1987 Minnesota Motor Vehicle CRASH FACTS

MINNESOTA
MOTOR VEHICLE
CRASH FACTS
1987

An analysis 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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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 accidents 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.

In 1987, 530 people were killed and 42,091 injured in 94,095 crashes throughout the state. Over 3.3 million vehicles traveled 35.1 billion miles on our state's roadways. Minnesota driver licenses were held by 3,101,953 persons in 1987. The total economic loss resulting from motor vehicle accidents in Minnesota was $506,432,200. This figure is calculated from costs estimated for 1986 by the National Safety Council for fatalities, injuries, and property loss resulting from traffic crashes.

The total dollar value is determined as follows:

530	Deaths	@$240,000	=$127,200,000
5,557	Severe Injuries	@ 25,500	= 141,703,500
16,217	Moderate Injuries	@ 6,300	= 102,167,100
20,317	Possible Injuries	@ 1,600	= 32,507,200
64,284	Property Damage Crashes	@ 1,600	= 102,854,400
		Total	=$506,432,200

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

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 accident information is collected and analyzed, some of the results presented here may differ slightly from figures that will be available at a later date.

THE FOLLOWING SUMMARIZES SEVERAL CATEGORIES OF 1987 TRAFFIC CRASHES:

GENERAL INFORMATION

Minesota's fatality rate per hundred million vehicle miles traveled decreased to a record low of 1.51 in 1987. This was 9.6% lower than the 1986 record of 1.67 -- the lowest rate in the nation that year. Fatality rates per population and per registered vehicles as well as crash rates were all at ten-year lows. (Table 1.01)

ALCOHOL

It is estimated that 42 percent, or 224, of the 1987 traffic fatalities and 16 percent, or 7,027 of the 1987 traffic injuries were alcohol related. Persons aged 15 to 29 suffered 61 percent of these fatalities and 63 percent of these injuries. Sixty percent of the persons arrested for drunken driving were between the ages of 16 and 29.

MOTOR VEHICLE OCCUPANTS

The age group of injured persons with the highest percentage of restraint use recorded was the 61-to-70-year-old age category. The lowest recorded restraint use among injured

persons occurred in the 11-to-20-year-old age group. Actual restraint use observed at various locations in Minnesota shows a flat 32 percent since the seat belt law was enacted in 1986, after a jump from 20 percent just prior to the law.

TRUCKS

Truck crashes, fatalities, and injuries declined for the second straight year in 1987. Twenty-six-to-thirty-year-olds made up the largest age group of truck drivers involved in crashes. The peak time of day for truck crashes was 11 am to 12 noon.

PEDESTRIANS

Sixty-two pedestrians died and 1,533 pedestrians suffered injuries in 1987 motor vehicle crahses. These numbers represent small (6 percent each) reductions from the averages for the preceding five-year period. The pedestrians killed and injured were most often young persons, and children between the ages of five and nine suffered the most fatalities and injuries of any single five-year age group.

MOTORCYCLES

Motorcycle crashes, fatalities and injuries were the lowest they have been since the early 1970s. The drop in crashes is not just a reflection of the declining number of motorcycles. As a rate per 10,000 registered motorcycles, fatalities were the lowest they have been in 14 years. Crash victims were mostly young persons: 61 percent were younger than 30. Alcohol use and helmet non-use continued to characterize fatally-injured motorcyle drivers.

BICYCLISTS

In 1987, bicycle crashes and injuries both reached historic highs. There were 1,574 crashes and 1,452 injuries to bicyclists, up 23 percent and 17 percent respectively from the preceding five-year averages. There were 15 bicyclist fatalities. Although this was a 20 percent increase over the prior five-year average, it was not an historic high. There have been more fatalities in 15 out of the past 26 years for which records are available.

MOTOR VEHICLE/TRAIN CRASHES

There were four fatalities resulting from motor vehicle train crashes. This was the lowest number over the 23-year period of time for which records are availble. Total motor vehicle/train crashes were down 19 percent from the prior five year average; total injuries eight percent.

TABLE 1.01

CRASH, FATALITY AND INJURY RATES, 1978-1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Traffic Crashes	118,833	120,633	103,612	97,879	89,443	97,371	93,741	99,168	95,460	94,095
Traffic Fatalities	980	881	863	763	581	558	584	610	572	530
Traffic Injuries	50,332	49,604	45,227	43,739	38,692	41,086	41,808	44,316	42,130	42,091
Registered Motor Vehicles (Millions of Vehicles)	2.90	3.00	3.01	3.09	3.01	3.03	3.13	3.22	3.25	3.31
Licensed Drivers* (Millions of Drivers)	2.70	2.73	2.77	2.83	2.87	2.90	2.91	3.04	3.07	3.10
Vehicular Miles Traveled (Billions of Miles)	28.8	29.0	28.5	28.6	29.2	30.5	32.2	33.1	34.2	35.1
Fatality Rate Per Hundred Million Vehicle Miles Traveled	3.40	3.04	3.03	2.67	1.98	1.83	1.81	1.84	1.67	1.51
Fatality Rate Per 100,000 Registered Vehicles	33.8	29.3	28.7	24.7	19.3	18.4	18.7	18.9	17.6	16.0
Fatality Rate Per 100,000 Population	24.5	21.7	21.2	18.6	14.2	13.5	14.1	14.7	13.6	12.6
Crash Rate Per Hundred Million Vehicle Miles Traveled	412	417	364	342	304	319	291	300	279	268
Crash Rate Per 100,000 Registered Vehicles	4,100	4,018	3,446	3,163	2,972	3,214	2,995	3,080	2,937	2,840
Crash Rate Per 100,000 Population	2,965	2,971	2,546	2,387	2,181	2,356	2,262	2,380	2,266	2,233

* Permits included.

TABLE 1.02

TRAFFIC CRASH TRENDS
1982 - 1987

	1982	1983	1984	1985	1986	1982-1986 Average	1987	Record High	
Total Crashes	89,443	97,371	93,741	99,168	95,460	95,036	94,095	123,106	(1975)
Fatal	514	501	519	538	506	516	466	N.A.	
Severe Injury	4,517	4,831	5,109	5,038	4,437	4,786	4,566	N.A.	
Moderate Injury	11,052	11,892	11,951	12,326	11,610	11,766	11,517	N.A.	
Minor Injury	11,023	11,950	11,817	13,274	13,179	12,249	13,262	N.A.	
Property Damage	62,337	68,197	64,345	67,992	65,728	65,720	64,284	N.A.	
Injuries	38,692	41,086	41,808	44,316	42,130	42,275	42,621	50,332	(1978)
Total Fatalities	581	558	584	610	572	581	530	1,060	(1968)
Pedestrian	76	62	55	65	71	66	62	157	(1971)
Mv/Train*	7	15	11	13	12	13	4	62	(1932)
Bicycle	12	14	15	10	12	13	15	24	(1977)
Motorcycle	70	66	62	77	66	68	51	121	(1980)
3-Wheel Vehicle	2	9	4	1	9	5	2	9	(1986)
Snowmobile	1	4	9	3	5	4	0	9	(1984)
Motor Vehicle Occupants	415	398	430	441	402	448	396	N.A.	
Fatality Rate**	1.98	1.83	1.81	1.84	1.67	2.03	1.51	23.6	(1934)
U.S. Fatality Rate**	2.89	2.70	2.68	2.58	2.60	2.83	2.60	18.0	(1925)
Minnesota Economic Loss(millions)	$366.4	$393.3	$443.9	$480.9	$445.7	$416.5	$506.4	$506.4	

* Fatalities occurring in motor vehicle/train crashes are included in other categories as well. They are not usually train occupants. In 1987, they were all motor vehicle occupants.

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

N.A. = Not Available.

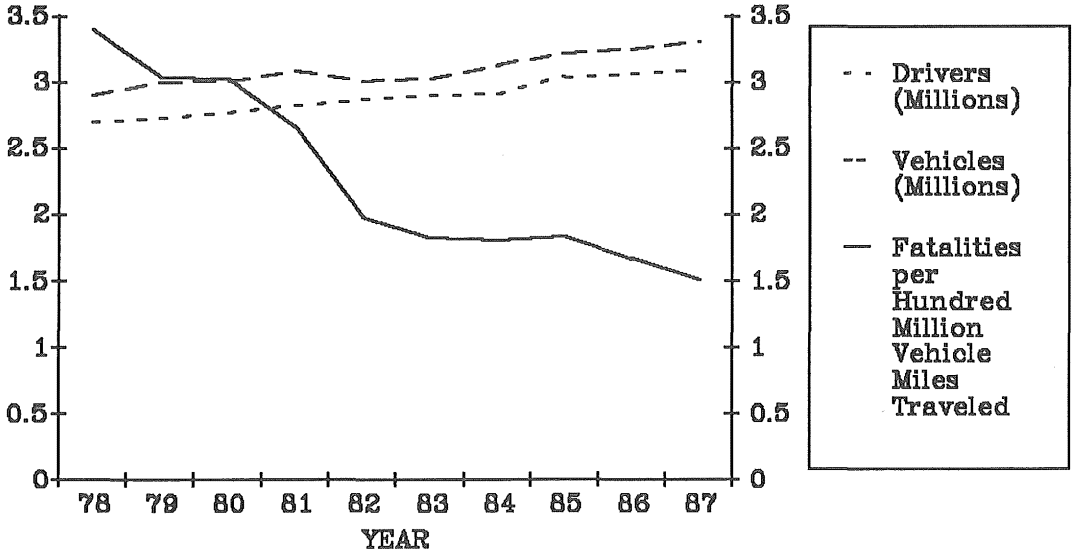
GENERAL INFORMATION

Motor vehicle crash trends in Minnesota have followed a relatively steady downward course over the past ten years. Although crashes and injuries have generally decreased, the number of registered motor vehicles, licensed drivers, and vehicle miles traveled have steadily increased. Combining the decreases in crashes, fatalities, and injuries with increases in the above mentioned categories markedly decreases crash and fatality rates as shown in Figure 1.01 below.

For a better overall understanding of Minnesota's 1987 traffic accidents, a breakdown of "who, what, where, and when" describing basic environmental and circumstantial factors is given on the following pages.

FIGURE 1.01

Drivers, Vehicles and Fatality Rates
1978 – 1987



WHO was involved

Drivers of cars and trucks constituted the highest number (244) and largest percentage (46%) of persons killed in traffic crashes. In order of involvement, the other categories were passengers of cars and trucks (129), pedestrians (62), motorcyclists (51) and bicyclists (15). (Table 1.03)

Sixty-three percent of all traffic fatalities were males. This was a decrease from 71 percent in 1986. Males accounted for 69 percent of car or truck driver fatalities, 80 percent of bicyclist fatalities, and all motorcycle driver fatalities. In the age groups above 35, however, females outnumbered males (Figure 1.02). The five-year age group with the highest number of fatalities and injuries in traffic crashes was 15 to 19 (20%), followed by 20 to 24 (16%). (Tables 1.04 and 1.05)

In 1987, 170,978 drivers were involved in traffic crashes; this translates into one out of every 18 licensed drivers. The age group of drivers with the greatest involvement in crashes was 16 to 20, comprising 17.9% of drivers involved in crashes. Yet this age group represented only 9.3% of all licensed drivers. The other driver age group over-involved in crashes was 21 to 25. (Table 1.11 and Figure 1.03)

Younger drivers (aged 16 to 20) were more than twice as likely to be involved in single-vehicle crashes as those over 35, especially in collisions with fixed objects and in overturns. (Table 1.08)

The most frequently recorded contributing factor for drivers in crashes was driver inattention or distraction, followed by failure to yield right of way and illegal or unsafe speed. Drivers 66 and over, however, were cited significantly fewer times for illegal or unsafe speed than younger driver age groups. (Table 1.11)

WHAT the conditions were

Most collisions occurring in 1987 were between two moving motor vehicles (65%); a collision with a fixed object was second with 12 percent. Fatality rates per thousand crashes show that in 1987 a submersion accident -- which is a very rare event -- had the highest probability of fatality -- 44.4 fatalities per 1,000 crashes. Pedestrian crashes were second with 39.6 fatalities per 1,000 crashes. In past years motor vehicle/train crashes had by far the highest fatality rate per thousand crashes; however in 1987, this rate dropped to 33.6 from 103.4 in 1986.

