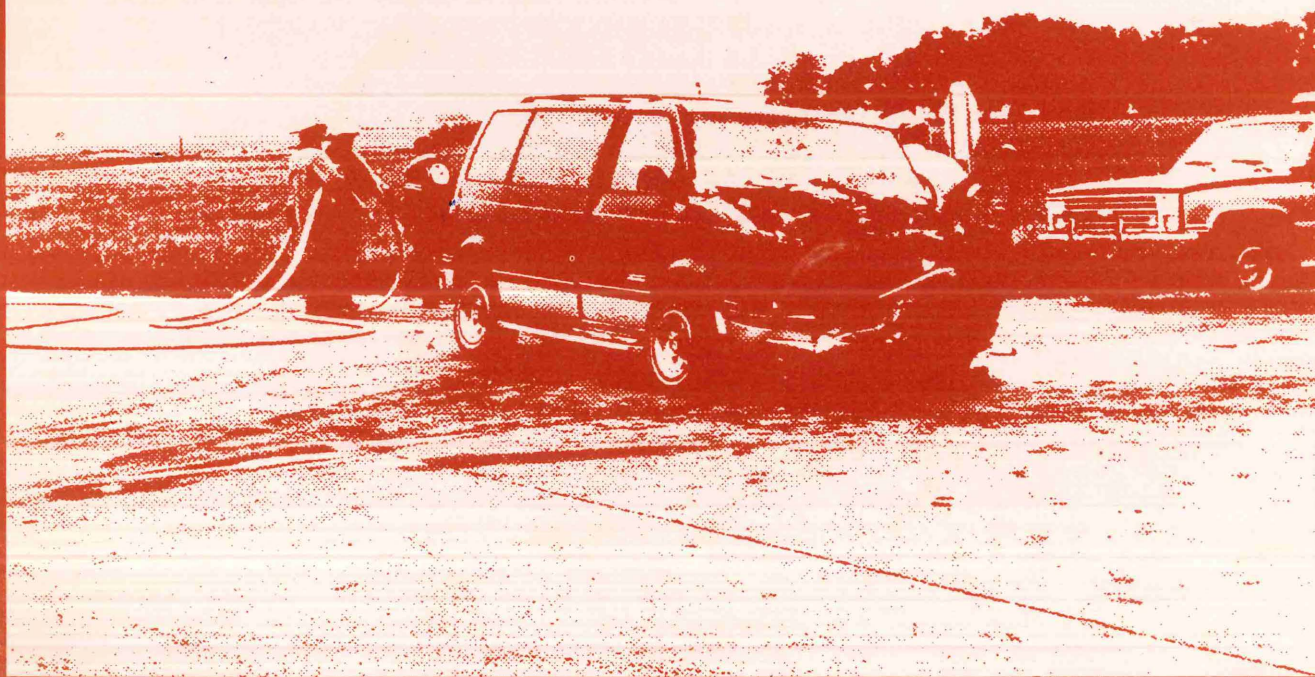


Minnesota Motor Vehicle CRASH FACTS 1991



MINNESOTA MOTOR VEHICLE CRASH FACTS 1991

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

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STATE OF MINNESOTA

DEPARTMENT OF PUBLIC SAFETY

SAINT PAUL 55155

July 1992

In the United States, there is not only a love affair with the automobile, there is an economic dependency as well. There are eight motor vehicles for every ten people in this country. A terrible price is paid in exchange for this dependence. During the last decade, almost as many people died *each year* in traffic crashes as died in combat during all of the Vietnam War. Last year there were 41,462 traffic deaths nationwide. In Minnesota, 531 people died, 4,302 were severely injured, and almost 40,000 received moderate or minor injuries. The total estimated economic loss for Minnesota alone exceeded \$834 million.

A major theme of the Department of Public Safety is that even though the term "traffic accident" is commonly used, these events are not just random occurrences that can not be avoided. There are specific, practical steps that people can take to avoid traffic crashes, or to reduce the severity of crashes that do occur.

Here are the most important of those steps: (1) To avoid crashes, drivers should pay attention to their driving and drive defensively, instead of driving aggressively. (2) Drivers should never drive while intoxicated; doing so is a prescription for death. Any alcohol consumption prior to driving can cause some impairment and should be avoided. (3) Drivers should always drive at speeds that are legal and safe for conditions. (4) All motor vehicle occupants should use safety restraints -- the lap and shoulder belts provided in vehicles, and child safety seats for small children.

The Department of Public Safety is committed to carrying out programs to promote traffic safety and it is committed to vigorous enforcement of traffic safety laws. Compilation of this book is required by Minnesota statute. It is also a concrete expression of the Department's commitment to monitor and control the costly problem of traffic crashes.

Sincerely,

Thomas H. Frost
Commissioner

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DEFINITIONS

Motor Vehicle Accident/Crash - An accident 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.

Fatal Accident/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 accident.

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

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

INTRODUCTION

At the end of the 1991 calendar year, 3,223,154 people held Minnesota driver licenses and 3,508,806 motor vehicles were registered in the state. Vehicles traveled an estimated 39.3 billion miles on public roadways in the state. There were 101,419 traffic crashes; 531 people died and 42,748 people were injured in those crashes. This report provides a statistical summary of those crashes.

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 169.09, requires that traffic accidents 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 the conditions under which a crash must be reported and who shall make the report. "The driver of a vehicle involved in an accident resulting in bodily injury to or death of any person or total property damage to an apparent extent of \$500 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 in 1976, and then to the current minimum of \$500 in 1981.

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, as though they were acts of God. In fact, though, the experience of the last two decades potently 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.

The report 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 focus on specific areas in which interest among policy makers and the public seems to be broadest. 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.

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 fourth leading cause of death among all persons (*Accident Facts, 1991 Edition*, p. 6).

Motor vehicle crashes are by far the leading cause of accidental death, especially among the young. For example, among 15- to 24-year-olds in the country in 1988, there were 14,406 deaths from traffic crashes, compared to 1,019 from drowning (the next most frequent cause of accidental death). In the same age group, homicide and suicide each accounted for about 6,000 and 5,000 deaths, respectively, and disease and other natural causes accounted for about 9,000 (*Accident Facts, 1991 edition*, p. 7).]

It is possible to estimate economic costs of traffic crashes, although the results can vary depending on definitions and estimating procedures. For example, in 1980 the National Safety Council estimated that, on average, a motor vehicle death cost \$170,000 in wage loss, medical expense, insurance administration costs, and property damage. In the same year the National Highway Traffic Safety Administration used the figure of \$268,727 for the average cost of a motor vehicle death. Both organizations also estimated costs of injuries. The former used a three-category scale for injury severity and the latter used a five-category scale.

Neither the National Safety Council nor the National Highway Traffic Safety Administration attempt to include in their estimates a value for pain and suffering caused by death or injury. Nor do their estimated costs represent a dollar amount that people would be willing to pay to avoid death or injury.

Many states use the National Safety Council's economic cost figures, the most recent of which are based on 1990 data. Based on those, the total economic loss from 1991 traffic crashes in Minnesota was \$834,099,800, a figure which is calculated as follows:

531	deaths	@\$410,000 =	\$217,710,000
4,302	severe injuries	@\$38,200 =	\$164,336,400
14,725	moderate injuries	@ \$8,900 =	\$131,052,500
23,721	minor injuries	@ \$2,900 =	\$68,790,900
72,060	property damage		
	crashes	@ \$3,500 =	<u>\$252,210,000</u>
		Total =	\$834,099,800

Factors Influencing Crash Incidence and Severity

Some form of conceptual model of traffic crashes will assist in thinking about the problem and in thinking about approaches to it. A multiplicity of 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. But 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.

Factors also have a logical time order, some being antecedent to others. For example, changing dram shop laws to increase server liability could reduce alcohol impairment among bar patrons, leading to reduced drunk driving incidence and fewer alcohol related accidents. Increased funding of emergency medical services could increase the number of crash victims who are transported to hospital emergency rooms within the first "golden hour" after a crash, thereby reducing the number of traffic deaths, and the number of crashes classified as fatal. 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 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.

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 teenaged 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

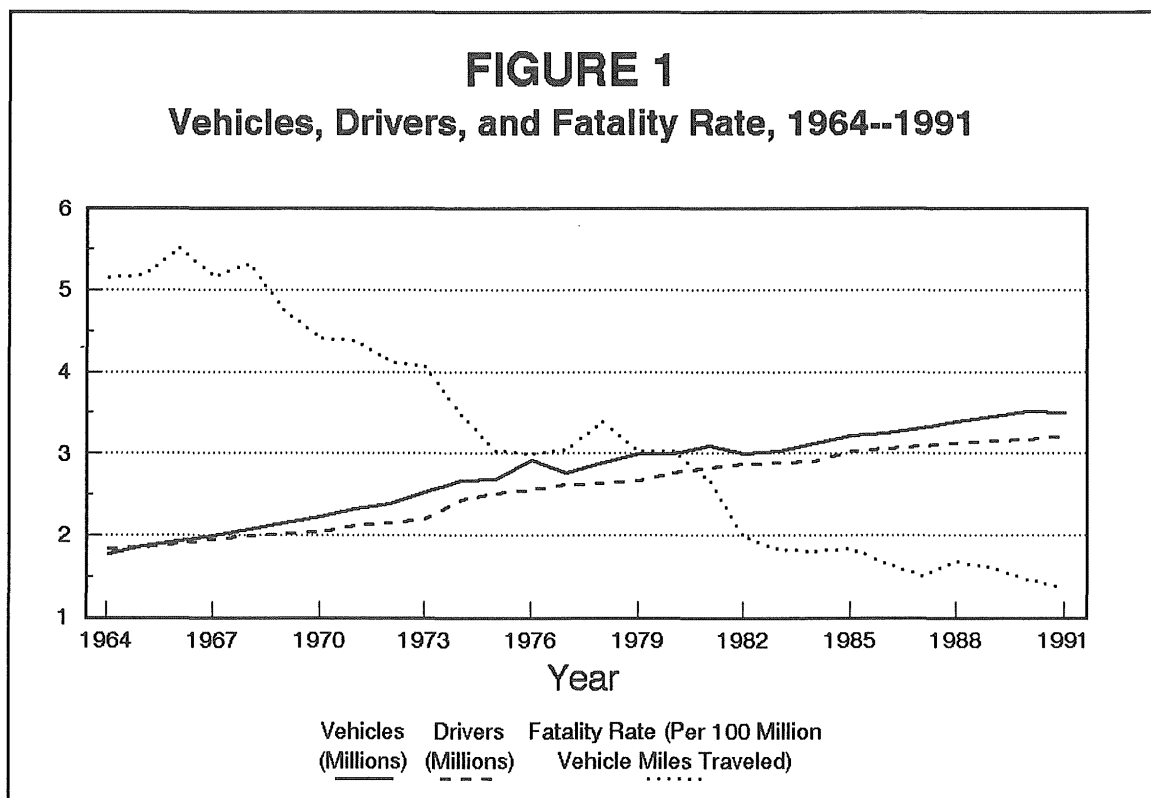
In 1966, there were 53,041 traffic fatalities in the country, or 5.7 for every hundred million miles of travel. In Minnesota in 1968, there were 1,060 traffic fatalities, or 5.3 per hundred million miles of travel. Those were the worst years. Since then, both the rate and the number of fatalities has declined in a fairly steady pattern. Last year, there were 41,462 traffic fatalities throughout the country and 531 in Minnesota. The respective rates per hundred million miles of travel were 1.9 and 1.35. 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 U.S. 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 below 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.



A PRELIMINARY NOTE ABOUT CHANGES IN DATA COLLECTION AND THEIR EFFECTS ON NUMBERS REPORTED

The Department of Public Safety initiated two important changes in traffic crash reporting beginning in 1991. First, data are kept in a new computer system. The new system uses completely new computer hardware and software. The transition to the new system required extensive programming changes, which in turn led to some delays in processing data. In the long run, these changes should result in less expensive and more efficient data analysis.

The second and more critical change is that a new police accident report and a new citizen accident report form went into use statewide on January 1, 1991. The new forms were designed to collect additional information to reflect changes in the traffic safety field since the prior form was introduced in the 1970s.

In a few instances, use of the new form produced some unexpected changes in the patterns of numbers reported for 1991 when they are compared against prior years. It is believed the changes are in the desirable direction of more accurate reporting of data.

Here is one example: On the form used in 1990 and for prior years, officers often indicated the type of vehicle in the crash by writing a word, such as "truck." On the new form, they must choose a code from numbered categories. In the course of compiling this year's Crash Facts, we found a 25 % drop from 1990 in the number of reported truck crashes; this results not from a real reduction in truck crashes, but from the more accurate classification of vehicles involved in crashes. Footnotes will be used in certain tables to call the reader's attention to other changes which appear to be the result of changes in the way data are collected instead of changes that occurred in the real world.

TRAFFIC CRASHES IN 1991

1991 CRASHES

There were 101,419 crashes in 1991. Almost three-quarters (71 %) were property damage only crashes. There were 28,890 injury crashes and 469 fatal crashes in which 42,748 people were injured and 531 people died. The fatality rate per 100 million vehicle miles traveled was 1.35, the lowest it has ever been in the state, and one of the lowest rates in the country. There were 12.0 fatalities per 100,000 population. The following sections describe the crashes in terms of the people involved, what the conditions were, and where and when they occurred.

WHO was involved

Most crash victims were car or pickup truck occupants

Seventy-one percent of the people who died and 83 % of those injured were drivers or passengers in

passenger cars or pickup trucks. Two other large categories among those killed were pedestrians (61 deaths, or 11 % of the total) and motorcyclists (40 deaths, or 8 % of the total). Among those injured, van occupants and motorcyclists accounted for an additional 5 % and 3 % respectively, and bicyclists and pedestrians each accounted for an additional 3 %.

15-to-30-year-olds are over-involved

People aged 15 to 30 are over-involved in crashes, both as drivers and as victims, compared to their number in the driving population. That age group accounts for only 27 % of the driving population. However they account for 41 % of the fatalities and 43 % of the injuries. They also account for 42 % of drivers in fatal crashes and 41 % of drivers in injury crashes.

Contributing factors vary by accident type and driver age

For single-vehicle crashes, illegal/unsafe speed is

cited most often, especially among drivers under 35. Driver inattention/distraction is most common for drivers over 65. In multi-vehicle crashes, driver inattention/distraction was cited about one fifth of the time among drivers of all age groups. The contributing factors of illegal/unsafe speed and following too closely were more often associated with younger drivers, however, while failure to yield right of way was more often associated with older drivers.

WHAT the conditions were

Two-thirds of crashes involve another motor vehicle

Sixty-seven percent of all crashes involved one vehicle colliding with one or more other vehicles in transit. The next most common accident type was collision with a fixed object, such as a traffic signal or guardrail (accounting for 10% of all crashes), followed by collision with a parked vehicle (6%), collision with a deer (6%), and single vehicle overturn crashes (5%).

Most crashes occur in good driving conditions

Sixty-one percent of all crashes occurred during daylight hours; three-fourths occurred during clear or cloudy (as opposed to inclement) weather conditions, and 52% occurred on dry roads. However, 25% of the 1991 crashes did occur on snowy or icy roads—a percentage figure that is two-thirds greater than the 15% that occurred on such roads during the prior calendar year.

Contributing factors vary by crash severity

The leading contributing factors in fatal crashes were illegal/unsafe speed, and physical impairment (generally by alcohol), together accounting for about 25% of the factors cited. The leading factors in nonfatal crashes were driver inattention/distraction and failure to yield right of way, together accounting for 34% of all factors cited.

WHERE they happened

Crash severity varies by population density

A strong relationship exists between severity of crash and the population of the area in which the crash occurs. Seventy percent of fatal crashes occur in rural areas (defined here as having a

population of less than 5,000). By contrast, 71% of all crashes occur in urban areas (those with a population of 5,000 or more).

Most crashes occur on trunk and county state aid highways

Interstate highways carry disproportionate traffic volume, but are relatively safe, accounting for only 6% of fatal and 9% of all crashes. Much of the inter-city traffic is carried by the trunk and county state aid systems, which are built to lower standards, and these roadways account for 74% of fatal and 56% of all crashes. Municipal streets account for another 30% of the total crashes.

WHEN they occurred

Fatal crashes peak in the summer, on weekends, late at night.

The one hour of the day with the most fatal crashes was the hour between 1:00 AM and 2:00 AM. That was followed by the evening rush hour between 4:00 and 5:00 PM. The weekend days (Friday, Saturday, and Sunday) accounted for 53% of all fatal crashes. June and July had the most fatal crashes, January and November had the fewest.

Total crashes peak in winter and during evening rush hour

Compared to fatal crashes, total crashes are more evenly distributed across days of the week, although Thursdays and Fridays were slightly overrepresented. The evening rush hour period between 3:00 and 6:00 PM was strongly overrepresented, with 23% of all crashes—more than five times the hourly average. The winter months were also overrepresented: January, February, November, and December accounted for 40% of all crashes.

TABLE 1.01

CRASH, FATALITY, AND INJURY SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Traffic Crashes	89,443	97,371	93,741	99,168	95,460	94,095	102,094	105,996	99,236	101,419
Persons Killed	581	558	584	610	572	530	615	605	568	531
Persons Injured	38,692	41,086	41,808	44,316	42,130	42,091	44,415	45,404	44,634	42,748
Registered Motor Vehicles (Millions of Vehicles)	3.01	3.03	3.13	3.22	3.25	3.31	3.39	3.46	3.52	3.51
Licensed Drivers* (Millions of Drivers)	2.87	2.90	2.91	3.04	3.07	3.10	3.13	3.16	3.18	3.22
Vehicular Miles Traveled (Billions of Miles)	29.2	30.5	32.2	33.1	34.2	35.1	36.4	37.6	38.8	39.3
Fatality Rate Per Hundred Million Vehicle Miles Traveled	1.98	1.83	1.81	1.84	1.67	1.51	1.69	1.61	1.47	1.35
Fatality Rate Per 100,000 Registered Motor Vehicles	19.3	18.4	18.7	18.9	17.6	16.0	18.1	17.5	16.1	15.1
Fatality Rate Per 100,000 Population	14.2	13.5	14.1	14.7	13.6	12.6	14.3	13.9	13.0	12.0
Crash Rate Per Hundred Million Vehicle Miles Traveled	304	319	291	300	279	268	280	282	256	258
Crash Rate Per 100,000 Registered Vehicles	2,972	3,214	2,995	3,080	2,937	2,840	3,012	3,060	2,817	2,890
Crash Rate Per 100,000 Population	2,181	2,356	2,262	2,380	2,266	2,233	2,371	2,435	2,268	2,288

* Permits included.

TABLE 1.02

**TRAFFIC CRASH TRENDS
1986 - 1991**

	1986	1987	1988	1989	1990	1986-1990 Average	1991	% Change from 5 Yr Average	Record High	
Total Crashes	95,460	94,095	102,094	105,996	99,236	99,376.2	101,419	+2.1	123,106	(1975)
Fatal Crashes	506	466	545	539	503	511.8	469	-8.4	878	(1973)
Injury Crashes	29,226	29,345	30,743	31,576	30,684	30,314.8	28,890	-4.7	33,686	(1978)
Severe	4,437	4,566	4,386	4,111	4,016	4,303.2	3,356	-22.0	5,109	(1984) ¹
Moderate	11,610	11,517	11,066	11,057	10,641	11,178.2	10,421	-6.8	12,326	(1985) ¹
Minor	13,179	13,262	15,291	16,408	16,027	14,833.4	15,113	+1.9	16,408	(1989) ¹
Property Damage Crashes	65,728	64,284	70,806	73,881	68,049	68,549.6	72,060	+5.1	94,810	(1975)
Total Injuries	42,130	42,091	44,415	45,404	44,634	43,734.8	42,748	-2.3	50,332	(1978)
Total Fatalities	572	530	615	605	568	578.0	531	-8.1	1,060	(1968)
Pedestrian	71	62	69	67	65	66.8	61	-8.7	157	(1971)
Motor Vehicle/Train ²	12	4	12	15	17	12.0	10	-16.7	62	(1932)
Bicycle	12	15	16	10	8	12.2	8	-34.4	24	(1977)
Motorcycle	66	51	58	37	50	52.4	40	-23.7	121	(1980)
3-Wheel Vehicle	9	2	1	5	2	3.8	6	+57.9	9	(1986)
Snowmobile	5	0	4	3	1	2.6	2	-23.1	9	(1984)
Motor Vehicle Occupants	402	396	459	478	431	433.2	405	-6.5	478	(1989) ¹
Fatality Rate³	1.67	1.51	1.69	1.61	1.47	1.59	1.35	-15.1	23.6	(1934)
U.S. Fatality Rate³	2.6	2.6	2.3	2.2	2.1	2.4	1.9	-20.8	18.0	(1925)
Minnesota Economic Loss (millions)	\$445.7	\$506.4	\$579.9	\$619.0	\$717.9	\$573.8	\$834.1	+45.4	\$834.1	(1991)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 The record economic loss is a function of inflation rather than trends in traffic safety.

TABLE 1.03

1991 FATALITIES BY TRAFFIC ROLE, SEX, AND AGE

Type of Vehicle	Position in Vehicle	Sex	Age								Total
			0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 & Older	
Car or Truck	Driver	Male	0	31	66	27	15	16	18	31	204
		Female	0	5	17	10	11	7	10	15	75
	Passenger	Male	6	14	14	8	3	1	2	8	56
		Female	4	13	9	6	2	6	5	14	59
	Unknown	Male	0	2	4	2	0	0	0	0	8
		Female	0	1	1	0	0	0	0	0	2
Motorcycle	Operator	Male	0	4	15	14	2	1	0	0	36
		Female	0	0	0	0	0	0	0	0	0
	Passenger	Male	0	2	0	0	0	0	0	0	2
		Female	0	1	1	0	0	0	0	0	2
Motorscooter or Moped	Driver	Male	0	0	1	0	0	0	0	0	1
		Female	0	0	0	0	0	0	0	0	0
	Passenger	Male	0	0	0	1	0	0	0	0	1
		Female	0	0	0	0	0	0	0	0	0
All Terrain Vehicle	Driver	Male	0	2	1	0	1	0	0	1	5
		Female	0	0	0	0	0	0	0	0	0
	Passenger	Male	1	0	0	0	0	0	0	0	1
		Female	0	0	0	0	0	0	0	0	0
Snowmobile	Driver	Male	0	0	1	1	0	0	0	0	2
		Female	0	0	0	0	0	0	0	0	0
	Passenger	Male	0	0	0	0	0	0	0	0	0
		Female	0	0	0	0	0	0	0	0	0
Other Motor Vehicle**	Driver	Male	0	0	1	2	0	0	0	0	3
		Female	0	0	0	0	0	0	0	1	1
	Passenger	Male	0	0	0	0	0	0	0	0	0
		Female	0	0	0	0	0	1	0	1	2
	Unknown	Male	0	0	0	0	0	0	0	0	0
		Female	1	0	0	0	0	0	1	0	2
Bicyclist		Male	0	1	1	0	0	2	0	0	4
		Female	1	0	1	2	0	0	0	0	4
Pedestrian		Male	6	4	11	3	1	0	0	11	36
		Female	3	4	3	4	1	0	3	6	25
<hr/>											
Total Fatalities		Male	13	60	115	58	22	20	20	51	359
		Female	9	24	32	22	14	14	19	37	172*
		Total	22	84	147	80	36	34	39	88	531

* Included in the total column (but not in other columns) is one female pedestrian whose age was unknown.

** "Other motor vehicle" includes motorhome or camper (1 fatality), farm tractor or equipment (3 fatalities), hit and run vehicle (2 fatalities) and "other privately owned vehicle" (2 fatalities).

TABLE 1.04

AGE AND SEX OF PERSONS KILLED OR INJURED IN 1991 CRASHES

Age Group	Persons Killed			Persons Injured		
	Male	Female	Total	Male	Female	Total*
0 - 4	6	4	10	321	323	650
5 - 9	7	5	12	706	656	1,373
10 - 14	5	7	12	831	897	1,730
15 - 19	55	17	72	3,507	3,555	7,067
20 - 24	63	20	83	3,225	3,009	6,248
25 - 29	52	12	64	2,516	2,389	4,909
30 - 34	36	8	44	2,102	2,058	4,173
35 - 39	22	14	36	1,574	1,694	3,271
40 - 44	11	7	18	1,293	1,505	2,806
45 - 49	11	7	18	897	983	1,885
50 - 54	8	4	12	651	758	1,411
55 - 59	12	10	22	532	612	1,145
60 - 64	6	9	15	468	526	998
65 - 69	14	10	24	416	489	906
70 - 74	7	11	18	313	422	736
75 - 79	18	12	30	248	351	599
80 - 84	13	7	20	204	241	445
85 & Older	13	7	20	119	125	244
Not Stated	0	1	1	922	1,086	2,152
Total	359	172	531	20,845	21,679	42,748

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

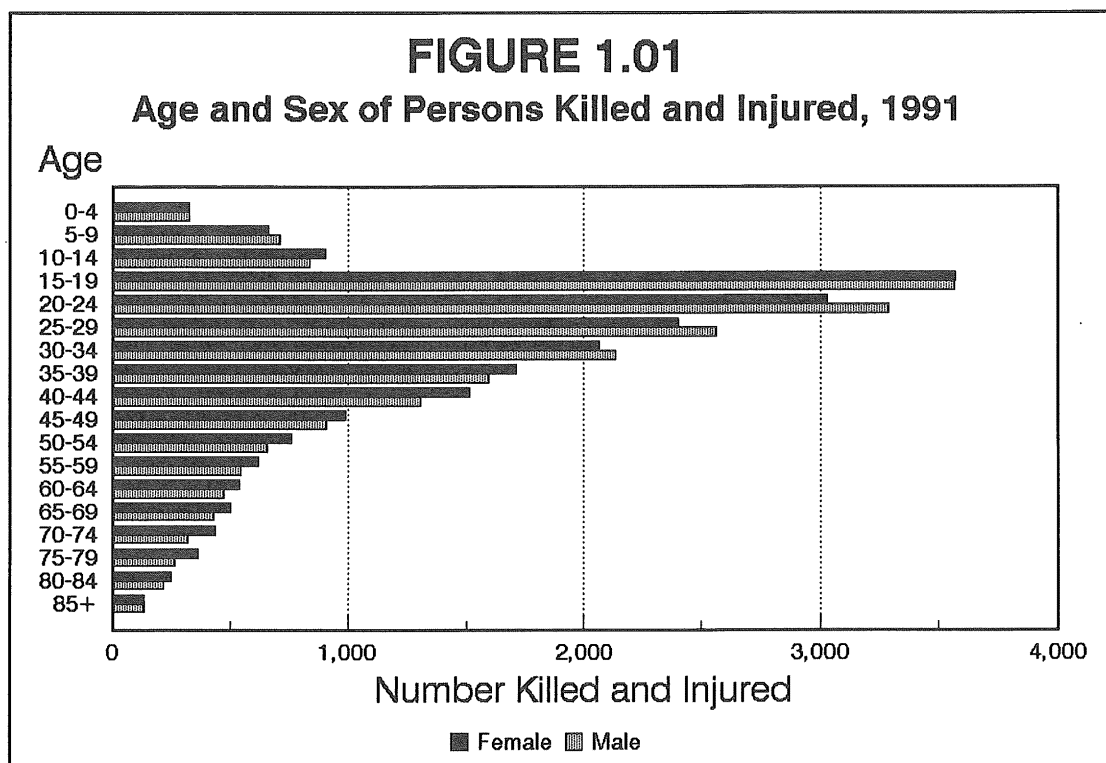


TABLE 1.05

DRIVERS IN 1991 CRASHES BY PHYSICAL CONDITION*

<u>Physical Condition</u>	<u>Drivers in Fatal Crashes</u>	<u>Drivers in Injury Crashes</u>	<u>Drivers in Property Damage Crashes</u>	<u>Drivers in All Crashes</u>
Normal	367	38,860	76,746	115,973
Under the Influence	62	2,039	1,926	4,027
Had Been Drinking	71	1,477	1,453	3,001
Had Been Using Drugs	1	40	27	68
Asleep	2	284	315	601
Fatigued	4	117	122	243
Ill	2	129	68	199
Other	8	186	186	380
Unknown	220	7,544	39,062	46,826
Total	737	50,676	119,905	171,318

