STATE OF MINNESOTA STATE OF MINNESOTA STATE OF MINNESOTA STATE OF MINNESOTA

DEPARTMENT OF PUBLIC SAFETY

MINNESOTA MOTOR VEHICLE CRASH FACTS 1989

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MOTOR VEHICLE
CRASH FACTS
1989

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

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The Department of Public Safety administers programs to protect the safety of Minnesota citizens. Traffic crashes are a leading public safety problem; they kill hundreds of people each year and injure thousands more. Last year in Minnesota, 605 people died and over 45,000 were injured in traffic crashes. The experience of the last two decades suggests that much of this suffering is preventable.

Concern with traffic safety at the federal level increased during the 1960s. The National Highway Traffic Safety Administration was established in the U.S. Department of Transportation in 1967. It promoted, and Congress passed, legislation mandating the manufacture of safer cars. At the same time, the federal interstate highway system was expanding, which contributed to a safer roadway environment. Safer cars and safer, less congested roadways reduce the likelihood of traffic crashes and reduce the seriousness of the crashes that do occur.

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 peak years. Since then, both the rate and the number of fatalities has declined in a fairly steady pattern. Last year, there were 45,500 traffic fatalities throughout the country and 605 in Minnesota. The respective rates per hundred million miles of travel were 2.2 and 1.6. A dramatic benefit has been achieved.

One can rightly take pride in this achievement in the traffic safety field. Thousands of lives have been saved and millions of injuries have been prevented. Moreover, although there are problems with the adequacy and comparability of records across different countries, experts believe the U.S. has the lowest fatality rate in the world. In Minnesota, one can take satisfaction as well. Beginning in 1986, and for three years in succession, our state had the lowest fatality rate of the fifty states.

Traffic crashes nonetheless remain a leading cause of death and injury. The public safety perspective is that traffic crashes are not just "accidents." They are tragic events that do

not have to happen; they can be prevented by changes in human behavior. This perspective may become even more important in the future, as there may come a point where the benefits gained by improvements in road and vehicular safety are determined by the public not to be worth the additional investment of resources they would require.

Human behavioral factors lead to traffic crashes and human behavioral factors can reduce the seriousness of the crashes that occur. Leading factors in traffic crash causation are driver inattention, driving at illegal or unsafe speeds, and -- in the case of fatal crashes -- alcohol-impaired driving. A critically important factor in prevention of death and injury, when there is a crash, is use of safety equipment; that is, use of seat and shoulder belts, use of child restraint seats for infants and toddlers, and use of helmets by motorcyclists and bicyclists.

This book is produced annually in accordance with the requirements of Minnesota statute 169.10. It tabulates characteristics of the approximately 100,000 crashes that occur each year. Those 100,000 crashes constitute a significant toll that can be reduced to the extent that every citizen pays attention to his or her driving, shows respect for other drivers, drives at speeds that are legal and safe for conditions, avoids driving after drinking, and wears safety equipment properly.

Sincerely,

Paul Tschida
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 AND SUMMARY

Minnesota Motor Vehicle Crash Facts is produced by the Office of Traffic Safety, Minnesota Department of Public Safety, in accordance with Minnesota Statutes, Section 169.10. The information presented is derived from accident reports submitted by citizens and law enforcement agencies for motor vehicle crashes involving death, personal injury, or property damage of $500 or more. The minimum dollar amount for crashes involving only property damage has changed over the years. The first minimum was set at $50 in 1939. This remained in effect until 1965 when $100 became the minimum. In 1976, it was raised to $300, and the present minimum ($500) became effective in 1981.

The purpose of *Minnesota Motor Vehicle Crash Facts* is to provide summary information about the traffic crashes which occur in Minnesota. The report is divided into nine parts. The first examines general information about crashes, vehicles, and drivers; the other sections review pedestrians, motorcycles, and other selected types of motor vehicle crashes. Due to changes in the way crash information is collected and analyzed, some of the results presented here may differ slightly from figures that will be available at a later date.

In 1989, 605 persons died and 45,404 suffered non-fatal injuries in the 105,996 motor vehicle crashes that occurred on public roadways throughout the state. Almost 3.5 million vehicles travelled 37.6 billion miles on our state's roadways. Minnesota drivers licenses were held by 3,155,170 people in 1989. The total economic loss resulting from motor vehicle crashes in Minnesota was $618,994,000. This figure is calculated from costs estimated for 1988 by the National Safety Council for fatalities, injuries, and property loss resulting from traffic crashes.

The total dollar value is determined as follows:

605	Deaths	@	$290,000 = $175,450,000
5,148	Severe Injuries	@	$30,600 = $157,528,800
15,431	Moderate Injuries	@	$7,500 = $115,732,500
24,825	Possible Injuries	@	$1,800 = $44,685,000
73,881	Property Damage Crashes	@	$1,700 = $125,597,700
			Total = $618,994,000

These estimates are based on the calculable costs of wage loss, medical expenses, insurance costs, and property damage.

The following sections summarize several categories of 1989 traffic crashes.

GENERAL INFORMATION

Six hundred and five people died and 45,404 people were injured in 105,996 traffic crashes in Minnesota in 1989. There were 1.61 fatalities per 100 million miles of travel in the state. This rate is 27% below the rate for the nation as a whole, which is estimated to be 2.2, and is 5% below Minnesota's 1988 rate of 1.69, which was the lowest rate of the 50 states. Total crashes and total injuries were both higher than in any other year during the 1980s. The increase, however, is due to a rise in less serious crashes and in minor injuries. The number of severely and moderate injury crashes, and the number of severe and moderately injured persons were actually the lowest they have been during the decade.

ALCOHOL

Half of the fatally injured drivers who were tested for alcohol tested positive. Of these, 41% were also over the legal limit. There were 34,562 DWI arrests in 1989; 32% of those arrested were under the age of 25. It is estimated that 275 (45%) of the fatalities and 6,877 (15%) of the injuries in 1989 were alcohol-related.

RESTRAINT USE BY MOTOR VEHICLE OCCUPANTS

According to observational surveys, safety equipment use by front seat occupants in Minnesota increased from 20% in June of 1986, before the first mandatory seat belt law, to 47% in August of 1988. The August, 1989, survey showed a 44% use rate. Use is higher in the Twin City metropolitan area than elsewhere. For vehicle occupants injured in crashes, reported use was highest among young children under four years of age (over 60%), and lowest among those between 11 and 19 (about 30%). After age 19, safety equipment use increases with age. In 1989, as in 1988, use was lower (about 31%) in the West Central region of the state than in other regions.

MOTORCYCLES

Motorcycle crashes continued their decline in 1989. There were 1,748 crashes; these crashes resulted in 1,617 injuries and 37 fatalities. This was the lowest number of fatalities since 1969 when there were 32 fatalities. Motorcycle crashes were 4 times more likely to involve a fatality than were crashes as a whole. Males accounted for 87% of the injuries and 84% of the fatalities.

TRUCKS

In 1989, there were 7,381 traffic crashes involving trucks. Ninety four people died and 2,411 people were injured in those crashes. The number killed was 21% greater than in 1988, but was still within the range of recent years. The number injured actually declined from 1988. Truck crashes are mainly daytime, weekday occurrences: 75% of them occurred between 6:00 a.m. and 6:00 p.m. (compared to about 63% of all crashes), and 90% occurred during the weekdays Monday through Friday (compared to about 75% of all crashes).

PEDESTRIANS

There were 1,591 crashes involving pedestrians in 1989 that resulted in 1,578 injuries and 67 fatalities to pedestrians. More than a third of the fatalities and half of the injuries were to pedestrians under the age of 25. Rural areas accounted for 5% of the crashes but 27% of the fatalities. Forty percent of the pedestrians killed and 28% of those injured were crossing with no crosswalk and no signal.

BICYCLISTS

There were 10 bicyclists killed in 1989; this is the lowest number since 1964 when 4 bicyclists were killed. There were also 10 killed in 1981 and 1985. There was a total of 1,392 crashes and 1,353 bicyclists injured in these crashes. Males were more often killed and injured in these crashes than females. Males made up 90% of the fatalities and 71% of the injuries.

SCHOOL BUS CRASHES

The number of school bus involved crashes rose to 828 in 1989 but the number of non-fatal injuries fell to 281. There were 4 people killed; none were school bus occupants. The majority of crashes (87%) involved two moving vehicles. The before school hours of 6:00 - 9:00 AM and the after school hours of 3:00 - 6:00 PM accounted for 63% of the crashes and 70% of the injuries.

MOTOR VEHICLE/TRAIN CRASHES

There were 142 crashes involving motor vehicles and trains in 1989; these resulted in 15 persons killed and 75 persons injured. Persons aged 10 through 29 accounted for 80% of the fatalities and over half the injuries sustained in motor vehicle/train crashes. At least 80% of the crashes occurred at a rail road crossing device.

TABLE 1.01

CRASH, FATALITY AND INJURY RATES, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Traffic Crashes	103,612	97,879	89,443	97,371	93,741	99,168	95,460	94,095	102,094	105,996
Persons Killed	863	763	581	558	584	610	572	530	615	605
Persons Injured	45,227	43,739	38,692	41,086	41,808	44,316	42,130	42,091	44,415	45,404
Registered Motor Vehicles (Millions of Vehicles)	3.01	3.09	3.01	3.03	3.13	3.22	3.25	3.31	3.39	3.46
Licensed Drivers* (Millions of Drivers)	2.77	2.83	2.87	2.90	2.91	3.04	3.07	3.10	3.13	3.16
Vehicular Miles Traveled (Billions of Miles)	28.5	28.6	29.2	30.5	32.2	33.1	34.2	35.1	36.4	37.6
Fatality Rate Per Hundred Million Vehicle Miles Traveled	3.03	2.67	1.98	1.83	1.81	1.84	1.67	1.51	1.69	1.61
Fatality Rate Per 100,000 Registered Vehicles	28.7	24.7	19.3	18.4	18.7	18.9	17.6	16.0	18.1	17.5
Fatality Rate Per 100,000 Population	21.2	18.6	14.2	13.5	14.1	14.7	13.6	12.6	14.3	13.9
Crash Rate Per Hundred Million Vehicle Miles Traveled	364	342	304	319	291	300	279	268	280	282
Crash Rate Per 100,000 Registered Vehicles	3,446	3,163	2,972	3,214	2,995	3,080	2,937	2,840	3,012	3,060
Crash Rate Per 100,000 Population	2,546	2,387	2,181	2,356	2,262	2,380	2,266	2,233	2,371	2,435

* Permits included.

TABLE 1.02

TRAFFIC CRASH TRENDS
1984 - 1989

	1984	1985	1986	1987	1988	1984-1989 Average	1989	% Change from 5 Yr Average	Record High
Total Crashes	**93,741**	**99,168**	**95,460**	**94,095**	**102,094**	**96,912**	**105,996**	**+9.4**	**123,106 (1975)**
Fatal Crashes	**519**	**538**	**506**	**466**	**545**	**515**	**539**	**+4.7**	**878 (1973)**
Injury Crashes	**28,877**	**30,638**	**29,226**	**29,345**	**30,743**	**29,932**	**31,576**	**+5.5**	**33,686 (1978)**
Severe	5,109	5,038	4,437	4,566	4,386	4,707	4,111	-12.7	5,109 (1984)[1]
Moderate	11,951	12,326	11,610	11,517	11,066	11,694	11,057	-5.4	12,326 (1985)[1]
Minor	11,817	13,274	13,179	13,262	15,291	13,365	16,408	+22.8	16,408 (1989)[1]
Property Damage Crashes	**64,345**	**67,992**	**65,728**	**64,284**	**70,806**	**66,631**	**73,881**	**+10.9**	**94,810 (1975)**
Total Injuries	**41,808**	**44,316**	**42,130**	**42,621**	**44,415**	**43,058**	**45,404**	**+5.4**	**50,332 (1978)**
Total Fatalities	**584**	**610**	**572**	**530**	**615**	**582**	**605**	**+4.0**	**1,060 (1968)**
Pedestrian	55	65	71	62	69	64	67	+4.7	157 (1971)
Motor vehicle/Train[2]	11	13	12	4	12	10	15	+50.0	62 (1932)
Bicycle	15	10	12	15	16	14	10	-28.6	24 (1977)
Motorcycle	62	77	66	51	58	63	37	-41.3	121 (1980)
3-Wheel Vehicle	4	1	9	2	1	3	5	+66.7	9 (1986)
Snowmobile	9	3	5	0	4	4	3	-25.0	9 (1984)
Motor Vehicle Occupants	430	441	402	396	459	426	478	+12.2	478 (1989)[1]
Fatality Rate[3]	1.81	1.84	1.67	1.51	1.69	1.70	1.61	-5.3	23.6 (1934)
U.S. Fatality Rate[3]	2.7	2.6	2.6	2.6	2.3	2.6	2.2	-15.4	18.0 (1925)
Minnesota Economic Loss (millions)	$443.9	$480.9	$445.7	$506.4	$579.9	$491.4	$619.0	+26.0	$619.0 (1989)[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 more than trends in traffic safety.

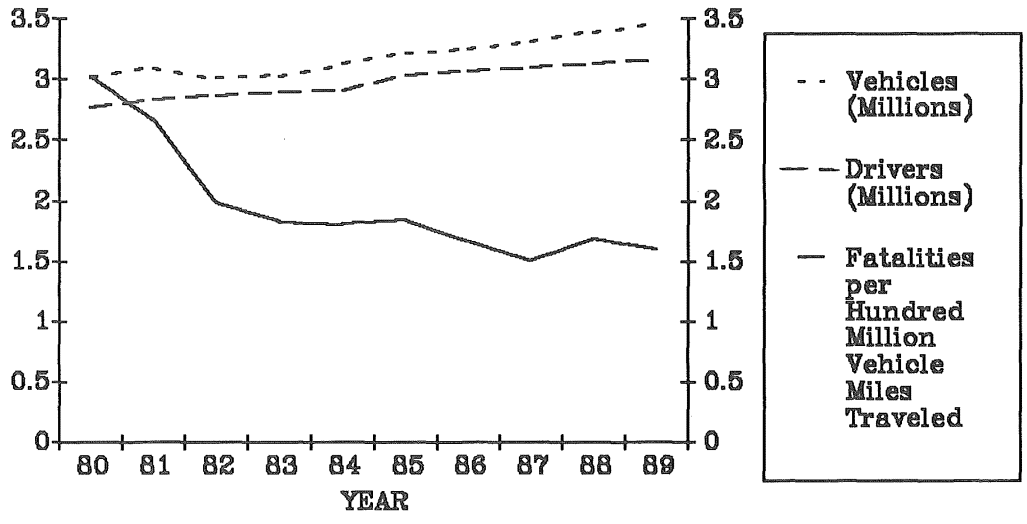
I: GENERAL INFORMATION

Even though the number of licensed drivers and registered vehicles increases gradually from year to year, highway safety has been improving during the 1980s. Figure 1.01 shows a downward trend during the decade in the number of fatalities as a rate per hundred million miles of travel. At the beginning of the decade, the rate was 3.03. In 1989, it reached 1.61. This is a slight improvement over the 1988 rate of 1.69, and it is much better than the average rate estimated for the nation in 1989 of 2.2.

The following sections provide summary descriptions of the 1989 crashes in terms of the people who were involved, the conditions that contributed to the crashes, the locations where they occurred, and the times when they occurred.

FIGURE 1.01

Vehicles, Drivers, and Fatality Rate 1980 - 1989



WHO was involved

There were 193,389 motor vehicle drivers, 1,404 bicyclists, and 1,648 pedestrians involved in the 105,996 traffic crashes that occurred in Minnesota in 1989. In those crashes, 605 people died and an additional 45,404 people were injured.

Males outnumber females in fatalities
Among those who died, 395 were male and 210 were female. The great majority (460) were car or truck occupants, including 324 drivers and 136 passengers. There were also 37 motorcyclists, 10 bicyclists, and 67 pedestrians who died (Table 1.03).

15 to 19 year olds suffer most injuries
Teenagers aged 15 to 19 suffered far more fatalities and injuries than any other five-year age group. Injuries decline steadily across subsequent age groups (Table 1.04).

Most drivers collide with other drivers
The great majority (over 75%) of drivers were involved in crashes where the first harmful event was collision with another vehicle. Collision with a fixed object was the next most common accident type. Other types of collisions (such as with a parked car or an animal or a pedestrian) or non-collision crashes (e.g., overturns) were relatively rare (Table 1.06).

Most drivers are male; most injured persons are female
Although over half the persons injured were female (Table 1.04), most of the drivers were male. In fatal crashes, 611 out of 836 drivers were male. For all crashes, there were 109,433 male drivers, and 66,969 female drivers (Table 1.07).

Young drivers are over-represented
People aged 15 to 19 make up 7% of the driving population but account for 14% of the crash-involved drivers. People ages 20 to 24 make up 10% of the driving population, but 15% of the crash-involved drivers (Table 1.08). Driver age groups beginning at age 30 are underrepresented, with those between about 50 and 75 years of age appearing to be the most underrepresented, relative to their share of the driving population (Figure 1.03).

Driver inattention, speed, and failure to yield right of way are the leading causes
For each driver in a crash, police can cite zero, one, or two factors as having contributed to the crash. For multiple vehicle crashes (about two thirds of the total), driver inattention accounted for about 25% of the factors cited. Next most frequently cited was failure to yield right-of-way, then illegal or unsafe speed (Table 1.10). In single vehicle crashes, illegal or unsafe speed was cited most frequently, then driver inattention, then physical impairment (Table 1.09).

Some factors vary with driver age
Police attributed "illegal or unsafe speed" as a contributing factor to drivers under age 25 two to three times more often than they did to drivers 65 and older. On the other hand, police attributed "failure to yield right-of-way" to drivers 65 and older almost twice as often as they did to drivers under 25 (Tables 1.09 and 1.10).

WHAT the conditions were

No broad vehicle type overrepresented
Passenger cars accounted for about 75% of the vehicles registered in Minnesota and about 73% of the vehicles involved in crashes. The corresponding figures for pickups are 15% and 12%; for trucks, 4% and 4%; for motorcycles, 4% and 1%. Thus, there was no obvious over-involvement within broad vehicle types (Tables 1.13, 1.14).

Most crashes occur in optimal driving conditions
Over 60% of injury and property damage crashes occurred in daylight. By contrast, just under half the fatal crashes occurred during

dawn, dusk, or dark conditions (Table 1.18). Weather conditions were clear or cloudy, rather than inclement, for 86% of fatal crashes and 81% of total crashes (Table 1.19). Dry road surface conditions existed for 77% of the fatal crashes and 61% of total crashes. About 25% of the less serious property damage crashes occurred on snowy or icy road surfaces, compared to only about 14% of the fatal crashes (Table 1.21).

Speed is leading factor in fatal crashes, driver inattention in nonfatal crashes

Of all the contributing factors associated with drivers in fatal crashes, police cited illegal or unsafe speed most often--19% of the time. Physical impairment (nearly always meaning suspected alcohol involvement) was cited next most often (18%), followed by driver inattention (14%), and failure to yield right of way (11%). By contrast, in the injury crashes and property damage crashes, driver inattention was cited most often (about 25% of the time), followed by failure to yield right of way (about 15%) and then illegal or unsafe speed (13%) (Table 1.20).

WHERE they happened

Non-fatal crashes occur mostly in urban areas, fatal crashes in rural areas

In urban areas, traffic congestion may be greater and speeds slower, resulting in more numerous, but less severe crashes. In 1989, 70% of all crashes occurred in urban areas, while 68% of the 539 fatal crashes occurred on rural roadways, especially the federal and state trunk highways and county-state-aid highways. Of the 365 fatal crashes in rural areas, only 13 occurred on rural interstates, even though those highways carry a disproportionate share of rural traffic. (Table 1.23, Figure 1.04)

Counties vary widely

While total crashes throughout the state increased 9% over the average of the prior five years, the increase was not uniformly experienced by counties. Six counties had increases of 25% or more. These counties were: Koochiching (+54%), Cook (+41%), Isanti (+34%), Pine (+33%), Stevens (+25%), and Lake (+25%). Nine counties had decreases of 5% or more. Those counties were Mahnomen (-30%), Swift (-18%), Jackson (-11%), Lyon (-9%), Faribault (-7%), Chippewa (-7%), Traverse (-6%), Norman (-5%), and Brown (-5%) (Table 1.25).

WHEN they occurred*

Fatal crashes rise in warm months, total crashes in the cold months

Fatal crashes were least frequent in the winter months of January, February, and March, and most frequent during the warmer weather months of May, July, and September. By contrast, variation in total crashes is mostly driven by variation in the large number of property damage crashes, and they occurred most frequently during the months of January, November, and December, and least frequently in the warmer weather months of April, May, and July (Table 1.28).

Total crashes peak during afternoon rush hours; fatal crashes peak twice daily

Total crashes are most numerous during the afternoon rush hours between 3:00 PM and 6:00 PM Fatal crashes, by contrast, have peaks twice during the day, once during the afternoon rush hours and then again between 1:00 AM and 2:00 AM

* In 1989, an error in data input caused an estimated four to five thousand crashes that occurred between midnight and 1:00 AM and between noon and 1:00 PM to be coded as having occurred at an unknown time of day. This error was discovered and corrected for fatal crashes, but was not corrected for all other crashes, causing some distortion in the tables and figures showing crashes by time of day.

TABLE 1.03

1989 FATALITIES BY TRAFFIC ROLE, SEX, AND AGE

		Age								
Traffic Role	Sex	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 & Older	Total*
Car or Truck Driver	Male	0	27	60	43	33	17	13	32	225
	Female	0	17	21	8	13	8	10	22	99
Car or Truck Passenger	Male	4	14	13	5	5	5	8	7	62
	Female	5	18	8	8	4	9	13	9	74
Motorcycle Operator	Male	0	8	11	6	4	2	0	0	31
	Female	0	0	0	0	0	0	0	0	0
Motorcycle Passenger	Male	0	0	0	0	0	0	0	0	0
	Female	0	4	0	2	0	0	0	0	6
Motorscooter or Moped Driver	Male	0	0	0	1	1	0	0	0	2
	Female	0	0	0	0	0	0	0	0	0
Motorscooter or Moped Passenger	Male	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0
All Terrain Vehicle Driver	Male	0	4	0	0	0	0	0	0	4
	Female	0	1	0	0	0	0	0	0	1
All Terrain Vehicle Passenger	Male	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0
Snowmobile Driver	Male	0	1	2	0	0	0	0	0	3
	Female	0	0	0	0	0	0	0	0	0
Snowmobile Passenger	Male	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0
Bicyclist	Male	3	3	1	1	0	1	0	0	9
	Female	1	0	0	0	0	0	0	0	1
Pedestrian	Male	8	5	9	0	3	6	3	6	41
	Female	4	4	2	3	1	3	2	7	26
Other or Unknown Traffic Role	Male	6	3	5	2	1	0	0	1	18
	Female	2	0	0	0	0	0	0	1	3
Total Fatalities	Male	21	65	101	58	47	31	24	46	395
	Female	12	44	31	21	18	20	25	39	210
	Total	33	109	132	79	65	51	49	85	605

* Included in the total column (but not in other columns) are one male car or truck passenger of unknown age and one male pedestrian of unknown age.

TABLE 1.04

AGE AND SEX OF PERSONS KILLED OR INJURED IN 1989 CRASHES

	Persons Killed			Persons Injured		
Age Group	Male	Female	Total	Male	Female	Total*
0 - 4	9	3	12	551	513	1,064
5 - 9	12	9	21	879	716	1,596
10 - 14	9	4	13	859	863	1,723
15 - 19	56	40	96	3,968	3,958	7,931
20 - 24	60	17	77	3,404	3,146	6,552
25 - 29	41	14	55	2,708	2,455	5,164
30 - 34	27	7	34	2,008	1,893	3,904
35 - 39	31	14	45	1,474	1,646	3,123
40 - 44	26	7	33	1,120	1,219	2,340
45 - 49	21	11	32	763	971	1,735
50 - 54	14	10	24	578	689	1,268
55 - 59	17	10	27	515	644	1,160
60 - 64	12	13	25	467	521	988
65 - 69	12	12	24	403	503	907
70 - 74	9	13	22	337	469	808
75 - 79	17	9	26	268	338	606
80 - 84	10	12	22	149	214	363
85 & Older	10	5	15	92	107	199
Not Stated	2	0	2	1,808	1,796	3,973
Total	395	210	605	22,351	22,661	45,404

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

FIGURE 1.02

Age and Sex of Persons Killed and Injured, 1989

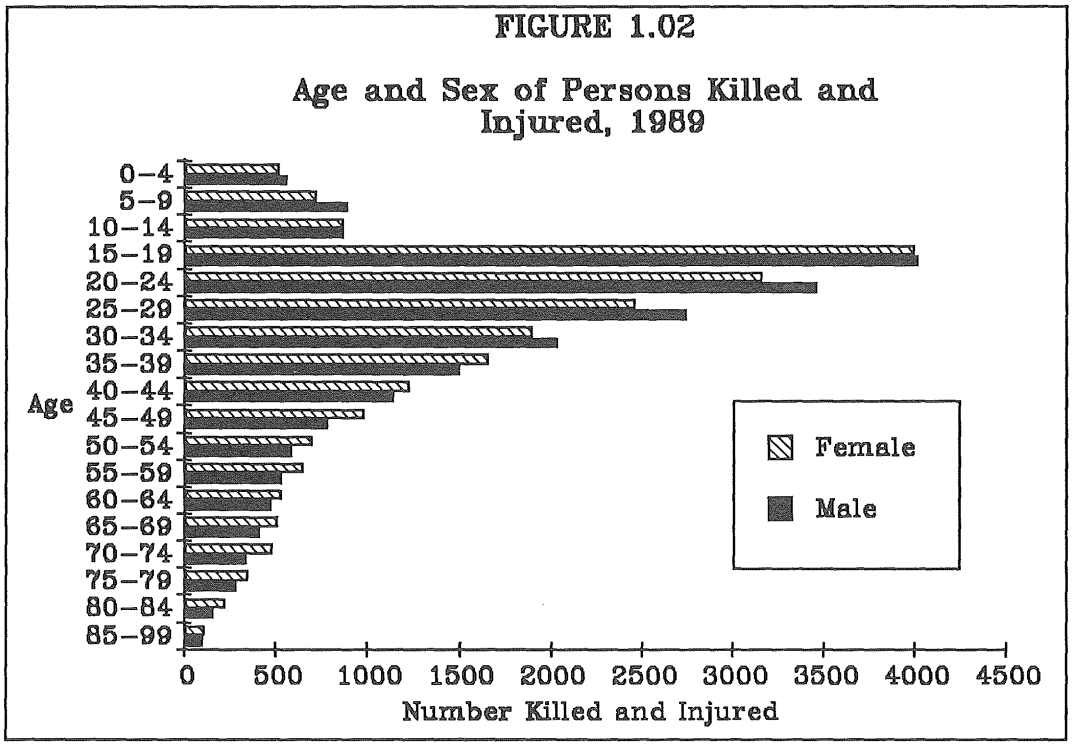


TABLE 1.05

DRIVERS IN 1989 CRASHES BY PHYSICAL CONDITION*

Physical Condition	Drivers in Fatal Crashes	Drivers in Injury Crashes	Drivers in Property Damage Crashes	Drivers in All Crashes
Normal	434	41,933	81,902	124,269
Under the Influence	86	2,452	2,218	4,756
Had Been Drinking	93	2,049	1,861	4,003
Had Been Using Drugs	2	32	47	81
Asleep	12	343	354	709
Fatigued	4	165	168	337
Ill	4	156	88	248
Other	27	314	473	814
Unknown	174	9,263	48,735	58,172
Total	836	56,707	135,846	193,389

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

TABLE 1.06

DRIVERS IN 1989 CRASHES BY AGE AND FIRST HARMFUL EVENT IN CRASH

First Harmful Event	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65 & Older
Collision With:						
Other Motor Vehicle	75.9%	79.0%	81.2%	81.9%	83.3%	86.6%
Parked Motor Vehicle	3.4	2.8	2.4	2.3	2.0	3.1
Railroad Train	0.1	0.1	0.1	0.1	0.1	0.1
Bicycle	0.6	0.7	0.6	0.7	0.8	1.0
Pedestrian	0.7	0.8	0.8	0.9	0.8	0.8
Animal	2.0	2.7	3.1	3.8	4.4	2.3
Fixed Object	10.7	9.0	7.2	6.1	5.2	4.1
Other Object	0.5	0.5	0.5	0.7	0.6	0.3
Non-Collision:						
Overturn	5.3	3.7	3.2	2.9	2.1	1.1
Other	0.8	0.8	0.8	0.8	0.8	0.5
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number of Drivers	26,394	28,033	25,664	20,700	56,277	11,729

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 1989 CRASHES*

	Drivers in Fatal Crashes				Drivers in All Crashes			
Age Group	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
14 & Younger	4	1	0	5	139	68	2	209
15 - 19	79	31	0	110	16,191	10,192	11	26,394
20 - 24	95	25	0	120	17,095	10,926	12	28,033
25 - 29	88	25	0	113	15,987	9,665	12	25,664
30 - 34	69	18	0	87	12,804	7,879	17	20,700
35 - 39	67	20	0	87	9,986	6,656	9	16,651
40 - 44	41	6	0	47	7,776	5,041	5	12,822
45 - 49	33	19	0	52	5,606	3,512	4	9,122
50 - 54	25	10	0	35	4,371	2,480	4	6,855
55 - 59	29	7	0	36	3,844	2,000	4	5,848
60 - 64	22	11	0	33	3,293	1,685	1	4,979
65 - 69	15	4	0	19	2,662	1,452	2	4,116
70 - 74	9	14	0	23	2,070	1,277	2	3,349
75 - 79	15	7	0	22	1,470	842	1	2,313
80 - 84	12	6	0	18	846	479	2	1,327
85 & Older	8	3	0	11	447	174	3	624
Not Stated	0	0	18	18	4,846	2,641	16,896	24,383
Total*	611	207	18	836	109,433	66,969	16,987	193,389

* 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, 1989

Age Group	Percentage of All Licensed Drivers	Percentage of Drivers in Fatal Crashes	Injury Crashes	Prop. Damage Crashes	All Crashes
14 & Younger	0.0%	0.6%	0.2%	0.1%	0.1%
15 - 19	7.1	13.2	15.6	12.9	13.6
20 - 24	10.1	14.4	16.0	13.9	14.5
25 - 29	12.2	13.5	14.0	13.0	13.3
30 - 34	12.5	10.4	11.3	10.5	10.7
35 - 39	11.3	10.4	9.1	8.4	8.6
40 - 44	9.5	5.6	6.9	6.5	6.6
45 - 49	7.3	6.2	4.8	4.7	4.7
50 - 54	5.8	4.2	3.6	3.5	3.5
55 - 59	5.2	4.3	3.2	2.9	3.0
60 - 64	5.1	3.9	2.6	2.6	2.6
65 - 69	4.7	2.3	2.3	2.1	2.1
70 - 74	3.9	2.8	1.9	1.6	1.7
75 - 79	2.8	2.6	1.3	1.1	1.2
80 - 84	1.7	2.2	0.7	0.7	0.7
85 & Older	0.9	1.3	0.4	0.3	0.3
Not Stated	0.0	2.2	6.1	15.4	12.6
Total Percent*	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number**	3,155,170	836	56,707	135,846	193,389

* Percents may not sum to 100 due to rounding.
** Includes drivers with instruction permits.