Although one might expect serious accidents to occur most often during inclement weather, the majority of accidents occurred on dry pavement during daylight and on clear days.

The most frequently cited contributing factors in 1987 fatal crashes were illegal or unsafe speed (23%), and physical impairment (18%). This was a switch from 1986, when physical impairment topped the list with 17 percent and speed was second with 16 percent. In personal injury and property damage crashes, driver inattention was at the top with approximately 25 percent and failure to yield right of way tied with illegal/unsafe speed for second.

WHERE they happened

On June 17, 1987, Minnesota increased the speed limit on rural interstates from 55 miles per hour to 65. According to a preliminary study which compared 1987 with the previous four years, the increase in fatalities and crashes on this type of roadway was statisically significant. Despite the decreases in crashes

on other roadways, crashes on rural interstates increased.

The road design most common in accidents was the two-lane two-way undivided highway; 41% of total crashes and 68% of fatal crashes occurred on this type of roadway. (Table 1.19)

Trunk highways had more crashes than other types of roadways with 33 percent; local streets came in a close second with 30 percent. More than twice as many crashes occurred on urban roadways as rural; however, fatal crashes were more than twice as likely to occur on rural roadways as urban. (Table 1.22)

When a traffic control device was present at the site of an accident, it was most frequently reported in accidents was a traffic light or stop sign. Each of these devices was present in 18 percent of the crashes; however, in fatal crashes a stop sign was present more than three times as often as a traffic light.

The ten counties which decreased their fatalities to at least five fewer than their own previous five-year averages were Anoka, Beltrami, Cass, Dakota (second year in a row), Faribault, Hennepin, Itasca, Ramsey, St. Louis (second year in a row), and Sherburne. The counties with no fatalities at all in 1987 were Faribault, Grant, Lake of the Woods (second year in a row), Martin, Norman, Rock, and Traverse (second year in a row). Seven counties had at least five more fatalities than their previous five-year averages. They were Chisago, Fillmore, Goodhue, McLeod, Roseau, Steele, and Wright.

WHEN they occurred

Traffic crashes historically occur more often during the winter months than other months. This trend seems to be changing. In 1987, January had about the same number of crashes as May, June, July, August, and September. This may be partly due to the mild winter of 1986-87. December still had the most crashes (11.7%) and October and November each had about nine percent. Fatal crashes, on the other hand, normally occur more frequently in the summer months. This was true in 1987 with the highest number of fatal crashes occurring in August (13.9%), followed by June (11.4%), and then September (10.3%). (Table 1.27)

The peak time of day for fatal crashes was 1-2am with two smaller peaks at 3pm and 6pm. Total crashes peaked during the afternoon rush hours of 4-6pm.(Figure 1.06) As usual, Friday had the most crashes (17%), with Saturday and Thursday coming in a close second. Fatal crashes were more likely to occur on Saturday (21%) than any other day, and Sunday was second with 17 percent. (Table 1.28)

In 1987 the Memorial Day holiday had only four fatalities, and 695 crashes, the lowest for that holiday period in the last five years. The July Fourth weekend, however, had the most fatalities and crashes it has had in the last five years -- seven fatalities and 834 crashes. New Year's weekend also had the most fatalities it has had in the last five years (six). (Table 1.29)

TABLE 1.03

1987 FATALITIES BY TRAFFIC ROLE AND AGE

Traffic Role	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 & Older	Unknown	Total
Car/Truck Driver	-	35	74	44	24	18	22	27	-	244
Car/Truck Passenger	17	37	24	10	8	7	8	15	3	129
Pedestrian	10	7	11	7	4	8	2	13	-	62
Bicyclist	2	7	5	-	-	-	-	1	-	15
Motorcycle Driver/ Passenger-	-	14	25	7	3	1	1	-	-	51
All-Terrain Vehicle Driver/Passenger	-	1	-	-	1	-	-	-	-	2
Snowmobile Driver/Passenger	-	-	-	-	-	-	-	-	-	0
Other/Unknown	1	14	8	-	2	-	-	1	-	27
Total	30	115	147	68	42	35	33	57	3	530

TABLE 1.04

1987 FATALITIES BY TRAFFIC ROLE AND SEX

Traffic Role	Male		Female		Total
Car/Truck Driver	168	(68.9%)	76	(31.1%)	244
Car/Truck Passenger	50	(38.8%)	79	(61.2%)	129
Motorcycle Driver	45	(100.0%)	0		45
Motorcycle Passenger	2	(33.3%)	4	(66.7%)	6
Pedestrian	37	(59.7%)	25	(40.3%)	62
Bicyclist	12	(80.0%)	3	(20.0%)	15
Moped Driver	0		0		0
Snowmobile Driver	0		0		0
All-Terrain Vehicle Driver	1	(50.0%)	1	(50.0%)	2
Other/Unknown	16	(59.3%)	11	(40.7%)	27
Total	331	(62.5%)	199	(37.5%)	530

FIGURE 1.02

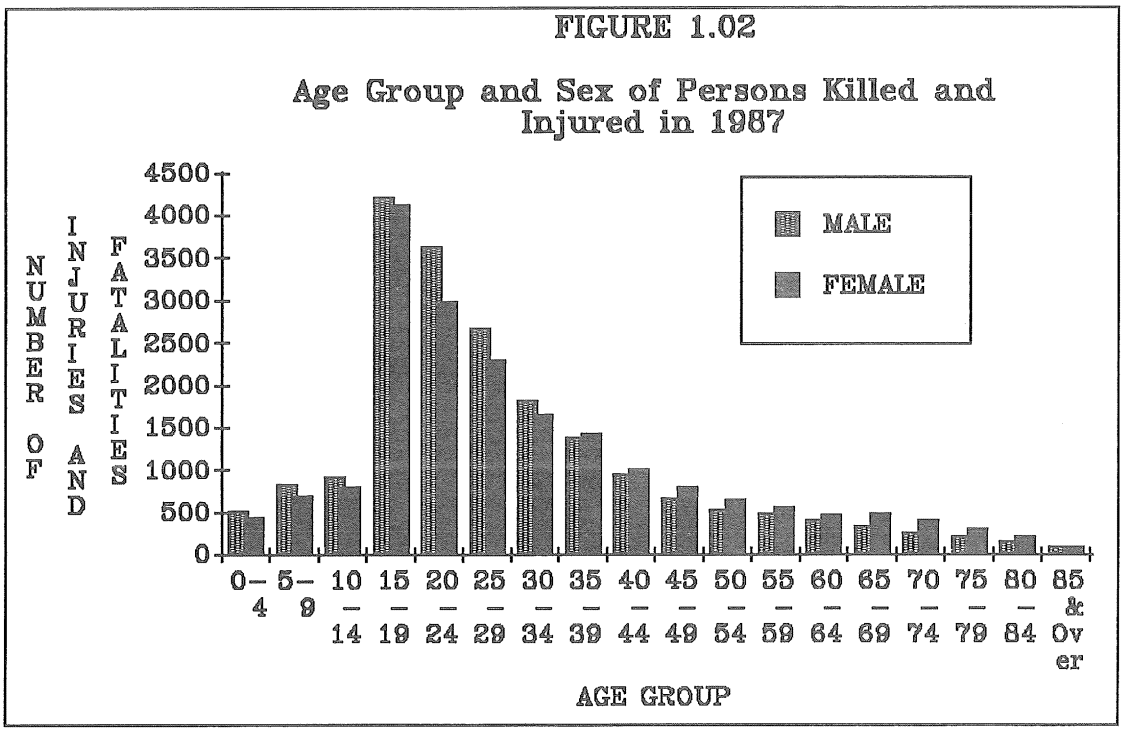


TABLE 1.05

AGE AND SEX OF PERSONS KILLED OR INJURED IN 1987 CRASHES

	Persons Killed			Persons Injured		
Age Group	Male	Female	Total	Male	Female	Total*
0- 4	3	5	8	520	442	965
5- 9	11	10	21	831	692	1,525
10-14	9	6	15	928	803	1,731
15-19	58	41	99	4,166	4,090	8,257
20-24	54	21	75	3,586	2,979	6,567
25-29	53	16	69	2,633	2,286	4,923
30-34	29	11	40	1,802	1,650	3,454
35-39	19	10	29	1,378	1,430	2,809
40-44	15	6	21	948	1,020	1,969
45-49	10	10	20	662	800	1,462
50-54	13	9	22	531	653	1,185
55-59	7	6	13	484	564	1,050
60-64	11	4	15	414	474	889
65-69	7	12	19	347	477	824
70-74	5	9	14	262	406	668
75-79	10	5	15	213	308	522
80-84	7	10	17	159	215	374
85 & Over	4	6	10	103	96	199
Not Stated	6	2	8	1,172	1,473	2,718
Total	331	199	530	21,139	20,858	42,091

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

TABLE 1.06

PEOPLE KILLED OR INJURED IN VARIOUS VEHICLE TYPES, 1987

Vehicle Type	Fatalities	Severe Injuries	Moderate Injuries	Possible Injuries	Total
Passenger Car	318	3,444	11,372	15,805	30,939
Passenger Car & Trailer	1	4	18	21	44
Truck or Truck Tractor	6	32	144	147	329
Truck Tractor and Semi-Trailer	3	22	86	97	208
Truck Tractor with Twin Trailer	1	0	1	1	3
Truck With Other Trailer	2	2	21	12	37
Pickup Truck	53	535	1,607	1,798	3,993
Van	7	123	405	646	1,181
Motorcycle	51	574	918	361	1,904
Motorscooter/Motorbike	1	25	21	23	70
Motorized Bicycle*	0	23	43	10	76
All Terrain Vehicle	2	22	31	16	71
School Bus	0	8	29	63	100
Bus	1	2	41	55	99
Motorhome/Camper	3	2	17	12	34
Snowmobile	0	8	8	3	19
Farm Equipment	3	4	15	7	29
Taxicab	0	7	15	48	70
Hit Run Vehicle	0	19	94	116	229
Police Vehicle	1	4	19	59	83
Fire Department Vehicle	0	0	0	0	0
Ambulance	0	1	2	2	5
Military Vehicle	0	0	1	0	1
Road Maintenance Vehicle	0	0	1	2	3
Bicyclist	15	258	724	470	1,467
Pedestrians	62	433	570	530	1,595
Other/Unknown	0	5	14	13	32
Total	530	5,557	16,217	20,317	42,621

*Formerly referred to as moped.

