	7	
		Female	0	0	1	1	0	0	0	2	4	
Motorcycle	Operator	Male	0	4	13	10	5	4	1	1	38	
		Female	0	0	0	0	0	0	0	0	0	
	Passenger	Male	0	0	1	1	0	0	0	0	2	
		Female	0	1	0	1	0	0	0	0	2	
Motorscooter or Moped	Driver	Male	0	0	0	0	0	0	0	0	0	
		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	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	
Snowmobile	Driver	Male	0	4	1	0	0	0	0	0	5	
		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	0	1	0	3	3	0	7	
		Female	1	1	0	0	0	1	0	0	3	
	Passenger	Male	0	0	0	0	0	0	1	0	1	
		Female	0	0	0	0	0	0	0	0	0	
	Unknown	Male	1	2	0	0	0	0	0	0	3	
		Female	0	1	0	0	0	0	0	0	1	
Bicyclist		Male	1	3	0	0	1	0	0	1	6	
		Female	0	0	0	0	0	0	0	0	0	
Pedestrian		Male	4	4	7	3	4	2	5	5	34	
		Female	0	2	0	0	3	1	1	5	12	
Total Fatalities			Male	10	75	79	60	46	31	26	46	1
			Female	5	38	32	20	33	17	22	35	202
			Total	15	113	111	80	79	48	48	81	576

Note: Age was unknown for one male car/truck passenger. The 15 fatalities shown to have occurred in "other motor vehicle" included 2 fatalities in a school bus, 1 in a bus other than a school bus, 3 on farm equipment, 1 in a motorhome, 1 in a hit-and-run vehicle, 2 in "other publicly owned vehicle," 4 in "other privately owned vehicle," and 1 in "other type of vehicle."

TABLE 1.04

AGE AND GENDER OF PERSONS KILLED OR INJURED IN 1996 CRASHES

Age Group	Persons Killed			Persons Injured		
	Male	Female	Total	Male	Female	Total*
0 - 4	5	1	6	401	376	791
5 - 9	5	4	9	761	667	1,434
10 - 14	11	6	17	1,000	1,043	2,049
15 - 19	64	32	96	4,179	4,735	8,926
20 - 24	51	17	68	3,093	2,965	6,073
25 - 29	28	15	43	2,515	2,495	5,021
30 - 34	27	12	39	2,252	2,278	4,540
35 - 39	33	8	41	2,079	2,145	4,237
40 - 44	26	16	42	1,617	1,777	3,397
45 - 49	20	17	37	1,305	1,562	2,873
50 - 54	12	13	25	826	1,017	1,847
55 - 59	19	4	23	704	747	1,455
60 - 64	14	12	26	475	548	1,024
65 - 69	12	10	22	401	502	910
70 - 74	15	10	25	392	505	898
75 - 79	10	10	20	288	367	657
80 - 84	14	6	20	214	235	451
85 & Older	7	9	16	136	148	285
Not Stated	1	0	1	620	880	2,095
Total	374	202	576	23,258	24,992	48,963

* Many totals do not add across because gender is not always indicated on the accident report.

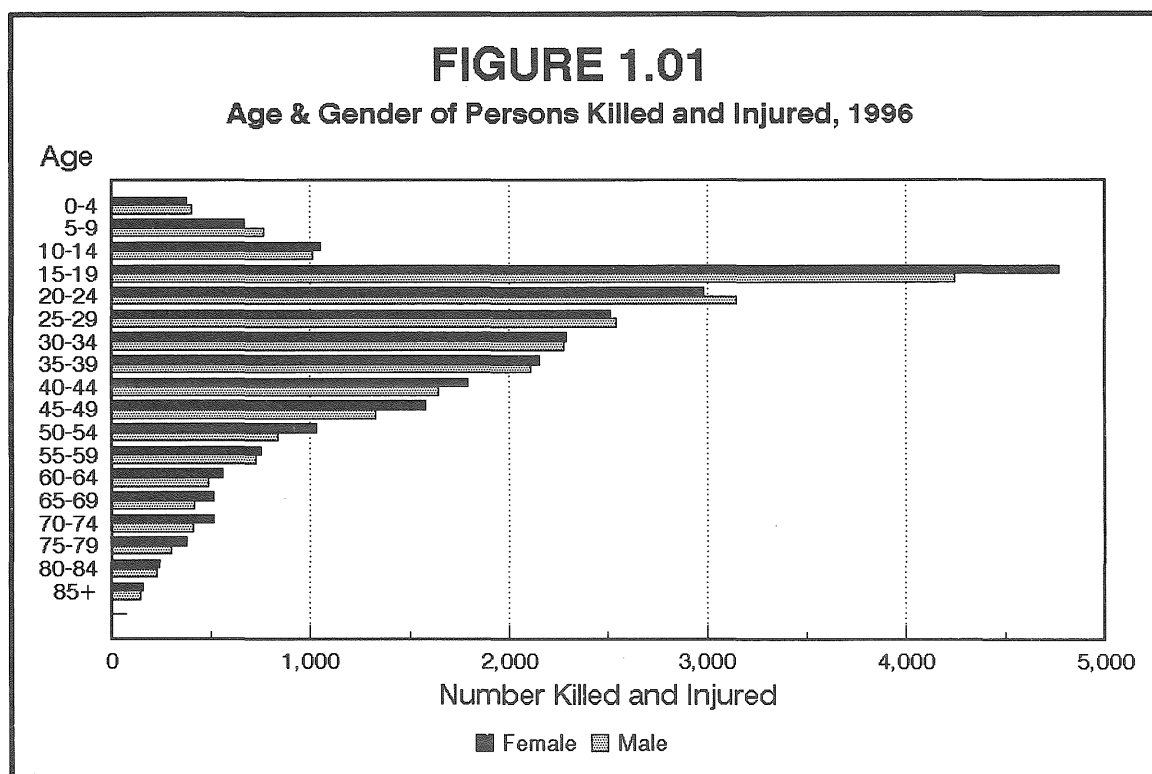


TABLE 1.05

DRIVERS IN 1996 CRASHES BY PHYSICAL CONDITION*

Physical Condition	Drivers in Fatal Crashes	Drivers in Injury Crashes	Drivers in Property Damages Crashes	Drivers in All Crashes
Normal	462	48,252	82,409	131,123
Under the Influence	72	2,115	1,689	3,876
Had Been Drinking	61	1,326	1,170	2,557
Had Been Using Drugs	2	51	30	83
Asleep	11	333	302	646
Fatigued	3	136	126	265
Ill	4	127	69	200
Other	11	256	208	475
Unknown	198	7,225	38,456	45,879
Total	824	59,821	124,459	185,104

* As noted by police officer on accident report. Pedestrians and bicyclists are not included.

TABLE 1.06

DRIVERS IN 1996 CRASHES BY AGE AND FIRST HARMFUL EVENT IN CRASH

First Harmful Event	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65-79	Drivers 80 & Older
Collision With:							
Other Motor Vehicle	77.5	79.4	81.7	82.0	82.7	86.7	87.0
Parked Motor Vehicle	3.1	2.7	2.5	2.3	2.2	2.6	4.2
Railroad Train	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Bicycle	0.5	0.5	0.7	0.6	0.7	1.0	0.8
Pedestrian	0.7	0.8	0.6	0.7	0.6	0.7	0.8
Deer	1.8	2.1	2.4	2.9	3.7	2.5	0.9
Other Animal	0.2	0.2	0.2	0.2	0.3	0.2	0.0
Fixed Object	8.2	7.5	6.5	5.7	4.7	3.8	4.0
Other Object	0.1	0.1	0.2	0.3	0.2	0.1	0.1
Non-Collision:							
Overturn	6.5	5.1	3.9	3.9	3.3	1.5	1.0
Other Non-Collision	0.2	0.3	0.2	0.2	0.2	0.1	0.2
Other or Unknown	1.3	1.3	1.2	1.3	1.3	1.0	0.9
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Drivers	27,617	23,839	21,895	20,691	68,898	9,970	2,472

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 1996 CRASHES

Age Group	Drivers in Fatal Crashes				Drivers in All Crashes			
	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
14 & Younger	5	1	0	6	128	47	3	178
15 - 19	88	43	0	131	16,097	11,350	170	27,617
20 - 24	79	24	0	103	14,176	9,470	193	23,839
25 - 29	60	20	0	80	13,050	8,661	184	21,895
30 - 34	57	24	0	81	12,269	8,244	178	20,691
35 - 39	56	14	1	71	11,540	7,835	160	19,535
40 - 44	58	21	0	79	9,456	6,467	137	16,060
45 - 49	46	18	0	64	7,929	5,214	95	13,238
50 - 54	31	12	0	43	5,443	3,301	67	8,811
55 - 59	32	7	0	39	4,159	2,289	50	6,498
60 - 64	22	9	0	31	3,033	1,685	38	4,756
65 - 69	13	5	0	18	2,525	1,398	29	3,952
70 - 74	17	8	0	25	2,069	1,320	24	3,413
75 - 79	11	7	0	18	1,583	1,000	22	2,605
80 - 84	14	7	0	21	993	658	16	1,667
85 & Older	6	3	0	9	499	293	13	805
Not Stated	4	0	1	5	1,471	661	7,412	9,544
Total	599	223	2	824	106,420	69,893	8,791	185,104

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, 1996

Age Group	Percentage of All Licensed Drivers**	Percentage of Drivers in			
		Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes
14 & Younger	0.0	0.7	0.1	0.1	0.1
15 - 19	7.6	15.9	16.0	14.4	14.9
20 - 24	8.2	12.5	13.6	12.6	12.9
25 - 29	9.6	9.7	12.3	11.6	11.8
30 - 34	10.7	9.8	11.4	11.1	11.2
35 - 39	11.8	8.6	10.9	10.4	10.6
40 - 44	10.8	9.6	8.7	8.7	8.7
45 - 49	9.3	7.8	7.1	7.2	7.2
50 - 54	7.2	5.2	4.7	4.8	4.8
55 - 59	5.6	4.7	3.5	3.5	3.5
60 - 64	4.6	3.8	2.5	2.6	2.6
65 - 69	4.3	2.2	2.1	2.2	2.1
70 - 74	3.9	3.0	1.9	1.8	1.8
75 - 79	3.1	2.2	1.5	1.4	1.4
80 - 84	2.1	2.6	1.0	0.9	0.9
85 & Older	1.3	1.1	0.5	0.4	0.4
Not Stated	0.0	0.6	2.4	6.5	5.2

Total Percent*	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number**	3,456,505	824	59,821	124,459	185,104

* Percents may not sum to 100% due to rounding.

** Includes drivers with instruction permits.

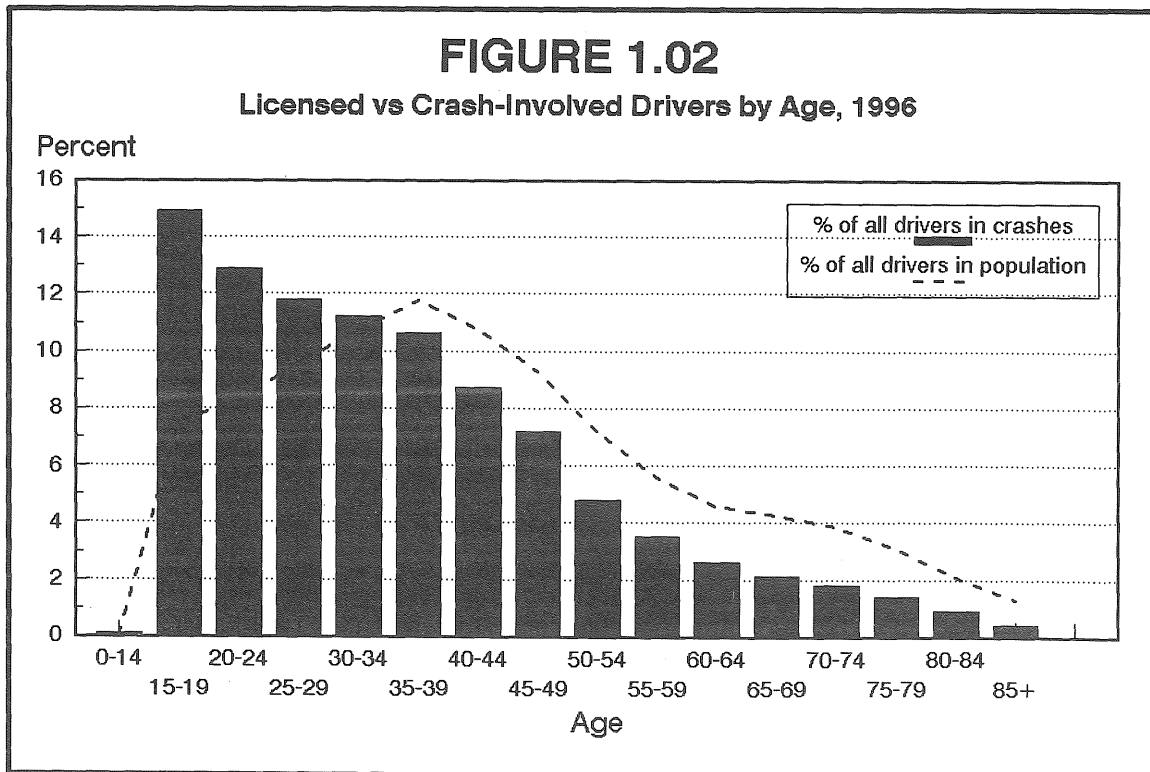


TABLE 1.09

**SINGLE-VEHICLE CRASHES:
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1996**

Contributing Factors	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65-79	Drivers 80 & Older
Human Factors							
Illegal/Unsafe Speed	24.3	25.4	24.0	22.8	20.0	10.8	6.1
Driver Inattention/Distracted	17.2	16.7	16.1	17.0	17.9	23.7	30.5
Physical Impairment	4.9	11.7	12.3	11.5	10.6	12.8	12.2
Driver Inexperience	17.8	4.8	2.3	1.8	1.8	0.8	0.7
Improper/Unsafe Lane Use	2.7	3.7	4.1	3.8	3.5	3.5	5.7
Failure to Yield Right of Way	1.6	2.5	2.2	2.8	3.2	4.5	4.3
Unsafe Backing	1.1	1.1	1.4	1.1	1.7	2.5	4.3
Vision Obscured	1.1	1.2	1.5	1.4	1.9	3.6	3.6
Driving Left of Center--Not Passing	1.0	1.0	1.1	1.0	1.0	1.1	1.4
Improper Turn	0.9	0.9	0.8	0.9	1.2	0.8	3.2
Improper Parking/Starting/Stopping	0.4	0.5	0.6	0.7	0.6	1.9	1.8
Disregard for Traffic Control Device	0.5	0.7	0.8	0.7	0.6	0.6	1.1
Improper Passing/Overtaking	0.7	0.5	0.6	0.5	0.7	0.8	0.7
Following Too Closely	0.4	0.4	0.5	0.5	0.5	0.4	0.0
Failure to Use Lights	0.1	0.1	0.1	0.0	0.1	0.2	0.0
Driver on CB Radio or Cell Phone	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Impeding Traffic	0.1	0.0	0.1	0.1	0.1	0.0	0.0
Other Human Factors	2.0	2.3	2.2	2.1	2.5	4.2	8.2
Vehicular Factors							
Skidding	8.7	8.6	9.9	10.2	10.1	7.4	6.1
Defective Equipment	1.1	1.3	1.3	1.3	1.2	1.6	1.1
Other Vehicular Factor	0.8	1.2	1.3	1.4	1.6	1.7	1.1
Miscellaneous Factors							
Weather	9.2	11.5	12.7	14.0	14.8	12.7	5.7
Other	3.4	3.9	4.1	4.1	4.4	4.6	2.2
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Contributing Factors Cited	7,516	5,169	3,856	3,361	9,282	1,002	279
Drivers for Whom There Was							
"No Clear Contributing Factor"	879	840	796	792	3,056	316	62
Total Number of Drivers	5,858	4,498	3,594	3,306	10,544	1,181	291

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. Contributing factors with a frequency of less than one-tenth of one percent (for all age groups combined) are merged into the category "other human factors."

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, 1996**

Contributing Factors	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65-79	Drivers 80 & Older
Human Factors							
Driver Inattention or Distraction	22.2	22.0	22.8	22.2	22.4	23.3	23.5
Failure to Yield Right of Way	19.1	16.5	15.5	16.6	18.4	30.0	37.3
Following Too Closely	7.9	9.8	10.2	9.7	8.0	5.1	2.8
Illegal or Unsafe Speed	10.5	12.7	12.4	10.9	9.1	4.3	2.9
Disregard of Traffic Control Device	3.7	4.5	4.6	4.4	4.4	6.0	6.4
Improper or Unsafe Lane Use	3.4	4.1	4.2	4.0	4.3	4.9	4.4
Vision Obscured	3.4	3.0	3.0	3.2	4.1	4.2	4.7
Improper Turn	2.5	2.3	2.3	2.1	2.6	4.2	5.1
Driver Inexperience	7.6	1.8	0.9	0.8	0.6	0.3	0.3
Physical Impairment	0.7	2.1	2.2	2.5	2.0	1.5	1.3
Improper Passing or Overtaking	1.6	1.8	1.7	1.6	1.7	1.3	1.4
Improper Parking, Starting, or Stopping	1.0	1.3	1.1	1.2	1.3	1.5	1.9
Unsafe Backing	0.7	0.9	1.0	1.3	1.5	1.2	1.0
Driving Left of Center (Not Passing)	1.2	1.0	1.0	1.2	1.1	1.2	0.6
Improper or No Signal	0.4	0.3	0.3	0.4	0.6	0.5	0.3
Impeding Traffic	0.2	0.3	0.2	0.2	0.3	0.3	0.3
Failure to Use Lights	0.2	0.1	0.2	0.1	0.2	0.0	0.1
Driver on Cell Phone or CB Radio	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Other Human Factors	0.4	0.5	0.5	0.6	0.6	0.7	0.9
Vehicular Factors							
Skidding	5.0	5.1	5.6	5.9	5.7	2.8	1.5
Defective Equipment	0.9	0.8	0.7	0.7	0.7	0.5	0.1
Other Vehicular Factor	0.4	0.4	0.4	0.4	0.5	0.4	0.3
Miscellaneous Factors							
Weather	5.4	6.4	6.5	7.1	7.0	3.7	2.0
Other	1.7	2.3	2.6	2.9	2.9	2.0	1.6
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Contributing Factors Cited	19,417	14,091	11,394	10,305	31,673	6,063	1,989
Drivers for Whom There Was							
"No Clear Contributing Factor"	6,637	7,118	7,553	7,656	26,974	3,302	588
Total Number of Drivers	21,702	19,246	18,199	17,287	58,015	8,753	2,173

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. Contributing factors with a frequency of less than one-tenth of one percent (for all age groups combined) are merged into the category "other human factors."

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

PEOPLE KILLED OR INJURED IN VARIOUS VEHICLE TYPES, 1996

Vehicle Type	Killed	Injured			Total
		Severe	Moderate	Minor	
Automobile	347	2,325	10,964	20,740	34,029
Pickup Truck	79	446	2,109	3,088	5,643
Van	32	228	1,153	2,355	3,736
Motorhome/Camper	1	1	6	12	19
Taxicab	0	3	29	74	106
Police Vehicle	0	7	44	98	149
Fire Department Vehicle	0	0	1	2	3
School Bus	2	8	50	173	231
Other Bus	1	2	22	101	125
Ambulance	0	1	7	6	14
Military Vehicle	0	0	2	5	7
Snowmobile	5	21	36	31	88
All Terrain Vehicle	1	13	15	11	39
Farm Tractor or Equipment	3	7	9	7	23
Motorcycle*	42	245	524	277	1,046
Motorscooter/Motorbike*	0	9	11	6	26
Motorized Bicycle (Moped)*	0	4	10	8	22
Hit and Run Vehicle	1	15	91	105	211
Road Maintenance Vehicle	0	4	5	5	14
Single Truck (2-axle, 6-tire)	2	13	45	87	145
Single Truck (3 or more axles)	0	5	21	29	55
Single Truck with Trailer	0	3	15	17	35
Truck Tractor with No Trailer	0	2	1	4	7
Truck Tractor with Semi Trailer	1	13	60	122	195
Truck Tractor with Double Trailers	0	0	1	4	5
Other or Unknown Truck Type	0	0	4	4	8
Other or Unknown Motor Vehicle	7	28	101	184	313
Bicycle	6	144	644	493	1,281
Pedestrian	46	266	539	583	1,388
Total	576	3,813	16,519	28,631	48,963

* 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, 1987 - 1996

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
15	12,301	13,387	14,072	12,832	15,075	16,626	18,047	16,031	20,660	24,783
16	45,397	42,178	41,544	42,885	43,708	45,744	47,600	48,754	52,205	54,657
17	59,321	53,900	49,458	48,496	51,161	50,796	51,688	54,960	57,426	60,864
18	61,276	62,772	56,250	52,070	51,293	54,442	53,894	55,472	58,307	61,788
19	61,767	62,637	63,653	58,230	53,876	53,307	55,417	55,793	57,139	61,058
20	60,229	61,076	62,770	63,375	57,902	54,591	53,645	56,765	56,902	58,964
Under 21	300,291	295,950	287,747	277,888	273,015	275,506	280,291	287,775	302,639	322,114
15 - 19	240,062	234,874	224,977	214,513	215,113	220,915	226,646	231,010	245,737	263,150
20 - 24	336,289	326,738	319,048	316,504	312,463	307,139	297,918	290,752	283,027	284,532
25 - 29	399,409	396,744	386,440	372,178	357,464	345,255	336,007	330,676	331,259	330,844
30 - 34	380,972	385,508	393,168	398,645	402,273	404,717	401,155	393,253	381,403	368,340
35 - 39	335,262	344,613	355,869	364,385	371,856	383,109	386,805	396,206	402,366	407,794
40 - 44	269,275	280,236	298,889	316,265	324,986	335,328	342,988	355,845	364,629	373,405
45 - 49	213,358	221,666	229,993	234,494	252,944	266,872	276,715	296,176	313,384	323,114
50 - 54	174,453	179,129	184,310	189,266	197,122	210,453	216,632	225,468	230,114	248,979
55 - 59	165,791	164,032	163,520	164,023	165,779	169,769	173,423	178,920	183,763	191,853
60 - 64	161,733	161,449	160,260	159,799	158,552	157,248	156,044	156,192	156,652	158,537
65 - 69	143,841	144,830	147,857	148,161	148,934	149,867	149,118	148,961	149,004	148,228
70 - 74	118,338	120,753	121,638	122,965	126,115	128,653	128,828	132,442	132,842	134,127
75 - 79	85,032	86,901	89,355	92,378	96,235	98,605	98,970	101,494	103,558	107,144
80 - 84	50,812	51,922	52,667	55,000	58,863	60,829	60,181	65,022	68,506	71,501
85 & Older	27,326	27,634	27,179	29,915	34,455	35,198	32,723	38,158	42,107	44,957
Total	3,101,953	3,127,029	3,155,170	3,178,491	3,223,154	3,273,957	3,284,153	3,340,575	3,388,351	3,456,505