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

TABLE 1.06

DRIVERS IN 1991 CRASHES BY AGE AND FIRST HARMFUL EVENT IN CRASH

<u>First Harmful Event</u>	<u>Drivers 15-19</u>	<u>Drivers 20-24</u>	<u>Drivers 25-29</u>	<u>Drivers 30-34</u>	<u>Drivers 35-64</u>	<u>Drivers 65-79</u>	<u>Drivers 80 & Older</u>
Collision With:							
Other Motor Vehicle	75.7%	79.0%	80.7%	81.0%	81.8%	86.2%	85.6%
Parked Motor Vehicle	3.6	3.0	2.5	2.7	2.4	3.0	5.8
Railroad Train	0.1	0.1	0.1	0.0	0.1	0.1	0.2
Bicycle	0.5	0.5	0.5	0.6	0.7	0.8	0.4
Pedestrian	0.7	0.6	0.7	0.8	0.7	0.9	0.8
Deer	2.1	2.9	3.4	3.9	4.9	2.7	0.9
Other Animal	0.6	0.5	0.5	0.5	0.5	0.3	0.1
Fixed Object	9.2	7.9	6.7	5.6	4.8	3.7	4.6
Falling Object	0.3	0.3	0.3	0.3	0.3	0.0	0.1
Non-Collision:							
Overtake	5.7	4.1	3.4	3.1	2.6	1.4	0.6
Other Non-Collision	0.2	0.1	0.1	0.1	0.1	0.1	<0.1
Other or Unknown	1.3	1.1	1.1	1.2	1.1	0.8	0.8
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Drivers	22,503	25,100	22,467	20,171	56,262	9,651	2,149

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 SEX OF DRIVERS IN 1991 CRASHES*

Age Group	Drivers in Fatal Crashes				Drivers in All Crashes			
	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
14 & Younger	2	0	0	2	187	87	9	283
15 - 19	74	21	0	95	13,581	8,875	47	22,503
20 - 24	91	29	2	122	14,943	10,070	87	25,100
25 - 29	80	16	0	96	13,603	8,819	45	22,467
30 - 34	55	15	0	70	12,299	7,819	53	20,171
35 - 39	59	16	0	75	9,756	6,574	43	16,373
40 - 44	37	12	0	49	8,236	5,533	32	13,801
45 - 49	28	13	0	41	5,581	3,554	33	9,168
50 - 54	17	3	0	20	4,202	2,527	17	6,746
55 - 59	23	11	0	34	3,485	2,006	12	5,503
60 - 64	14	11	0	25	3,113	1,545	13	4,671
65 - 69	20	7	0	27	2,518	1,412	12	3,942
70 - 74	17	10	0	27	1,980	1,248	5	3,233
75 - 79	16	7	0	23	1,523	944	9	2,476
80 - 84	9	5	0	14	882	575	5	1,462
85 & Older	9	1	0	10	463	221	3	687
Not Stated	4	0	3	7	5,933	3,311	3,488	12,732
Total*	555	177	5	737	102,285	65,120	3,913	171,318

* 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, 1991

Age Group	Percentage of All Licensed Drivers	Percentage of Drivers in			
		Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes
14 & Younger	0.0%	0.3%	0.2%	0.1%	0.2%
15 - 19	6.7	12.9	14.4	12.6	13.1
20 - 24	9.7	16.6	15.6	14.3	14.7
25 - 29	11.1	13.0	13.7	12.9	13.1
30 - 34	12.5	9.5	12.0	11.7	11.8
35 - 39	11.5	10.2	9.6	9.6	9.6
40 - 44	10.1	6.6	8.1	8.0	8.1
45 - 49	7.8	5.6	5.5	5.3	5.4
50 - 54	6.1	2.7	3.9	4.0	3.9
55 - 59	5.1	4.6	3.2	3.2	3.2
60 - 64	4.9	3.4	2.7	2.7	2.7
65 - 69	4.6	3.7	2.4	2.3	2.3
70 - 74	3.9	3.7	1.9	1.9	1.9
75 - 79	3.0	3.1	1.5	1.4	1.4
80 - 84	1.8	1.9	0.9	0.8	0.9
85 & Older	1.1	1.4	0.5	0.4	0.4
Not Stated	0.0	0.9	4.0	8.9	7.4
Total Percent*	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number**	3,223,154	737	50,676	119,905	171,318

* Percents may not sum to 100 due to rounding.

** Includes drivers with instruction permits.

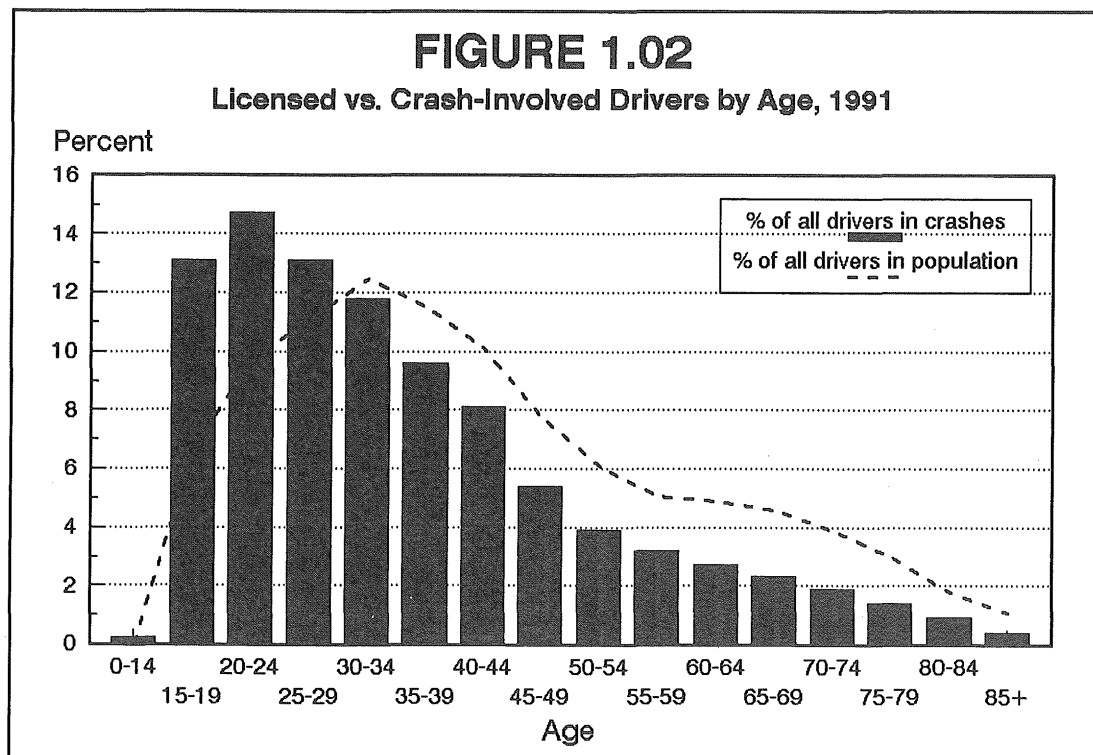


TABLE 1.09

**SINGLE-VEHICLE CRASHES:
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1991**

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	22.5%	23.8%	22.1%	19.0%	17.1%	8.9%	8.7%
Driver Inattention/Distracted	15.9	16.0	14.9	14.6	15.4	20.4	17.6
Physical Impairment	6.3	12.5	12.6	12.5	9.3	9.9	11.5
Driver Inexperience	17.3	4.6	2.5	2.1	1.9	1.7	1.0
Improper/Unsafe Lane Use	2.8	4.2	4.6	4.7	3.7	5.4	7.1
Failure to Yield Right of Way	2.7	3.1	3.7	4.1	5.3	6.9	2.9
Driving Left of Center--Not Passing	1.9	1.8	2.1	1.8	1.3	1.4	2.2
Vision Obscured	1.6	1.2	1.6	1.2	2.5	3.6	3.2
Unsafe Backing	1.3	1.3	1.3	1.7	1.6	3.6	7.4
Disregard for Traffic Control Device	0.7	0.9	1.0	0.9	0.8	0.7	1.3
Improper Turn	0.8	1.0	1.1	1.6	1.4	1.1	1.9
Improper Passing/Overtaking	0.7	1.1	0.6	0.8	0.6	1.1	1.3
Improper Parking/Starting/Stopping	0.5	0.9	0.7	1.0	1.1	3.3	4.8
Following Too Closely	0.6	0.8	0.9	0.7	1.0	0.4	0.6
Improper or No Signal	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Impeding Traffic	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Failure to Use Lights	0.1	0.1	0.1	0.2	0.1	0.2	0.0
Use of Phone or CB Radio	0.1	0.0	0.1	0.0	0.0	0.1	0.0
Other Human Factors	2.1	2.7	2.7	2.1	2.5	3.9	8.3
Vehicular Factors:							
Skidding	8.3	8.4	8.2	9.5	10.6	9.1	6.7
Defective Equipment	1.7	1.5	1.6	2.1	2.0	1.0	1.6
Other Vehicular Factor	0.9	0.9	1.3	1.7	1.9	1.3	1.3
Miscellaneous Factors:							
Weather	7.5	9.3	10.8	12.6	14.6	11.2	5.4
Other	3.4	3.7	5.2	5.0	5.3	4.6	4.5
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Contributing Factors Cited	6,799	5,779	4,304	3,449	7,993	1,073	312
Drivers for Whom There Was							
"No Clear Contributing Factor"	562	767	717	737	2,306	273	37
Total Number of Drivers	5,468	5,283	4,340	3,841	10,238	1,333	310

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

For contributing factors in multiple-vehicle crashes, see Table 1.10. For contributing factors in crashes at different levels of severity, see Table 1.20.

TABLE 1.10

**MULTIPLE-VEHICLE CRASHES:
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1991**

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/Distracted	20.7%	20.4%	20.2%	20.4%	20.4%	21.0%	21.3%
Failure to Yield Right of Way	19.1	18.1	17.9	17.5	20.8	31.5	38.0
Illegal/Unsafe Speed	10.3	11.2	11.0	10.0	7.8	4.3	2.5
Following Too Closely	9.2	10.1	9.9	9.1	7.9	4.1	2.8
Disregard for Traffic Control Device	3.7	4.7	4.6	4.1	4.3	6.6	6.3
Improper/Unsafe Lane Use	3.6	4.1	4.1	4.6	4.4	4.8	5.0
Vision Obscured	3.2	3.3	3.7	3.6	4.2	4.1	3.7
Improper Turn	2.6	2.8	2.5	2.9	3.1	4.8	5.7
Physical Impairment	0.7	1.9	2.5	2.6	1.9	1.2	1.5
Improper Passing/Overtaking	2.0	2.0	2.1	2.2	1.8	1.5	0.9
Driving Left of Center--Not Passing	1.3	1.3	1.3	1.5	1.3	1.0	0.7
Improper Parking/Starting/Stopping	1.3	1.3	1.3	1.4	1.5	2.2	2.5
Driver Inexperience	7.9	1.8	0.9	0.8	0.6	0.4	0.3
Unsafe Backing	1.1	1.2	1.4	1.5	1.9	1.5	1.7
Improper or No Signal	0.5	0.5	0.5	0.5	0.8	0.7	0.4
Impeding Traffic	0.2	0.2	0.4	0.3	0.4	0.4	0.3
Failure to Use Lights	0.3	0.3	0.2	0.2	0.2	0.1	0.2
Use of Phone or CB Radio	0.0	0.1	0.1	0.0	0.1	0.1	0.1
Other Human Factors	0.4	0.6	0.7	0.7	0.6	0.9	1.1
Vehicular Factors:							
Skidding	4.5	4.9	4.6	5.1	5.0	2.5	1.3
Defective Equipment	1.0	0.9	1.1	0.9	0.9	0.5	0.3
Other Vehicular Factor	0.3	0.4	0.4	0.4	0.4	0.3	0.0
Miscellaneous Factors:							
Weather	4.9	6.1	6.7	7.2	7.5	4.0	2.1
Other	1.4	1.8	1.9	2.3	2.3	1.8	1.5
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Contributing Factors Cited	15,595	14,961	11,880	10,243	26,882	6,222	1,889
Drivers for Whom There Was							
"No Clear Contributing Factor"	3,367	4,761	4,874	4,490	13,606	1,907	261
Total Number of Drivers	17,035	19,817	18,127	16,330	46,024	8,318	1,839

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

For contributing factors in single-vehicle crashes, see Table 1.09. For contributing factors in crashes at different levels of severity, see Table 1.20.

TABLE 1.11

PEOPLE KILLED OR INJURED IN VARIOUS VEHICLE TYPES, 1991

Vehicle Type	Killed	Injured			Total
		Severe	Moderate	Minor	
Automobile	317	2,775	10,132	18,066	30,973
Pickup Truck	62	449	1,621	2,284	4,354
Van	15	163	659	1,146	1,968
Motorhome/Camper	1	5	12	33	50
Taxicab	0	7	20	78	105
Police Vehicle	0	7	47	64	118
Fire Department Vehicle	0	2	0	0	2
School Bus	0	5	69	116	190
Other Bus	0	1	12	70	83
Ambulance	0	0	10	11	21
Military Vehicle	0	3	10	28	41
Snowmobile	2	14	23	22	59
All Terrain Vehicle	6	13	11	11	35
Farm Tractor or Equipment	3	6	13	20	39
Motorcycle*	40	328	714	315	1,357
Motorscooter/Motorbike*	2	11	22	16	49
Motorized Bicycle (Moped)*	0	9	15	8	32
Hit and Run Vehicle	2	7	59	74	140
Road Maintenance Vehicle	0	2	3	9	14
Single Truck (2-axle, 6-tire)	3	8	46	65	119
Single Truck (3 or more axles)	2	6	16	22	44
Single Truck with Trailer	2	2	8	17	27
Truck Tractor with No Trailer	0	0	2	4	6
Truck Tractor with Semi Trailer	3	9	92	113	214
Truck Tractor with Double Trailers	0	0	1	3	4
Other or Unknown Truck Type	0	0	4	8	12
Other or Unknown Motor Vehicle	2	20	77	99	196
Bicycle	8	153	572	432	1,157
Pedestrian	61	297	455	587	1,339
Total	531	4,302	14,725	23,721	42,478

* 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, 1982 - 1991

Age	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
15	13,083	13,867	14,686	13,116	11,920	12,301	13,387	14,072	12,832	15,075
16	48,011	46,133	47,296	47,959	48,944	45,397	42,178	41,544	42,885	43,708
17	59,238	55,725	54,135	56,670	57,829	59,321	53,900	49,458	48,496	51,161
18	64,119	63,250	60,026	58,553	59,910	61,276	62,772	56,250	52,070	51,293
19	72,700	69,786	60,681	62,361	60,626	61,767	62,637	63,653	58,230	53,876
20	78,110	74,788	71,195	65,449	62,040	60,229	61,076	62,770	63,375	57,902
15 - 19	257,151	248,761	236,824	238,659	239,229	240,062	234,874	224,977	214,513	215,113
20 - 24	392,548	388,573	376,051	370,613	352,170	336,289	326,738	319,048	316,504	312,463
25 - 29	376,034	381,076	384,544	405,120	402,984	399,409	396,744	386,440	372,178	357,464
30 - 34	336,185	343,874	350,728	370,634	374,138	380,972	385,508	393,168	398,645	402,273
35 - 39	270,169	281,484	295,902	322,827	329,018	335,262	344,613	355,869	364,385	371,856
40 - 44	215,529	224,477	231,740	241,313	257,213	269,275	280,236	298,889	316,265	324,986
45 - 49	177,343	182,122	185,534	195,594	202,083	213,358	221,666	229,993	234,494	252,944
50 - 54	171,348	168,949	168,248	170,984	171,833	174,453	179,129	184,310	189,266	197,122
55 - 59	169,761	169,520	167,629	169,847	168,037	165,791	164,032	163,520	164,023	165,779
60 - 64	154,268	154,937	157,311	161,519	161,268	161,733	161,449	160,260	159,799	158,552
65 - 69	130,611	133,450	133,503	139,155	141,584	143,841	144,830	147,857	148,161	148,934
70 - 74	99,435	101,548	103,525	112,352	115,619	118,338	120,753	121,638	122,965	126,115
75 - 79	66,109	67,908	69,288	77,369	80,947	85,032	86,901	89,355	92,378	96,235
80 - 84	34,356	35,191	35,359	42,850	46,817	50,812	51,922	52,667	55,000	58,863
85 & Older	15,199	15,272	14,619	20,482	23,305	27,326	27,634	27,179	29,915	34,455
Total	2,866,046	2,897,142	2,910,805	3,039,318	3,066,245	3,101,953	3,127,029	3,155,170	3,178,491	3,223,154

* Includes Learner's Permits

TABLE 1.13

MOTOR VEHICLE REGISTRATIONS, 1982 - 1991

Type of Vehicle*	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Passenger Cars	2,157,922	2,185,457	2,258,877	2,339,782	2,395,247	2,450,232	2,518,604	2,583,982	2,642,022	2,638,572
Pickups	464,801	469,116	490,087	500,744	501,646	509,070	515,968	526,212	528,342	520,339
Trucks	129,248	120,690	119,667	118,990	124,323	127,888	135,918	137,690	140,874	139,263
Recreational Vehicles	31,926	31,791	32,451	33,133	32,026	33,120	34,226	34,805	35,328	35,515
Motorcycles	159,345	155,502	153,851	151,449	141,261	134,590	128,956	123,308	120,081	117,492
Motorized Bicycles	14,725	14,516	13,633	13,034	12,047	12,311	10,529	9,987	9,306	8,703
School Buses	4,002	4,113	3,998	4,185	4,598	5,095	5,115	5,026	5,037	5,109
Buses	3,459	3,490	3,604	3,575	3,405	3,502	3,879	4,217	3,780	3,822
Van Pool	0	0	137	180	209	229	253	248	259	264
Tax Exempt Vehicles	48,732	49,811	51,525	53,510	35,741	37,659	35,969	38,106	37,739	39,727
Motor Vehicle Subtotal	3,014,160	3,034,486	3,127,830	3,218,582	3,250,503	3,313,696	3,389,417	3,463,581	3,522,768	3,508,806
Trailers	614,631	565,046	615,004	602,795	663,559	653,630	726,054	708,693	780,484	754,942
Collector's Vehicles	30,569	35,048	39,981	45,269	50,702	56,146	61,280	66,860	72,031	76,947
Total Registrations	3,659,360	3,634,580	3,782,815	3,866,646	3,964,764	4,023,472	4,176,751	4,239,134	4,375,283	4,340,695

* 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 1991 CRASHES

Motor Vehicle Type*	Vehicles in			
	Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes
Automobile	448	38,189	93,192	131,829
Pickup Truck	111	6,628	17,754	24,493
Van	33	2,591	6,569	9,193
Motorhome/Camper	3	47	149	199
Taxicab	0	129	330	459
Police Vehicle	1	152	387	540
Fire Department Vehicle	0	5	39	44
School Bus	4	184	679	867
Other Bus	0	112	269	381
Ambulance	0	20	49	69
Military Vehicle	0	52	130	182
Snowmobile	2	52	31	85
All Terrain Vehicle	6	30	20	56
Farm Tractor or Equipment	7	82	146	235
Motorcycle*	39	1,223	236	1,498
Motorscooter/Motorbike*	2	48	7	57
Motorized Bicycle (Moped)*	0	32	5	37
Hit and Run Vehicle	8	1,092	6,538	7,638
Road Maintenance Vehicle	2	58	383	443
Single Truck (2-axle, 6-tire)	12	332	976	1,320
Single Truck (3 or more axles)	8	141	322	471
Single Truck with Trailer	6	89	300	395
Truck Tractor with No Trailer	1	29	111	141
Truck Tractor with Semi Trailer	46	633	1,820	2,499
Truck Tractor with Double Trailers	1	6	41	48
Other or Unknown Truck Type	0	69	402	471
Other or Unknown Motor Vehicle	10	256	914	1,180
Total**	750	52,281	131,799	184,830

* 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

1991 CRASHES AND INJURIES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured	Fatality Rate Per 1,000 Crashes
Collision With:							
Another Motor Vehicle	225	19,007	48,491	67,723	272	30,189	4.0
Parked Motor Vehicle	9	579	5,885	6,473	10	753	1.5
Railroad Train	10	49	88	147	10	70	68.0
Bicycle	7	1,041	62	1,110	7	1,099	6.3
Pedestrian	57	1,228	23	1,308	57	1,328	43.6
Deer	1	295	5,586	5,882	1	343	0.2
Other Animal	5	136	626	767	5	183	6.5
Fixed Object	84	3,241	7,102	10,427	95	4,260	9.1
Falling Object	1	90	270	361	1	119	2.8
Non-Collision:							
Overturn	60	2,666	2,703	5,429	63	3,703	11.6
Fire/Explosion	0	11	112	123	0	11	0.0
Submersion	3	9	43	55	3	15	54.5
Other or Unknown	7	538	1,069	1,614	7	675	4.3
Total	469	28,890	72,060	101,419	531	42,748	5.2

TABLE 1.16

1991 "HIT-AND-RUN" CRASHES AND INJURIES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Collision With:						
Other Motor Vehicle	5	655	3,234	3,894	5	901
Parked Motor Vehicle	1	30	2,435	2,466	1	34
Railroad Train	0	0	3	3	0	0
Bicycle	0	132	6	138	0	137
Pedestrian	2	169	6	177	2	173
Deer	0	1	4	5	0	1
Other Animal	0	0	13	13	0	0
Fixed Object	0	67	687	754	0	77
Falling Object	0	3	13	16	0	4
Non-Collision:						
Overturn	0	20	51	71	0	31
Fire/Explosion	0	0	0	0	0	0
Submersion	0	0	2	2	0	0
Other or Unknown	0	15	116	131	0	19
Total	8	1,092	6,570	7,670	8	1,377

TABLE 1.17

1991 CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
None*	92	10,239	25,256	35,587	100	14,899
Traffic Signal	23	6,540	14,214	20,777	28	9,632
Overhead Flashers	3	501	1,751	2,255	3	717
Stop Sign-All Approaches	5	473	1,186	1,664	5	670
Other Stop Sign	72	4,125	8,310	12,507	86	6,500
Yield Sign	9	640	1,643	2,292	12	1,033
Flagman, Officer, or School Patrol	1	72	234	307	1	100
School Bus Stop Arm	1	25	42	68	1	32
School Zone Sign	0	18	18	36	0	20
No Passing Zone	29	401	585	1,015	32	644
RR Crossing Gate	0	10	36	46	0	15
RR Flashing Lights	3	21	30	54	3	32
RR Crossing Stop Sign	4	11	29	44	4	17
RR Other	3	50	89	142	3	68
Other	52	241	1,335	1,628	58	398
Unknown	172	5,523	17,302	22,997	195	7,971
Total	469	28,890	72,060	101,419	531	42,748

* The category "none" is shown even though that category does not appear on the accident report form that went into use January 1, 1991. The new report form substituted "not applicable" (in place of the "none" on the previous form) as the category for the investigating officer to use to describe those crashes that occurred at a location where no traffic control device was present.

This change in the forms appears to have caused an artificial change in the number of crashes reported to have occurred at a location where no traffic control device was present. It appears that many officers chose not to use the new category "not applicable," but to leave the data field blank instead, causing the numbers shown in the row labeled "unknown" to greatly increase over what would be expected based on past years.

Over the last five years, the number of crashes that occurred where no traffic control device was present has been highly consistent and has averaged 63% for fatal crashes, 52% for injury crashes, 58% for property damage crashes, and 56% for all crashes. Over the last two years, the number killed averaged 63%, and the number injured, 50%. It is likely that 1991 would be similar to these averages from prior years.

TABLE 1.18
1991 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Daylight	237	18,404	43,210	61,851	276	27,229
Dawn/Dusk	31	1,957	5,614	7,602	36	2,824
Dark/Street Lights On	46	4,574	11,584	16,204	52	6,754
Dark/No Street Lights	147	3,153	7,685	10,985	159	4,857
Other/Unknown	8	802	3,967	4,777	8	1,084
Total	469	28,890	72,060	101,419	531	42,748

TABLE 1.19
1991 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Clear	262	14,725	34,852	49,839	298	21,714
Cloudy	125	7,854	18,047	26,026	142	11,667
Rain	22	2,483	5,409	7,914	22	3,781
Snow	22	1,937	6,838	8,797	26	2,798
Sleet/Hail	3	541	1,519	2,063	3	836
Fog/Smog/Smoke	13	343	809	1,165	15	538
Blowing Sand/Dust	10	331	1,051	1,392	11	520
Severe Crosswinds	0	33	107	140	0	40
Other	1	51	243	295	2	69
Not Stated/Unknown	11	592	3,185	3,788	12	785
Total	469	28,890	72,060	101,419	531	42,748

TABLE 1.20

CONTRIBUTING FACTORS IN 1991 CRASHES

Contributing Factors	Crash Severity			Number of People Affected by the Factor	
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Killed	Injured
Human Factors:					
Driver Inattention/Distracted	9.3%	18.6%	18.5%	99	12,506
Failure to Yield Right of Way	9.2	15.5	15.6	96	11,033
Illegal/Unsafe Speed	14.7	12.0	11.5	160	8,502
Following Too Closely	1.1	6.2	6.3	10	4,001
Improper/Unsafe Lane Use	3.4	3.1	5.5	31	2,113
Physical Impairment	10.9	5.4	2.6	114	3,825
Disregard For Traffic Control Device	4.0	4.7	2.9	48	3,626
Driver Inexperience	1.8	3.5	3.0	18	2,417
Vision Obscured	1.6	2.8	3.1	15	1,671
Improper Turn	0.4	1.9	3.0	5	1,351
Pedestrian Violation/Error	3.8	4.7	0.0	31	1,202
Improper Passing/Overtaking	1.2	1.2	2.0	15	859
Unsafe Backing	0.3	0.4	2.3	3	253
Driving Left of Roadway					
Center--Not Passing	7.1	1.7	1.2	82	1,422
Improper Parking/Starting/Stopping	0.6	1.1	1.6	5	824
Improper or No Signal	0.0	0.4	0.5	0	261
Impeding Traffic	0.2	0.2	0.3	2	164
Failure to Use Lights	0.1	0.3	0.2	1	173
Use of phone or CB radio	0.1	0.1	0.1	1	36
Other Human Factor	1.2	1.3	1.0	14	821
Vehicular Factors:					
Skidding	4.2	4.2	6.1	40	2,697
Defective Equipment	1.1	1.0	1.2	14	713
Other Vehicular Factor	0.4	0.5	0.7	4	331
Miscellaneous Factors:					
Weather	5.1	5.9	7.6	42	3,171
Other	18.1	3.4	3.2	112	1,543
Total Percent	100.0%	100.0%	100.0%		
Total contributing factors cited	980	47,398	83,180		
Vehicles for Which There Was					
"No Clear Contributing Factor"	25	13,413	31,279		
Total Number of Vehicles	823	54,769	131,871		

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 and the sum of the people affected by the factors to exceed the number of people killed or injured during the year. Percentages are based on all factors cited; they may 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.