TABLE 1.07

DRIVER LICENSE* SUMMARY BY AGE, 1978 - 1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
15 & Under	13,379	12,781	12,388	12,788	13,083	13,867	14,686	13,116	11,920	12,301
16 - 20	369,423	358,538	350,345	336,396	322,178	309,682	293,333	290,992	289,349	287,990
21 - 25	371,874	375,865	382,179	391,613	394,187	394,066	386,945	388,026	370,163	354,138
26 - 30	337,143	344,843	353,844	364,655	368,033	372,428	375,738	399,040	400,606	401,331
31 - 35	272,890	283,854	299,522	318,948	328,663	335,037	341,865	360,804	367,520	372,253
36 - 40	218,356	227,471	235,457	241,625	256,066	268,572	279,592	303,775	320,399	327,488
41 - 45	180,777	185,076	188,861	196,504	202,863	213,187	222,389	235,597	239,289	255,522
46 - 50	175,161	172,582	172,042	172,881	173,958	176,424	181,034	188,847	193,823	200,623
51 - 55	175,835	175,052	173,275	173,292	172,158	170,075	167,334	169,734	169,349	170,480
56 - 60	162,762	162,895	165,954	167,906	167,281	167,734	167,301	168,778	167,774	166,224
61 - 65	141,863	144,333	144,819	146,638	149,763	151,671	151,966	158,218	158,781	158,883
66 - 70	113,093	115,001	117,727	121,826	125,456	127,288	129,482	134,695	136,032	138,909
71 & Older	164,064	167,127	169,619	180,825	192,357	197,111	199,140	227,696	241,240	255,811
Total	2,696,620	2,725,418	2,766,032	2,825,897	2,866,046	2,897,142	2,910,805	3,039,318	3,066,245	3,101,953

* Includes Learner's Permits

TABLE 1.08

PERCENT OF DRIVERS IN AN AGE GROUP BY ACCIDENT TYPE - 1987

Accident Type	Drivers 16-20	Drivers 21-25	Drivers 26-30	Drivers 31-35	Drivers 36-65	Drivers 66 & Over
Collision With:						
Other Motor Vehicle	75%	79%	81%	81%	83%	86%
Parked Motor Vehicle	4%	3%	3%	2%	2%	4%
Railroad Train	*	*	*	*	*	*
Bicyclist	1%	1%	1%	1%	1%	1%
Pedestrian	1%	1%	1%	1%	1%	1%
Animal	2%	3%	3%	4%	4%	2%
Fixed Object	11%	9%	7%	6%	5%	4%
Other Object	1%	1%	1%	1%	1%	*
Non-Collision:						
Overturn	5%	4%	3%	3%	2%	1%
Other	1%	1%	1%	1%	1%	0%
Total Percent	100%	100%	100%	100%	100%	100%
Total Number	30,586	25,874	20,985	16,212	43,263	9,479

The percentages are based on the number of accident-involved drivers in each age group. Bicyclists and pedestrians are not included. They may not sum to 100 due to rounding.
* Less than one percent.

TABLE 1.09

DRIVERS IN 1987 CRASHES BY PHYSICAL CONDITION*

Physical Condition	Drivers in Fatal Crashes	Drivers in Injury Crashes	Drivers in Property Damage Crashes	Drivers in All Crashes
Normal	404	37,448	69,643	107,495
Under the Influence	57	2,376	2,263	4,696
Had Been Drinking	91	2,234	2,139	4,464
Had Been Using Drugs	2	33	33	68
Asleep	8	336	316	660
Fatigued	5	168	166	339
Ill	2	135	85	222
Handicapped	1	44	75	120
Other	13	197	366	576
Unknown	140	8,937	43,261	52,338
Total	723	51,908	118,347	170,978

* As noted by police officer on accident report.

TABLE 1.10

AGE AND SEX OF DRIVERS IN 1987 CRASHES*

	Drivers in Fatal Crashes				Drivers in All Crashes			
Age Group	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
15 & Under	5	4	0	9	383	211	0	594
16 - 20	97	28	0	125	18,987	11,581	18	30,586
21 - 25	81	27	0	108	16,204	9,652	18	25,874
26 - 30	72	19	0	91	13,201	7,768	16	20,985
31 - 35	50	16	0	66	10,157	6,041	14	16,212
36 - 40	48	13	0	61	8,075	5,132	9	13,216
41 - 45	39	11	0	50	5,566	3,476	4	9,046
46 - 50	22	6	0	28	4,128	2,447	4	6,579
51 - 55	21	8	0	29	3,382	1,929	2	5,313
56 - 60	22	6	0	28	3,228	1,709	2	4,939
61 - 65	23	5	0	28	2,749	1,417	4	4,170
66 - 70	19	8	0	27	2,094	1,202	2	3,298
71 - 75	11	5	0	16	1,611	1,037	2	2,650
76 - 80	11	3	0	14	1,228	745	1	1,974
81 - 85	4	3	0	7	728	372	0	1,100
86 & Over	3	1	0	4	343	114	0	457
Not Stated	8	4	20	32	4,678	2,528	16,779	23,985
Total	536	167	20	723	96,742	57,361	16,875	170,978

* Most crashes involve more than one driver. For that reason, the total number of drivers involved in crashes listed here will be greater than the total number of crashes. Pedestrians and bicyclists are not included.

TABLE 1.11

LICENSED* VS. CRASH-INVOLVED DRIVERS BY AGE - 1987

Age Group	Percent of All Licensed Drivers	Percent of Drivers in Fatal Crashes	Percent of Drivers in Injury Crashes	Percent of Drivers in Property Damage Crashes	Percent of Drivers in All Crashes
15 & Under	0.4	1.2	0.5	0.3	0.3
16 - 20	9.3	17.3	20.2	16.9	17.9
21 - 25	11.4	14.9	16.3	14.6	15.1
26 - 30	12.9	12.6	13.2	11.9	12.3
31 - 35	12.0	9.1	10.1	9.2	9.5
36 - 40	10.6	8.4	8.2	7.5	7.7
41 - 45	8.2	6.9	5.6	5.2	5.3
46 - 50	6.5	3.9	4.1	3.8	3.8
51 - 55	5.5	4.0	3.2	3.0	3.1
56 - 60	5.4	3.9	3.0	2.8	2.9
61 - 65	5.1	3.9	2.4	2.4	2.4
66 - 70	4.5	3.7	2.0	1.9	1.9
71 - 75	3.6	2.2	1.7	1.5	1.5
76 - 80	2.5	1.9	1.3	1.1	1.2
81 - 85	1.4	1.0	0.6	0.6	0.6
86 & Over	0.7	0.6	0.3	0.3	0.3
Not Stated	0.0	4.4	7.4	17.0	14.0
Total Percent**	100.0	100.0	100.0	100.0	100.0
Total Number	3,101,953	723	51,908	118,347	170,978

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

FIGURE 1.03

Licensed vs. Crash-Involved Drivers by Age Group, 1987

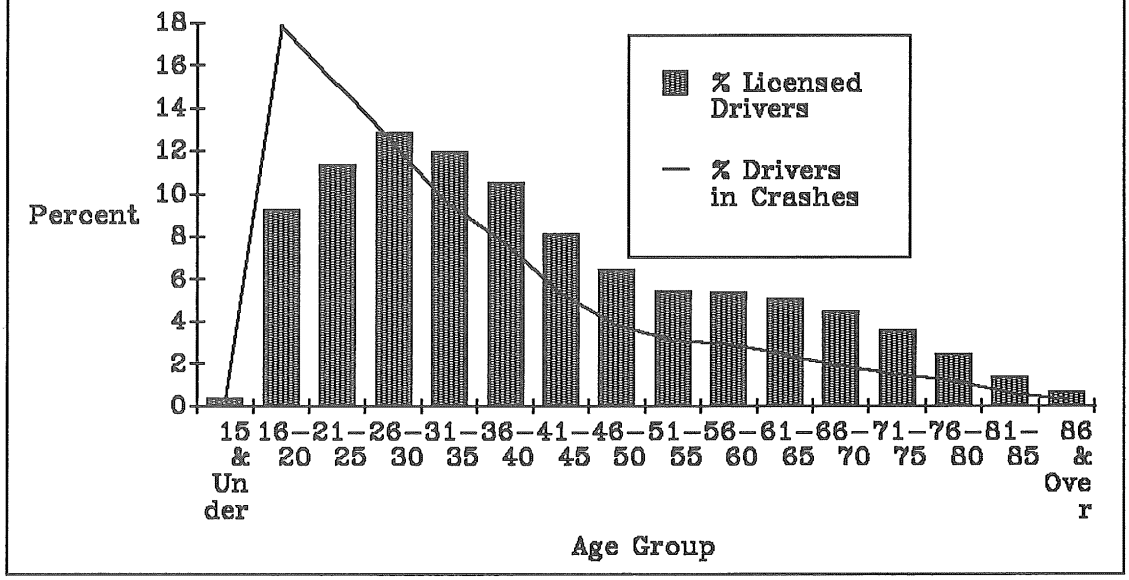


TABLE 1.12

CONTRIBUTING FACTORS CITED BY AGE GROUP OF DRIVER - 1987

Contributing Factor	Drivers 16-20	Drivers 21-25	Drivers 26-30	Drivers 31-35	Drivers 36-65	Drivers 66 & Above
Driver Inattention/Distraction	23%	24%	25%	25%	28%	31%
Failure to Yield Right of Way	12%	11%	12%	12%	17%	26%
Illegal/Unsafe Speed	16%	16%	14%	13%	9%	4%
Following Too Closely	6%	8%	8%	7%	6%	3%
Disregard for Traffic Control Device	4%	5%	4%	4%	5%	7%
Driving Left of Center--						
Not Passing	2%	2%	2%	2%	2%	1%
Improper Passing/Overtaking	2%	2%	2%	2%	1%	1%
Improper/Unsafe Lane Use	4%	5%	5%	6%	6%	6%
Improper Parking/Starting/Stopping	1%	1%	1%	1%	1%	2%
Improper Turn	2%	2%	3%	3%	3%	5%
Unsafe Backing	1%	1%	1%	1%	1%	2%
No/Improper Signal	*	*	*	*	1%	*
Impeding Traffic	*	*	*	*	1%	*
Driver Inexperience	12%	3%	2%	2%	1%	1%
Physical Impairment	5%	8%	9%	8%	5%	4%
Vision Obscured	3%	2%	3%	4%	4%	4%
Defective Equipment	2%	1%	1%	1%	1%	1%
Weather	1%	3%	3%	3%	3%	1%
Other	5%	4%	3%	4%	4%	2%
Total Percent	100%	100%	100%	100%	100%	100%
Total Contributing Factors Cited	19,860	12,562	8,304	5,898	14,062	4,658
No Improper Driving	7,847	8,433	7,629	6,423	18,077	2,575
Total Number of Drivers	30,586	25,874	20,985	16,212	43,263	9,479

Percentages are based on all contributing factors cited within each age group. The percentages may not sum to 100 due to rounding. Bicyclists and pedestrians are excluded.

*Less than one percent.

TABLE 1.13

1987 CRASHES AND INJURIES BY ACCIDENT TYPE*

Type of Crash	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Killed	Total Injured	Fatality Rate Per 1,000 Crashes
Collision With:							
Another Motor Vehicle	61,243	201	18,193	42,849	247	28,020	4.0
Parked Motor Vehicle	6,830	4	693	6,133	5	864	0.7
Railroad Train	119	4	55	60	4	74	33.6
Bicyclist	1,554	14	1,422	118	14	1,467	9.0
Pedestrian	1,517	60	1,440	17	60	1,515	39.6
Animal	4,692	2	287	4,403	2	365	0.4
Fixed Object	11,660	92	3,945	7,623	106	5,238	9.1
Other Object	719	0	235	484	0	290	0.0
Non-Collision:							
Overturn	4,805	81	2,704	2,020	84	3,794	17.5
Fire/Explosion	160	1	19	140	1	25	6.3
Submersion	45	2	16	27	2	19	44.4
Other	751	5	336	410	5	420	6.7
Total	94,095	466	29,345	64,284	530	42,091	5.6

TABLE 1.14

1987 "HIT-AND-RUN" CRASHES AND INJURIES BY ACCIDENT TYPE*

Type of "Hit-and-Run" Crash	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Killed	Total Injured
Collision With:						
Other Motor Vehicle	3,350	3	708	2,639	3	933
Parked Motor Vehicle	3,112	0	73	3,039	0	89
Railroad Train	3	0	0	3	0	0
Bicyclist	155	0	135	20	0	138
Pedestrian	181	8	169	4	8	173
Animal	0	0	0	0	0	0
Fixed Object	1,177	1	84	1,092	1	107
Other Object	41	0	3	38	0	3
Non-Collision:						
Overturn	53	0	19	34	0	25
Fire/Explosion	0	0	0	0	0	0
Other/Unknown	33	0	7	26	0	9
Total	8,105	12	1,198	6,895	12	1,477

* The type of crash is determined by the first harmful event.