* 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, 1987 - 1996

Type of Vehicle*	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Passenger Cars	2,450,232	2,518,604	2,583,982	2,642,022	2,638,572	2,670,885	2,615,602	2,728,963	2,709,986	2,707,168
Pickups	509,070	515,968	526,212	528,342	520,339	525,205	511,677	584,044	615,068	640,308
Trucks	127,888	135,918	137,690	140,874	139,263	141,144	144,367	145,413	151,188	156,511
Recreational Vehicles	33,120	34,226	34,805	35,328	35,515	36,290	36,826	37,049	37,775	37,683
Motorcycles	134,590	128,956	123,308	120,081	117,492	116,124	114,548	113,337	113,981	112,551
Motorized Bicycles	12,311	10,529	9,987	9,306	8,703	7,947	7,304	6,752	6,441	6,088
School Buses	5,095	5,115	5,026	5,037	5,109	5,058	5,052	5,168	5,319	5,474
Buses	3,502	3,879	4,217	3,780	3,822	3,804	4,039	4,103	4,282	4,145
Van Pool	229	253	248	259	264	256	319	300	295	289
Tax Exempt Vehicles	37,659	35,969	38,106	37,739	39,727	38,829	40,773	40,263	40,511	31,648
Motor Vehicle Subtotal	3,313,696	3,389,417	3,463,581	3,522,768	3,508,806	3,545,542	3,480,507	3,665,392	3,684,846	3,701,865
Trailers	653,630	726,054	708,693	780,484	754,942	830,527	807,187	894,909	849,482	956,629
Collectors' Vehicles	56,146	61,280	66,860	72,031	76,947	82,116	87,405	92,775	97,839	103,030
Total Registrations	4,023,472	4,176,751	4,239,134	4,375,283	4,340,695	4,458,185	4,375,099	4,653,076	4,632,167	4,761,524

* 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 1996 CRASHES

Motor Vehicle Type*	Vehicles in			
	Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes
Automobile	480	41,923	85,254	127,657
Pickup Truck	153	8,709	21,363	30,225
Van	55	4,680	10,262	14,997
Motorhome/Camper	1	23	83	107
Taxicab	1	154	332	487
Police Vehicle	3	191	351	545
Fire Department Vehicle	0	6	36	42
School Bus	6	246	798	1,050
Other Bus	2	115	321	438
Ambulance	1	16	50	67
Military Vehicle	0	9	29	38
Snowmobile	8	86	62	156
All Terrain Vehicle	2	35	10	47
Farm Tractor or Equipment	6	81	115	202
Motorcycle*	42	955	165	1,162
Motorscooter/Motorbike*	0	25	0	25
Motorized Bicycle (Moped)*	0	21	1	22
Hit and Run Vehicle	3	1,348	6,380	7,731
Road Maintenance Vehicle	3	90	312	405
Single Truck (2-axle, 6-tire)	11	443	904	1,358
Single Truck (3 or more axles)	6	173	366	545
Single Truck with Trailer	4	95	318	417
Truck Tractor with No Trailer	0	32	109	141
Truck Tractor with Semi Trailer	45	732	1,943	2,720
Truck Tractor with Double Trailers	2	12	36	50
Other or Unknown Truck Type	0	46	308	354
Other or Unknown Motor Vehicle	11	540	1,528	2,079
Total**	845	60,786	131,436	193,067

* 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

1996 CRASHES AND INJURIES BY FIRST HARMFUL EVENT

First Harmful Event	Personal Property			Total Crashes	Killed	Injured	Fatality Rate
	Fatal Crashes	Injury Crashes	Damage Crashes				Per 1,000 Crashes
Collision With:							
Another Motor Vehicle	269	22,271	48,135	70,675	328	35,030	4.6
Parked Motor Vehicle	3	645	5,801	6,449	3	855	0.5
Railroad Train	8	45	71	124	8	50	64.5
Bicycle	6	1,216	56	1,278	6	1,245	4.7
Pedestrian	41	1,266	0	1,307	41	1,345	31.4
Deer	2	319	4,622	4,943	2	370	0.4
Other Animal	1	83	276	360	2	99	5.6
Fixed Object	88	3,494	7,163	10,745	93	4,608	8.7
Other Object	0	37	171	208	0	40	0.0
Non-Collision:							
Overturn	72	3,296	3,791	7,159	78	4,550	10.9
Fire/Explosion	0	9	259	268	0	11	0.0
Submersion	1	19	35	55	3	27	54.5
Other or Unknown	12	583	1,166	1,761	12	733	6.8
Total	503	33,283	71,546	105,332	576	48,963	5.5

TABLE 1.16

1996 "HIT-AND-RUN" CRASHES AND INJURIES BY FIRST HARMFUL EVENT

First Harmful Event	Personal		Property	Total	Killed	Injured
	Fatal Crashes	Injury Crashes	Damage Crashes			
Collision With:						
Other Motor Vehicle	0	821	2,739	3,560	0	1,120
Parked Motor Vehicle	0	63	2,710	2,773	0	75
Railroad Train	0	1	4	5	0	1
Bicycle	0	153	12	165	0	157
Pedestrian	2	188	0	190	2	200
Deer	0	1	3	4	0	1
Other Animal	0	0	2	2	0	0
Fixed Object	1	78	717	796	1	95
Other Object	0	3	9	12	0	3
Non-Collision:						
Overturn	0	14	61	75	0	19
Fire/Explosion	0	0	1	1	0	0
Other or Unknown	0	18	76	94	0	24
Total	3	1,340	6,334	7,677	3	1,695

TABLE 1.17

1996 CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Not Applicable	343	18,140	37,443	55,926	397	26,225
Traffic Signal	26	7,509	12,526	20,061	27	11,169
Overhead Flashers	3	107	255	365	3	172
Stop Sign-All Approaches	2	514	1,288	1,804	2	710
Other Stop Sign	76	4,710	8,756	13,542	87	7,369
Yield Sign	16	537	1,055	1,608	18	874
Flagman, Officer, or School Patrol	0	50	71	121	0	78
School Bus Stop Arm	0	18	48	66	0	22
School Zone Sign	0	9	24	33	0	10
No Passing Zone	18	279	439	736	22	480
RR Crossing Gate	0	15	37	52	0	21
RR Flashing Lights	0	20	39	59	0	28
RR Crossing Stop Sign	1	6	19	26	1	8
RR Other	4	27	47	78	4	31
Other	5	407	2,326	2,738	6	556
Unknown	9	935	7,173	8,117	9	1,210
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.18

1996 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Clear	281	17,737	36,245	54,263	311	26,111
Cloudy	135	9,058	17,958	27,151	160	13,326
Rain	22	2,325	4,476	6,823	24	3,617
Snow	22	2,074	6,114	8,210	28	2,922
Sleet/Hail/Freezing Rain	6	753	2,007	2,766	7	1,077
Fog/Smog/Smoke	6	200	405	611	9	307
Blowing Sand/Dust	16	523	1,367	1,906	19	777
Severe Crosswinds	0	59	133	192	0	96
Other	3	66	288	357	3	97
Not Stated/Unknown	12	488	2,553	3,053	15	633
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.19

CONTRIBUTING FACTORS IN 1996 CRASHES

Contributing Factors	Percent of Factors Cited in Crashes by Severity of Crash			Number of Crashes in which the Factor was Cited			Number of People Affected	
	Fatal Crashes	Injury Crashes	Property Damage Crashes	Fatal Crashes	Injury Crashes	Property Damage Crashes	Killed	Injured
Human Factors								
Driver Inattention/Distracted	12.1	22.5	19.8	103	10,718	15,430	115	16,226
Failure to Yield Right of Way	12.8	15.4	14.0	113	7,617	11,307	126	12,065
Illegal/Unsafe Speed	17.8	12.8	13.1	138	6,195	10,409	164	9,481
Following Too Closely	1.0	6.3	6.3	8	2,910	4,756	15	4,298
Improper/Unsafe Lane Use	4.3	3.2	5.3	36	1,594	4,308	39	2,365
Disregard Traf Contr Device	3.6	5.0	2.8	32	2,503	2,257	38	4,191
Physical Impairment	13.6	5.3	2.4	115	2,635	1,988	126	3,909
Driver Inexperience	2.3	3.4	3.0	20	1,693	2,474	24	2,665
Vision Obscured	2.2	2.8	3.0	18	1,336	2,221	19	1,809
Improper Turn	0.7	1.7	2.6	6	862	2,167	8	1,397
Improper Passing/Overtaking	1.4	1.0	1.9	11	512	1,522	12	756
Unsafe Backing	0.1	0.5	1.9	1	226	1,521	1	287
Improper Parking/Starting/ Stopping	0.8	1.1	1.4	7	535	1,120	8	799
Driving Left of Center (Not Passing)	6.7	1.3	1.1	58	628	860	82	1,156
Pedestrian Violation or Error	2.2	1.0	0.0	19	505	0	19	524
Improper or No Signal	0.1	0.3	0.4	1	131	316	1	189
Impeding Traffic	0.0	0.2	0.3	0	74	198	0	138
Failure to Use Lights	0.3	0.2	0.1	3	90	91	3	130
Driver on CB radio / Cellular phone	0.1	0.1	0.1	1	39	50	1	57
Other Human Factor	1.3	1.2	0.9	10	577	715	11	801
Vehicular Factors								
Skidding	3.8	4.8	6.6	31	2,247	5,028	39	3,255
Defective Equipment	0.5	0.9	0.8	4	448	676	7	647
Other Vehicular Factor	0.3	0.5	0.7	3	247	580	5	363
Miscellaneous Factors								
Weather	6.4	6.1	8.1	30	2,476	5,656	37	3,541
Other	5.7	2.9	3.5	46	1,246	2,393	52	1,758
Total Percent	100.0%	100.0%	100.0%					
Total Contributing Factors	880	50,968	83,115					
Vehicles Where There Was "No Clear Contributing Factor"								
Total Number of Vehicles	902	63,449	131,501					

Zero, one, or two contributing factors may be associated with each vehicle. This causes the number of factors cited to be different from the number of vehicles, the number of crashes, and the number of people affected by the factors. Percentages are based on all factors cited; they do not sum to 100% due to rounding. 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. Contributing factors with a frequency of less than one-tenth of one percent are merged into the category "other human factors."

TABLE 1.20

1996 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Daylight	266	21,979	44,068	66,313	304	32,462
Dawn/Dusk	32	2,029	5,113	7,174	42	2,895
Dark/Street Lights On	57	5,361	11,878	17,296	62	7,852
Dark/No Street Lights	135	3,373	7,415	10,923	155	5,022
Other/Unknown	13	541	3,072	3,626	13	732
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.21

1996 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Dry	368	19,760	35,550	55,678	422	29,385
Wet	47	4,661	8,879	13,587	52	7,120
Snow/Slush	13	2,040	5,546	7,599	15	2,920
Ice or Packed Snow	59	6,081	18,835	24,975	69	8,510
Other	9	396	775	1,180	9	581
Not Stated/Unknown	7	345	1,961	2,313	9	447
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.22

1996 CRASHES BY ROAD DESIGN

Road Design	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Freeway (Including Ramps)	44	3,373	8,107	11,524	49	4,822
Other Divided Highway	59	4,650	7,101	11,810	65	7,069
One-Way Street	3	1,040	1,369	2,412	3	1,470
4-6 Lanes Undivided	29	6,148	8,802	14,979	31	9,035
3 Lanes	5	346	576	927	7	533
2 Lanes--Two-Way	355	14,819	27,889	43,063	413	22,194
Alley/Driveway	2	203	579	784	2	228
Other	4	490	941	1,435	4	717
Not Stated/Unknown	2	2,214	16,182	18,398	2	2,895
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.23

1996 CRASHES BY DIAGRAM

Diagram	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Rear End	38	8,013	12,246	20,297	47	12,095
Sideswipe Passing	2	908	5,467	6,377	2	1,197
Left Turn -- Oncoming Traffic	12	1,840	2,876	4,728	14	2,952
Ran Off Road - Left	59	2,432	3,424	5,915	63	3,309
Right Angle	119	8,400	12,289	20,808	132	13,123
Right Turn -- Cross Street Traffic	2	181	437	620	2	232
Ran Off Road - Right	84	3,093	4,734	7,911	91	4,107
Head On	92	1,397	1,578	3,067	122	2,578
Sideswipe Opposing	8	475	1,372	1,855	9	733
Other / Unknown / Incomplete	87	6,544	27,123	33,754	94	8,637
Total	503	33,283	71,546	105,332	576	48,963

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

1996 CRASHES BY POPULATION OF AREA

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
100,000 & Over	32	7,402	16,730	24,164	34	10,601
50,000 - 99,999	23	3,439	6,265	9,727	28	4,955
25,000 - 49,999	30	4,957	10,762	15,749	30	7,049
10,000 - 24,999	40	4,954	11,297	16,291	42	7,098
5,000 - 9,999	24	2,247	5,089	7,360	25	3,278
2,500 - 4,999	14	861	2,147	3,022	15	1,270
1,000 - 2,499	14	640	1,558	2,212	15	984
Under 1,000	326	8,783	17,698	26,807	387	13,728
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.25

1996 CRASHES BY TYPE OF ROADWAY

Type of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Urban						
Interstate	22	2,245	5,981	8,248	25	3,159
Trunk Highway	39	5,504	11,044	16,587	41	8,071
County State Aid Highway	40	6,543	11,703	18,286	41	9,653
County Road	3	253	440	696	4	363
Local Street	45	8,454	20,975	29,474	48	11,735
Total	149	22,999	50,143	73,291	159	32,981
Rural						
Interstate	15	746	1,900	2,661	15	1,139
Trunk Highway	167	4,319	8,683	13,169	215	7,100
County State Aid Highway	128	3,076	5,375	8,579	143	4,613
County Road	12	499	835	1,346	12	773
Township Road	24	825	1,265	2,114	24	1,254
Local Street	6	617	2,443	3,066	6	847
Other Road	2	202	902	1,106	2	256
Total	354	10,284	21,403	32,041	417	15,982
All Roadways						
Interstate	37	2,991	7,881	10,909	40	4,298
Trunk Highway	206	9,823	19,727	29,756	256	15,171
County State Aid Highway	168	9,619	17,078	26,865	184	14,266
County Road	15	752	1,275	2,042	16	1,136
Township Road	24	827	1,265	2,116	24	1,256
Local Street	51	9,069	23,418	32,538	54	12,580
Other Road	2	202	902	1,106	2	256
Total	503	33,283	71,546	105,332	576	48,963

("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

1996 COUNTY CRASH REPORT

County	1996 Crashes				Average Crashes 1991-1995	Number Killed 1996	Average Killed 1991-1995	Number Injured 1996	Average Injured 1991-1995
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes					
Aitkin	2	76	205	283	265	2	5	106	141
Anoka	21	1,819	3,296	5,136	4,866	21	20	2,771	2,557
Becker	3	158	209	370	445	3	9	232	280
Beltrami	6	233	624	863	739	7	7	351	293
Benton	11	237	522	770	732	15	6	406	385
Big Stone	1	25	73	99	99	1	1	41	31
Blue Earth	12	470	1,072	1,554	1,537	12	8	657	630
Brown	2	176	352	530	479	2	4	272	222
Carlton	4	160	297	461	458	4	7	244	236
Carver	5	395	799	1,199	1,095	5	10	593	546
Cass	6	141	295	442	410	6	11	224	249
Chippewa	6	79	150	235	215	8	4	146	112
Chisago	12	245	506	763	670	13	6	389	304
Clay	4	298	947	1,249	1,096	4	7	440	445
Clearwater	3	32	69	104	108	4	3	48	58
Cook	2	54	110	166	161	2	1	86	63
Cottonwood	0	46	120	166	171	0	4	76	101
Crow Wing	7	372	775	1,154	1,123	13	10	561	591
Dakota	23	1,781	3,739	5,543	5,105	24	19	2,616	2,438
Dodge	4	84	183	271	261	4	6	144	123
Douglas	2	261	649	912	889	2	8	392	349
Faribault	3	70	137	210	216	3	4	102	102
Fillmore	3	112	240	355	344	4	4	165	170
Freeborn	5	211	582	798	715	7	6	290	305
Goodhue	3	349	759	1,111	1,108	3	10	526	489
Grant	0	21	68	89	100	0	1	29	44
Hennepin	50	9,669	20,506	30,225	28,114	55	57	13,739	12,409
Houston	4	111	249	364	325	4	4	170	138
Hubbard	7	96	177	280	253	7	2	144	161
Isanti	4	187	386	577	520	5	7	291	271

TABLE 1.26 CONTINUED

1996 COUNTY CRASH REPORT

County	1996 Crashes					Number Killed 1996	Average Killed 1991-1995	Number Injured 1996	Average Injured 1991-1995
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1991-1995				
Itasca	5	264	540	809	692	5	8	410	369
Jackson	2	75	167	244	213	2	4	105	98
Kanabec	3	94	146	243	232	4	3	152	133
Kandiyohi	9	318	544	871	850	11	15	489	467
Kittson	1	28	69	98	84	2	1	39	27
Koochiching	2	89	172	263	245	2	4	123	130
Lac Qui Parle	2	39	65	106	94	2	2	60	46
Lake	2	65	164	231	235	2	3	98	96
Lake of The Woods	5	19	41	65	66	5	1	37	29
Le Sueur	4	147	377	528	484	4	6	241	201
Lincoln	1	23	82	106	109	1	2	32	43
Lyon	4	155	381	540	493	7	7	218	216
McLeod	11	210	478	699	666	15	7	325	334
Mahnomen	4	36	34	74	72	6	3	66	67
Marshall	4	49	70	123	130	4	2	82	68
Martin	5	118	321	444	411	5	4	183	178
Meeker	5	139	201	345	335	6	4	230	157
Mille Lacs	3	159	272	434	398	6	4	264	255
Morrison	7	206	342	555	518	10	9	330	267
Mower	5	190	481	676	743	5	5	265	295
Murray	2	31	90	123	123	3	2	47	60
Nicollet	3	142	343	488	495	3	5	209	189
Nobles	1	125	359	485	415	1	2	182	159
Norman	2	53	83	138	104	3	2	76	59
Olmsted	12	832	1,643	2,487	2,419	14	10	1,224	1,080
Otter Tail	10	338	616	964	927	12	10	516	438
Pennington	1	108	169	278	264	2	3	151	148
Pine	5	194	326	525	483	6	6	317	267
Pipestone	2	43	85	130	154	2	1	61	69
Polk	5	195	369	569	534	5	6	302	245

TABLE 1.26 CONTINUED

1996 COUNTY CRASH REPORT

County	1996 Crashes				Average Crashes 1991-1995	Number Killed 1996	Average Killed 1991-1995	Number Injured 1996	Average Injured 1991-1995
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes					
Pope	2	43	77	122	147	5	2	62	61
Ramsey	26	4,282	10,698	15,006	14,069	26	23	6,057	5,550
Red Lake	2	16	49	67	62	2	2	26	24
Redwood	10	97	177	284	262	12	2	164	148
Renville	4	96	200	300	249	4	5	152	136
Rice	3	342	765	1,110	1,033	3	10	528	463
Rock	2	75	188	265	230	2	1	106	87
Roseau	4	68	133	205	230	6	3	108	93
St. Louis	21	1,166	2,212	3,399	3,378	24	26	1,732	1,603
Scott	10	498	1,048	1,556	1,359	13	11	745	637
Sherburne	11	302	595	908	812	12	8	470	420
Sibley	3	83	228	314	250	3	4	124	100
Stearns	16	1,060	1,912	2,988	2,949	17	20	1,581	1,402
Steele	4	215	618	837	746	4	6	318	285
Stevens	1	31	97	129	127	1	1	38	57
Swift	2	48	96	146	129	2	2	75	70
Todd	6	102	292	400	398	7	4	169	177
Traverse	0	24	29	53	41	0	1	33	24
Wabasha	2	114	263	379	366	2	4	172	166
Wadena	1	88	184	273	268	1	3	127	123
Waseca	3	96	261	360	313	4	2	148	118
Washington	8	927	2,247	3,182	2,865	8	13	1,380	1,282
Watonwan	0	51	101	152	186	0	4	70	84
Wilkin	4	75	142	221	184	5	2	113	94
Winona	5	296	825	1,126	1,125	5	8	408	442
Wright	10	583	891	1,484	1,271	12	17	876	681
Yellow Medicine	1	53	92	146	144	1	2	96	80
Total	503	33,283	71,546	105,332	98,971	576	578	48,963	44,910

TABLE 1.27

1996 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Afton	0	17	35	52	0	41
Albert Lea	3	113	305	421	5	152
Alexandria	0	128	323	451	0	191
Andover	2	76	167	245	2	111
Anoka	1	151	354	506	1	239
Apple Valley	1	198	278	477	1	291
Arden Hills	1	116	264	381	1	179
Aurora	0	8	35	43	0	12
Austin	0	112	293	405	0	143
Baxter	1	52	97	150	1	88
Bayport	0	6	20	26	0	8
Belle Plaine	0	15	55	70	0	26
Bemidji	0	107	402	509	0	155
Benson	1	12	46	59	1	15
Big Lake	0	16	40	56	0	26
Blaine	1	277	550	828	1	463
Bloomington	0	768	1,759	2,527	0	1,090
Blue Earth	0	10	27	37	0	10
Brainerd	0	143	374	517	0	185
Branch	1	9	26	36	1	20
Breckenridge	0	20	57	77	0	31
Brooklyn Center	2	287	559	848	2	411
Brooklyn Park	5	494	517	1,016	7	721
Buffalo	0	63	135	198	0	88
Burnsville	3	363	713	1,079	3	549
Byron	1	8	20	29	1	14
Caledonia	0	8	39	47	0	10
Cambridge	0	44	116	160	0	66
Cannon Falls	0	13	54	67	0	19
Champlin	1	86	141	228	1	120
Chanhassen	1	129	259	389	1	189
Chaska	0	78	182	260	0	104
Chisholm	0	17	49	66	0	25
Circle Pines	0	16	33	49	0	20
Cloquet	1	58	106	165	1	91
Cold Spring	0	13	48	61	0	23
Columbia Heights	1	113	200	314	1	162
Coon Rapids	4	474	701	1,179	4	696
Corcoran	0	22	43	65	0	32
Cottage Grove	1	105	249	355	1	152
Crookston	0	39	99	138	0	61
Crystal	2	131	214	347	2	179
Dayton	1	14	68	83	1	19
Deephaven	0	7	30	37	0	10
Delano	0	22	32	54	0	41
Detroit Lakes	1	55	72	128	1	80
Dilworth	0	12	13	25	0	13
Duluth	6	492	752	1,250	7	708
Eagan	2	272	620	894	2	373
East Bethel	2	60	90	152	2	89