TABLE 1.21

1991 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Dry	344	17,093	35,275	52,712	394	25,530
Wet	43	5,096	11,160	16,299	45	7,729
Snow/Slush	16	1,698	5,333	7,047	17	2,425
Ice or Packed Snow	54	3,829	14,234	18,117	62	5,483
Other	7	483	890	1,380	7	715
Not Stated/Unknown	5	691	5,168	5,864	6	866
Total	469	28,890	72,060	101,419	531	42,748

TABLE 1.22

1991 CRASHES BY ROAD DESIGN

Road Design	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Freeway (Including Ramps)	38	2,560	6,948	9,546	43	3,635
Other Divided Highway	53	3,952	6,807	10,812	63	6,182
One-Way Street	3	841	1,428	2,272	3	1,231
4-6 Lanes Undivided	24	5,339	9,418	14,781	24	7,883
3 Lanes	8	252	438	698	8	386
2 Lanes--Two-Way	333	13,024	27,486	40,843	379	19,691
Alley/Driveway	2	148	604	754	2	168
Other	8	434	1,548	1,990	9	603
Not Stated/Unknown	0	2,340	17,383	19,723	0	2,969
Total	469	28,890	72,060	101,419	531	42,748

TABLE 1.23

1991 CRASHES BY TYPE OF ROADWAY

Type of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Urban						
Interstate	12	1,540	4,955	6,507	12	2,132
Trunk Highway	54	5,434	12,419	17,907	58	8,128
County State Aid Highway	34	5,265	11,280	16,579	37	7,632
County Road	1	254	535	790	1	397
Local Street	41	7,040	21,732	28,813	41	9,608
Total	142	19,533	50,921	70,596	149	27,897
Rural						
Interstate	18	581	1,834	2,433	22	888
Trunk Highway	145	4,105	9,100	13,350	176	6,800
County State Aid Highway	116	2,891	5,781	8,788	132	4,406
County Road	18	537	870	1,425	20	846
Township Road	22	643	1,085	1,750	23	1,052
Local Street	5	369	1,500	1,874	6	552
Other Road	3	231	969	1,203	3	307
Total	327	9,357	21,139	30,823	382	14,851
All Roadways						
Interstate	30	2,121	6,789	8,940	34	3,020
Trunk Highway	199	9,539	21,519	31,257	234	14,928
County State Aid Highway	150	8,156	17,061	25,367	169	12,038
County Road	19	791	1,405	2,215	21	1,243
Township Road	22	643	1,085	1,750	23	1,052
Local Street	46	7,409	23,232	30,687	47	10,160
Other Road	3	231	969	1,203	3	307
Total	469	28,890	72,060	101,419	531	42,748

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

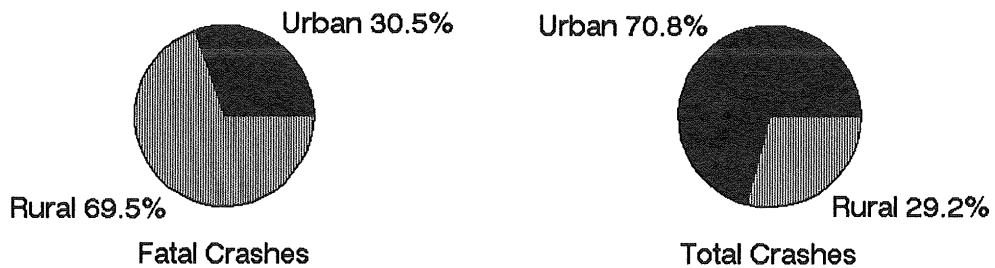
TABLE 1.24

1991 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	35	6,654	17,866	24,555	36	9,210
50,000 - 99,999	11	1,611	4,168	5,790	11	2,286
25,000 - 49,999	29	5,413	13,033	18,475	33	7,798
10,000 - 24,999	37	4,117	10,970	15,124	37	6,009
5,000 - 9,999	31	2,115	5,670	7,816	33	3,172
2,500 - 4,999	7	1,147	3,020	4,174	8	1,761
1,000 - 2,499	17	622	1,776	2,415	19	949
Under 1,000	302	7,211	15,557	23,070	354	11,563
Total	469	28,890	72,060	101,419	531	42,748

FIGURE 1.03

Fatal vs. Total Crashes, by Location, 1991



"Urban" refers to an area having a population of 5,000 or more. "Rural" refers to an area of less than 5,000 population.

TABLE 1.25

1991 COUNTY CRASH REPORT

County	1991 CRASHES				Average Crashes 1986-1990	Number Killed 1991	Average Killed 1986-1990	Number Injured 1991	Average Injured 1986-1990
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes					
Aitkin	2	75	153	230	249	4	3	131	128
Anoka	13	1,631	3,297	4,941	4,865	16	24	2,523	2,542
Becker	2	171	271	444	450	2	7	274	267
Beltrami	6	192	553	751	624	8	4	305	310
Benton	6	222	491	719	678	6	8	342	326
Big Stone	1	22	61	84	102	2	1	27	54
Blue Earth	5	416	1,231	1,652	1,421	5	7	589	515
Brown	3	150	345	498	470	3	3	216	213
Carlton	7	151	377	535	507	8	6	223	240
Carver	9	328	773	1,110	957	9	10	522	455
Cass	12	139	267	418	365	15	7	220	209
Chippewa	3	53	148	204	189	4	4	80	119
Chisago	3	185	470	658	656	3	9	291	308
Clay	6	264	769	1,039	1,099	8	7	433	443
Clearwater	0	40	80	120	111	0	1	57	65
Cook	1	35	146	182	155	1	2	62	63
Cottonwood	3	65	106	174	179	3	1	104	91
Crow Wing	9	346	695	1,050	1,049	10	10	549	510
Dakota	14	1,520	3,574	5,108	4,972	18	21	2,285	2,158
Dodge	4	90	202	296	244	5	4	140	111
Douglas	7	223	664	894	750	8	9	347	347
Faribault	3	74	168	245	213	3	3	119	109
Fillmore	2	113	239	354	340	2	6	175	164
Freeborn	7	193	521	721	680	7	5	302	263
Goodhue	9	298	707	1,014	956	10	9	450	455
Grant	1	21	73	95	89	1	1	31	38
Hennepin	49	8,343	20,503	28,895	30,162	52	72	11,612	12,688
Houston	2	94	231	327	296	3	3	141	136
Hubbard	1	86	183	270	268	1	4	131	173
Isanti	7	154	370	531	499	9	4	257	252

TABLE 1.25 CONTINUED

1991 COUNTY CRASH REPORT

County	1991 CRASHES				Average Crashes 1986-1990	Number Killed 1991	Average Killed 1986-1990	Number Injured 1991	Average Injured 1986-1990
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes					
Itasca	11	243	420	674	648	11	9	387	370
Jackson	2	62	153	217	198	2	2	97	91
Kanabec	1	79	164	244	225	1	3	130	149
Kandiyohi	9	256	530	795	771	11	7	410	414
Kittson	2	13	72	87	83	2	1	23	46
Koochiching	4	71	186	261	265	4	3	108	141
Lac Qui Parle	1	22	61	84	90	1	3	36	43
Lake	4	68	177	249	222	4	2	109	96
Lake of The Woods	1	22	48	71	61	2	0	31	30
Le Sueur	4	136	357	497	494	4	4	185	196
Lincoln	4	30	84	118	93	4	2	52	47
Lyon	7	125	318	450	332	7	3	199	185
Mcleod	4	212	462	678	688	5	7	349	312
Mahnomen	1	22	27	50	62	1	2	42	61
Marshall	2	42	96	140	138	2	3	66	84
Martin	6	123	338	467	360	7	1	203	191
Meeker	7	92	244	343	375	7	5	137	176
Mille Lacs	3	140	234	377	342	3	6	241	214
Morrison	12	161	328	501	498	14	7	282	270
Mower	5	209	552	766	683	6	4	306	277
Murray	0	40	89	129	101	0	3	63	59
Nicollet	3	121	410	534	503	6	5	186	208
Nobles	1	100	293	394	356	1	2	158	160
Norman	1	34	61	96	91	1	1	49	67
Olmsted	8	695	1,787	2,490	2,396	8	11	1,059	1,005
Otter Tail	7	285	622	914	805	7	12	468	425
Pennington	1	82	175	258	257	1	2	116	145
Pine	5	149	281	435	416	5	7	216	213
Pipestone	0	52	119	171	168	0	5	86	75
Polk	3	150	369	522	551	5	8	228	287

TABLE 1.25 CONTINUED

1991 COUNTY CRASH REPORT

County	1991 CRASHES				Average Crashes 1986-1990	Number Killed 1991	Average Killed 1986-1990	Number Injured 1991	Average Injured 1986-1990
	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes					
Pope	1	39	104	144	133	1	1	61	60
Ramsey	24	3,774	11,335	15,133	14,987	25	31	5,267	5,330
Red Lake	0	10	48	58	64	0	2	17	30
Redwood	2	111	170	283	200	2	3	185	106
Renville	4	86	145	235	226	5	8	142	126
Rice	9	304	773	1,086	1,045	11	7	450	493
Rock	0	53	169	222	199	0	1	92	74
Roseau	2	67	191	260	220	2	4	101	99
St. Louis	23	1,065	2,562	3,650	3,527	26	24	1,563	1,586
Scott	7	368	905	1,280	1,301	7	12	586	584
Sherburne	5	263	541	809	713	6	9	402	428
Sibley	2	59	200	261	229	2	3	81	103
Stearns	14	836	2,086	2,936	2,827	14	13	1,285	1,347
Steele	7	178	594	779	671	8	6	270	256
Stevens	2	33	102	137	150	3	2	43	62
Swift	0	43	83	126	122	0	2	65	59
Todd	3	107	295	405	373	3	7	189	231
Traverse	1	12	23	36	46	1	0	18	22
Wabasha	3	96	278	377	380	3	8	129	183
Wadena	1	77	216	294	253	1	1	125	125
Waseca	1	93	245	339	331	1	3	124	131
Washington	11	752	1,987	2,750	2,672	11	15	1,155	1,154
Watsonwan	3	53	127	183	175	4	1	91	82
Wilkin	2	55	102	159	157	2	1	89	83
Winona	6	271	817	1,094	1,148	11	6	384	451
Wright	17	393	841	1,251	1,229	20	19	627	676
Yellow Medicine	3	43	81	127	130	4	2	84	64
Unknown	0	119	315	434		0		163	
Total	469	28,890	72,060	101,419	99,376	531	578	42,748	43,735

TABLE 1.26

1991 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Afton	1	16	46	63	1	23
Albert Lea	2	97	274	373	2	135
Alexandria	0	92	315	407	0	131
Andover	1	76	163	240	1	121
Anoka	0	157	392	549	0	245
Apple Valley	0	153	307	460	0	245
Arden Hills	1	94	316	411	1	140
Aurora	0	2	19	21	0	3
Austin	1	130	376	507	1	191
Baxter	0	50	52	102	0	105
Bayport	0	3	15	18	0	4
Belle Plaine	0	6	35	41	0	7
Bemidji	1	107	296	404	1	157
Benson	0	6	30	36	0	6
Big Lake	1	16	41	58	1	24
Blaine	3	333	587	923	3	533
Bloomington	3	699	1,680	2,382	3	986
Blue Earth	0	8	27	35	0	12
Brainerd	1	135	332	468	1	200
Breckenridge	1	6	35	42	1	8
Brooklyn Center	3	254	536	793	3	350
Brooklyn Park	5	436	607	1,048	6	628
Buffalo	0	50	117	167	0	88
Burnsville	0	270	714	984	0	399
Caledonia	0	10	27	37	0	15
Cambridge	0	37	85	122	0	54
Cannon Falls	0	12	32	44	0	16
Champlin	1	68	142	211	1	113
Chanhassen	1	96	255	352	1	161
Chaska	1	69	186	256	1	100
Chisholm	0	12	44	56	0	16
Circle Pines	0	13	35	48	0	16
Cloquet	1	54	164	219	1	75
Columbia Heights	1	88	207	296	1	125
Coon Rapids	2	386	774	1,162	4	578
Corcoran	0	25	41	66	0	42
Cottage Grove	3	94	254	351	3	154
Crookston	0	33	97	130	0	59
Crystal	1	143	248	392	1	213
Dayton	0	7	40	47	0	9
Deephaven	0	4	12	16	0	4
Delano	0	17	32	49	0	24
Detroit Lakes	0	54	111	165	0	81

TABLE 1.26 CONTINUED

1991 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Dilworth	0	6	10	16	0	9
Duluth	6	500	1,253	1,759	6	691
Eagan	0	218	562	780	0	329
East Bethel	0	33	85	118	0	59
East Grand Forks	0	48	121	169	0	66
Eden Prairie	4	231	719	954	4	337
Edina	0	270	728	998	0	359
Elk River	3	85	164	252	4	130
Ely	0	9	42	51	0	12
Eveleth	1	17	72	90	1	25
Excelsior	0	18	36	54	0	27
Fairmont	1	67	235	303	1	112
Falcon Heights	0	24	99	123	0	42
Faribault	0	126	319	445	0	177
Farmington	0	29	55	84	0	51
Fergus Falls	1	85	204	290	1	128
Forest Lake	0	54	92	146	0	80
Fridley	0	245	429	674	0	372
Gilbert	0	6	19	25	0	7
Glencoe	0	10	23	33	0	17
Glenwood	0	8	27	35	0	10
Golden Valley	0	212	536	748	0	285
Goodview	0	1	4	5	0	13
Grand Rapids	0	55	174	229	0	81
Granite Falls	0	6	34	40	0	9
Ham Lake	0	74	123	197	0	101
Hastings	0	94	269	363	0	150
Hermantown	2	34	69	105	2	57
Hibbing	2	92	291	385	2	138
Hopkins	1	132	296	429	1	172
Hoyt Lakes	0	1	14	15	0	3
Hugo	0	15	49	64	0	23
Hutchinson	0	58	171	229	0	89
Independence	2	25	67	94	3	38
International Falls	1	40	104	145	1	58
Inver Grove Heights	5	114	299	418	5	158
Jackson	0	11	27	38	0	12
Jordan	0	9	34	43	0	13
Kasson	0	5	23	28	0	5
La Crescent	0	17	30	47	0	31
Lake City	0	22	68	90	0	27
Lake Elmo	2	35	100	137	2	63
Lakeville	4	146	259	409	4	232

TABLE 1.26 CONTINUED

1991 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Lauderdale	0	12	62	74	0	15
Le Sueur	0	15	37	52	0	18
Lino Lakes	1	52	151	204	1	89
Litchfield	1	24	89	114	1	35
Little Canada	0	99	257	356	0	130
Little Falls	1	40	131	172	1	54
Long Prairie	0	8	30	38	0	23
Luverne	0	18	44	62	0	32
Mahtomedi	0	21	35	56	0	27
Mankato	2	282	885	1,169	2	394
Maple Grove	0	133	357	490	0	176
Maplewood	2	274	697	973	2	399
Marshall	0	60	181	241	0	90
Medina	1	25	76	102	1	36
Melrose	0	4	26	30	0	4
Mendota Heights	2	59	183	244	2	77
Minneapolis	17	4,189	10,404	14,610	17	5,821
Minnetonka	0	305	664	969	0	403
Minnetrista	0	22	73	95	0	32
Montevideo	1	23	88	112	1	38
Monticello	0	39	125	164	0	63
Moorhead	1	178	622	801	1	262
Mora	0	18	34	52	0	29
Morris	0	16	68	84	0	22
Mound	0	33	81	114	0	44
Mounds View	0	58	133	191	0	83
Mountain Iron	1	17	40	58	1	31
New Brighton	2	120	334	456	2	160
New Hope	0	92	214	306	0	135
Newport	0	39	136	175	0	57
New Prague	0	14	37	51	0	17
New Ulm	1	87	192	280	1	121
Northfield	0	44	117	161	0	61
North Mankato	1	33	97	131	3	44
North Oaks	0	9	31	40	0	13
North St. Paul	1	73	211	285	1	104
Oakdale	0	74	170	244	0	121
Oak Park Heights	1	21	68	90	1	26
Olivia	0	6	9	15	0	8
Orono	0	27	143	170	0	38
Ortonville	0	8	20	28	0	10
Osseo	0	12	46	58	0	16
Owatonna	0	86	337	423	0	120

TABLE 1.26 CONTINUED

1991 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Park Rapids	1	14	42	57	1	21
Pine City	0	15	36	51	0	19
Pipestone	0	19	48	67	0	34
Plainview	0	5	23	28	0	6
Plymouth	4	224	593	821	5	330
Princeton	1	21	44	66	1	35
Prior Lake	1	57	94	152	1	104
Proctor	0	16	25	41	0	22
Ramsey	1	64	117	182	1	107
Red Wing	1	103	344	448	1	161
Redwood Falls	0	33	65	98	0	42
Richfield	1	324	871	1,196	1	449
Robbinsdale	0	99	266	365	0	138
Rochester	2	444	1,336	1,782	2	648
Rockford	0	7	10	17	0	9
Rosemount	2	62	145	209	2	104
Roseville	1	297	847	1,145	1	421
St. Anthony	0	38	80	118	0	53
St. Cloud	1	484	1,352	1,837	1	699
St. James	1	13	23	37	1	19
St. Joseph	0	11	27	38	0	16
St. Louis Park	2	271	744	1,017	2	353
St. Michael	0	4	14	18	0	7
St. Paul	18	2,529	7,741	10,288	19	3,482
St. Paul Park	0	14	36	50	0	21
St. Peter	0	33	103	136	0	51
Sartell	0	7	22	29	0	9
Sauk Centre	1	12	54	67	1	20
Sauk Rapids	0	43	120	163	0	62
Savage	3	61	132	196	3	87
Shakopee	1	104	333	438	1	159
Shoreview	0	79	267	346	0	123
Shorewood	0	48	104	152	0	75
Silver Bay	0	7	13	20	0	8
Sleepy Eye	0	14	37	51	0	20
South Interntl. Falls	0	0	0	0	0	0
South St. Paul	0	126	273	399	0	155
Spring Lake Park	1	45	105	151	1	68
Spring Valley	0	6	24	30	0	12
Staples	0	7	25	32	0	11
Stewartville	0	14	23	37	0	29
Stillwater	0	70	248	318	0	96
Thief River Falls	0	57	117	174	0	78

TABLE 1.26 CONTINUED

1991 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Two Harbors	0	14	52	66	0	21
Vadnais Heights	0	78	224	302	0	114
Virginia	1	72	177	250	1	98
Waconia	0	17	48	65	0	25
Wadena	0	29	89	118	0	46
Waite Park	1	53	129	183	1	87
Waseca	0	40	99	139	0	49
Wayzata	0	46	156	202	0	54
Wells	0	5	23	28	0	6
West St. Paul	0	119	286	405	0	180
White Bear Lake	1	160	426	587	1	246
Willmar	1	155	362	518	1	244
Windom	0	19	28	47	0	28
Winona	1	152	507	660	1	208
Woodbury	1	97	238	336	1	155
Worthington	0	61	201	262	0	95

TABLE 1.27

1991 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	1,748	19	393	4	156	3	164	2	165	4	190	0	225	3	455	3
1:00	2,616	38	658	10	191	0	213	4	206	2	302	4	327	4	719	14
2:00	1,388	17	363	5	111	1	107	0	121	1	118	0	162	2	406	8
3:00	884	13	250	3	51	1	69	1	69	1	68	1	109	1	268	5
4:00	712	3	166	0	60	0	80	0	63	0	86	1	89	1	168	1
5:00	998	7	155	1	132	1	137	0	120	0	132	0	152	2	170	3
6:00	2,235	10	157	2	342	0	427	0	381	4	362	2	374	1	192	1
7:00	5,051	9	162	2	794	0	956	2	1,004	0	986	2	906	1	243	2
8:00	4,464	13	199	2	641	2	792	3	844	3	800	2	789	0	399	1
9:00	3,780	20	327	1	507	4	601	3	528	4	624	3	653	4	540	1
10:00	4,171	15	441	3	536	1	620	3	524	3	587	3	729	2	734	0
11:00	5,059	14	532	3	691	1	743	1	650	2	725	2	835	2	883	3
Noon	5,910	15	656	0	764	0	840	2	833	2	891	3	949	3	977	5
1:00	5,507	26	629	7	821	3	748	1	741	2	833	3	858	5	877	5
2:00	6,668	23	619	2	1,031	4	939	4	1,089	3	1,012	3	1,126	5	872	2
3:00	7,915	27	610	4	1,187	1	1,182	4	1,310	3	1,243	3	1,499	8	884	4
4:00	7,991	36	602	5	1,211	7	1,173	5	1,310	3	1,326	5	1,552	7	817	4
5:00	7,680	26	628	7	1,154	2	1,179	1	1,238	4	1,331	6	1,370	2	780	4
6:00	5,594	30	531	3	748	4	808	4	833	2	930	9	988	2	756	6
7:00	4,337	19	520	5	519	2	579	1	580	3	734	1	772	4	633	3
8:00	3,374	16	406	3	386	5	445	1	532	3	509	0	610	1	486	3
9:00	3,755	20	408	3	411	3	494	2	505	2	605	1	725	6	607	3
10:00	3,341	27	340	2	327	2	429	3	408	4	474	2	714	8	649	6
11:00	2,619	20	265	3	234	1	283	1	295	3	389	6	641	1	512	5
Unknown	3,602	6	367	0	463	1	514	0	507	2	492	0	700	3	559	0
Total	101,419	469	10,384	80	13,468	49	14,522	48	14,856	60	15,749	62	17,854	78	14,586	92

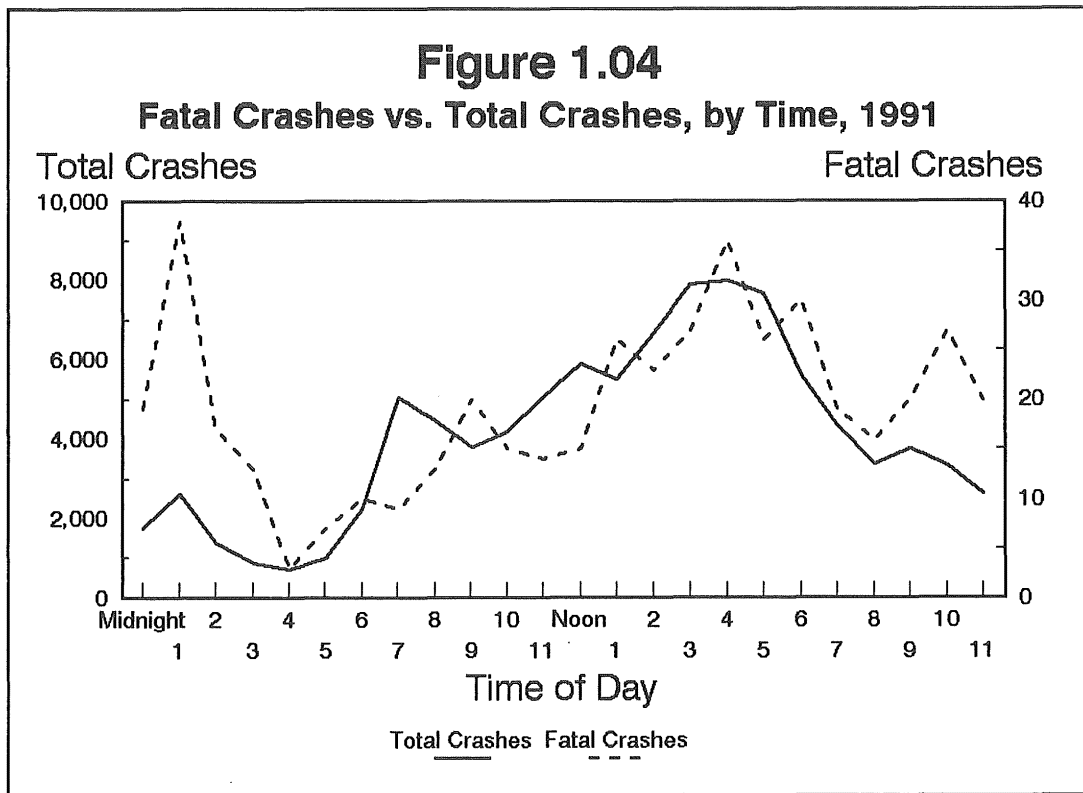


TABLE 1.28

1991 CRASHES, FATALITIES, AND INJURIES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	12	2,188	6,819	9,019	16	3,109
February	38	2,248	6,766	9,052	46	3,268
March	35	1,895	4,999	6,929	38	2,783
April	35	2,096	4,560	6,691	39	2,988
May	42	2,479	5,068	7,589	45	3,597
June	51	2,638	5,028	7,717	58	4,077
July	63	2,756	5,094	7,913	75	4,243
August	43	2,641	4,957	7,641	45	3,987
September	41	2,442	5,177	7,660	50	3,633
October	46	2,552	6,525	9,123	47	3,865
November	29	2,388	8,746	11,163	36	3,380
December	34	2,567	8,321	10,922	36	3,818
Total	469	28,890	72,060	101,419	531	42,748

TABLE 1.29

HOLIDAY CRASH SUMMARY, 1987 - 1991

Holiday Period	Year	Hours*	Total Crashes	Fatal Crashes	Personal Injury Crashes	Killed	Injured
Memorial Day	1987	78	695	4	238	4	384
(For 1991, the holiday	1988	78	691	8	243	8	369
period was 6 PM Fri.,	1989	78	749	7	288	7	426
May 24 - midnight	1990	78	861	4	310	4	497
Mon., May 27)	1991	78	549	2	161	2	239
July 4th	1987	78	834	6	319	7	500
(For 1991, the holiday	1988	78	717	8	282	8	458
period was 6 PM Wed.,	1989	102	1,079	13	439	14	708
July 3 - midnight	1990	30	351	2	142	2	216
Sun., July 7)	1991	102	988	13	392	15	644
Labor Day	1987	78	711	5	258	5	406
(For 1991, the holiday	1988	78	764	9	271	12	416
period was 6 PM Fri.,	1989	78	801	4	289	4	413
Aug. 30 - midnight	1990	78	713	8	307	10	486
Mon., Sept. 2)	1991	78	655	8	236	12	403
Thanksgiving	1987	102	1,522	7	441	10	690
(For 1991, the holiday	1988	102	1,580	8	386	8	595
period was 6 PM Wed.,	1989	102	1,180	6	313	6	482
Nov. 27 - midnight	1990	102	845	8	237	11	377
Sun., Dec. 1)	1991	102	1,444	5	305	10	452
Christmas	1987	78	648	2	164	2	260
(For 1991, the holiday	1988	78	1,052	1	247	1	406
period was 6 PM Mon.,	1989	78	1,247	7	347	8	518
Dec. 23 - midnight	1990	102	1,907	2	443	3	662
Wed., Dec. 25)	1991	54	414	2	114	2	164
New Year's							
(For 1990/91, the	1987/88	30	744	5	208	6	355
holiday period was	1988/89	78	823	4	219	4	335
6 PM Mon., Dec. 30,	1989/90	78	972	5	248	5	398
1991 - midnight Wed.,	1990/91	102	1,457	4	386	4	564
Jan. 1, 1992)	1991/92	54	453	2	126	2	213

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

II: ALCOHOL-RELATED CRASHES

The 1980s saw a decrease in the percentage of drivers killed who tested positive for alcohol. This percentage declined until the mid-80s, then reached a plateau at around 50%. The percentage of drivers killed who were legally intoxicated also followed this pattern and has reached a plateau at around 40%. Minnesota law requires alcohol testing of any driver or pedestrian, 16 years of age or older, who dies within 4 hours as a result of a traffic crash.

In September of 1986, the drinking age was raised from 19 to 21, but the law was phased in. The last year anyone under the age of 21 could legally drink was 1988; everyone had to be 21 in 1991.

"Alcohol-related" defined

In the case of fatal crashes and fatalities, both the investigating officer's perception of alcohol involvement as well as the alcohol test results for any driver, pedestrian, or bicyclist involved in the crash are used. In the case of injury crashes, injuries, and property damage crashes, we use only the officer's perception of alcohol involvement. Thus, the number of alcohol-related injury crashes, injuries, and property damage crashes are probably underestimated.