FIGURE 1.03

Licensed vs. Crash-Involved Drivers by Age, 1989

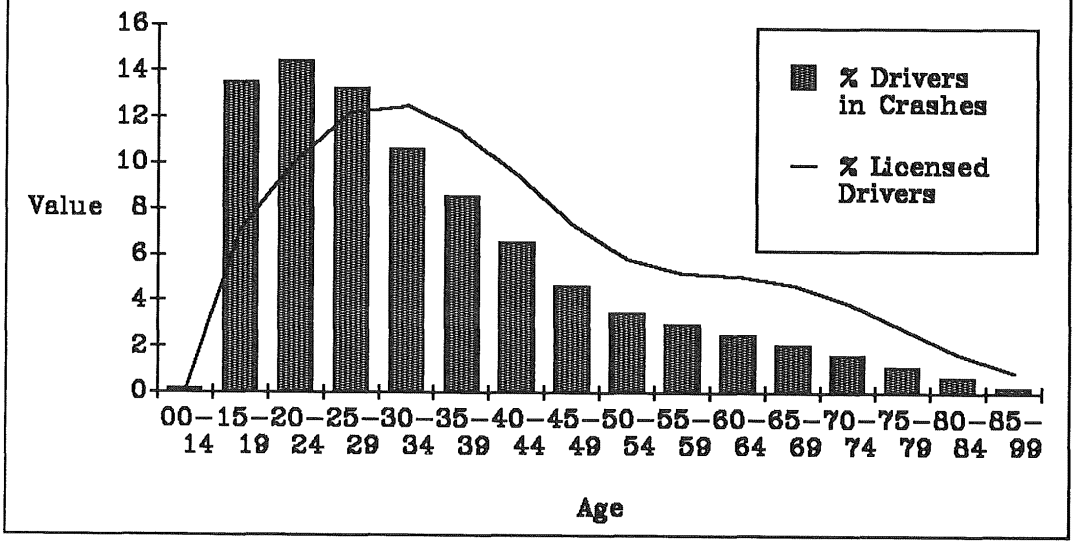


TABLE 1.09

SINGLE-VEHICLE CRASHES
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1989

Contributing Factor	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65 & Above
Human Factors:						
Illegal/Unsafe Speed	25.5%	26.8%	24.2%	22.4%	19.5%	8.9%
Driver Inattention/Distraction	19.7	20.8	20.7	22.5	23.3	29.4
Physical Impairment	9.6	16.9	18.1	15.7	12.9	15.7
Improper/Unsafe Lane Use	3.2	4.5	4.5	5.2	4.5	6.1
Driver Inexperience	19.9	5.7	3.6	3.2	2.9	1.7
Failure to Yield Right of Way	1.2	2.0	2.1	2.7	3.5	5.6
Driving Left of Center--Not Passing	1.8	2.0	1.9	1.7	1.6	1.3
Vision Obscured	1.2	1.5	1.5	1.9	2.7	3.7
Unsafe Backing	1.4	1.1	1.1	1.7	1.9	3.8
Disregard for Traffic Control Device	0.8	1.2	0.9	1.3	1.3	1.5
Improper Turn	1.1	0.9	1.0	1.4	1.6	0.9
Improper Passing/Overtaking	0.6	0.7	0.9	0.7	0.7	0.8
Improper Parking/Starting/Stopping	0.4	0.7	1.0	0.8	1.2	3.4
Following Too Closely	0.4	0.5	0.5	0.7	0.8	0.5
Improper or No Signal	0.1	0.1	0.1	0.1	0.1	0.0
Impeding Traffic	0.1	0.1	0.1	0.1	0.1	0.0
Other Human Factors	2.1	2.3	2.6	2.1	2.5	2.8
Vehicular Factors:						
Skidding	4.0	4.1	4.1	4.1	4.5	4.2
Defective Equipment	1.4	1.5	1.9	1.9	2.1	1.2
Other Vehicular Factor	1.4	1.2	2.0	2.9	3.4	2.0
Miscellaneous Factors:						
Weather	3.8	5.2	6.5	6.6	8.2	6.2
Road Defects	0.5	0.2	0.6	0.5	0.7	0.5
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Contributing Factors Cited	7,611	6,183	4,419	3,160	6,515	1,277
No Improper Driving	1,134	1,283	1,318	1,220	3,474	425
Total Number of Drivers	6,371	5,880	4,818	3,749	9,416	1,567

Percentages are based on all contributing factors cited within each age group. One or two contributing factors may be attributed to a single driver. The percentages may not sum to 100 due to rounding. Bicyclists and pedestrians are excluded.

TABLE 1.10

MULTIPLE-VEHICLE CRASHES
CONTRIBUTING FACTORS, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1989

Contributing Factor	Drivers 15-19	Drivers 20-24	Drivers 25-29	Drivers 30-34	Drivers 35-64	Drivers 65 & Above
Human Factors:						
Driver Inattention/Distraction	25.3%	26.0%	26.3%	25.5%	26.4%	25.9%
Failure to Yield Right of Way	18.9	17.5	16.3	17.8	20.7	34.5
Illegal/Unsafe Speed	10.7	12.3	11.6	9.6	8.3	3.8
Following Too Closely	8.1	9.3	10.2	9.2	7.2	3.7
Disregard for Traffic Control Device	4.1	4.9	4.9	4.7	5.1	6.2
Improper/Unsafe Lane Use	3.6	4.2	4.4	4.7	4.8	4.6
Vision Obscured	3.4	3.5	3.5	3.8	4.2	3.9
Improper Turn	2.7	2.4	2.5	3.0	3.1	4.8
Physical Impairment	1.1	2.9	3.1	2.9	2.4	1.6
Improper Passing/Overtaking	1.9	1.9	2.1	2.1	2.0	1.4
Driving Left of Center--Not Passing	1.4	1.4	1.3	1.1	1.1	1.2
Improper Parking/Starting/Stopping	1.0	1.0	0.9	1.3	1.2	1.3
Unsafe Backing	0.8	1.0	1.0	1.5	1.7	1.2
Driver Inexperience	8.4	1.9	1.3	0.9	0.8	0.3
Improper or No Signal	0.5	0.4	0.4	0.6	0.7	0.6
Impeding Traffic	0.3	0.4	0.3	0.5	0.4	0.4
Other Human Factors	0.6	1.0	0.9	1.1	1.0	0.7
Vehicular Factors:						
Skidding	2.2	2.5	2.5	2.9	2.5	1.2
Defective Equipment	1.0	0.9	0.9	0.9	0.9	0.3
Other Vehicular Factor	0.4	0.5	0.6	0.6	0.7	0.3
Miscellaneous Factors:						
Weather	3.4	4.1	4.6	4.9	4.6	2.0
Road Defects	0.2	0.2	0.3	0.3	0.3	0.3
Total Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Contributing Factors Cited	17,807	15,772	12,962	9,888	25,597	8,068
No Improper Driving	5,700	7,714	7,847	6,803	19,903	3,033
Total Number of Drivers	20,023	22,153	20,846	16,951	46,861	10,162

Percentages are based on all contributing factors cited within each age group. One or two contributing factors may be attributed to a single driver. The percentages may not sum to 100 due to rounding. Bicyclists and pedestrians are excluded.

TABLE 1.11

PEOPLE KILLED AND INJURED IN VARIOUS VEHICLE TYPES, 1989

Vehicle Type	Killed	Injured			
		Severe	Moderate	Minor	Total
Passenger Car	373	3,185	10,928	19,112	33,225
Passenger Car & Trailer	2	4	15	19	38
Truck or Truck Tractor	6	34	135	234	403
Truck Tractor and Semi-Trailer	6	18	89	118	225
Truck Tractor with Twin Trailer	0	0	2	5	7
Truck With Other Trailer	0	5	14	22	41
Pickup Truck	76	525	1,589	2,358	4,472
Van	14	171	488	839	1,498
Motorcycle*	37	458	775	384	1,617
Motorscooter/Motorbike*	1	7	23	6	36
Motorized Bicycle*	1	10	19	12	41
All Terrain Vehicle	5	12	21	7	40
School Bus	0	3	16	98	117
Bus	0	7	24	94	125
Motorhome/Camper	1	7	12	14	33
Snowmobile	3	17	17	12	46
Farm Equipment	1	11	8	6	25
Taxicab	0	5	14	68	87
Hit and Run Vehicle	1	9	58	104	171
Police Vehicle	0	6	28	116	150
Fire Department Vehicle	0	3	1	3	7
Ambulance	0	0	1	9	10
Military Vehicle	0	0	1	1	2
Road Maintenance Vehicle	0	0	2	13	15
Bicycle	10	217	616	520	1,353
Pedestrian	67	424	522	632	1,578
Other/Unknown	1	10	13	19	42
Total	605	5,148	15,431	24,825	45,404

* By law, motorcycles are defined as having engines of more than 50 cc. A motorscooter is now legally classed as a motorcycle if the engine exceeds the 50 cc threshold. Motorized bicycles and mopeds (abbreviated from motorized pedalcycle) must have engines of 50 cc or less to be so classified.

TABLE 1.12

DRIVER LICENSE* SUMMARY BY AGE, 1980 - 1989

Age	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
15	12,388	12,788	13,083	13,867	14,686	13,116	11,920	12,301	13,387	14,072
16	54,728	50,982	48,011	46,133	47,296	47,959	48,944	45,397	42,178	41,544
17	67,132	64,370	59,238	55,725	54,135	56,670	57,829	59,321	53,900	49,458
18	69,521	64,762	64,119	63,250	60,026	58,553	59,910	61,276	62,772	56,250
19	77,981	76,675	72,700	69,786	60,681	62,361	60,626	61,767	62,637	63,653
20	80,983	79,607	78,110	74,788	71,195	65,449	62,040	60,229	61,076	62,770
15 - 19	281,750	269,577	257,151	248,761	236,824	238,659	239,229	240,062	234,874	224,977
20 - 24	391,310	395,496	392,548	388,573	376,051	370,613	352,170	336,289	326,738	319,048
25 - 29	360,167	369,236	376,034	381,076	384,544	405,120	402,984	399,409	396,744	386,440
30 - 34	317,137	329,488	336,185	343,874	350,728	370,634	374,138	380,972	385,508	393,168
35 - 39	240,789	257,450	270,169	281,484	295,902	322,827	329,018	335,262	344,613	355,869
40 - 44	196,020	204,317	215,529	224,477	231,740	241,313	257,213	269,275	280,236	298,889
45 - 49	172,572	175,196	177,343	182,122	185,534	195,594	202,083	213,358	221,666	229,993
50 - 54	173,760	173,361	171,348	168,949	168,248	170,984	171,833	174,453	179,129	184,310
55 - 59	168,986	169,120	169,761	169,520	167,629	169,847	168,037	165,791	164,032	163,520
60 - 64	148,512	152,104	154,268	154,937	157,311	161,519	161,268	161,733	161,449	160,260
65 - 69	124,469	128,310	130,611	133,450	133,503	139,155	141,584	143,841	144,830	147,857
70 - 74	92,061	95,385	99,435	101,548	103,525	112,352	115,619	118,338	120,753	121,638
75 - 79	58,385	62,717	66,109	67,908	69,288	77,369	80,947	85,032	86,901	89,355
80 - 84	29,232	31,251	34,356	35,191	35,359	42,850	46,817	50,812	51,922	52,667
85 & Older	10,882	12,889	15,199	15,272	14,619	20,482	23,305	27,326	27,634	27,179
Total	2,766,032	2,825,897	2,866,046	2,897,142	2,910,805	3,039,318	3,066,245	3,101,953	3,127,029	3,155,170

* Includes Learner's Permits

TABLE 1.13

MOTOR VEHICLE REGISTRATIONS, 1985 - 1989

Type of Vehicle*	1985	1986	1987	1988	1989
Passenger Cars	2,339,782	2,395,247	2,450,232	2,518,604	2,583,982
Pickups	500,744	501,646	509,070	515,968	526,212
Trucks	118,990	124,323	127,888	135,918	137,690
Recreational Vehicles	33,133	32,026	33,120	34,226	34,805
Motorcycles	151,449	141,261	134,590	128,956	123,308
Motorized Bicycles	13,034	12,047	12,311	10,529	9,987
School Buses	4,185	4,598	5,095	5,115	5,026
Buses	3,575	3,405	3,502	3,879	4,217
Van Pool	180	209	229	253	248
Tax Exempt Vehicles	53,510	35,741	37,659	35,969	38,106
Motor Vehicle Subtotal	3,218,582	3,250,503	3,313,696	3,389,417	3,463,581
Trailers	602,795	663,559	653,630	726,054	708,693
Collector's Vehicles	45,269	50,702	56,146	61,280	66,860
Grand Total	3,866,646	3,964,764	4,023,472	4,176,751	4,239,134

* "Motorcycles" are defined by law as having engines exceeding 50 cc. The category "motorized bicycles" includes mopeds as well as motorscooters or motorbikes if they have 50 cc or less engine capacity. (In 1986 and before, to be so classified, a motorized bicycle had to have pedals as well as having engine capacity of 50 cc or less.) A "van pool" is a van that is used exclusively for carpooling purposes and that is registered accordingly. "Tax exempt vehicles" are vehicles owned by city, county and state offices. They have license plates but are not taxed. Police and fire department vehicles are tax exempt but are not included since they do not bear 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. Collector's 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 1989 CRASHES

Motor Vehicle Type*	Vehicles In Fatal Crashes	Vehicles In Personal Injury Crashes	Vehicles In Property Damage Crashes	Vehicles In All Crashes
Passenger Car	507	42,388	98,576	141,471
Passenger Car & Trailer	2	43	121	166
Truck or Truck Tractor	34	1,077	3,436	4,547
Truck Tractor and Semi-Trailer	42	693	2,053	2,788
Truck Tractor and Twin Trailer	0	12	36	48
Truck With Other Trailer	3	83	261	347
Pickup	135	6,559	16,570	23,264
Van	32	2,100	5,130	7,262
Motorcycle*	39	1,499	251	1,789
Motorscooter/Motorbike*	1	32	7	40
Motorized Bicycle/Moped*	1	39	2	42
All Terrain Vehicle	5	38	10	53
School Bus	4	171	659	834
Bus	6	165	474	645
Motorhome/Camper	4	34	136	174
Snowmobile	5	40	21	66
Farm Tractor or Equipment	2	56	116	174
Taxicab	0	117	275	392
Hit-and-Run Vehicle	6	1,200	6,893	8,099
Police Vehicle	1	188	332	521
Fire Department Vehicle	0	15	29	44
Ambulance	1	10	27	38
Military Vehicle	0	3	5	8
Road Maintenance Vehicle	5	66	237	308
Other Public Owner Vehicle	0	36	95	131
Other Private Owner Vehicle	1	41	94	136
Other	0	2	0	2
Total**	836	56,707	135,846	193,389

* By law, motorcycles are defined as having engines of more than 50 cc. A motorscooter is now legally classed as a motorcycle if the engine exceeds the 50 cc threshold. Motorized bicycles and mopeds (abbreviated from motorized pedalcycle) must have engines of 50 cc or less to be so classified.

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

TABLE 1.15

1989 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	247	20,283	50,435	70,965	298	31,261	4.2
Parked Motor Vehicle	5	698	5,892	6,595	5	836	0.8
Railroad Train	11	49	83	143	15	75	104.9
Bicycle	10	1,321	48	1,379	10	1,376	7.3
Pedestrian	63	1,499	7	1,569	64	1,592	40.8
Animal	3	327	5,277	5,607	3	409	0.5
Fixed Object	84	3,934	8,507	12,525	88	5,140	7.0
Other Object	3	201	553	757	3	260	4.0
Non-Collision:							
Overturn	97	2,810	2,333	5,240	101	3,896	19.3
Fire/Explosion	1	9	170	180	2	12	11.1
Submersion	2	9	19	30	3	13	100.0
Other	13	436	557	1,006	13	534	12.9
Total	539	31,576	73,881	105,996	605	45,404	5.7

TABLE 1.16

1989 "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	1	701	2,991	3,693	1	906
Parked Motor Vehicle	1	41	2,699	2,741	1	54
Railroad Train	0	0	4	4	0	0
Bicycle	1	151	11	163	1	155
Pedestrian	3	205	2	210	3	210
Animal	0	0	2	2	0	0
Fixed Object	0	70	1,020	1,090	0	90
Other Object	0	5	39	44	0	6
Non-Collision:						
Overturn	0	14	33	47	0	23
Fire/Explosion	0	0	2	2	0	0
Submersion	0	0	1	1	0	0
Other	0	7	51	58	0	9
Total	6	1,194	6,855	8,055	6	1,453

TABLE 1.17

1989 CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes	Killed	Injured
None	355	16,312	42,362	59,029	393	22,925
Traffic Signal	25	6,642	12,765	19,432	25	9,483
Overhead Flashers	1	118	194	313	1	187
Stop Sign-All Approaches	5	607	1,467	2,079	5	849
Other Stop Sign	91	5,742	11,072	16,905	111	8,736
Yield Sign	14	595	1,230	1,839	15	942
Flagman, Officer, or School Patrol	1	44	76	121	1	61
School Bus Stop Arm	0	12	34	46	0	15
School Zone Sign	0	21	17	38	0	31
RR Crossing Gate	1	19	63	83	1	27
RR Flashing Lights	2	21	59	82	4	28
RR Crossing Stop Sign	2	14	16	32	3	19
RR Other	4	37	61	102	5	55
No Passing Zone	23	450	526	999	25	710
Other	7	263	490	760	7	387
Unknown	8	679	3,449	4,136	9	949
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.18

1989 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Daylight	264	20,138	45,006	65,408	293	28,953
Dawn/Dusk	27	2,118	5,436	7,581	28	2,951
Dark/Street Lights On	69	5,487	13,232	18,788	73	7,772
Dark/No Street Lights	169	3,617	7,907	11,693	197	5,450
Other/Unknown	10	216	2,300	2,526	14	278
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.19

1989 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Clear	307	18,558	40,510	59,375	343	26,589
Cloudy	158	8,220	18,152	26,530	180	11,982
Rain	16	1,649	3,401	5,066	17	2,358
Snow	31	2,147	7,499	9,677	37	3,068
Sleet/Hail	2	238	849	1,089	2	318
Fog/Smog/Smoke	7	190	400	597	7	288
Blowing Sand/Dust	8	236	553	797	8	375
Severe Crosswinds	3	33	79	115	3	48
Other	1	51	207	259	1	55
Not Stated/Unknown	6	254	2,231	2,491	7	323
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.20

CONTRIBUTING FACTORS IN 1989 CRASHES

Contributing Factors	Crash Severity: Fatal Crashes	Crash Severity: Personal Injury Crashes	Crash Severity: Property Damage Crashes	Number of People Affected by the Factor: Killed	Number of People Affected by the Factor: Injured
Human Factors:					
Illegal/Unsafe Speed	18.6%	13.1%	13.0%	176	9,152
Physical Impairment	17.5	7.4	3.5	179	5,049
Driver Inattention/Distraction	13.9	25.1	24.1	128	17,331
Failure to Yield Right of Way	10.7	15.6	15.0	102	11,299
Driving Left of Roadway Center--Not Passing	7.8	1.9	1.3	77	1,488
Improper/Unsafe Lane Use	5.3	3.1	5.9	55	2,027
Disregard For Traffic Control Device	4.1	5.2	3.3	43	3,976
Driver Inexperience	3.4	4.1	3.7	31	2,856
Pedestrian Violation/Error	3.3	1.5	0.0	28	767
Vision Obscured	2.4	3.1	3.1	22	2,135
Improper Passing/Overtaking	1.1	1.2	2.1	9	824
Improper Parking/ Starting/Stopping	0.7	0.8	1.4	6	549
Following Too Closely	0.5	5.8	6.3	4	4,006
Improper Turn	0.5	1.7	3.1	4	1,240
Impeding Traffic	0.1	0.3	0.3	1	255
Unsafe Backing	0.0	0.4	2.1	0	225
Improper or No Signal	0.0	0.3	0.5	0	189
Other Human Factor	1.9	1.5	1.3	16	988
Vehicular Factors:					
Skidding	2.9	2.3	2.9	7	456
Defective Equipment	1.2	1.1	1.1	40	1,993
Other Vehicular Factor	0.9	0.8	1.1	29	544
Miscellaneous Factors:					
Weather	3.2	3.5	4.7	29	2,541
Road Defect	0.1	0.3	0.3	2	198
Total Percent	100.0%	100.0%	100.0%		
Total contributing factors cited	850	47,295	80,745		
No Improper Driving	302	21,552	41,611		
Total Number of Drivers	915	59,634	135,892		

One or two contributing factors may be attributed to a single driver. This may cause the sum of the number of factors cited to exceed the number of drivers 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 contributing factors cited; they may not sum to 100 due to rounding. Bicyclists and pedestrians are included in this table. For contributing factors by age of drivers, see tables 1.09 and 1.10.