TABLE 1.27 CONTINUED

1996 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
East Grand Forks	1	38	124	163	1	56
Eden Prairie	4	307	815	1,126	4	422
Edina	1	293	677	971	1	398
Elk River	2	93	173	268	2	125
Ely	0	21	40	61	0	26
Eveleth	0	15	58	73	0	27
Excelsior	0	21	43	64	0	23
Fairmont	0	59	207	266	0	84
Falcon Heights	0	31	73	104	0	38
Faribault	0	124	294	418	0	186
Farmington	2	42	61	105	3	66
Fergus Falls	2	112	233	347	2	166
Forest Lake	1	53	131	185	1	75
Fridley	3	286	365	654	3	432
Gilbert	0	4	26	30	0	8
Glencoe	0	19	54	73	0	25
Glenwood	0	5	30	35	0	7
Golden Valley	0	225	446	671	0	315
Goodview	0	10	25	35	0	13
Grand Rapids	0	64	223	287	0	92
Granite Falls	0	14	42	56	0	22
Ham Lake	1	68	137	206	1	102
Hastings	0	89	230	319	0	133
Hermantown	1	51	85	137	1	74
Hibbing	0	132	281	413	0	187
Hopkins	0	113	238	351	0	163
Hoyt Lakes	0	6	15	21	0	9
Hugo	0	20	50	70	0	33
Hutchinson	2	62	185	249	2	92
Independence	0	27	44	71	0	43
International Falls	0	49	90	139	0	64
Inver Grove Heights	2	142	312	456	2	215
Jackson	0	11	40	51	0	12
Jordan	0	5	33	38	0	6
Kasson	0	7	26	33	0	9
La Crescent	0	19	63	82	0	30
Lake City	0	22	59	81	0	27
Lake Elmo	0	44	87	131	0	80
Lakeville	2	158	381	541	2	258
Lauderdale	0	22	42	64	0	27
Le Sueur	0	13	50	63	0	17
Lindstrom	0	18	33	51	0	24
Lino Lakes	1	68	169	238	1	102
Litchfield	1	34	70	105	1	52
Little Canada	0	103	290	393	0	134
Little Falls	0	58	140	198	0	77
Long Prairie	0	7	33	40	0	8
Luverne	0	19	71	90	0	23
Mahtomedi	0	21	50	71	0	31

TABLE 1.27 CONTINUED

1996 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Mankato	3	340	725	1,068	3	452
Maple Grove	3	189	433	625	3	260
Maplewood	1	358	722	1,081	1	532
Marshall	0	75	178	253	0	95
Medina	2	31	79	112	2	46
Melrose	0	6	37	43	0	9
Mendota Heights	3	76	175	254	3	104
Minneapolis	14	4,804	10,223	15,041	16	6,911
Minnetonka	4	281	676	961	4	383
Minnetrasta	2	32	57	91	2	52
Montevideo	0	44	75	119	0	71
Monticello	0	71	117	188	0	106
Moorhead	0	175	656	831	0	234
Mora	0	19	35	54	0	24
Morris	0	15	67	82	0	17
Mound	1	26	55	82	1	34
Mounds View	1	56	142	199	1	78
Mountain Iron	3	24	51	78	3	41
New Brighton	1	116	332	449	1	170
New Hope	0	81	129	210	0	122
Newport	1	72	145	218	1	97
New Prague	0	10	44	54	0	11
New Ulm	1	96	192	289	1	148
Northfield	0	60	121	181	0	89
North Mankato	1	27	103	131	1	37
North Oaks	0	15	26	41	0	17
North St. Paul	2	75	143	220	2	113
Oakdale	1	77	212	290	1	110
Oak Park Heights	0	16	68	84	0	17
Olivia	0	10	32	42	0	13
Orono	0	61	133	194	0	87
Ortonville	0	5	31	36	0	11
Osseo	0	29	66	95	0	45
Otsego	0	45	49	94	0	69
Owatonna	0	116	352	468	0	149
Park Rapids	0	10	31	41	0	14
Pine City	0	12	35	47	0	23
Pipestone	0	15	36	51	0	17
Plainview	0	6	24	30	0	10
Plymouth	1	294	695	990	1	391
Princeton	0	33	57	90	0	50
Prior Lake	1	77	88	166	1	122
Proctor	0	11	24	35	0	14
Ramsey	3	72	149	224	3	104
Red Wing	0	129	295	424	0	186
Redwood Falls	0	33	66	99	0	54
Richfield	0	345	739	1,084	0	475
Robbinsdale	0	126	189	315	0	170
Rochester	4	605	1,242	1,851	5	863

TABLE 1.27 CONTINUED

1996 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Rockford	0	10	16	26	0	16
Roseau	0	10	39	49	0	12
Rosemount	2	61	114	177	2	94
Roseville	0	301	832	1,133	0	378
St. Anthony	0	24	58	82	0	31
St. Charles	0	8	24	32	0	10
St. Cloud	2	675	1,108	1,785	2	1,033
St. Francis	0	14	37	51	0	24
St. James	0	11	31	42	0	14
St. Joseph	0	7	31	38	0	11
St. Louis Park	2	283	749	1,034	2	389
St. Michael	1	7	24	32	2	11
St. Paul	18	2,653	6,834	9,505	18	3,758
St. Paul Park	0	17	48	65	0	24
St. Peter	1	37	75	113	1	52
Sartell	1	20	46	67	1	30
Sauk Centre	0	9	73	82	0	13
Sauk Rapids	0	56	129	185	0	85
Savage	2	97	205	304	2	126
Shakopee	3	119	342	464	3	166
Shoreview	0	122	302	424	0	170
Shorewood	0	40	66	106	0	54
Silver Bay	0	5	12	17	0	10
Sleepy Eye	0	18	60	78	0	28
South St. Paul	0	106	335	441	0	138
Spring Lake Park	0	47	106	153	0	71
Spring Valley	0	5	30	35	0	5
Staples	0	10	42	52	0	19
Stewartville	0	10	28	38	0	17
Stillwater	0	84	211	295	0	119
Thief River Falls	0	65	113	178	0	93
Two Harbors	0	15	50	65	0	19
Vadnais Heights	1	84	232	317	1	124
Victoria	1	26	53	80	1	37
Virginia	1	61	175	237	1	93
Waconia	1	16	48	65	1	23
Wadena	0	32	80	112	0	43
Waite Park	0	52	168	220	0	69
Waseca	0	29	119	148	0	45
Wayzata	1	55	134	190	1	71
Wells	0	4	24	28	0	4
West St. Paul	0	106	195	301	0	131
White Bear Lake	1	200	386	587	1	300
Willmar	2	144	367	513	2	210
Windom	0	19	56	75	0	27
Winona	1	157	508	666	1	207
Woodbury	3	169	352	524	3	249
Worthington	0	75	238	313	0	101

TABLE 1.28

1996 CRASHES BY TIME AND DAY

Hour Beginning	Total Crashes	Fatal Crashes	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
			All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	1,538	21	375	8	151	2	132	0	135	0	176	1	181	3	388	7
1:00	2,201	27	605	6	148	2	140	2	207	2	217	4	301	5	583	6
2:00	1,227	17	317	6	96	3	99	0	94	1	143	2	141	2	337	3
3:00	723	14	181	5	65	1	57	1	63	0	80	2	88	0	189	5
4:00	636	3	112	0	78	0	59	1	58	1	77	0	94	0	158	1
5:00	1,050	5	136	0	159	2	144	1	135	1	164	0	170	0	142	1
6:00	2,388	17	155	1	352	5	501	3	364	1	423	3	402	4	191	0
7:00	5,403	24	155	0	770	3	1,305	6	976	1	1,067	6	865	6	265	2
8:00	5,025	16	240	1	715	1	1,080	3	871	1	928	3	770	5	421	2
9:00	4,112	9	345	2	648	1	696	1	628	1	612	0	590	2	593	2
10:00	4,327	12	517	1	656	4	686	1	543	1	592	2	637	2	696	1
11:00	5,277	21	576	3	801	1	690	3	745	4	698	4	867	2	900	4
Noon	6,268	13	728	2	892	0	899	1	945	1	820	3	1,022	4	962	2
1:00	5,713	27	648	6	838	2	815	2	780	8	786	3	975	1	871	5
2:00	6,782	28	724	5	985	6	1,044	2	969	3	982	4	1,161	3	917	5
3:00	8,339	30	775	6	1,343	4	1,252	3	1,288	3	1,308	6	1,513	3	860	5
4:00	8,425	33	759	8	1,445	6	1,314	3	1,271	4	1,279	2	1,529	4	828	6
5:00	8,429	54	706	6	1,425	8	1,423	6	1,294	8	1,391	9	1,400	8	790	9
6:00	5,968	27	592	3	973	5	881	3	889	5	858	6	1,023	4	752	1
7:00	4,634	18	527	3	662	1	626	3	675	2	595	5	825	0	724	4
8:00	3,850	17	427	4	503	2	531	2	560	0	540	3	666	4	623	2
9:00	3,800	23	414	3	493	2	509	4	511	1	524	4	729	5	620	4
10:00	3,057	22	304	4	365	1	358	1	431	4	394	2	650	4	555	6
11:00	2,643	17	225	1	238	0	296	4	345	3	334	2	621	5	584	2
Unknown	3,517	8	407	2	477	1	507	1	519	1	505	0	563	3	539	0
Total	105,332	503	10,950	86	15,278	63	16,044	57	15,296	57	15,493	76	17,783	79	14,488	85

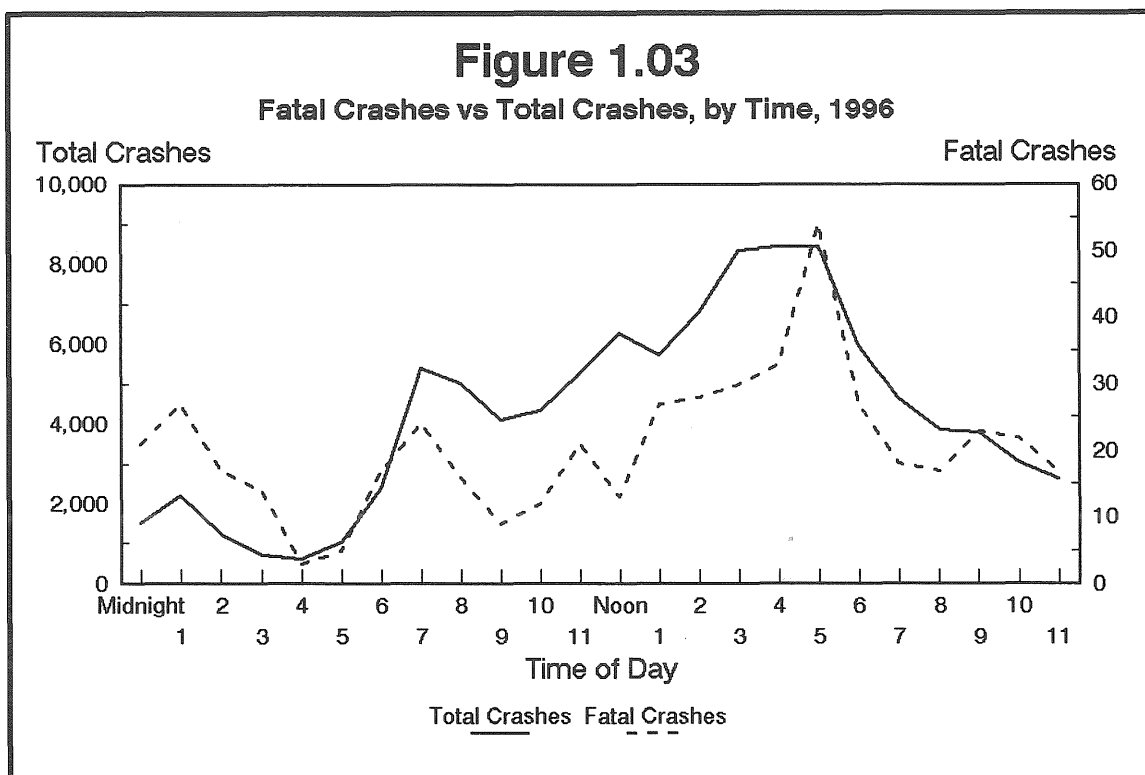


TABLE 1.29

1996 CRASHES, FATALITIES, AND INJURIES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	25	3,447	10,098	13,570	31	4,793
February	26	2,504	6,352	8,882	32	3,555
March	35	2,352	5,777	8,164	36	3,447
April	39	2,058	3,908	6,005	46	3,079
May	37	2,472	4,271	6,780	44	3,587
June	42	2,931	4,875	7,848	52	4,441
July	52	2,893	4,547	7,492	62	4,376
August	70	2,810	4,495	7,375	76	4,301
September	60	2,734	4,706	7,500	69	4,088
October	49	2,833	5,733	8,615	53	4,183
November	31	2,917	7,474	10,422	34	4,238
December	37	3,332	9,310	12,679	41	4,875
Total	503	33,283	71,546	105,332	576	48,963

TABLE 1.30

HOLIDAY CRASH SUMMARY, 1992 - 1996

Holiday Period	Year	Hours*	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Memorial Day	1992	78	7	232	443	682	7	388
(For 1996, the holiday	1993	78	6	249	468	723	8	415
period was 6 PM Fri.,	1994	78	7	258	398	663	8	431
May 24 - midnight	1995	78	7	312	470	789	9	507
Monday, May 27.)	1996	78	9	208	330	547	13	346
July 4th	1992	78	7	248	447	702	9	422
(For 1996, the holiday	1993	78	11	261	509	781	12	487
period was 6 PM Wed.,	1994	78	5	283	444	732	6	468
July 3 - midnight	1995	102	13	365	532	910	20	588
Sunday, July 7.)	1996	102	13	389	554	956	17	649
Labor Day	1992	78	6	250	467	723	7	413
(For 1996, the holiday	1993	78	4	254	390	648	5	430
period was 6 PM Fri.,	1994	78	6	267	441	714	6	435
Aug. 30 - midnight	1995	78	4	248	343	595	5	413
Monday, Sep. 2.)	1996	78	10	243	365	618	12	395
Thanksgiving	1992	102	6	295	765	1,066	7	444
(For 1996, the holiday	1993	102	7	375	1,391	1,773	7	581
period was 6 PM Wed.,	1994	102	12	383	1,018	1,413	18	584
Nov. 27 - midnight	1995	102	8	360	896	1,264	9	579
Sunday, Dec. 1.)	1996	102	7	345	998	1,350	8	537
Christmas	1992	102	4	285	828	1,117	7	425
(For 1996, the holiday	1993	78	2	171	476	649	2	256
period was 6 PM Wed.,	1994	78	6	164	357	527	6	255
Dec 24 - midnight	1995	78	5	166	364	535	6	260
Thursday, Dec. 25.)	1996	30	1	80	281	362	1	123
New Year's	1992/93	102	5	432	1,225	1,662	6	657
(For 1996-97, the	1993/94	78	6	297	766	1,069	6	485
holiday period was	1994/95	78	3	193	476	672	4	286
6 PM Wed., Dec. 31	1995/96	78	13	392	1,017	1,422	18	646
- midnight Thursday,	1996/97	30	1	95	220	316	1	141
Jan 1, 1997.)								

* Holiday period hours vary depending on the day of the week on which the holiday falls.

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 always exceeds 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 800 to 900 drivers involved in fatal crashes in Minnesota each year, much effort is expended to obtain alcohol test results for any 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, and 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 drunk 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 be classified as alcohol related. In 1996, 11 pedestrians killed were 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 alcohol-related crashes. 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 1996, 105 of the 314 drivers killed and tested were positive for alcohol. Nine had alcohol concentrations between .01% and .04%. Thirteen had concentrations from .05% to .09%, and remaining 83 were over .10%.

DWI arrests at all-time high in 1996

According to the Criminal Justice Reporting System (CJRS) maintained by the Bureau of Criminal Apprehension and based on reports by law enforcement agencies around the state, there were 38,925 DWI arrests in 1996. This is an historic high number. The prior record high was 37,261 in 1990. Over the 1991 through 1995 period, DWI arrests averaged 32,762. Thus the 1996 figure was 19% over the prior five-year average. This suggests a high level of traffic law enforcement which should help to translate into improved alcohol-related crash and fatality figures.

Alcohol-related deaths at almost all-time low

Apparently in response to widespread public concern, increased enforcement levels, and legislation, alcohol-related fatalities generally showed reductions during the 1980s and 1990s. In 1995, however, the proportion of deaths that were alcohol-related rose to 41% -- six percentage points higher than the prior year. In 1996, the percentage was back down -- to 36%. This is close to the all-time low of 35% in 1994. Among killed drivers tested for alcohol, 26% were positive. This is the lowest percentage since records are available (back to 1970), and is only about one-third as many as the high of 69% reached in 1980.

TABLE 2.01
DRINKING DRIVER SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Drunken Driving Arrests	34,664	32,827	34,562	37,261	33,574	31,973	32,518	32,391	33,355	38,925
% Male	84%	84%	84%	83%	84%	82%	82%	82%	82%	81%
% Female	16%	16%	16%	17%	16%	18%	18%	18%	18%	19%
Drivers Killed	297	361	368	334	327	344	355	377	383	359
Tested	89%	87%	85%	78%	74%	85%	80%	80%	90%	87%
Alcohol Concentration										
(.00)	50%	52%	50%	50%	56%	58%	61%	60%	58%	67%
(.01 - .09)	7%	10%	8%	9%	9%	5%	7%	8%	8%	7%
(.10 or higher)	43%	38%	41%	42%	35%	37%	32%	32%	34%	26%
Total Fatalities	530	615	605	568	531	581	538	644	597	576
Alcohol-Related Fatalities*										
Known (Number)	224	277	275	235	212	229	196	226	246	205
(Percent)	42%	45%	45%	41%	40%	39%	36%	35%	41%	36%
Estimated (Number)	240	289	291	254	231	237	212	244	265	*
(Percent)	45%	47%	48%	45%	43%	41%	39%	38%	44%	*

Information on Drunk Driving Arrests provided by the Bureau of Criminal Apprehension.

Information on Alcohol Concentration test results provided by the Fatal Accident Reporting System from information supplied by county coroners and the Bureau of Criminal Apprehension.

* Estimated alcohol-related fatalities are higher than known alcohol-related fatalities because not all drivers in fatal crashes are tested for alcohol. The estimation procedure relies on a discriminant function analysis that classifies drivers and non-occupants with unknown alcohol concentration levels into one of three alcohol groups: negative, .01 to .09, or .10 or higher alcohol concentration. Classifying a person into the second or third groups causes the crash to be classified as alcohol-related, and all resulting deaths to be classified as alcohol-related fatalities. The procedure was developed by Terry Klein, currently Director of the Mathematical Analysis section of the Center for Statistics and Analysis of the National Highway Traffic Safety Administration. Estimates for 1995 are not yet available.

TABLE 2.02
DWI ARRESTS BY AGE, 1987 - 1996

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
14 & Younger	8	6	8	7	5	3	5	6	6	9
15	13	15	25	12	14	9	10	15	23	17
16	208	160	175	158	126	128	100	117	107	179
17	485	503	458	431	299	275	241	240	238	403
18	1,084	1,038	1,072	959	740	576	542	560	589	802
19	1,363	1,229	1,284	1,318	1,063	836	787	684	776	1,000
20	1,709	1,291	1,426	1,472	1,315	1,048	929	845	874	1,022
Total Under 21	4,870	4,242	4,448	4,357	3,562	2,875	2,614	2,467	2,613	3,432
14 & Younger	8	6	8	7	5	3	5	6	6	9
15 - 19	3,153	2,945	3,014	2,878	2,242	1,824	1,680	1,616	1,733	2,401
20 - 24	9,345	7,933	8,071	8,357	7,470	7,217	7,101	6,321	6,441	7,219
25 - 29	8,146	7,920	8,293	8,744	7,332	6,646	6,559	6,281	6,219	7,238
30 - 34	5,110	5,146	5,554	6,509	6,312	6,109	6,177	6,371	6,457	7,028
35 - 39	3,356	3,265	3,577	4,111	4,100	4,073	4,613	4,658	4,985	6,040
40 - 44	2,087	2,101	2,418	2,689	2,680	2,549	2,724	3,069	3,320	3,953
45 - 49	1,289	1,360	1,407	1,531	1,340	1,510	1,567	1,852	1,906	2,364
50 - 54	834	786	892	985	845	856	943	915	1,033	1,215
55 - 59	584	556	568	590	489	523	533	582	582	677
60 - 64	359	406	389	417	369	349	287	364	334	373
65 & Older	393	403	371	441	390	314	329	356	339	408
Total	34,664	32,827	34,562	37,261*	33,574	31,973	32,518	32,391	33,355	38,925

* The total for 1990 includes 2 arrests where age was unknown.

Information provided by the Bureau of Criminal Apprehension.

"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 2.03

AGE OF PERSONS KILLED AND INJURED IN ALL CRASHES AND IN ALCOHOL - RELATED CRASHES, 1996

Age	Killed ¹		Injured ²	
	All	Alcohol-Related	All	Alcohol-Related
0 - 4	6	1	791	39
5 - 9	9	1	1,434	65
10 - 14	17	1	2,049	101
15 - 19	96	36	8,926	811
20 - 24	68	39	6,073	999
25 - 29	43	20	5,021	762
30 - 34	39	25	4,540	671
35 - 39	41	16	4,237	563
40 - 44	42	17	3,397	381
45 - 49	37	11	2,873	259
50 - 54	25	9	1,847	128
55 - 59	23	6	1,455	108
60 - 64	26	5	1,024	57
65 - 69	22	4	910	42
70 - 74	25	7	898	34
75 - 79	20	1	657	33
80 - 84	20	4	451	11
85 & Older	16	1	285	8
Not Stated	1	1	2,095	250
Total	576	205	48,963	5,322

¹ Based on alcohol test results plus officer's perception of alcohol as noted on accident report.

² Based only on officer's perception of alcohol as noted on accident report.

* 11 of the 205 alcohol-related fatalities were pedestrians who had been drinking.

TABLE 2.04

**1996 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	106	99	10	17	72
Car or Truck Passenger	55	37	7	8	22
Motorcycle Driver	15	15	1	4	10
Motorcycle Passenger	2	2	1	0	1
Snowmobile Driver	2	2	0	1	1
Pedestrian	18	15	4	0	11
Other/Unknown	7	5	1	1	3
Total	205	175	24	31	120

TABLE 2.05

**PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES
DETERMINED TO BE ALCOHOL - RELATED, 1987 - 1996**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Deaths* (Known)	42%	45%	45%	41%	40%	39%	36%	35%	41%	36%
(Estimated)	45%	47%	48%	45%	43%	41%	39%	38%	44%	NA
Injuries**	17%	15%	15%	15%	13%	13%	12%	11%	11%	11%
Property Damage Crashes**	7%	5%	5%	6%	5%	5%	4%	4%	4%	4%

* Based on alcohol test information plus officer's perception of alcohol noted on accident report. See note above Table 2.03 regarding known and estimated alcohol-related fatalities. Estimated deaths are not available for 1996.

** Includes only police officer's perception of alcohol noted on accident report.

TABLE 2.06

**FIRST HARMFUL EVENT IN ALCOHOL-RELATED
FATAL CRASHES AND ALL FATAL CRASHES, 1996***

First Harmful Event	Alcohol-Related Fatal Crashes		All Fatal Crashes	
	Number	Percent	Number	Percent
Collision with:				
Another Motor Vehicle	63	34.6	269	53.5
Parked Motor Vehicle	1	0.5	3	0.6
Railroad Train	1	0.5	8	1.6
Bicycle	3	1.6	6	1.2
Pedestrian	17	9.3	41	8.2
Deer	1	0.5	2	0.4
Other Animal	1	0.5	1	0.2
Fixed Object	50	27.5	88	17.5
Non-Collision:				
Overturn	41	22.5	72	14.3
Fire/Explosion	0	0.0	0	0.0
Submersion	0	0.0	1	0.2
Other/Unknown	4	2.2	12	2.4
Total	182	100.0	503	100.0

* Includes alcohol test information as well as officer's perception of alcohol noted on accident report.