TABLE 1.15

1987 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Daylight	220	18,123	38,514	56,857
Dawn/Dusk	28	1,935	4,608	6,571
Dark/Street Lights On	60	5,362	12,093	17,515
Dark/No Street Lights	154	3,664	6,960	10,778
Other/Unknown	4	261	2,109	2,374
Total	466	29,345	64,284	94,095

TABLE 1.16

1987 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Clear	281	16,750	34,592	51,623
Cloudy	133	8,288	17,602	26,023
Rain	20	2,181	4,678	6,879
Snow	10	1,050	3,423	4,483
Sleet/Hail	3	269	862	1,134
Fog/Smog/Smoke	10	406	775	1,191
Blowing Sand/Dust	1	51	103	155
Severe Crosswinds	0	19	47	66
Other	3	35	105	143
Not Stated/Unknown	5	296	2,097	2,398
Total	466	29,345	64,284	94,095

TABLE 1.17

APPARENT CONTRIBUTING FACTORS IN 1987 CRASHES

Apparent Contributing Factors	Crash Severity: Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Number of People* Affected by the Factor: Killed	Injured
Human Factors:					
Illegal/Unsafe Speed	23%	14%	13%	162	7,799
Driver Inattention/ Distraction	16%	25%	25%	139	15,727
Physical Impairment	18%	8%	4%	121	4,741
Failure to Yield Right of Way	8%	14%	13%	88	9,701
Driving Left of Roadway Center--Not Passing	7%	2%	2%	61	1,301
Pedestrian Violation/Error	1%	***	***	27	659
Disregard For Traffic Control Device	4%	6%	6%	31	3,591
Driver Inexperience	4%	6%	5%	35	3,059
Improper/Unsafe Lane Use	5%	4%	7%	39	1,952
Vision Obscured	2%	3%	4%	14	1,697
Improper Passing/ Overtaking	3%	1%	2%	23	694
Improper Parking/ Starting/Stopping	0%	1%	1%	1	507
Improper Turn	***	2%	4%	6	1,192
Impeding Traffic	***	***	***	1	223
Following Too Closely	1%	6%	6%	4	3,523
Unsafe Backing	0%	***	2%	0	184
No/Improper Signal	0%	***	***	1	226
Vehicular Factors:					
Defective Equipment	2%	1%	***	22	344
Skidding	2%	2%	2%	3	463
Miscellaneous Factors:					
Weather	2%	2%	3%	7	548
Other	2%	2%	2%	59	3,547
Total Percent**	100%	100%	100%		
Total Contributing Factors Cited	807	54,887	118,486		

* Many persons injured or killed are affected by more than one contributing factor.
** Percentages may not sum to 100 due to rounding.
*** Less than one percent.

For Contributing Factors broken down by Driver Age, see Table 1.12.

TABLE 1.18

1987 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Dry	370	21,710	44,143	66,223
Wet	58	4,359	9,373	13,790
Snow/Slush	9	877	2,895	3,781
Ice or Packed Snow	20	1,775	5,388	7,183
Other	6	311	510	827
Not Stated/Unknown	3	313	1,975	2,291
Total	466	29,345	64,284	94,095

TABLE 1.19

1987 CRASHES BY ROAD DESIGN

Road Design	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Freeway	41	1,890	5,643	7,574
Other Divided Highway	52	3,439	5,993	9,484
One-Way Street	4	884	1,387	2,275
4-6 Lanes Undivided-Two-Way	37	5,915	9,974	15,926
3 Lanes Undivided	4	161	337	502
2 Lanes Undivided-Two-Way	318	13,749	24,665	38,732
Alley/Driveway	0	223	664	887
Other	6	338	525	869
Not Stated/Unknown	4	2,746	15,096	17,846
Total	466	29,345	64,284	94,095

TABLE 1.20

TYPES OF MOTOR VEHICLES IN 1987 CRASHES*

Motor Vehicle Type	Vehicles In Fatal Crashes	Vehicles In Personal Injury Crashes	Vehicles In Property Damage Crashes	Vehicles In All Crashes
Passenger Car	444	38,910	86,839	126,193
Passenger Car & Trailer	1	57	151	209
Truck or Truck Tractor	21	790	2,163	2,974
Truck Tractor and Semi-Trailer	43	598	1,856	2,497
Truck Tractor and Twin Trailer	1	11	39	51
Truck With Other Trailer	4	94	256	354
Pickup	95	5,850	13,854	19,799
Van	27	1,640	3,743	5,410
Motorcycle	51	1,724	386	2,161
Motorscooter/Motorbike	2	58	11	71
Motorized Bike/Moped	0	74	6	80
All Terrain Vehicle	2	63	3	68
School Bus	6	143	385	534
Bus	4	134	348	486
Motorhome/Camper	5	41	111	157
Snowmobile	0	19	11	30
Farm Tractor or Equipment	5	62	114	181
Taxicab	1	105	264	370
Hit-and-Run Vehicle	10	1,301	7,257	8,568
Police Vehicle	1	137	258	396
Fire Department Vehicle	0	2	23	25
Ambulance	0	6	25	31
Military Vehicle	0	5	6	11
Road Maintenance Vehicle	0	32	116	148
Other Public Owner Vehicle	0	22	67	89
Other Private Owner Vehicle	0	27	55	82
Other	0	3	0	3
Total	723	51,908	118,347	170,978

* Most crashes involve more than one vehicle. For that reason, the total number of vehicles involved in crashes and listed here is greater than the number of crashes.

Bicycles and pedestrians are excluded from this table.

TABLE 1.21

MOTOR VEHICLE REGISTRATIONS, 1983 - 1987

Type of Vehicle	1983	1984	1985	1986	1987
Passenger Cars	2,185,457	2,258,877	2,339,782	2,395,247	2,450,232
Pickups	469,116	490,087	500,744	501,646	509,070
Trucks[1]	120,690	119,667	118,990	124,323	127,888
Recreational Vehicles	31,791	32,451	33,133	32,026	33,120
Motorcycles	155,502	153,851	151,449	141,261	134,590
Motorized Bicycles[2]	14,516	13,633	13,034	12,047	12,311
School Buses	4,113	3,998	4,185	4,598	5,095
Buses	3,490	3,604	3,575	3,405	3,502
Van Pool[3]	0	137	180	209	229
Tax Exempt Vehicles[4]	49,811	51,525	53,510	35,741	37,659
Motor Vehicle Subtotal	3,034,486	3,127,830	3,218,582	3,250,503	3,313,696
Trailers	565,046	615,004	602,795	663,559	653,630
Collector's Items	35,048	39,981	45,269	50,702	56,146
Grand Total	3,634,580	3,782,815	3,866,646	3,964,764	4,023,472

[1] Trucks include farm trucks, gross weight trucks, urban zone trucks, commercial zone trucks and Minnesota-based prorate trucks.

[2] Starting in 1987, motorized bicycles include those with or without pedals, 50cc and under. Prior to 1987, only those *with* pedals and under 50cc were included.

[3] Prior to 1984, van pools were registered either as passenger cars or buses, depending on the number of passengers they carried.

[4] Prior to 1986, tax-exempt vehicles were registered once only and were retained in the registration file indefinitely. Since 1986, they have been required to be registered every two years, and are dropped from the file if not re-registered.

TABLE 1.22

1987 CRASHES BY TYPE OF ROADWAY

Type of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Urban				
Interstate	17	1,327	4,514	5,858
Trunk Highway	57	6,237	12,810	19,104
County State Aid Highway	27	5,240	10,056	15,323
County Road	6	316	592	914
Local Street	30	6,930	18,278	25,238
Total	137	20,050	46,250	66,437
Rural				
Interstate	19	290	1,176	1,485
Trunk Highway	152	3,770	8,034	11,956
County State Aid Highway	113	3,037	4,455	7,605
County Road	19	556	762	1,337
Township Road	19	879	1,024	1,922
Local Street	6	605	1,976	2,587
Other Road	1	158	607	766
Total	329	9,295	18,034	27,658
All Roadways				
Interstate	36	1,617	5,690	7,343
Trunk Highway	209	10,007	20,844	31,060
County State Aid Highway	140	8,277	14,511	22,928
County Road	25	872	1,354	2,251
Township Road	19	879	1,024	1,922
Local Street	36	7,535	20,254	27,825
Other Road	1	158	607	766
Total	466	29,345	64,284	94,095

Urban = Greater than or equal to 5,000 population.
Rural = Less than 5,000 population.

FIGURE 1.04
Crashes by Location

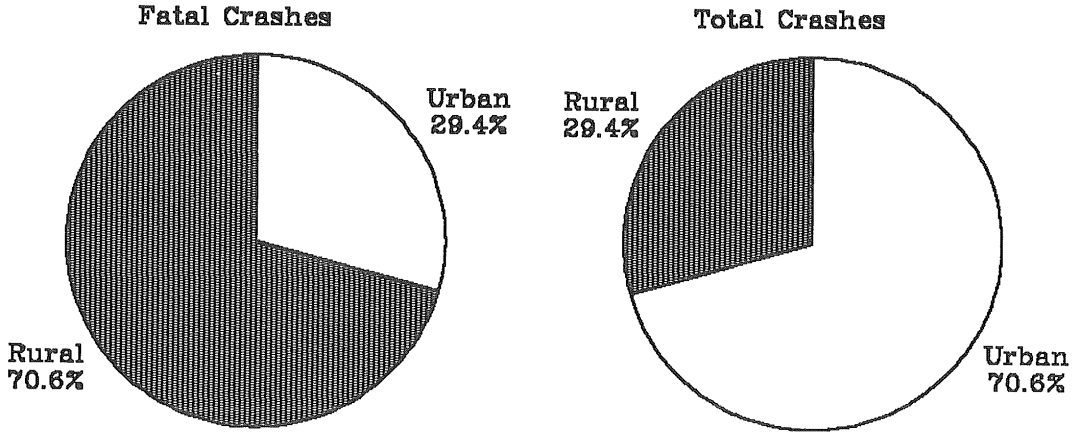


TABLE 1.23

1987 CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
None	291	15,209	36,846	52,346
Traffic Signal	27	6,240	10,946	17,213
Overhead Flashers	1	104	164	269
Stop Sign-All Approaches	5	532	1,219	1,756
Other Stop Sign	72	5,170	9,643	14,885
Yield Sign	11	561	1,048	1,620
Flagman, Officer, or School Patrol	0	55	85	140
School Bus Stop Arm	1	20	27	48
School Zone Sign	0	17	24	41
RR Crossing Gate	1	17	42	60
RR Flashing Lights	1	22	40	63
RR Crossing Stop Sign	2	8	11	21
RR Other	0	37	41	78
No Pass Zone	33	420	481	934
Other	13	249	489	751
Unknown	8	684	3,178	3,870
Total	466	29,345	64,284	94,095

TABLE 1.24

LOCATION OF 1987 CRASHES BY POPULATION

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
100,000 & Over	39	6,949	17,108	24,096
50,000- 99,999	9	1,621	4,018	5,648
25,000- 49,999	31	5,395	11,461	16,887
10,000- 24,999	31	4,054	9,117	13,202
5,000- 9,999	27	2,031	4,546	6,604
2,500- 4,999	19	1,038	2,331	3,388
1,000- 2,499	11	537	1,321	1,869
Under 1,000	299	7,720	14,382	22,401
Total	466	29,345	64,284	94,095