TABLE 1.21

1989 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Dry	416	20,809	43,351	64,576	470	30,129
Wet	40	4,354	9,033	13,427	43	6,249
Snow/Slush	18	1,621	5,121	6,760	23	2,258
Ice or Packed Snow	56	4,145	13,688	17,889	60	5,906
Other	7	327	491	825	7	459
Not Stated/Unknown	2	320	2,197	2,519	2	403
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.22

1989 CRASHES BY ROAD DESIGN

Road Design	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes	Killed	Injured
Freeway	53	2,366	6,991	9,410	56	3,231
Other Divided Highway	52	3,746	6,599	10,397	59	5,737
One-Way Street	5	864	1,460	2,329	5	1,225
4-6 Lanes Undivided-Two-Way	34	6,495	10,983	17,512	35	9,199
3 Lanes Undivided	3	254	381	638	3	399
2 Lanes Undivided-Two-Way	383	14,447	28,350	43,180	437	21,351
Alley/Driveway	2	227	752	981	2	256
Other	6	272	499	777	7	385
Not Stated/Unknown	1	2,905	17,866	20,772	1	3,621
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.23

1989 CRASHES BY TYPE OF ROADWAY

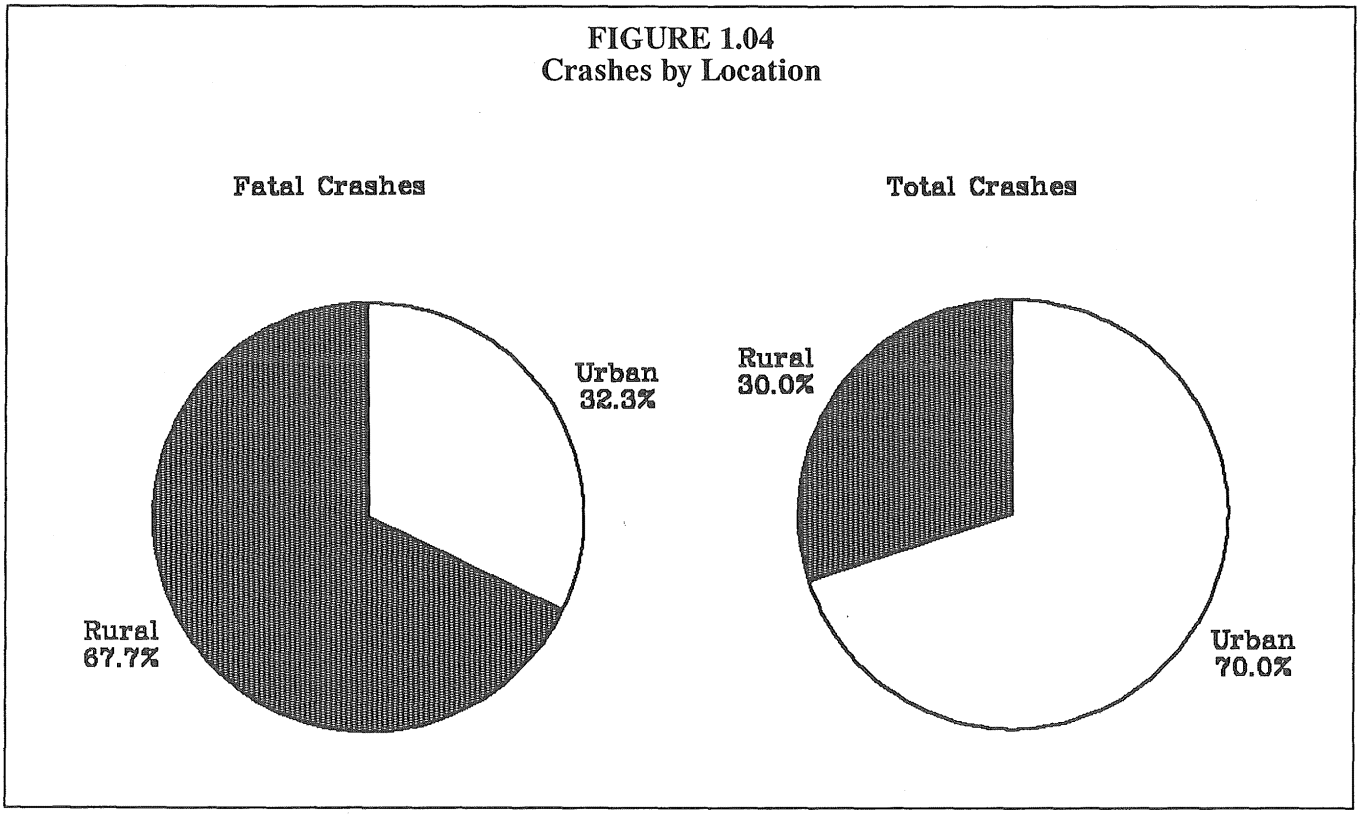
Type of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes	Killed	Injured
Urban						
Interstate	29	1,604	5,507	7,140	31	2,115
Trunk Highway	51	6,210	13,608	19,869	54	8,867
County State Aid Highway	39	5,809	11,869	17,717	44	8,253
County Road	4	249	514	767	4	359
Local Street	51	7,646	21,021	28,718	51	10,198
Total	174	21,518	52,519	74,211	184	29,792
Rural						
Interstate	13	453	1,456	1,922	13	685
Trunk Highway	183	4,177	9,157	13,517	222	6,783
County State Aid Highway	134	3,219	5,332	8,685	149	4,881
County Road	14	560	859	1,433	15	856
Township Road	18	821	1,180	2,019	19	1,321
Local Street	2	673	2,600	3,275	2	900
Other Road	1	155	778	934	1	186
Total	365	10,058	21,362	31,785	421	15,612
All Roadways						
Interstate	42	2,057	6,963	9,062	44	2,800
Trunk Highway	234	10,387	22,765	33,386	276	15,650
County State Aid Highway	173	9,028	17,201	26,402	193	13,134
County Road	18	809	1,373	2,200	19	1,215
Township Road	18	821	1,180	2,019	19	1,321
Local Street	53	8,319	23,621	31,993	53	11,098
Other Road	1	155	778	934	1	186
Total	539	31,576	73,881	105,996	605	45,404

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

TABLE 1.24

1989 CRASHES BY POPULATION OF AREA WHERE CRASH OCCURRED

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes	Killed	Injured
100,000 & Over	45	7,343	18,690	26,078	45	9,920
50,000 - 99,999	18	1,769	4,407	6,194	18	2,407
25,000 - 49,999	35	5,811	13,392	19,238	41	8,152
10,000 - 24,999	44	4,327	10,622	14,993	45	6,039
5,000 - 9,999	32	2,268	5,408	7,708	35	3,274
2,500 - 4,999	20	1,061	2,752	3,833	23	1,560
1,000 - 2,499	11	630	1,581	2,222	16	956
Under 1,000	334	8,367	17,029	25,730	382	13,096
Total	539	31,576	73,881	105,996	605	45,404



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

TABLE 1.25

1989 COUNTY CRASH REPORT

County	1989 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1984-1988	Number Killed 1989	Average Killed 1984-1988	Number Injured 1989	Average Injured 1984-1988
Aitkin	5	87	188	280	232	6	3	141	126
Anoka	24	1,718	3,406	5,148	4,583	28	21	2,578	2,459
Becker	3	164	270	437	437	3	9	248	268
Beltrami	0	232	438	670	578	0	5	350	299
Benton	6	228	512	746	627	6	7	337	327
Big Stone	1	32	75	108	104	2	2	48	59
Blue Earth	6	377	1,081	1,464	1,404	6	6	510	534
Brown	1	125	339	465	490	1	4	172	219
Carlton	7	173	372	552	460	7	4	282	213
Carver	6	319	695	1,020	881	10	9	498	404
Cass	6	138	254	398	338	7	10	216	185
Chippewa	4	55	128	187	200	4	5	96	114
Chisago	13	214	498	725	601	14	6	340	278
Clay	9	309	839	1,157	1,147	11	5	470	446
Clearwater	0	39	83	122	108	0	2	64	67
Cook	0	52	127	179	127	0	2	78	49
Cottonwood	2	59	128	189	181	2	2	88	88
Crow Wing	6	390	801	1,197	1,021	8	11	584	479
Dakota	27	1,599	3,818	5,444	4,896	28	20	2,232	2,248
Dodge	4	64	176	244	236	4	4	102	114
Douglas	2	221	577	800	706	2	8	330	330
Faribault	5	69	129	203	218	5	4	95	104
Fillmore	6	107	246	359	321	7	6	156	158
Freeborn	5	174	510	689	697	5	6	260	289
Goodhue	10	296	710	1,016	909	11	7	431	443
Grant	2	20	72	94	94	2	2	30	45
Hennepin	69	9,570	22,515	32,154	29,931	72	72	13,071	12,737
Houston	4	96	209	309	295	4	3	140	142
Hubbard	4	105	164	273	250	4	4	162	165
Isanti	3	195	381	579	432	3	4	302	231

TABLE 1.25 CONT'D

1989 COUNTY CRASH REPORT

County	1989 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1984-1988	Number Killed 1989	Average Killed 1984-1988	Number Injured 1989	Average Injured 1984-1988
Itasca	7	291	445	743	606	9	7	445	334
Jackson	0	53	125	178	200	0	2	78	83
Kanabec	1	84	141	226	200	1	3	155	124
Kandiyohi	5	296	532	833	791	7	6	426	407
Kittson	2	36	44	82	78	2	3	53	45
Koochiching	3	101	228	332	215	3	2	138	129
Lac Qui Parle	3	37	61	101	96	3	2	51	41
Lake	5	73	178	256	205	6	2	121	82
Lake of The Woods	1	21	38	60	49	1	1	33	23
LeSueur	7	132	407	546	473	8	4	197	207
Lincoln	0	28	74	102	96	0	2	40	52
Lyon	1	122	185	308	337	1	5	174	196
Mcleod	5	232	512	749	652	5	9	336	295
Mahnomen	0	25	20	45	64	0	2	35	56
Marshall	5	55	77	137	127	5	2	99	80
Martin	1	123	232	356	358	1	3	196	176
Meeker	6	91	276	373	355	7	6	135	181
Mille Lacs	5	137	188	330	322	5	6	235	180
Morrison	2	185	318	505	514	3	6	270	281
Mower	5	206	502	713	691	5	5	275	288
Murray	3	52	70	125	105	6	2	84	58
Nicollet	8	150	341	499	501	9	5	223	217
Nobles	0	120	253	373	361	0	3	158	151
Norman	1	50	39	90	95	1	2	89	62
Olmsted	7	698	1,941	2,646	2,295	8	15	1,023	1,000
OtterTail	11	318	579	908	776	12	11	513	410
Pennington	1	120	168	289	238	1	2	146	143
Pine	6	151	305	462	348	9	8	241	173
Pipestone	5	42	118	165	166	6	3	63	69
Polk	7	179	387	573	567	8	6	296	285

TABLE 1.25 CONT'D

1989 COUNTY CRASH REPORT

County	1989 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1984-1988	Number Killed 1989	Average Killed 1984-1988	Number Injured 1989	Average Injured 1984-1988
Pope	0	58	97	155	130	0	2	92	57
Ramsey	33	4,107	11,636	15,776	14,923	36	32	5,588	5,257
Red Lake	3	22	45	70	68	3	2	29	32
Redwood	3	66	131	200	204	3	2	99	106
Renville	11	80	159	250	219	14	6	155	114
Rice	5	332	699	1,036	1,018	5	8	482	473
Rock	2	52	161	215	195	2	1	79	76
Roseau	2	69	156	227	191	6	3	93	98
St. Louis	27	1,216	2,696	3,939	3,295	31	26	1,781	1,487
Scott	15	404	955	1,374	1,273	15	9	613	569
Sherburne	8	247	436	691	658	9	9	386	408
Sibley	2	72	176	250	228	2	3	112	120
Stearns	9	906	2,136	3,051	2,674	9	18	1,364	1,261
Steele	3	156	528	687	618	3	5	253	248
Stevens	3	47	127	177	142	5	1	69	58
Swift	3	42	68	113	138	3	1	62	68
Todd	4	166	234	404	360	4	8	279	217
Traverse	0	12	32	44	47	0	0	18	25
Wabasha	3	122	313	438	378	3	9	178	188
Wadena	2	77	191	270	242	2	2	124	120
Waseca	5	96	261	362	315	7	2	137	142
Washington	19	810	2,028	2,857	2,486	20	13	1,198	1,114
Watonwan	0	59	119	178	175	0	1	85	76
Wilkin	2	67	122	191	151	2	1	113	79
Winona	6	369	934	1,309	1,079	8	6	510	397
Wright	13	440	817	1,270	1,176	16	20	690	640
Yellow Medicine	3	47	99	149	144	3	2	76	75
Total	539	31,576	73,881	105,996	96,911	605	582	45,404	42,953

FIGURE 1.05

1989 COUNTY CRASH MAP

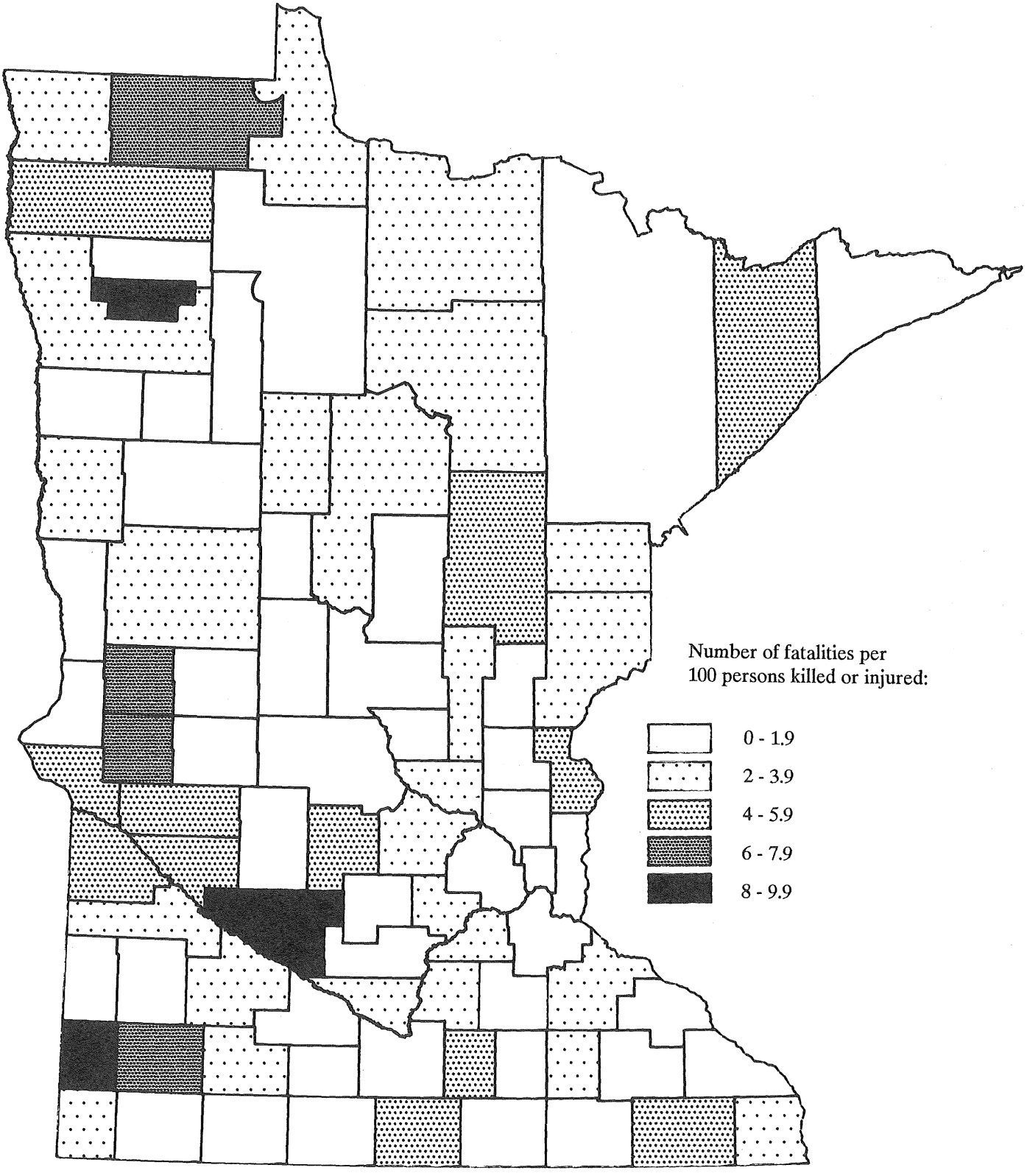


TABLE 1.26

1989 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Afton	0	16	42	58	0	19
Albert Lea	1	100	278	379	1	151
Alexandria	0	96	292	388	0	132
Andover	0	71	131	202	0	112
Anoka	0	173	399	572	0	229
Apple Valley	0	171	290	461	0	242
Arden Hills	0	87	225	312	0	133
Aurora	0	8	14	22	0	9
Austin	2	124	292	418	2	160
Baxter	0	27	42	69	0	45
Bayport	0	7	15	22	0	9
Belle Plaine	1	3	22	26	1	5
Bemidji	0	103	273	376	0	147
Benson	0	2	18	20	0	2
Blaine	2	309	570	881	2	489
Bloomington	9	766	2,019	2,794	9	1,021
Blue Earth	0	10	16	26	0	12
Brainerd	0	140	408	548	0	198
Breckenridge	1	18	27	46	1	26
Brooklyn Center	0	271	670	941	0	359
Brooklyn Park	2	445	622	1,069	2	625
Buffalo	0	40	93	133	0	55
Burnsville	1	325	838	1,164	1	458
Caledonia	0	9	11	20	0	18
Cambridge	0	37	93	130	0	55
Cannon Falls	0	9	31	40	0	12
Champlin	0	69	147	216	0	99
Chanhassen	1	86	203	290	1	136
Chaska	0	66	150	216	0	90
Chisholm	0	17	57	74	0	19
Circle Pines	0	18	18	36	0	28
Cloquet	1	60	179	240	1	90
Columbia Heights	4	134	211	349	4	194
Coon Rapids	4	386	735	1,125	6	572
Corcoran	0	18	36	54	0	27
Cottage Grove	2	90	264	356	2	131
Crookston	0	42	111	153	0	80
Crystal	0	133	248	381	0	184
Dayton	1	11	37	49	1	15
Delano	0	15	52	67	0	25
Detroit Lakes	0	49	110	159	0	65
Dilworth	0	4	18	22	0	4
Duluth	9	593	1,192	1,794	9	822
Eagan	6	208	548	762	7	293

TABLE 1.26 CONT'D

1989 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
East Bethel	0	39	59	98	0	74
East Grand Forks	1	35	133	169	1	46
Eden Prairie	4	248	682	934	4	350
Edina	3	282	740	1,025	3	389
Elk River	1	67	125	193	1	94
Ely	1	5	26	32	1	9
Eveleth	0	20	51	71	0	27
Excelsior	0	7	18	25	0	9
Fairmont	1	65	140	206	1	102
Falcon Heights	0	35	102	137	0	51
Faribault	2	120	306	428	2	172
Farmington	0	25	75	100	0	33
Fergus Falls	0	87	185	272	0	132
Forest Lake	1	34	87	122	1	50
Fridley	1	262	549	812	1	375
Gilbert	0	4	16	20	0	5
Glencoe	0	7	27	34	0	14
Glenwood	0	6	16	22	0	10
Golden Valley	1	294	743	1,038	1	410
Goodview	0	6	15	21	0	6
Grand Rapids	0	82	189	271	0	115
Granite Falls	0	9	20	29	0	16
Ham Lake	2	63	114	179	2	105
Hastings	1	110	219	330	1	157
Hermantown	0	42	92	134	0	62
Hibbing	3	109	341	453	3	169
Hopkins	0	155	306	461	0	204
Hoyt Lakes	0	2	9	11	0	2
Hugo	0	15	45	60	0	19
Hutchinson	0	96	177	273	0	128
Independence	2	16	42	60	2	31
International Falls	0	52	121	173	0	71
Inver Grove Heights	1	133	294	428	1	182
Jackson	0	11	26	37	0	11
Jordan	0	11	26	37	0	15
Kasson	0	1	21	22	0	3
La Crescent	0	6	26	32	0	6
Lake City	0	19	59	78	0	22
Lake Elmo	3	27	80	110	4	41
Lakeville	3	115	243	361	3	165
Le Sueur	0	6	34	40	0	8
Lino Lakes	4	41	112	157	5	66
Litchfield	0	24	54	78	0	28

TABLE 1.26 CONT'D

1989 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Little Canada	2	96	268	366	2	146
Little Falls	0	56	133	189	0	74
Long Prairie	1	9	20	30	1	9
Luverne	0	16	38	54	0	24
Mahtomedi	0	11	25	36	0	13
Mankato	0	247	708	955	0	319
Maple Grove	5	133	339	477	5	196
Maplewood	1	320	649	970	1	452
Marshall	0	55	71	126	0	75
Medina	1	32	60	93	1	49
Melrose	0	11	34	45	0	15
Mendota Heights	2	57	176	235	2	77
Minneapolis	23	4,704	10,799	15,526	23	6,388
Minnetonka	4	336	689	1,029	5	465
Minnetrista	1	30	94	125	1	37
Montevideo	1	33	76	110	1	53
Monticello	2	34	72	108	2	53
Moorhead	1	202	637	840	2	298
Mora	0	11	21	32	0	21
Morris	0	25	79	104	0	30
Mound	0	26	76	102	0	34
Mounds View	0	67	134	201	0	88
Mountain Iron	0	14	35	49	0	25
New Brighton	0	97	285	382	0	130
New Hope	0	84	206	290	0	109
Newport	3	46	138	187	3	59
New Prague	0	13	38	51	0	21
New Ulm	0	52	169	221	0	71
Northfield	0	33	105	138	0	44
North Mankato	0	37	88	125	0	47
North Oaks	1	10	32	43	4	13
North St. Paul	2	69	183	254	2	108
Oakdale	0	67	134	201	0	97
Oak Park Heights	0	28	53	81	0	41
Olivia	0	3	13	16	0	3
Orono	1	55	136	192	2	73
Ortonville	0	8	17	25	0	13
Osseo	0	16	36	52	0	20
Owatonna	0	77	296	373	0	103
Park Rapids	0	14	33	47	0	24
Pine City	0	18	46	64	0	24
Pipestone	1	20	34	55	1	26
Plainview	0	7	32	39	0	13
Plymouth	1	190	569	760	2	270

TABLE 1.26 CONT'D

1989 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Princeton	1	20	42	63	1	35
Prior Lake	0	50	95	145	0	69
Proctor	0	9	25	34	0	14
Ramsey	3	55	97	155	3	97
Red Wing	0	98	294	392	0	136
Redwood Falls	0	18	41	59	0	25
Richfield	2	351	926	1,279	2	475
Robbinsdale	1	138	257	396	1	182
Rochester	0	410	1,196	1,606	0	564
Rockford	0	11	25	36	0	13
Rosemount	7	51	119	177	7	90
Roseville	1	265	799	1,065	1	351
St. Anthony	1	38	58	97	1	54
St. Cloud	2	530	1,283	1,815	2	743
St. James	0	7	35	42	0	10
St. Joseph	0	10	31	41	0	18
St. Louis Park	2	366	808	1,176	2	510
St. Paul	22	2,639	7,891	10,552	22	3,532
St. Paul Park	0	12	41	53	0	18
St. Peter	0	45	82	127	0	65
Sartell	0	9	13	22	0	11
Sauk Centre	0	10	41	51	0	15
Sauk Rapids	0	45	106	151	0	69
Savage	3	72	179	254	3	104
Shakopee	1	105	317	423	1	153
Shoreview	0	83	197	280	0	122
Shorewood	2	44	54	100	2	71
Silver Bay	0	6	8	14	0	8
Sleepy Eye	0	10	34	44	0	15
South Interntl. Falls	0	4	12	16	0	4
South St. Paul	1	118	347	466	1	169
Spring Lake Park	0	54	108	162	0	72
Spring Valley	0	7	16	23	0	12
Staples	0	7	33	40	0	8
Stewartville	0	8	26	34	0	13
Stillwater	1	88	222	311	1	114
Thief River Falls	0	85	119	204	0	104
Two Harbors	0	11	37	48	0	24
Vadnais Heights	2	79	191	272	2	118
Virginia	1	61	181	243	2	75
Waconia	0	18	32	50	0	31
Wadena	0	17	80	97	0	24
Waite Park	0	46	130	176	0	76

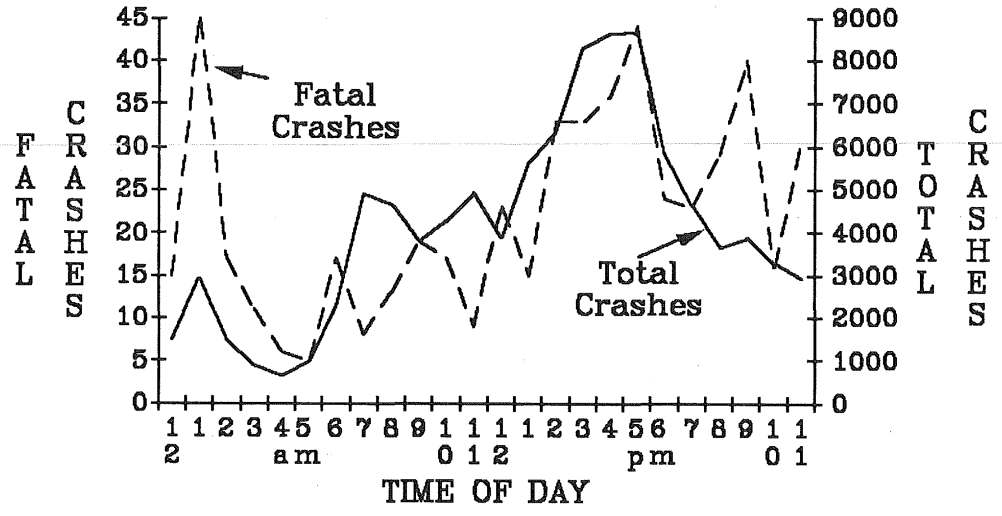
TABLE 1.26 CONT'D

1989 CRASHES IN CITIES OF 2,500 OR MORE POPULATION

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Waseca	0	35	127	162	0	43
Wayzata	0	49	137	186	0	70
Wells	0	3	8	11	0	3
West St. Paul	0	127	273	400	0	150
White Bear Lake	1	178	388	567	1	229
Willmar	1	146	322	469	1	197
Windom	0	12	37	49	0	19
Winona	2	212	513	727	2	283
Woodbury	2	86	204	292	2	131
Worthington	0	55	154	209	0	73

FIGURE 1.06

1989 Fatal Crashes vs. Total Crashes by Time of Day*



* An error was made in the data input process that caused the numbers of crashes shown to have occurred between midnight and 1:00 AM and between noon and 1:00 PM to be much lower than they should be. The error was found and corrected for fatal crashes, so that numbers reported for the time of fatal crashes in various tables and figures are not affected. For total crashes, the true number of crashes that occurred during the midnight and noon hours could be as much as 50% higher than the numbers shown. The crashes are incorrectly shown as having occurred during an unknown time (in Table 1.27 and other tables). This problem affects Tables 1.28, 4.05, 5.08, 6.03, 7.03, 8.05, and 9.04 and Figures 1.06, 2.01, 4.01, 5.01, 6.03, and 7.01, in addition to the figure above. For convenience, short notes beneath those tables and figures will reference this footnote.

TABLE 1.27

1989 CRASHES BY TIME AND DAY*

Hour Beginning	Total Crashes	Fatal Crashes	Mon All	Mon Fatal	Tues All	Tues Fatal	Wed All	Wed Fatal	Thur All	Thur Fatal	Fri All	Fri Fatal	Sat All	Sat Fatal	Sun All	Sun Fatal
Midnight	1,491	15	139	4	116	0	139	2	132	1	193	2	406	5	366	1
1:00	2,919	45	119	4	219	7	259	6	299	2	366	2	846	11	811	13
2:00	1,459	17	84	1	130	0	139	0	128	1	158	2	425	8	395	5
3:00	880	11	59	2	69	1	59	1	85	0	78	0	233	5	297	2
4:00	652	6	70	0	58	0	60	2	61	0	70	1	181	1	152	2
5:00	989	5	143	0	126	0	118	1	151	1	141	1	163	0	147	2
6:00	2,270	17	385	2	365	2	330	3	439	3	387	3	192	2	172	2
7:00	4,909	8	887	3	934	1	842	1	1,000	0	860	0	229	3	157	0
8:00	4,669	13	752	4	811	3	782	2	819	1	870	0	432	2	203	1
9:00	3,799	19	543	2	616	7	566	2	591	2	613	3	583	1	287	2
10:00	4,265	17	510	4	621	0	580	1	634	3	760	5	760	3	400	1
11:00	4,938	9	620	2	706	2	659	3	690	1	886	0	894	1	483	0
Noon	3,886	23	522	4	512	5	528	0	521	1	723	2	647	6	433	5
1:00	5,648	15	762	1	831	4	762	1	809	3	1,055	3	840	3	589	0
2:00	6,367	33	884	6	949	5	971	4	907	5	1,199	6	864	2	593	5
3:00	8,308	33	1,203	5	1,448	8	1,246	4	1,243	4	1,595	5	929	4	644	3
4:00	8,648	36	1,259	5	1,467	2	1,293	4	1,420	7	1,591	6	964	4	654	8
5:00	8,677	44	1,366	3	1,565	6	1,352	10	1,329	4	1,596	9	838	9	631	3
6:00	5,834	24	761	4	986	2	791	1	840	5	1,122	5	763	5	571	2
7:00	4,633	23	595	3	664	2	626	2	626	3	932	7	677	3	513	3
8:00	3,666	29	431	4	496	2	506	2	490	4	734	8	573	7	436	2
9:00	3,884	40	495	5	536	4	530	5	529	6	797	6	579	9	418	5
10:00	3,288	16	356	0	410	2	391	1	467	1	739	3	596	8	329	1
11:00	2,934	31	259	1	334	4	337	3	395	3	741	11	606	4	262	5
Unknown	6,983	10	845	0	971	1	959	3	989	0	1,197	0	1,200	2	822	4
Total	105,996	539	14,049	69	15,940	70	14,825	64	15,594	61	19,403	90	15,420	108	10,765	77

* Total crashes (but not including fatal crashes) between midnight and 1:00 AM and between noon and 1:00 PM are underreported. See footnote, p. 34.