20% of revocations for test refusal

Of the 37,679 alcohol-related driver license revocations processed, about 20% were for refusing an alcohol test. This has held constant at about the same percentage since 1986.

DWI arrests down from last year's record high

DWI arrests reached an all-time high of 37,261 in 1990. There were 33,574 arrests for DWI in 1991. Of these, 84% were males and 16% were females. There were 3,562 arrests of individuals under the legal drinking age. Drivers between 20 and 29 years old made up 44% of those arrested.

Alcohol-related fatalities young

There were 531 people killed in 1991. Of these, 212 (40%) were alcohol-related. A full 80% of the fatalities were between 15 and 39. The age group 20 - 29 made up 45% of the alcohol-related fatalities and 40% of the injuries. Those in the 20 to 24 age group were

the most often killed and injured.

Alcohol-related fatalities mostly drivers

Of the 212 alcohol-related fatalities, 63% were drivers, another 24% were passengers, and 10% were pedestrians. The remaining 3% consisted of 2 bicyclists and 4 persons whose traffic role was unknown. At least two-thirds of alcohol-related fatalities had themselves been drinking.

Most crashes late night, weekends

The hour from 1 - 2 AM had the highest number of alcohol-related crashes. Over one-fourth of the crashes occurred on Saturdays. Friday, Saturday, and Sunday accounted for almost 63% of the alcohol-related crashes.

Alcohol-related fatal crashes differ

In all fatal crashes, the most common occurrence is a collision with another motor vehicle. Alcohol-related fatal crashes, on the other hand, are more likely to be collisions with fixed objects or overturns (both usually single vehicle crashes) than fatal crashes in general.

Fewer dead drivers tested

In 1991, 327 were drivers killed; 242 of these were tested for alcohol concentration. This is only 74% tested for alcohol. The percentage tested has dropped for the fourth year in a row. Of those tested, 44% were drinking and 35% were over the legal limit.

Drivers killed between midnight and 3 AM likely to be alcohol-positive

Thirty-five percent of those testing positive for alcohol were from crashes that occurred between midnight and 3 AM. More than 90% of those fatally injured drivers who tested positive for alcohol were male. Twenty-one percent of those testing positive were under the legal drinking age.

25 - 29 year olds really drunk

Although 30 - 34 year olds tested positive for alcohol most often, 11 of the 36 tested who were between 25 and 29 years old had blood alcohol concentrations of .25 or higher. More than 20% of fatally injured drivers tested were at or above .20--twice the legal limit in Minnesota.

TABLE 2.01

DRINKING DRIVER SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Drunken Driving Arrests	28,048	32,155	36,638	35,383	36,390	34,664	32,827	34,562	37,261	33,574
% Male	87%	86%	86%	85%	85%	84%	84%	84%	83%	84%
% Female	13%	14%	14%	15%	15%	16%	16%	16%	17%	16%
Alcohol-Related Driver License Revocations Processed ¹	36,024	41,311	43,502	40,807	42,586	40,899	37,530	38,619	42,470	37,679
Administrative Revocations For Refusing Test	8,456	11,155	11,413	9,219	8,468	8,336	7,907	7,943	8,354	7,452
Drivers Killed	321	345	383	372	347	297	361	368	334	327
Tested	72%	75%	83%	79%	81%	89%	87%	85%	78%	74%
Positive (.01 or higher)	54%	56%	58%	47%	49%	50%	48%	50%	50%	44%
Drunk (.10 or higher)	48%	45%	47%	37%	41%	43%	38%	41%	42%	35%
Alcohol-Related Fatalities ²			305	261	264	224	277	275	235	212
% of Total Fatalities			52%	43%	46%	42%	45%	45%	41%	40%

¹ Total alcohol revocations include certain multiple offenders who are revoked twice, under separate statutes, and those who have their Minnesota driver's license revoked because of an arrest outside of Minnesota.

² Alcohol-related fatalities were defined differently prior to 1984.

TABLE 2.02

DWI ARRESTS BY AGE, 1982 - 1991

Age	1982	1983	1984	1985	1986	1987	1988	1989	1990*	1991
14 & Younger	4	7	6	8	8	8	6	8	7	5
15	13	21	21	24	27	13	15	25	12	14
16	202	169	185	171	254	208	160	175	158	126
17	503	546	500	446	546	485	503	458	431	299
18	1,327	1,284	1,342	1,109	1,151	1,084	1,038	1,072	959	740
19	1,789	1,983	2,166	1,864	1,813	1,363	1,229	1,284	1,318	1,063
20	1,840	2,040	2,370	2,035	2,002	1,709	1,291	1,426	1,472	1,315
14 & Younger	4	7	6	8	8	8	6	8	7	5
15 - 19	3,834	4,003	4,214	3,614	3,791	3,153	2,945	3,014	2,878	2,242
20 - 24	8,213	9,564	11,220	10,289	10,273	9,345	7,933	8,071	8,357	7,470
25 - 29	5,229	6,299	7,511	7,618	8,295	8,146	7,920	8,293	8,744	7,332
30 - 34	3,450	3,948	4,720	4,933	5,002	5,110	5,146	5,554	6,509	6,312
35 - 39	2,273	2,701	3,013	3,200	3,316	3,356	3,265	3,577	4,111	4,100
40 - 44	1,589	1,796	2,078	2,062	2,098	2,087	2,101	2,418	2,689	2,680
45 - 49	1,119	1,239	1,394	1,292	1,274	1,289	1,360	1,407	1,531	1,340
50 - 54	849	975	916	911	857	834	786	892	985	845
55 - 59	688	738	704	686	631	584	556	568	590	489
60 - 64	412	471	443	395	397	359	406	389	417	369
65 & Older	388	414	419	375	448	393	403	371	441	390
TOTAL	28,048	32,155	36,638	35,383	36,390	34,664	32,827	34,562	37,261	33,574

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

"ALCOHOL-RELATED"

The term "alcohol-related" is defined differently for fatal crashes and fatalities than it is for injury crashes, injuries, and property damage crashes.

Alcohol-related fatality: The investigating officer suspected alcohol involvement and/or there was a positive blood test for alcohol for any driver, pedestrian or bicyclist involved in the crash.

Alcohol-related fatal crash: The investigating officer suspected alcohol involvement and/or there was a positive blood test for alcohol for any driver, pedestrian or bicyclist involved in the crash.

Alcohol-related injury crash/injury: 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: 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 property damage crashes are probably underestimated.

TABLE 2.03

AGE OF PERSONS KILLED AND INJURED IN 1991 ALCOHOL-RELATED CRASHES

<u>Age</u>	<u>Killed¹</u>	<u>Injured²</u>
0 - 4	1	35
5 - 9	0	76
10 - 14	2	112
15 - 19	33	965
20 - 24	53	1,305
25 - 29	42	900
30 - 34	23	715
35 - 39	19	417
40 - 44	8	293
45 - 49	9	176
50 - 54	5	97
55 - 59	3	65
60 - 64	2	51
65 - 69	2	43
70 - 74	2	31
75 - 79	5	17
80 - 84	1	15
85 & Older	1	10
<u>Not Stated</u>	<u>1</u>	<u>233</u>
Total	212*	5,556

¹ Includes alcohol test information as well as officer's perception of alcohol noted on accident report.

² Includes only police officer's perception of alcohol noted on accident report.

* Twelve of the 212 alcohol-related fatalities were pedestrians who had been drinking.
In 2 of these 12 cases, the motor vehicle driver had also been drinking.

TABLE 2.04

**1991 ALCOHOL-RELATED FATALITIES'
LEVEL OF INTOXICATION BY TRAFFIC ROLE**

Traffic Role	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Car or Truck Driver	104	93	87	68
Car or Truck Passenger	49	24	16	9
Motorcycle Driver	25	23	17	14
Motorcycle Passenger	2	2	1	0
Motorscooter/Moped Driver	1	1	1	1
Pedestrian	22	15	12	11
Bicyclist	2	2	0	0
All-Terrain Vehicle Driver	2	2	2	2
Snowmobile Driver	1	0	0	0
Other/Unknown	4	4	4	3
Total	212	166	140	108

TABLE 2.05

**PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES
DETERMINED TO BE ALCOHOL-RELATED, 1984 - 1991**

	1984	1985	1986	1987	1988	1989	1990	1991
Deaths*	52 %	43 %	46 %	42 %	45 %	45 %	41 %	40 %
Injuries**	19 %	16 %	17 %	17 %	15 %	15 %	15 %	13 %
Property Damage Crashes**	7 %	6 %	7 %	7 %	5 %	5 %	6 %	5 %

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

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

FIGURE 2.01
1991 Alcohol-Related Crashes
by Time of Day

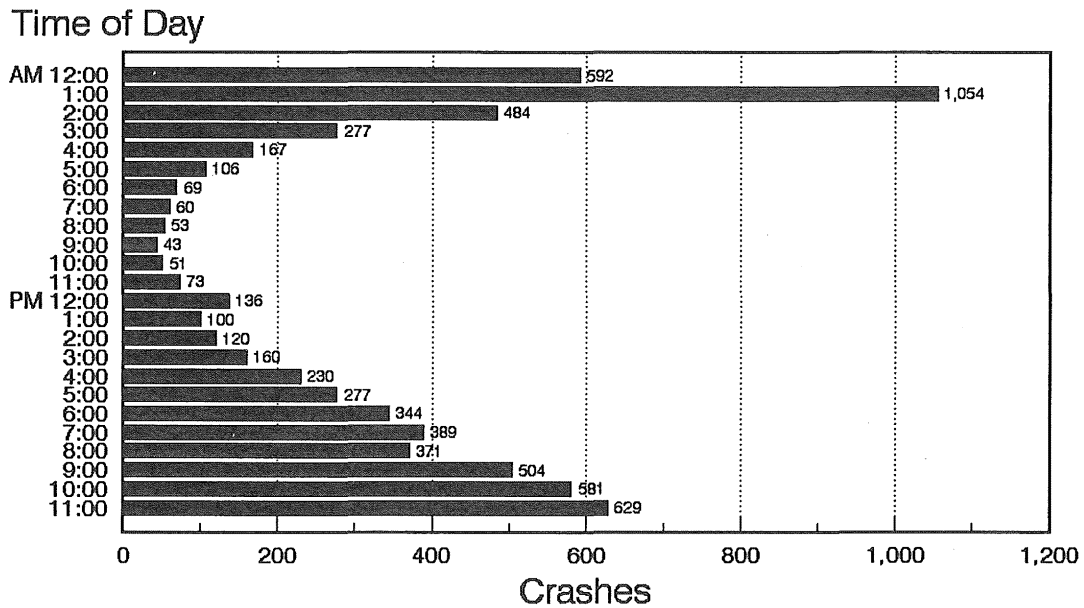


FIGURE 2.02
1991 Alcohol-Related Crashes
by Day of Week

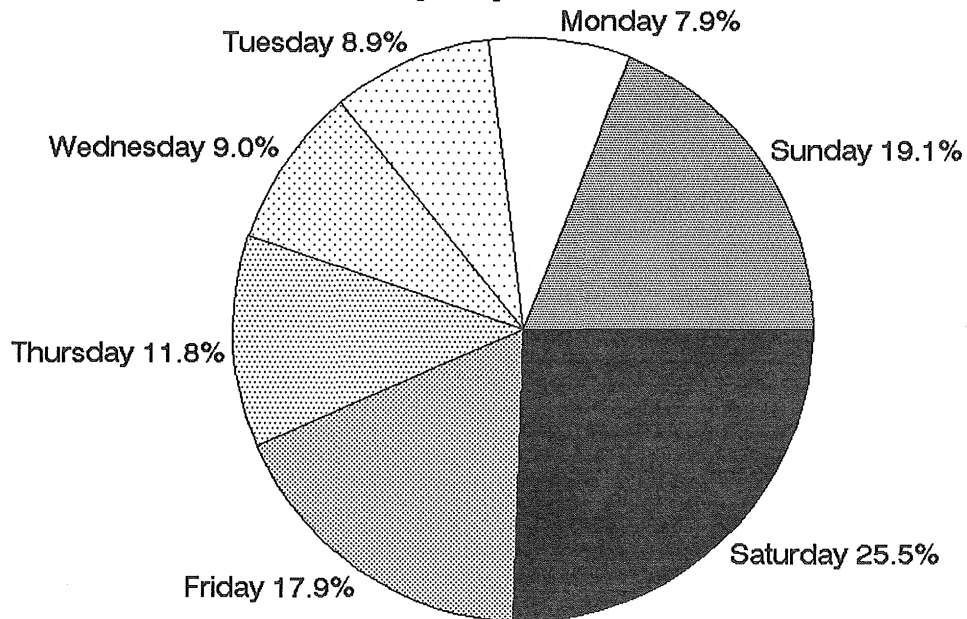


TABLE 2.06

ALCOHOL-RELATED* FATAL CRASHES BY FIRST HARMFUL EVENT, 1991

First Harmful Event	Alcohol-Related Fatal Crashes		All Fatal Crashes	
	Number	Percent	Number	Percent
Collision with:				
Another Motor Vehicle	64	33.2%	225	48.0%
Parked Motor Vehicle	5	2.6	9	1.9
Railroad Train	2	1.0	10	2.1
Bicycle	2	1.0	7	1.5
Pedestrian	20	10.4	57	12.2
Deer	1	0.5	1	0.2
Other Animal	1	0.5	5	1.1
Fixed Object	51	26.4	84	17.9
Falling Object	0	0.0	1	0.2
Non-Collision:				
Overtake	41	21.2	60	12.8
Submersion	2	1.0	3	0.6
Other	4	2.1	7	1.5
Total	193	100.0%	469	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, 1982 - 1991

Year	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1982	321	232	126 (54%)	112 (48%)
1983	345	258	145 (56%)	117 (45%)
1984	383	318	185 (58%)	149 (47%)
1985	372	295	139 (47%)	108 (37%)
1986	347	281	138 (49%)	114 (41%)
1987	297	265	133 (50%)	115 (43%)
1988	361	313	150 (48%)	118 (38%)
1989	368	313	155 (50%)	129 (41%)
1990	334	260	131 (50%)	108 (42%)
1991	327	242	107 (44%)	85 (35%)

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

TABLE 2.08

DRIVERS KILLED WHO TESTED .01 OR HIGHER, 1982 - 1991
("Drinking")

Year	Total	Male	Female	Occurred Between Midnight - 3 AM	Under Legal Age
1982	126	116 (92%)	10 (8%)	41 (33%)	9 (7%)
1983	145	129 (89%)	16 (11%)	38 (26%)	13 (9%)
1984	185	163 (88%)	22 (12%)	63 (34%)	17 (9%)
1985	139	116 (83%)	23 (17%)	60 (43%)	14 (10%)
1986	138	117 (85%)	21 (15%)	50 (36%)	16 (12%)*
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%)

* On September 1, 1986, the drinking age was raised from 19 to 21.

TABLE 2.09

DRIVERS KILLED WHO TESTED .10 OR HIGHER, 1982 - 1991
("Drunk")

Year	Total	Male	Female	Occurred Between Midnight - 3 AM	Under Legal Age
1982	112	102 (91%)	10 (9%)	41 (37%)	7 (6%)
1983	117	105 (90%)	12 (10%)	38 (32%)	8 (7%)
1984	149	132 (89%)	17 (11%)	50 (34%)	12 (8%)
1985	108	90 (83%)	18 (17%)	49 (45%)	6 (6%)
1986	114	100 (88%)	14 (12%)	42 (37%)	12 (11%)*
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%)

* On September 1, 1986, the drinking age was raised from 19 to 21.

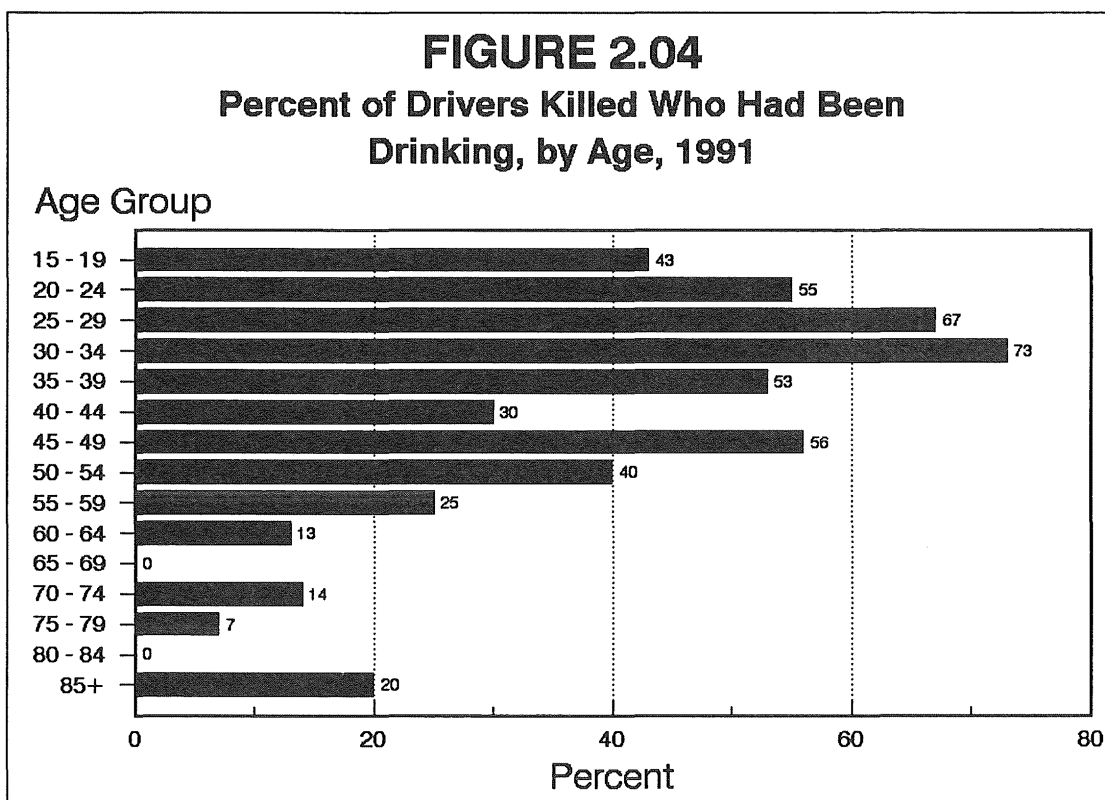
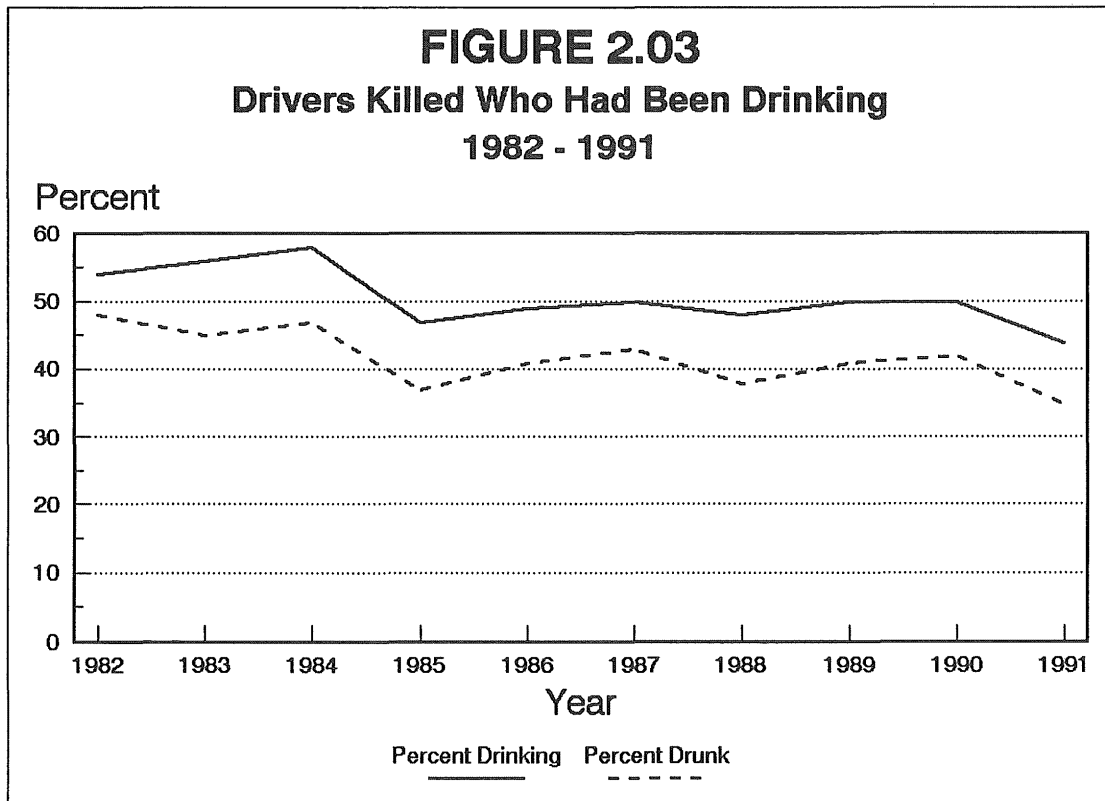


TABLE 2.10

**1991 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION
BY AGE**

Age	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Alcohol Concentration					
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
14 & Younger	1	0	0	0	0	0	0	0	0	0
15	1	1	0	0	0	0	0	0	0	0
16	11	9	1	0	0	1	0	0	0	0
17	5	5	2	1	0	1	1	0	0	0
18	12	11	4	0	2	2	0	0	0	0
19	12	9	8	5	2	1	3	0	2	0
20	18	15	8	7	0	1	3	2	1	1
14 & Younger	1	0	0	0	0	0	0	0	0	0
15 - 19	41	35	15 (43%)	6 (17%)	4	5	4	0	2	0
20 - 24	59	47	26 (55%)	21 (45%)	2	3	7	6	6	2
25 - 29	43	36	24 (67%)	20 (56%)	3	1	0	4	5	11
30 - 34	31	22	16 (73%)	14 (64%)	1	1	3	2	4	5
35 - 39	23	19	10 (53%)	9 (47%)	1	0	1	3	3	2
40 - 44	15	10	3 (30%)	3 (30%)	0	0	1	1	1	0
45 - 49	14	9	5 (56%)	5 (56%)	0	0	0	1	2	2
50 - 54	7	5	2 (40%)	2 (40%)	0	0	0	0	0	2
55 - 59	17	8	2 (25%)	2 (25%)	0	0	0	1	0	1
60 - 64	11	8	1 (13%)	1 (13%)	0	0	0	0	0	1
65 - 69	17	10	0 (0%)	0 (0%)	0	0	0	0	0	0
70 - 74	11	7	1 (14%)	1 (14%)	0	0	0	0	0	1
75 - 79	18	14	1 (7%)	1 (7%)	0	0	1	0	0	0
80 - 84	11	7	0 (0%)	0 (0%)	0	0	0	0	0	0
85 & Older	8	5	1 (20%)	0 (0%)	1	0	0	0	0	0
Total	327	242	107 (44%)	85 (35%)	12	10	17	18	23	27

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

TABLE 2.11

**1991 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION
BY MONTH**

Month	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Alcohol Concentration					
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
January	11	9	3 (33%)	1 (11%)	1	1	0	0	0	1
February	27	21	8 (38%)	7 (33%)	0	1	1	1	2	3
March	25	20	14 (70%)	11 (55%)	1	2	4	1	5	1
April	25	20	9 (45%)	7 (35%)	2	0	4	2	1	0
May	31	21	12 (57%)	9 (43%)	2	1	1	3	1	4
June	36	22	12 (55%)	10 (45%)	0	2	1	3	3	3
July	40	33	14 (42%)	10 (30%)	4	0	0	1	3	6
August	27	23	11 (48%)	9 (39%)	1	1	2	2	2	3
September	31	18	6 (33%)	5 (28%)	1	0	0	1	1	3
October	32	26	10 (38%)	9 (35%)	0	1	3	4	1	1
November	21	13	3 (23%)	3 (23%)	0	0	1	0	1	1
December	21	16	5 (31%)	4 (25%)	0	1	0	0	3	1
Total	327	242	107 (44%)	85 (35%)	12	10	17	18	23	27

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

TABLE 2.12

**1991 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION
BY ROAD TYPE**

Road Type	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Alcohol Concentration					
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
Urban Interstate	9	7	5 (71%)	5 (71%)	0	0	0	1	1	3
Rural Interstate	15	9	2 (22%)	2 (22%)	0	0	0	0	1	1
Urban Trunk Highway	35	25	8 (32%)	6 (24%)	1	1	2	2	1	1
Rural Trunk Highway	118	89	33 (37%)	24 (27%)	5	4	2	7	9	6
County State Aid Highway	100	73	41 (56%)	33 (45%)	5	3	6	6	8	13
County Road	14	9	3 (33%)	2 (22%)	0	1	2	0	0	0
Township Road	16	15	7 (47%)	6 (40%)	1	0	3	0	1	2
Local Street	19	14	7 (50%)	6 (43%)	0	1	2	2	2	0
Other	1	1	1(100%)	1(100%)	0	0	0	0	0	1
Total	327	242	107 (44%)	85 (35%)	12	10	17	18	23	27

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

TABLE 2.13

**1991 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION
BY TIME OF DAY**

Time of Day	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	<u>Alcohol Concentration</u>					
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
Midnight - 2:59 AM	51	42	37 (88%)	30 (71%)	3	4	9	6	8	7
3:00 - 5:59 AM	18	13	10 (77%)	9 (69%)	0	1	1	4	4	0
6:00 - 8:59 AM	25	15	5 (33%)	4 (27%)	0	1	1	2	1	0
9:00 - 11:59 AM	38	24	4 (17%)	2 (8%)	2	0	0	0	1	1
Noon - 2:59 PM	46	29	2 (7%)	1 (3%)	1	0	0	0	0	1
3:00 - 5:59 PM	65	49	7 (14%)	6 (12%)	1	0	0	0	1	5
6:00 - 8:59 PM	41	36	22 (61%)	17 (47%)	4	1	2	4	2	9
9:00 - 11:59 PM	37	30	16 (53%)	12 (40%)	1	3	3	1	4	4
Unknown	6	4	4(100%)	4(100%)	0	0	1	1	2	0
Total	327	242	107 (44%)	85 (35%)	12	10	17	18	23	27

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

TABLE 2.14

**1991 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION
BY DAY OF WEEK**

Day of Week	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	<u>Alcohol Concentration</u>					
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over
Sunday	60	45	20 (44%)	19 (42%)	0	1	7	4	4	4
Monday	33	25	11 (44%)	10 (40%)	1	0	2	2	2	4
Tuesday	34	27	5 (19%)	2 (7%)	2	1	0	0	0	2
Wednesday	45	30	16 (53%)	12 (40%)	4	0	1	1	5	5
Thursday	42	30	9 (30%)	6 (20%)	2	1	0	2	2	2
Friday	61	41	18 (44%)	15 (37%)	2	1	3	5	3	4
Saturday	52	44	28 (64%)	21 (48%)	1	6	4	4	7	6
Total	327	242	107 (44%)	85 (35%)	12	10	17	18	23	27

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

III: SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS IN 1991 CRASHES

Studies show that using the available restraint systems in vehicles reduces the chance of death and serious injury by forty to fifty percent. To understand the impact of higher use rates, the number of people killed and injured, as well as how many of them were or were not using a restraint system, must be considered.

The most common system is safety belts--a system that includes lap and shoulder belts which are either automatically or manually operated. Many new cars also have airbags on the driver side and some have front seat passenger airbags as well. Child safety seats are needed for children under four years of age. Other devices, such as booster seats, are helpful for young children over the age of four.