TABLE 1.25

1987 COUNTY CRASH REPORT

County	1987 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1982-1986	Number Killed 1987	Average Killed 1982-1986	Number Injured 1987	Average Injured 1982-1986
Aitkin	1	94	162	257	230	1	4	145	119
Anoka	20	1,707	2,822	4,549	4,396	21	30	2,500	2,270
Becker	7	179	253	439	452	11	7	271	278
Beltrami	2	204	374	580	586	2	7	333	283
Benton	6	196	465	667	626	8	7	297	315
Big Stone	2	32	62	96	106	2	3	56	53
Blue Earth	6	315	929	1,250	1,511	6	7	447	569
Brown	2	142	273	417	530	2	4	207	221
Carlton	6	144	338	488	453	6	4	214	201
Carver	8	273	583	864	886	8	8	381	414
Cass	5	131	207	343	345	5	10	180	190
Chippewa	4	76	93	173	224	7	5	120	107
Chisago	10	193	391	594	565	12	6	305	259
Clay	2	280	731	1,013	1,196	2	5	418	438
Clearwater	1	41	66	108	103	1	3	58	66
Cook	1	46	89	136	118	2	2	67	47
Cottonwood	3	57	108	168	188	3	2	94	79
Crow Wing	9	337	650	996	1,019	9	13	486	445
Dakota	11	1,442	3,246	4,699	4,876	14	21	2,070	2,222
Dodge	1	78	158	237	234	1	3	111	114
Douglas	8	203	458	669	681	8	6	320	304
Faribault	0	70	136	206	228	0	5	105	101
Fillmore	7	110	222	339	320	10	3	166	154
Freeborn	4	187	519	710	744	5	5	265	311
Goodhue	8	318	612	938	904	10	5	484	418
Grant	0	29	63	92	94	0	2	42	46
Hennepin	55	9,143	19,999	29,197	30,194	57	69	12,553	12,506
Houston	3	98	194	295	287	3	3	133	142
Hubbard	7	98	135	240	245	9	5	153	149
Isanti	5	149	291	445	413	7	4	242	218

TABLE 1.25 CONT'D

1987 COUNTY CRASH REPORT

	1987 CRASHES								
County	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1982-1986	Number Killed 1987	Average Killed 1982-1986	Number Injured 1987	Average Injured 1982-1986
Itasca	3	218	350	571	630	3	9	324	345
Jackson	1	52	131	184	206	1	1	69	78
Kanabec	2	84	145	231	185	3	3	173	90
Kandiyohi	3	277	441	721	960	3	6	395	414
Kittson	1	28	49	78	71	1	3	41	40
Koochiching	3	64	128	195	234	4	2	100	142
Lac Qui Parle	1	25	55	81	125	1	3	33	49
Lake	2	63	127	192	213	2	2	101	84
Lake of The Woods	0	13	31	44	55	0	1	17	29
LeSueur	2	129	316	447	469	2	4	189	201
Lincoln	1	33	48	82	97	1	2	47	47
Lyon	4	109	172	285	363	4	5	175	192
Mcleod	9	210	397	616	692	12	7	300	283
Mahnomen	3	40	26	69	65	4	1	77	43
Marshall	1	45	68	114	126	1	2	67	77
Martin	0	106	206	312	398	0	4	161	179
Meeker	5	108	217	330	389	7	3	168	172
Mille Lacs	5	120	179	304	335	6	7	179	165
Morrison	4	166	301	471	563	4	8	259	295
Mower	5	177	388	570	764	5	5	245	325
Murray	3	28	53	84	123	3	3	42	55
Nicollet	2	144	314	460	511	3	5	203	221
Nobles	2	103	217	322	432	2	3	166	148
Norman	0	36	42	78	95	0	2	71	51
Olmsted	9	646	1,487	2,142	2,355	11	15	924	1,032
OtterTail	12	261	473	746	784	13	12	397	396
Pennington	2	88	120	210	260	3	3	124	145
Pine	8	128	234	370	318	9	7	189	150
Pipestone	3	48	106	157	181	3	2	70	61
Polk	5	168	362	535	614	5	5	269	278

TABLE 1.25 CONT'D

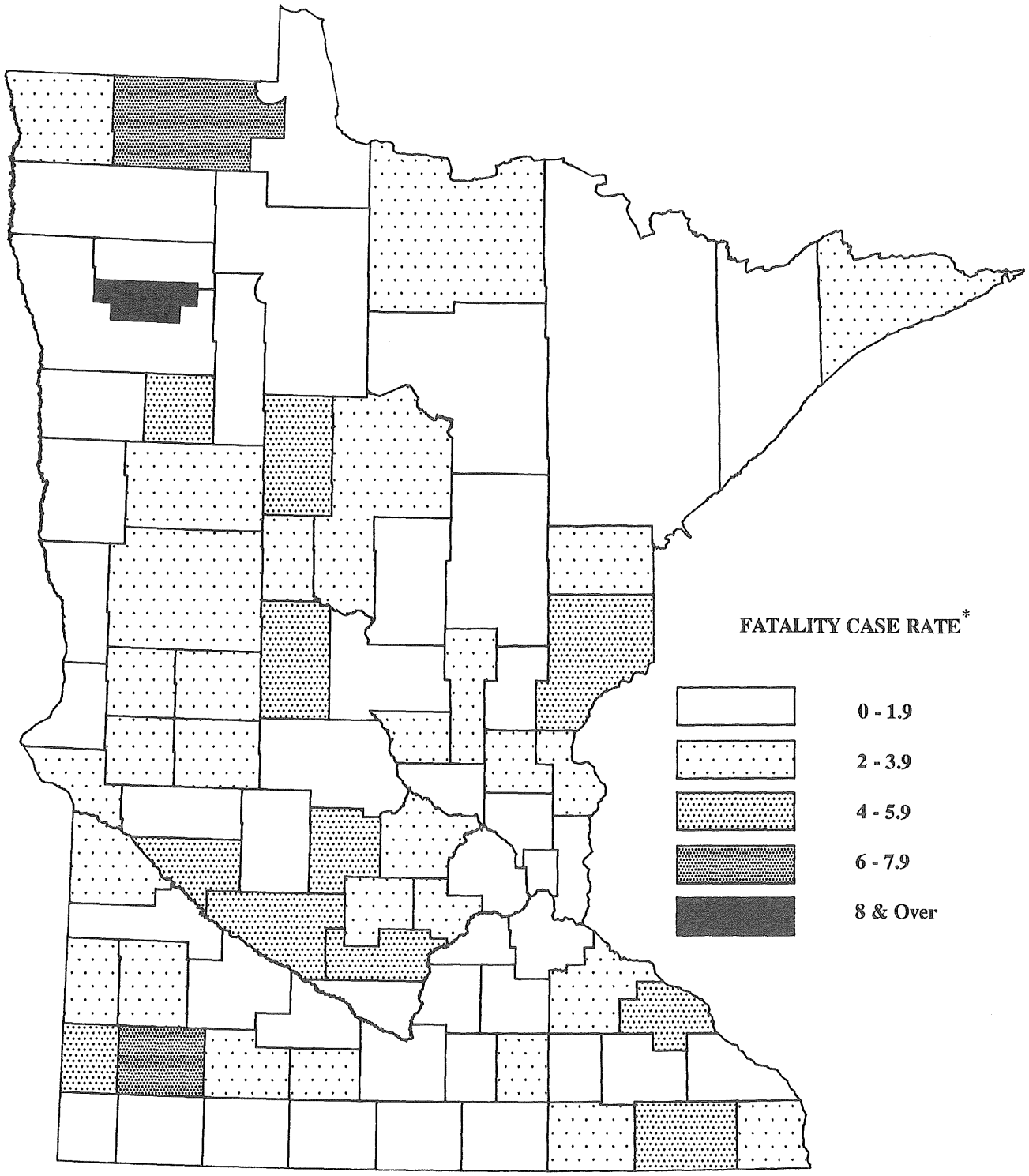
1987 COUNTY CRASH REPORT

	1987 CRASHES								
County	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1982-1986	Number Killed 1987	Average Killed 1982-1986	Number Injured 1987	Average Injured 1982-1986
Pope	1	31	84	116	144	1	3	43	59
Ramsey	25	3,831	10,611	14,467	15,256	26	37	5,170	5,250
Red Lake	2	19	45	66	86	3	2	22	32
Redwood	1	61	116	178	232	1	2	103	108
Renville	2	57	128	187	248	5	6	87	123
Rice	7	305	647	959	1,031	7	6	473	461
Rock	0	52	139	191	200	0	2	73	66
Roseau	3	58	140	201	163	7	2	84	86
St. Louis	15	1,039	2,254	3,308	3,409	15	30	1,415	1,447
Scott	9	383	815	1,207	1,232	10	8	564	562
Sherburne	5	252	431	688	614	5	10	423	356
Sibley	6	74	147	227	228	6	3	129	116
Stearns	19	885	1,820	2,724	2,739	22	19	1,335	1,173
Steele	8	169	428	605	579	9	3	255	227
Stevens	1	37	92	130	169	1	1	48	64
Swift	2	42	83	127	147	2	1	64	66
Todd	6	108	225	339	357	7	4	170	202
Traverse	0	17	32	49	52	0	1	22	31
Wabasha	7	119	242	368	388	8	8	176	187
Wadena	2	65	151	218	251	2	2	94	115
Waseca	1	88	192	281	321	1	4	125	141
Washington	11	754	1,821	2,586	2,334	11	11	1,134	1,056
Watonwan	2	55	116	173	194	2	1	89	82
Wilkin	1	54	99	154	164	1	2	72	79
Winona	7	258	745	1,010	1,100	7	7	377	384
Wright	17	399	794	1,210	1,143	22	17	678	566
Yellow Medicine	1	44	75	120	167	1	3	68	85
Total	466	29,345	64,284	94,095	98,301 *	530	581	42,091	41,953 *

* These averages differ from the averages calculable from crash figures shown on page 3 and 4 because they include about 14,000 parking lot accidents that occurred in 1984 and 1985. Parking lot accidents are not normally counted, and are not included in the crash figures shown on pages 3 and 4.

FIGURE 1.05

County Crash Map



*Fatality Case Rate is calculated by the formula: $\frac{\text{Fatalities}}{\text{Fatalities + Injuries}} \times 100$

TABLE 1.26

1987 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Albert Lea	0	101	291	392	0	139
Alexandria	2	88	236	326	2	137
Andover	1	61	95	157	1	90
Anoka	2	198	320	520	2	279
Apple Valley	0	187	294	481	0	300
Arden Hills	1	94	199	294	1	133
Austin	2	111	219	332	2	152
Bemidji	0	98	256	354	0	150
Blaine	1	290	447	738	1	419
Bloomington	2	742	1,818	2,562	2	1,003
Brainerd	1	142	316	459	1	175
Brooklyn Center	1	320	582	903	1	452
Brooklyn Park	0	397	561	958	0	582
Buffalo	2	42	97	141	2	64
Burnsville	2	288	694	984	2	435
Champlin	0	55	123	178	0	73
Chanhassen	3	73	182	258	3	86
Chaska	1	58	109	168	1	77
Chisholm	0	14	30	44	0	21
Cloquet	0	57	154	211	0	82
Columbia Heights	0	130	224	354	0	189
Coon Rapids	7	328	587	922	7	489
Cottage Grove	0	103	208	311	0	151
Crookston	0	50	104	154	0	88
Crystal	0	153	216	369	0	212
Detroit Lakes	1	61	107	169	1	79
Duluth	6	492	1,235	1,733	6	628
Eagan	0	141	403	544	0	195
East Bethel	0	40	63	103	0	61
East Grand Forks	0	36	120	156	0	54
Eden Prairie	4	220	569	793	4	313
Edina	2	277	616	895	2	367
Elk River	2	74	140	216	2	130
Fairmont	0	46	133	179	0	71
Falcon Heights	0	26	80	106	0	43
Faribault	1	118	239	358	1	187
Farmington	0	36	60	96	0	54
Fergus Falls	0	63	160	223	0	92
Forest Lake	1	50	113	164	1	74
Fridley	4	309	505	818	5	458
Golden Valley	1	284	582	867	1	378
Grand Rapids	0	50	128	178	0	74
Ham Lake	1	57	96	154	1	82

*Cities with at least 5,000 estimated population in 1986.