TABLE 1.28

1989 CRASHES, FATALITIES AND INJURIES BY MONTH

	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	23	2,508	7,680	10,211	24	3,588
February	32	2,270	7,059	9,361	32	3,179
March	25	2,384	7,326	9,735	26	3,387
April	39	2,057	4,384	6,480	46	2,980
May	52	2,578	5,047	7,677	55	3,661
June	51	2,910	5,243	8,204	56	4,200
July	69	2,850	4,842	7,761	77	4,227
August	49	2,917	5,056	8,022	54	4,264
September	52	2,609	5,264	7,925	63	3,761
October	51	2,630	5,596	8,277	59	3,781
November	47	3,013	8,495	11,555	55	4,283
December	49	2,850	7,889	10,788	58	4,093
Total	539	31,576	73,881	105,996	605	45,404

TABLE 1.29

HOLIDAY CRASH SUMMARY, 1985 - 1989

	Year	Hours*	Total Crashes	Fatal Crashes	Personal Injury Crashes	Killed	Injured
Memorial Day	1985	78	715	5	281	5	395
(For 1989, the holiday	1986	78	855	9	285	11	421
period was 6 PM Fri.,	1987	78	695	4	238	4	384
May 26 - midnight	1988	78	691	8	243	8	369
Mon., May 29)	1989	78	749	7	288	7	426
July 4th	1985	30	353	5	136	5	211
(For 1989, the holiday	1986	78	751	4	278	5	469
period was 6 pm Fri.,	1987	78	834	6	319	7	500
June 30 - midnight	1988	78	717	8	282	8	458
Tues., July 4)	1989	102	1,079	13	439	14	708
Labor Day	1985	78	814	6	279	7	419
(For 1989, the holiday	1986	78	800	8	280	8	446
period was 6 PM Fri.,	1987	78	711	5	258	5	406
Sep. 1 - midnight	1988	78	764	9	271	12	416
Mon., Sept. 4)	1989	78	801	4	289	4	413
Thanksgiving	1985	102	2,054	8	461	8	705
(For 1989, the holiday	1986	102	838	13	192	15	323
period was 6 PM Wed.,	1987	102	1,522	7	441	10	690
Nov. 22 - midnight	1988	102	1,580	8	386	8	595
Sun., Nov. 26)	1989	102	1,180	6	313	6	482
Christmas	1985	30	178	0	45	0	66
(For 1989, the holiday	1986	30	130	3	35	3	48
period was 6 PM Fri.,	1987	78	648	2	164	2	260
Dec. 22-midnight	1988	78	1,052	1	247	1	406
Mon., Dec. 25)	1989	78	1,247	7	347	8	518
New Year's							
(For 1989/90, the	1985/6	30	249	3	70	3	112
holiday period was	1986/7	30	199	0	56	0	84
6 PM Fri., Dec. 29,	1987/8	30	744	5	208	6	355
1989 - midnight Mon.,	1988/9	78	823	4	219	4	335
Jan. 1, 1990)	1989/90	78	972	5	248	5	398

* The number of hours for a holiday period varies depending on what day of the week the holiday falls.

II: ALCOHOL-RELATED CRASHES

The 1980s saw a decrease in the percentage of drivers who were killed who tested positive for alcohol. This number declined until the mid-80s, then reached a plateau at around 50%. The percentage of drivers who were killed who were legally intoxicated also followed this pattern and has reached a plateau at around 40%. Minnesota law requires alcohol testing of anyone 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 1989.

50% of fatally injured drivers test positive
There were 368 drivers killed and 313 (85%) were tested for alcohol. Half of these drivers tested positive for alcohol: this number has remained fairly constant since 1985. Of the 313 tested, 41% were over the legal limit for intoxication.

DWI arrests up from 1988
There were 34,562 DWI arrests in 1989. This is a 5% increase from 1988 but is still 2% below the average of the prior five years. The number of DWI arrests for those under 21, which is currently 13% of the total number of DWI arrests, has been dropping since 1984. Thirty-two percent of those arrested were under the age of 25. Although 84% of those arrested were male and 16% were female, females have shown a gradual increase in percentage of DWI arrests as a whole from 11.8% in 1981 to 16.2% in 1989.

Alcohol-related crash victims young adults
The age group hardest hit by alcohol-related crashes was the 15-29 year olds. This group made up 47% of the alcohol-related fatalities and 57% of alcohol-related injuries. There were 275 alcohol-related fatalities, which translates to 45% of all fatalities. Fifteen percent of injuries and 5% of property damage crashes were also alcohol-related.

Single-vehicle crashes predominate
Whereas close to half of all fatal crashes involved collision with another vehicle, only about a third (34%) of alcohol-related crashes were of this type. Alcohol-related crashes were more often single vehicle overturn crashes (25%) or involved collision with a fixed object (22%) than did non-alcohol-related fatal crashes.

Most alcohol-related crashes occur at 1:00 AM
The hour between 1:00 and 2:00 AM had 15% of all alcohol-related crashes. In contrast, only 2% of the crashes occurred in the hours between 7:00 and 10:00 AM. The weekend days of Friday, Saturday, and Sunday together accounted for 63% of alcohol-related crashes, while Monday had 7%.

Males predominate among drivers who were drinking and killed
Males made up 89% of the fatally injured drivers who had been drinking and 91% of those who were legally drunk. This percentage has not changed much throughout the 1980s. Although the percentage of dead drivers who had been drinking but were under legal age has decreased from 1988, the percentage is still above the average of the prior five years.

25 - 29 year olds test positive most often
A full 69% of those 25-29 year olds drivers who were killed and tested for alcohol tested positive. Fifty-eight percent of these were legally drunk. Fatally injured drivers aged 15 to 29 made up 42% of those drivers who were tested for alcohol, 48% of those who tested positive and 47% of those who were legally drunk.

Saturdays, early mornings have highest alcohol use
Of those drivers who were tested who died on Saturday, 69% had been drinking and 57% were drunk. Of those drivers who were tested who died between midnight and 3:00 AM 85% had been drinking and 76% were drunk.

TABLE 2.01

DRINKING DRIVER SUMMARY, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Drunken Driving Arrests	22,788	27,034	28,048	32,155	36,638	35,383	36,390	34,664	32,827	34,562
Alcohol-Related Driver License Revocations Processed*	30,481	32,043	36,024	41,311	43,502	40,807	42,586	40,899	37,530	38,619
Estimated Alcohol Incidents that Led to Revocation**							39,310	37,710	34,270	35,470
Administrative Revocations For Refusing Test	3,863	4,427	8,456	11,155	11,413	9,219	8,468	8,336	7,907	7,943
Drivers Killed	519	437	321	345	383	372	347	297	361	368
Tested	65%	66%	72%	75%	83%	79%	81%	89%	87%	85%
Positive (.01 or higher)	69%	62%	54%	56%	58%	47%	49%	50%	48%	50%
Drunk (.10 or higher)	58%	52%	48%	45%	47%	37%	41%	43%	38%	41%

* 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.

** Estimated number of incidents that led to license revocation. For example: if John Doe gets arrested for a second alcohol offense in January and is arrested in June for a third offense, there could be 1 driver, 2 alcohol incidents, and 3 revocations. (These estimates are not available prior to 1986).

TABLE 2.02

DWI ARRESTS BY AGE, 1984 - 1989

Age	1984	1985	1986	1987	1988	1989
14 & Younger	6	8	8	8	6	8
15	21	24	27	13	15	25
16	185	171	254	208	160	175
17	500	446	546	485	503	458
18	1,342	1,109	1,151	1,084	1,038	1,072
19	2,166	1,864	1,813	1,363	1,229	1,284
20	2,370	2,035	2,002	1,709	1,291	1,426
14 & Younger	6	8	8	8	6	8
15 - 19	4,214	3,614	3,791	3,153	2,945	3,014
20 - 24	11,220	10,289	10,273	9,345	7,933	8,071
25 - 29	7,511	7,618	8,295	8,146	7,920	8,293
30 - 34	4,720	4,933	5,002	5,110	5,146	5,554
35 - 39	3,013	3,200	3,316	3,356	3,265	3,577
40 - 44	2,078	2,062	2,098	2,087	2,101	2,418
45 - 49	1,394	1,292	1,274	1,289	1,360	1,407
50 - 54	916	911	857	834	786	892
55 - 59	704	686	631	584	556	568
60 - 64	443	395	397	359	406	389
65 & Older	419	375	448	393	403	371
TOTAL	36,638	35,383	36,390	34,664	32,827	34,562

TABLE 2.03

DWI ARRESTS BY SEX, 1984 - 1989

Age	1984	1985	1986	1987	1988	1989
Male	31,327	30,135	30,836	29,266	27,686	28,978
Female	5,311	5,248	5,554	5,398	5,141	5,584
% Male	85.5	85.2	84.7	84.4	84.3	83.8
% Female	14.5	14.8	15.3	15.6	15.7	16.2

"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. In the case of fatal crashes and fatalities, we use 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. 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 is probably underestimated.

TABLE 2.04

AGE OF PERSONS KILLED AND INJURED IN 1989 ALCOHOL-RELATED CRASHES

Age	Killed *	Injured **
0 - 4	4	83
5 - 9	6	98
10 - 14	2	110
15 - 19	49	1,302
20 - 24	47	1,532
25 - 29	34	1,096
30 - 34	24	723
35 - 39	31	471
40 - 44	17	292
45 - 49	15	206
50 - 54	11	110
55 - 59	12	92
60 - 64	6	72
65 - 69	7	58
70 - 74	3	43
75 & Older	6	43
Not Stated	1	546
Total	275 ***	6,877

* 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.

*** Seventeen of the total 275 alcohol related fatalities were pedestrians or bicyclists who had been drinking. In four of these seventeen cases, the motor vehicle driver had also been drinking.

TABLE 2.05

PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES CODED AS ALCOHOL-RELATED, 1984 - 1989

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

TABLE 2.06

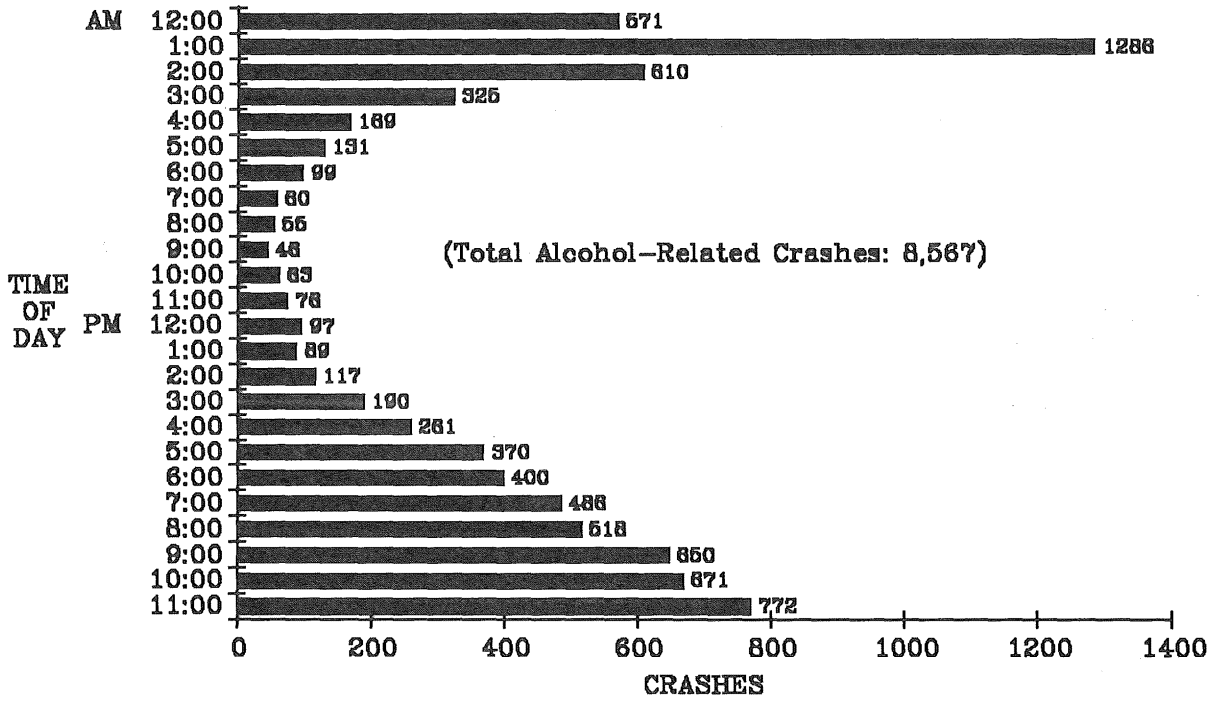
ALCOHOL-RELATED* FATAL CRASHES BY FIRST HARMFUL EVENT, 1989

First Harmful Event	Alcohol-Related Fatal Crashes Number	Percent	All Fatal Crashes Number	Percent
Collision with:				
Another Motor Vehicle	82	34.0%	247	45.8%
Parked Motor Vehicle	3	1.2	5	0.9
Railroad Train	6	2.5	11	2.0
Bicycle	2	0.8	10	1.9
Pedestrian	23	9.5	63	11.7
Animal	2	0.8	3	0.6
Fixed Object	54	22.4	84	15.6
Other Object	2	0.8	3	0.6
Non-Collision:				
Overturn	60	24.9	97	18.0
Fire/Explosion	0	0.0	1	0.2
Submersion	1	0.4	2	0.4
Other	6	2.5	13	2.4
Total	241	100.0%	539	100.0%

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

FIGURE 2.01

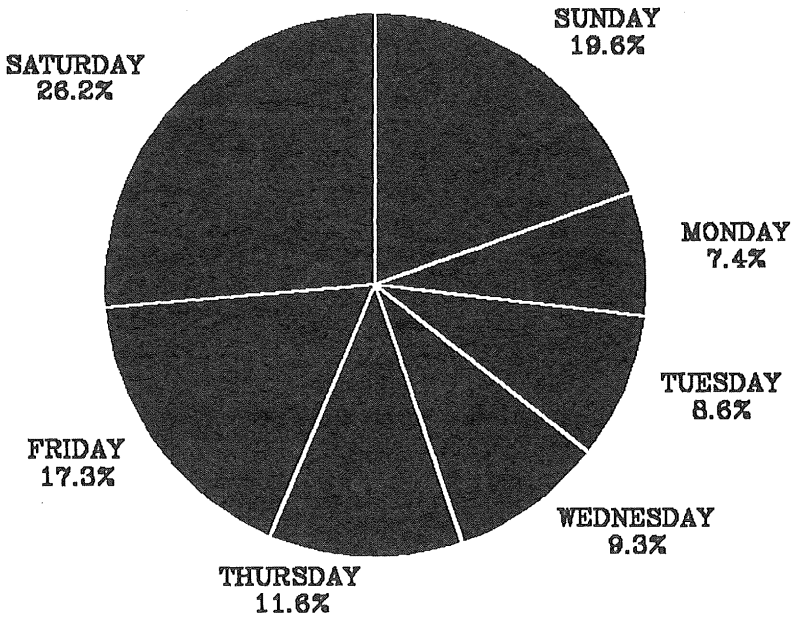
1989 Alcohol-Related Crashes by Time of Day*



* Includes only police officer's perception of alcohol as noted on accident report. Crashes during the midnight and noon hours are underreported; see footnote p. 34.

FIGURE 2.02

1989 Alcohol-Related* Crashes by Day of Week



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

TABLE 2.07

1989 FATALITIES' LEVEL OF INTOXICATION BY TRAFFIC ROLE

Fatality Type	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Car or Truck Driver	324	274	128	108
Car or Truck Passenger	136	61	26	20
Motorcycle Driver	31	30	21	18
Motorcycle Passenger	6	4	1	0
Pedestrian	67	42	16	12
Bicyclist	10	5	1	1
All-Terrain Vehicle Driver	5	3	0	0
Moped Driver	1	0	0	0
Snowmobile Driver	3	3	3	1
Motorscooter Driver	1	1	1	1
Other Driver	3	2	2	1
Other Passenger	1	0	0	0
Other/Unknown	17	4	2	2
Total	605	429	201	164

TABLE 2.08

DRIVERS KILLED WHO HAD BEEN DRINKING, 1980 - 1989

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1980	519	337	232 (69%)	195 (58%)
1981	437	288	178 (62%)	150 (52%)
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%)

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

TABLE 2.09

DRIVERS KILLED WHO TESTED .01 OR HIGHER, 1980 - 1989

	Total	Male	Female	Occurred Between Midnight - 3 am	Under Legal Age
1980	232	211 (91%)	21 (9%)	68 (29%)	23 (10%)
1981	178	162 (91%)	16 (9%)	61 (34%)	17 (10%)
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%)

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

TABLE 2.10

DRIVERS KILLED WHO TESTED .10 OR HIGHER, 1980 - 1989

	Total	Male	Female	Occurred Between Midnight - 3 am	Under Legal Age
1980	195	179 (92%)	16 (8%)	68 (35%)	17 (9%)
1981	150	138 (92%)	12 (8%)	81 (54%)	15 (10%)
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%)

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

FIGURE 2.03

Drivers Killed Who Had Been Drinking
1980 – 1989

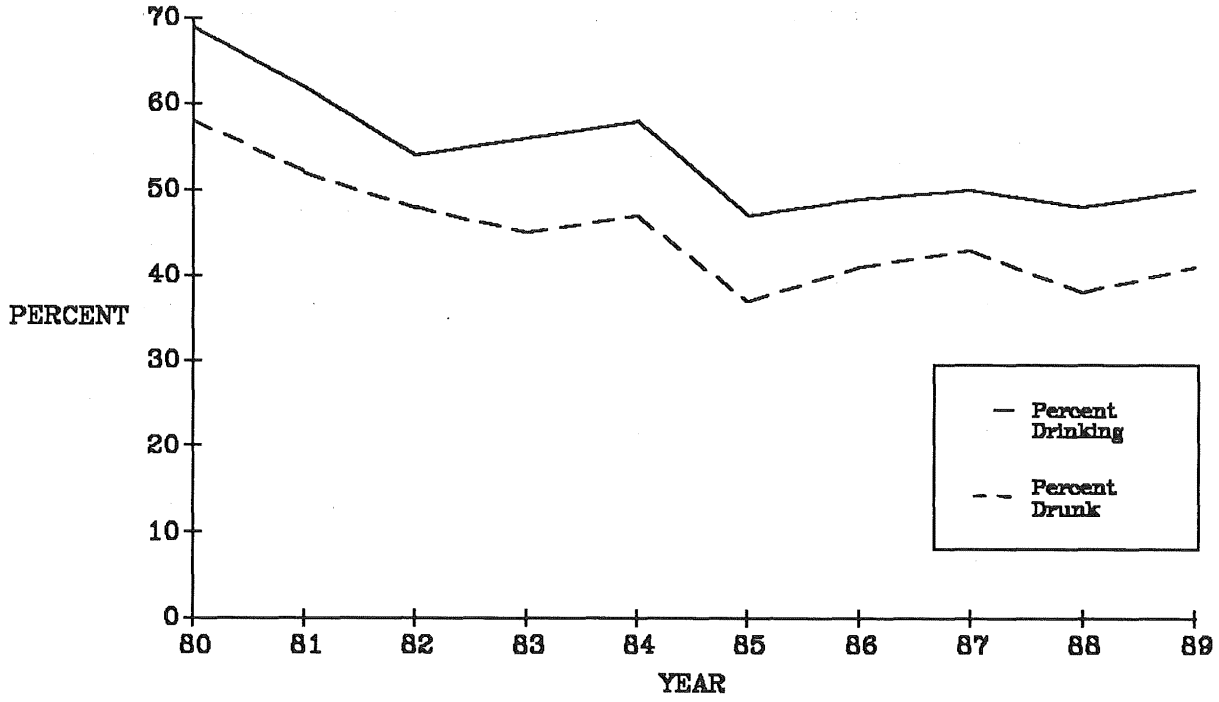


FIGURE 2.04

Percent of Drivers Killed in an Age Group Who Had Been Drinking
1989

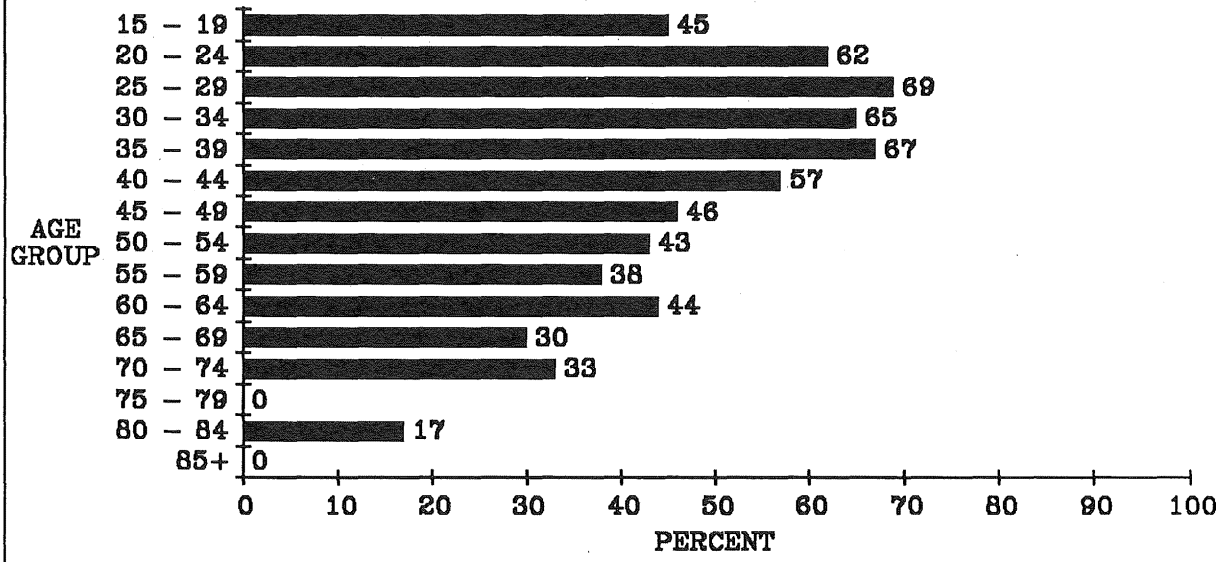


TABLE 2.11

1989 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

					Blood Alcohol Concentration				
Age	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
14 & Younger	4	2	0	0	0	0	0	0	0
15	2	1	0	0	0	0	0	0	0
16	7	5	1	1	0	0	1	0	0
17	10	9	4	3	0	1	1	2	0
18	12	11	7	4	1	2	2	2	0
19	24	23	10	7	1	2	0	7	0
20	12	8	4	4	0	0	1	3	0
14 & Younger	4	2	0	0	0	0	0	0	0
15 - 19	55	49	22 (45%)	15 (31%)	2	5	4	11	0
20 - 24	55	45	28 (62%)	24 (53%)	2	2	8	12	4
25 - 29	40	36	25 (69%)	21 (58%)	2	2	5	10	6
30 - 34	24	23	15 (65%)	15 (65%)	0	0	3	9	3
35 - 39	35	30	20 (67%)	19 (63%)	0	1	4	8	7
40 - 44	26	21	12 (57%)	9 (43%)	3	0	2	4	3
45 - 49	27	26	12 (46%)	11 (42%)	0	1	2	8	1
50 - 54	15	14	6 (43%)	4 (29%)	1	1	0	4	0
55 - 59	11	8	3 (38%)	3 (38%)	0	0	0	2	1
60 - 64	12	9	4 (44%)	3 (33%)	0	1	0	2	1
65 - 69	11	10	3 (30%)	2 (20%)	0	1	0	2	0
70 - 74	15	9	3 (33%)	2 (22%)	1	0	1	1	0
75 - 79	15	11	0	0	0	0	0	0	0
80 - 84	13	12	2 (17%)	1 (8%)	1	0	1	0	0
85 & Older	10	8	0	0	0	0	0	0	0
Total	368	313	155 (50%)	129 (41%)	12	14	30	73	26

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

TABLE 2.12

1989 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY MONTH

Month	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
January	12	12	6 (50%)	4 (33%)	1	1	0	2	2
February	22	19	6 (32%)	5 (26%)	1	0	2	2	1
March	18	16	5 (31%)	4 (25%)	1	0	0	3	1
April	24	22	16 (73%)	14 (64%)	1	1	4	8	2
May	37	32	18 (56%)	17 (53%)	0	1	5	10	2
June	32	29	12 (41%)	9 (31%)	2	1	2	6	1
July	47	42	24 (57%)	21 (50%)	0	3	5	10	6
August	35	28	17 (61%)	12 (43%)	2	3	4	6	2
September	39	34	14 (41%)	11 (32%)	1	2	1	8	2
October	35	28	15 (54%)	13 (46%)	1	1	4	7	2
November	38	32	11 (34%)	9 (28%)	2	0	2	6	1
December	29	19	11 (58%)	10 (53%)	0	1	1	5	4
Total	368	313	155 (50%)	129 (41%)	12	14	30	73	26

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

TABLE 2.13

1989 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY ROAD TYPE

Road Type	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Urban Interstate	17	14	3 (21%)	3 (21%)	0	0	1	1	1
Rural Interstate	10	9	5 (56%)	5 (56%)	0	0	1	3	1
Trunk Highway	176	149	67 (45%)	53 (36%)	7	7	9	37	7
County Road	126	110	60 (55%)	51 (46%)	4	5	13	22	16
Township Road	12	9	7 (78%)	6 (67%)	0	1	1	4	1
Local Street	27	22	13 (59%)	11 (50%)	1	1	5	6	0
Total	368	313	155 (50%)	129 (41%)	12	14	30	73	26

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

TABLE 2.14

1989 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY TIME OF DAY

					Blood Alcohol Concentration				
Time of Day	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Midnight - 2:59 AM	58	55	47 (85%)	42 (76%)	1	4	9	23	10
3:00 - 5:59 AM	18	15	12 (80%)	11 (73%)	1	0	4	6	1
6:00 - 8:59 AM	30	24	6 (25%)	5 (21%)	1	0	0	5	0
9:00 - 11:59 AM	34	25	2 (8%)	2 (8%)	0	0	2	0	0
Noon - 2:59 PM	41	30	6 (20%)	3 (10%)	3	0	2	1	0
3:00 - 5:59 PM	69	59	10 (17%)	7 (12%)	1	2	1	4	2
6:00 - 8:59 PM	51	46	24 (52%)	18 (39%)	3	3	5	6	7
9:00 - 11:59 PM	57	49	39 (80%)	32 (65%)	2	5	4	23	5
Unknown	10	10	9 (90%)	9 (90%)	0	0	3	5	1
Total	368	313	155 (50%)	129 (41%)	12	14	30	73	26

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

TABLE 2.15

1989 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY DAY OF WEEK

					Blood Alcohol Concentration				
Day of Week	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-24	.25 & Over
Sunday	49	41	25 (61%)	22 (54%)	2	1	3	14	5
Monday	48	40	13 (33%)	12 (30%)	1	0	2	6	4
Tuesday	45	37	15 (41%)	13 (35%)	1	1	3	9	1
Wednesday	47	41	21 (51%)	18 (44%)	1	2	6	8	4
Thursday	38	31	12 (39%)	8 (26%)	1	3	3	4	1
Friday	65	58	24 (41%)	19 (33%)	3	2	2	10	7
Saturday	76	65	45 (69%)	37 (57%)	3	5	11	22	4
Total	368	313	155 (50%)	129 (41%)	12	14	30	73	26

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

III: SAFETY EQUIPMENT USE BY VEHICLE OCCUPANTS IN 1989 CRASHES

Studies show that using seat belts reduces the risk of fatal and serious injury by forty to fifty percent. Restraint use is thus an important traffic safety priority. The Minnesota Child Passenger Protection Act took effect in 1982. As amended in 1983 and 1987, it requires that children three and under be properly restrained in a child safety seat. The mandatory seat belt law, passed in 1986, requires that all front seat occupants and children four to ten years old, no matter where they are sitting, be restrained. The Legislature added a $10 fine to this law in 1988.