TABLE 2.07

TEST RESULTS OF DRIVERS KILLED, 1987 - 1996

Year	Killed	Tested	Alcohol Concentration*		
			(.00)	(.01 - .09)	(.10 or more)
1987	297	265	132 (50%)	18 (7%)	115 (43%)
1988	361	313	163 (52%)	32 (10%)	118 (38%)
1989	368	313	158 (50%)	26 (8%)	129 (41%)
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%)

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

TABLE 2.08

DRIVERS KILLED WHO TESTED .01 OR HIGHER, 1987 - 1996
("Any Alcohol")

Year	Total	Male		Female		Occurred Between Midnight - 3 AM		Under Legal Age	
1987	133	112 (84%)	21 (16%)			34 (26%)		22 (17%)	
1988	150	131 (87%)	19 (13%)			32 (21%)		34 (23%)	
1989	155	138 (89%)	17 (11%)			47 (30%)		26 (17%)	
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%)	

TABLE 2.09

DRIVERS KILLED WHO TESTED .10 OR HIGHER, 1987 - 1996
("Over Limit")

Year	Total	Male		Female		Occurred Between Midnight - 3 AM		Under Legal Age	
1987	115	98 (85%)	17 (15%)			33 (29%)		13 (11%)	
1988	118	100 (85%)	18 (15%)			27 (23%)		22 (19%)	
1989	129	117 (91%)	12 (9%)			42 (33%)		19 (15%)	
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%)	

Figure 2.01
Killed Drivers Tested for Alcohol
Percent Drinking and Percent Drunk, 1970 - 1996

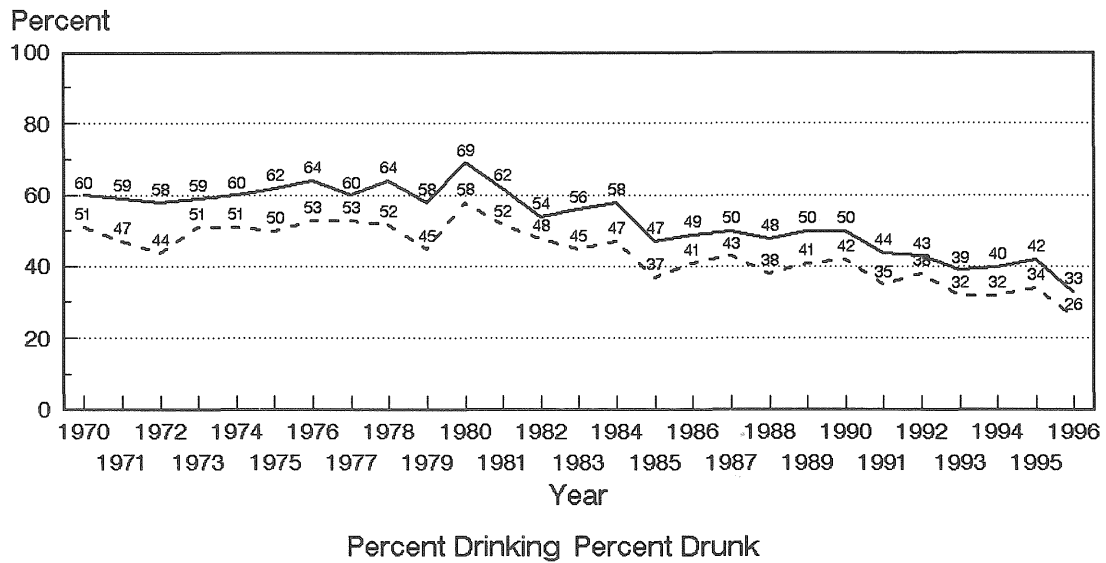


FIGURE 2.02
Percent of Drivers Killed Who Had Been
Drinking, by Age, 1996

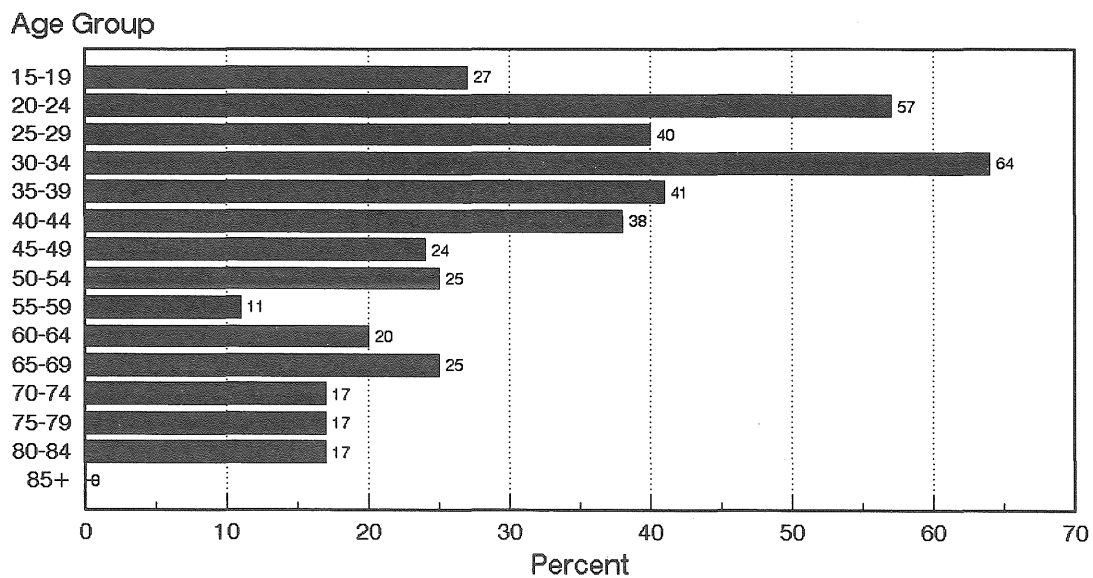


TABLE 2.10

1996 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

Age	Killed	Tested	Alcohol Concentration*			Alcohol Concentration						
			(.00)	(.01 - .09)	(.10 or more)	.00	.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
14 & Younger	5	4	4	0	0	4	0	0	0	0	0	0
15	5	4	4	0	0	4	0	0	0	0	0	0
16	14	12	11	0	1	11	0	0	1	0	0	0
17	11	10	8	1	1	8	0	1	0	1	0	0
18	15	13	9	0	4	9	0	0	2	1	1	0
19	12	10	4	1	5	4	1	0	1	3	1	0
20	8	6	3	1	2	3	0	1	1	0	0	1
Under 21	70	59	43	3	13	43	1	2	5	5	2	1
14 & Younger	5	4	4 (100%)	0 (0%)	0 (0%)	4	0	0	0	0	0	0
15 - 19	57	49	36 (73%)	2 (4%)	11 (22%)	36	1	1	4	5	2	0
20 - 24	43	37	16 (43%)	5 (14%)	16 (43%)	16	0	5	4	2	6	4
25 - 29	30	30	18 (60%)	2 (7%)	10 (33%)	18	2	0	1	4	3	2
30 - 34	28	28	10 (36%)	1 (4%)	17 (61%)	10	1	0	3	8	1	5
35 - 39	27	22	13 (59%)	1 (5%)	8 (36%)	13	0	1	3	2	1	2
40 - 44	30	29	18 (62%)	2 (7%)	9 (31%)	18	1	1	2	1	4	2
45 - 49	23	21	16 (76%)	1 (5%)	4 (19%)	16	1	0	1	2	0	1
50 - 54	17	16	12 (75%)	1 (6%)	3 (19%)	12	1	0	1	0	0	2
55 - 59	20	18	16 (89%)	1 (6%)	1 (6%)	16	0	1	0	1	0	0
60 - 64	18	15	12 (80%)	2 (13%)	1 (7%)	12	1	1	1	0	0	0
65 - 69	9	8	6 (75%)	1 (13%)	1 (13%)	6	0	1	1	0	0	0
70 - 74	16	12	10 (83%)	1 (8%)	1 (8%)	10	0	1	0	0	0	1
75 - 79	12	6	5 (83%)	1 (17%)	0 (0%)	5	1	0	0	0	0	0
80 - 84	15	12	10 (83%)	1 (8%)	1 (8%)	10	0	1	1	0	0	0
85 & Older	9	7	7 (100%)	0 (0%)	0 (0%)	7	0	0	0	0	0	0
Total	359	314	209 (67%)	22 (7%)	83 (26%)	209	9	13	22	25	17	19

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

TABLE 2.11

1996 ALCOHOL - RELATED CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	3	252	259	514	3	371
February	14	225	252	491	16	343
March	11	242	254	507	12	392
April	18	249	156	423	19	366
May	14	340	179	533	17	532
June	15	327	221	563	18	508
July	20	351	224	595	22	564
August	22	338	216	576	24	522
September	29	327	216	572	35	485
October	21	322	212	555	23	460
November	7	282	292	581	7	435
December	8	222	323	553	9	344
Total	182	3,477	2,804	6,463	205	5,322

TABLE 2.12

1996 ALCOHOL - RELATED CRASHES BY ROADWAY TYPE

Roadway Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Urban Interstate	9	258	282	549	11	404
Rural Interstate	4	56	47	107	4	85
Urban Trunk Hwy	12	440	413	865	12	687
Rural Trunk Hwy	54	566	395	1,015	63	924
County State Aid Hwy	65	1,099	668	1,832	75	1,728
County Road	9	119	67	195	10	182
Township Road	8	161	80	249	8	227
Local Street	20	755	825	1,600	21	1,051
Other	1	23	27	51	1	34
Total	182	3,477	2,804	6,463	205	5,322

FIGURE 2.03

1996 Alcohol-Related Crashes by Time of Day

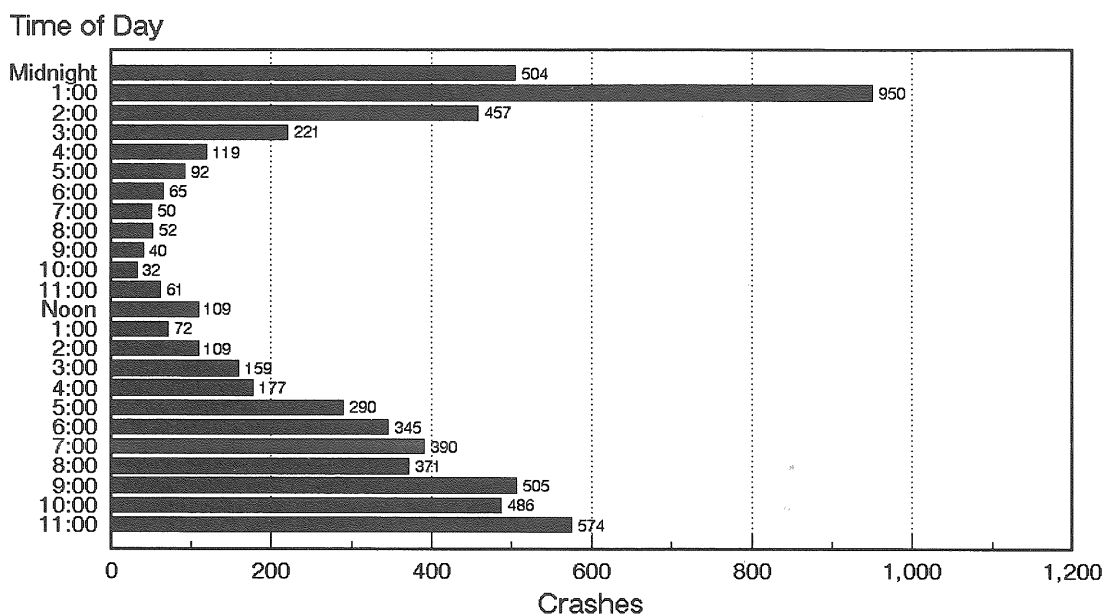


FIGURE 2.04

1996 Alcohol-Related Crashes by Day of Week

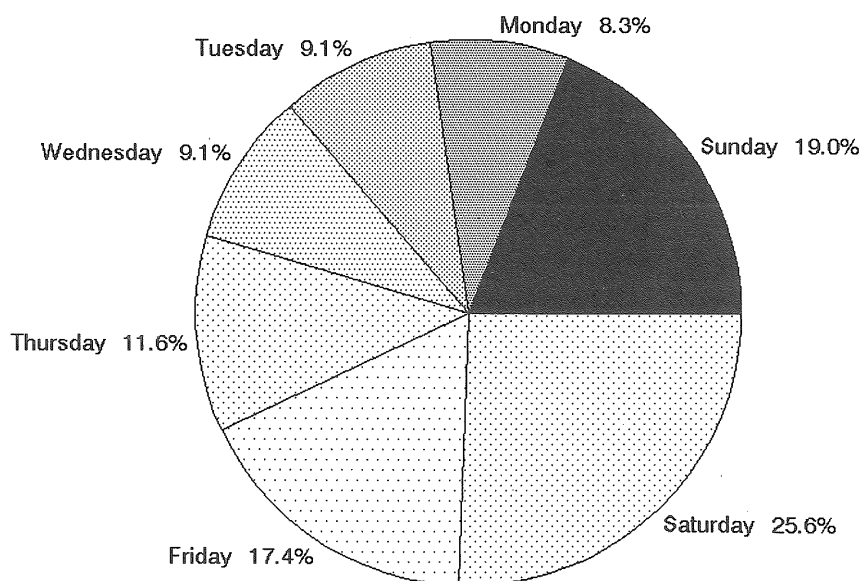


TABLE 2.13

1996 ALCOHOL - RELATED CRASHES BY TIME OF DAY AND DAY OF WEEK

Hour	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total	Killed	Injured
Beginning										
Midnight	120	42	33	33	59	84	133	504	23	378
1:00 AM	266	52	53	86	98	117	278	950	26	746
2:00 AM	149	26	33	24	40	51	134	457	17	379
3:00 AM	73	19	13	12	22	19	63	221	10	176
4:00 AM	35	9	4	6	9	15	41	119	1	90
5:00 AM	33	4	7	6	12	10	20	92	1	82
6:00 AM	18	4	6	4	6	5	22	65	3	62
7:00 AM	14	2	5	2	3	8	16	50	4	40
8:00 AM	9	5	3	8	5	7	15	52	1	35
9:00 AM	9	1	2	5	4	7	12	40	0	31
10:00 AM	7	3	4	3	3	1	11	32	0	39
11:00 AM	12	5	5	9	8	12	10	61	1	59
Noon	22	11	12	9	11	19	25	109	1	84
1:00 PM	13	11	6	4	11	10	17	72	4	59
2:00 PM	18	12	13	7	17	11	31	109	2	106
3:00 PM	27	14	21	17	20	26	34	159	6	135
4:00 PM	31	15	23	15	19	37	37	177	8	155
5:00 PM	55	23	33	25	40	47	67	290	15	276
6:00 PM	54	34	33	37	44	71	72	345	7	314
7:00 PM	53	44	45	46	49	70	83	390	10	335
8:00 PM	51	29	46	38	54	74	79	371	11	297
9:00 PM	46	60	49	51	74	107	118	505	14	434
10:00 PM	43	46	41	62	55	124	115	486	18	360
11:00 PM	40	41	51	65	71	162	144	574	15	475
Unknown	44	14	18	29	27	40	61	233	7	175
Total	1,242	526	559	603	761	1,134	1,638	6,463	205	5,322

III: SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS IN 1996 CRASHES

Types of safety equipment

The most common type of safety equipment is the safety belt -- a system that usually includes lap and shoulder belts that are operated either automatically or manually. All recent model cars come with driver-side, and sometimes passenger-side, airbags. Child safety seats are available for children under age four. Other devices, such as booster seats, can be beneficial for young children aged four to eight.

Safety benefits and legislation

Studies estimate that using these safety 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 51%

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 use rate remains at about the same level (64%) in 1996. Nevertheless, other states--especially those with primary seat belt laws--have still higher rates.

Belt use low among young and among males

There were 462 people killed and 44,168 people injured who were occupants of vehicles normally equipped with seat belts. Three clear relationships stand out. First, belt use increases with age. The young are not good at wearing their seat belts. Among the fatalities, only 17% of 11-to-19-year-olds, and 20% of 20-to-29-year-olds, used their belts. Second, males are less good than females at using their belts. This was especially true among those killed, where almost twice as many females as males (41% to 23%) used belts. Third, as would be expected, the more severe the injury, the less likely it was that the occupant used belts: 68% of those with minor injuries wore belts, compared with 58% of those with moderate injuries, 45% of those with severe injuries, and 30% of those who died.

Northwestern part of state has low use rate

Belt use appears to correspond positively with population density. It was highest (67%) among occupants killed or injured in the metro area and lowest (44%) in the sparsely populated Northwest, with in-between levels in other areas of the state.

Almost 2,000 airbags deployed

Though certain negative features of airbags received media attention in 1996, there is consensus that they provide dramatic life-saving and injury-reducing benefits in head-on type collisions. They are now required in all types of passenger vehicles and their deployment in crashes is becoming more frequent. In 1991, the first year for which the information is available, there were only 248 airbag deployments. There were then 381 in 1992, 598 in 1993, 913 in 1994, 1,359 in 1995, and 1,997 last year.

TABLE 3.01

**MOTOR VEHICLE OCCUPANTS KILLED OR INJURED,
BY AGE AND SEVERITY OF INJURY, 1996**

Age Group	Killed	Injured			Total
		Severe	Moderate	Minor	
0 - 4	4	26	238	422	686
5 - 9	4	54	385	565	1,004
10 - 14	6	84	523	743	1,350
15 - 19	84	601	3,211	4,502	8,314
20 - 24	54	410	1,945	3,191	5,546
25 - 29	35	285	1,439	2,863	4,587
30 - 34	31	278	1,246	2,637	4,161
35 - 39	33	278	1,168	2,430	3,876
40 - 44	32	208	910	1,995	3,113
45 - 49	34	169	757	1,722	2,648
50 - 54	21	125	501	1,096	1,722
55 - 59	16	85	402	873	1,360
60 - 64	22	82	282	614	978
65 - 69	16	71	276	529	876
70 - 74	23	86	301	473	860
75 - 79	17	56	225	342	623
80 - 84	17	46	153	230	429
85 & Older	12	22	97	147	266
Not Stated	1	84	408	1,277	1,769
Total	462	3,050	14,467	26,651	44,168

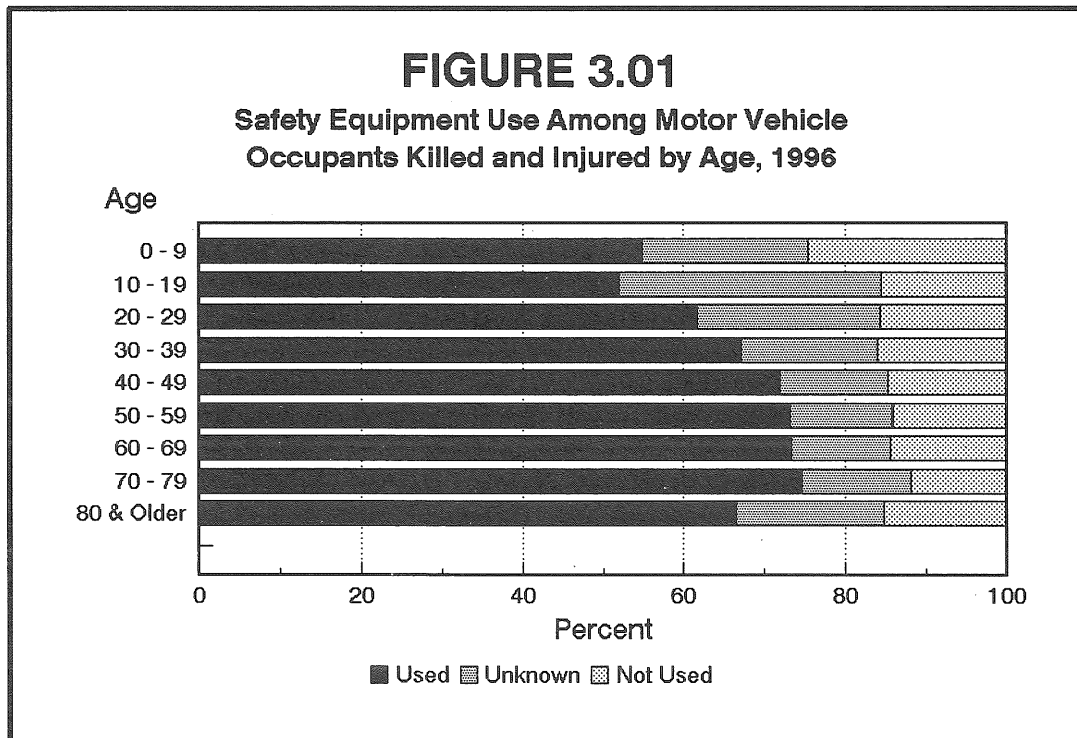


TABLE 3.02

SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE AND INJURY SEVERITY, 1996