TABLE 1.26 CONT'D

1987 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Hastings	3	81	226	310	3	116
Hermantown	0	26	64	90	0	41
Hibbing	0	116	222	338	0	152
Hopkins	0	127	287	414	0	171
Hutchinson	1	70	164	235	1	94
International Falls	1	31	52	84	1	44
Inver Grove Heights	1	102	253	356	1	138
Lake Elmo	1	33	95	129	1	68
Lakeville	1	128	232	361	1	186
Lino Lakes	0	44	106	150	0	75
Litchfield	0	22	49	71	0	34
Little Canada	2	94	251	347	2	116
Little Falls	1	45	123	169	1	56
Mankato	0	209	571	780	0	298
Maple Grove	1	122	303	426	2	156
Maplewood	3	277	590	870	4	381
Marshall	0	45	69	114	0	66
Mendota Heights	0	51	118	169	0	67
Minneapolis	24	4,461	9,991	14,476	24	6,088
Minnetonka	5	365	585	955	6	508
Montevideo	1	50	52	103	1	27
Moorhead	0	180	590	770	0	252
Morris	0	23	70	93	0	29
Mound	0	41	78	119	0	55
Mounds View	1	49	116	166	1	72
New Brighton	0	74	230	304	0	102
New Hope	1	98	180	279	1	134
New Ulm	0	63	172	235	0	85
Northfield	0	39	109	148	0	50
North Mankato	0	35	72	107	0	47
North St. Paul	0	63	172	235	0	81
Oakdale	0	47	123	170	0	73
Orono	0	58	111	169	0	82
Owatonna	1	90	255	346	1	116
Plymouth	2	255	578	835	2	349
Prior Lake	2	68	97	167	3	117
Ramsey	2	61	80	143	2	92
Red Wing	1	102	241	344	1	140
Redwood Falls	0	15	38	53	0	28
Richfield	0	279	761	1,040	0	378
Robbinsdale	1	131	245	377	1	191
Rochester	1	401	1,004	1,406	1	554

* Cities of at least 5,000 estimated population in 1986.

TABLE 1.26 CONT'D

1987 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Rosemount	1	68	121	190	2	88
Roseville	0	228	680	908	0	306
St. Anthony	0	32	61	93	0	44
St. Cloud	1	484	1,143	1,628	1	679
St. Louis Park	1	301	740	1,042	1	396
St. Paul	15	2,558	7,439	10,012	15	3,430
St. Peter	0	33	83	116	0	45
Sauk Rapids	1	42	102	145	1	61
Savage	1	57	176	234	1	93
Shakopee	1	94	258	353	1	129
Shoreview	0	83	206	289	0	120
South St. Paul	1	97	271	369	1	128
Spring Lake Park	1	53	100	154	1	72
Stillwater	0	79	244	323	0	117
Thief River Falls	0	68	90	158	0	94
Vadnais Heights	1	57	153	211	1	90
Virginia	0	54	115	169	0	67
Waseca	0	33	88	121	0	46
West St. Paul	0	141	293	434	0	198
White Bear Lake	1	168	356	525	1	228
Willmar	0	133	267	400	0	185
Winona	2	150	413	565	2	207
Woodbury	4	84	171	259	4	136
Worthington	1	41	133	175	1	60

* Cities of at least 5,000 estimated population in 1986.

TABLE 1.27

1987 CRASHES, INJURIES AND FATALITIES BY MONTH

	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
January	22	302	748	1,001	5,702	7,775
February	26	213	625	726	3,794	5,384
March	15	294	700	842	4,043	5,894
April	30	360	892	992	4,310	6,584
May	40	456	1,161	1,129	5,195	7,981
June	53	457	1,155	1,176	5,155	7,996
July	47	484	1,137	1,180	5,250	8,098
August	65	467	1,082	1,146	5,060	7,820
September	48	432	1,012	1,217	5,335	8,044
October	39	375	982	1,182	5,910	8,488
November	47	347	988	1,214	6,447	9,043
December	34	379	1,035	1,457	8,083	10,988
Total	466	4,566	11,517	13,262	64,284	94,095

FIGURE 1.06

1987 Fatal Crashes vs. Total Crashes by Time of Day

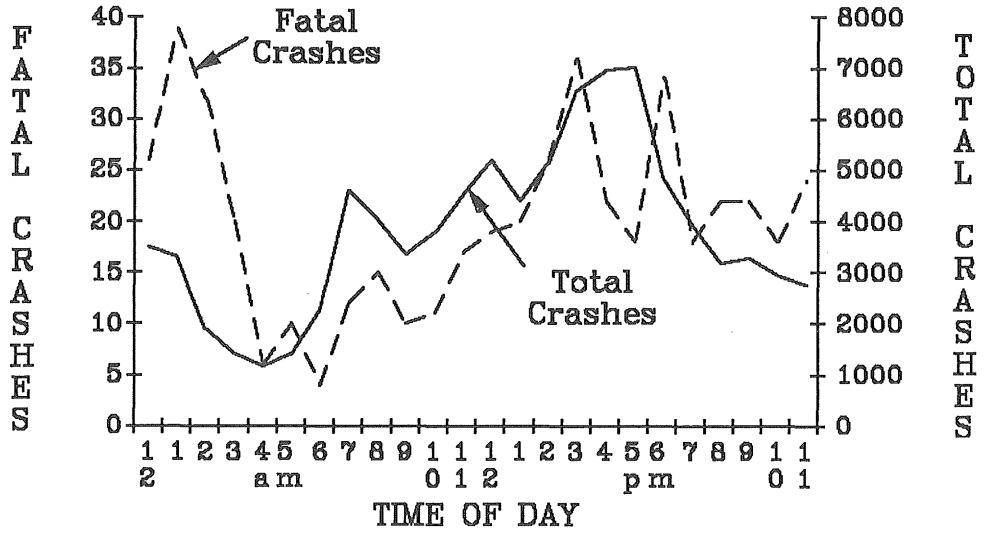


TABLE 1.28

1987 CRASHES BY TIME OF DAY AND DAY OF WEEK

Hour Beginning	Total Crashes	Fatal Crashes	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
			All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	3,497	26	370	4	316	2	366	5	409	1	477	3	806	3	753	8
1:00	3,293	39	176	2	261	1	286	3	347	3	424	3	890	17	909	10
2:00	1,895	21	124	1	178	1	175	2	223	0	223	1	474	8	498	8
3:00	1,418	10	108	0	140	0	144	1	168	1	212	2	336	3	310	3
4:00	1,162	6	119	2	138	0	130	1	153	0	174	1	236	1	212	1
5:00	1,401	10	146	0	190	0	181	0	202	0	224	1	273	7	185	2
6:00	2,270	4	309	2	367	0	354	0	390	0	388	1	267	0	195	1
7:00	4,611	12	780	4	912	3	837	2	854	0	799	0	263	2	166	1
8:00	4,029	15	633	2	787	6	646	1	683	2	685	0	399	2	196	2
9:00	3,358	10	493	0	537	1	467	3	521	1	523	1	506	3	311	1
10:00	3,785	11	522	0	505	1	566	2	596	1	607	1	612	3	377	3
11:00	4,520	17	614	5	589	1	635	2	760	4	693	2	803	2	426	1
Noon	5,192	19	668	2	674	3	671	3	859	3	843	3	873	5	604	0
1:00	4,399	20	596	5	541	3	661	1	652	2	738	2	694	4	517	3
2:00	5,135	26	685	5	697	4	809	0	767	4	917	7	732	3	528	3
3:00	6,570	36	951	4	898	7	1,042	5	1,045	8	1,256	7	783	3	595	2
4:00	6,964	22	1,055	3	1,020	3	1,099	3	1,064	2	1,299	5	822	4	605	2
5:00	7,009	18	1,018	2	1,097	0	1,112	4	1,100	2	1,304	5	762	1	616	4
6:00	4,811	34	575	2	652	7	702	2	738	1	885	10	741	1	518	11
7:00	3,936	18	525	1	518	2	582	4	497	0	705	2	593	4	516	5
8:00	3,187	22	381	3	422	1	431	4	427	5	611	2	546	5	369	2
9:00	3,280	22	372	4	447	2	464	3	425	2	645	4	584	6	343	1
10:00	2,944	18	293	1	345	2	376	2	425	2	628	4	586	3	291	4
11:00	2,781	24	219	1	268	2	337	2	354	4	682	7	675	7	246	1
Unknown	2,648	6	329	0	363	1	368	0	426	1	405	0	442	2	315	2
Total	94,095	466	12,061	55	12,862	53	13,441	55	14,085	49	16,347	74	14,698	99	10,601	81

TABLE 1.29

HOLIDAY CRASH SUMMARY, 1983-1987

	Year	Hours*	Total Crashes	Fatal Crashes	Personal Injury Crashes	Fatalities	Injuries
New Year's	1983	54	577	1	160	1	244
(For 1987-88, the	1984	78	931	1	194	1	317
holiday period was	1985	30	446	1	112	1	169
6 p.m. Thurs., Dec. 31,	1986	30	249	3	70	3	112
1987-midnight Sun.,	1987	30	199	0	56	0	84
Jan. 3, 1988)	1988	78	744	5	208	6	355
Memorial Day	1983	78	826	9	304	11	488
(For 1987, the holiday	1984	78	696	7	246	7	383
period was 6 p.m. Fri.,	1985	78	715	5	281	5	395
May 22-midnight	1986	78	855	9	285	11	421
Mon.,May 25)	1987	78	695	4	238	4	384
July 4th	1983	78	750	5	293	5	494
(For 1987 the holiday	1984	30	328	2	140	2	213
period was 6 pm Thurs.,	1985	30	353	5	136	5	211
July 2-midnight	1986	78	751	4	278	5	469
Sun., July 5)	1987	78	834	6	319	7	500
Labor Day	1983	78	793	5	299	5	437
(For 1987, the holiday	1984	78	748	5	274	5	451
period was 6 p.m. Fri.,	1985	78	814	6	279	7	419
Sep. 4-midnight	1986	78	800	8	280	8	446
Mon., Sept. 7)	1987	78	711	5	258	5	406
Thanksgiving	1983	102	1,350	5	290	6	443
(For 1987, the holiday	1984	102	1,491	9	440	12	667
period was 6 p.m. Wed.,	1985	102	2,054	8	461	8	461
Nov. 25-midnight	1986	102	838	13	192	15	323
Sun., Nov. 29)	1987	102	1,522	7	441	10	690
Christmas	1983	78	1,435	3	313	3	483
(For 1987, the holiday	1984	30	174	1	52	1	78
period was 6 p.m. Thurs.,	1985	30	178	0	45	0	66
Dec. 24-midnight	1986	30	130	3	35	3	48
Sun., Dec. 27)	1987	78	648	2	164	2	260

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

ALCOHOL-RELATED CRASHES

In Minnesota and nationwide, drinking and driving is the leading cause of fatal traffic accidents, accounting for about half of all traffic fatalities. The problem disproportionately affects young persons. Historically, Minnesota has been a leader in DWI control efforts. Minnesota's "implied consent" law provides that a peace officer may require any driver suspected of driving while intoxicated to submit to an alcohol concentration test. The penalty for refusal is a one-year license revocation. The penalty for failure (having a blood alcohol concentration, or BAC, of .10% or greater) is a 90-day license revocation. The implied consent law is a civil law. Persons found guilty of DWI under the state's criminal DWI statutes are subject to additional criminal law penalties.