Currently, information is collected only for killed and injured occupants of motor vehicles normally equipped with seat belts (e.g., cars and trucks, but not motorcycles or school buses). Information on non-injured occupants is not collected.

44% seat belt use rate statewide

Observational surveys of randomly sampled vehicles on state roadways have been conducted since 1986. In June, 1986, before the seat belt law, 20% of observed front seat occupants wore seat belts. In the August, 1989, survey, seat belt use increased to 44%. Use is higher in the Twin City metro area (52%) than in other locations (40%). Also, seat belt use rates increase as travel speeds increase (Table 3.06).

Use highest for infants, lowest for teenagers

Over 60% of 0 to 3 year old children injured were restrained, compared to only about 30% of those between 11 and 19. Restraint use then increases again with later ages (Table 3.02 and Figure 3.01).

As seat belt use decreases, injury severity inversely increases

Not surprisingly, only 21% of all killed occupants were restrained, versus 42% of all injured occupants (Table 3.02). In general, as severity of injury increases, the likelihood that the injured person was wearing safety restraints decreases (Table 3.03).

Seat belt use higher on highways than local streets

On interstate and trunk highways, belt use by killed and injured persons exceeded 45%, but on local streets it was under 40%. It was lower still on county and township roads.

Use lowest in West Central counties

Belt use by killed and injured persons in counties in the West Central region of the state was 31%, the lowest in the state and about 10 percentage points less than for the state as a whole (Table 3.05). The West Central region had the lowest usage in 1988 as well.

TABLE 3.01

1989 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE AND SEVERITY OF INJURY

Age Group	Killed	Injured			Total
		Severe	Moderate	Minor	
0 - 4	8	57	312	583	952
5 - 9	8	65	419	564	1,048
10 - 14	5	103	403	606	1,112
15 - 19	73	795	2,825	3,531	7,151
20 - 24	63	634	2,145	3,052	5,831
25 - 29	43	496	1,610	2,507	4,613
30 - 34	30	356	1,071	2,070	3,497
35 - 39	36	279	844	1,722	2,845
40 - 44	30	189	671	1,282	2,142
45 - 49	26	153	461	1,001	1,615
50 - 54	17	106	366	708	1,180
55 - 59	22	95	350	660	1,105
60 - 64	24	107	283	550	940
65 - 69	20	108	277	483	868
70 - 74	20	106	265	392	763
75 - 79	23	81	190	300	571
80 - 84	18	39	124	169	332
85 & Older	11	30	68	83	181
Not Stated	1	164	635	2,668	3,467
Total	478	3,963	13,319	22,931	40,213

FIGURE 3.01

1989 Restraint Use of Motor Vehicle Occupants Killed and Injured by Age

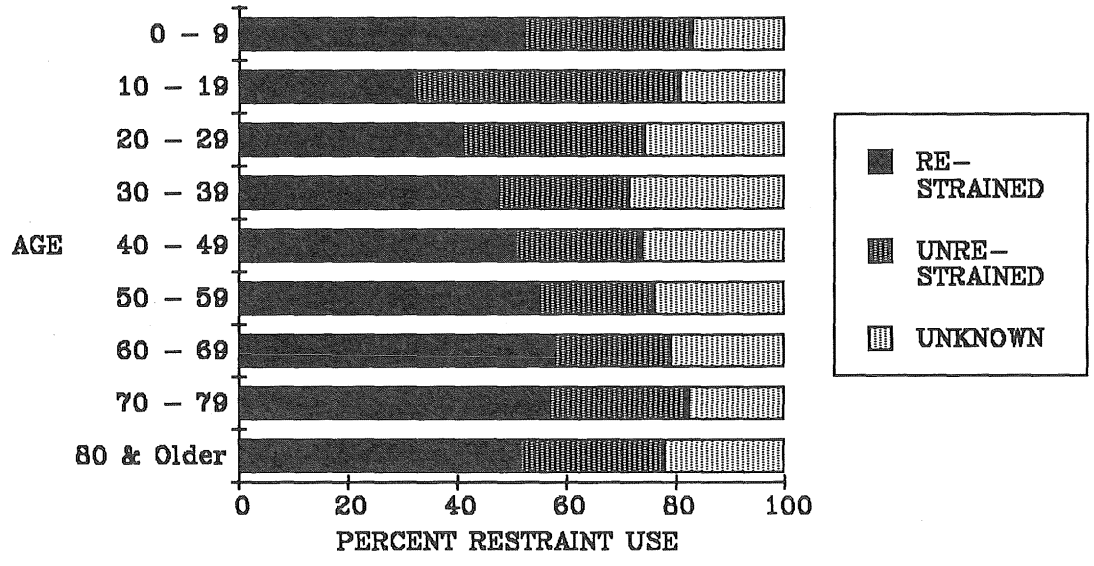


TABLE 3.02

RESTRAINT USE OF VEHICLE OCCUPANTS KILLED AND INJURED IN 1989 BY AGE AND INJURY SEVERITY

Age Group	Restraint Use	Killed		Injured							
				Severe		Moderate		Minor		Total	
		#	%	#	%	#	%	#	%	#	%
0 - 3	Restrained	2	25.0	21	46.7	139	62.6	265	63.7	425	62.2
Years	Unrestrained	5	62.5	13	28.9	56	25.2	85	20.4	154	22.5
	Unknown	8	12.5	11	24.4	27	12.2	66	15.9	104	15.2
	Total	1	100.0	45	100.0	222	100.0	416	100.0	683	100.0
4 - 10	Restrained	1	12.5	34	36.6	244	41.9	414	49.6	692	45.8
Years	Unrestrained	2	25.0	41	44.1	242	41.5	258	30.9	541	35.8
	Unknown	5	62.5	18	19.4	97	16.6	163	19.5	278	18.4
	subtotal	8	100.0	93	100.0	583	100.0	835	100.0	1,511	100.0
11 - 19	Restrained	8	10.3	160	18.1	890	28.2	1,498	37.1	2,548	31.6
Years	Unrestrained	55	70.5	547	62.0	1,782	56.5	1,625	40.3	3,954	49.0
	Unknown	15	19.2	175	19.8	482	15.3	910	22.6	1,567	19.4
	subtotal	78	100.0	882	100.0	3,154	100.0	4,033	100.0	8,069	100.0
20 - 29	Restrained	17	16.0	297	26.3	1,369	36.5	2,563	46.1	4,229	40.5
Years	Unrestrained	69	65.1	595	52.7	1,579	42.1	1,366	24.0	3,510	33.6
	Unknown	20	18.9	238	21.1	807	21.5	1,660	29.9	2,705	25.9
	subtotal	106	100.0	1,130	100.0	3,755	100.0	5,559	100.0	10,444	100.0
30 - 39	Restrained	10	15.2	238	37.5	865	45.2	1,915	50.5	3,018	47.6
Years	Unrestrained	48	72.7	258	40.6	620	32.4	607	16.0	1,485	23.4
	Unknown	8	12.1	139	21.9	430	22.5	1,270	33.5	1,839	29.0
	subtotal	66	100.0	635	100.0	1,915	100.0	3,792	100.0	6,342	100.0
40 - 49	Restrained	13	23.2	152	44.4	535	47.3	1,220	53.4	1,907	50.8
Years	Unrestrained	39	69.6	135	39.5	352	31.1	360	15.8	847	22.5
	Unknown	4	7.1	55	16.1	245	21.6	703	30.8	1,003	26.7
	subtotal	56	100.0	342	100.0	1,132	100.0	2,283	100.0	3,757	100.0
50 - 59	Restrained	10	25.6	90	44.8	380	53.1	784	57.3	1,254	54.9
Years	Unrestrained	27	69.2	70	34.8	203	28.4	197	14.4	470	20.6
	Unknown	2	5.1	41	20.4	133	18.6	387	28.3	561	24.6
	subtotal	39	100.0	201	100.0	716	100.0	1,368	100.0	2,285	100.0
60 - 69	Restrained	14	31.8	99	46.0	316	56.4	631	61.1	1,046	57.9
Years	Unrestrained	25	56.8	74	34.4	153	27.3	148	14.3	375	20.7
	Unknown	5	11.4	42	19.5	91	16.3	254	24.6	387	21.4
	subtotal	44	100.0	215	100.0	560	100.0	1,033	100.0	1,808	100.0
70 &	Restrained	23	31.9	121	47.3	346	53.5	563	59.6	1,030	55.8
Older	Unrestrained	34	47.2	92	35.9	204	31.5	170	18.0	466	25.2
	Unknown	15	20.8	43	16.8	97	15.0	211	22.4	351	19.0
	subtotal	72	100.0	256	100.0	647	100.0	944	100.0	1,847	100.0
Age	Restrained	0	0.0	41	25.0	232	36.5	580	21.7	853	24.6
Not	Unrestrained	1	100.0	74	45.1	215	33.9	244	9.1	533	15.4
Stated	Unknown	0	0.0	49	29.9	188	29.6	1,844	69.1	2,081	60.0
	subtotal	1	100.0	164	100.0	635	100.0	2,688	100.0	3,467	100.0
All	Restrained	98	20.5	1,253	31.6	5,316	39.9	10,433	45.5	17,002	42.3
Ages	Unrestrained	305	63.8	1,899	47.9	5,406	40.6	5,030	21.9	12,335	30.7
	Unknown	75	15.7	811	20.5	2,597	19.5	7,468	32.6	10,876	27.0
	Total	478	100.0	3,963	100.0	13,319	100.0	22,931	100.0	40,213	100.0

(Persons aged 0 to 3 and 4 to 10 years old are categorized in separate groups because Minnesota law makes special provisions for these age groups.)

TABLE 3.03

PERCENT RESTRAINT USE OF MOTOR VEHICLE OCCUPANTS INJURED OR KILLED, BY INJURY SEVERITY AND YEAR, 1984-1989

	1984	1985	1986	1987	1988	1989
Killed						
Restrained	5.8%	8.8%	9.2%	17.7%	21.1%	20.5%
Unrestrained	64.5	70.8	69.7	67.9	64.1	63.8
Unknown	29.7	20.4	21.1	14.4	14.8	15.7
Injured						
Severe Injuries						
Restrained	5.9	8.4	16.9	22.0	30.5	31.6
Unrestrained	46.3	60.3	57.8	55.1	48.9	47.9
Unknown	47.8	31.3	25.4	22.9	20.6	20.5
Moderate Injuries						
Restrained	7.4	10.7	20.8	29.3	38.2	39.9
Unrestrained	44.8	58.8	53.4	48.4	41.7	40.6
Unknown	47.8	30.4	25.9	22.3	20.1	19.5
Minor Injuries						
Restrained	9.0	14.4	25.7	36.2	42.9	45.5
Unrestrained	34.7	45.6	38.9	32.2	24.4	21.9
Unknown	56.3	40.0	35.3	31.6	32.7	32.6
Total Killed and Injured						
Restrained	8.1	12.5	22.7	31.9	39.7	42.0
Unrestrained	41.9	53.8	46.7	41.2	33.3	31.1
Unknown	50.0	33.7	30.6	26.9	27.0	26.9

TABLE 3.04

RESTRAINT USE OF MOTOR VEHICLE OCCUPANTS KILLED AND INJURED BY ROADWAY TYPE, 1989

	Restrained		Unrestrained		Unknown		Total	
Roadway Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Interstate	1,255	46.6	637	23.6	804	29.8	2,696	100.0
Trunk Highway	6,677	45.7	4,478	30.6	3,465	23.7	14,620	100.0
County State-Aid Highway	4,946	41.7	3,678	31.0	3,244	27.3	11,868	100.0
County Road	378	34.4	469	42.7	252	22.9	1,099	100.0
Township Road	340	27.4	642	51.8	257	20.7	1,239	100.0
Local Street	3,479	38.4	2,692	29.7	2,883	31.8	9,054	100.0
Other Road	25	21.7	44	38.3	46	40.0	115	100.0
Total	17,100	42.0	12,640	31.1	10,951	26.9	40,691	100.0

TABLE 3.05

RESTRAINT USE OF MOTOR VEHICLE OCCUPANTS KILLED AND INJURED BY REGION OF STATE, 1989

Region*	Percent Restrained	Percent Unrestrained	Percent Unknown	Number of People
Metropolitan	44.2	24.5	31.3	22,621
Central	41.3	38.6	20.1	5,101
Northeast	42.2	34.5	23.2	2,741
Northwest	36.5	44.1	19.4	1,355
South Central	40.3	39.5	20.2	1,583
Southeast	41.4	37.8	20.8	3,428
Southwest	34.6	45.5	19.8	2,096
West Central	31.3	40.0	28.7	1,766
Statewide	42.0	31.1	26.9	40,691

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

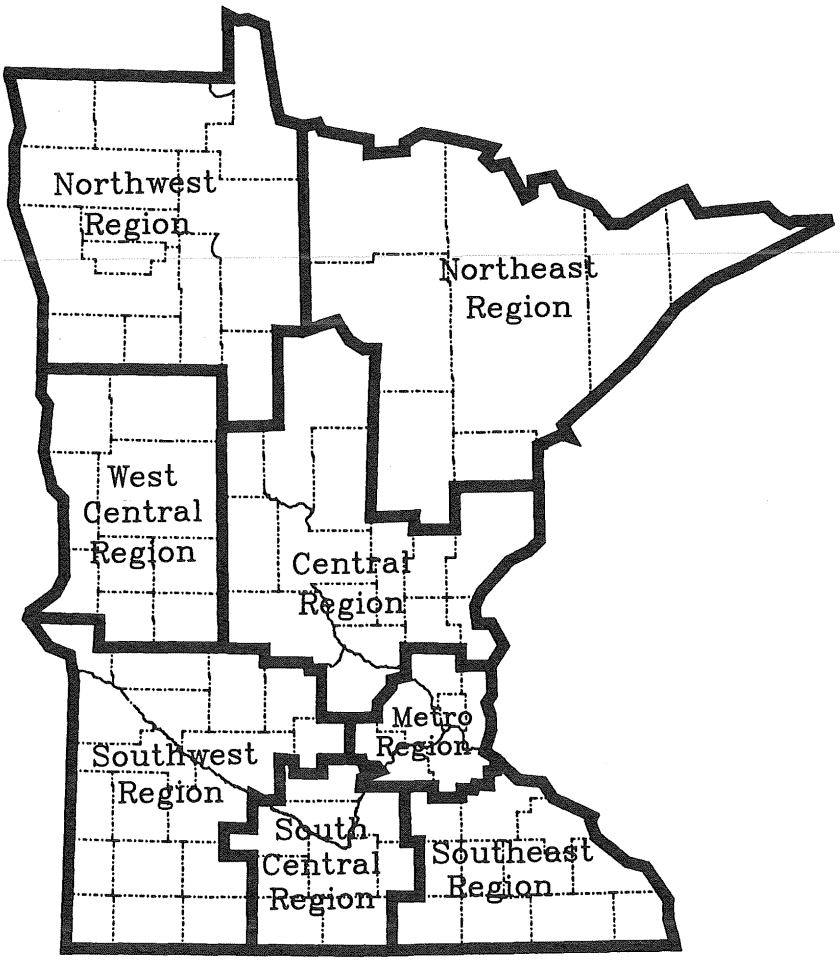


TABLE 3.06

PERCENT OF FRONT SEAT OCCUPANTS WEARING SEAT BELTS, BY DATE OF OBSERVATION SURVEY

	June 1986	August 1986	November 1986	August 1987	August 1988	August 1989
Estimation Area						
Statewide	20	33	32	32	47	44
Metro	30	43	39	40	51	52
Non-Metro	15	26	24	28	45	40
Weather						
Clear	19	32	33	32	47	44
Other	23	36	19	41	48	53
Time						
Rush Hour	21	31	30	30	47	42
Non-rush Hour	20	34	32	33	47	44
Day of the Week						
Weekday	19	33	33	32	45	42
Weekend	21	33	29	33	52	49
Speed						
20 MPH	14	29	33	29	35	39
40 MPH	20	32	27	30	47	46
60 MPH	28	39	36	41	57	52
Road Class						
Major Roads	23	35	31	35	48	44
Local Roads	17	31	32	29	46	45

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. The June 1986 observation study was conducted prior to the implementation of this law; all other studies were conducted after the law went into effect. The August 1988 survey was conducted after the amendment adding a $10.00 fine 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.

IV: MOTORCYCLE CRASHES

The number of motorcycle crashes, injuries and fatalities declined during the 1980s; the number of motorcycle registrations also declined. There were 123,308 motorcycles registered in Minnesota in 1989. This is a 4% decrease from 1988 and a 13% decrease from the average of the prior five years. The number of licensed operators, on the other hand, has continually increased throughout the decade.

Motorcycle crashes were four times more likely to involve a fatality than were total motor vehicle crashes in 1989. This number is down from six times more likely in 1988. While the fatal crash rate per 100 crashes for motorcycles has been decreasing, the rate for all vehicle types has reached a plateau at 0.5.

Fatalities lowest in 20 years
There were 37 motorcyclists killed in 1989. This is the lowest number since 1969 when there were 32 motorcycle fatalities. The number of crashes and injuries were also down. There were 1,748 crashes, which represents a 27% decrease from the average of the prior five years. Motorcyclists sustained 1,617 injuries, which represents a 26% decrease from the average of the prior five years.

Most common collision with other vehicles
Over half of the motorcycle crashes involved a collision with another motor vehicle. Another 25% were overturns. For fatal crashes, 46% were collisions with another motor vehicle, 30% were collisions with a fixed object, and only 16% were overturns.

Rural areas overrepresented in fatal crashes
Areas of under 1,000 population accounted for 22% of the crashes and 25% of the injuries; however, 51% of the fatalities occurred in these areas. Areas of 100,000 or more population accounted for 22% of the crashes and 35% of the property damage (no injury) crashes.

July highest month
July was again the month with the highest number of crashes, injuries, and fatalities. The three months of June, July, and August accounted for 57% of the crashes. The five cold weather months of January, February, March, November, and December accounted for only 2% of the crashes.

Crashes occur in early afternoon
The hours from 3:00 to 6:00 PM were the three hours with the highest number of crashes. The hours 3:00 to 6:00 AM were the hours with the lowest number of crashes. Sunday had the highest number of total crashes but the lowest number of fatal crashes. Saturday had the second highest number of total crashes and the highest number of fatal crashes, accounting for 38% of all fatal crashes.

Younger riders suffer more
The age group 15 - 24 suffered 51% of the fatalities and 43% of the injuries sustained by motorcyclists. Males made up more than 80% of the injuries at every severity level. Males accounted for 84% of the fatalities.

Few killed motorcyclists were wearing helmets
At least 78% of the motorcyclists killed and 55% of motorcyclists injured were not wearing a helmet at the time of their crash. Only 56% of motorcyclists involved in fatal crashes had a valid license endorsement.

More drivers tested for alcohol
The number of fatally injured motorcycle drivers who were tested for blood alcohol concentration reached an all-time high of 97% in 1989. The number of those tested who had been drinking increased to 70%, and the number who were over the legal limit of intoxication was 60%. Alcohol use by drivers appears fairly evenly spread across age groups.

Driver inattention/distraction high
The top two contributing factors associated with motorcycle drivers were illegal/unsafe speed and driver inattention/distraction. The top two contributing factors associated with other drivers in motorcycle crashes were failure to yield the right of way and driver inattention/distraction. The investigating officer found "no improper driving" in the case of 33% of the motorcyclists and 29% of the other drivers.

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total Crashes	3,308	3,063	2,518	2,811	2,768	2,748	2,318	2,121	1,969	1,748
Fatal Crashes	112	92	72	70	59	75	63	51	57	37
Personal Injury Crashes	2,728	2,516	2,115	2,377	2,302	2,238	1,891	1,692	1,628	1,463
Property Damage Crashes	468	455	331	364	407	435	364	378	284	248
Persons Killed:										
Motorcyclists	121	96	70	73	62	77	66	51	58	37
Non-Motorcyclists/Unknown	1	0	6	0	1	1	0	3	4	0
Persons Injured:										
Motorcyclists*	3,359	2,874	2,381	2,678	2,590	2,500	2,152	1,853	1,817	1,617
Non-Motorcyclists/Unknown	N/A	196	189	191	207	204	142	145	126	104
Licensed Operators	222,330	238,926	246,134	252,808	256,836	272,317	282,087	288,424	293,347	**
Registered Motorcycles	157,815	166,151	159,345	155,502	153,851	151,449	141,261	134,590	128,956	123,308
Rates:										
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	3.4	3.0	2.9	2.5	2.2	2.7	2.7	2.4	2.9	2.1
Fatal Crashes Per 100 Crashes (All Vehicles)	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Motorcyclist Fatalities Per 10,000 Motorcycle Registrations	7.7	5.8	4.5	4.7	4.0	5.1	4.7	3.8	4.5	3.0
Motorcyclist Injuries Per 10,000 Motorcycle Registrations	212.8	173.0	149.4	172.2	165.5	165.1	152.3	137.7	140.9	131.1
Total Motorcycle Crashes Per 10,000 Motorcycle Registrations	209.6	184.4	158.0	180.8	179.9	181.4	164.1	157.6	152.7	141.8

* 1983 and 1984 injury figures include some all-terrain vehicles. Fatality figures do not.
** Data for 1989 were not available when this publication went to press.
N/A Not Available

TABLE 4.02

1989 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	17	717	156	890	17	792
Parked Motor Vehicle	0	22	29	51	0	21
Bicycle	0	16	0	16	0	6
Pedestrian	0	13	0	13	0	5
Animal	2	48	9	59	2	61
Fixed Object	11	149	11	171	11	169
Other Object	1	19	9	29	1	20
Non-Collision:						
Overturn	6	397	27	430	6	450
Other/Unknown	0	82	7	89	0	93
Total	37	1,463	248	1,748	37	1,617

TABLE 4.03

1989 MOTORCYCLE CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Motorcyclists Killed	Motorcyclists Injured
100,000 and Over	4	288	88	380	4	306
50,000 - 99,999	4	64	17	85	4	71
25,000 - 49,999	3	265	39	307	3	282
10,000 - 24,999	4	234	31	269	4	255
5,000 - 9,999	0	122	15	137	0	127
2,500 - 4,999	1	58	10	69	1	59
1,000 - 2,499	0	30	2	32	0	31
Under 1,000	19	327	37	383	19	403
Unknown	2	75	9	86	2	83
Total	37	1,463	248	1,748	37	1,617

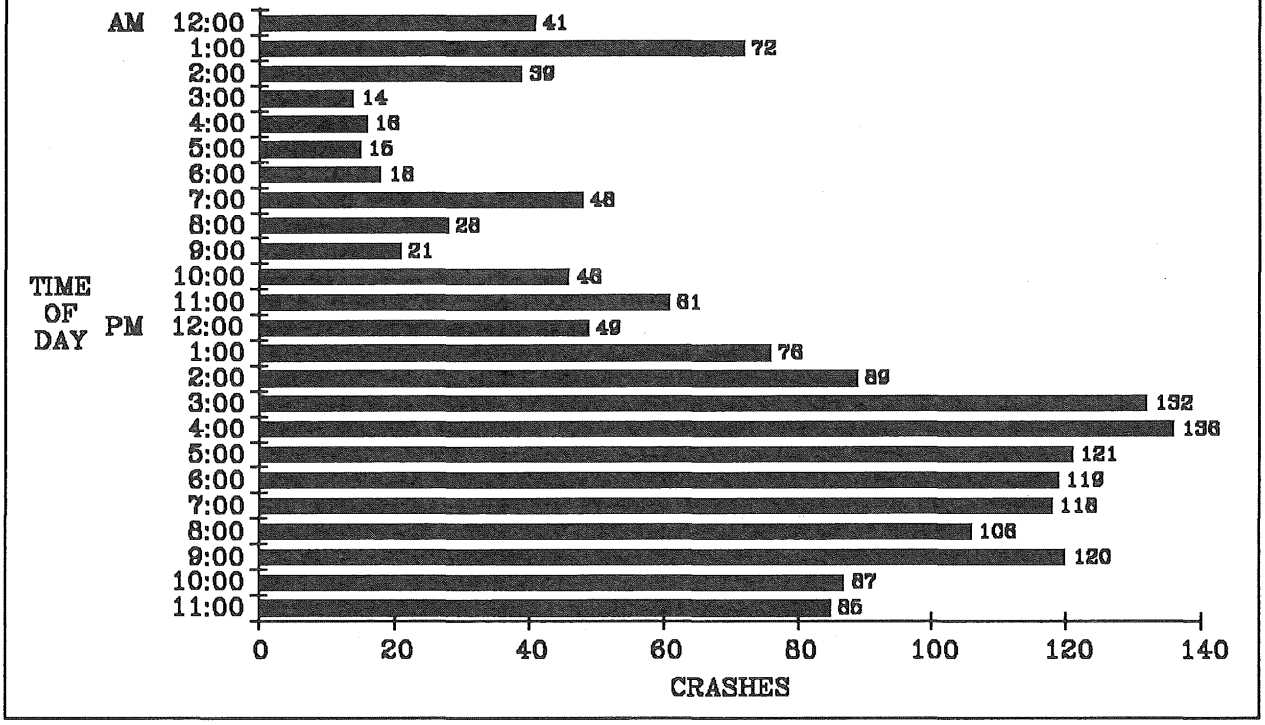
TABLE 4.04

1989 MOTORCYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Motorcyclists Killed	Motorcyclists Injured
January	0	1	0	1	0	1
February	0	0	0	0	0	0
March	0	12	4	16	0	16
April	1	90	15	106	1	97
May	9	208	32	249	9	228
June	7	280	43	330	7	304
July	11	309	36	356	11	349
August	2	257	46	305	2	281
September	4	172	41	217	4	193
October	3	124	25	152	3	137
November	0	9	5	14	0	10
December	0	1	1	2	0	1
Total	37	1,463	248	1,748	37	1,617

FIGURE 4.01

1989 Motorcycle Crashes by Time of Day*



* Crashes during the midnight and noon hours are underreported; see footnote p. 34.