Age Group	Restraint Use	Killed		Severe		Moderate		Minor		Total	
		#	%	#	%	#	%	#	%	#	%
0 - 3 Years	Used	2	50.0	4	22.2	61	40.1	158	51.5	223	46.8
	Not Used	1	25.0	5	27.8	39	25.7	55	17.9	99	20.8
	Unknown	1	<u>25.0</u>	2	<u>50.0</u>	<u>52</u>	<u>34.2</u>	<u>94</u>	<u>30.6</u>	<u>155</u>	<u>32.5</u>
	Subtotal	4	100.0	18	100.0	152	100.0	307	100.0	223	46.8
4 - 10 Years	Used	1	25.0	40	54.1	306	54.8	489	60.4	835	58.0
	Not Used	2	50.0	21	28.4	151	27.1	142	17.6	314	21.8
	Unknown	1	<u>25.0</u>	<u>13</u>	<u>17.6</u>	<u>101</u>	<u>18.1</u>	<u>178</u>	<u>22.0</u>	<u>292</u>	<u>20.3</u>
	Subtotal	4	100.0	74	100.0	558	100.0	809	100.0	1,441	100.0
11 - 19 Years	Used	15	16.7	239	35.5	1,725	47.3	2,964	57.9	4,928	52.2
	Not Used	57	63.3	316	47.0	1,401	38.4	1,325	25.9	3,042	32.2
	Unknown	<u>18</u>	<u>20.0</u>	<u>118</u>	<u>17.5</u>	<u>521</u>	<u>14.3</u>	<u>827</u>	<u>16.2</u>	<u>1,466</u>	<u>15.5</u>
	Subtotal	90	100.0	673	100.0	3,647	100.0	5,116	100.0	9,436	100.0
20 - 29 Years	Used	18	20.2	259	37.3	1,879	55.5	4,152	68.6	6,290	62.1
	Not Used	54	60.7	297	42.7	1,000	29.6	955	15.8	2,252	22.2
	Unknown	<u>17</u>	<u>19.1</u>	<u>139</u>	<u>20.0</u>	<u>505</u>	<u>14.9</u>	<u>947</u>	<u>15.6</u>	<u>1,591</u>	<u>15.7</u>
	Subtotal	89	100.0	695	100.0	3,384	100.0	6,054	100.0	10,133	100.0
30 - 39 Years	Used	15	23.4	251	45.1	1,442	59.7	3,725	73.5	5,418	67.4
	Not Used	37	57.8	191	34.4	578	23.9	566	11.2	1,335	16.6
	Unknown	<u>12</u>	<u>18.8</u>	<u>114</u>	<u>20.5</u>	<u>394</u>	<u>16.3</u>	<u>776</u>	<u>15.3</u>	<u>1,284</u>	<u>16.0</u>
	Subtotal	64	100.0	556	100.0	2,414	100.0	5,067	100.0	8,037	100.0
40 - 49 Years	Used	25	37.9	205	54.4	1,130	67.8	2,832	76.2	4,167	72.3
	Not Used	32	48.5	103	27.3	321	19.3	317	8.5	741	12.9
	Unknown	<u>9</u>	<u>13.6</u>	<u>69</u>	<u>18.3</u>	<u>216</u>	<u>13.0</u>	<u>568</u>	<u>15.3</u>	<u>853</u>	<u>14.8</u>
	Subtotal	66	100.0	377	100.0	1,667	100.0	3,717	100.0	5,761	100.0
50 - 59 Years	Used	10	27.0	122	58.1	648	71.8	1,504	76.4	2,274	73.8
	Not Used	21	56.8	42	20.0	150	16.6	180	9.1	372	12.1
	Unknown	<u>6</u>	<u>16.2</u>	<u>46</u>	<u>21.9</u>	<u>105</u>	<u>11.6</u>	<u>285</u>	<u>14.5</u>	<u>436</u>	<u>14.2</u>
	Subtotal	37	100.0	210	100.0	903	100.0	1,969	100.0	3,082	100.0
60 - 69 Years	Used	18	47.4	86	56.2	394	70.6	888	77.7	1,368	73.8
	Not Used	12	31.6	35	22.9	94	16.9	91	8.0	220	11.9
	Unknown	<u>8</u>	<u>21.1</u>	<u>32</u>	<u>20.9</u>	<u>70</u>	<u>12.5</u>	<u>164</u>	<u>14.4</u>	<u>266</u>	<u>14.4</u>
	Subtotal	38	100.0	153	100.0	558	100.0	1,143	100.0	1,854	100.0
70 & Older	Used	36	52.2	126	60.0	558	71.9	896	75.2	1,580	72.5
	Not Used	26	37.7	58	27.6	125	16.1	131	11.0	314	14.4
	Unknown	<u>7</u>	<u>10.1</u>	<u>26</u>	<u>12.4</u>	<u>93</u>	<u>12.0</u>	<u>165</u>	<u>13.8</u>	<u>284</u>	<u>13.0</u>
	Subtotal	69	100.0	210	100.0	776	100.0	1,192	100.0	2,178	100.0
Age Not Stated	Used	0	0.0	33	39.3	177	43.4	492	38.5	702	39.7
	Not Used	1	100.0	27	32.1	100	24.5	136	10.7	263	14.9
	Unknown	<u>0</u>	<u>0.0</u>	<u>24</u>	<u>28.6</u>	<u>131</u>	<u>32.1</u>	<u>649</u>	<u>50.8</u>	<u>804</u>	<u>45.5</u>
	Subtotal	1	100.0	84	100.0	408	100.0	1,277	100.0	1,769	100.0
All Ages	Used	140	30.3	1,365	44.8	8,320	57.5	18,100	67.9	27,785	62.9
	Not Used	243	52.6	1,095	35.9	3,959	27.4	3,898	14.6	8,952	20.3
	Unknown	<u>79</u>	<u>17.1</u>	<u>590</u>	<u>19.3</u>	<u>2,188</u>	<u>15.1</u>	<u>4,653</u>	<u>17.5</u>	<u>7,431</u>	<u>16.8</u>
	Total	462	100.0	3,050	100.0	14,467	100.0	26,651	100.0	44,168	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 3.03

**SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS,
BY GENDER AND INJURY SEVERITY, 1996**

	Killed			Injured						
				Severe		Moderate		Minor		Total
	Female	Male	Total	Female	Male	Female	Male	Female	Male	
Used	76	64	140	838	522	4,582	3,734	10,597	7,478	27,785
Not Used	82	161	243	475	617	1,642	2,315	1,925	1,970	8,952
Unknown	26	53	79	273	315	981	1,173	2,208	1,991	7,431
Total	184	278	462	1,568	1,454	7,205	7,222	14,730	11,439	44,168

Note: Gender was not reported for 526 persons injured (mostly those with minor injuries), causing the the "total" to be 526 greater than the sum of the "severe," "moderate," and "minor" injury columns.

TABLE 3.04

**PERCENT OF INJURED OR KILLED MOTOR VEHICLE OCCUPANTS WHO
USED SAFETY EQUIPMENT, BY INJURY SEVERITY AND YEAR, 1987 - 1996**

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Killed										
Used	17.7	21.1	20.5	20.9	24.4	27.5	32.1	25.4	27.1	30.3
Not Used	67.9	64.1	63.8	65.9	57.0	58.5	52.6	56.3	48.3	52.6
Unknown	14.4	14.8	15.7	13.2	18.5	14.0	15.3	18.3	24.6	17.1
Injured										
Severe Injuries										
Used	22.0	30.5	31.6	32.6	35.7	36.6	40.7	43.0	41.7	44.8
Not Used	55.1	48.9	47.9	48.4	40.7	41.7	37.4	37.6	37.2	35.9
Unknown	22.9	20.6	20.5	18.9	23.6	21.7	21.9	19.4	21.1	19.3
Moderate Injuries										
Used	29.3	38.2	39.9	41.1	45.9	48.5	51.8	54.5	55.3	57.5
Not Used	48.4	41.7	40.6	40.2	33.7	34.0	31.9	29.6	28.4	27.4
Unknown	22.3	20.1	19.5	18.7	20.4	17.5	16.3	15.9	16.2	15.1
Minor Injuries										
Used	36.2	42.9	45.5	45.3	54.3	61.4	64.8	65.0	66.8	67.9
Not Used	32.2	24.4	21.9	23.1	19.8	19.9	17.0	16.0	15.2	14.6
Unknown	31.6	32.7	32.6	31.6	25.9	18.8	18.1	19.0	18.0	17.5
Total Injured										
Used	32.0	39.9	42.3	42.7	49.8	55.0	58.7	59.9	61.1	62.9
Not Used	40.9	32.9	30.7	31.2	26.3	26.4	23.5	22.1	21.2	20.3
Unknown	27.1	27.1	27.0	26.1	23.9	18.6	17.9	18.0	17.6	16.8

TABLE 3.05

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS
KILLED AND INJURED, BY ROADWAY TYPE, 1996**

Roadway Type	Used		Not Used		Unknown		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Interstate	2,961	71.4	686	16.5	503	12.1	4,150	100.0
Trunk Highway	9,266	64.2	3,051	21.2	2,106	14.6	14,423	100.0
County State-Aid Highway	8,042	61.2	2,651	20.3	2,382	18.2	13,075	100.0
County Road	526	49.7	327	30.9	206	19.5	1,059	100.0
Township Road	495	42.2	478	40.7	201	17.1	1,174	100.0
Local Street	6,555	62.0	1,962	18.6	2,060	19.5	10,577	100.0
Other Road	80	46.5	40	23.3	52	30.2	172	100.0
Total	27,925	62.6	9,195	20.6	7,510	16.8	44,630	100.0%

TABLE 3.06

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS
KILLED AND INJURED, BY REGION OF THE STATE, 1996**

EMS Region	Percent Used	Percent Not Used	Percent Unknown	Number of People
Metropolitan	67.0	15.4	17.5	24,904
Central	60.9	25.6	13.5	5,841
Northeast	60.9	24.2	14.9	2,577
Northwest	44.0	34.9	21.1	1,397
South Central	60.9	24.8	14.3	1,838
Southeast	56.1	26.5	17.4	3,852
Southwest	52.5	30.2	17.3	2,469
West Central	51.8	30.1	18.0	1,752
Statewide	62.6	20.6	16.8	44,630

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

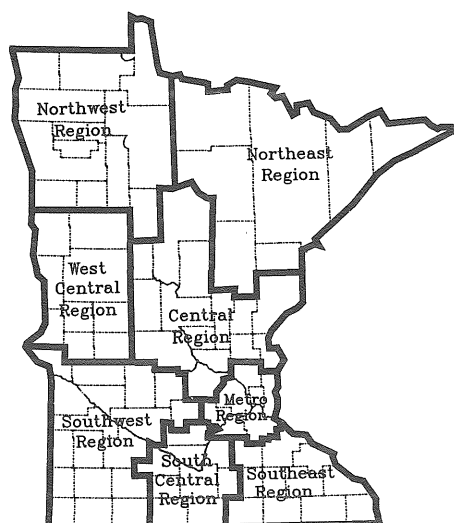


TABLE 3.07

AIRBAG DEPLOYMENTS, 1991 - 1996

Year	Injury Severity	Airbag Deployed Belt		Deployment Not Indicated Belt		Belt Use Unknown	Total
		Belt Used	Not Used	Belt Used	Not Used		
1991	Killed	1	0	98	231	75	405
	Severe Injury	7	4	1,219	1,395	813	3,438
	Moderate Injury	45	6	5,772	4,272	2,588	12,683
	Minor Injury	44	11	11,867	4,342	5,687	21,951
	No Apparent Injury	<u>123</u>	<u>7</u>	<u>67,212</u>	<u>10,851</u>	<u>119,996</u>	<u>198,189</u>
	Total	220	28	86,168	21,091	129,159	236,666
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

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.

TABLE 3.08

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

	Survey Desing Used Through August 1994										New Survey Design		
	June 1986	Aug 1986	Aug 1987	Aug 1988	Aug 1989	Aug 1990	Aug 1991	Aug 1992	Aug 1993	Aug 1994	Aug 1994	Aug 1995	Aug 1996
Statewide	20%	33%	32%	47%	44%	47%	53%	51%	55%	55%	57%	65%	64%
Metro	30	43	40	51	52	54	62	62	59	61	58	68	67
Non-Metro	15	26	28	45	40	42	47	46	52	52	54	56	58
Road Class													
Major Roads	23	35	35	48	44	49	53	55	57	60	65	68	68
Local Roads	17	31	29	46	45	46	52	48	53	51	54	64	62
Weather													
Clear	19	32	32	47	44	47	53	52	55	54			
Other	23	36	41	48	53	50	48	41	52	59			
Time													
Rush Hour	21	31	30	47	42	47	53	55	59	54			
Non-Rush	20	34	33	47	44	48	52	51	54	62			
Day of the Week													
Weekday	19	33	32	45	42	45	51	51	56	55			
Weekend	21	33	33	52	49	50	56	53	52	54			
Speed													
20 MPH	14	29	29	35	39	46	47	39	50	48			
40 MPH	20	32	30	47	46	46	56	58	57	60			
60 MPH	28	39	41	57	52	53	61	62	61	64			

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 and continued in 1995. The prior survey design was also used in 1994, and then discontinued. The new survey design uses different sites and is not strictly comparable to the prior design.

IV: MOTORCYCLE CRASHES

The last decade: crashes decline

There were roughly half the number of motorcycle crashes last year as there were a decade ago. In 1987, there were over 2,000 motorcycle crashes. Last year there were 1,131. Deaths to persons riding on motorcycles dropped from 51 in 1987 to 42 in 1996, and motorcyclists injured declined from 1,853 to 1,046. In general, motorcycle crashes, deaths, and injuries dropped rather sharply through about 1993; the decline has leveled off during the last three or four years. There are also two seemingly contradictory trends taking place: The number of licensed motorcycle operators in the state has climbed unevenly, but reached an all-time high of 297,102 in 1996, while the number of motorcycles registered in the state has fallen steadily, reaching a low of 112,151 that same year.

Time and place: in the summer throughout the state

There is a distinct riding season for motorcycles, and motorcycle crashes increase as the temperature rises. In 1996, June, July, and August each had over 200 crashes per month. The months May through September accounted for all but 4 of the 42 deaths. Motorcycle crashes peak between 5:00 and 6:00 PM. They occur throughout the state in both urban and rural areas. Fatal crashes are more likely to occur in the open rural areas, while a majority of the less severe injury and property damage crashes occur in towns and cities having populations of 10,000 and more.

Victims: male motorcyclists under 40

In collisions involving a motorcycle and another vehicle, the non-motorcyclists rarely suffer death or injury. In 1996, no non-motorcyclists were killed, though 71 non-motorcyclists were injured. Instead it is almost always the motorcyclist who suffers injury or death. These victims are almost always males in their teens, twenties, and thirties. Last year, males accounted for 40 of the 42 deaths and 85% of the

1,046 injuries. Seventy-one percent of those injured were aged 15 to 39.

Risk factors: no helmets

Minnesota had a mandatory motorcycle helmet law for almost nine years, from May 1, 1968, to April 17, 1977. Traffic safety advocates strongly believe in the safety benefits of wearing a motorcycle helmet. In 1996, most of the motorcyclists killed or injured were not wearing a helmet. Only 9 of the 42 persons who died, and 269 (26%) of the 1,046 persons injured were definitely known to have been wearing a helmet. Alcohol use is also a very obvious risk factor. In 1996, 39% of the motorcycle operators who were killed and tested for alcohol were positive for alcohol. This is a clear improvement over the 68% who were positive for alcohol in 1995.

Other contributing factors to crashes

About one half of motorcycle crashes involve only the single motorcycle and about one half involve collision with other vehicles. These two types of crashes involve different contributing factors. For the single-motorcycle crashes, illegal or unsafe speed is cited the most often (26% of all factors cited), followed by physical impairment (14%), driver inexperience (13%), and inattention/distraction (11%). For the multiple-vehicle crashes, the drivers of the other (non-motorcycle) vehicles have contributing factors associated with them much more often than the motorcycle operators do. Two factors are especially common among the non-motorcyclists: failure to yield right of way (representing 33% of the factors cited) and driver inattention or distraction (26%). For the motorcyclists, the leading factors were inattention/distraction (23%), speed (17%), following too closely (12%), and improper passing (8%).

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Record High (since 1970)
Total Crashes	2,121	1,969	1,748	1,735	1,461	1,361	1,245	1,381	1,126	1,131	3,308 (1980)
Fatal Crashes	51	57	37	46	38	29	33	41	32	39	112 (1980)
Personal Injury Crashes	1,692	1,628	1,463	1,446	1,198	1,133	1,022	1,151	941	934	2,728 (1980)
Property Damage Crashes	378	284	248	243	225	199	190	189	153	158	537 (1976)
Persons Killed:											
Motorcyclists	51	58	37	50	40	28	34	43	35	42	121 (1980)
Non-Motorcyclists/Unknown	3	4	0	2	0	3	3	0	2	0	9 (1975)
Persons Injured:											
Motorcyclists	1,853	1,817	1,617	1,605	1,357	1,288	1,151	1,324	1,063	1,046	3,359 (1980)
Non-Motorcyclists/Unknown	145	126	104	126	104	60	104	66	76	71	N/A
Licensed Operators	288,424	293,347	290,000	292,074	296,624	290,722	291,756	293,164	295,849	297,102	297,102 (1996)
Registered Motorcycles	134,590	128,956	123,308	120,081	117,492	116,124	114,548	113,337	113,981	112,551	166,151 (1981)
Rates:											
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	2.4	2.9	2.1	2.7	2.6	2.1	2.7	3.0	2.8	3.4	3.6 (1978)
Fatal Crashes Per 100 Crashes (All Vehicles)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.8 (1970)

TABLE 4.02

1996 MOTORCYCLE CRASHES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Motorcyclists Killed	Motorcyclists Injured
Collision With:						
Other Motor Vehicle	22	425	104	551	24	477
Parked Motor Vehicle	0	10	25	35	0	11
Bicycle	0	8	0	8	0	7
Pedestrian	0	4	0	4	0	2
Deer	2	28	2	32	2	32
Other Animal	0	18	0	18	0	18
Fixed Object	8	104	8	120	9	117
Other Object	0	1	0	1	0	1
Non-Collision:						
Overturn	5	208	10	223	5	229
Other / Unknown	2	128	9	139	2	152
Total	39	934	158	1,131	42	1,046

TABLE 4.03

1996 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	174	48	224	3	194
50,000 - 99,999	2	76	11	89	3	79
25,000 - 49,999	4	137	24	165	4	155
10,000 - 24,999	3	140	24	167	3	155
5,000 - 9,999	4	72	9	85	4	81
2,500 - 4,999	2	32	4	38	3	32
1,000 - 2,499	2	23	9	34	2	28
Under 1,000	20	280	29	329	20	322
Total	39	934	158	1,131	42	1,046

TABLE 4.04

1996 MOTORCYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Motorcyclists Killed	Motorcyclists Injured
January	0	0	0	0	0	0
February	0	1	0	1	0	1
March	0	6	2	8	0	6
April	2	60	16	78	2	65
May	6	115	14	135	6	132
June	6	203	27	236	8	232
July	9	186	25	220	9	206
August	8	180	29	217	8	201
September	5	91	27	123	5	102
October	2	84	16	102	3	93
November	1	7	2	10	1	7
December	0	1	0	1	0	1
Total	39	934	158	1,131	42	1,046

FIGURE 4.01

1996 Motorcycle Crashes by Time of Day

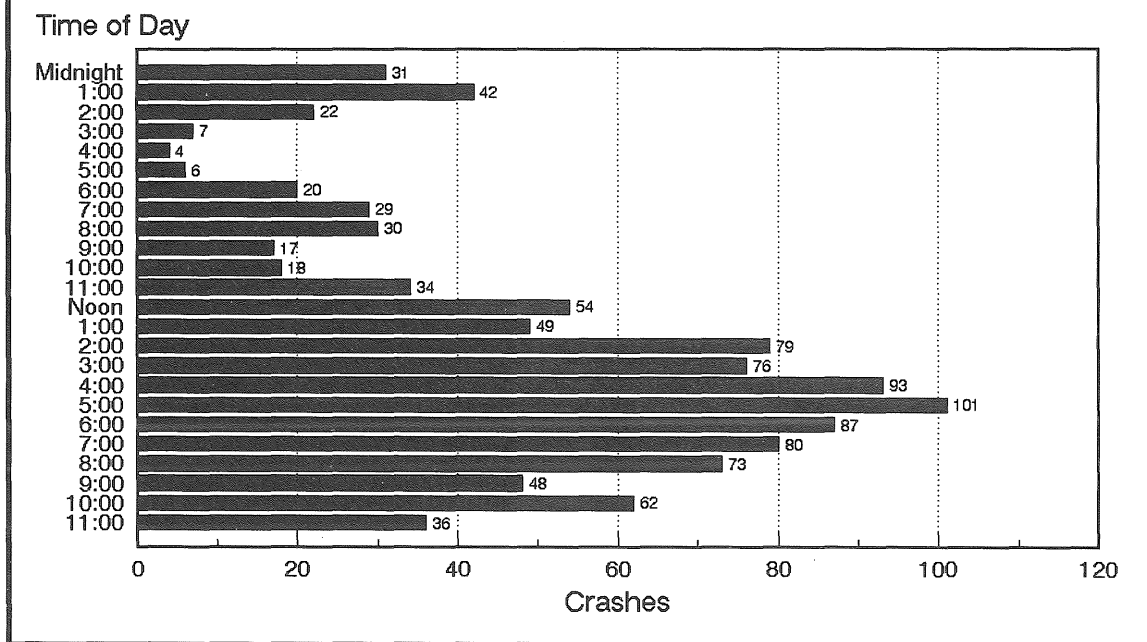


TABLE 4.05

1996 MOTORCYCLE CRASHES BY TIME AND DAY

Hour Beginning	Total Crashes	Fatal Crashes	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
			All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	31	2	8	1	6	1	2	0	2	0	5	0	2	0	6	0
1:00	42	0	12	0	2	0	2	0	0	0	6	0	9	0	11	0
2:00	22	2	6	1	2	1	1	0	2	0	1	0	3	0	7	0
3:00	7	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0
4:00	4	0	0	0	1	0	0	0	0	0	2	0	0	0	1	0
5:00	6	0	1	0	0	0	1	0	0	0	2	0	1	0	1	0
6:00	20	2	4	0	0	0	5	1	0	0	3	0	4	1	4	0
7:00	29	2	1	0	2	0	7	0	10	0	2	1	5	0	2	1
8:00	30	1	0	0	3	0	6	0	6	0	5	0	3	0	7	1
9:00	17	0	2	0	1	0	3	0	4	0	3	0	2	0	2	0
10:00	18	0	3	0	1	0	1	0	5	0	1	0	3	0	4	0
11:00	34	2	5	1	3	0	5	1	3	0	6	0	4	0	8	0
Noon	54	2	6	0	6	0	5	0	11	0	8	1	8	1	10	0
1:00	49	1	7	0	7	0	7	0	1	0	4	0	8	0	15	1
2:00	79	1	15	0	13	0	9	0	13	0	17	1	6	0	6	0
3:00	76	5	10	1	9	0	14	1	6	0	14	1	10	1	13	1
4:00	93	2	13	1	9	0	14	0	13	0	8	0	20	0	16	1
5:00	101	2	20	1	7	0	18	1	14	0	13	0	14	0	15	0
6:00	87	2	11	0	7	1	11	1	17	0	14	0	15	0	12	0
7:00	80	1	11	0	10	0	11	0	17	0	11	1	12	0	8	0
8:00	73	4	10	1	8	0	14	1	8	0	8	0	15	1	10	1
9:00	48	3	7	1	6	0	7	0	4	0	5	1	7	0	12	1
10:00	62	2	8	1	8	0	11	0	7	1	8	0	9	0	11	0
11:00	36	1	3	0	2	0	6	1	5	0	4	0	9	0	7	0
Not Stated	33	2	4	0	3	0	2	0	8	0	4	0	7	2	5	0
Total	1,131	39	173	9	116	3	162	7	157	1	154	6	176	6	193	7

TABLE 4.06

MOTORCYCLISTS KILLED OR INJURED BY AGE AND GENDER, 1996

Age Group	Killed			Severe			Moderate			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	1	1	0	1	1
5 - 9	0	0	0	0	1	1	2	0	2	1	0	1	3	1	4
10 - 14	1	0	1	4	0	4	3	0	3	1	0	1	8	0	8
15 - 19	3	1	4	29	1	30	53	7	60	24	5	29	106	13	119
20 - 24	9	0	9	44	3	47	102	11	113	42	4	46	188	18	206
25 - 29	5	0	5	24	6	30	66	7	73	37	6	44	127	19	147
30 - 34	5	0	5	22	5	27	54	10	64	32	3	35	108	18	126
35 - 39	6	1	7	28	9	37	59	7	66	34	10	44	121	26	147
40 - 44	4	0	4	21	4	25	41	8	49	19	6	25	81	18	99
45 - 49	1	0	1	18	2	20	32	12	44	18	6	24	68	20	88
50 - 54	2	0	2	9	2	11	19	5	24	5	2	7	33	9	42
55 - 59	2	0	2	4	0	4	14	2	16	8	0	8	26	2	28
60 - 64	1	0	1	3	1	4	2	0	2	3	0	3	8	1	9
65 - 69	0	0	0	2	0	2	0	0	0	1	0	1	3	0	3
70 & Older	1	0	1	0	0	0	2	0	2	1	0	1	3	0	3
Not Stated	0	0	0	2	1	3	0	5	6	1	3	7	3	9	16
Total	40	2	42	210	35	245	449	74	524	227	46	277	886	155	1046