In view of the safety benefits of passenger protection systems, Minnesota's Legislature enacted laws to require safety equipment use. The Minnesota Child Passenger Protection Act took effect in 1982. As amended in 1983 and 1987, it requires children under four to be properly restrained in a federally approved child car seat. The Minnesota mandatory Seat Belt Law took effect in 1986. Amended in 1988 and 1991, it requires drivers, front seat passengers, and children from age four through age ten, regardless of their seating position, to wear safety belts.

Almost 40,000 occupants killed or injured

In 1991, 405 people died and 38,072 were injured in vehicles normally equipped with passenger protection systems. Restraint use data from crashes must be regarded with a certain amount of skepticism; in about one-fourth of the cases it is coded by the investigating officer as unknown, and the accuracy of the rest is uncertain. Assuming the accuracy does not change drastically from year to year, the data are interesting as possible measures of general trends. It is estimated that 24% of those killed in 1991 had been using safety equipment at the time of the crash, an increase from the 21% estimated last year.

Use is lowest on county and township roads

Only 30% of occupants in crashes on township roads used restraints. Use was next lowest

(39%) among occupants in crashes on county roads. By contrast, restraint use is relatively high on the major highways--60% among occupants in crashes on interstates, and 52% on trunk highways.

Use is lowest among injured teenagers

Restraint use continues to be lowest among those in the 11 to 19 year-old age group. Only 37% used restraints in a crash. While fewer injured children appeared to be in car seats in 1991 (48%) than in 1990 (57%), the number of children injured fell from 819 to 439, suggesting very high use among those not injured at all. In 1991, use was estimated highest among those in their fifties and sixties (about 62%).

Use is highest in Metro area, lowest in Northwest

Restraint use among killed and injured vehicle occupants continues to be highest (54%) in the metro area, and relatively high in other eastern regions. The lowest rates were found in the Northwest (36%), West Central, (38%) and Southwest (39%) regions. Minnesota is bounded on the west by North Dakota and South Dakota, two of the remaining eight states in the nation without seat belt laws.

Safety belt use responds to legislation

Observational surveys of vehicles on randomly sampled state roadways have been conducted since 1986. Results suggest that usage rates fall into stages, with changes from one to the next coincident with changes in the law. In June, 1986 (before the initial safety belt law), 20% of observed front seat occupants were wearing belts. After the law took effect in August, 1986, usage increased to about 32%. After a \$10 fine was added in May, 1988, it rose to 47% and when the fine was increased to \$25 in August, 1991, it again rose to 53% statewide. The statewide average conceals a much higher rate in the Metro area (63%) than in the Non-metro area (47%).

TABLE 3.01

MOTOR VEHICLE OCCUPANTS KILLED OR INJURED,
BY AGE AND SEVERITY OF INJURY, 1991

Age Group	Killed	Injured			Total
		Severe	Moderate	Minor	
0 - 4	5	32	233	350	615
5 - 9	5	58	347	531	936
10 - 14	8	99	414	595	1,108
15 - 19	58	680	2,522	3,224	6,426
20 - 24	66	517	2,017	3,043	5,577
25 - 29	45	364	1,444	2,616	4,424
30 - 34	31	326	1,169	2,267	3,762
35 - 39	22	256	884	1,836	2,976
40 - 44	14	202	794	1,611	2,607
45 - 49	17	145	488	1,105	1,738
50 - 54	11	129	359	837	1,325
55 - 59	20	85	309	674	1,068
60 - 64	15	98	294	554	946
65 - 69	20	102	245	517	864
70 - 74	15	85	229	402	716
75 - 79	24	69	192	308	569
80 - 84	15	50	167	207	424
85 & Older	14	27	91	110	228
Not Stated	0	114	485	1,164	1,763
Total	405	3,438	12,683	21,951	38,072

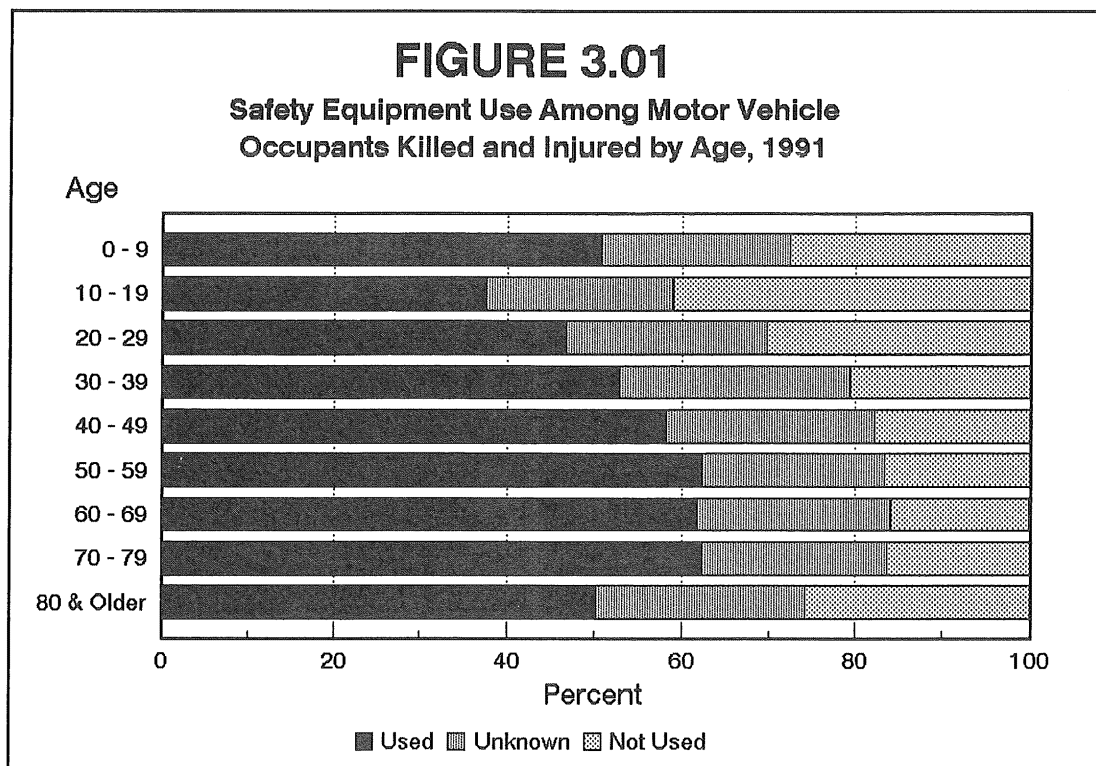


TABLE 3.02

**SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS KILLED
OR INJURED, BY AGE AND INJURY SEVERITY, 1991**

Age Group	Restraint Use	<u>Killed</u>		<u>Injured</u>						<u>Total</u>	
		#	%	<u>Severe</u>	<u>Moderate</u>	<u>Minor</u>				#	%
0 - 3 Years	Used	2	66.7	2	11.8	85	49.4	124	49.6	211	48.1
	Not Used	0	0.0	8	47.1	49	28.5	60	24.0	117	26.7
	Unknown	1	33.3	7	41.2	38	22.1	66	26.4	111	25.3
	Subtotal	3	100.0	17	100.0	172	100.0	250	100.0	439	100.0
4 - 10 Years	Used	3	33.3	28	32.9	249	50.8	398	53.8	675	51.3
	Not Used	5	55.6	38	44.7	156	31.8	184	24.9	378	28.7
	Unknown	1	11.1	19	22.4	85	17.3	158	21.4	262	19.9
	Subtotal	9	100.0	85	100.0	490	100.0	740	100.0	1,315	100.0
11 - 19 Years	Used	8	12.5	183	23.9	982	34.4	1,571	42.3	2,736	37.3
	Not Used	41	64.1	412	53.7	1,317	46.1	1,281	34.5	3,010	41.1
	Unknown	15	23.4	172	22.4	555	19.4	858	23.1	1,585	21.6
	Subtotal	64	100.0	767	100.0	2,854	100.0	3,710	100.0	7,331	100.0
20 - 29 Years	Used	19	17.1	277	31.4	1,459	42.2	2,980	52.7	4,716	47.2
	Not Used	70	63.1	400	45.4	1,319	38.1	1,264	22.3	2,983	29.8
	Unknown	22	19.8	204	23.2	683	19.7	1,415	25.0	2,302	23.0
	Subtotal	111	100.0	881	100.0	3,461	100.0	5,659	100.0	10,001	100.0
30 - 39 Years	Used	7	13.2	229	39.3	998	48.6	2,365	57.6	3,592	53.3
	Not Used	35	66.0	213	36.6	583	28.4	567	13.8	1,363	20.2
	Unknown	11	20.8	140	24.1	472	23.0	1,171	28.5	1,783	26.5
	Subtotal	53	100.0	582	100.0	2,053	100.0	4,103	100.0	6,738	100.0
40 - 49 Years	Used	10	32.3	157	45.2	731	57.0	1,647	60.6	2,535	58.3
	Not Used	18	58.1	106	30.5	315	24.6	343	12.6	764	17.6
	Unknown	3	9.7	84	24.2	236	18.4	726	26.7	1,046	24.1
	Subtotal	31	100.0	347	100.0	1,282	100.0	2,716	100.0	4,345	100.0
50 - 59 Years	Used	8	25.8	109	50.9	416	62.3	975	64.5	1,500	62.7
	Not Used	17	54.8	67	31.3	134	20.1	186	12.3	387	16.2
	Unknown	6	19.4	38	17.8	118	17.7	350	23.2	506	21.1
	Subtotal	31	100.0	214	100.0	668	100.0	1,511	100.0	2,393	100.0
60 - 69 Years	Used	13	37.1	105	52.5	318	59.0	705	65.8	1,128	62.3
	Not Used	14	40.0	50	25.0	118	21.9	110	10.3	278	15.4
	Unknown	8	22.9	45	22.5	103	19.1	256	23.9	404	22.3
	Subtotal	35	100.0	200	100.0	539	100.0	1,071	100.0	1,810	100.0
70 & Older	Used	29	42.6	99	42.9	374	55.1	663	64.6	1,136	58.6
	Not Used	31	45.6	65	28.1	152	22.4	144	14.0	361	18.6
	Unknown	8	11.8	67	29.0	153	22.5	220	21.4	440	22.7
	Subtotal	68	100.0	231	100.0	679	100.0	1,027	100.0	1,937	100.0
Age Not Stated	Used	0	0.0	37	32.5	205	42.3	483	41.5	725	41.1
	Not Used	0	0.0	40	35.1	135	27.8	214	18.4	389	22.1
	Unknown	0	0.0	37	32.5	145	29.9	467	40.1	649	36.8
	Subtotal	0	0.0	114	100.0	485	100.0	1,164	100.0	1,763	100.0
All Ages	Used	99	24.4	1,226	35.7	5,817	45.9	11,911	54.3	18,954	49.8
	Not Used	231	57.0	1,399	40.7	4,278	33.7	4,353	19.8	10,030	26.3
	Unknown	75	18.5	813	23.6	2,588	20.4	5,687	25.9	9,088	23.9
	Total	405	100.0	3,438	100.0	12,683	100.0	21,951	100.0	38,072	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

**PERCENT OF INJURED OR KILLED MOTOR VEHICLE OCCUPANTS WHO
USED SAFETY EQUIPMENT BY INJURY SEVERITY AND YEAR, 1984 - 1991**

	1984	1985	1986	1987	1988	1989	1990	1991
Killed								
Used	5.8%	8.8%	9.2%	17.7%	21.1%	20.5%	20.9%	24.4%
Not Used	64.5	70.8	69.7	67.9	64.1	63.8	65.9	57.0
Unknown	29.7	20.4	21.1	14.4	14.8	15.7	13.2	18.5
Injured								
Severe Injuries								
Used	5.9	8.4	16.9	22.0	30.5	31.6	32.6	35.7
Not Used	46.3	60.3	57.8	55.1	48.9	47.9	48.4	40.7
Unknown	47.8	31.3	25.4	22.9	20.6	20.5	18.9	23.6
Moderate Injuries								
Used	7.4	10.7	20.8	29.3	38.2	39.9	41.1	45.9
Not Used	44.8	58.8	53.4	48.4	41.7	40.6	40.2	33.7
Unknown	47.8	30.4	25.9	22.3	20.1	19.5	18.7	20.4
Minor Injuries								
Used	9.0	14.4	25.7	36.2	42.9	45.5	45.3	54.3
Not Used	34.7	45.6	38.9	32.2	24.4	21.9	23.1	19.8
Unknown	56.3	40.0	35.3	31.6	32.7	32.6	31.6	25.9
Total Injured								
Used	8.0	12.4	23.0	32.0	39.9	42.3	42.7	49.8
Not Used	49.1	54.2	46.5	40.9	32.9	30.7	31.2	26.3
Unknown	42.9	33.4	30.5	27.1	27.1	27.0	26.1	23.9

TABLE 3.04

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS
KILLED AND INJURED, BY ROADWAY TYPE, 1991**

Roadway Type	Used		Not Used		Unknown		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Interstate	1,740	60.0	633	21.8	528	18.2	2,901	100.0
Trunk Highway	7,293	52.1	3,776	27.0	2,940	21.0	14,009	100.0
County State-								
Aid Highway	5,285	48.5	2,741	25.1	2,878	26.4	10,904	100.0
County Road	457	39.4	433	37.3	271	23.3	1,161	100.0
Township Road	286	29.6	464	48.0	216	22.4	966	100.0
Local Street	3,911	47.1	2,153	25.9	2,244	27.0	8,308	100.0
Other Road	81	35.5	61	26.8	86	37.7	228	100.0
Total	19,053	49.5	10,261	26.7	9,163	23.8	38,477	100.0

TABLE 3.05

**SAFETY EQUIPMENT USE BY MOTOR VEHICLE OCCUPANTS
KILLED AND INJURED BY EMS REGION* OF STATE, 1991**

EMS Region	Percent Used	Percent Not Used	Percent Unknown	Number of People
Metropolitan	53.6	21.0	25.4	21,124
Central	47.6	32.8	19.6	4,753
Northeast	45.9	31.1	23.0	2,383
Northwest	35.8	36.4	27.8	1,095
South Central	44.7	31.3	24.0	1,644
Southeast	48.8	32.5	18.7	3,520
Southwest	38.9	39.0	22.1	2,192
West Central	37.9	36.0	26.1	1,627
Unknown	44.6	24.5	30.9	139
Statewide	49.5	26.7	23.8	38,477

*There are eight Emergency Medical Services (EMS) regions in the state, shown in the map below.

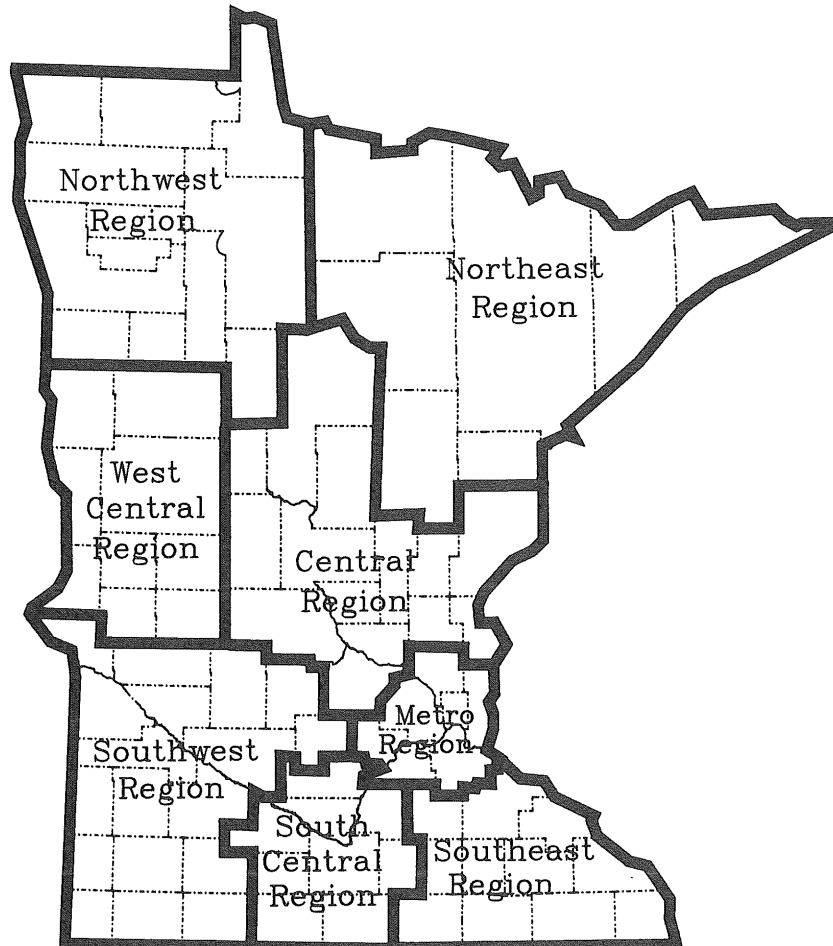


TABLE 3.06

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

	June 1986	August 1986	November 1986	August 1987	August 1988	August 1989	August 1990	August 1991
Statewide	20%	33%	32%	32%	47%	44%	47%	53.3%
Metro	30	43	39	40	51	52	54	62.7
Non-Metro	15	26	24	28	45	40	42	47.2
Weather								
Clear	19	32	33	32	47	44	47	53.9
Other	23	36	19	41	48	53	50	48.4
Time								
Rush Hour	21	31	30	30	47	42	47	53.4
Non-rush Hour	20	34	32	33	47	44	48	52.5
Day of the Week								
Weekday	19	33	33	32	45	42	45	51.7
Weekend	21	33	29	33	52	49	50	56.5
Speed								
20 MPH	14	29	33	29	35	39	46	47.6
40 MPH	20	32	27	30	47	46	46	56.8
60 MPH	28	39	36	41	57	52	53	61.6
Road Class								
Major Roads	23	35	31	35	48	44	49	53.9
Local Roads	17	31	32	29	46	45	46	52.7

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 study 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.

TABLE 3.07
SAFETY EQUIPMENT USE AMONG INFANTS AND
CHILDREN IN THREE OBSERVATIONAL STUDIES

	<u>August 1985</u>		<u>August 1987</u>		<u>August 1990</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Infants (less than 1 year of age)						
Safety Equipment Used Correctly	128	68.1	313	46.7	609	71.6
Safety Equipment Used Incorrectly	14	7.4	224	33.4	115	13.5
Safety Equipment Not Used	<u>46</u>	<u>24.5</u>	<u>133</u>	<u>19.9</u>	<u>127</u>	<u>14.9</u>
Total Infants Observed	188	100.0	670	100.0	851	100.0
Younger Children (age 1 to 3)						
Safety Equipment Used Correctly	137	31.1	870	27.1	1,571	41.7
Safety Equipment Used Incorrectly	35	7.9	537	16.7	534	14.2
Safety Equipment Not Used	<u>269</u>	<u>61.0</u>	<u>1,801</u>	<u>56.1</u>	<u>1,665</u>	<u>44.2</u>
Total Younger Children Observed	441	100.0	3,208	100.0	3,770	100.0
Older Children (age 4 to 10)						
Safety Equipment Used	204	17.2	1,819	26.0	2,264	33.0
Safety Equipment Not Used	<u>982</u>	<u>82.8</u>	<u>5,185</u>	<u>74.0</u>	<u>4,590</u>	<u>67.0</u>
Total Older Children Observed	1,186	100.0	7,004	100.0	6,854	100.0

Observations were conducted at 10 sites in 1985, and then, in an effort to increase representativeness of the sample, at 20 sites in 1987 and 1990. The definition of "older children" changed (from age 4 through 11 in 1985 to 4 through 10 in 1987 and 1990) to reflect a change in law. The apparent decrease from 1985 to 1987 in correct safety use among infants is the result of a more rigorous definition of "correct use" rather than a real decrease in correct use. The August, 1990, survey is the most recent study; no survey was conducted in 1991.

IV: MOTORCYCLE CRASHES

Motorcyclists are exposed to a greater chance of injury should a crash occur because they are not protected by the body of a vehicle. In 1991, 85 % of motorcycle crashes resulted in an injury or fatality; for total motor vehicle crashes, only 29 % of the crashes produced an injury or fatality. Motorcycle crashes were more than 5 times more likely to involve a fatality.

Crashes, injuries and fatalities down

There were 1,461 crashes involving motorcycles in 1991. This is a 26 % decrease from the average of the prior five years. There were 1,357 motorcyclists injured--a 25 % decrease. There were 40 motorcyclists killed--10 fewer than last year.

Licensed operators at all-time high

In 1991, 296,624 people had a motorcycle endorsement on their Minnesota driver licence. This number has continued to increase even though the number of registered motorcycles dropped for the tenth consecutive year.

Single vehicle crashes common

About half the crashes, injuries, and fatalities involved collision with another vehicle. However, 30% of fatalities involved collision with a fixed object and 22% of the crashes (25% of injuries) were the result of overturns. Forty-five percent of fatal crashes were single vehicle crashes.

Crashes in rural areas more likely to be fatal

Areas of under 1,000 population accounted for 28 % of the crashes and 30 % of the injuries but 63 % of the fatalities. Areas of over 100,000, on the other hand, accounted for 22 % of the crashes, 20 % of the injuries, and only 8 % of the fatalities.

June highest for crashes

Twenty percent of the crashes and injuries occurred in the month of June. July and August tied for most fatalities with 11 each. The winter months had very few crashes.

Saturday most crash involved

Saturday had the highest number of fatal as well

as total crashes. Thirty-five percent of the crashes occurred between 3 and 8 PM. The highest number of fatal crashes occurred between 1 and 2 AM.

Majority of fatalities under 40 and male

Most of the fatalities (93 %) were under the age of 40. The age group 25 - 29 sustained the highest number of fatalities. Over a quarter of injuries were in the 20 - 24 year old age group. More than 86 % of those injured were male. All but two of the fatalities were male. About one-quarter of the injuries were severe, another quarter minor, and half were moderate.

Most motorcyclists killed not wearing helmets

At least 60 % of motorcyclists killed were not wearing a helmet. At least 43 % of those injured were also not wearing a helmet. Helmet use was unknown for one-third of the motorcyclists injured. Almost 13 % of motorcyclists in fatal crashes had no motorcycle endorsement. Another 10 % had a license that was cancelled, suspended, or revoked.

Alcohol use declines

Of the 36 motorcycle operators who were killed, 30 (83%) were tested for alcohol. Of those tested, 57% had been drinking and 47% were legally drunk. This is down from the percentages in 1989 and 1990. The 25 - 35 year old age group had the highest percentages of those tested who were drinking.

Speed top contributing factor

Twelve percent of motorcyclists in single vehicle crashes were found to have committed no improper driving. They were most likely to be cited for illegal/unsafe speed, followed by physical impairment. In multi-vehicle crashes, one-third of the motorcyclists were found to have committed no improper driving; this was true of 23% of the other drivers in these crashes. Speed was still the top factor for motorcyclists in multi-vehicle crashes, followed by driver inattention/ distraction. For other drivers, failure to yield the right of way and driver inattention/distraction were the top factors cited.

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Record High (since 1970)
Total Crashes	2,518	2,811	2,768	2,748	2,318	2,121	1,969	1,748	1,735	1,461	3,308 (1980)
Fatal Crashes	72	70	59	75	63	51	57	37	46	38	112 (1980)
Personal Injury Crashes	2,115	2,377	2,302	2,238	1,891	1,692	1,628	1,463	1,446	1,198	2,728 (1980)
Property Damage Crashes	331	364	407	435	364	378	284	248	243	225	537 (1976)
Persons Killed:											
Motorcyclists	70	73	62	77	66	51	58	37	50	40	121 (1980)
Non-Motorcyclists/Unknown	6	0	1	1	0	3	4	0	2	0	9 (1975)
Persons Injured:											
58 Motorcyclists*	2,381	2,678	2,590	2,500	2,152	1,853	1,817	1,617	1,605	1,357	3,359 (1980)
Non-Motorcyclists/Unknown	189	191	207	204	142	145	126	104	126	104	N/A
Licensed Operators	246,134	252,808	256,836	272,317	282,087	288,424	293,347	290,000	292,074	296,624	296,624 (1991)
Registered Motorcycles	159,345	155,502	153,851	151,449	141,261	134,590	128,956	123,308	120,081	117,492	166,151 (1981)
Rates:											
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	2.9	2.5	2.2	2.7	2.7	2.4	2.9	2.1	2.7	2.6	3.6 (1978)
Fatal Crashes Per 100 Crashes (All Vehicles)	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8 (1970)

* 1983 and 1984 injury figures include some all-terrain vehicles. Fatality figures do not.