State law also requires that a driver 16 years of age or older who dies within four hours of an accident must be tested for alcohol. Because of this law, BAC results on fatally injured drivers provide a relatively reliable measure of the extent of alcohol involvement in fatal crashes. Many of the tables in this section focus on this measure. Estimates of alcohol involvement in non-fatal crashes rely on the investigating officer's judgement and are less reliable.

In March, 1986, the Legislature changed the drinking age from 19 to 21. The law was grandfathered in, however, affecting all person who became 19 on September 2, 1986, or later.

In 1987, 34,664 persons were arrested for drunken driving, down slightly from 1986, but close to the preceding five-year average of 33,722. Sixty percent of the arrests were of persons aged 16 to 29, who made up 31 percent of the population of licensed drivers. Males, 52 percent of the licensed drivers, accounted for 84% of the arrests (Tables 2.02, 2.03).

The state issued 40,871 license revocations for alcohol-related offenses. This number is higher than the number of DWI arrests because certain multiple offenders are revoked twice (under separate statutes) for one offense, and because some persons had their Minnesota licenses revoked although they were arrested outside the state (Table 2.01).

* There were 297 drivers killed in Minnesota in 1987. Two-hundred-sixty-five, or 89 percent, were tested for alcohol. Fifty percent (133) tested positive (.01% BAC or higher), and 43 percent (115) were drunk by legal definition. These percentage figures are almost the same as the corresponding averages (53 percent and 44 percent) for the preceding five-year period (Tables 2.01, 2.04, 2.07).

* The dead drivers who tested positive were disproportionately (84 percent) male. Seventeen percent of them were under the legal drinking age (up five percentage points from 1986), and 65 percent were aged 16 to 30. Eighty-five percent of them died from accidents on county roads or on state or federal trunk highways. Fifty percent died in accidents occurring between 9:00 pm and 3:00 am (tables 2.09, 2.11, 2.13, 2.14).

* Persons aged 15 to 29 suffered 61 percent of the total 224 deaths resulting from the 205 fatal crashes estimated to be alcohol related. The same age group suffered 63 percent of the total 7,027 injuries from alcohol-related injury crashes (Tables 2.04, 2.06).

* Alcohol-related crashes were concentrated in the nighttime hours. Two-thirds of them occurred between 8:00 pm and 4:00 am. They peaked from 1:00 to 2:00 am. Over a quarter of the crashes occurred on Saturdays (Figures 2.01, 2.02).

TABLE 2.01

DRINKING DRIVER SUMMARY - 1978-1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Drunken Driving Arrests	18,078	18,092	22,788	27,034	28,048	32,155	36,638	35,383	36,390	34,664
Alcohol-Related Driver License Revocations*	24,357	24,966	30,481	32,043	36,024	41,311	43,502	40,807	42,586	40,871
Administrative Revocations For Refusing Test	3,344	3,427	3,863	4,427	8,456	11,155	11,413	9,219	8,468	8,336
Drivers Killed	576	523	519	437	321	345	383	372	347	297
Tested (died within 4 hours)	66%	63%	65%	66%	72%	75%	83%	79%	81%	89%
Positive (had been drinking)	63%	58%	69%	62%	54%	56%	58%	47%	49%	50%
Drunk (.10 or higher)	51%	45%	58%	52%	48%	45%	47%	37%	41%	43%

* Total alcohol revocations exceed drunken driving arrests because certain multiple offenders are revoked twice, under separate statutes, and beause some persons who have their Minnesota driver's license revoked are arrested outside of Minnesota.

TABLE 2.02

DWI ARRESTS BY AGE, 1983-1987

Age	1983	1984	1985	1986	1987
Under 15	7	6	8	8	8
15	21	21	24	27	13
16	169	185	171	254	208
17	546	500	446	546	485
18	1,284	1,342	1,109	1,151	1,084
19	1,983	2,166	1,864	1,813	1,363
20	2,040	2,370	2,035	2,002	1,709
21	2,028	2,377	2,053	2,070	1,830
22	1,931	2,269	2,170	2,115	1,862
23	1,883	2,202	2,024	2,040	2,019
24	1,682	2,002	2,007	2,006	1,925
25-29	6,299	7,511	7,618	8,295	8,146
30-34	3,948	4,720	4,933	5,002	5,110
35-39	2,701	3,013	3,200	3,316	3,356
40-44	1,796	2,078	2,062	2,098	2,087
45-49	1,239	1,394	1,292	1,274	1,289
50-54	975	916	911	857	834
55-59	738	704	686	631	584
60-64	471	443	395	397	359
65 & Over	414	419	375	448	393
Total	32,155	36,638	35,383	36,390	34,664

TABLE 2.03

DWI ARRESTS BY SEX, 1983 - 1987

Age	1983	1984	1985	1986	1987
Male	27,521	31,327	30,135	30,836	29,266
Female	4,634	5,311	5,248	5,554	5,398

TABLE 2.04

AGE OF PERSONS KILLED AND INJURED IN 1987 ALCOHOL-RELATED CRASHES

Age	Killed*	Injured**
0 - 4	0	68
5 - 9	2	71
10 - 14	4	83
15 - 19	41	1,527
20 - 24	48	1,752
25 - 29	47	1,158
30 - 34	19	653
35 - 39	19	461
40 - 44	10	279
45 - 49	8	168
50 - 54	7	113
55 - 59	5	109
60 - 64	3	57
65 - 69	5	47
70 - 74	0	33
75 & Older	6	41
Not Stated	0	407
Total***	224	7,027

* 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.
*** Nineteen of the 224 alcohol-related fatalities were pedestrians or bicyclists who had been drinking. In three of these nineteen cases, the motor vehicle driver had also been drinking.

TABLE 2.05

PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES CODED AS ALCOHOL-RELATED, 1984-1987

	Minnesota				United States			
	1984	1985	1986	1987	1984	1985	1986	1987
Deaths	52%	43%	46%	42%	53%*	51%*	52%*	NA
Injuries	19%	16%	17%	17%	NA	15%**	NA	NA
Property Damage Crashes	7%	6%	7%	7%	NA	NA	NA	NA

* Fatal Accident Reporting System (FARS) data.
** National Accident Sampling System (NASS) data.

NA: Not Available.

FIGURE 2.01

Alcohol Related Crashes by Time of Day
1987

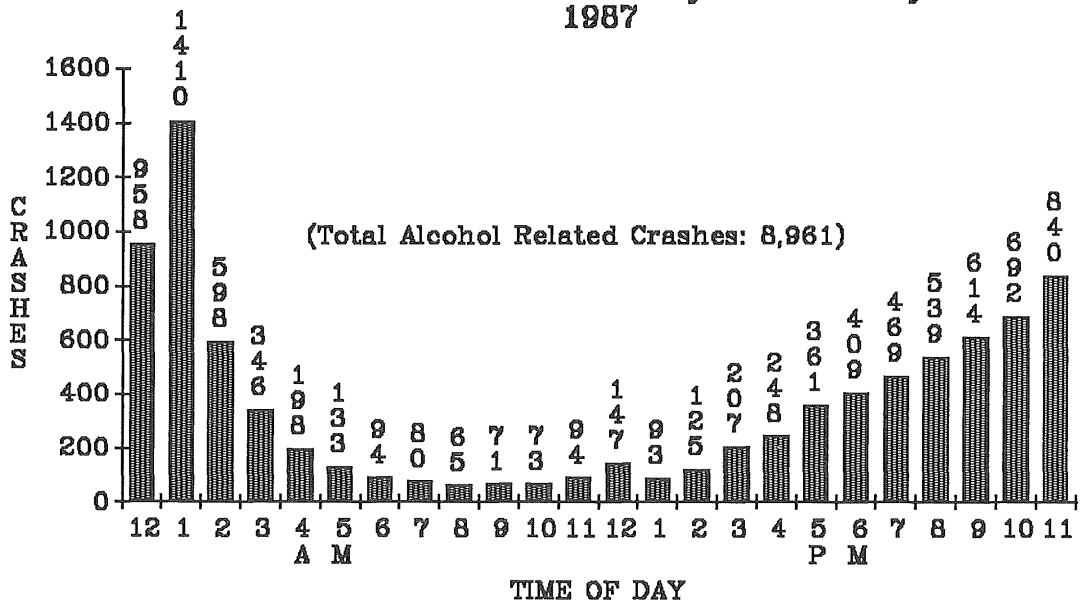


FIGURE 2.02

Alcohol Related Crashes by Day of Week,
1987

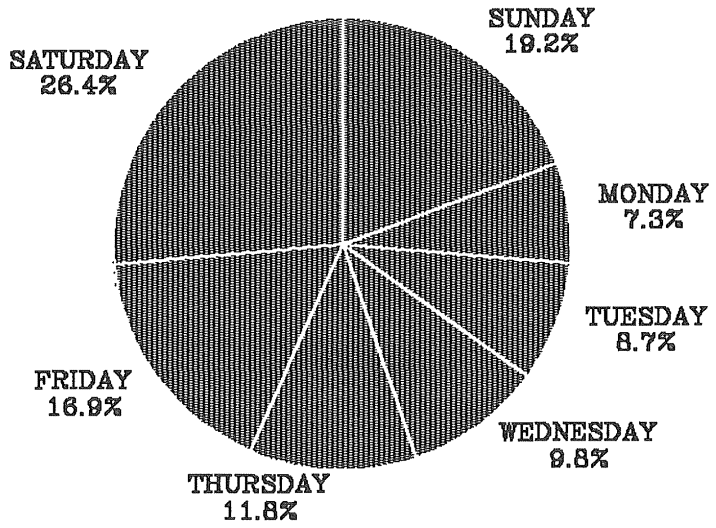


TABLE 2.06

ALCOHOL-RELATED FATAL CRASHES BY FIRST HARMFUL EVENT, 1987

	Alcohol-Related Fatal Crashes*		Total Fatal Crashes	
Collision with:				
Other Motor Vehicle	64	(31%)	205	(100%)
Railroad Train	0		5	(100%)
Bicyclist	2	(14%)	14	(100%)
Pedestrian	25	(42%)	60	(100%)
Animal	0		1	(100%)
Fixed Object	66	(72%)	92	(100%)
Other Object	0		1	(100%)
Non-Collision:				
Overturn	47	(58%)	81	(100%)
Submersion	1	(50%)	2	(100%)
Other	0		6	(100%)
Total	205	(44%)	466	(100%)

* "Alcohol-related" defined by alcohol concentration test result or by officer's perception as noted on accident report.