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

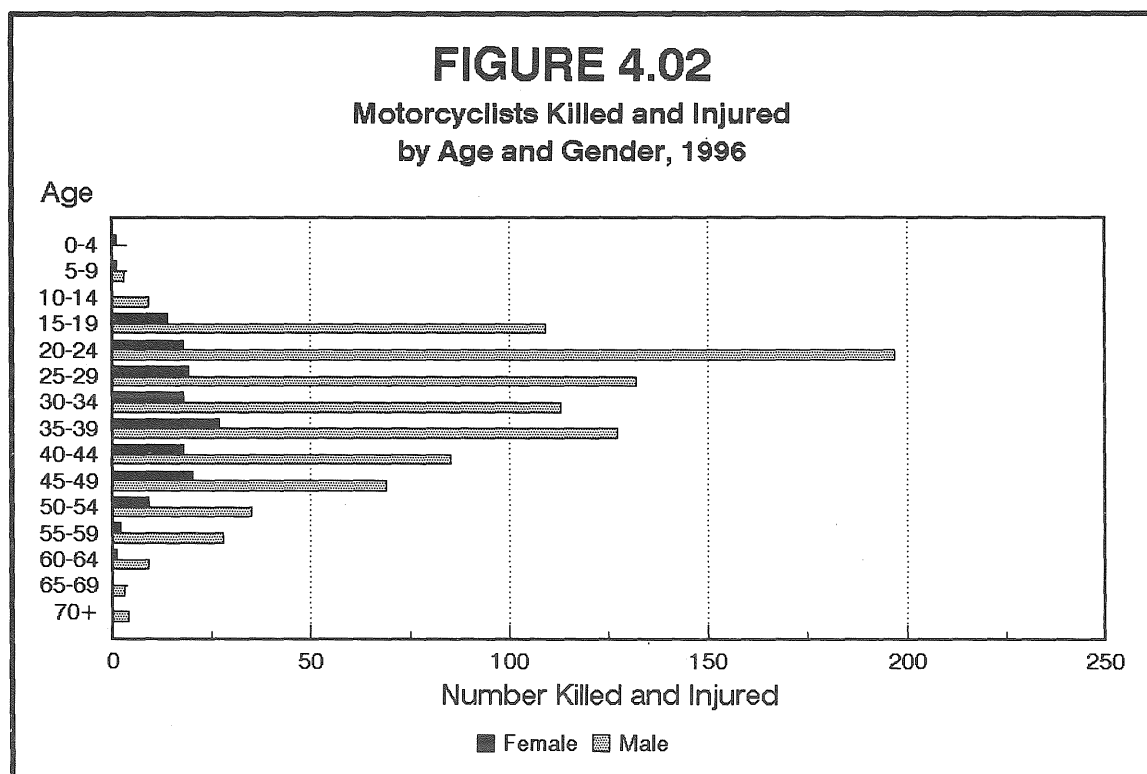


TABLE 4.07

HELMET USE BY MOTORCYCLISTS KILLED OR INJURED, 1991 - 1996

	<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
Killed								
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
Injured								
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

TABLE 4.08

ENDORSEMENT STATUS OF MOTORCYCLE OPERATORS INVOLVED IN FATAL CRASHES, 1986 - 1996

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
1986	41	64.1%	1	1.6%	7	10.9%	15	23.4%	64	100.0%
1987	33	64.7	1	2.0	10	19.6	7	13.7	51	100.0
1988	32	55.2	3	5.2	9	15.5	13	22.4	58	100.0
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

* 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 - 1996

Year	Killed	Tested	Alcohol Concentration*		
			(.00)	(.01 - .09)	(.10 or more)
1986	56	46	16 (35%)	5 (11%)	25 (54%)
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%)

*Percentages are based on those motorcycle drivers tested.

TABLE 4.10

1996 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	1	1	0	0	1	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	1	1	1	0	0	0	1	0	0	0	0	
18	1	1	0	1	0	0	0	0	1	0	0	
19	1	0	0	0	0	0	0	0	0	0	0	
20	1	0	0	0	0	0	0	0	0	0	0	
Under 21	5	3	1	1	1	0	1	0	1	0	0	
14 & Younger	1	1	0	0	1	0	0	0	0	0	0	
15 - 19	3	2	1 (50%)	1 (50%)	0	0	1	0	1	0	0	
20 - 24	8	7	1 (14%)	1 (14%)	5	0	1	0	0	1	0	
25 - 29	5	5	0 (0%)	2 (40%)	3	0	0	0	0	1	1	
30 - 34	5	5	1 (20%)	3 (60%)	1	1	0	1	2	0	0	
35 - 39	5	5	0 (0%)	1 (20%)	4	0	0	0	1	0	0	
40 - 44	4	4	0 (0%)	2 (50%)	2	0	0	1	0	1	0	
45 - 49	1	1	0	0	1	0	0	0	0	0	0	
50 - 54	2	2	0	0	2	0	0	0	0	0	0	
55 - 59	2	2	0	0	2	0	0	0	0	0	0	
60 & Older	2	2	1 (50%)	0	1	1	0	0	0	0	0	
Total	38	36	4 (11%)	10 (28%)	22	2	2	2	4	3	1	

* Percentages are based on those motorcycle drivers tested.

TABLE 4.11

CONTRIBUTING FACTORS IN 1996 MOTORCYCLE CRASHES

Contributing Factors	Single Vehicle Crashes Attributed to Motorcycle Drivers		Multi-Vehicle Crashes Attributed to Motorcycle Drivers		Attributed to Other Drivers	
	Number	Percent	Number	Percent	Number	Percent
Human Factors:						
Illegal/Unsafe Speed	160	26.1%	63	16.9%	15	2.6%
Driver Inattention/Distracted	70	11.4	84	22.5	153	26.1
Driver Inexperience	79	12.9	20	5.4	12	2.0
Physical Impairment	87	14.2	21	5.6	13	2.2
Improper/Unsafe Lane Use	27	4.4	26	7.0	33	5.6
Improper Turn	6	1.0	6	1.6	30	5.1
Improper Parking/Starting/ Stopping	7	1.1	2	0.5	13	2.2
Failure to Yield Right of Way	8	1.3	28	7.5	196	33.4
Following Too Closely	2	0.3	44	11.8	21	3.6
Disregard for Traffic Control Device	6	1.0	4	1.1	28	4.8
Driving Left of Center	4	0.7	3	0.8	4	0.7
Improper Passing / Overtaking	7	1.1	30	8.0	7	1.2
Vision Obscured	2	0.3	5	1.3	26	4.4
Failure to Use Lights	1	0.2	1	0.3	2	0.3
Unsafe Backing	0	0.0	0	0.0	5	0.9
Improper or No Signal	1	0.2	1	0.3	7	1.2
Impeding Traffic	0	0.0	1	0.3	1	0.2
Driver on CB Radio / Phone	0	0.0	0	0.0	1	0.2
Other Human Factor	14	2.3	2	0.5	1	0.2
Vehicular Factors:						
Skidding	46	7.5	15	4.0	1	0.2
Defective Equipment	14	2.3	3	0.8	3	0.5
Other Vehicular Factors	13	2.1	1	0.3	2	0.3
Miscellaneous Factors:						
Weather Conditions	10	1.6	0	0.0	0	0.0
Other	49	8.0	13	3.5	12	2.0
Total	613	100.0%	373	100.0%	586	100.0%
Vehicles for Which There Was "No Clear Contributing Factor"	118		345		180	
Total Number Drivers	534		628		608	

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 accident 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 1996

Since 1991, truck crashes have averaged just under 5,000 per year. In 1996, there were 5,358 truck crashes. There were 60 fatal crashes, killing 79 people. In addition, 2,074 people were injured. Unlike other types of crashes, truck crashes resulting in severe injury have not been decreasing in the 1990s.

Persons killed or injured usually in other vehicles

Although the number of people killed in truck crashes decreased slightly in 1996, the number of people injured (2,074) represents an 11% increase from the previous year. In a two-vehicle collision, relative vehicle weight is a recognized safety advantage. Of the 79 people killed, only 3 were truck occupants. And, of the 2,074 people injured, only 450 (22%) were truck occupants.

Contributing factors similar for truck and non-truck drivers

Reporting officers indicated they could determine no clear contributing factor for 42% of the truck drivers and for 44% of the other vehicle drivers. Truck drivers were less likely to be alcohol-impaired than non-truck drivers. For the truck drivers, 12 were reported to have been drinking, and 10 were reported to have been under the influence, compared with 49 and 71, respectively, for the non-truck drivers. Defective vehicular factors were far more common on trucks than on the other vehicles. Not including "skidding", vehicular factors were reported 274 times compared to just 43 times for the other vehicles.

Otherwise, contributing factors were similar for the two groups. Driver inattention or distraction (22% for truck drivers and 20% for non-truck drivers), and illegal or unsafe speed (10% and 14%, respectively), were the top two factors cited for both.

Collision with other vehicle most common

Eighty-eight percent of fatal truck crashes came about from a collision with another moving motor vehicle. This compares with 53% for all fatal crashes. For the non-fatal truck crashes, slightly over three-fourths (76%) were collisions with another moving motor vehicle, compared with 67% for all crashes.

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 1996, Monday through Friday averaged 959 truck crashes per day, compared to just 282 on the average Saturday or Sunday.

Driving conditions

Driving conditions are usually good in Minnesota, and most truck crashes occurred on dry roads in clear weather. However, 22% of the fatal crashes and 38% of the 1,473 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. Eighty percent of the fatal truck crashes, and 45% of the injury crashes occurred in rural areas. As expected, a majority (72%) of the fatal truck crashes occurred on U.S. Trunk or State Trunk Highways.

TABLE 5.01

TRUCK CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total Crashes	5,668	7,038	7,381	6,712	5,152	4,463	4,931	5,132	4,752	5,358
Fatal Crashes	65	70	77	70	72	65	63	81	77	60
Persons Killed	71	78	94	83	85	84	77	94	86	79
Injury Crashes	1,443	1,729	1,784	1,652	1,250	1,213	1,268	1,369	1,277	1,473
Severe	232	282	247	225	137	167	148	151	153	176
Moderate	548	604	586	617	477	418	452	481	470	516
Minor	663	843	951	810	636	628	668	737	654	781
Persons Injured	2,033	2,444	2,411	2,390	1,762	1,721	1,764	1,902	1,869	2,074
Severe	291	362	293	285	179	222	198	203	196	217
Moderate	767	856	777	876	667	560	598	630	645	708
Minor	975	1,226	1,341	1,229	916	939	968	1,069	1,028	1,149
Property Damage Crashes	4,160	5,239	5,520	4,990	3,830	3,185	3,600	3,682	3,398	3,825

TABLE 5.02

PERSONS KILLED OR INJURED IN 1996 TRUCK CRASHES
BY VEHICLE OCCUPIED

Vehicle Type	Killed	Injured			Total
		Severe	Moderate	Minor	
Automobile	47	109	405	613	1,127
Pickup Truck	12	33	90	116	239
Van	9	15	44	91	150
Police or Fire Department Vehicle	0	0	3	3	6
School Bus	0	1	2	10	13
Snowmobile	1	3	1	1	5
Farm Equipment	0	3	1	1	5
Motorcycle	1	3	6	4	13
Hit and Run Vehicle	0	1	2	2	5
Two-Axle, Six-Tire Single Unit Truck or Stepvan	2	13	45	87	145
Three or More Axle Single Unit Truck	0	5	21	29	55
Single Unit Truck with Trailer	0	3	15	17	35
Truck Tractor with No Trailer	0	2	1	4	7
Truck Tractor with Semi Trailer	1	13	60	122	195
Truck Tractor with Twin Trailers	0	0	1	4	5
Heavy Truck--Other or Unknown Type	0	0	4	4	8
Other or Unknown Vehicle Type	0	5	1	28	34
Bicycle	2	3	1	4	8
Pedestrian	4	5	5	9	19
Total	79	217	708	1,149	2,074

TABLE 5.03

CONTRIBUTING FACTORS IN 1996 TRUCK CRASHES

Contributing Factors	Attributed to Truck Vehicles		Attributed to Non-Truck Vehicles	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention/Distracted	973	22.0%	778	20.4%
Illegal or Unsafe Speed	448	10.1	529	13.9
Failure to Yield Right of Way	343	7.8	454	11.9
Improper or Unsafe Lane Use	315	7.1	331	8.7
Following Too Closely	300	6.8	190	5.0
Improper Turn	189	4.3	80	2.1
Unsafe Backing	165	3.7	25	0.7
Vision Obscured	158	3.5	101	2.7
Disregard for Traffic Control Device	118	2.7	95	2.5
Improper Passing or Overtaking	85	1.9	179	4.7
Driver Inexperience	64	1.4	104	2.7
Improper Parking, Starting, or Stopping	54	1.2	50	1.3
Physical Impairment	51	1.2	94	2.5
Driving Left of Center (Not Passing)	40	0.9	64	1.7
Improper or No Signal	24	0.5	14	0.4
Impeding Traffic	14	0.3	12	0.3
Use of Phone or CB Radio	6	0.1	1	0.0
Failure to Use Lights	5	0.1	5	0.1
Pedestrian Violation or Error	0	0.0	5	0.1
Other Human Factors	47	1.1	23	0.6
Vehicular Factors				
Skidding	183	4.1	209	5.5
Defective Brakes	81	1.8	7	0.2
Oversize or Overweight Vehicle	41	0.9	3	0.1
Defective Tire	33	0.7	6	0.2
Defective Lights	18	0.4	4	0.1
Other Vehicular Factor	101	2.3	23	0.6
Miscellaneous Factors				
Weather	366	8.3	327	8.6
Other	198	4.5	98	2.6
<hr/>				
Total Contributing Factors Cited	4,420	100%	3,811	100%
Vehicles for Which There Was				
"No Clear Contributing Factor"	2,329		2,146	
Total Number of Vehicles	5,585		4,916	

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 1996 CRASHES

Driver Age	Truck or Truck Tractor	Truck with Semi-Trailer	Truck with Twin Trailer	Truck with Other Trailer	Total
10 - 14	1	0	0	0	1
15 - 19	89	16	0	9	114
20 - 24	281	183	3	49	516
25 - 29	363	328	2	60	753
30 - 34	339	381	3	58	781
35 - 39	355	425	8	69	857
40 - 44	240	375	8	52	675
45 - 49	187	308	9	24	528
50 - 54	140	254	7	32	433
55 - 59	120	206	7	24	357
60 - 64	67	115	1	8	191
65 & Older	63	56	0	18	137
Not Stated	53	36	1	3	93
Total*	2,298	2,683	49	406	5,436

* There were 5,585 trucks in crashes in 1996. However, 135 of these were parked vehicles. The driver could not be identified for an additional 14 of these trucks. This table tabulates the ages of drivers for the remaining 5,436 trucks where it was possible to identify a driver.

TABLE 5.05

DRIVERS IN 1996 TRUCK CRASHES
BY PHYSICAL CONDITION*

Physical Condition	Truck Driver		Other Driver	
	Number	Percent	Number	Percent
Normal	4,891	90.0%	4,034	86.3%
Had Been Drinking	12	0.2	49	1.0
Under the Influence	10	0.2	71	1.5
Had Been Using Drugs	0	0.0	2	0.0
Asleep	27	0.5	12	0.3
Fatigued	20	0.4	8	0.2
Ill	4	0.1	5	0.1
Other	8	0.1	14	0.3
Unknown	464	8.5	480	10.3
Total **	5,436	100%	4,675	100%

* As noted by police officer on accident report.

** There were 5,585 trucks in crashes in 1996. However, 135 were parked. The driver could not be identified for an additional 14. This table tabulates the apparent physical condition of drivers for the remaining 5,436 trucks where it was possible to identify a driver. Also, there were 4,882 non-truck motor vehicles in 1996 truck crashes. However, 196 of them were parked, and there were 11 more for which a driver could not be identified, leaving 4,675 for which an apparent physical condition was recorded.

TABLE 5.06

1996 TRUCK CRASHES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Collision With:						
Other Motor Vehicle	53	1,179	2,854	4,086	72	1,730
Parked Motor Vehicle	1	30	201	232	1	41
Railroad Train	1	8	15	24	1	10
Bicycle	2	7	1	10	2	7
Pedestrian	2	14	0	16	2	15
Deer	0	2	53	55	0	2
Other Animal	0	3	18	21	0	4
Fixed Object	0	58	309	367	0	68
Other Object	0	8	31	39	0	10
Non-Collision:						
Overturn	1	147	152	300	1	164
Fire or Explosion	0	0	12	12	0	0
Other	0	17	179	196	0	23
Total	60	1,473	3,825	5,358	79	2,074

TABLE 5.07

1996 TRUCK CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	5	160	471	636	6	204
February	2	106	282	390	4	140
March	5	108	267	380	5	153
April	6	61	197	264	9	94
May	3	102	266	371	4	136
June	5	109	270	384	7	164
July	7	115	295	417	13	179
August	7	118	301	426	8	178
September	10	130	283	423	11	184
October	3	157	380	540	3	199
November	4	155	368	527	5	223
December	3	152	445	600	4	220
Total	60	1,473	3,825	5,358	79	2,074

TABLE 5.08

1996 TRUCK CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	127	12	18	11	21	20	25	20
3:00 - 5:59 AM	158	6	30	25	17	26	33	21
6:00 - 8:59 AM	796	17	123	171	155	146	135	49
9:00 - 11:59 AM	1,213	37	262	197	217	195	235	70
Noon - 2:59 PM	1,219	44	208	239	230	203	231	64
3:00 - 5:59 PM	1,073	48	218	192	197	178	187	53
6:00 - 8:59 PM	422	40	86	54	71	58	80	33
9:00 - 11:59 PM	241	22	34	30	53	38	49	15
Unknown	109	4	22	27	17	13	16	10
Total	5,358	230	1,001	946	978	877	991	335

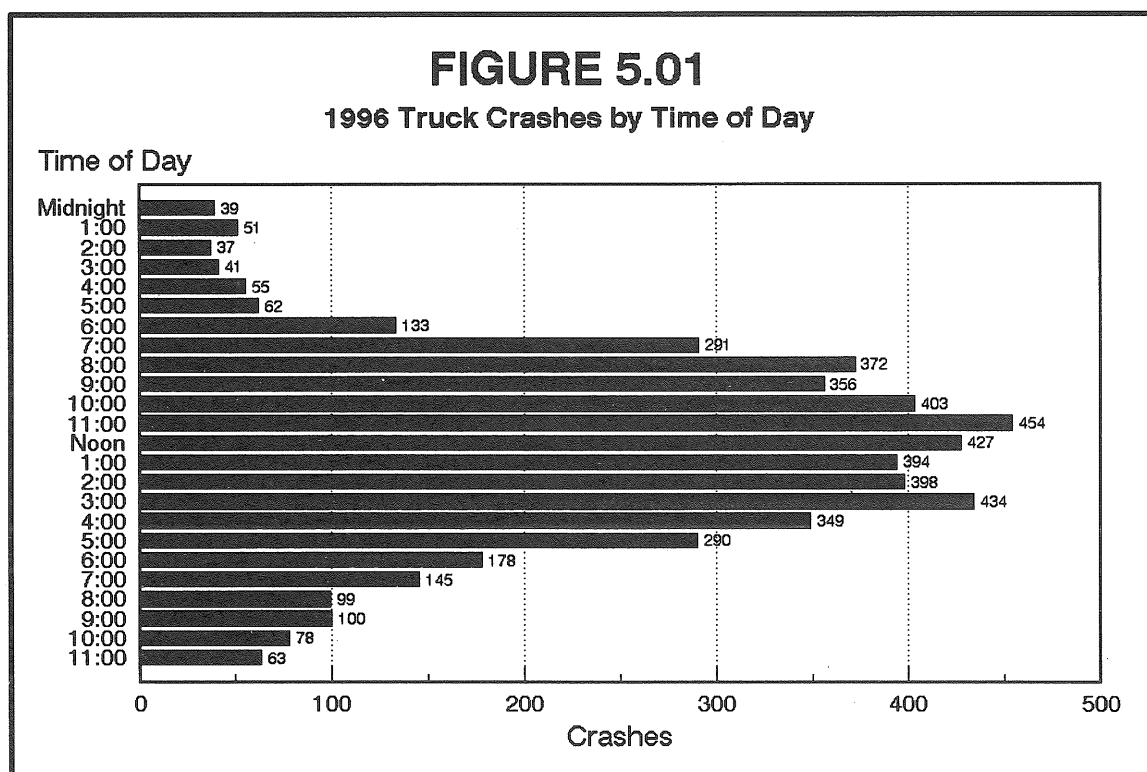


TABLE 5.09

1996 TRUCK CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Dry	47	884	2,202	3,133	62	1,260
Wet	4	202	415	621	5	294
Snow or Slush	4	86	279	369	6	116
Ice or Packed Snow	5	275	844	1,124	6	371
Other	0	18	36	54	0	23
Unknown	0	8	49	57	0	10
Total	60	1,473	3,825	5,358	79	2,074

TABLE 5.10

1996 TRUCK CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Clear	27	753	1,971	2,751	34	1,051
Cloudy	17	394	976	1,387	23	549
Rain	1	100	208	309	1	150
Snow	4	117	346	467	6	157
Sleet/Hail/Freezing Rain	1	30	98	129	1	39
Fog/Smog/Smoke	3	16	22	41	5	30
Blowing Sand/Dust/Snow	4	42	114	160	5	63
Severe Cross Winds	0	9	27	36	0	9
Other	1	3	9	13	1	8
Unknown	2	9	54	65	3	18
Total	60	1,473	3,825	5,358	79	2,074

TABLE 5.11

1996 TRUCK CRASHES BY POPULATION OF AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
100,000 & Over	0	238	712	950	0	319
50,000 - 99,999	2	125	311	438	3	167
25,000 - 49,999	1	179	525	705	1	226
10,000 - 24,999	5	176	570	751	5	234
5,000 - 9,999	4	89	289	382	4	125
2,500 - 4,999	1	48	156	205	1	63
1,000 - 2,499	1	38	111	150	1	52
Under 1,000	46	580	1,151	1,777	64	888
Total	60	1,473	3,825	5,358	79	2,074

TABLE 5.12

1996 TRUCK CRASHES BY TYPE OF ROADWAY

Roadway Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Interstate Highway	6	280	853	1,139	6	411
US Trunk Highway	22	251	610	883	32	361
State Trunk Highway	21	361	809	1,191	29	530
County State-Aid Highway	7	343	623	973	8	455
County Road	0	22	49	71	0	29
Township Road	1	32	50	83	1	49
Local Street	3	179	787	969	3	234
Other Road	0	5	44	49	0	5
Total	60	1,473	3,825	5,358	79	2,074

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 decrease in 1996

In 1996, there were 1,378 crashes in which a pedestrian was injured or killed by a motor vehicle. This figure represents a 6% decrease in the number of crashes from 1995, and also was the lowest total since 1991. Pedestrians killed and pedestrians injured also decreased. Forty-six pedestrians were killed, and 1,388 were injured; both numbers also represent a 6% decrease from the previous year. (Note from Table 6.03 that there were 47 fatal pedestrian crashes, but in one of them the person who died was a motor vehicle occupant.) About three-and-one-half percent of pedestrian crashes resulted in a death, compared to about one-half of one percent of all crashes.