TABLE 4.02

1991 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	19	545	144	708	21	615
Parked Motor Vehicle	1	12	26	39	1	13
Bicycle	0	11	2	13	0	9
Pedestrian	0	11	0	11	0	5
Deer	1	55	5	61	1	68
Other Animal	2	23	1	26	2	27
Fixed Object	12	124	10	146	12	140
Falling Object	0	7	3	10	0	8
Non-Collision:						
Overturn	2	294	22	318	2	339
Other	1	103	11	115	1	119
Unknown	0	13	1	14	0	14
Total	38	1,198	225	1,461	40	1,357

TABLE 4.03

1991 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	3	243	70	316	3	268
50,000 - 99,999	1	59	9	69	1	67
25,000 - 49,999	4	225	37	266	4	248
10,000 - 24,999	2	172	35	209	2	194
5,000 - 9,999	4	86	23	113	4	99
2,500 - 4,999	0	45	13	58	0	52
1,000 - 2,499	1	21	3	25	1	25
Under 1,000	23	347	35	405	25	404
Total	38	1,198	225	1,461	40	1,357

TABLE 4.04

1991 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	4	0	4	0	5
March	0	11	1	12	0	11
April	2	121	15	138	2	130
May	4	182	24	210	4	209
June	8	238	50	296	8	274
July	9	232	38	279	11	262
August	11	221	42	274	11	257
September	3	121	32	156	3	134
October	1	66	20	87	1	74
November	0	1	1	2	0	1
December	0	1	2	3	0	0
Total	38	1,198	225	1,461	40	1,357

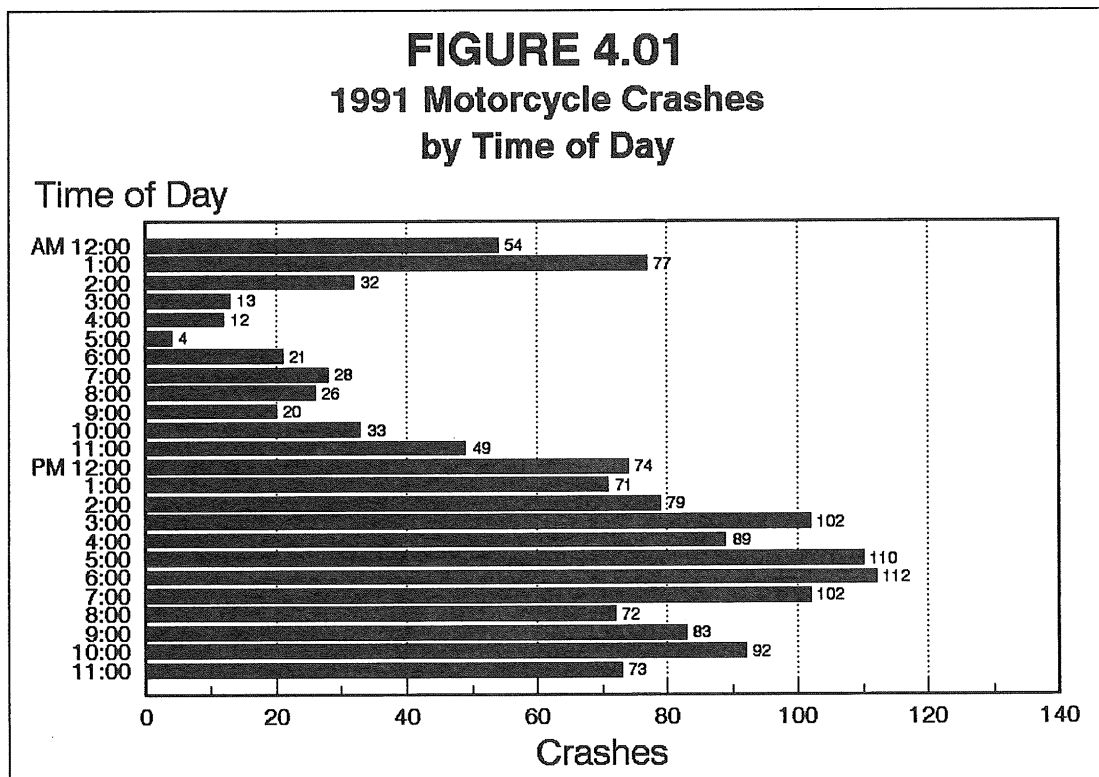


TABLE 4.05

1991 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	54	2	9	0	10	1	7	0	4	0	7	0	4	1	13	0
1:00	77	6	20	1	6	0	8	0	5	0	8	1	9	1	21	3
2:00	32	1	4	0	4	0	4	0	2	0	1	0	5	0	12	1
3:00	13	2	1	0	1	0	2	1	2	0	1	0	2	0	4	1
4:00	12	0	1	0	0	0	3	0	0	0	1	0	1	0	6	0
5:00	4	1	0	0	0	0	1	0	1	0	0	0	1	1	1	0
6:00	21	0	5	0	5	0	1	0	2	0	4	0	2	0	2	0
7:00	28	1	2	0	0	0	7	1	5	0	5	0	4	0	5	0
8:00	26	2	4	2	5	0	2	0	4	0	4	0	4	0	3	0
9:00	20	2	3	0	2	1	2	0	3	1	5	0	3	0	2	0
10:00	33	0	4	0	4	0	5	0	3	0	5	0	5	0	7	0
11:00	49	0	10	0	4	0	7	0	5	0	8	0	5	0	10	0
Noon	74	0	9	0	12	0	8	0	8	0	10	0	9	0	18	0
1:00	71	1	11	0	9	0	6	0	16	0	12	0	5	0	12	1
2:00	79	1	11	0	10	0	12	0	6	0	10	0	14	1	16	0
3:00	102	1	10	1	18	0	13	0	12	0	18	0	14	0	17	0
4:00	89	0	20	0	9	0	10	0	11	0	19	0	12	0	8	0
5:00	110	0	18	0	6	0	15	0	11	0	17	0	22	0	21	0
6:00	112	4	18	0	17	1	20	1	12	1	10	1	17	0	18	0
7:00	102	0	15	0	14	0	12	0	14	0	15	0	12	0	20	0
8:00	72	4	13	1	15	2	11	0	9	0	4	0	7	1	13	0
9:00	83	3	13	1	12	1	6	0	11	1	9	0	15	0	17	0
10:00	92	5	9	0	11	0	16	1	13	2	8	0	15	1	20	1
11:00	73	2	11	0	5	0	6	0	7	0	13	1	15	0	16	1
Not Stated	33	0	8	0	6	0	5	0	3	0	4	0	4	0	3	0
Total	1,461	38	229	6	185	6	189	4	169	5	198	3	206	6	285	8

TABLE 4.06

MOTORCYCLISTS KILLED OR INJURED BY AGE AND SEX, 1991

Age Group	Killed			Injured			Injured			Injured			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	1	1	0	0	0	0	1	1
5 - 9	0	0	0	0	0	0	2	1	3	0	1	1	2	2	4
10 - 14	0	0	0	4	0	4	3	1	5	0	1	1	7	2	10
15 - 19	6	1	7	44	10	54	121	12	133	44	5	49	209	27	236
20 - 24	6	1	7	72	8	80	167	24	191	75	9	84	314	41	355
25 - 29	9	0	9	48	6	54	94	18	112	57	4	61	199	28	227
30 - 34	7	0	7	33	4	37	69	12	81	34	11	45	136	27	163
35 - 39	7	0	7	31	6	37	59	12	71	18	5	23	108	23	131
40 - 44	2	0	2	19	4	23	33	7	40	14	2	16	66	13	79
45 - 49	0	0	0	10	1	11	22	3	25	10	0	10	42	4	46
50 - 54	0	0	0	10	1	11	9	2	11	9	2	11	28	5	33
55 - 59	1	0	1	5	0	5	10	2	12	5	0	5	20	2	22
60 - 64	0	0	0	5	0	5	6	0	6	0	0	0	11	0	11
65 - 69	0	0	0	1	0	1	2	0	2	2	0	2	5	0	5
70 & Older	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1
Not Stated	0	0	0	3	3	6	14	6	20	3	3	7	20	12	33
Total	38	2	40	285	43	328	612	101	714	271	43	315	1,168	187	1,357

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

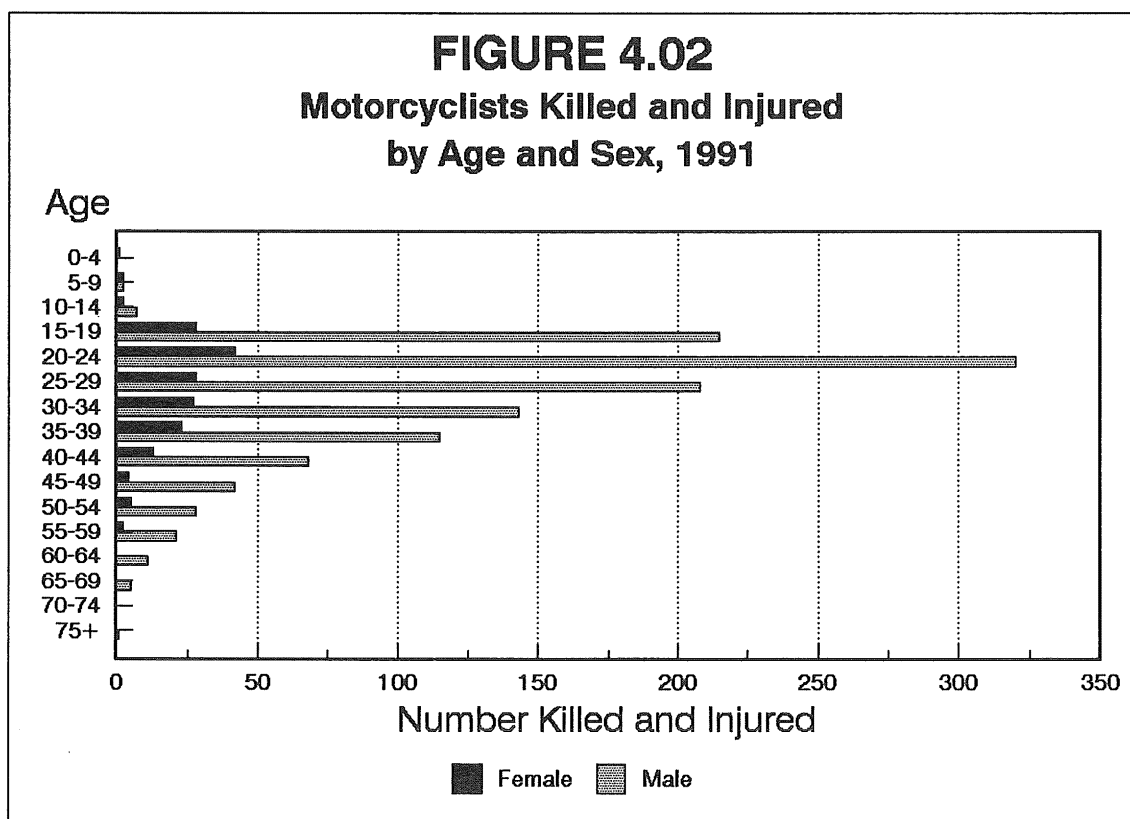


TABLE 4.07

HELMET USE BY MOTORCYCLISTS KILLED OR INJURED, 1987 - 1991

	<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								
1987	16	31.4%	33	64.7%	2	3.9%	51	100.0%
1988	12	20.7	41	70.7	5	8.6	58	100.0
1989	4	10.8	29	78.4	4	10.8	37	100.0
1990	2	4.0	42	84.0	6	12.0	50	100.0
1991	11	27.5	24	60.0	5	12.5	40	100.0
Injured								
1987	*		*		*		1,853	100.0%
1988	506	27.8	1,007	55.4	304	16.7	1,817	100.0
1989	447	27.6	886	54.8	284	17.6	1,617	100.0
1990	419	26.1	917	57.1	269	16.8	1,605	100.0
1991	310	22.8	594	43.8	453	33.4	1,357	100.0

*Data for these categories are unavailable for 1987.

TABLE 4.08

ENDORSEMENT STATUS OF MOTORCYCLE OPERATORS INVOLVED IN FATAL CRASHES, 1982 - 1991

Year	<u>Valid Endorsement*</u>		<u>Permit Only</u>		<u>Cancelled, Suspended, Revoked</u>		<u>No Endorsement</u>		<u>Total** For Year</u>	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1982	53	76.8%	2	2.9%	2	2.9%	12	17.4%	69	100.0%
1983	47	68.1	6	8.7	3	4.3	13	18.8	69	100.0
1984	50	73.5	1	1.5	3	4.4	14	20.6	68	100.0
1985	50	64.9	5	6.5	7	9.1	15	19.5	77	100.0
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

* 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, 1982 - 1991

Year	Killed	Tested	Drinking* (.01 or more)		Drunk* (.10 or more)	
			Number	Percent	Number	Percent
1982	55	39	23	59%	17	44%
1983	56	36	24	67	20	56
1984	57	45	32	71	23	51
1985	63	51	33	65	25	49
1986	56	46	30	65	25	54
1987	45	42	25	60	22	52
1988	52	45	25	56	17	38
1989	31	30	21	70	18	60
1990	43	35	25	71	20	57
1991	36	30	17	57	14	47

*Percentages are based on those motorcycle drivers tested.

TABLE 4.10

1991 MOTORCYCLE DRIVER FATALITIES'
LEVEL OF ALCOHOL CONCENTRATION BY AGE

Age	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration						
					.01- .04	.05- .09	.10- .14	.15- .19	.20- .24	.25 & Over	
15	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	
17	1	1	0	0	0	0	0	0	0	0	
18	2	2	0	0	0	0	0	0	0	0	
19	1	0	0	0	0	0	0	0	0	0	
20	3	3	0	0	0	0	0	0	0	0	
14 & Younger	0	0	0	0	0	0	0	0	0	0	
15 - 19	4	3	0 (0%)	0 (0%)	0	0	0	0	0	0	
20 - 24	6	6	2 (33%)	1 (17%)	1	0	0	0	1	0	
25 - 29	9	6	5 (83%)	4 (67%)	0	1	0	1	1	2	
30 - 34	7	6	5 (83%)	4 (67%)	0	1	2	1	1	0	
35 - 39	7	6	3 (50%)	3 (50%)	0	0	1	0	2	0	
40 - 44	2	2	1 (50%)	1 (50%)	0	0	0	1	0	0	
45 - 49	0	0	0	0	0	0	0	0	0	0	
50 - 54	0	0	0	0	0	0	0	0	0	0	
55 - 59	1	1	1 (100%)	1 (100%)	0	0	0	1	0	0	
60 & Older	0	0	0	0	0	0	0	0	0	0	
Total	36	30	17 (57%)	14 (47%)	1	2	3	4	5	2	

* Percentages are based on those motorcycle drivers tested.

TABLE 4.11

CONTRIBUTING FACTORS IN 1991 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	231	28.4 %	114	18.0 %	19	2.5 %
Driver Inattention/Distracted	89	10.9	110	17.3	158	21.1
Driver Inexperience	95	11.7	36	5.7	6	0.8
Physical Impairment	101	12.4	31	4.9	24	3.2
Improper/Unsafe Lane Use	20	2.5	21	3.3	39	5.2
Following Too Closely	8	1.0	69	10.9	26	3.5
Failure to Yield Right of Way	20	2.5	58	9.1	245	32.7
Improper Passing/Overtaking	9	1.1	40	6.3	10	1.3
Disregard for Traffic						
Control Device	5	0.6	22	3.5	25	3.3
Driving Left of Roadway						
Center--Not Passing	16	2.0	14	2.2	12	1.6
Vision Obscured	6	0.7	16	2.5	39	5.2
Improper Turn	6	0.7	8	1.3	36	4.8
Improper Parking/Starting/						
Stopping	4	0.5	9	1.4	16	2.1
Unsafe Backing	0	0.0	1	0.2	12	1.6
Impeding Traffic	0	0.0	0	0.0	3	0.4
Improper or No Signal	0	0.0	6	0.9	14	1.9
Pedestrian Violation	0	0.0	0	0.0	23	3.1
Failure to Use Lights	2	0.2	1	0.2	1	0.1
Driver on Phone or CB Radio	0	0.0	1	0.2	0	0.0
Other Human Factor	22	2.7	8	1.3	5	0.7
Vehicular Factors:						
Skidding	55	6.8	19	3.0	4	0.5
Defective Equipment	26	3.2	7	1.1	7	0.9
Other Vehicular Factors	25	3.1	3	0.5	1	0.1
Miscellaneous Factors:						
Weather Conditions	15	1.8	12	1.9	6	0.8
Other	58	7.1	29	4.6	19	2.5
Total	813	100.0 %	635	100.0 %	750	100.0 %
No Improper Driving	77		280		201	
Total Number Drivers	652		846		860	

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.

V: TRUCK CRASHES

This section summarizes data on crashes involving trucks. On the new accident report form, trucks are identified as any of the following eight types of vehicles: (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. A crash involving any of these vehicles is classified as a truck crash. Pickup trucks and vans are not counted as trucks.

Increased accuracy caused reduction in reported truck crashes

As noted earlier (p. 5), reported truck crashes for 1991 decreased almost a quarter (23%) from 1990. This decrease results from a more accurate classification of vehicle types on the new police accident report form. This was an unexpected benefit of the revision in the report form. On the form used prior to 1991, officers frequently wrote the vehicle type on the report form. A pickup truck was frequently identified as a truck instead of as a pickup. It appears that this error may have occurred in as many as one out of about seven or eight cases in which a pickup was involved. It appears that the new form greatly reduces the frequency of this occurrence since it requires officers to select a numeric code from a list of numbered categories. Also, "pickup" is listed ahead of other types of trucks on the new form--a change from the old form.

Killed and injured are not in trucks

Truck drivers are often professional drivers who may have better than average driving records. When vehicles of discrepant sizes collide, however, occupants of the larger vehicles frequently have greater protection. Only 10 of the 85 people killed in 1991 truck crashes were

truck occupants; 75% were occupants of automobiles, pickups, or vans. Among those injured, 24% were truck occupants and 71% were car, pickup, or van occupants.

Contributing factors differ slightly between truck and non-truck drivers

In the main, the contributing factors officers attribute to truck drivers are similar to those they attribute to non-truck drivers--driver inattention/distraction being cited most frequently for both. Illegal/unsafe speed and failure to yield right of way are slightly more often attributed to non-truck drivers. Also, only 19 (less than one half of one percent) of the 5,151 truck drivers were suspected of alcohol use, compared to 123 (3%) of the 4,318 non-truck drivers.

Higher proportion of crashes on snowy/icy roads and during November and December

In 1991, 27% of the crashes occurred on snowy or icy road surfaces, compared to 16% of the truck crashes reported during the 1990 calendar year. Also, 23% of all 1991 truck crashes occurred in November and December--about one-third more than the monthly average, and 16% more than the corresponding figure for 1990.

Truck crashes are most frequent during midday hours on weekdays

Truck crashes differ from crashes in general in that they appear more tied to the workday and the workweek. Only 10% of truck crashes occurred on Saturdays and Sundays, compared to 25% of all crashes. Also, they are more concentrated during the midday hours--67% of truck crashes occurred between 8:00 AM and 5:00 PM compared to 51% of all crashes.

TABLE 5.01
TRUCK CRASH SUMMARY, 1985 - 1991

	1985	1986	1987	1988	1989	1990	1991
Total Crashes	7,973	6,908	5,668	7,038	7,381	6,712	5,152
Fatal Crashes	86	85	65	70	77	70	72
Persons Killed	101	100	71	78	94	83	85
Injury Crashes	1,941	1,674	1,443	1,729	1,784	1,652	1,250
Persons Injured	2,832	2,371	2,033	2,444	2,411	2,390	1,762
Property Damage Crashes	6,424	5,149	4,160	5,239	5,520	4,990	3,830

TABLE 5.02
PERSONS KILLED OR INJURED IN 1991 TRUCK CRASHES
BY VEHICLE OCCUPIED

Vehicle Type	Killed	Injured			Total
		Severe	Moderate	Minor	
Automobile	51	116	359	538	1,013
Pickup Truck	9	15	69	76	160
Van	4	7	33	41	81
Motorhome/Camper	0	0	0	0	0
Police or Fire Department Vehicle	0	0	1	1	2
Ambulance	0	0	1	0	1
School Bus	0	0	13	8	21
Snowmobile or All Terrain Vehicle	0	0	0	0	0
Motorcycle	2	5	3	4	12
Motorscooter or Moped	0	1	1	1	3
Hit and Run Vehicle	0	0	0	1	1
Two-Axle, Six-Tire Single Unit Truck or Stepvan	3	8	46	65	119
Three or More Axle Single Unit Truck	2	6	16	22	44
Single Unit Truck with Trailer	2	2	8	17	27
Truck Tractor with No Trailer	0	0	2	4	6
Truck Tractor with Semi Trailer	3	9	92	113	214
Truck Tractor with Twin Trailers	0	0	1	3	4
Heavy Truck--Other or Unknown Type	0	0	4	8	12
Other or Unknown Vehicle Type	1	0	7	12	19
Bicycle	1	0	6	0	6
Pedestrian	7	10	5	2	17
Total	85	179	667	916	1,762

TABLE 5.03

CONTRIBUTING FACTORS IN 1991 TRUCK CRASHES

Contributing Factors	Attributed to Truck Vehicles		Attributed to Non-Truck Vehicles	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention/Distracted	739	17.1 %	620	18.3 %
Illegal/Unsafe Speed	417	9.6	411	12.2
Failure to Yield Right of Way	390	9.0	426	12.6
Improper or Unsafe Lane Use	348	8.0	252	7.5
Following Too Closely	258	6.0	189	5.6
Improper Turn	178	4.1	75	2.2
Unsafe Backing	210	4.9	22	0.7
Vision Obscured	175	4.0	90	2.7
Disregard for Traffic Control Device	96	2.2	80	2.4
Improper Passing or Overtaking	106	2.4	148	4.4
Driver Inexperience	74	1.7	89	2.6
Physical Impairment	40	0.9	93	2.7
Improper Parking, Starting, or Stopping	62	1.4	50	1.5
Improper or No Signal	24	0.6	17	0.5
Driving Left of Center (Not Passing)	55	1.3	83	2.5
Impeding Traffic	19	0.4	8	0.2
Pedestrian Violation	0	0.0	34	1.0
Failure to Use Lights	3	0.1	7	0.2
Use of Cellular Phone or CB Radio	1	0.0	7	0.2
Other Human Factors	44	1.0	37	1.1
Vehicular Factors				
Defective Brakes	102	2.4	13	0.4
Skidding	188	4.3	193	5.7
Oversize or Overweight Vehicle	31	0.7	4	0.1
Defective Tire	33	0.8	8	0.2
Defective Lights	26	0.6	6	0.2
Other Vehicular Factor	108	2.5	27	0.8
Miscellaneous Factors				
Weather	434	10.0	293	8.7
Other	167	3.9	100	3.0
Total Contributing Factors Cited	4,328	100.0 %	3,382	100.0 %
Vehicles for Which There Was				
"No Clear Contributing Factor"	1,180		1,213	
Total Number of Vehicles	5,345		4,633	

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.

TABLE 5.04

AGE OF TRUCK DRIVERS IN 1991 CRASHES

Driver Age	Truck or Truck Tractor	Truck with Semi-Trailer	Truck with Twin Trailer	Truck with Other Trailer	Total
15 - 19	61	16	0	16	93
20 - 24	284	177	0	58	519
25 - 29	388	338	2	94	822
30 - 34	390	426	1	94	911
35 - 39	245	349	4	65	663
40 - 44	190	317	7	48	562
45 - 49	139	245	15	40	439
50 - 54	112	221	6	20	359
55 - 59	69	152	9	27	257
60 - 64	55	66	2	10	133
65 & Older	46	39	0	15	100
Not Stated	150	90	0	53	293
Total	2,129	2,436	46	540	5,151*

* There were 5,345 trucks in crashes in 1991. However, 174 of these were parked vehicles. The driver could not be identified for an additional 20 of these trucks. This table tabulates the ages of drivers for the remaining 5,151 trucks where it was possible to identify a driver.

TABLE 5.05

DRIVERS IN 1991 TRUCK CRASHES
BY PHYSICAL CONDITION*

Physical Condition	Truck Driver	Other Driver
Normal	4,233	3,403
Under the Influence	9	72
Had Been Drinking	10	51
Had Been Using Drugs	0	3
Asleep	25	13
Fatigued	19	12
Ill	3	4
Other	5	14
Unknown	847	746
Total	5,151	4,318**

* As noted by police officer on accident report.

** There were 4,600 non-truck motor vehicles in 1991 truck crashes. However, 243 of them were parked vehicles, and there were 39 more for which a driver could not be identified, leaving 4,318 for which an apparent physical condition was recorded.

TABLE 5.06

1991 TRUCK CRASHES BY FIRST HARMFUL EVENT

First Harmful Event	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:						
Other Motor Vehicle	55	115	342	511	2,786	3,809
Parked Motor Vehicle	4	5	23	20	243	295
Railroad Train	1	0	4	4	12	21
Bicycle	0	0	4	0	1	5
Pedestrian	7	7	3	1	0	18
Deer	0	0	0	1	40	41
Other Animal	0	0	0	0	19	19
Fixed Object	2	4	32	32	329	399
Falling Object	0	1	5	3	43	52
Non-Collision:						
Overtake	3	5	50	48	135	241
Fire or Explosion	0	0	0	1	4	5
Submersion	0	0	0	0	0	0
Other	0	0	14	15	218	247
Total	72	137	477	636	3,830	5,152

TABLE 5.07

1991 TRUCK CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Dry	49	88	278	366	2,017	2,798
Wet	7	21	85	111	512	736
Snow or Slush	1	9	35	42	279	366
Ice or Snow Packed	12	16	68	101	847	1,044
Other	2	1	9	7	32	51
Unknown	1	2	2	9	143	157
Total	72	137	477	636	3,830	5,152

TABLE 5.08

1991 TRUCK CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	147	12	23	18	15	26	29	24
3:00 - 5:59 AM	127	13	16	22	21	30	16	9
6:00 - 8:59 AM	735	9	117	142	142	132	145	48
9:00 - 11:59 AM	1,083	23	184	217	172	209	213	65
Noon - 2:59 PM	1,227	29	218	243	243	216	190	88
3:00 - 5:59 PM	1,076	36	183	208	194	186	216	53
6:00 - 8:59 PM	396	29	59	78	58	78	62	32
9:00 - 11:59 PM	245	20	32	40	48	41	43	21
Unknown	116	2	12	24	17	23	24	14
Total	5,152	173	844	992	910	941	938	354

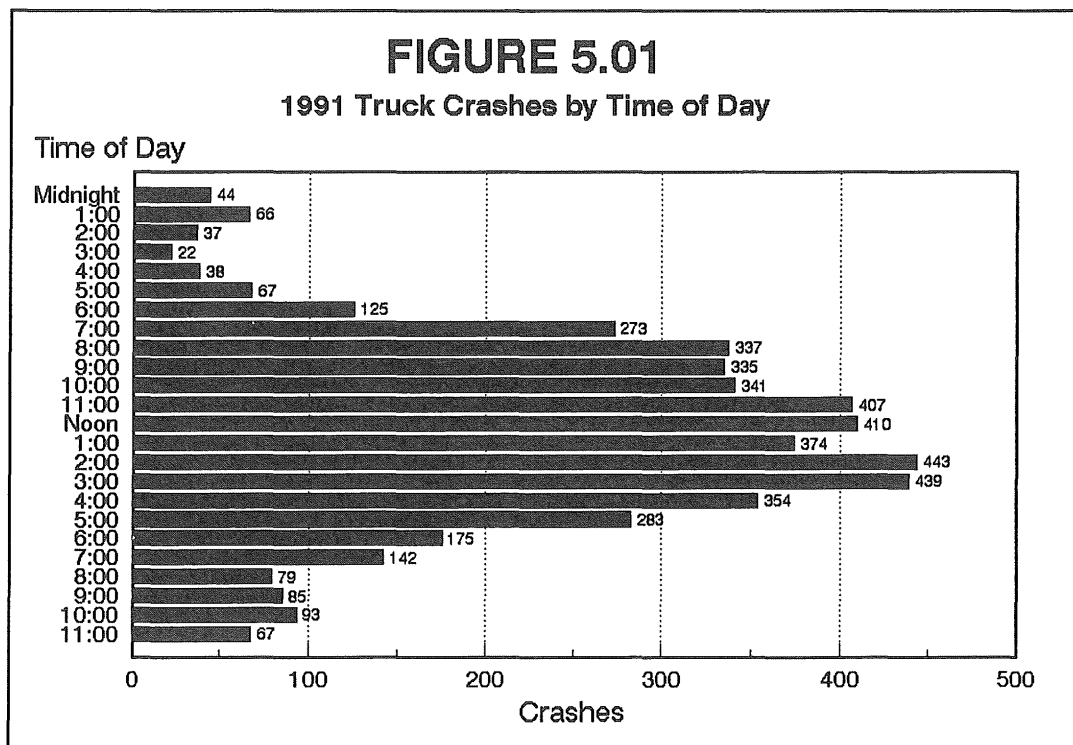


TABLE 5.09
1991 TRUCK CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	1	93	361	455	1	117
February	9	105	414	528	11	146
March	2	71	240	313	2	95
April	5	68	238	311	6	103
May	3	93	267	363	4	127
June	5	105	309	419	6	151
July	6	127	290	423	8	187
August	5	108	257	370	6	154
September	10	108	246	364	12	150
October	9	110	325	444	10	177
November	10	140	476	626	12	193
December	7	122	407	536	7	162
Total	72	1,250	3,830	5,152	85	1,762

TABLE 5.10
1991 TRUCK CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Clear	38	70	226	308	1,780	2,422
Cloudy	17	34	128	161	999	1,339
Rain	6	8	41	53	226	334
Snow	4	15	45	69	441	574
Sleet/Hail/Freezing Rain	0	3	16	17	99	135
Fog/Smog/Smoke	3	3	11	9	40	66
Blowing Sand/Dust/Snow	3	4	5	11	118	141
Severe Cross Winds	0	0	1	1	26	28
Other	0	0	0	1	5	6
Unknown	1	0	4	6	96	107
Total	72	137	477	636	3,830	5,152

TABLE 5.11

1991 TRUCK CRASHES BY POPULATION OF AREA

<u>Population of City or Township</u>	<u>Fatal Crashes</u>	<u>Severe Injury Crashes</u>	<u>Moderate Injury Crashes</u>	<u>Minor Injury Crashes</u>	<u>Property Damage Crashes</u>	<u>Total Crashes</u>
100,000 & Over	6	16	71	122	795	1,010
50,000 - 99,999	2	8	19	33	226	288
25,000 - 49,999	7	19	60	91	589	766
10,000 - 24,999	5	15	64	76	560	720
5,000 - 9,999	5	6	29	45	303	388
2,500 - 4,999	1	4	18	29	212	264
1,000 - 2,499	4	2	17	26	112	161
Under 1,000	42	67	198	210	1,016	1,533
Unknown	0	0	1	4	17	22
Total	72	137	477	636	3,830	5,152

TABLE 5.12

1991 TRUCK CRASHES BY TYPE OF ROADWAY

<u>Roadway Type</u>	<u>Fatal Crashes</u>	<u>Severe Injury Crashes</u>	<u>Moderate Injury Crashes</u>	<u>Minor Injury Crashes</u>	<u>Property Damage Crashes</u>	<u>Total Crashes</u>
Interstate Highway	7	7	72	128	823	1,037
US Trunk Highway	25	28	101	143	617	914
State Trunk Highway	24	39	123	164	825	1,175
County State-Aid Highway	11	40	92	111	627	881
Municipal State-Aid Street	3	12	42	44	447	548
County Road	0	2	12	6	44	64
Township Road	1	0	10	5	34	50
Municipal Street	1	8	21	28	363	421
Other Road	0	1	4	7	50	62
Total	72	137	477	636	3,830	5,152

VI: PEDESTRIAN CRASHES

Crashes reported in this section deal 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.