TABLE 4.05

1989 MOTORCYCLE CRASHES BY TIME AND DAY*

Hour Beginning	Total Crashes	Fatal Crashes	Sun		Mon		Tues		Wed		Thurs		Fri		Sat	
			All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	41	1	9	0	2	0	3	0	5	0	9	0	7	0	6	1
1:00	72	3	17	1	2	1	9	0	7	0	4	0	10	0	23	1
2:00	39	1	11	0	3	0	6	0	5	0	5	0	2	0	7	1
3:00	14	0	5	0	0	0	1	0	2	0	1	0	1	0	4	0
4:00	16	0	6	0	0	0	0	0	2	0	1	0	3	0	4	0
5:00	15	0	3	0	1	0	3	0	3	0	3	0	2	0	0	0
6:00	18	1	3	0	3	0	3	0	2	1	4	0	3	0	0	0
7:00	48	2	2	0	10	0	7	0	7	0	8	0	7	0	7	2
8:00	28	0	0	0	4	0	4	0	8	0	7	0	3	0	2	0
9:00	21	1	3	0	1	0	3	0	6	0	0	0	4	0	4	1
10:00	46	4	9	0	1	0	2	0	5	0	8	2	8	1	13	1
11:00	61	0	12	0	8	0	10	0	6	0	4	0	7	0	14	0
Noon	49	1	9	0	9	1	7	0	6	0	8	0	5	0	5	0
1:00	76	2	19	0	6	0	4	0	14	0	10	0	15	1	8	1
2:00	89	0	17	0	9	0	12	0	8	0	13	0	14	0	16	0
3:00	132	0	25	0	15	0	21	0	16	0	14	0	22	0	19	0
4:00	136	2	19	0	17	0	15	0	12	0	20	1	26	0	27	1
5:00	121	4	19	0	17	1	19	1	14	1	15	0	20	0	17	1
6:00	119	4	19	0	16	1	16	1	19	0	12	0	18	1	19	1
7:00	118	0	24	0	16	0	17	0	13	0	14	0	16	0	18	0
8:00	106	3	21	0	12	0	13	0	15	0	17	1	13	1	15	1
9:00	120	4	14	0	14	1	19	0	19	1	13	0	22	1	19	1
10:00	87	1	10	0	10	0	15	1	12	0	14	0	11	0	15	0
11:00	85	3	8	1	8	0	15	0	4	1	14	0	21	0	15	1
Not Stated	91	0	18	0	9	0	11	0	13	0	13	0	16	0	11	0
Total	1,748	37	302	2	193	5	235	3	223	4	231	4	276	5	288	14

* Total crashes (but not including fatal crashes) during the midnight and noon hours are underreported; see footnote p. 34.

TABLE 4.06

MOTORCYCLISTS KILLED OR INJURED BY AGE AND SEX, 1989

	Killed			Injured											
				Severe			Moderate			Minor			Total		
Age Group	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 - 9	0	0	0	1	0	1	2	0	2	1	0	1	4	0	4
10 - 14	0	0	0	5	1	6	3	1	4	5	0	5	13	2	15
15 - 19	8	4	12	67	15	82	131	17	148	44	6	50	242	38	280
20 - 24	7	0	7	108	10	118	192	20	212	78	8	86	378	38	416
25 - 29	4	0	4	71	8	79	132	19	151	48	7	55	251	34	285
30 - 34	2	0	2	59	5	64	76	7	83	40	9	49	175	21	196
35 - 39	4	2	6	30	4	34	56	11	67	18	4	22	104	19	123
40 - 44	1	0	1	28	2	30	39	3	42	17	2	19	84	7	91
45 - 49	3	0	3	10	0	10	12	4	16	10	1	11	32	5	37
50 - 54	2	0	2	4	0	4	13	0	13	1	1	2	18	1	19
55 - 59	0	0	0	3	1	4	6	1	7	2	1	3	11	3	14
60 - 64	0	0	0	1	0	1	4	0	4	1	1	2	6	1	7
65 - 69	0	0	0	2	1	3	2	0	2	1	0	1	5	1	6
70 & Older	0	0	0	1	0	1	1	0	1	0	0	0	2	0	2
Not Stated	0	0	0	16	5	21	19	3	23	51	7	78	86	15	122
Total	31	6	37	406	52	458	688	86	775	317	47	384	1,411	185	1,617

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

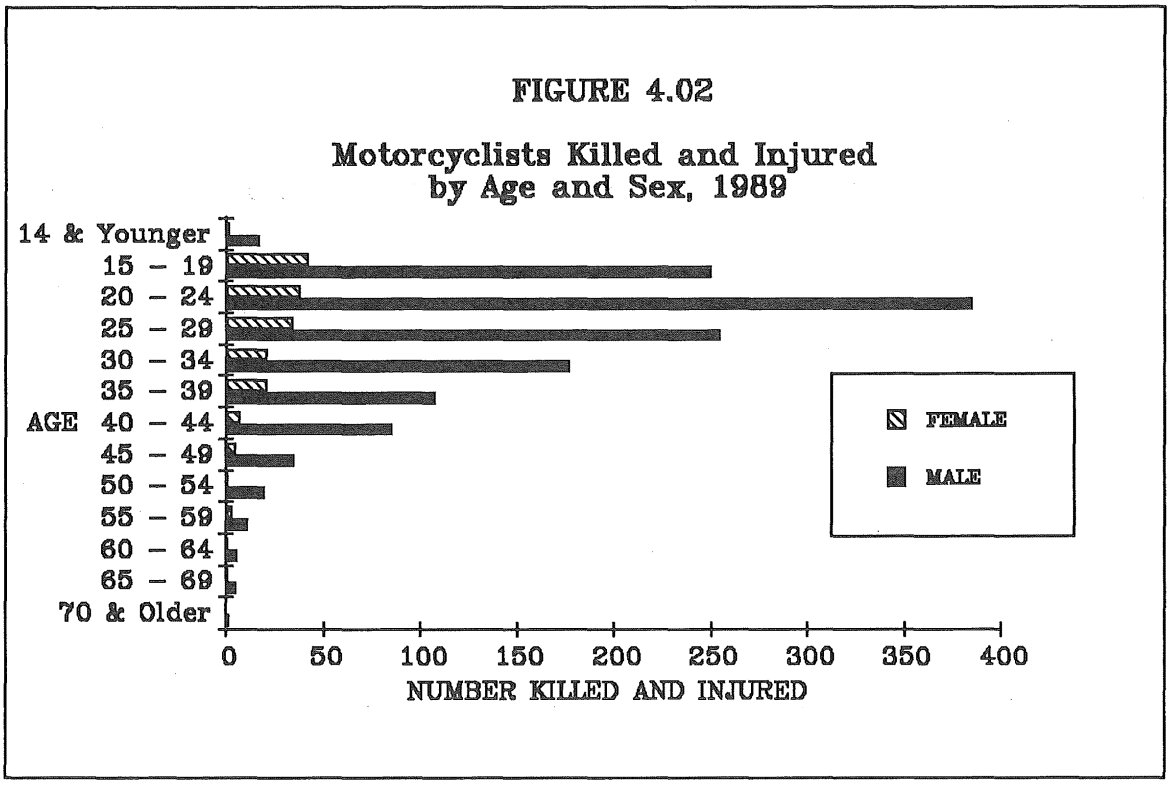


TABLE 4.07

HELMET USE BY MOTORCYCLISTS KILLED AND INJURED, 1985 - 1989

	Helmet Used		Helmet Not Used		Helmet Use Unknown		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fatalities								
1985	16	20.8%	61	79.2%	0	0.0%	77	100.0%
1986	18	27.3	42	63.6	6	9.1	66	100.0
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
Injuries								
1985	*		*		*		2,500	100.0
1986	720	33.5	1,096	50.9	336	15.6	2,152	100.0
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

*Data for these categories are unavailable for 1985 and 1987.

TABLE 4.08

ENDORSEMENT STATUS OF MOTORCYCLE OPERATORS INVOLVED IN FATAL CRASHES, 1980 - 1989

	Valid Endorsement*		Permit Only		Cancelled, Suspended, Revoked		No Endorsement		Total** For Year	
Year	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1980	74	66.7%	6	5.4%	4	3.6%	27	24.3%	111	100.0%
1981	73	80.2	2	2.2	4	4.4	12	13.2	91	100.0
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
Total	475	68.1%	27	3.9%	57	8.2%	137	19.7%	697	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, 1980 - 1989

Year	Killed	Tested	Drinking (.01 or more) Number	Drinking (.01 or more) Percent	Drunk (.10 or more) Number	Drunk (.10 or more) Percent
1980	107	57	37	65%	29	51%
1981	76	44	30	68	25	57
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

*Percentages are based on those motorcycle drivers tested.

TABLE 4.10

1989 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-.24	.25 & Over
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	1	1	0	0	0	0	0	0	0
18	3	3	3	3	0	0	1	2	0
19	5	5	1	1	0	0	0	1	0
20	1	0	0	0	0	0	0	0	0
14 & Younger	0	0	0 (0%)	0 (0%)	0	0	0	0	0
15 - 19	9	9	4 (44%)	4 (44%)	0	0	1	3	0
20 - 24	6	5	4 (80%)	3 (60%)	1	0	1	1	1
25 - 29	4	4	4 (100%)	4 (100%)	0	0	2	0	2
30 - 34	2	2	2 (100%)	2 (100%)	0	0	0	2	0
35 - 39	4	4	3 (75%)	2 (50%)	0	1	1	1	0
40 - 44	1	1	1 (100%)	1 (100%)	0	0	0	1	0
45 - 49	3	3	2 (67%)	2 (67%)	0	0	1	1	0
50 - 54	2	2	1 (50%)	0 (0%)	0	1	0	0	0
55 - 59	0	0	0 (0%)	0 (0%)	0	0	0	0	0
60 & Older	0	0	0 (0%)	0 (0%)	0	0	0	0	0
Total	31	30	21 (70%)	18 (60%)	1	2	6	9	3

* Percentages are based on those motorcycle drivers tested.

TABLE 4.11

CONTRIBUTING FACTORS IN 1989 MOTORCYCLE CRASHES

Contributing Factors	Attributed to Motorcycle Drivers Number	Percent	Attributed to Other Drivers Number	Percent
Human Factors:				
Illegal/Unsafe Speed	427	25.6%	41	4.3%
Driver Inattention/Distraction	311	18.6	244	25.6
Driver Inexperience	198	11.9	20	2.1
Physical Impairment	188	11.3	23	2.4
Improper/Unsafe Lane Use	74	4.4	68	7.1
Following Too Closely	62	3.7	38	4.0
Failure to Yield Right of Way	61	3.7	303	31.8
Improper Passing/Overtaking	60	3.6	10	1.0
Disregard for Traffic Control Device	39	2.3	30	3.1
Driving Left of Roadway Center--Not Passing	27	1.6	11	1.2
Vision Obscured	19	1.1	39	4.1
Improper Turn	9	0.5	46	4.8
Improper Parking/Starting/ Stopping	9	0.5	15	1.6
Unsafe Backing	2	0.1	16	1.7
Impeding Traffic	1	0.1	5	0.5
Improper or No Signal	1	0.1	14	1.5
Pedestrian Violation or Error	0	0.0	8	0.8
Other Human Factor	50	3.0	6	0.6
Vehicular Factors:				
Skidding	43	2.6	1	0.1
Defective Equipment	23	1.4	6	0.6
Other Vehicle Factor	30	1.8	9	0.9
Miscellaneous Factors:				
Road Defects	26	1.6	0	0.0
Weather	10	0.6	1	0.1
Total	1,670	100.0%	954	100.0%
No Improper Driving	591		308	
Total Number Drivers	1,789		1,056	

One of two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to exceed 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 in this table.

V: TRUCK CRASHES

This section summarizes data on crashes involving trucks. A "truck crash" is defined as an accident in which the investigating officer indicates that at least one of the vehicles was a truck or truck tractor, truck with semi trailer, truck with twin trailer, or truck with other trailer. Pickups trucks and vans are *not* included.

Crashes increase about 5% from recent years
Total truck crashes went up about 5% (to 7,381) from 1988 and about the same (7%) from the average of the prior four years. There were 77 fatal crashes, killing 94 people. The number of fatalities was up over 20% from 1988, but was still within the range of recent years. The number of injury crashes (1,784) was close to the preceding year, and the number of people injured (2,411) actually declined from 1988 (Table 5.01).

Automobile occupants primarily suffer injury
Although trucks accounted for over half of the vehicles in 1989 truck crashes, only 12 (or 13%) of the people killed and 676 (or 28%) of the people injured were in trucks. Automobile occupants suffered most of the fatalities and injuries (Table 5.02).

Driver Inattention is most frequent factor
For both truck drivers and other drivers, police report one or two factors they believe contributed to the crash. The two driver groups are similar to one another in the contributing factors the police cited. For both, the police reported "driver inattention" almost one out of four times, and illegal or unsafe speed about one out of nine times (Table 5.03). The police suspected alcohol use for less than 1% of the truck drivers, and a little over 2% of the other drivers (Table 5.05).

Two-vehicle collisions on dry road surfaces are most common
Over three fourths of the truck crashes involved collisions with another motor vehicle (Table 5.06). About 60% occurred on dry road surfaces (Table 5.07). It is possible, though, that yearly variation in crashes occurring on snow and ice-covered roads may account for much of the year-to-year variation in total crashes. For example, there were over 1,600 crashes on such roads in 1989, compared to only 571 in 1987.

Crashes occur mostly on weekdays during daytime hours
Almost 90% of the truck crashes occurred during the weekdays, Monday through Friday and over 75% occurred between 6:00 AM and 6:00 PM (Table 5.08 and Figure 5.01).

Little variation by month
Truck crashes were distributed about equally across the 12 months, although April had the fewest crashes and November had the most (Table 5.09). Also, January and February had far fewer fatal crashes than the other months.

Fatal crashes occur mostly in the rural areas
Over 60% of the fatal crashes occurred in areas of less than a thousand population--that is, in rural areas (Table 5.11). Total truck crashes were more evenly distributed, with almost a quarter of them occurring in cities of 100,000 or more population (i.e., Minneapolis, or St. Paul). Also, over 60% of the fatal crashes, compared to under 40% of total crashes, occurred on the federal and state trunk highways.

TABLE 5.01

TRUCK CRASHES, 1985 - 1989

	1985	1986	1987	1988	1989
Total Crashes	7,973	6,908	5,668	7,038	7,381
Fatal Crashes	86	85	65	70	77
Persons Killed	101	100	71	78	94
Injury Crashes	1,941	1,674	1,443	1,729	1,784
Persons Injured	2,832	2,371	2,033	2,444	2,411
Property Damage Crashes	6,424	5,149	4,160	5,239	5,520

TABLE 5.02

PERSONS KILLED OR INJURED IN 1989 TRUCK CRASHES BY VEHICLE OCCUPIED

		Injured			
Vehicle Type	Killed	Severe	Moderate	Minor	Total
Automobile	54	161	421	785	1,367
Truck or Truck Tractor	6	34	135	234	403
Truck with Semi-Trailer	6	18	89	118	225
Truck with Twin Trailer	0	0	2	5	7
Truck with Other Trailer	0	5	14	22	41
Pickup Truck	9	35	67	89	191
Van	4	18	18	45	81
Motorcycle	2	9	7	10	26
All Terrain Vehicle	0	0	0	0	0
Moped	0	0	1	1	2
School Bus	0	0	1	0	1
Other Bus	0	0	2	4	6
Motorhome Camper	0	0	0	2	2
Snowmobile	2	1	0	0	1
Farm Equipment	0	1	0	0	1
Taxicab	0	0	0	5	5
Hit and Run Vehicle	0	0	0	0	0
Police Vehicle	0	0	3	1	4
Road Maintenance Vehicle	0	0	0	2	2
Other Public Owned Vehicle	0	0	0	1	1
Bicycle	1	3	6	6	15
Pedestrian	10	8	11	11	30
Total	94	293	777	1,341	2,411

TABLE 5.03

CONTRIBUTING FACTORS IN 1989 TRUCK CRASHES

Contributing Factors	Attributed to Truck Driver Number	Attributed to Truck Driver Percent	Attributed to Other Driver Number	Attributed to Other Driver Percent
Human Factors				
Driver Inattention	1,214	23.7%	927	24.0%
Illegal/Unsafe Speed	566	11.1	457	11.8
Failure to Yield Right of Way	449	8.8	488	12.6
Improper Lane Use	408	8.0	294	7.6
Following Too Closely	354	6.9	229	5.9
Vision Obscured	236	4.6	139	3.6
Unsafe Backing	217	4.2	31	0.8
Improper Turn	210	4.1	93	2.4
Disregard for Traffic Control Device	143	2.8	141	3.6
Driver Inexperience	117	2.3	132	3.4
Improper Passing	95	1.9	182	4.7
Physical Impairment	80	1.6	123	3.2
Improper Parking	70	1.4	51	1.3
Improper or No Signal	52	1.0	22	0.6
Driving Left of Center	40	0.8	78	2.0
Impeding Traffic	10	0.2	22	0.6
Pedestrian Violation	0	0.0	14	0.4
Other Human Factors	70	1.4	56	1.4
Vehicular Factors				
Defective Brakes	129	2.5	16	0.4
Skidding	86	1.7	123	3.2
Defective Tire	35	0.7	5	0.1
Defective Lights	33	0.6	12	0.3
Oversize or Overweight Vehicle	32	0.6	1	0.1
Other Vehicular Factor	201	3.9	32	0.8
Miscellaneous Factors				
Weather	252	4.9	191	4.9
Road Defect	14	0.3	6	0.2
Total	5,113	100.0%	3,865	100.0%
No Improper Driving	2,383		2,378	
Total Number of Drivers	7,730		6,784	

One or two contributing factors may be attributed to a single driver. (This may cause the sum of the factors cited to exceed 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 in this table.

TABLE 5.04

AGE OF TRUCK DRIVERS IN 1989 CRASHES

Driver Age	Truck or Truck Tractor	Truck with-Semi-Trailer	Truck with Twin Trailer	Truck with Other Trailer	Total
14 & Younger	2	0	0	0	2
15 - 19	220	17	0	13	250
20 - 24	661	223	5	59	948
25 - 29	791	476	5	58	1,330
30 - 34	679	483	6	40	1,208
35 - 39	494	375	6	41	916
40 - 44	343	327	7	29	706
45 - 49	254	231	7	30	522
50 - 54	215	217	5	23	460
55 - 59	175	178	5	18	376
60 - 64	115	89	2	11	217
65 & Older	96	38	0	11	145
Not Stated	502	134	0	14	650
Total	4,547	2,788	48	347	7,730

TABLE 5.05

DRIVERS IN 1989 TRUCK CRASHES BY PHYSICAL CONDITION*

Physical Condition	Truck Driver	Other Driver
Normal	5,465	4,549
Under the Influence	31	93
Had Been Drinking	30	60
Had Been Using Drugs	2	5
Asleep	28	19
Fatigued	15	12
Ill	5	11
Other	15	29
Unknown	2,139	2,006
Total	7,730	6,784

* As noted by police officer on accident report.

TABLE 5.06

1989 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	57	195	447	778	4,248	5,725
Parked Motor Vehicle	0	8	18	13	311	350
Railroad Train	1	0	0	4	15	20
Bicycle	1	3	6	6	0	16
Pedestrian	10	8	10	9	0	37
Animal	0	0	2	5	136	143
Fixed Object	2	12	38	44	393	489
Other Object	0	1	2	10	72	85
Non-Collision:						
Overturn	5	18	53	70	187	333
Fire or Explosion	0	0	2	0	11	13
Submersion	0	0	0	0	2	2
Other	1	2	8	12	145	168
Total	77	247	586	951	5,520	7,381

TABLE 5.07

1989 TRUCK CRASHES BY ROAD CONDITION

Road Surface Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Dry	64	164	372	582	3,382	4,564
Wet	6	41	79	146	619	891
Snow or Slush	4	8	42	60	366	480
Ice or Snow Packed	2	32	82	146	901	1,163
Other	1	2	3	4	40	50
Unknown	0	0	8	13	212	233
Total	77	247	586	951	5,520	7,381

TABLE 5.08

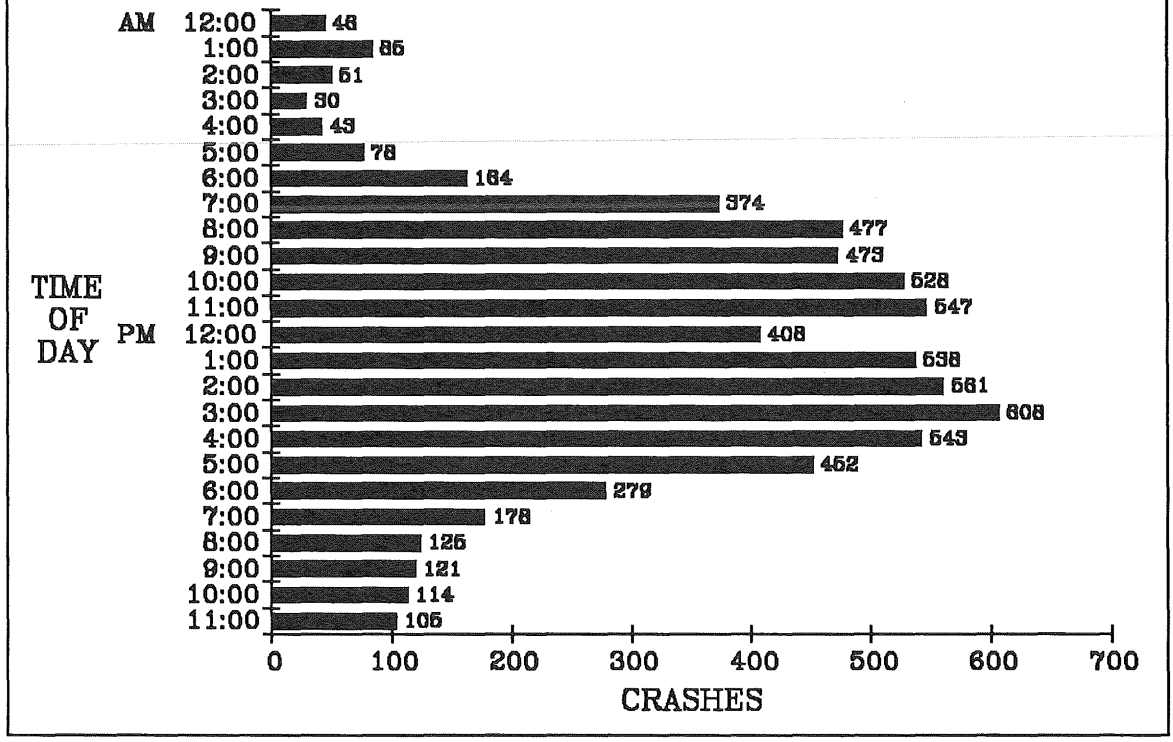
1989 TRUCK CRASHES BY TIME OF DAY*

Time Period	Total	Sun	Mon	Tues	Wed	Thur	Fri	Sat
Midnight - 2:59 AM	182	30	17	27	21	26	41	20
3:00 - 5:59 AM	151	11	28	21	30	25	17	19
6:00 - 8:59 AM	1,015	9	191	178	194	193	195	55
9:00 - 11:59 AM	1,548	36	276	281	261	257	302	135
Noon - 2:59 PM	1,507	49	244	289	270	242	303	110
3:00 - 5:59 PM	1,603	52	278	335	256	265	317	100
6:00 - 8:59 PM	582	26	94	112	97	97	109	47
9:00 - 11:59 PM	340	29	49	58	51	50	63	40
Unknown	453	21	78	81	54	86	88	45
Total	7,381	263	1,255	1,382	1,234	1,241	1,435	571

* Crashes between midnight and 1:00 AM and between noon and 1:00 PM are underreported; see footnote, p.34.

FIGURE 5.01

1989 Truck Crashes by Time of Day*



* Crashes between midnight and 1:00 AM and between noon and 1:00 PM are underreported; see footnote, p.34.

TABLE 5.09

1989 TRUCK CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	2	163	529	694	3	209
February	2	127	464	593	2	160
March	5	148	562	715	5	205
April	8	81	279	368	8	104
May	5	135	403	543	5	175
June	9	153	436	598	9	205
July	7	153	433	593	8	228
August	11	183	426	620	12	254
September	10	140	427	577	17	200
October	8	170	451	629	10	219
November	6	178	619	803	8	234
December	4	153	491	648	7	218
Total	77	1,784	5,520	7,381	94	2,411

TABLE 5.10

1989 TRUCK CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Clear	46	144	322	515	3,158	4,185
Cloudy	25	63	159	245	1,205	1,697
Rain	2	14	30	54	242	342
Snow	4	15	52	101	578	750
Sleet/Hail/Freezing Rain	0	1	3	6	68	78
Fog/Smog/Smoke	0	5	6	7	31	49
Blowing Sand/Dust/Snow	0	3	9	12	53	77
Severe Cross Winds	0	1	2	1	14	18
Other	0	1	0	4	27	32
Unknown	0	0	3	6	144	153
Total	77	247	586	951	5,520	7,381

TABLE 5.11

1989 TRUCK CRASHES BY POPULATION AREA

Population Area	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
100,000 & Over	6	22	88	217	1,360	1,693
50,000 - 99,999	2	13	21	51	349	436
25,000 - 49,999	1	42	101	141	911	1,196
10,000 - 24,999	5	29	74	136	786	1,030
5,000 - 9,999	1	22	55	70	377	525
2,500 - 4,999	9	8	25	41	244	327
1,000 - 2,499	4	4	11	26	148	193
Under 1,000	48	95	181	244	1,099	1,667
Unknown	1	12	30	25	246	314
Total	77	247	586	951	5,520	7,381

TABLE 5.12

1989 TRUCK CRASHES BY TYPE OF ROADWAY

Roadway Type	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Interstate Highway	8	18	68	152	874	1,120
US Trunk Highway	25	54	114	176	853	1,222
State Trunk Highway	22	47	136	218	1,213	1,636
County State-Aid Highway	17	86	138	214	1,084	1,539
Municipal State-Aid Street	3	22	62	116	781	984
County Road	1	3	11	12	58	85
Township Road	1	8	12	17	64	102
Municipal Street	0	7	40	44	545	636
Other Road	0	2	5	2	48	57
Total	77	247	586	951	5,520	7,381

VI: PEDESTRIAN CRASHES

Pedestrian crashes change little from 1988
Pedestrian crashes rose to a total of 1,591 crashes in 1989. This represents a 1% increase over 1988, but a 4% decrease from the previous five year average. There were 1,578 pedestrians injured and 67 killed.

Fatalities show slight decrease from 1988
In 1989, 67 pedestrians were killed; this reflects a 3% decrease from 1988 but is also a 4% increase from the previous five year average. These numbers are still well below the figures prior to 1982, when 100+ pedestrians were killed each year. In the decade from 1980 - 1989, the ages of 15 - 19 made up the highest number of fatalities; this group was followed by the 5 - 9 age group.

Pedestrians under age 25 injured most often
More than a third of the fatalities and nearly half of the injuries were to pedestrians under the age of 25. The age group 5 - 9 suffered the highest number of fatalities with 10 killed, or 15% of all pedestrian fatalities. This group also suffered the highest number of injuries with 235, or 15% of total pedestrian injuries.

Males suffer more injuries than females
Males accounted for 61% of the fatalities and 57% of the injuries. Males outnumbered females in the number of pedestrians killed and injured in all but one of the age groups under the age of 65. After age 65, females outnumber males in the number of pedestrians injured.

June highest month for crashes
The month of June had 162 , or 10%, of all pedestrian crashes. June also had the highest number of injuries with 161, also 10%. February had the lowest number with 102, or 6%. December had the highest number of fatalities with 10 which was 15% of the total.

Early afternoon most hazardous
The hour between 3:00 and 4:00 in the afternoon had the highest number of crashes (166) for a single one hour period. The early morning hours of 2:00 to 6:00 AM together accounted for only 2% of all pedestrian crashes. The most fatal crashes occurred between 9:00 and 10:00 PM. Friday was the day with the highest number of crashes. Twenty percent of pedestrian crashes occurred on Friday; Sunday accounted for only 9% of these crashes.

Rural areas overrepresented in fatal crashes
Areas of under 1,000 population accounted for only about 5% of crashes and injuries, but accounted for 27% of the fatalities. Areas of over 100,000 population accounted for almost half of the crashes and injuries and 28% of the fatalities.

Motor vehicles going straight prior to crash
Over 70% of the pedestrians killed and injured were struck by a vehicle that was going straight. The next most common movement by a vehicle was making a left turn.