Children at greater risk

In all traffic crashes, children aged 5 to 14 accounted for 7% of the persons injured. In pedestrian crashes, they accounted for 26%. The 5 to 9 year old group had the largest number of injuries (194). 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 about 30%. Pedestrian injuries and fatalities both appear evenly distributed across months of the year.

Large cities and rush-hours.

In 1996, 47% of non-fatal pedestrian crashes occurred in cities of over 100,000, and 79% occurred in cities of 10,000 or more. Half (51%) of the fatal crashes occurred in cities of 10,000

or more. Weekdays tended to have more pedestrian crashes than Saturdays and Sundays. Monday to Friday averaged 216 crashes. Saturday and Sunday averaged 149. The hours from 3:00 to 6:00 PM during the week had the most crashes, 362, which represents 26% of all pedestrian crashes.

Prior actions of vehicles and pedestrians

In 57% of the fatal crashes, and 58% of the non-fatal crashes, the motor vehicle was simply going straight ahead on the roadway prior to the crash. In the injury crashes, the vehicle was making a right turn 7% of the time, and making a left turn 11% of the time. As might be expected, the pedestrians were often trying to cross the road. One fourth of them were attempting to cross the road where there was no signal or crosswalk. Twelve percent of those injured were crossing with the signal, 6% against the signal, and 7% were crossing in a crosswalk where there was no signal. Nine percent were walking in the road with traffic, and 6% were walking against traffic.

Contributing factors

For 41% 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 (26%), and failure to yield the right of way (22%).

Pedestrians and alcohol

Of the 46 pedestrians killed, 34 were tested for alcohol. Of those tested, roughly two-thirds (23 of the 34) were negative, and one-third (11 of the 34) had concentrations over the legal driving limit of .10. Two of the 11 who tested positive were between the ages of 15 and 24.

TABLE 6.01

PEDESTRIAN CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Pedestrian Crashes	1,556	1,575	1,591	1,512	1,338	1,420	1,383	1,409	1,458	1,378
Pedestrians Killed	62	69	67	65	61	46	47	53	49	46
Pedestrians Injured	1,533	1,566	1,578	1,499	1,339	1,424	1,390	1,400	1,471	1,388

TABLE 6.02

PEDESTRIANS KILLED OR INJURED BY AGE AND GENDER, 1996

Age Group	Killed			Injured									Total		
	M	F	Total	Severe			Moderate			Minor			M	F	Total*
0 - 4	2	0	2	5	6	12	18	13	33	18	8	31	41	27	76
5 - 9	2	0	2	27	16	43	47	28	76	40	33	75	114	77	194
10 - 14	2	1	3	18	15	33	43	33	76	26	32	59	87	80	168
15 - 19	2	1	3	9	14	23	37	27	66	34	31	66	80	72	155
20 - 24	4	0	4	12	11	23	20	12	33	18	23	43	50	46	99
25 - 29	3	0	3	11	6	17	30	10	40	29	14	46	70	30	103
30 - 34	3	0	3	8	10	18	19	14	33	26	17	45	53	41	96
35 - 39	0	0	0	11	3	16	14	17	32	15	12	27	40	32	75
40 - 44	3	2	5	8	5	13	18	6	24	20	20	40	46	31	77
45 - 49	1	1	2	5	3	8	13	12	25	16	10	27	34	25	60
50 - 54	1	0	1	6	5	11	12	6	18	3	4	7	21	15	36
55 - 59	1	1	2	5	4	9	9	5	14	9	2	11	23	11	34
60 - 64	1	1	2	1	2	3	5	5	10	4	1	5	10	8	18
65 - 69	4	0	4	0	5	5	5	5	10	4	2	9	9	12	24
70 - 74	1	0	1	3	4	7	4	7	11	4	4	8	11	15	26
75 - 79	1	1	2	2	5	7	5	4	10	3	3	6	10	12	23
80 - 84	2	1	3	0	2	3	3	5	8	2	2	5	5	9	16
85 & Older	1	3	4	2	3	5	3	2	5	1	1	2	6	6	12
Not Stated	0	0	0	4	5	10	6	6	15	24	18	71	34	29	96
Total	34	12	46	137	124	266	311	217	539	296	237	583	744	578	1,388

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

FIGURE 6.01

Pedestrian Fatalities by Age, 1987-1996 Combined

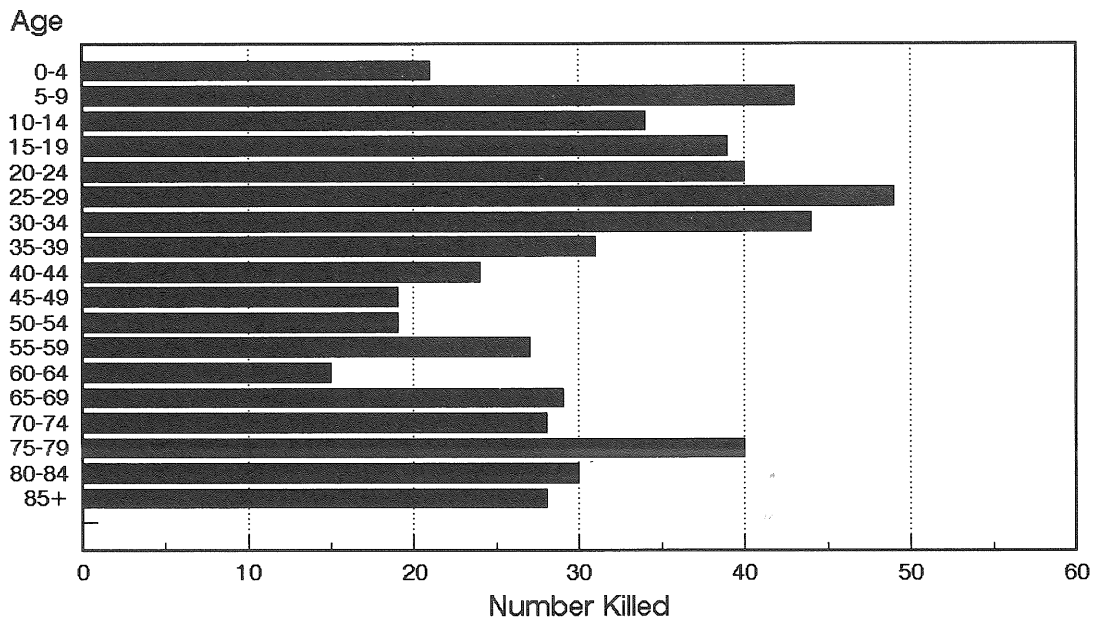


FIGURE 6.02

Pedestrians Killed and Injured
by Age and Gender, 1996

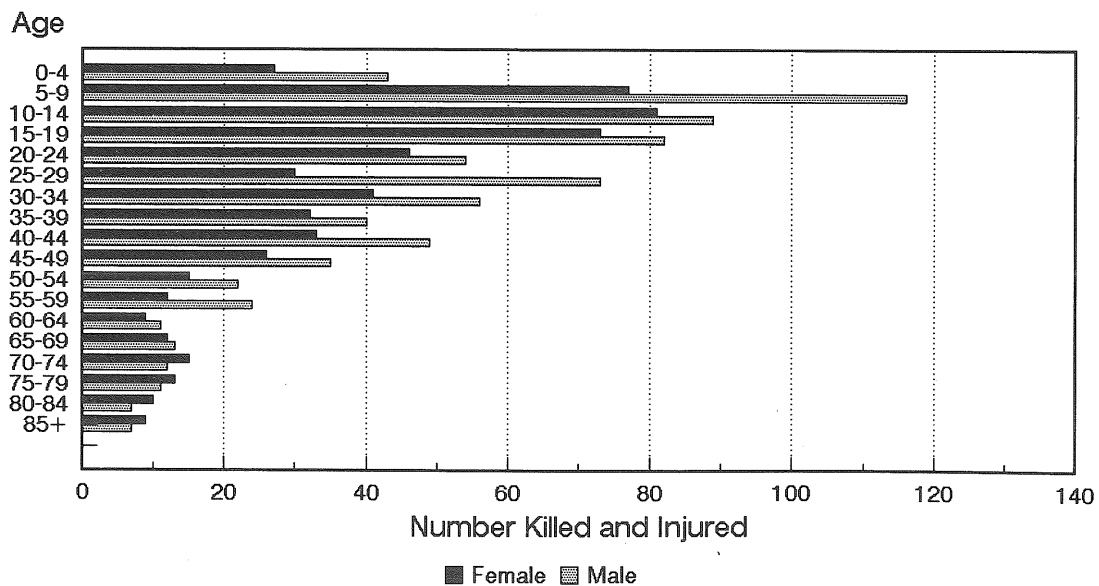


TABLE 6.03

1996 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
January	1	124	125	1	132
February	4	110	114	4	113
March	4	107	111	4	113
April	2	102	104	2	103
May	4	116	120	4	118
June	2	115	117	2	119
July	2	126	128	2	132
August	7	102	109	7	103
September	5	112	117	5	120
October	8	123	131	7	131
November	4	109	113	4	112
December	4	85	89	4	92
Total	47	1,331	1,378	46	1,388

TABLE 6.04

1996 PEDESTRIAN CRASHES BY POPULATION OF AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
100,000 and Over	7	626	633	7	644
50,000 - 99,999	2	113	115	2	118
25,000 - 49,999	9	134	143	9	136
10,000 - 24,999	6	173	179	6	183
5,000 - 9,999	4	73	77	4	76
2,500 - 4,999	2	32	34	2	32
1,000 - 2,499	3	19	22	3	22
Under 1,000	14	161	175	13	177
Total	47	1,331	1,378	46	1,388

TABLE 6.05

1996 PEDESTRIAN CRASHES BY TIME AND DAY

Time of Day	Fatal Crashes	Total Crashes	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight 2:59 AM	6	78	22	4	2	8	7	10	25
3:00 - 5:59 AM	0	6	1	1	2	2	0	0	0
6:00 - 8:59 AM	7	155	6	23	39	29	34	21	3
9:00 - 11:59 AM	3	127	13	18	19	19	19	21	18
Noon - 2:59 PM	3	223	25	23	34	43	30	32	36
3:00 - 5:59 PM	9	362	21	48	63	63	71	62	34
6:00 - 8:59 PM	9	258	18	38	40	36	45	45	36
9:00 - 11:59 PM	8	132	10	17	20	13	19	28	25
Unknown	2	37	4	3	6	8	10	5	1
Total	47	1,378	120	175	225	221	235	224	178

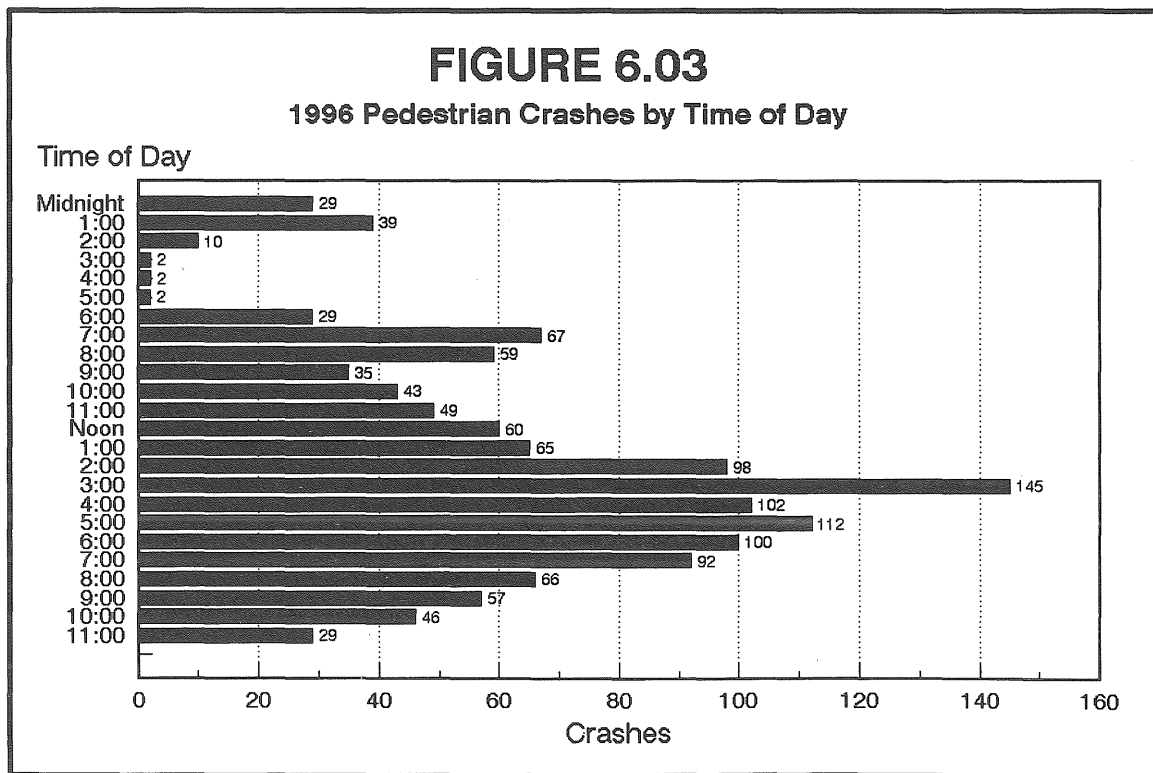


TABLE 6.06

PRIOR ACTION OF VEHICLES IN 1996 PEDESTRIAN CRASHES

<u>Action</u>	<u>Vehicles in Fatal Crashes</u>	<u>Vehicles in Injury Crashes</u>	<u>Vehicles in Total Crashes*</u>
Going Straight	33	829	862
Wrong Way Opposing Traffic	1	5	6
Turning Right on Red	0	26	26
Turning Left on Red	0	4	4
Turning Right	0	96	96
Turning Left	3	157	160
Making U Turn	0	2	2
Starting From Parked	0	24	24
Starting in Traffic	0	30	30
Slowing in Traffic	0	14	14
Parking	0	5	5
Avoiding Object in Road	0	27	27
Changing Lanes	2	0	2
Passing	0	11	11
Backing	0	54	54
All Others	14	114	128
Unknown	5	27	32
Total	58	1,425	1,483

* 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 1996

<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)	17	37.0%	340	24.5%
Crossing Against Signal	2	4.3	84	6.1
Crossing With Signal	1	2.2	168	12.1
Crossing In Crosswalk (No Signal)	2	4.3	100	7.2
Walking In Road With Traffic	2	4.3	109	7.9
Walking In Road Against Traffic	2	4.3	85	6.1
Standing In Road	6	13.0	65	4.7
Emerging From Front/Behind Parked Car	1	2.2	91	6.6
Child Getting On/Off School Bus	0	0.0	2	0.1
Pushing/Working On Vehicle	2	4.3	7	0.5
Working In Road	1	2.2	11	0.8
Getting On/Off Vehicle	2	4.3	18	1.3
Playing In Road	1	2.2	32	2.3
Not In Road	1	2.2	42	3.0
Other Pedestrian Action	1	2.2	113	8.1
Unknown	5	10.9	121	8.7
Total*	46	100.0%	1,388	100.0%

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

TABLE 6.08

CONTRIBUTING FACTORS IN 1996 PEDESTRIAN CRASHES

Contributing Factors	Attributed to Motor Vehicle Drivers	
	Number	Percent
Human Factors		
Driver Inattention / Distraction	297	26.1%
Failure to Yield Right of Way	244	21.5
Vision Obscured	97	8.5
Illegal or Unsafe Speed	89	7.8
Physical Impairment	39	3.4
Unsafe Backing	34	3.0
Improper / Unsafe Lane Use	31	2.7
Disregard for Traffic Control Device	31	2.7
Driver Inexperience	20	1.8
Improper Parking / Starting / Stopping	20	1.8
Improper Turn	14	1.2
Improper Passing / Overtaking	12	1.1
Following Too Closely	5	0.4
Driving Left of Center	4	0.4
Failure to Use Lights	1	0.1
Other Human Factors	32	2.8
Vehicular Factors		
Defective Equipment	3	0.3
Skidding	33	2.9
Other Vehicular Factors	8	0.7
Miscellaneous Factors		
Weather Conditions	52	4.6
Other	70	6.2
 Total Contributing Factors Cited	 1,136	 100.0%
 Vehicles for Which There Was "No Clear Contributing Factor"	 602	
Total Number of Drivers	1,483	

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, 1987 - 1996**

Year	Killed	Tested	Alcohol Concentration*		
			(.00)	(.01 - .09)	(.10 or more)
1987	62	42	23 (55%)	2 (5%)	17 (40%)
1988	69	47	25 (53%)	2 (4%)	20 (43%)
1989	67	42	26 (62%)	4 (10%)	12 (29%)
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%)

* 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

**1996 PEDESTRIAN FATALITIES'
LEVEL OF ALCOHOL CONCENTRATION BY AGE**

Age Group	Killed	Tested	Alcohol Concentration		
			(.00)	(.01 - .09)	(.10 or more)
14 & Younger	7	5	5	0	0
15 - 19	3	2	1	0	1
20 - 24	4	3	2	0	1
25 - 29	3	3	3	0	0
30 - 34	3	1	0	0	1
35 - 39	0	0	0	0	0
40 - 44	5	4	1	0	3
45 - 49	2	2	0	0	2
50 - 54	1	1	0	0	1
55 - 59	2	1	0	0	1
60 - 64	2	1	1	0	0
65 - 69	4	4	4	0	0
70 - 74	1	0	0	0	0
75 - 79	2	2	2	0	0
80 - 84	3	2	1	0	1
85 & Older	4	3	3	0	0
Total	46	34	23	0	11

TABLE 6.11

**1996 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL
CONCENTRATION BY TIME OF DAY**

Time of Day	Killed	Tested	Alcohol Concentration		
			(.00)	(.01 - .09)	(.10 or more)
Midnight - 2:59 AM	5	3	1	0	2
3:00 - 5:59 AM	0	0	0	0	0
6:00 - 8:59 AM	7	5	4	0	1
9:00 - 11:59 AM	3	2	2	0	0
Noon - 2:59 PM	3	2	1	0	1
3:00 - 5:59 PM	9	6	5	0	1
6:00 - 8:59 PM	9	8	5	0	3
9:00 - 11:59 PM	8	6	3	0	3
Unknown	2	2	2	0	0
Total	46	34	23	0	11

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.

Low number of deaths again in 1996

Based upon averages for the previous 5 year period, the year 1996 was normal for bicycle crashes and injuries. The total numbers for 1996 almost matched exactly the totals for 1995. A lower than usual number of bicyclists were killed. There were only 6 bicyclist fatalities in 1996. That is the second lowest number recorded for the period of time that records are available (back to 1965).

Warm weather and rush-hour

Bike crashes are a warm-weather occurrence. In 1996, all 6 fatalities, 90% of the crashes, and 90% of the injuries occurred between May 1 and October 31. They also appear to follow rush-hour traffic patterns. Thirty-five percent of the bike crashes occurred between 6:00 AM and 9:00 AM, or between 3:00 PM and 6:00 PM on Monday through Friday. Thirty-nine percent (almost 4 out of every 10) of the bike crashes occurred in cities of over 100,000 population.

Males injured most often

In 1996, all 6 of the bicyclist fatalities, and approximately 75% of bicyclist injuries were male. In other words, males were injured almost three times as often as females (927 to 331). Ages were similar for males and females. For both, about 15% were aged 5 to 9, 30% were aged 10 to 14, and another 15% were aged 15 to 19. Injuries diminished steadily as age increased.

Actions by bicyclists prior to crash

Bicyclists are supposed to ride with traffic. Of the 1,351 bicyclists involved in crashes, 165 were riding with traffic prior to the crash. An additional 134 (10%) were riding against traffic. The most commonly occurring action by bicyclists prior to the crash (for 477, or 35% of the total) was attempting to ride across the trafficway. (However, the prior action was indicated as "other" or "unknown" for fully 39% of the bicyclists.)

Contributing factors

The reporting officer showed "no improper driving" for 417 (31%) of the 1,351 bicyclists in crashes, compared with 623 (46%) of the motor vehicle drivers in bicycle crashes. There were four contributing factors that officers reported relatively frequently for bicyclists. These were failure to yield the right of way (cited 21% of the time), inattention or distraction (21%), improper or unsafe lane use (12%), and disregard for traffic control device (11%). For the motor vehicle drivers, two factors accounted for 64% of the contributing factors cited, and thus stood out more than the others. These two were driver inattention or distraction (36%), and failure to yield the right-of-way (28%).