Crashes, injuries continue downward trend

There were 1,338 crashes in 1991 where a pedestrian was injured. This is a 15% decrease from the average of the prior five years. The number of injuries in these crashes was down 14%, to 1,339. There were 61 pedestrians killed; this is 4 fewer than in 1990.

Half of those injured under 30

More than half of the injuries and fatalities were to pedestrians under the age of 30. In the ten years from 1982 to 1991, pedestrian fatalities were highest for those under 30, then decreased for ages 30 - 74 and increased again after age 75. The 5 - 9 year old age group had the highest number of injuries in 1991.

Elderly pedestrians more likely to be killed

Pedestrians over age 65 made up only 7% of the injuries but almost one-third of the fatalities. For all pedestrians, 44% of the injuries were minor, 34% were moderate, and 22% were severe.

November highest month

Pedestrian crashes were evenly distributed by month. November had the highest number of crashes and injuries, January had the fewest crashes and injuries, and July had the most fatalities (9).

Crashes high on weekends after bars close

The hour from 1 - 2 AM was the hour with the highest number of fatal crashes. Saturday and Sunday show an unexpectedly high number of crashes from 1 - 2 AM (after the bars close). However, the afternoon and early evening hours from 2-7 PM accounted for 43% of the crashes.

Rural areas overrepresented in fatalities

There were almost twice as many fatalities in areas of under 1,000 population as there were in areas of 100,000 or more. About half the crashes and injuries occurred in areas of 100,000 or more population. Only 8% of crashes and 7% of injuries occurred in areas of under 1,000 population.

Vehicles going straight prior to crash

More than 56% of motor vehicles in pedestrian crashes were going straight prior to the crash. The second most common pre-crash maneuver involved a vehicle making a left turn prior to striking the pedestrian.

Pedestrians killed outside crosswalk

Of the pedestrians killed, 26% were crossing the road with no crosswalk and no signal. This was true of 27% of the injured pedestrians. The pedestrian action that was next most likely to be fatal was walking in the road with traffic. For injured pedestrians, the second most common action was crossing with the signal.

Driver inattention/distraction plays role

Officers investigating pedestrian crashes cited driver inattention/distraction for drivers more than any other factor. Drivers were also frequently cited for failure to yield the right of way and obscured vision. Officers found no improper driving for 27% of the drivers.

Alcohol-positive pedestrians over .10

Of the 61 pedestrians who were killed, 32 (52%) were tested for alcohol concentration. Of these, 12 (38%) tested positive for alcohol. All but one of these were at or above .10.

Older pedestrians non-drinking

All of the fatally injured pedestrians who had been drinking were under the age of 40. Half of the fatally injured pedestrians who had been drinking were killed between midnight and 3 AM.

TABLE 6.01

PEDESTRIAN CRASH SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Pedestrian Crashes*	1,374	1,516	1,690	1,845	1,610	1,556	1,575	1,591	1,512	1,338
Pedestrians Killed	76	62	55	65	71	62	69	67	65	61
Pedestrians Injured	1,438	1,625	1,682	1,837	1,570	1,533	1,566	1,578	1,499	1,339

*Prior to 1984 a crash was defined as a pedestrian crash only if a 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.

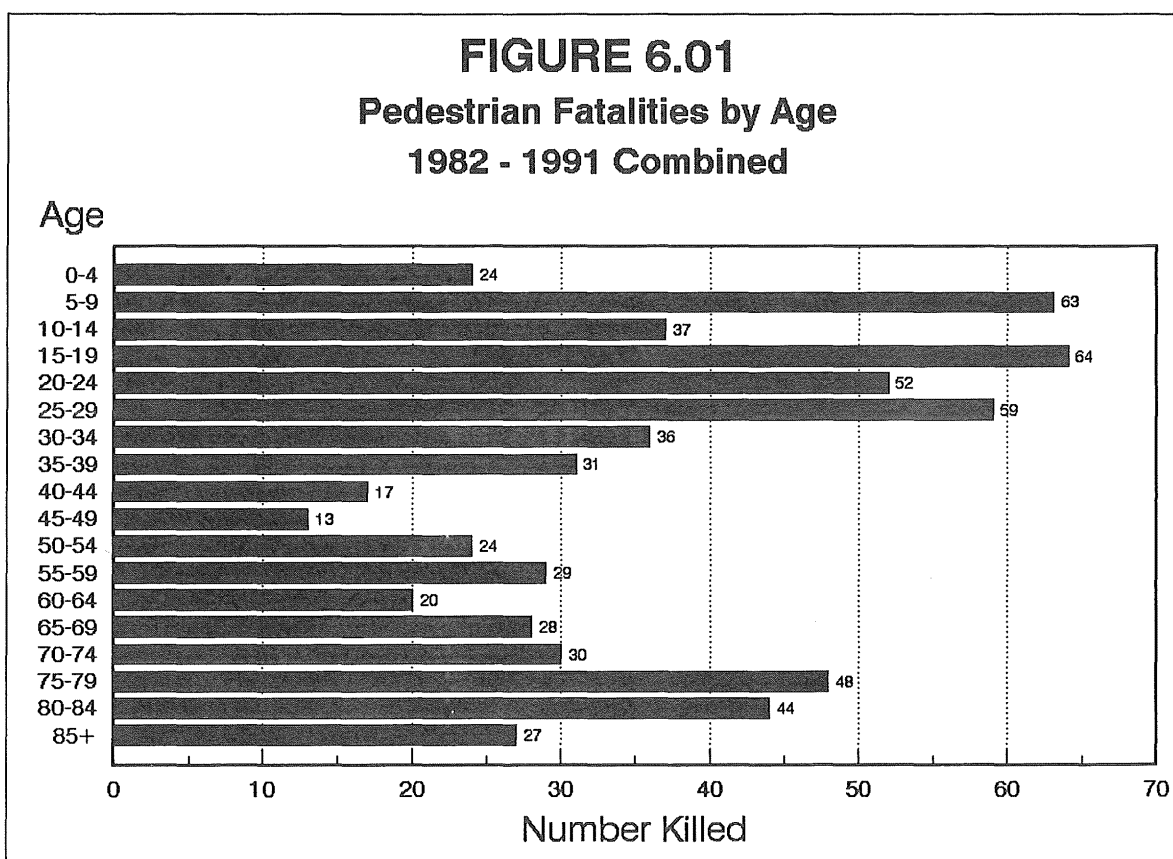


TABLE 6.02

PEDESTRIANS KILLED OR INJURED BY AGE AND SEX, 1991

Age Group	Killed			Injured									Total		
	M	F	Total	Severe			Moderate			Minor			M	F	Total*
0 - 4	2	1	3	2	1	3	6	2	8	1	2	3	9	5	14**
5 - 9	4	2	6	21	15	36	31	26	57	53	29	86	105	70	179
10 - 14	1	1	2	17	22	39	30	23	53	27	23	50	74	68	142
15 - 19	3	3	6	13	18	31	24	21	45	29	27	57	66	66	133
20 - 24	6	0	6	12	7	19	22	21	43	26	11	38	60	39	100
25 - 29	5	3	8	18	9	27	22	11	33	25	29	55	65	49	115
30 - 34	2	1	3	16	10	26	16	13	29	37	17	55	69	40	110
35 - 39	1	3	4	9	7	16	17	5	22	22	11	33	48	23	71
40 - 44	1	1	2	5	6	12	14	11	25	13	13	28	32	30	65
45 - 49	0	0	0	6	1	8	13	10	23	11	6	17	30	17	48
50 - 54	0	0	0	3	2	5	5	3	8	8	7	15	16	12	28
55 - 59	0	0	0	5	4	9	2	6	8	8	10	18	15	20	35
60 - 64	0	0	0	5	6	11	3	3	6	6	5	11	14	14	28
65 - 69	0	3	3	5	5	10	3	7	10	4	0	4	12	12	24
70 - 74	1	1	2	1	3	4	1	2	3	4	0	4	6	5	11
75 - 79	3	2	5	2	7	9	2	5	7	2	7	9	6	19	25
80 - 84	4	1	5	0	6	6	0	5	5	1	4	5	1	15	16
85 & Older	3	2	5	3	2	5	3	3	6	2	1	3	8	6	14
Not Stated	0	1	1	11	9	21	37	26	64	51	35	96	99	70	181
Total	36	25	61	154	140	297	251	203	455	330	237	587	735	580	1,339

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

** Pedestrian injuries aged 0 - 4 are underreported due to a problem with the new computer system in 1991. Several of these injuries are reported as age unknown.

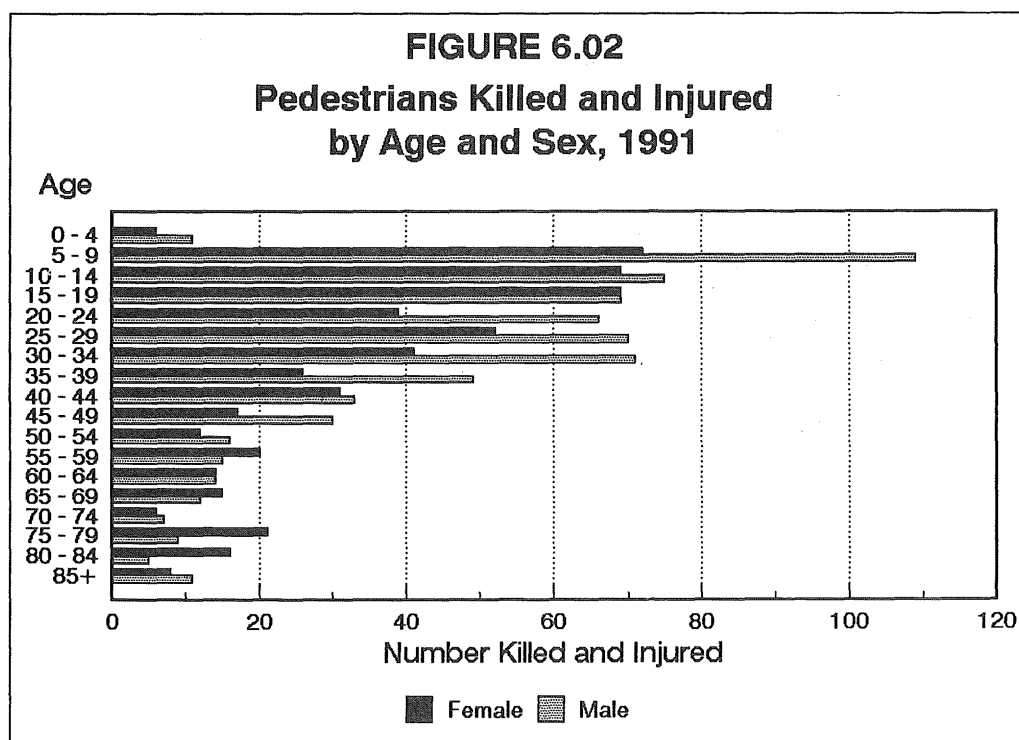


TABLE 6.03

1991 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
January	0	97	97	0	99
February	5	104	109	5	109
March	3	95	98	3	102
April	5	103	108	5	106
May	5	109	114	5	110
June	4	107	111	4	113
July	9	96	105	9	102
August	7	100	107	7	106
September	5	119	124	5	126
October	7	112	119	7	118
November	3	127	130	3	136
December	8	108	116	8	112
Total	61	1,277	1,338	61	1,339

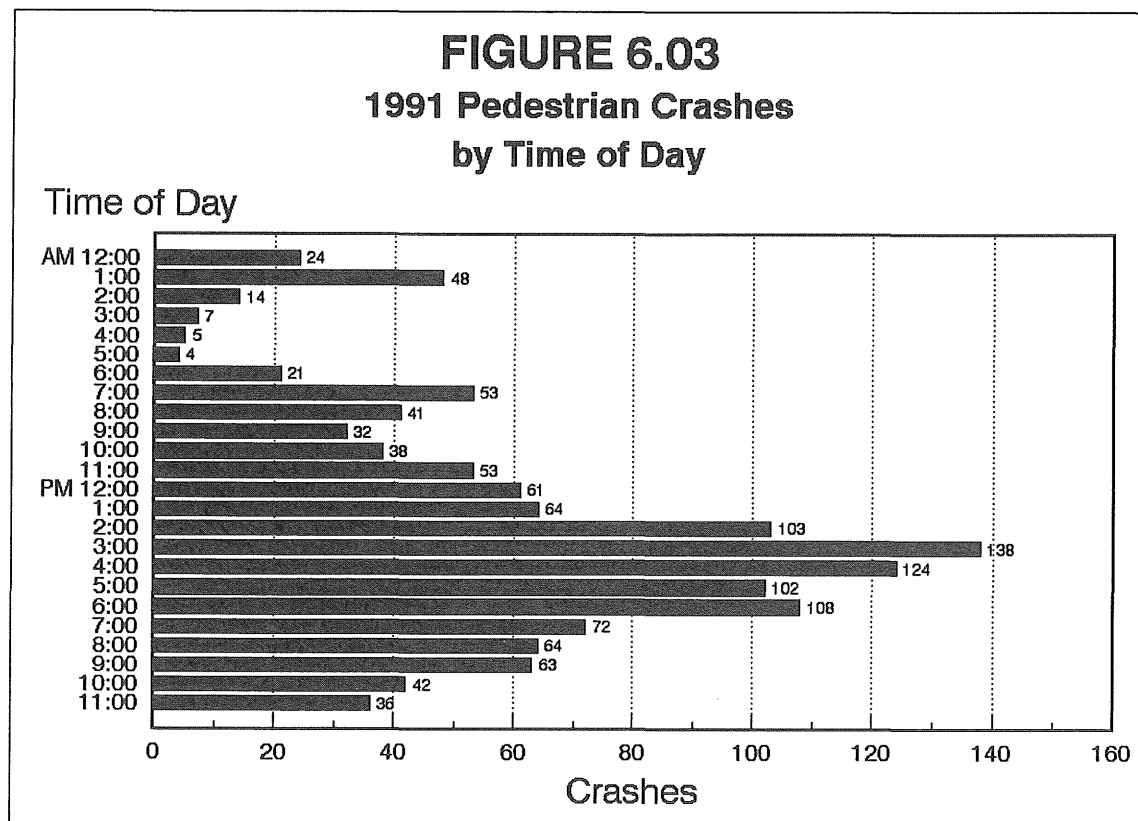


TABLE 6.04

1991 PEDESTRIAN CRASHES BY TIME AND DAY

Hour Beginning	Fatal Crashes	Total Crashes	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight	0	24	6	1	1	3	2	3	8
1:00 AM	7	48	10	1	4	5	3	4	21
2:00 AM	2	14	6	0	0	0	4	1	3
3:00 AM	0	7	3	0	1	0	0	1	2
4:00 AM	0	5	2	0	0	1	0	1	1
5:00 AM	2	4	0	0	1	1	0	1	1
6:00 AM	0	21	1	3	2	6	3	5	1
7:00 AM	0	53	0	7	9	12	6	14	5
8:00 AM	3	41	0	9	4	5	12	7	4
9:00 AM	2	32	1	5	2	10	2	9	3
10:00 AM	1	38	2	3	8	6	8	6	5
11:00 AM	1	53	7	5	12	4	8	12	5
Noon	2	61	7	5	15	8	5	10	11
1:00 PM	1	64	7	13	10	13	12	5	4
2:00 PM	1	103	7	22	17	15	16	14	12
3:00 PM	2	138	5	17	30	22	20	25	19
4:00 PM	5	124	4	23	21	15	26	23	12
5:00 PM	5	102	9	20	15	17	16	11	14
6:00 PM	6	108	7	20	17	14	17	18	15
7:00 PM	4	72	6	7	9	15	10	14	11
8:00 PM	4	64	5	12	9	8	8	12	10
9:00 PM	5	63	3	7	8	5	16	13	11
10:00 PM	5	42	3	2	7	4	7	10	9
11:00 PM	3	36	2	3	1	9	5	9	7
Unknown	0	21	1	4	3	2	4	2	5
Total	61	1,338	104	189	206	200	210	230	199

TABLE 6.05

1991 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	10	644	654	10	670
50,000 - 99,999	2	66	68	2	72
25,000 - 49,999	9	170	179	9	175
10,000 - 24,999	17	162	179	17	168
5,000 - 9,999	4	76	80	4	81
2,500 - 4,999	0	43	43	0	47
1,000 - 2,499	0	26	26	0	27
Under 1,000	19	85	104	19	93
Unknown	0	5	5	0	6
Total	61	1,277	1,338	61	1,339

TABLE 6.06

PRIOR ACTION OF VEHICLES IN 1991 PEDESTRIAN CRASHES

Action	Vehicles in Fatal Crashes	Vehicles in Injury Crashes	Vehicles in Total Crashes*
Going Straight	49	750	799
Wrong Way Opposing Traffic	0	11	11
Turning Right on Red	0	28	28
Turning Left on Red	0	1	1
Turning Right	1	85	86
Turning Left	1	158	159
Making U Turn	0	3	3
Starting From Parked	0	27	27
Starting in Traffic	0	26	26
Slowing in Traffic	1	17	18
Parking	0	4	4
Avoiding Object in Road	6	31	37
Changing Lanes	0	13	13
Passing	0	12	12
Merging	0	1	1
Backing	3	49	52
All Others	6	62	68
Unknown	5	65	70
Total	72	1,343	1,415

* 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 1991

<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)	16	26.2%	367	27.4%
Crossing Against Signal	1	1.6	84	6.3
Crossing With Signal	1	1.6	187	14.0
Crossing In Crosswalk (No Signal)	3	4.9	99	7.4
Walking In Road With Traffic	10	16.4	129	9.6
Walking In Road Against Traffic	4	6.6	72	5.4
Standing In Road	5	8.2	60	4.5
Emerging From Front/Behind				
Parked Car	1	1.6	73	5.5
Child Getting On/Off School Bus	1	1.6	2	0.1
Pushing/Working On Vehicle	2	3.3	6	0.4
Working In Road	0	0.0	14	1.0
Getting On/Off Vehicle	1	1.6	12	0.9
Playing In Road	1	1.6	20	1.5
Not In Road	4	6.6	32	2.4
Other Pedestrian Action	11	18.0	182	13.6
Total	61	100.0%	1,339	100.0%

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

TABLE 6.08

CONTRIBUTING FACTORS IN 1991 PEDESTRIAN CRASHES

Contributing Factors	Attributed to Pedestrians		Attributed to Motor Vehicle Drivers	
	Number	Percent	Number	Percent
Human factors				
Pedestrian Violation	2,272	80.9%	0	0.0%
Physical Impairment	50	1.8	34	3.0
Driver Inattention/Distracted	0	0.0	266	23.8
Failure to Yield Right of Way	0	0.0	244	21.8
Vision Obscured	0	0.0	82	7.3
Illegal or Unsafe Speed	0	0.0	74	6.6
Improper/Unsafe Lane Use	0	0.0	38	3.4
Driver Inexperience	0	0.0	36	3.2
Unsafe Backing	0	0.0	33	2.9
Disregard for Traffic Control Device	0	0.0	27	2.4
Improper Turn	0	0.0	27	2.4
Improper Parking/Stopping/Starting	0	0.0	25	2.2
Driving Left of Roadway				
Center - Not Passing	0	0.0	15	1.3
Improper Passing	0	0.0	13	1.2
Following Too Closely	0	0.0	6	0.5
Failure to Use Lights	0	0.0	6	0.5
Improper or No Signal	0	0.0	2	0.2
Impeding Traffic	0	0.0	2	0.2
Other Human Factors	0	0.0	32	2.9
Vehicular Factors				
Defective Equipment	0	0.0	13	1.2
Skidding	0	0.0	32	2.9
Other Vehicular Factors	0	0.0	6	0.5
Miscellaneous Factors				
Weather Conditions	13	0.5	52	4.6
Other	473	16.8	55	4.9
Total Contributing Factors Cited	2,808	100.0%	1,120	100.0%
No Improper Actions:	0		376	
Total Number of Pedestrians/Drivers	1,404		1,415	

Zero, one, or two contributing factors may be attributed to a single driver or pedestrian. This may cause the sum of the factors cited to differ from the number of drivers or pedestrians. 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, 1982 - 1991**

Year	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1982	76	40	18 (45%)	17 (43%)
1983	62	38	21 (55%)	18 (47%)
1984	55	38	20 (53%)	18 (47%)
1985	65	37	15 (41%)	10 (27%)
1986	71	49	28 (57%)	27 (55%)
1987	62	42	19 (45%)	17 (40%)
1988	69	47	22 (47%)	20 (43%)
1989	67	42	16 (38%)	12 (29%)
1990	65	41	16 (39%)	15 (37%)
1991	61	32	12 (38%)	11 (34%)

* 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 persons 16 years of age or older who die within four hours as a result of a motor vehicle crash.)

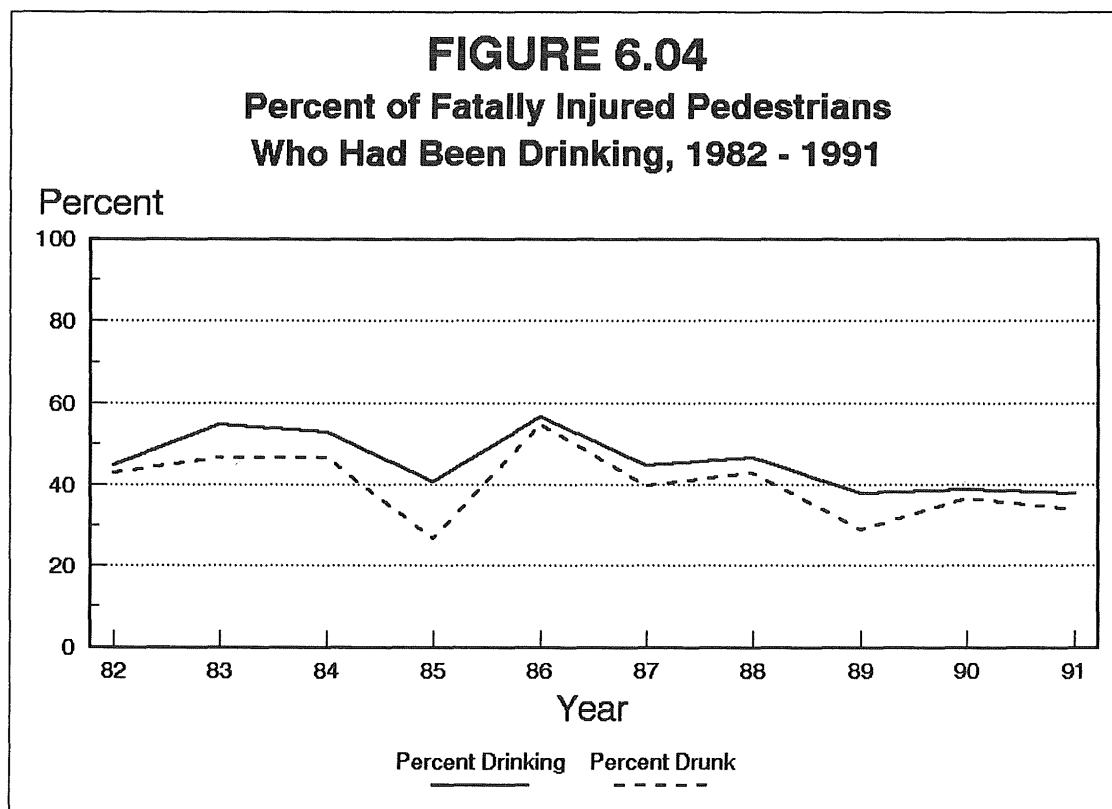


TABLE 6.10

**1991 PEDESTRIAN FATALITIES'
LEVEL OF ALCOHOL CONCENTRATION BY AGE**

Age Group	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
14 & Younger	11	3	0	0
15 - 19	6	4	1	0
20 - 24	6	6	4	4
25 - 29	8	4	3	3
30 - 34	3	2	2	2
35 - 39	4	3	2	2
40 - 44	2	1	0	0
45 - 49	0	0	0	0
50 - 54	0	0	0	0
55 - 59	0	0	0	0
60 - 64	0	0	0	0
65 - 69	3	1	0	0
70 - 74	2	1	0	0
75 - 79	5	3	0	0
80 - 84	5	3	0	0
85 & Older	5	1	0	0
Unknown	1	0	0	0
Total	61	32	12	11

TABLE 6.11

**1991 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL
CONCENTRATION BY TIME OF DAY**

Time of Day	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Midnight - 2:59 AM	9	7	6	6
3:00 - 5:59 AM	2	0	0	0
6:00 - 8:59 AM	3	0	0	0
9:00 - 11:59 AM	4	2	0	0
Noon - 2:59 PM	4	2	0	0
3:00 - 5:59 PM	12	4	1	1
6:00 - 8:59 PM	14	9	2	1
9:00 - 11:59 PM	13	8	3	3
Total	61	32	12	11

VII: BICYCLE CRASHES

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

Data collected before 1984 counted bicycles only if they were the first "object" struck by the motor vehicle. Beginning in 1984, all motor vehicle crashes that involved collision with a bicycle were reported as bicycle crashes. The number of bicycle crashes reported here rose slightly as a result.

Bicycle crashes continue to decrease

For the fourth year in a row, the number of crashes involving bicycles has fallen. There was a 15% decrease from the prior five-year average; part of this decrease may be attributed to the change to the new accident report form. There were 1,208 crashes involving bicycles in 1991.

Bicyclist fatalities tie with 25-year low

There were 8 bicyclists killed in crashes in 1991. This is the same as last year, which was the lowest number in the last 25 years. The record low was in 1964 when 4 bicyclists were killed. Only two bicyclists under the age of 20 were killed. Injuries were down 15% from the prior five-year average.

Most crashes May through September

The months from May through September accounted for 82% of the crashes and injuries involving bikes. July had the most crashes (271) and 4 of the 8 fatalities.

Most crashes during daylight hours

Over 70% of the crashes occurred between the hours of noon and 9 PM. The hours from 3 to 6 PM accounted for just over one-third of the crashes. The single hour with the most crashes

was from 5 to 6 PM. Wednesday had the most crashes (223), while Sunday accounted for only 10% of the crashes.

10 - 14 year olds most often injured

The age group from 10-14 years old made up 29% of the injuries. Seventy percent of the persons injured were under age 25. Equal numbers of males and females were killed, but males made up 72% of the injuries. More males than females were injured in every age group. Of the injuries, 49% were classified as moderate, 37% as minor, and 13% as severe.

Bicyclists' inexperience may contribute to crashes

The contributing factor cited most often for bicyclists was driver inexperience. The second most cited for bicyclists--and the most common for other drivers--was driver inattention/distraction and then failure to yield the right of way. Officers cited "no improper driving" for 32% of motor vehicle drivers compared with only 13% of the bicyclists.