Pedestrians not crossing with signal
Forty percent of the pedestrians killed and 28% of those injured were crossing with no crosswalk and no signal. Another 5% of those killed and 6% of those injured were crossing against the signal. However, 6% of those killed and 19% of those injured were crossing with the signal when they were struck.

Contributing factors
Officers investigating pedestrian crashes most often cited motor vehicle drivers for driver inattention, and failure to yield the right of way and cited pedestrians for a pedestrian violation. However, 42% of motor vehicle drivers and 21% of pedestrians were found by the officer to have committed no improper actions .

Fewer alcohol-related incidents
Of the 67 pedestrians who were killed in 1989, 42 (63%) were tested for blood alcohol concentration. Sixteen (38%) had been drinking and, of these, 12 were over the legal limit of intoxication. The pedestrians who had been drinking were spread across age groups. The pedestrians killed between 9:00 PM and 3:00 AM accounted for 75% of the fatally injured pedestrians who had been drinking and 75% of those who were legally drunk.

TABLE 6.01

PEDESTRIAN CRASHES, INJURIES AND FATALITIES, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Pedestrian Crashes*	1,629	1,648	1,374	1,516	1,690	1,845	1,610	1,556	1,575	1,591
Pedestrians Killed	114	100	76	62	55	65	71	62	69	67
Pedestrians Injured	1,636	1,658	1,438	1,625	1,682	1,837	1,570	1,533	1,566	1,578

*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.

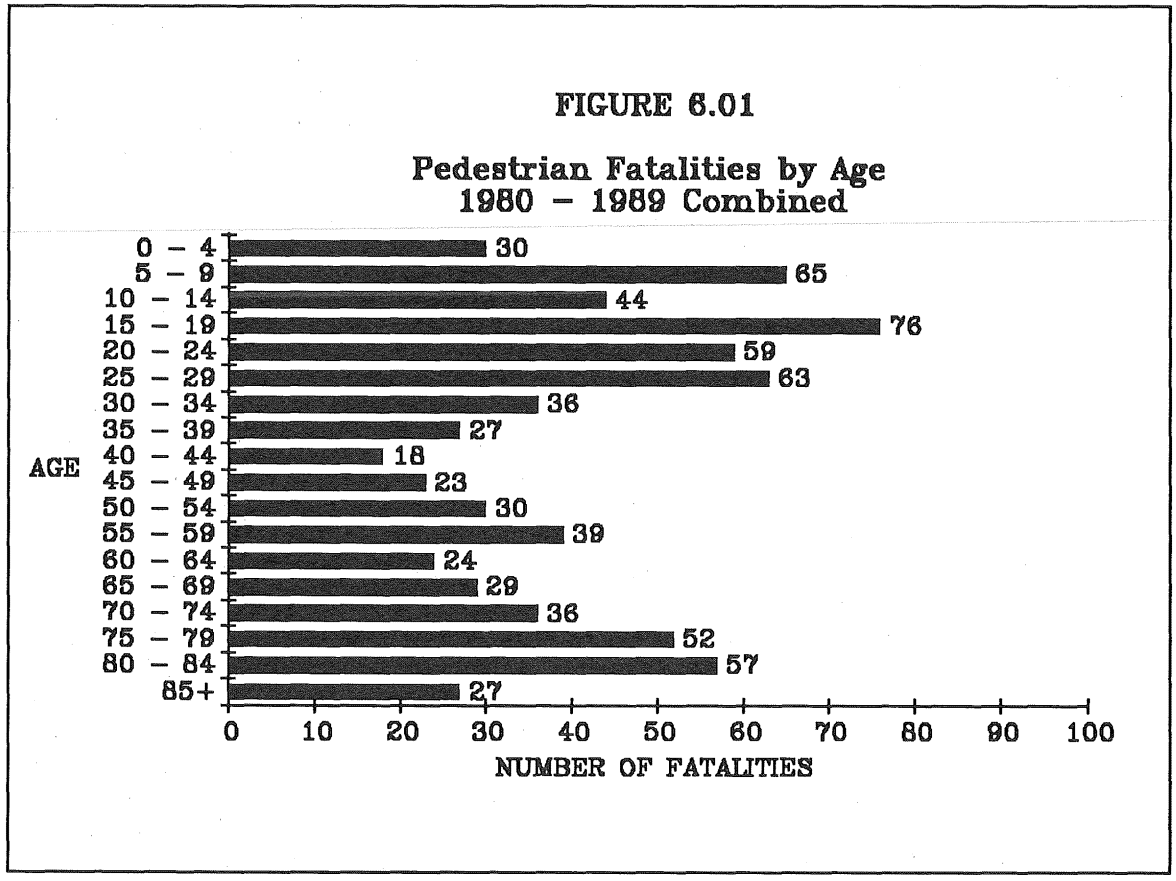


TABLE 6.02

PEDESTRIANS KILLED AND INJURED BY AGE AND SEX, 1989

Age Group	Killed			Injured											
				Severe			Moderate			Minor			Total		
	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	2	0	2	18	7	25	25	10	35	18	10	28	61	27	88
5 - 9	6	4	10	36	23	59	60	24	84	63	29	92	159	76	235
10 - 14	2	0	2	23	26	49	33	24	57	30	21	51	86	71	157
15 - 19	3	4	7	28	19	47	36	31	67	32	28	60	96	78	174
20 - 24	4	0	4	26	9	35	22	24	46	16	24	40	64	57	121
25 - 29	5	2	7	17	19	36	26	16	42	31	13	44	74	48	122
30 - 34	0	0	0	20	12	32	24	12	36	38	17	55	82	41	123
35 - 39	0	3	3	15	7	22	21	8	29	22	14	36	58	29	87
40 - 44	1	0	1	7	6	13	18	7	25	13	15	29	38	28	67
45 - 49	2	1	3	10	9	19	8	5	13	5	13	18	23	27	50
50 - 54	2	3	5	9	7	16	6	5	11	11	3	14	26	15	41
55 - 59	4	0	4	2	3	5	6	6	12	3	3	6	11	12	23
60 - 64	1	0	1	3	7	10	7	2	9	7	6	13	17	15	32
65 - 69	2	2	4	2	8	10	5	7	12	3	2	5	10	17	27
70 - 74	1	1	2	2	4	8	2	4	6	6	10	16	10	18	30
75 - 79	2	1	3	4	6	10	5	1	6	2	10	12	11	17	28
80 - 84	1	3	4	2	10	12	3	4	7	1	6	7	6	20	26
85 & Older	2	2	4	1	5	6	1	3	4	2	3	5	4	11	15
Not Stated	1	0	1	3	6	10	10	10	21	51	39	101	64	55	132
Total	41	26	67	228	193	424	318	203	522	354	266	632	900	662	1,578

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

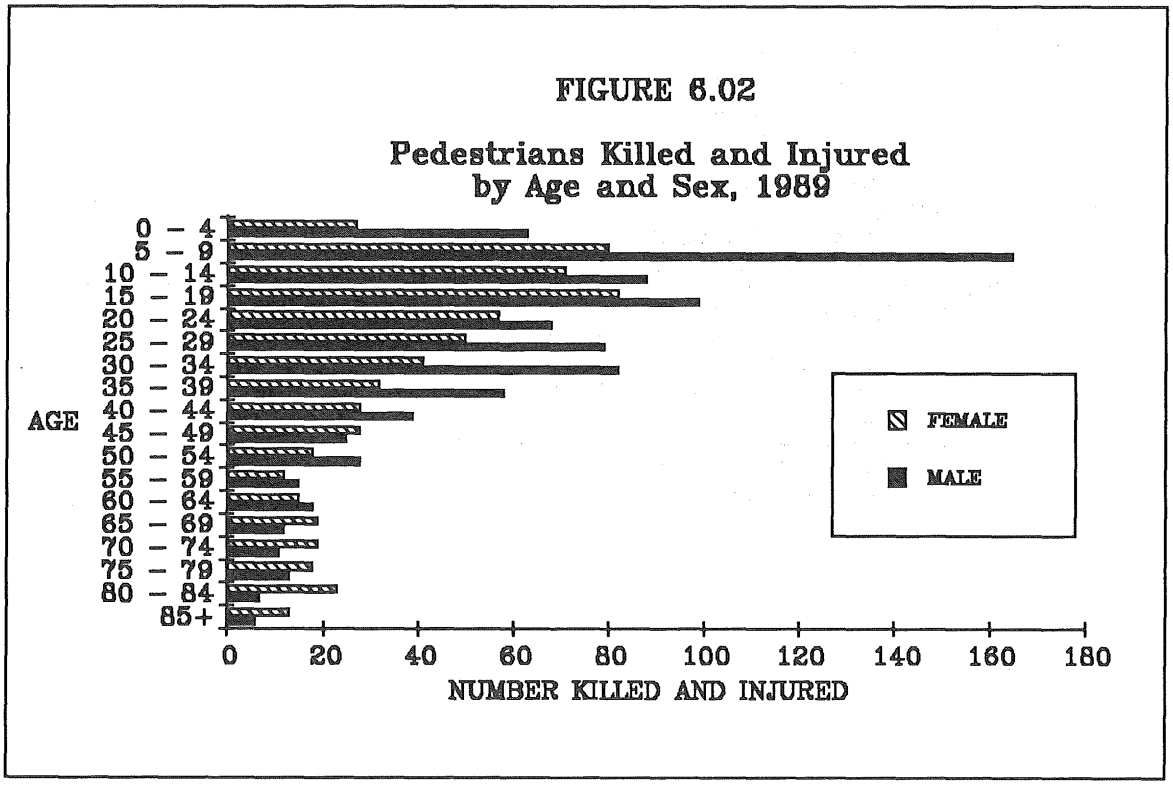


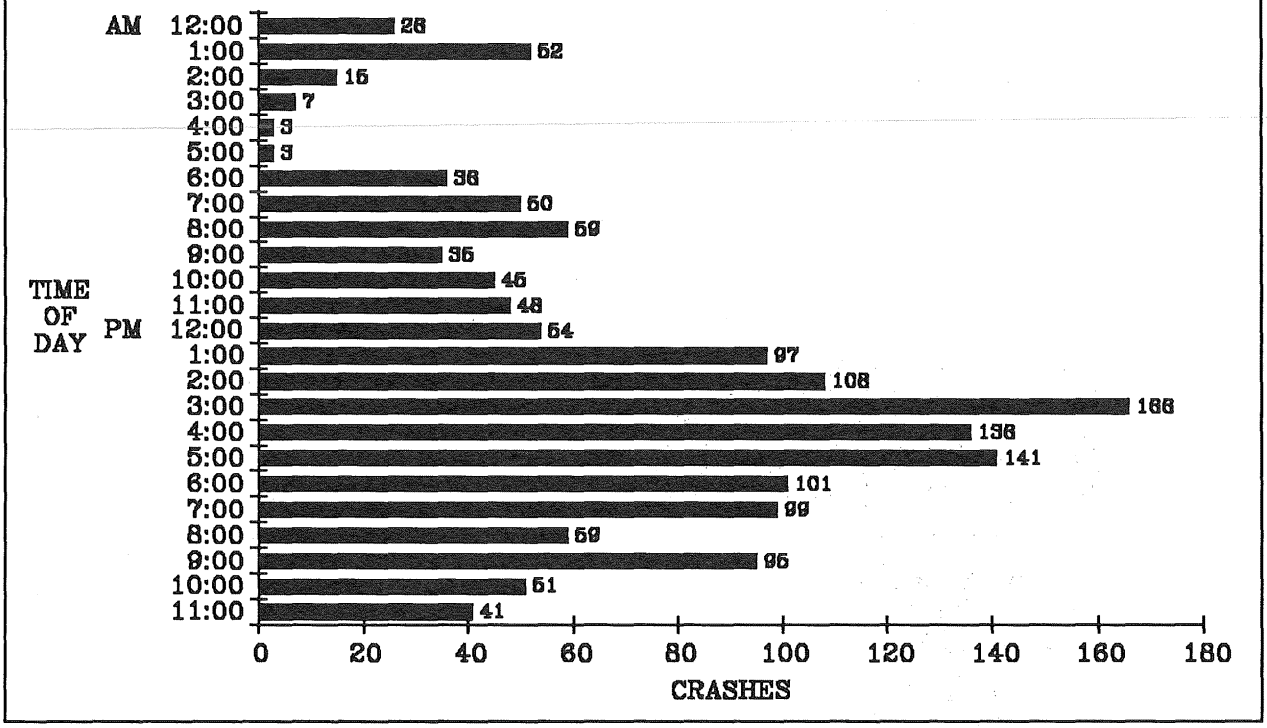
TABLE 6.03

1989 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
January	7	125	132	7	130
February	6	96	102	6	103
March	5	137	142	5	146
April	4	117	121	4	120
May	4	128	132	4	132
June	5	157	162	6	161
July	6	108	114	6	109
August	4	124	128	4	127
September	5	141	146	5	146
October	6	139	145	6	142
November	4	138	142	4	143
December	10	115	125	10	119
Total	66	1,525	1,591	67	1,578

FIGURE 6.03

1989 Pedestrian Crashes by Time of Day*



* Crashes during the midnight and noon hours are underreported; see footnote p. 34.

TABLE 6.04

1989 PEDESTRIAN CRASHES BY TIME AND DAY*

Hour Beginning	Fatal Crashes	Total Crashes	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Midnight	1	26	3	4	1	4	5	2	7
1:00 AM	5	52	18	1	1	2	4	5	21
2:00 AM	0	15	5	2	0	0	0	2	6
3:00 AM	0	7	2	1	0	0	1	1	2
4:00 AM	0	3	0	1	0	1	1	0	0
5:00 AM	0	3	1	0	0	0	0	0	2
6:00 AM	3	36	1	5	7	5	11	7	0
7:00 AM	0	50	0	5	9	13	9	14	0
8:00 AM	1	59	1	15	11	13	9	9	1
9:00 AM	1	35	2	7	4	6	11	3	2
10:00 AM	1	45	2	8	6	4	5	12	8
11:00 AM	1	48	4	5	6	14	8	5	6
Noon	4	54	4	8	5	9	7	9	12
1:00 PM	0	97	6	12	14	16	14	20	15
2:00 PM	6	108	9	23	10	14	17	18	17
3:00 PM	4	166	11	27	27	30	27	32	12
4:00 PM	7	136	6	16	23	25	30	21	15
5:00 PM	9	141	12	19	33	20	13	27	17
6:00 PM	4	101	11	10	15	18	19	21	7
7:00 PM	3	99	10	12	13	16	16	21	11
8:00 PM	3	59	8	8	8	7	8	14	6
9:00 PM	11	95	11	8	11	13	14	24	14
10:00 PM	0	51	3	4	4	6	9	17	8
11:00 PM	2	41	1	7	4	2	7	15	5
Unknown	0	64	8	5	8	11	5	15	12
Total	66	1,591	139	213	220	249	250	314	206

* Total crashes (but not including fatal crashes) during the midnight and noon hours are underreported; see footnote p. 34.

TABLE 6.05

1989 PEDESTRIAN CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
100,000 and Over	19	743	762	19	769
50,000 - 99,999	4	98	102	4	100
25,000 - 49,999	4	181	185	4	188
10,000 - 24,999	12	188	200	12	195
5,000 - 9,999	3	77	80	3	83
2,500 - 4,999	4	43	47	4	44
1,000 - 2,499	2	23	25	2	24
Under 1,000	17	70	87	18	72
Unknown	1	102	103	1	103
Total	66	1,525	1,591	67	1,578

TABLE 6.06

VEHICLE MOVEMENT IN 1989 PEDESTRIAN CRASHES

Vehicle Movement	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrians Killed	Pedestrians Injured
Vehicle Going Straight	47	1,074	1,121	48	1,114
Vehicle Turning Left	4	139	143	4	145
Vehicle Turning Right	0	90	90	0	94
Vehicle Backing	2	47	49	2	48
Moving Vehicle Colliding with Parked Vehicle	2	6	8	2	6
Two Vehicles Colliding at Intersection	0	13	13	0	14
Moving Vehicle Colliding with Vehicle Stopped in Traffic	1	7	8	1	8
All Others	10	119	129	10	119
Not Stated	0	30	30	0	30
Total	66	1,525	1,591	67	1,578

TABLE 6.07

PRIOR ACTION OF PEDESTRIANS KILLED AND INJURED IN 1989

Action	Pedestrians Killed		Pedestrians Injured	
	Number	Percent	Number	Percent
Crossing Road (No Crosswalk and No Signal)	27	40.3%	447	28.3%
Crossing Against Signal	3	4.5	94	6.0
Crossing With Signal	4	6.0	295	18.7
Crossing In Crosswalk (No Signal)	2	3.0	87	5.5
Walking In Road With Traffic	6	9.0	72	4.6
Walking In Road Against Traffic	1	1.5	59	3.7
Standing In Road	2	3.0	68	4.3
Emerging From Front/Behind Parked Car	2	3.0	97	6.1
Child Getting On/Off School Bus	0	0.0	11	0.7
Pushing/Working On Vehicle	2	3.0	6	0.4
Working In Road	0	0.0	13	0.8
Getting On/Off Vehicle	1	1.5	20	1.3
Playing In Road	0	0.0	24	1.5
Not In Road	3	4.5	43	2.7
Other Pedestrian Action	14	20.9	242	15.3
Total	67	100.0%	1,578	100.0%

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

TABLE 6.08

CONTRIBUTING FACTORS IN 1989 PEDESTRIAN CRASHES

Contributing Factors	Attributed to Pedestrians Number	Percent	Attributed to Motor Vehicle Drivers Number	Percent
Human factors				
Pedestrian Violation	740	88.9%	0	0.0%
Physical Impairment	76	9.1	49	3.9
Driver Inattention	0	0.0	385	30.9
Failure to Yield Right of Way	0	0.0	288	23.1
Illegal or Unsafe Speed	0	0.0	85	6.8
Vision Obscured	0	0.0	110	8.8
Improper Lane Use	0	0.0	41	3.3
Disregard for Traffic Control Device	1	0.1	40	3.2
Driver Inexperience	0	0.0	32	2.6
Unsafe Backing	0	0.0	34	2.7
Improper Parking	0	0.0	22	1.8
Driving Left of Center	0	0.0	7	0.6
Improper Passing	0	0.0	13	1.0
Improper Turn	0	0.0	22	1.8
Other Human Factors	2	0.2	47	3.8
Vehicular Factors				
Defective Equipment	0	0.0	11	0.9
Skidding	0	0.0	19	1.5
Other Vehicular Factors	0	0.0	12	1.0
Miscellaneous Factors				
Weather Conditions	13	1.6	27	2.2
Road Defects	0	0.0	3	0.2
Total Contributing Factors Cited	832	100.0%	1,247	100.0%
No improper actions:	341		722	
Total number of pedestrians/drivers	1,648		1,700	

One or two contributing factors may be attributed to a single driver or pedestrian. This may cause the sum of the factors cited to exceed 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, 1980 - 1989

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1980	114	48	28 (58%)	26 (54%)
1981	100	53	26 (49%)	23 (43%)
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%)

* 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.)

FIGURE 6.04

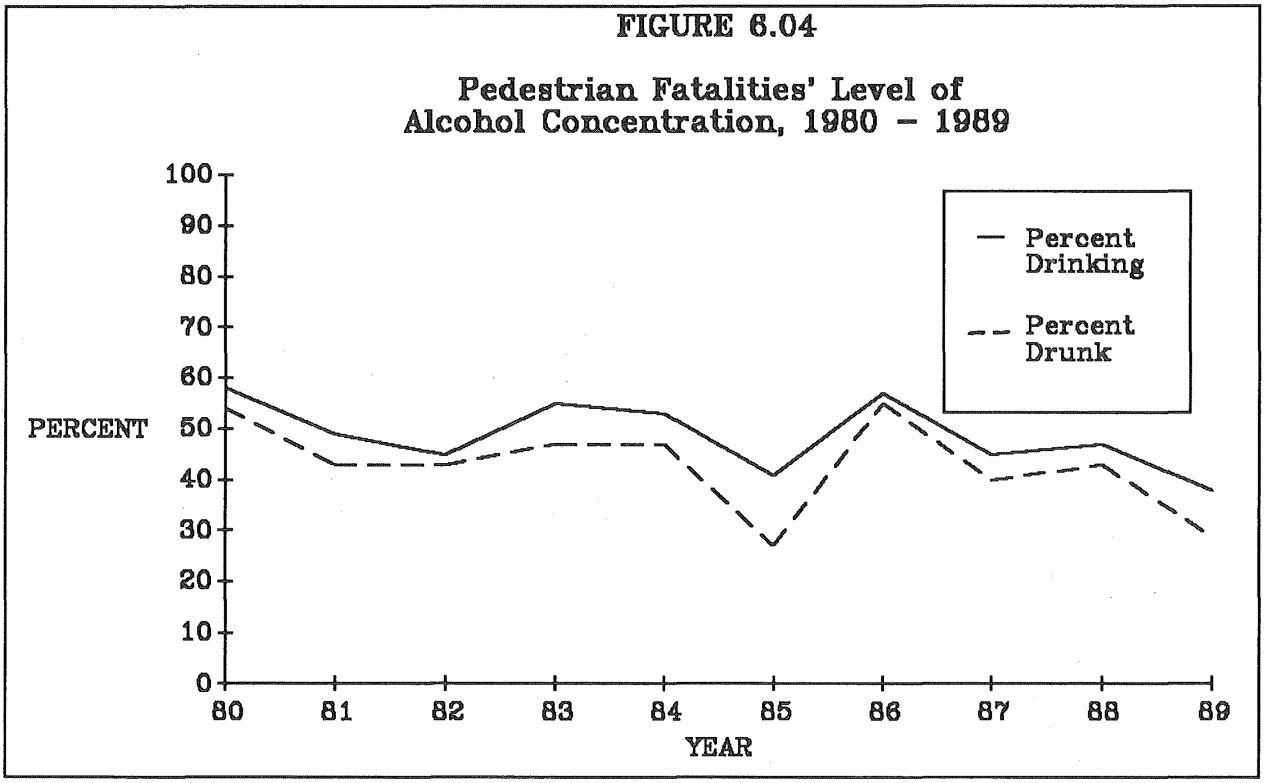


TABLE 6.10

1989 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
14 & Younger	14	3	0	0
15 - 19	7	6	2	1
20 - 24	4	3	2	1
25 - 29	7	5	4	4
30 - 34	0	0	0	0
35 - 39	3	2	1	1
40 - 44	1	1	0	0
45 - 49	3	1	1	1
50 - 54	5	4	1	1
55 - 59	4	3	2	1
60 - 64	1	1	0	0
65 - 69	4	3	2	2
70 - 74	2	1	0	0
75 - 79	3	3	0	0
80 - 84	4	3	0	0
85 & Older	4	2	1	0
Unknown	1	1	0	0
Total	67	42	16	12

TABLE 6.11

1989 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY TIME OF DAY

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Midnight - 2:59 AM	7	5	4	2
3:00 - 5:59 AM	0	0	0	0
6:00 - 8:59 AM	4	3	0	0
9:00 - 11:59 AM	3	2	0	0
Noon - 2:59 PM	10	7	1	1
3:00 - 5:59 PM	20	8	2	1
6:00 - 8:59 PM	10	4	1	1
9:00 - 11:59 PM	13	13	8	7
Total	67	42	16	12

VII: BICYCLE CRASHES

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

Data before 1984 only included bicycles 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.

Fewer bicyclists killed
There were 10 bicyclists killed in 1989; this is the lowest number since 1964 when 4 bicyclists were killed. There were also 10 killed in 1981 and 1985. There were a total of 1,392 crashes involving bicycles and 1,353 bicyclists injured. The number of crashes was lower than last year but only 1% lower than the average of the prior five years. Likewise, the number of injuries was lower than last year, but almost equal to the average of the prior five years.

Summer highest for crashes
The three summer months of June, July, and August, when most schools are not in session and weather is nicest, accounted for 56% of the crashes, 50% of the fatalities, and 57% of the injuries. July was the single highest month.

Early afternoon hours highest for crashes
More than one third of the crashes occurred between 3:00 and 6:00 PM. Of the days of the week, Friday had the highest number of crashes, Sunday the least.

Young males injured most often
More than twice as many males as females were injured at all severity levels and 9 of the 10 bicyclists killed were male. Eight of the ten fatalities and 74% of those injured were under the age of 25. Four of those killed were under the age of 10. Bicyclists aged 10 - 14 made up 28% of the injuries.

More bicyclists cited for contributing factors
Officers investigating bicycle crashes found that 47% of the motor vehicle drivers had committed "no improper driving"; this was true of only 21% of the bicyclists. As for the past five years, the top two contributing factors for both motor vehicle drivers and bicyclists were driver inattention or distraction and failure to yield the right of way.

Crossing road hazardous
Bicyclists were most likely to be riding across the road when they were struck by a motor vehicle. This maneuver accounts for 29% of the bicyclists in crashes. Another 9% were riding against traffic when struck.

Rural areas overrepresented in fatal crashes
Areas of under 1,000 population had only 5% of the total crashes and injuries but 50% of the bicyclists killed. Areas of over 100,000 population, on the other hand, had more than a third of the crashes and injuries but none of the bicyclists killed.