TABLE 7.01

BICYCLE CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Bicycle Crashes	1,574	1,448	1,392	1,357	1,208	1,343	1,321	1,436	1,333	1,337
Bicyclists Killed	15	16	10	8	8	11	9	16	5	6
Bicyclists Injured	1,452	1,401	1,353	1,327	1,157	1,249	1,240	1,359	1,283	1,281

TABLE 7.02

1996 BICYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Bicyclists Killed	Bicyclists Injured
January	0	6	2	8	0	6
February	0	7	0	7	0	7
March	0	23	2	25	0	23
April	0	67	3	70	0	68
May	0	167	7	174	0	169
June	2	226	12	240	2	229
July	0	257	15	272	0	257
August	1	247	9	257	1	252
September	2	138	6	146	2	139
October	1	108	6	115	1	109
November	0	17	1	18	0	17
December	0	5	0	5	0	5
Total	6	1,268	63	1,337	6	1,281

FIGURE 7.01

1996 Bicycle Crashes by Time of Day

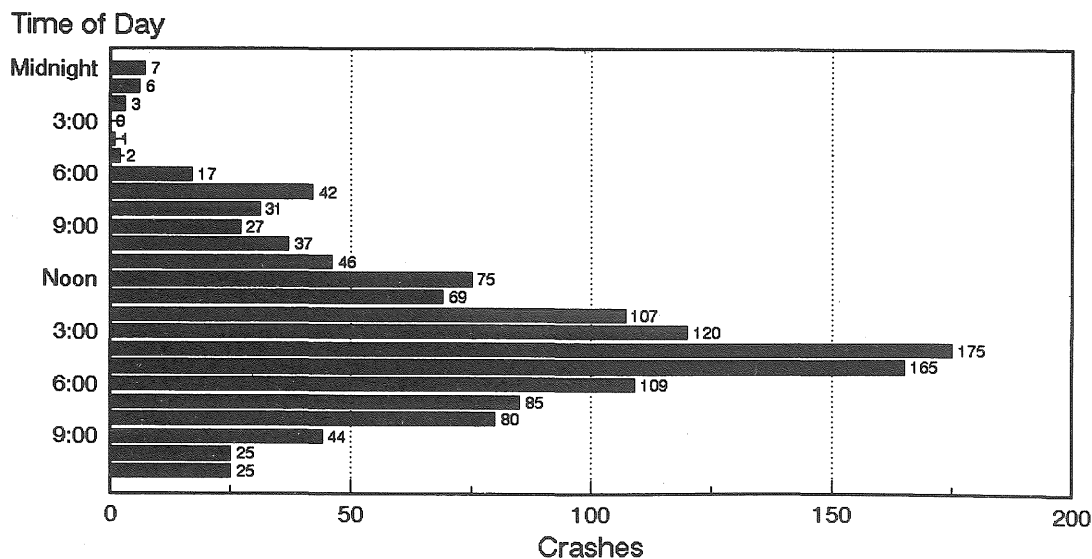


TABLE 7.03

1996 BICYCLE CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	16	2	0	2	3	2	2	5
3:00 - 5:59 AM	3	0	0	1	2	0	0	0
6:00 - 8:59 AM	90	1	9	18	20	22	16	4
9:00 - 11:59 AM	110	11	13	12	16	18	17	23
Noon - 2:59 PM	251	29	37	49	30	41	39	26
3:00 - 5:59 PM	460	31	75	76	81	69	86	42
6:00 - 8:59 PM	274	28	36	50	47	50	35	28
9:00 - 11:59 PM	94	7	19	16	6	12	19	15
Unknown	39	1	1	10	6	6	10	5
Total	1,337	110	190	234	211	220	224	148

TABLE 7.04

1996 BICYCLE CRASHES BY POPULATION OF AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Bicyclists Killed	Bicyclists Injured
100,000 and Over	0	493	29	522	0	498
50,000 - 99,999	0	115	3	118	0	116
25,000 - 49,999	1	201	11	213	1	203
10,000 - 24,999	0	206	10	216	0	207
5,000 - 9,999	1	58	3	62	1	58
2,500 - 4,999	0	33	0	33	0	32
1,000 - 2,499	0	23	0	23	0	26
Under 1,000	4	139	7	150	4	141
Total	6	1,268	63	1,337	6	1,281

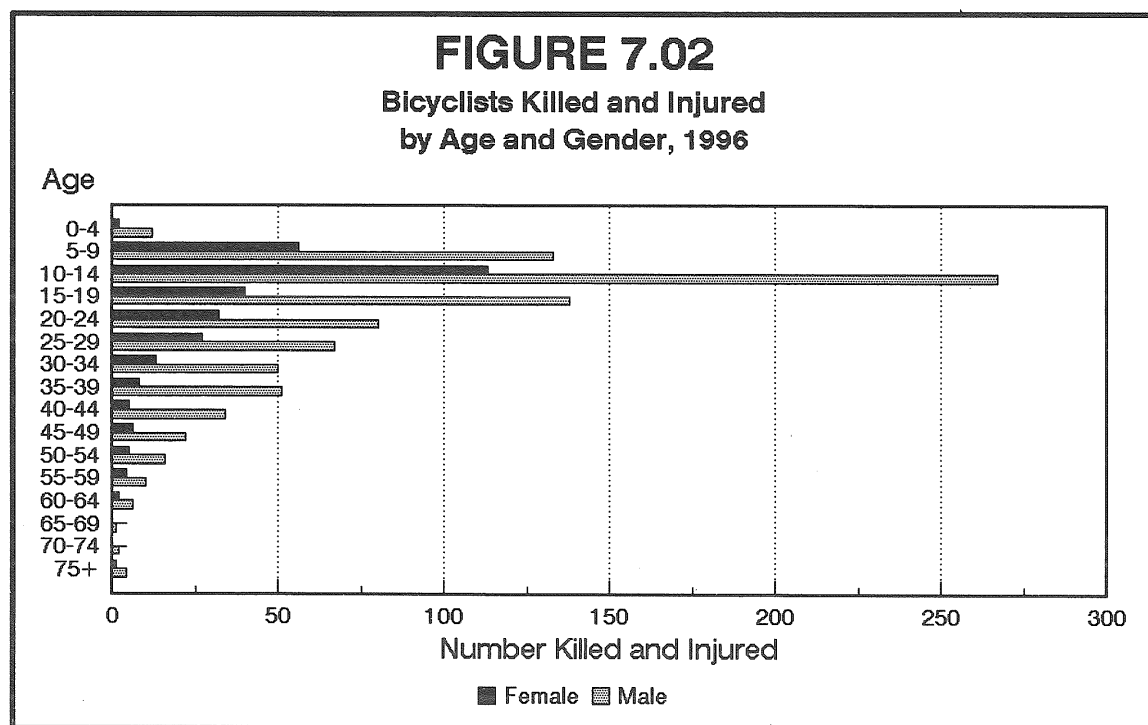


TABLE 7.05

BICYCLISTS KILLED OR INJURED BY AGE AND GENDER, 1996

Age Group	Killed			Severe			Moderate			Minor			Total		
	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	0	0	0	1	1	2	10	1	12	1	0	1	12	2	15
5 - 9	1	0	1	12	8	20	71	25	98	49	23	72	132	56	190
10 - 14	2	0	2	24	13	38	140	68	208	101	32	135	265	113	381
15 - 19	1	0	1	13	4	17	75	24	99	49	12	62	137	40	178
20 - 24	0	0	0	13	5	18	41	16	57	26	11	39	80	32	114
25 - 29	0	0	0	5	4	9	30	11	41	32	12	45	67	27	95
30 - 34	0	0	0	3	2	5	26	5	31	21	6	27	50	13	63
35 - 39	0	0	0	5	3	8	24	3	27	22	2	24	51	8	59
40 - 44	1	0	1	2	2	4	16	2	18	15	1	16	33	5	38
45 - 49	0	0	0	3	1	4	10	3	13	9	2	11	22	6	28
50 - 54	0	0	0	1	1	2	9	0	9	6	4	10	16	5	21
55 - 59	0	0	0	1	1	2	4	1	5	5	2	7	10	4	14
60 - 64	0	0	0	3	0	3	3	1	4	0	1	1	6	2	8
65 - 69	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
70 - 74	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1
75 & Older	0	0	0	2	0	2	2	1	3	0	0	0	4	1	5
Not Stated	0	0	0	5	4	10	15	1	18	20	12	42	40	17	70
Total	6	0	6	93	49	144	477	162	644	357	120	493	927	331	1,281

* 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 1996 CRASHES

Prior Action	Bicyclists In Fatal Crashes	Bicyclists In Injury Crashes	Bicyclists In Property Damage Crashes	Bicyclists In All Crashes*
Riding With Traffic	0	158	7	165
Riding Against Traffic	1	124	9	134
Making Right Turn	0	14	0	14
Making Left Turn	1	23	2	26
Making U Turn	0	4	0	4
Riding Across Road	1	457	19	477
Other/Unknown	3	500	28	531
Total	6	1,280	65	1,351

* 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 1996 BICYCLE CRASHES

Contributing Factors	Attributed to Bicyclists		Attributed to Motor Vehicle Drivers	
	Number	Percent	Number	Percent
Human Factors				
Failure to Yield Right of Way	223	21.2%	256	28.5%
Driver Inattention/Distracted	222	21.1	322	35.8
Improper / Unsafe Lane Use	127	12.1	20	2.2
Disregard for Traffic				
Control Device	119	11.3	21	2.3
Driver Inexperience	63	6.0	10	1.1
Driving Left of Center	36	3.4	2	0.2
Vision Obscured	32	3.0	83	9.2
Illegal or Unsafe Speed	23	2.2	25	2.8
Failure to Use Lights	20	1.9	2	0.2
Physical Impairment	16	1.5	10	1.1
Improper Turn	13	1.2	25	2.8
Improper or No Signal	7	0.7	2	0.2
Improper Passing/Overtaking	6	0.6	21	2.3
Improper Parking/Starting/ Stopping	5	0.5	15	1.7
Impeding Traffic	3	0.3	1	0.1
Following Too Closely	0	0.0	9	1.0
Unsafe Backing	0	0.0	14	1.6
Other Human Factors	16	1.5	6	0.7
Vehicular Factors				
Defective Equipment	35	3.3	2	0.2
Skidding	3	0.3	6	0.7
Other Vehicular Factors	1	0.1	2	0.2
Miscellaneous Factors				
Weather Conditions	7	0.7	9	1.0
Other	74	7.0	36	4.0
Total	1,051	100.0%	899	100.0%
Vehicles for Which There Was				
“No Clear Contributing Factor”	417		623	
Total Number of Bicyclists/Drivers	1,351		1,348	

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

In Minnesota, a crash is counted as a school bus crash if the bus hits another vehicle, is hit by another vehicle, hits a pedestrian or bicyclist, or just has a crash by itself (for example, runs off the road). 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. Unfortunately, in 1996, Minnesota experienced an increase in the number of school bus crashes, injuries, and deaths as compared to previous years.

Eight deaths in 1996

In 1996, there were six fatal crashes which resulted in eight deaths. Of the 8 deaths, 2 were persons that were riding on a school bus (not the driver). One person, while peering out a window, was struck by a fixed object, and one other person fell out the back door of a bus. Both incidents resulted in a death. The remaining 6 deaths were occupants of other vehicles. Two of those 6 were drivers.

Crashes and injuries up in 1996

There were 1,041 school bus crashes in 1996, the highest number ever recorded. This total also represents a 16% increase from 1995. The number of persons injured also increased, to 472, up 3% from 1995.

Of the people injured, only 33 (7%) received severe injuries; 124 (26%) received moderate injuries, and 315 (67%) received minor injuries. Five of the 8 deaths, and 22% of the total number of injuries, occurred in areas that have less than 1,000 population.

Slightly less than half (231, or 49%) of the persons injured were on a school bus. One-hundred-forty-six (63%) of the bus occupants injured were ages 5 to 19, and an additional 34 were probably children, though their ages were not reported. Six pedestrians and 235 occupants of other vehicles were injured.

School year and school day

As expected, school bus crashes in 1996 mainly occurred during the school year. Only 36 (3%) of the crashes occurred during the summer months, June, July, and August.

Of the 1,041 total school bus crashes, 639 (61%) occurred between 6:00 and 9:00 AM, or, between 3:00 and 6:00 PM.

Two-vehicle collisions

Eighty-five percent of school bus crashes involved a collision with another moving motor vehicle, and an additional 10% involved collisions with a parked motor vehicle.

Many (45%) of the school bus crashes occurred where there was no traffic control device, but 17% occurred at an intersection controlled by a traffic light; 5% occurred where there was a stop sign at all approaches to the intersection, and 20% occurred where there was a stop sign, but not at all approaches.

Contributing factors

Though there were 1,041 school bus crashes, a few involved more than one school bus. In all, there were 1,050 school buses in crashes. For over half (52%) of the school bus drivers, police showed there was "no clear contributing factor." This compares favorably to the 30% of other motor vehicle drivers for whom there was "no clear contributing factor." For the school bus drivers, two contributing factors were significant. These were: driver inattention or distraction (23%), and failure to yield the right of way (15%). For the other motor vehicle drivers, five contributing factors were significant: driver inattention or distraction (17%), illegal or unsafe speed (14%), skidding (14%), weather (10%), and failure to yield the right of way (10%).

TABLE 8.01

SCHOOL BUS CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total Crashes	530	679	828	674	857	741	894	821	898	1,041
Fatal Crashes	6	3	4	5	4	1	3	2	2	6
Persons Killed	6	3	4	6	4	1	3	2	2	8
Injury Crashes	141	175	167	149	181	169	212	210	216	241
Persons Injured	244	359	281	329	383	425	432	401	457	472
Property Damage Crashes	383	501	657	520	672	571	679	609	680	794
School Buses Involved	534	684	834	680	867	756	909	844	906	1,050

TABLE 8.02

1996 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	1	1	0	0
6:00 - 8:59 AM	2	79	253	334	2	112
9:00 - 11:59 AM	0	30	111	141	0	56
Noon - 2:59 PM	1	52	149	202	1	130
3:00 - 5:59 PM	3	69	233	305	5	153
6:00 - 8:59 PM	0	2	14	16	0	4
9:00 - 11:59 PM	0	1	6	7	0	2
Unknown	0	8	25	33	0	15
Total	6	241	794	1,041	8	472

TABLE 8.03

1996 SCHOOL BUS CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	2	41	175	218	2	99
February	0	40	119	159	0	61
March	1	25	94	120	1	43
April	1	16	51	68	1	42
May	1	19	49	69	1	42
June	0	6	13	19	0	9
July	0	3	6	9	0	11
August	0	2	6	8	0	2
September	1	22	49	72	3	42
October	0	16	51	67	0	27
November	0	22	92	114	0	36
December	0	29	89	118	0	58
Total	6	241	794	1,041	8	472

TABLE 8.04

**AGE AND GENDER OF PERSONS INJURED
IN 1996 SCHOOL BUS CRASHES**

Age Group	Total*	In Bus	Pedestrian	In Other Vehicle	Male	Female
0 - 4	9	5	0	4	3	6
5 - 9	39	29	1	9	16	23
10 - 14	104	91	0	13	36	68
15 - 19	86	26	2	58	37	49
20 - 24	26	0	0	26	12	14
25 - 29	26	6	0	20	14	12
30 - 34	21	6	0	15	11	9
35 - 39	34	9	0	25	14	20
40 - 44	28	7	1	20	12	16
45 - 54	29	6	0	23	8	21
55 - 64	23	8	1	14	10	13
65 & Older	13	5	1	7	8	5
Unknown	34	33	0	1	10	8
Total	472	231	6	235	191	264

* There were 17 cases where the gender of the person was not stated.

TABLE 8.05

**PERSONS KILLED OR INJURED
IN 1996 SCHOOL BUS CRASHES BY POPULATION OF AREA**

Population of City or Township	Killed	Injured			Total
		Severe	Moderate	Minor	
100,000 and Over	2	6	27	129	162
50,000 - 99,999	0	4	14	21	39
25,000 - 49,999	0	11	12	51	74
10,000 - 24,999	0	1	22	35	58
5,000 - 9,999	1	1	4	19	24
2,500 - 4,999	0	1	1	3	5
1,000 - 2,499	0	1	1	3	5
Under 1,000	5	8	43	54	105
Total	8	33	124	315	472

TABLE 8.06

1996 SCHOOL BUS CRASHES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Collision With:						
Other Motor Vehicle	4	209	671	884	6	422
Parked Motor Vehicle	0	11	89	100	0	20
Bicycle	0	5	0	5	0	6
Pedestrian	0	6	0	6	0	6
Deer or Other Animal	0	0	3	3	0	0
Fixed Object	1	5	14	20	1	11
Other Object	0	0	1	1	0	3
Non-collision:						
Overturn	0	2	1	3	1	4
Other/Unknown	1	3	15	19	0	0
Total	6	241	794	1,041	8	472

TABLE 8.07

1996 SCHOOL BUS CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Not Applicable	5	108	351	464	7	205
Traffic Signal	1	52	125	178	1	118
Overhead Flashers	0	0	5	5	0	0
Stop Sign--All Approaches	0	7	44	51	0	17
Other Stop Sign	0	49	154	203	0	94
Yield Sign	0	3	8	11	0	4
Officer/Flagperson/						
School Patrol	0	1	0	1	0	1
School Bus Stop Arm	0	7	21	28	0	8
School Sign Zone	0	1	2	3	0	1
No Passing Zone	0	1	5	6	0	1
Railroad Crossing Device	0	1	9	10	0	2
Other	0	7	23	30	0	16
Unknown	0	4	47	51	0	5
Total	6	241	794	1,041	8	472

TABLE 8.08

CONTRIBUTING FACTORS IN 1996 SCHOOL BUS CRASHES

Contributing Factors	Attributed to School Bus Drivers		Attributed to Drivers of Other Vehicles	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention /Distraction	112	22.8%	153	16.7%
Failure to Yield Right of Way	74	15.1	94	10.3
Illegal / Unsafe Speed	32	6.5	129	14.1
Improper Turn	32	6.5	18	2.0
Improper / Unsafe Lane Use	26	5.3	33	3.6
Unsafe Backing	24	4.9	6	0.7
Following Too Closely	22	4.5	67	7.3
Vision Obscured	19	3.9	24	2.6
Improper Parking / Starting / Stopping	10	2.0	18	2.0
Driving Left of Center	9	1.8	14	1.5
Disregard for Traffic Control Device	8	1.6	35	3.8
Improper Passing / Overtaking	6	1.2	15	1.6
Other Human Factors	6	1.2	5	0.5
Driver Inexperience	5	1.0	33	3.6
Improper or No Signal	4	0.8	2	0.2
Impeding Traffic	2	0.4	3	0.3
Physical Impairment	1	0.2	6	0.7
Pedestrian Violation or Error	0	0.0	3	0.3
Failure To Use Lights	0	0.0	1	0.1
Vehicular Factors				
Skidding	36	7.3	128	14.0
Defective Equipment	1	0.2	4	0.4
Other Vehicular Factors	2	0.4	1	0.1
Miscellaneous Factors				
Weather Conditions	46	9.4	97	10.6
Other	14	2.9	27	2.9
Total	491	100.0%	916	100.0%
Vehicles for Which There Was "No Clear Contributing Factor"	541		326	
Total Number of Drivers	1,050		1,084	

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, less than one-half of one percent of all motor vehicle crashes result in a fatality. In 1996, almost 7% of motor-vehicle/train crashes were fatal. That's more than fourteen times the rate for all crashes. Motor vehicle/train crashes may be few in number, but they are more likely to be serious and, thus, are a cause for concern.

Train Crashes decline once again

There were 124 motor-vehicle/train crashes in 1996. This represents a 6% decline from 1995 when there were 132 train crashes. Fatal train crashes and the number of deaths also declined in 1996. Eight crashes were fatal, resulting in 8 deaths. However, the number of non-fatal injury crashes were up slightly, as there were 45 crashes that resulted in injuries to 50 people, 9 of whom suffered a severe injury.

End of the year and end of the Week

In 1996, motor vehicle/train crashes were most numerous in November and December, as those two months accounted for close to one-third of the total number. Train crashes were also more likely to occur on Thursdays, Fridays, or Saturdays. Fifty-two percent of all train crashes occurred on those three days.

Railroad crossbuck remains dangerous

Thirty-four of the 124 train crashes, including 2 of the 8 fatal crashes, occurred at a crossing signed by a railroad crossbuck. An additional 13 crashes, including one fatal, occurred at a railroad crossing stop sign. Combined, those two types of traffic control devices were present for almost 40% of the total number of train crashes. By contrast, only 4 crashes, two of which were fatal, occurred at a crossing equipped with overhead flashing lights and a gate.

15-to-24-year-olds injured most often

Injuries resulting from motor vehicle/train crashes in 1996 ranged widely in age. However, the 15-to-24-year-old age group accounted for the most with 26% of the total number. Ironically, only one death from the 15-to-24-year-old age group occurred. No deaths occurred to young children or senior citizens. Four of the 8 deaths occurred in the 45-54 year-old age group.

Rural Areas at Greatest Risk

Motor vehicle crashes involving a train are predominantly rural. (Defined as an area with less than 5,000 population). In 1996, 70% of the total crashes, 100% of the fatal crashes, 78% of the injury crashes, and 76% of all injuries occurred in rural areas.

Contributing Factors

Driver inattention or distraction, failure to yield the right of way, and disregard for traffic control device, were the three most often cited contributing factors listed by officers.

TABLE 9.01

MOTOR VEHICLE / TRAIN CRASH SUMMARY, 1987 - 1996

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total Crashes	119	168	142	116	147	111	128	144	132	124
Fatal Crashes	4	9	11	13	10	7	11	14	15	8
Persons Killed	4	12	15	17	10	9	15	17	16	8
Injury Crashes	55	56	48	35	49	39	45	51	30	45
Persons Injured	74	70	75	67	70	54	63	75	34	50
Property Damage Crashes	60	103	83	68	88	65	72	79	87	71

TABLE 9.02

1996 MOTOR VEHICLE / TRAIN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	1	5	6	12	1	5
February	1	5	6	12	1	6
March	3	0	8	11	3	0
April	0	3	1	4	0	3
May	0	2	2	4	0	2
June	0	5	4	9	0	5
July	1	2	6	9	1	2
August	0	5	5	10	0	9
September	1	2	8	11	1	2
October	1	4	4	9	1	4
November	0	9	9	18	0	9
December	0	3	12	15	0	3
Total	8	45	71	124	8	50

TABLE 9.03

1996 MOTOR VEHICLE / TRAIN CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	10	2	0	0	2	1	2	3
3:00 - 5:59 AM	6	1	0	1	0	3	0	1
6:00 - 8:59 AM	14	2	1	2	3	4	1	1
9:00 - 11:59 AM	26	2	3	3	8	3	1	6
Noon - 2:59 PM	19	0	4	3	1	2	6	3
3:00 - 5:59 PM	18	0	5	4	1	2	6	0
6:00 - 8:59 PM	18	2	1	1	1	5	3	5
9:00 - 11:59 PM	11	0	0	5	1	1	2	2
Unknown	2	0	0	0	0	2	0	0
Total	124	9	14	19	17	23	21	21

TABLE 9.04

**1996 MOTOR VEHICLE / TRAIN CRASHES
BY TRAFFIC CONTROL DEVICE**

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
RR Crossbuck	2	18	14	34	2	20
RR Crossing Stop Sign	1	3	9	13	1	3
RR Flashing Lights	0	11	14	25	0	12
RR Overhead Flashers						
Plus Gate	2	1	1	4	2	1
RR Overhead Flashers	0	1	4	5	0	1
RR Crossing Gate	0	4	6	10	0	4
Stop Sign	2	2	9	13	2	3
Other	0	0	2	2	0	0
Unknown	1	0	2	3	1	0
Not Applicable	0	5	10	15	0	6
Total	8	45	71	124	8	50

TABLE 9.05

**AGE OF PERSONS KILLED OR INJURED IN 1996
MOTOR VEHICLE / TRAIN CRASHES**

Age Group	Killed	Injured			Total
		Severe	Moderate	Minor	
0-4	0	0	0	2	2
5-9	0	0	0	0	0
10-14	0	0	0	0	0
15-19	0	3	4	2	9
20-24	1	1	2	1	4
25-29	2	2	0	3	5
30-34	1	1	1	1	3
35-39	0	0	4	1	5
40-44	0	1	3	0	4
45-49	2	1	3	0	4
50-54	2	0	1	1	2
55-59	0	0	1	2	3
60-69	0	0	2	1	3
70-79	0	0	1	2	3
80 & Older	0	0	0	0	0
Not Stated	0	0	1	2	3
Total	8	9	23	18	50

TABLE 9.06

1996 MOTOR VEHICLE / TRAIN CRASHES BY POPULATION OF AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
100,000 and Over	0	2	8	10	0	4
50,000 - 99,999	0	3	3	6	0	3
25,000 - 49,999	0	0	6	6	0	0
10,000 - 24,999	0	5	5	10	0	5
5,000 - 9,999	0	0	5	5	0	0
2,500 - 4,999	1	3	7	11	1	3
1,000 - 2,499	1	1	4	6	1	1
Under 1,000	6	31	33	70	6	34
Total	8	45	71	124	8	50

TABLE 9.07

CONTRIBUTING FACTORS
IN 1996 MOTOR VEHICLE / TRAIN CRASHES

Contributing Factor	Number	Percent
Human Factors		
Driver Inattention / Distraction	41	24.1
Failure to Yield Right of Way	33	19.4
Disregard for Traffic Control Device	31	18.2
Illegal or Unsafe Speed	10	5.9
Physical Impairment	6	3.5
Improper Parking/Stopping/Starting	6	3.5
Vision Obscured	4	2.4
Improper or Unsafe Lane Use	2	1.2
Driver Inexperience	2	1.2
Impeding Traffic	2	1.2
Other Human Factor	1	0.6
Vehicular Factors		
Skidding	11	6.5
Defective Equipment	1	0.6
Other Vehicular Factor	1	0.6
Miscellaneous Factors		
Weather Conditions	13	7.6
Other	6	3.5
Total	170	100.0%
Vehicles for Which There Was "No Clear Contributing Factor"	11	
Number of Drivers	125	

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.



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