Bicyclists hit while crossing roads

Almost 39% of bicyclists in crashes were crossing the road prior to being struck by a motor vehicle. Another 27% were riding with traffic (as do most bicyclists) prior to being struck, and 11% were illegally riding against traffic.. Six of the eight bicyclists killed were riding with traffic prior to the crash. Fatalities were more likely to be riding with traffic; injuries, crossing the road.

Rural areas overrepresented in fatal crashes

Areas of under 1,000 population had only 8% of the crashes and injuries, but 5 of the 8 fatalities. Areas of over 100,000 population, on the other hand, had 38% of the crashes and injuries but only two of the fatalities.

TABLE 7.01
BICYCLE CRASH SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Bicycle Crashes	1,130	1,220	1,282	1,375	1,367	1,574	1,448	1,392	1,357	1,208
Bicyclists Killed	12	14	15	10	12	15	16	10	8	8
Bicyclists Injured	1,105	1,194	1,258	1,342	1,309	1,452	1,401	1,353	1,327	1,157

TABLE 7.02
1991 BICYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Bicyclists Killed	Bicyclists Injured
January	1	2	1	4	1	2
February	0	12	0	12	0	12
March	0	20	3	23	0	20
April	1	85	5	91	1	85
May	0	161	8	169	0	162
June	1	205	21	227	1	216
July	4	255	12	271	4	268
August	0	171	12	183	0	173
September	1	132	6	139	1	132
October	0	74	3	77	0	74
November	0	8	0	8	0	9
December	0	4	0	4	0	4
Total	8	1,129	71	1,208	8	1,157

TABLE 7.03

1991 BICYCLE CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	18	4	2	1	3	2	3	3
3:00 - 5:59 AM	7	1	2	0	2	2	0	0
6:00 - 8:59 AM	79	1	14	16	23	10	13	2
9:00 - 11:59 AM	121	12	23	16	13	18	20	19
Noon - 2:59 PM	220	30	26	25	39	41	34	25
3:00 - 5:59 PM	411	37	69	70	75	61	65	34
6:00 - 8:59 PM	246	21	44	30	50	40	32	29
9:00 - 11:59 PM	86	9	12	11	16	9	18	11
Unknown	20	1	4	4	2	0	5	4
Total	1,208	116	196	173	223	183	190	127

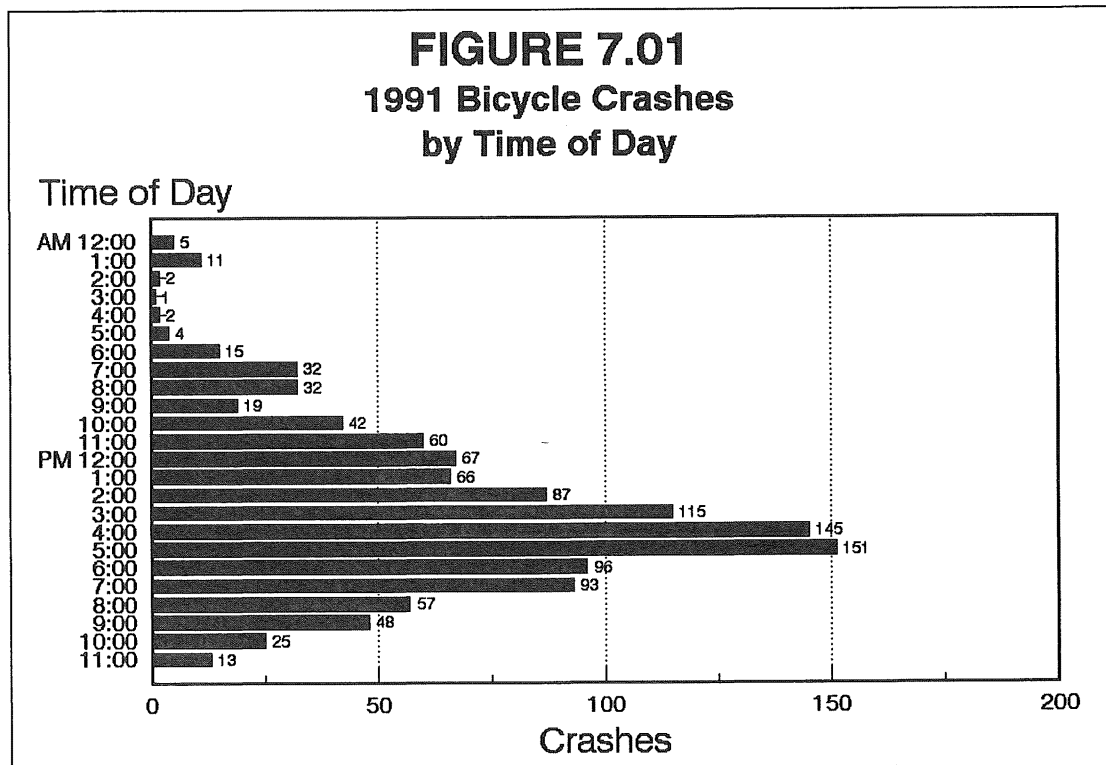


TABLE 7.04

BICYCLISTS KILLED OR INJURED BY AGE AND SEX, 1991

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	2	1	3	1	4	5	4	1	5	7	6	13
5 - 9	0	1	1	25	6	31	73	23	96	47	20	67	145	49	194
10 - 14	1	0	1	22	13	35	115	45	160	98	39	137	235	97	332
15 - 19	0	0	0	20	4	24	56	26	82	46	15	61	122	45	167
20 - 24	0	1	1	13	2	15	41	14	56	25	13	38	79	29	109
25 - 29	1	0	1	9	4	13	30	15	45	13	7	20	52	26	78
30 - 34	0	1	1	5	6	11	22	8	31	15	4	20	42	18	62
35 - 39	0	1	1	2	4	6	19	4	23	17	3	20	38	11	49
40 - 44	0	0	0	1	0	1	5	1	6	10	1	11	16	2	18
45 - 49	0	0	0	0	3	3	8	6	14	6	0	6	14	9	23
50 - 54	1	0	1	2	0	2	5	1	6	1	0	1	8	1	9
55 - 59	1	0	1	3	0	3	2	0	2	1	0	1	6	0	6
60 - 64	0	0	0	0	1	1	0	0	0	0	1	1	0	2	2
65 - 69	0	0	0	0	0	0	5	0	5	1	1	2	6	1	7
70 - 74	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2
75 & Older	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
Not Stated	0	0	0	3	1	4	26	13	39	28	10	42	57	24	85
Total	4	4	8	108	45	153	410	160	572	312	115	432	830	320	1,157

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

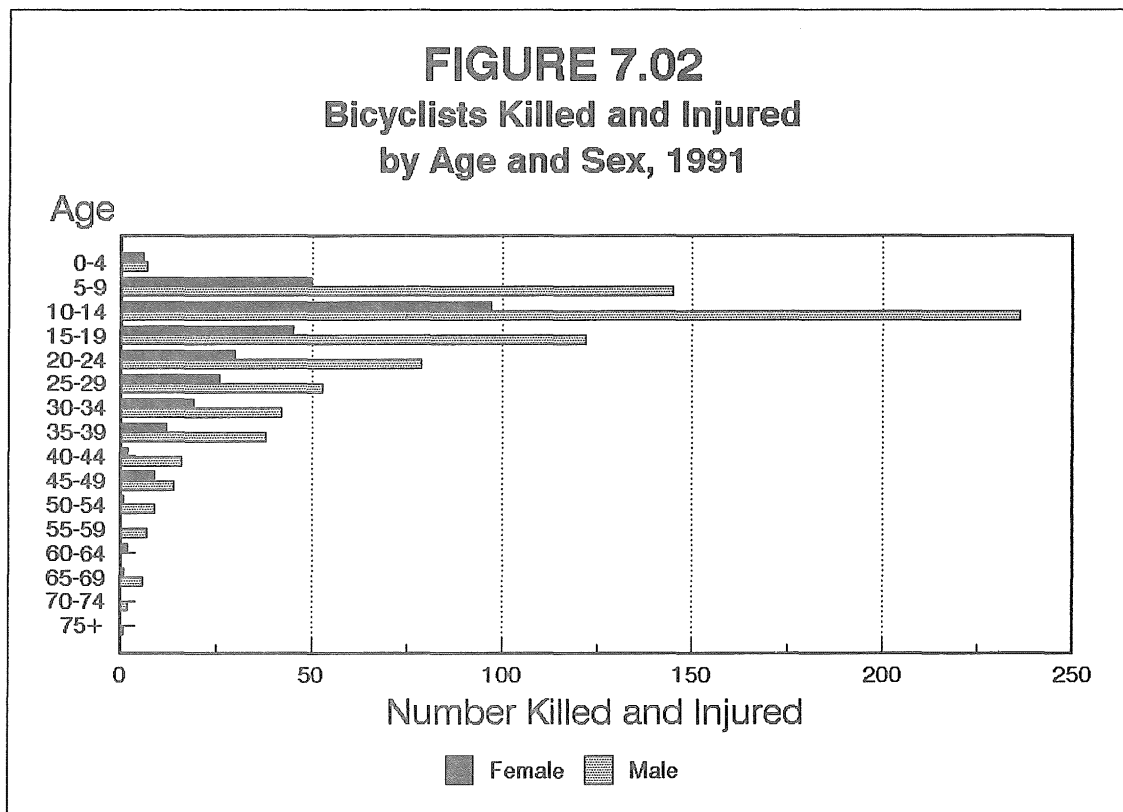


TABLE 7.05

CONTRIBUTING FACTORS IN 1991 BICYCLE CRASHES

Contributing Factors	Attributed to Bicyclists		Attributed to Motor Vehicle Drivers	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention/Distracted	210	15.7%	239	29.6%
Failure to Yield Right of Way	202	15.1	225	27.9
Improper/Unsafe Lane Use	96	7.2	40	5.0
Disregard for Traffic Control Device	88	6.6	26	3.2
Driver Inexperience	252	18.9	16	2.0
Vision Obscured	31	2.3	80	9.9
Improper Turn	26	1.9	18	2.2
Driving Left of Roadway				
Center--Not Passing	30	2.2	10	1.2
Illegal/Unsafe Speed	24	1.8	31	3.8
Physical Impairment	10	0.7	8	1.0
Improper Passing/Overtaking	6	0.4	15	1.9
Impeding Traffic	6	0.4	1	0.1
Following Too Closely	5	0.4	8	1.0
Improper Parking/Starting/Stopping	9	0.7	20	2.5
Improper or No Signal	5	0.4	3	0.4
Unsafe Backing	0	0.0	5	0.6
Failure to Use Lights	21	1.6	3	0.4
Using Phone/CB/Radio	3	0.2	0	0.0
Other Human Factors	29	2.2	10	1.2
Vehicular Factors				
Defective Equipment	32	2.4	2	0.2
Skidding	1	0.1	2	0.2
Other Vehicular Factors	1	0.1	0	0.0
Miscellaneous Factors				
Weather Conditions	9	0.7	12	1.5
Other	238	17.8	33	4.1
Total	1,334	100.0%	807	100.0%
No Improper Driving	161		392	
Total Number of Bicyclists/Drivers	1,229		1,226	

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.

TABLE 7.06

PRIOR ACTION OF BICYCLISTS INVOLVED IN 1991 CRASHES

Prior Action	Bicyclists In Fatal Crashes	Bicyclists In Injury Crashes	Bicyclists In Property Damage Crashes	Bicyclists In All Crashes*
Riding With Traffic	6	305	20	331
Riding Against Traffic	1	123	7	131
Making Left Turn	0	40	2	42
Making Right Turn	0	15	1	16
Making U Turn	0	10	0	10
Riding Across Road	0	457	22	479
Slowing, Starting, Stopping	0	20	1	21
Other/Unknown	1	179	19	199
Total	8	1,149	72	1,229

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

TABLE 7.07

1991 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	2	426	32	460	2	439
50,000 - 99,999	0	46	1	47	0	46
25,000 - 49,999	0	221	17	238	0	226
10,000 - 24,999	1	185	8	194	1	191
5,000 - 9,999	0	95	5	100	0	98
2,500 - 4,999	0	49	4	53	0	49
1,000 - 2,499	0	21	2	23	0	21
Under 1,000	5	86	2	93	5	87
Total	8	1,129	71	1,208	8	1,157

VIII: SCHOOL BUS CRASHES

School bus travel remains remarkably safe in Minnesota. For the past ten years, the number of fatalities in school bus crashes has ranged from 2 to 8 per year. Nearly 80% of the school bus crashes involved no injuries. However, because buses may carry many passengers, a small number of crashes may involve a large number of injuries.

Number of crashes increased

The total number of crashes involving school buses increased to 857 in 1991. This is a 27% increase both from last year and the prior five-year average. Property damage crashes were up almost 30%. There were two fewer fatalities than last year, but the number of injuries is up 16%. There were 4 crashes involving a fatality, 181 crashes involving injury, and 672 crashes that were property-damage-only crashes.

Fatalities not on bus

There were four fatalities in 1991. Three of these were drivers of other vehicles that collided with the school bus. The other fatality was a child crossing in front of the bus after disembarking who was struck by the bus.

Injuries split between bus and other vehicles

Of the 387 people killed and injured in school bus crashes, 49% were on the bus and 48% were in other vehicles that collided with the bus. Only 3% of the injuries and fatalities were sustained by pedestrians. More of the injuries were sustained by females (55%) than males (45%). Over half of the injuries were to those under the age of 19; 68% of the people injured were under age 30. On the bus, 10-14 year-olds had 43% of the injuries; in other vehicles, 15-29 year-olds had 45% of the injuries.

Most injuries minor

Of the injuries sustained in school bus crashes, 57% were minor and only 9% were severe. Two of the four fatalities occurred in cities or townships of under 1,000 population. Injuries were split with 33% in areas of 100,000 or more and 28% in areas of under 1,000.

Most crashes involve more than one vehicle

A full 84% of the crashes and 81% of the injuries involved collisions with another motor vehicle. Another 9% involved collision with a parked car. In contrast, only 1% of the crashes involved collision with a pedestrian.

Before/after school hours most crash involved

Not surprisingly, most crashes revolved around the school day. Ninety-five percent of all school bus crashes and 94% of the injuries occurred between 6 AM and 6 PM. Thirty-three percent of the crashes occurred in the before-school hours of 6 - 9 AM.

November has most crashes

November, with its surprise early snow, had the highest number of crashes, accounting for 16% of the total. November and December combined accounted for 30% of the crashes. The three summer months of June, July and August combined (when most schools are not in session) accounted for only 5% of the crashes. December had the highest number of injuries (62).

Driver inattention top factor

The contributing factor cited most often for both school bus drivers and other drivers in these crashes is driver inattention/distraction. School bus drivers were also likely to be cited for failure to yield the right of way and following too closely. Drivers of non-school bus vehicles were slightly more likely to have contributed to the crash by illegal or unsafe speed than were school bus drivers. Twenty-nine percent of school bus drivers were shown to have no contributing factors; this was true of 22% of the other drivers in these crashes.

Crash sites don't have traffic control devices

The most common school bus crashes to occurred where there were no traffic control devices. This was true for 30% of the crashes and 44% of the injuries. One fatality and seven injuries occurred when a school bus stop arm was in use.

TABLE 8.01
SCHOOL BUS CRASH SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Crashes	729	687	675	723	662	530	679	828	674	857
Fatal Crashes	2	7	3	4	3	6	3	4	5	4
Persons Killed	2	8	3	4	3	6	3	4	6	4
Injury Crashes	160	161	176	191	160	141	175	167	149	181
Persons Injured	282	321	340	366	265	244	359	281	329	383
Property Damage Crashes	567	519	496	528	499	383	501	657	520	672
School Buses in Crashes	737	694	686	729	667	534	684	834	680	867

TABLE 8.02
AGE AND SEX OF PERSONS KILLED AND INJURED*
IN 1991 SCHOOL BUS CRASHES

Age Group	Total**	In Bus	Pedestrian	In Other Vehicle	Male	Female
0 - 4	6	3	0	3	2	4
5 - 9	57	45	5	7	26	31
10 - 14	91	81	2	8	37	54
15 - 19	55	18	2	35	24	31
20 - 24	27	1	0	26	12	15
25 - 29	27	4	1	22	10	17
30 - 34	18	6	0	12	10	8
35 - 39	21	4	0	17	8	13
40 - 44	14	2	0	12	6	8
45 - 54	18	5	1	12	12	6
55 - 64	13	0	0	13	6	7
65 & Older	13	2	1	10	8	5
Unknown	27	19	0	8	12	13
Total	387	190	12	185	173	212

* Injuries and fatalities have been added together for this table.

** There were 2 cases where the sex of the person was not stated.

TABLE 8.03

**PERSONS KILLED OR INJURED
IN 1991 SCHOOL BUS CRASHES BY POPULATION OF AREA**

Population of City or Township	Killed	Injured			Total
		Severe	Moderate	Minor	
100,000 and Over	1	10	20	96	126
50,000 - 99,999	0	0	2	2	4
25,000 - 49,999	0	3	12	33	48
10,000 - 24,999	1	8	11	28	47
5,000 - 9,999	0	2	18	8	28
2,500 - 4,999	0	2	18	3	23
1,000 - 2,499	0	0	0	1	1
Under 1,000	2	9	50	47	106
Total	4	34	131	218	383

TABLE 8.04

1991 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	3	152	569	724	3	310
Parked Motor Vehicle	0	4	70	74	0	17
Bicycle	0	3	0	3	0	3
Pedestrian	1	11	0	12	1	11
Deer	0	0	3	3	0	0
Other Animal	0	2	3	5	0	9
Fixed Object	0	4	18	22	0	15
Non-collision:						
Overturn	0	1	3	4	0	11
Other	0	4	5	9	0	7
Unknown	0	0	1	1	0	0
Total	4	181	672	857	4	383

TABLE 8.05

1991 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	1	1	2	0	8
3:00 - 5:59 AM	0	0	2	2	0	0
6:00 - 8:59 AM	0	52	230	282	0	120
9:00 - 11:59 AM	1	24	86	111	1	42
Noon - 2:59 PM	0	38	148	186	0	72
3:00 - 5:59 PM	2	57	178	237	2	126
6:00 - 8:59 PM	1	6	14	21	1	11
9:00 - 11:59 PM	0	1	3	4	0	1
Unknown	0	2	10	12	0	3
Total	4	181	672	857	4	383

TABLE 8.06

1991 SCHOOL BUS CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	1	22	89	112	1	41
February	0	19	91	110	0	28
March	0	15	46	61	0	38
April	1	13	51	65	1	30
May	0	17	48	65	0	29
June	0	10	11	21	0	34
July	0	4	14	18	0	5
August	0	2	6	8	0	2
September	0	18	43	61	0	37
October	1	18	58	77	1	49
November	1	22	111	134	1	28
December	0	21	104	125	0	62
Total	4	181	672	857	4	383

TABLE 8.07

CONTRIBUTING FACTORS IN 1991 SCHOOL BUS CRASHES

Contributing Factors	Attributed to School Bus Drivers		Attributed to Drivers of Other Vehicles	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention/Distracted	104	19.6%	117	14.2%
Failure to Yield Right of Way	100	18.9	92	11.2
Following Too Closely	27	5.1	60	7.3
Illegal or Unsafe Speed	26	4.9	110	13.4
Improper Turn	25	4.7	19	2.3
Improper or Unsafe Lane Use	22	4.2	23	2.8
Unsafe Backing	16	3.0	13	1.6
Vision Obscured	16	3.0	18	2.2
Disregard for Traffic Control Device	16	3.0	34	4.1
Driving Left of Roadway Center--Not Passing	12	2.3	6	0.7
Improper Parking/Starting/ Stopping	9	1.7	14	1.7
Driver Inexperience	9	1.7	36	4.4
Failure to Use Lights	6	1.1	1	0.1
Impeding Traffic	4	0.8	5	0.6
Improper or No Signal	3	0.6	4	0.5
Improper Passing/Overtaking	3	0.6	16	1.9
Physical Impairment	1	0.2	9	1.1
Pedestrian Violation	0	0.0	17	2.1
Other Human Factors	4	0.8	4	0.5
Vehicular Factors				
Skidding	31	5.8	92	11.2
Defective Equipment	3	0.6	8	1.0
Oversize or Overweight	1	0.2	2	0.2
Other Vehicular Factors	4	0.8	2	0.2
Miscellaneous Factors				
Weather Conditions	64	12.1	92	11.2
Other	24	4.5	29	3.5
Total	530	100.0%	823	100.0%
No Improper Driving	252		193	
Total Number of Drivers	867		883	

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.

TABLE 8.08

1991 SCHOOL BUS CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
None	1	60	200	261	1	167
Traffic Signal	1	39	134	174	1	65
Overhead Flashers	0	2	21	23	0	3
Stop Sign--All Approaches	0	5	22	27	0	7
Other Stop Sign	0	38	121	159	0	76
Yield Sign	0	1	20	21	0	1
Officer/Flagperson/ School Patrol	0	0	2	2	0	0
School Bus Stop Arm	1	5	13	19	1	7
No Passing Zone	0	0	3	3	0	0
Railroad Crossing Device	0	1	5	6	0	2
Other	0	3	11	14	0	3
Unknown	1	27	120	148	1	52
Total	4	181	672	857	4	383

IX: MOTOR VEHICLE/TRAIN CRASHES

Crashes reported in this section involve a motor vehicle and a train. Train collisions with pedestrians or bicyclists are not counted as traffic crashes for the purpose of this publication. Motor vehicle/train crashes are few in number but are more likely to be fatal; less than one-half of 1% of all crashes statewide were fatal, but 7% of motor vehicle/train crashes were fatal in 1991.

Number of crashes returns to normal

There were 147 motor vehicle/train crashes in 1991. This is an increase of 27% from last year's record low. This is 11% higher than the average of the last five years, but two of these years were record lows.

Property damage crashes increase

This year's increase is in property damage crashes, not in injuries or fatalities. Sixty percent of motor vehicle/train crashes involved only property damage--no one was killed or injured.

Fatalities down, injuries stable

There were 10 fatalities in 1991. This is seven fewer than in 1990. There were 70 injuries, 3 more than last year and equal to the average of the last five years.

Late twenties and late teens most injured age groups

Both fatalities and injuries were highest in the 25 - 29 year old age group. Teens aged 15 - 19 had two of the fatalities and tied (with ten) for the highest number of injuries. The injuries were closely divided among the severity levels--30% of the injuries were severe, 39% were moderate, and 31% were minor.

Winter months had highest number of crashes

December had the highest number of crashes, (25). November and December combined accounted for one-third of all crashes. July had the highest number of fatal crashes and fatalities (3). December had the highest number of injuries.

9 AM - noon most crash-involved

The three hour time period from 9:00 AM to noon accounted for 22% of the crashes. Only 10% of crashes occurred between midnight and 6 AM. Of the days of the week, Thursday had the most crashes (33). Tuesday, Wednesday, and Thursday combined totalled 57% of the crashes. Saturday and Sunday had relatively few crashes: Sunday had the least (14).

Failure to yield cited most frequently

For the past ten years, the three factors cited most often as contributing to motor vehicle/train crashes have been: failure to yield right of way, driver inattention/distraction, and disregard for traffic control device. In 1991, nearly one-fourth of the factors cited as contributing to the crash were for failure to yield the right of way. Less than 3% of factors cited were for physical impairment.

Crashes at marked crossings

At least 87% of all crashes, injuries, and fatalities occurred where there was a railroad crossing sign or a stop sign. This is especially important because 11% of the contributing factors cited were for disregard for traffic control device.

TABLE 9.01
MOTOR VEHICLE/TRAIN CRASH SUMMARY, 1982 - 1991

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Crashes	164	174	149	134	116	119	168	142	116	147
Fatal Crashes	5	11	7	8	5	4	9	11	13	10
Persons Killed	7	15	11	13	12	4	12	15	17	10
Injury Crashes	73	69	56	63	53	55	56	48	35	49
Persons Injured	92	85	73	87	66	74	70	75	67	70
Property Damage Crashes	86	94	86	63	58	60	103	83	68	88

TABLE 9.02
AGE OF PERSONS KILLED OR INJURED IN 1991
MOTOR VEHICLE/TRAIN CRASHES

Age Group	Killed	Injured			Total
		Severe	Moderate	Minor	
0-4	0	1	0	0	1
5-9	0	0	1	1	2
10-14	0	0	0	0	0
15-19	2	3	3	4	10
20-24	0	2	1	6	9
25-29	4	3	5	2	10
30-34	0	2	0	2	4
35-39	1	2	4	0	6
40-44	1	2	3	1	6
45-49	0	0	0	0	0
50-59	1	1	3	2	6
60-69	1	1	1	2	4
70-79	0	1	1	1	3
80 & Older	0	3	3	1	7
Not Stated	0	0	2	0	2
Total	10	21	27	22	70

TABLE 9.03

1991 MOTOR VEHICLE/TRAIN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	0	3	11	14	0	4
February	2	3	12	17	2	4
March	2	6	6	14	2	10
April	1	2	4	7	1	5
May	0	2	6	8	0	2
June	0	4	5	9	0	5
July	3	3	5	11	3	6
August	0	3	8	11	0	3
September	0	2	2	4	0	2
October	0	3	2	5	0	4
November	1	5	16	22	1	8
December	1	13	11	25	1	17
Total	10	49	88	147	10	70

TABLE 9.04

1991 MOTOR VEHICLE/TRAIN CRASHES BY TIME AND DAY

Time of Day	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	11	2	2	0	0	2	1	4
3:00 - 5:59 AM	4	1	2	1	0	0	0	0
6:00 - 8:59 AM	18	2	2	4	4	3	1	2
9:00 - 11:59 AM	32	2	5	9	2	7	7	0
Noon - 2:59 PM	29	3	1	3	11	9	0	2
3:00 - 5:59 PM	21	1	2	3	4	8	1	2
6:00 - 8:59 PM	20	3	4	3	3	4	2	1
9:00 - 11:59 PM	12	0	0	2	2	0	4	4
Total	147	14	18	25	26	33	16	15

TABLE 9.05

CONTRIBUTING FACTORS IN 1991 MOTOR VEHICLE/TRAIN CRASHES

<u>Contributing Factor</u>	<u>Number</u>	<u>Percent</u>
Human Factors:		
Failure to Yield Right of Way	46	24.5%
Driver Inattention/Distracted	41	21.8
Disregard for Traffic Control Device	21	11.2
Illegal or Unsafe Speed	14	7.4
Vision Obscured	10	5.3
Improper Parking/Starting/Stopping	7	3.7
Physical Impairment	5	2.7
Driver Inexperience	2	1.1
Following Too Closely	2	1.1
Improper Turn	1	0.5
Driving Left of Roadway		
Center - Not Passing	1	0.5
Improper Passing	1	0.5
Failure to Use Lights	1	0.5
Other Human Factor	1	0.5
Vehicular Factors		
Skidding	15	8.0
Defective Equipment	1	0.5
Other Vehicular Factors	1	0.5
Miscellaneous Factors		
Weather Conditions	13	6.9
Other	5	2.7
Total	188	100.0%
No Improper Driving	13	
Number of Drivers	161	

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.

TABLE 9.06

**1991 MOTOR VEHICLE/TRAIN CRASHES
BY TRAFFIC CONTROL DEVICE PRESENT**

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
RR Crossbuck	3	23	27	53	3	33
RR Crossing Stop Sign	4	6	18	28	4	9
RR Flashing Lights	3	10	10	23	3	18
RR Overhead Flashers						
Plus Gate	0	2	4	6	0	2
RR Overhead Flashers	0	0	5	5	0	0
RR Crossing Gate	0	2	2	4	0	2
Stop Sign	0	1	8	9	0	1
Other	0	2	1	3	0	2
Unknown	0	0	5	5	0	0
None	0	3	8	11	0	3
Total	10	49	88	147	10	70



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