TABLE 7.01

BICYCLE CRASHES, INJURIES, FATALITIES, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Bicycle Crashes	1,276	1,255	1,130	1,220	1,282	1,375	1,367	1,574	1,448	1,392
Bicyclists Killed	19	10	12	14	15	10	12	15	16	10
Bicyclists Injured	1,295	1,213	1,105	1,194	1,258	1,342	1,309	1,452	1,401	1,353

TABLE 7.02

1989 BICYCLE CRASHES BY MONTH

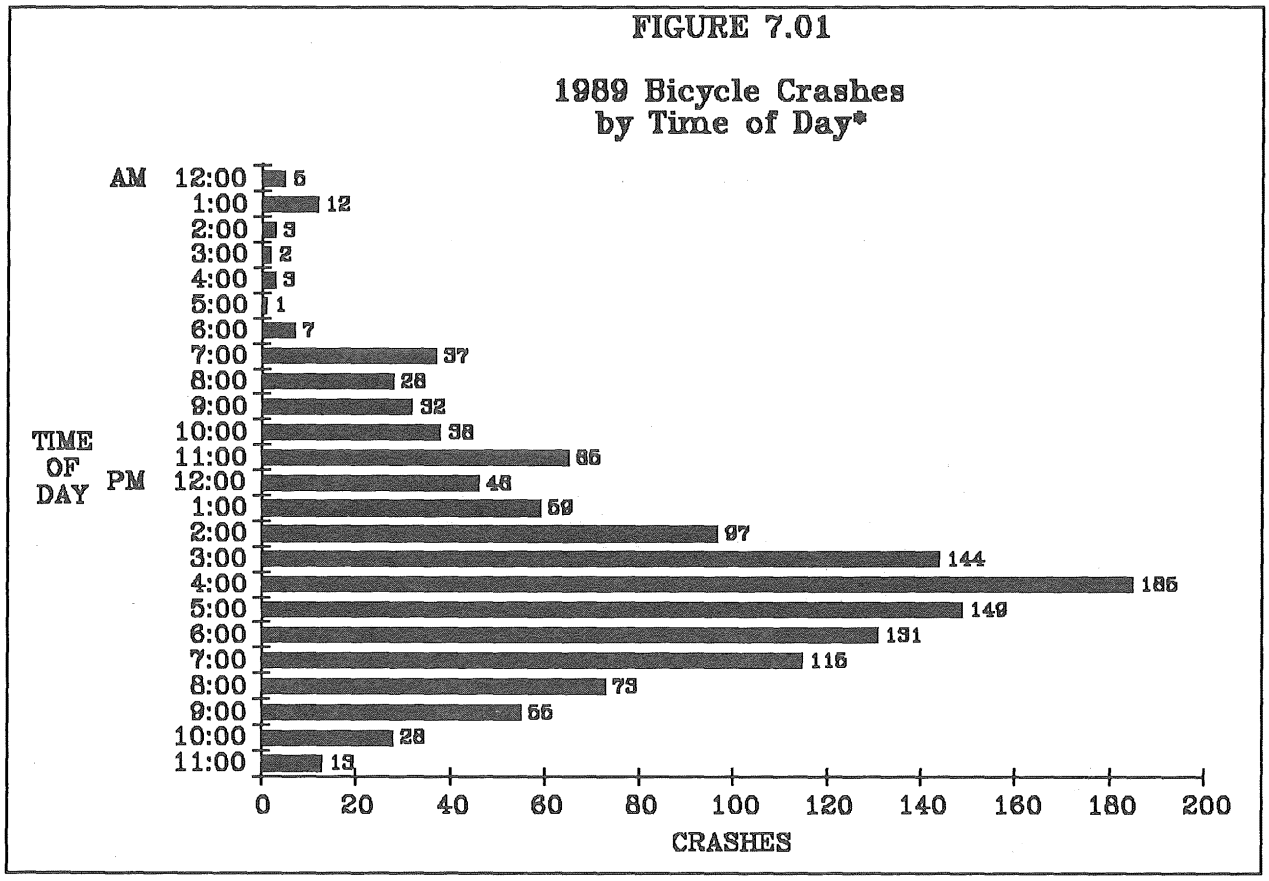
Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Bicyclists Killed	Bicyclists Injured
January	0	6	2	8	0	6
February	1	5	0	6	1	5
March	0	27	2	29	0	28
April	2	100	1	103	2	100
May	2	158	6	166	2	159
June	2	257	1	260	2	264
July	2	274	10	286	2	279
August	1	224	10	235	1	224
September	0	161	10	171	0	163
October	0	99	4	103	0	100
November	0	20	0	20	0	20
December	0	5	0	5	0	5
Total	10	1,336	46	1,392	10	1,353

TABLE 7.03

1989 BICYCLE CRASHES BY TIME AND DAY*

Time Period	Total	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Midnight - 2:59 AM	20	8	1	1	1	3	2	4
3:00 - 5:59 AM	6	0	0	1	1	1	1	2
6:00 - 8:59 AM	72	4	10	10	12	15	19	2
9:00 - 11:59 AM	135	11	22	14	13	23	27	25
Noon - 2:59 AM	202	28	25	31	27	23	41	27
3:00 - 5:59 PM	478	34	78	70	72	90	89	45
6:00 - 8:59 PM	319	37	47	57	62	34	39	43
9:00 - 11:59 AM	96	12	14	9	11	19	14	17
Unknown	64	7	14	7	10	11	11	4
Total	1,392	141	211	200	209	219	243	169

* Crashes between midnight and 2:59 AM and between noon and 2:59 PM may be underreported; see footnote, p. 34.



* Crashes during the midnight and noon hours are underreported; see footnote, p. 34.

TABLE 7.04

BICYCLISTS KILLED AND INJURED BY AGE AND SEX, 1989

	Killed			Injured											
				Severe			Moderate			Minor			Total		
Age Group	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	2	0	2	2	0	2	9	4	13	4	2	6	15	6	21
5 - 9	1	1	2	28	6	34	95	25	121	81	27	108	204	58	263
10 - 14	2	0	2	40	31	72	111	63	174	98	38	136	249	132	382
15 - 19	1	0	1	27	13	40	88	27	115	44	22	66	159	62	221
20 - 24	1	0	1	9	5	14	40	21	61	26	16	42	75	42	117
25 - 29	0	0	0	12	3	15	36	9	45	27	5	32	75	17	92
30 - 34	1	0	1	7	3	10	14	4	18	12	4	16	33	11	44
35 - 39	0	0	0	10	1	11	11	5	16	12	5	17	33	11	44
40 - 44	0	0	0	1	1	2	11	1	12	4	3	7	16	5	21
45 - 49	0	0	0	3	1	4	4	3	7	4	0	4	11	4	15
50 - 54	0	0	0	3	1	4	3	3	6	1	0	1	7	4	11
55 - 59	1	0	1	0	0	0	2	1	3	1	0	1	3	1	4
60 - 64	0	0	0	0	0	0	1	0	1	1	0	1	2	0	2
65 - 69	0	0	0	1	0	1	2	0	2	1	0	1	4	0	4
70 - 74	0	0	0	2	0	2	2	0	2	1	0	1	5	0	5
75 & Older	0	0	0	0	0	0	1	0	1	2	0	2	3	0	3
Not Stated	0	0	0	3	3	6	15	4	19	50	17	79	68	24	104
Total	9	1	10	148	68	217	445	170	616	369	139	520	962	377	1,353

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

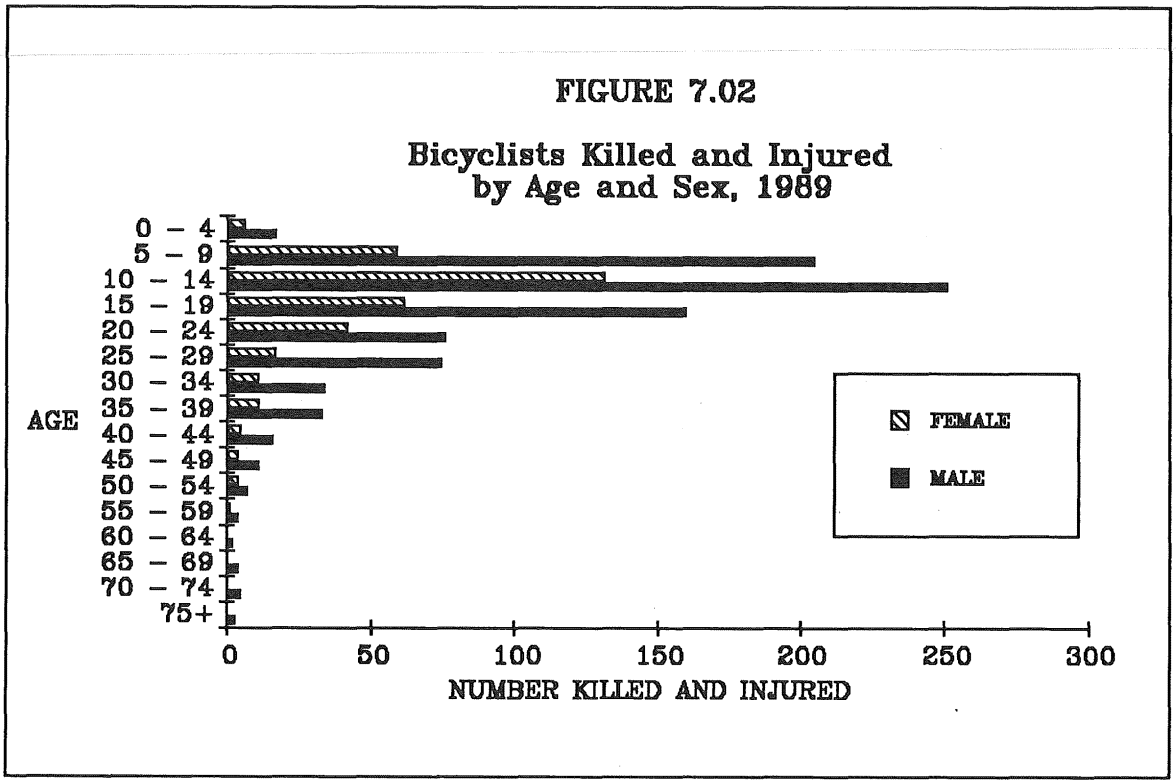


TABLE 7.05

CONTRIBUTING FACTORS IN 1989 BICYCLE CRASHES

Contributing Factors	Attributed to Bicyclists		Attributed to Motor Vehicle Drivers	
	Number	Percent	Number	Percent
Human Factors				
Driver Inattention/Distraction	376	29.5%	363	39.4%
Failure to Yield Right of Way	202	15.9	247	26.8
Disregard for Traffic Control Device	161	12.6	29	3.1
Driver Inexperience	113	8.9	18	2.0
Improper/Unsafe Lane Use	103	8.1	31	3.4
Driving Left of Roadway Center--Not Passing	52	4.1	9	1.0
Vision Obscured	36	2.8	83	9.0
Improper Turn	31	2.4	18	2.0
Illegal/Unsafe Speed	31	2.4	33	3.6
Physical Impairment	17	1.3	10	1.1
Improper Passing/Overtaking	9	0.7	15	1.6
Impeding Traffic	7	0.5	3	0.3
Following Too Closely	4	0.3	6	0.7
Improper Parking/ Starting/Stopping	3	0.2	14	1.5
Improper or No Signal	2	0.2	4	0.4
Other Human Factors	58	4.6	23	2.5
Vehicular Factors				
Defective Equipment	44	3.5	2	0.2
Skidding	2	0.2	4	0.4
Other Vehicular Factors	19	1.5	3	0.3
Miscellaneous Factors				
Weather, Road Defects	4	0.3	6	0.7
Total	1,274	100.0%	921	100.0%
No Improper Driving	293		657	
Total Number of Bicyclists/ Drivers	1,404		1,404	

One or two contributing factors may be attributed to a single driver or bicyclist. This may cause the sum of the factors cited to exceed 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 1989 CRASHES

Action	Bicyclists In Fatal Crashes	Bicyclists In Injury Crashes	Bicyclists In Property Damage Crashes	Bicyclists In All Crashes*
Riding With Traffic	3	373	11	387
Riding Against Traffic	0	123	2	125
Making Left Turn	0	49	3	52
Making Right Turn	0	22	0	22
Making U Turn	0	9	0	9
Riding Across Road	2	399	10	411
Slowing, Starting, Stopping	0	16	1	17
Other/Unknown	5	357	19	381
Total	10	1,348	46	1,404

* The total number of bicycle driver actions exceeds the number of bicycle crashes because more than one bicycle may be involved in a crash.

TABLE 7.07

1989 BICYCLE CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Bicyclists Killed	Bicyclists Injured
100,000 and Over	0	457	27	484	0	462
50,000 - 99,999	1	56	0	57	1	57
25,000 - 49,999	0	268	6	274	0	273
10,000 - 24,999	2	228	7	237	2	232
5,000 - 9,999	1	97	1	99	1	97
2,500 - 4,999	0	48	1	49	0	48
1,000 - 2,499	0	26	0	26	0	27
Under 1,000	5	68	1	74	5	68
Unknown	1	88	3	92	1	89
Total	10	1,336	46	1,392	10	1,353

VIII: SCHOOL BUS CRASHES

Crashes up, injuries down
The total number of crashes involving school buses in 1989 rose 22% over 1988 and is the highest number since 1979. There were 4 fatal crashes, 167 injury crashes, and 657 property damage only crashes for a total of 828. The number of fatalities was 4; the same as the previous five year average. The number of non-fatal injuries was 281; an 11% decrease from the previous five year average.

No one on school bus killed
Two of the four persons killed were drivers of other vehicles that collided with the bus, one was a 37 year old pedestrian, and the fourth was a 4 year old bicyclist.

Injuries split between bus and other vehicle
Of the 285 persons killed or injured in school bus crashes, 41% were occupants of the school bus and 56% were in or on another vehicle. Only 3% of the injuries/fatalities were pedestrians. Persons aged 5 through 19 accounted for 41% of those killed or injured. Five to nine year olds were the group most often injured on the bus, while 15 - 19 year olds were the group most often injured in other vehicles.

Urban areas see more fatalities than rural
Crashes that occurred in areas of over 5,000 population accounted for 3 out of the 4 persons killed and 213 out of the 281, or 76%, of the persons injured.

Crashes involve collisions with motor vehicles
Collisions with another motor vehicle accounted for 87% of school bus involved crashes and 81% of the injuries sustained in these crashes. Collision with a parked motor vehicle was the next most common type of crash.

Before and after school hours most crash involved
The before school hours of 6 - 9 AM and the after school hours of 3 - 6 PM accounted for a total of 63% of the crashes and 70% of the injuries.

February has most crashes
The highest number of crashes occurred in the month of February which accounted for 16% of the crashes. The combined summer months of June, July, and August, when most schools are not in session, had 6% of the total crashes. The highest number of injuries occurred in January which accounted for 20% of the injuries. Two of the four fatalities occurred in November.

Driver inattention contributes to crashes
Almost a quarter of the contributing factors cited for school bus drivers were for driver inattention/distraction. This was also true for 23% of those factors cited for other drivers in school bus crashes. Failure to yield the right of way was cited second most often for school bus drivers while the other drivers were cited second most often for illegal or unsafe speed. "No improper driving" was reported in the case of 40% of the school bus drivers and 28% of the other drivers.

Crashes lacking traffic control device
As in past years, over 40% of school bus crashes occurred where there was no traffic control device present; this is also true of 39% of the injuries. Another 23% of crashes occurred where there was a stop sign present at some but not all approaches. This is also true of 31% of the injuries and 3 of the 4 persons killed.

TABLE 8.01

SCHOOL BUS CRASHES, 1980 - 1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total Crashes	672	681	729	687	675	723	662	530	679	828
Fatal Crashes	1	2	2	7	3	4	3	6	3	4
Persons Killed	1	2	2	8	3	4	3	6	3	4
Injury Crashes	171	155	160	161	176	191	160	141	175	167
Persons Injured	*	*	282	321	340	366	265	244	359	281
Property Damage Crashes	500	524	567	519	496	528	499	383	501	657
School Buses Involved in Crashes	678	692	737	694	686	729	667	534	684	834

* Not Available.

TABLE 8.02

AGE AND SEX OF PERSONS KILLED AND INJURED IN 1989 SCHOOL BUS CRASHES

Age	Total*	In Bus	Pedestrian	In Other Vehicle	Male	Female
0 - 4	4	0	0	4	1	3
5 - 9	43	37	3	3	16	27
10 - 14	33	24	0	9	15	18
15 - 19	41	11	1	29	20	21
20 - 24	20	4	0	16	11	9
25 - 29	20	2	0	18	9	11
30 - 34	18	2	0	16	13	5
35 - 39	19	3	1	15	5	14
40 - 44	8	1	0	7	3	5
45 - 54	16	6	0	10	7	9
55 - 64	10	2	1	7	6	4
65 & Older	17	1	1	15	4	13
Unknown	36	24	1	11	18	16
Total	285	117	8	160	128	155

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

TABLE 8.03

PERSONS KILLED OR INJURED IN 1989 SCHOOL BUS CRASHES BY POPULATION AREA

Population of City or Township	Killed	Injured			
		Severe	Moderate	Minor	Total
100,000 and Over	1	4	22	74	100
50,000 - 99,999	0	2	2	25	29
25,000 - 49,999	1	3	11	16	30
10,000 - 24,999	1	5	13	26	44
5,000 - 9,999	0	0	3	7	10
2,500 - 4,999	0	0	2	6	8
1,000 - 2,499	0	1	8	1	10
Under 1,000	1	1	7	22	30
Unknown	0	5	5	10	20
Total	4	21	73	187	281

TABLE 8.04

1989 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	2	141	577	720	2	228
Parked Motor Vehicle	0	6	62	68	0	6
Bicycle	1	3	0	4	1	3
Pedestrian	1	7	0	8	1	9
Animal	0	0	2	2	0	0
Train	0	0	1	1	0	0
Fixed Object	0	5	11	16	0	26
Non-collision:						
Overturn	0	3	3	6	0	7
Other	0	2	1	3	0	2
Total	4	167	657	828	4	281

TABLE 8.05

1989 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	2	4	6	0	4
3:00 - 5:59 AM	0	1	1	2	0	2
6:00 - 8:59 AM	0	57	204	261	0	102
9:00 - 11:59 AM	0	20	74	94	0	26
Noon - 2:59 PM	3	28	115	146	3	42
3:00 - 5:59 PM	1	51	208	260	1	96
6:00 - 8:59 PM	0	2	11	13	0	3
9:00 - 11:59 PM	0	1	6	7	0	1
Unknown	0	5	34	39	0	5
Total	4	167	657	828	4	281

* Crashes and injuries between midnight and 2:59 AM and between noon and 2:59 PM may be underreported; see footnote, p. 34.

TABLE 8.06

1989 SCHOOL BUS CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	0	22	79	101	0	56
February	0	19	111	130	0	24
March	0	25	103	128	0	30
April	1	11	33	45	1	14
May	1	13	54	68	1	18
June	0	8	25	33	0	11
July	0	4	11	15	0	6
August	0	0	5	5	0	0
September	0	19	41	60	0	45
October	0	11	39	50	0	25
November	2	23	96	121	2	36
December	0	12	60	72	0	16
Total	4	167	657	828	4	281

TABLE 8.07

CONTRIBUTING FACTORS IN 1989 SCHOOL BUS CRASHES

Contributing Factors	Attributed to School Bus Drivers Number	Attributed to School Bus Drivers Percent	Attributed to Drivers of Other Vehicles Number	Attributed to Drivers of Other Vehicles Percent
Human Factors				
Driver Inattention/Distraction	103	24.8%	146	23.0%
Failure to Yield Right of Way	71	17.1	65	10.3
Illegal or Unsafe Speed	33	7.9	107	16.9
Improper Turn	27	6.5	12	1.9
Following Too Closely	27	6.5	47	7.4
Improper or Unsafe Lane Use	24	5.8	30	4.7
Unsafe Backing	22	5.3	6	0.9
Vision Obscured	19	4.6	18	2.8
Disregard for Traffic Control Device	12	2.9	34	5.4
Driver Inexperience	11	2.6	28	4.4
Driving Left of Roadway Center--Not Passing	6	1.4	11	1.7
Improper or No Signal	5	1.2	2	0.3
Improper Parking/Starting/ Stopping	4	1.0	9	1.4
Improper Passing/Overtaking	3	0.7	14	2.2
Impeding Traffic	1	0.2	0	0.0
Physical Impairment	0	0.0	6	0.9
Pedestrian Violation	0	0.0	2	0.3
Other Human Factors	8	1.9	9	1.4
Vehicular Factors				
Skidding	18	4.3	29	4.6
Defective Equipment	2	0.5	7	1.1
Other Vehicular Factors	2	0.5	2	0.3
Miscellaneous Factors				
Weather Conditions	16	3.8	47	7.4
Road Defects	2	0.5	3	0.5
Total	416	100.0%	634	100.0%
No Improper Driving	337		252	
Total Number of Drivers	834		898	

One or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to exceed 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 in this table.

TABLE 8.08

1989 SCHOOL BUS CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
None	0	64	297	361	0	110
Traffic Signal	1	37	112	150	1	64
Stop Sign--All Approaches	0	6	31	37	0	6
Other Stop Sign	3	48	143	194	3	87
Yield Sign	0	5	13	18	0	5
School Bus Stop Arm	0	2	10	12	0	3
Railroad Crossing Device	0	1	15	16	0	1
No Passing Zone	0	3	1	4	0	3
Other	0	0	6	6	0	0
Unknown	0	1	29	30	0	2
Total	4	167	657	828	4	281

IX: MOTOR VEHICLE/TRAIN CRASHES

Crashes more severe
Although the number of motor vehicle/train crashes is small, these crashes are more severe. There were 11 fatal crashes, 48 injury crashes, and 83 property damage crashes for a total of 142 crashes in 1989. Less than 1% of all crashes state-wide involved a fatal injury but 8% of crashes involving a train resulted in death.

Persons killed increased
The total number of crashes in 1989 is 3% higher than the previous five year average. The 15 persons killed is the highest this number has been since 1983. The 75 persons injured is only 1% above the average of the previous five years. Train collisions with a pedestrian or bicyclist are not counted as traffic crashes for the purpose of this publication.

10 to 29 most injured age group
Persons aged 10 through 29 accounted for 80% of the fatalities and over half of the injuries sustained in motor vehicle/train crashes.

December high month
The month of December had the highest number of crashes and injuries; however, no one was killed in this month. The month of November had the most persons killed. The winter months of January, November, and December accounted for 35% of the total crashes.

Post rush hour traffic dangerous
The hours from 9:00 AM to noon and 6:00 to 9:00 PM had the two highest counts of crashes. Of the days of the week, Tuesday had the highest number of crashes, Saturday the least.

Same three factors
For the past eight years the three factors cited most often as contributing to a motor vehicle/train crash have been: Driver inattention, failure to yield right of way, and disregard for traffic control device. Non-human factors were only 6% of the total factors cited.

Crashes at marked crossings
At least 80% of the crashes, injuries and fatalities occurred at a rail road crossing device. Another 10% occurred where there was a stop sign. This is made more significant by the fact that 14% of contributing factors cited were for disregard for traffic control device.

TABLE 9.01

MOTOR VEHICLE/TRAIN CRASHES, 1984 - 1989

	1984	1985	1986	1987	1988	1989
Total Crashes	149	134	116	119	168	142
Fatal Crashes	7	8	5	4	9	11
Persons Killed	11	13	12	4	12	15
Injury Crashes	56	63	53	55	56	48
Persons Injured	73	87	66	74	70	75
Property Damage Crashes	86	63	58	60	103	83

TABLE 9.02

AGE OF PERSONS KILLED OR INJURED IN 1989 MOTOR VEHICLE/TRAIN CRASHES

		Injured			
Age Group	Killed	Severe	Moderate	Minor	Total
0- 9	0	2	1	2	5
10-19	5	5	5	7	17
20-29	7	9	8	6	23
30-39	1	2	5	3	10
40-49	1	1	0	1	2
50-59	0	2	1	1	4
60-69	0	1	1	4	6
70 & Older	1	0	1	2	3
Not Stated	0	0	2	3	5
Total	15	22	24	29	75

TABLE 9.03

1989 MOTOR VEHICLE/TRAIN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
January	0	5	9	14	0	7
February	1	4	8	13	1	9
March	1	4	10	15	2	7
April	1	3	7	11	1	6
May	0	2	6	8	0	2
June	0	3	6	9	0	4
July	3	1	1	5	3	3
August	1	4	9	14	1	5
September	0	5	4	9	0	6
October	2	1	6	9	3	3
November	2	8	6	16	4	11
December	0	8	11	19	0	12
Total	11	48	83	142	15	75

TABLE 9.04

1989 MOTOR VEHICLE/TRAIN CRASHES BY TIME AND DAY*

	Total	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Midnight - 2:59 AM	10	2	1	1	2	0	1	3
3:00 - 5:59 AM	9	6	0	0	1	0	0	2
6:00 - 8:59 AM	15	1	3	6	1	2	0	2
9:00 - 11:59 AM	29	1	4	3	7	7	5	2
Noon - 2:59 PM	17	2	0	4	1	4	4	2
3:00 - 5:59 PM	17	1	4	3	3	3	2	1
6:00 - 8:59 PM	24	3	2	6	2	2	6	3
9:00 - 11:59 PM	13	1	4	2	2	2	1	1
Unknown	8	1	0	1	1	0	4	1
Total	142	18	18	26	20	20	23	17

* Crashes between midnight and 2:59 AM and between noon and 2:59 PM may be underreported; see footnote, p. 34.

TABLE 9.05

CONTRIBUTING FACTORS IN 1989 MOTOR VEHICLE/TRAIN CRASHES

Contributing Factor	Number	Percent
Human Factors:		
Driver Inattention	44	28.6%
Failure to Yield Right of Way	38	24.7
Disregard for Traffic Control Device	21	13.6
Illegal or Unsafe Speed	18	11.7
Vision Obscured	8	5.2
Physical Impairment	5	3.2
Improper Parking	4	2.6
Driving left of Roadway Center - Not Passing	2	1.3
Improper Passing	1	0.6
Improper Turn	1	0.6
Other Human Factor	3	1.9
Vehicular Factors		
Skidding	4	2.6
Defective Equipment	1	0.6
Miscellaneous Factors		
Weather Conditions	4	2.6
Total	154	100.0%
No Improper Driving	15	
Number of Drivers	151	

One or two contributing factors may be attributed to a single driver. This may cause the sum of the factors cited to exceed 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

1989 MOTOR VEHICLE/TRAIN CRASHES BY TRAFFIC CONTROL DEVICE PRESENT

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Killed	Injured
Standard Crossing Sign	4	21	24	49	5	33
RR Flashing Lights	2	6	27	35	4	11
RR Crossing Stop Sign	2	6	5	13	3	9
RR Crossing Gate	1	3	12	16	1	8
Stop Sign	0	7	7	14	0	7
Other	0	0	3	3	0	0
Unknown	0	0	3	3	0	0
None	2	5	2	9	2	7
Total	11	48	83	142	15	75

MINNESOTA TRAFFIC CRASHES, FATALITIES AND INJURIES: JANUARY THROUGH APRIL, 1990

Department of Public Safety, Office of Traffic Safety -- Report June 19, 1990

There is about a 30-day lag from the day a crash occurs until the report on the crash is completed, submitted to the Department, and entered in the computer. This one-page summary report shows the figures most commonly asked about for the January through April period. April is the latest month for which data entry is essentially complete.

Because of the seriousness of fatal crashes, a separate manual tabulation is maintained and updated daily, showing the number of fatalities in certain basic categories and comparing those numbers to the corresponding numbers from the prior year. The following numbers are from reports received as of June 18, 1990:

	Through June 18, 1990	Through June 18, 1989
People Killed	**172**	**195**
motor vehicle (except motorcycle)	145	156
motorcycle	6	11
pedestrian	19	24
bicyclist	2	4

	January through April, 1990			January thru April	
		Percent Change from			
	number	last year	prior 5-year average	last year	prior 5-year average
Total Crashes	**28,483**	**-20.4**	**-8.3**	**35,787**	**31,076**
Fatal crashes	113	-5.0	+0.9	119	112
Severe injury crashes	986	+0.2	-13.4	984	1,139
Moderate injury crashes	2,772	-8.6	-12.0	3,031	3,151
Possible injury crashes	4,297	-17.4	+1.0	5,204	4,252
Property damage only crashes	20,315	-23.2	-9.4	26,449	22,421
People Killed	**126**	**-1.6**	**+2.1**	**128**	**123**
Motor vehicle (except motorcycle)	109	+6.9	+11.2	102	98
Motorcycle	0			1	5
Pedestrian	15	-31.8	-20.2	22	18
Bicyclist	2			3	2
People Injured	**11,616**	**-11.6**	**-5.1**	**13,134**	**12,246**
Severe injury	1,240	-0.4	-12.6	1,245	1,419
Moderate injury	3,916	-7.7	-11.5	4,244	4,426
Possible injury	6,460	-15.8	+0.9	7,645	6,401

In general, 1990 has been a better year for traffic safety than last year and it has been better than the average of the prior five years. This is a beneficial development, especially since the number of cars, the number of drivers and the number of miles driven all increase from year to year. The benefit might in part be attributable to extraneous factors, such as the mildness of the winter, and the changing age structure of the population, but it likely also reflects improvements in roadway design, in car safety, and in human behavioral factors, such as the proper use of safety equipment.

Through June 18, 1990, there were 172 people killed, 23 fewer than for the same time period last year.

Through April, there were over 28,483 total crashes. This is down 20% from last year and 8% from the average of the prior five years.

Through April, there were 11,616 people injured. This is down 12% from last year, and 5% from the average of the prior five years. Note especially that in comparison with the prior five year average, severe and moderate injuries are down substantially (around 12%) while less serious injuries increased slightly. This is consistent with benefits to be expected from increased seat belt use.

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