TABLE 2.07

1987 FATALITIES' LEVEL OF INTOXICATION BY TRAFFIC ROLE

Fatality Type	Total Killed	Total Tested	Total Drinking (.01 or more)	Total Drunk (.10 or more)
Driver	244	218	107	92
Passenger	129	55	27	19
Motorcycle Driver	45	42	25	22
Motorcycle Passenger	6	4	2	0
Pedestrian	62	42	19	17
Bicyclist	15	9	2	0
Moped Driver	0	0	0	0
All-Terrain Vehicle Driver	2	2	0	0
Other Driver	6	3	1	1
Other Passenger	1	1	0	0
Other/Unknown	20	18	12	8
Total	530	394	195	159

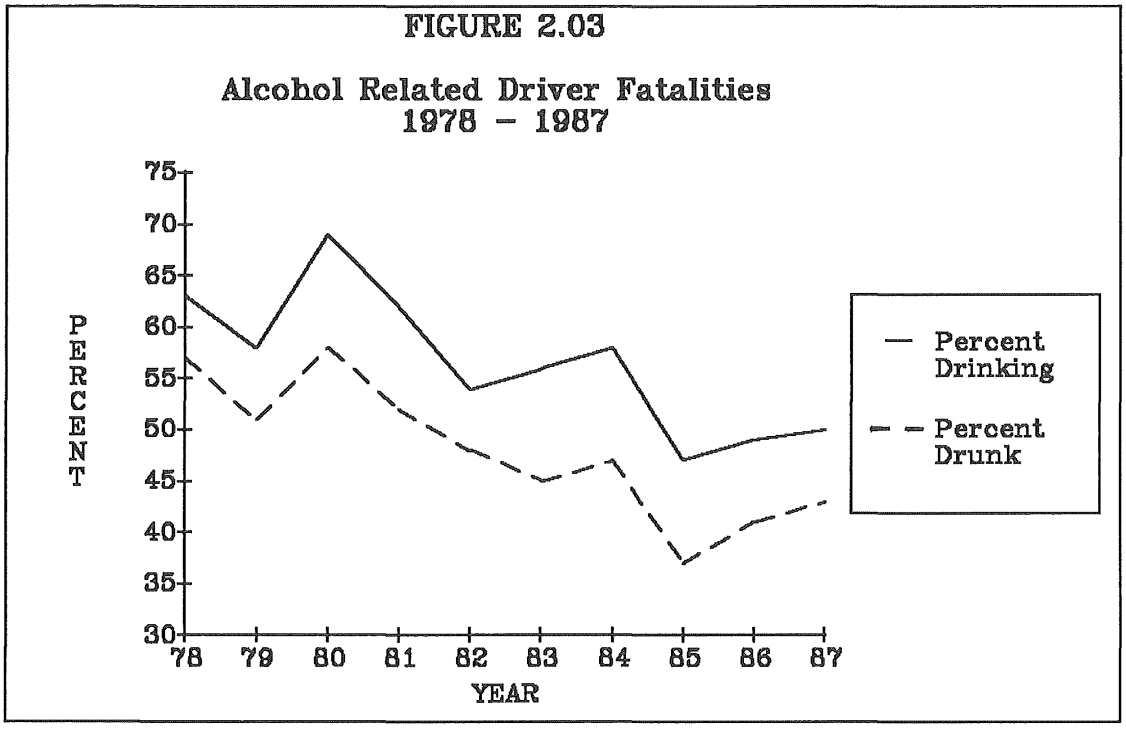


TABLE 2.08

DRIVERS KILLED WHO HAD BEEN DRINKING 1978-1987

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1978	576	381	241 (63%)	218 (57%)
1979	523	329	190 (58%)	168 (51%)
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%)

* Percentages are based on those tested.

TABLE 2.09

DRIVERS KILLED WHO TESTED .01 OR HIGHER 1978 - 1987

	Male	Female	Total	Occurred Between Midnight - 3 am	Under Legal Age
1978	222	19	241	78 (32%)	32 (13%)
1979	169	21	190	57 (30%)	27 (14%)
1980	211	21	232	68 (29%)	23 (10%)
1981	162	16	178	61 (34%)	17 (10%)
1982	116	10	126	41 (33%)	9 (7%)
1983	129	16	145	38 (26%)	13 (9%)
1984	163	22	185	63 (34%)	17 (9%)
1985	116	23	139	60 (43%)	14 (10%)
1986	117	21	138	50 (36%)	16 (12%) *
1987	112	21	133	34 (26%)	22 (17%)

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

TABLE 2.10

DRIVERS KILLED WHO TESTED .10 OR HIGHER 1978 - 1987

	Male	Female	Total	Occurred Between Midnight - 3 am	Under Legal Age
1978	198	20	218	82 (38%)	21 (10%)
1979	149	19	168	68 (40%)	19 (11%)
1980	179	16	195	68 (35%)	17 (9%)
1981	138	12	150	81 (54%)	15 (10%)
1982	102	10	112	41 (37%)	7 (6%)
1983	105	12	117	38 (32%)	8 (7%)
1984	132	17	149	50 (34%)	12 (8%)
1985	90	18	108	49 (45%)	6 (6%)
1986	100	14	114	42 (37%)	12 (11%) *
1987	98	17	115	33 (29%)	13 (11%)

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

TABLE 2.11

1987 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
15 & Below	3	2	0	0	0	0	0	0	0
16	11	10	3	1	0	2	0	1	0
17	8	7	4	3	1	0	1	2	0
18	17	16	6	5	1	0	3	2	0
19	11	11	7	3	0	4	0	2	1
20	11	9	2	1	0	1	0	1	0
16 - 20	58	53	22 (42%)	13 (25%)	2	7	4	8	1
21 - 25	50	48	37 (77%)	35 (55%)	0	2	10	20	5
26 - 30	44	41	27 (66%)	27 (66%)	0	0	2	18	7
31 - 35	27	22	14 (64%)	13 (59%)	0	1	5	6	2
36 - 40	20	17	9 (53%)	7 (41%)	1	1	1	5	1
41 - 45	17	17	10 (59%)	10 (59%)	0	0	0	6	4
46 - 50	10	7	1 (14%)	1 (14%)	0	0	1	0	0
51 - 55	11	11	4 (36%)	3 (27%)	0	1	0	2	1
56 - 60	8	8	3 (38%)	3 (38%)	0	0	0	2	1
61 - 65	10	9	0	0	0	0	0	0	0
66 & Above	39	30	6 (20%)	3 (10%)	2	1	1	2	0
Unknown	0	0	0	0	0	0	0	0	0
Total	297	265	133 (50%)	115 (43%)	5	13	24	69	22

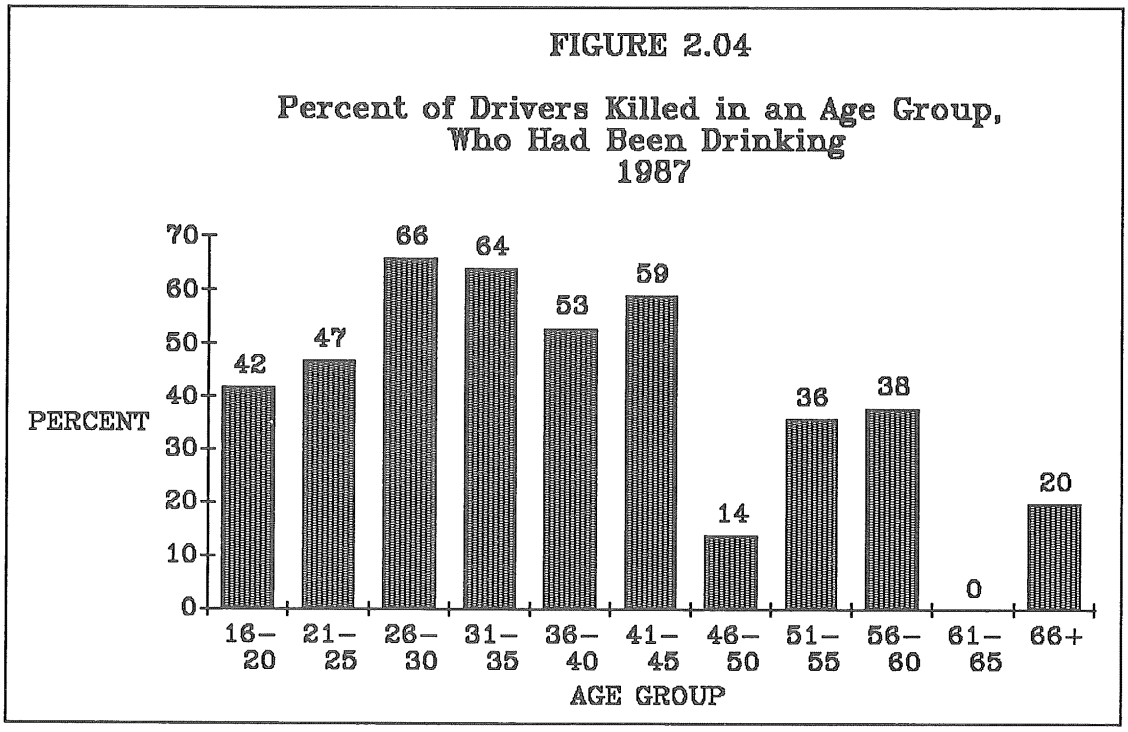


TABLE 2.12

1987 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY MONTH

					Blood Alcohol Concentration				
Month	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
January	12	11	4 (36%)	4 (36%)	0	0	0	4	0
February	14	14	11 (79%)	11 (79%)	0	0	1	7	3
March	9	8	3 (38%)	2 (25%)	0	1	0	1	1
April	20	20	12 (60%)	12 (60%)	0	0	3	9	0
May	26	23	12 (52%)	9 (39%)	1	2	2	3	4
June	43	38	21 (55%)	19 (50%)	1	1	5	11	3
July	26	21	10 (48%)	9 (43%)	0	1	4	3	2
August	41	38	19 (50%)	16 (42%)	1	2	4	10	2
September	27	23	10 (43%)	7 (30%)	0	3	1	3	3
October	26	24	11 (46%)	9 (38%)	1	1	2	6	1
November	32	27	9 (33%)	7 (26%)	1	1	0	7	0
December	21	18	11 (61%)	10 (56%)	0	1	2	5	3
Total	297	265	133 (50%)	115 (43%)	5	13	24	69	22

* Percentages are based on number of drivers tested.

TABLE 2.13

1987 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY ROAD TYPE

					Blood Alcohol Concentration				
Road Type	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Urban Interstate	13	9	2 (22%)	2 (22%)	0	0	0	1	1
Rural Interstate	12	11	6 (55%)	6 (55%)	0	0	0	6	0
Trunk Highway	138	124	53 (43%)	43 (35%)	2	8	12	22	9
County Road	109	97	60 (62%)	53 (55%)	3	4	10	33	10
Township Road	13	13	6 (46%)	5 (38%)	0	1	1	3	1
Local Street	12	11	6 (55%)	6 (55%)	0	0	1	4	1
Total	297	265	133 (50%)	115 (43%)	5	13	24	69	22

* Percentages are based on the number of drivers tested.

TABLE 2.14

1987 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	57	53	46 (87%)	40 (75%)	1	5	6	28	6
3:00 AM-5:59 AM	19	18	15 (83%)	14 (78%)	0	1	7	7	0
6:00 AM-8:59 AM	22	17	4 (24%)	4 (24%)	0	0	1	2	1
9:00 AM-11:59 AM	23	16	5 (31%)	3 (19%)	1	1	1	1	1
Noon-2:59 PM	45	43	9 (21%)	8 (19%)	1	0	1	6	1
3:00 PM-5:59 PM	43	34	7 (21%)	6 (18%)	0	1	1	5	0
6:00 PM-8:59 PM	44	42	23 (55%)	18 (43%)	1	4	2	9	7
9:00 PM-11:59 PM	38	36	20 (56%)	18 (50%)	1	1	5	9	4
Unknown	6	6	4 (67%)	4 (67%)	0	0	0	2	2
Total	297	265	133 (50%)	115 (43%)	5	13	24	69	22

* Percentages are based on the number of drivers tested

TABLE 2.15

1987 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	50	45	29 (64%)	24 (53%)	1	4	5	13	6
Monday	38	35	12 (34%)	11 (31%)	1	0	1	8	2
Tuesday	38	35	9 (26%)	8 (23%)	0	1	2	4	2
Wednesday	31	26	17 (65%)	17 (65%)	0	0	4	9	4
Thursday	28	25	8 (32%)	8 (32%)	0	0	3	5	0
Friday	37	31	14 (45%)	10 (32%)	1	3	1	7	2
Saturday	75	68	44 (65%)	37 (54%)	2	5	8	23	6
Total	297	265	133 (50%)	115 (43%)	5	13	24	69	22

* Percentages are based on number of drivers tested.

MOTOR VEHICLE OCCUPANTS IN 1987 CRASHES

This section analyzes occupants injured or killed in motor vehicles which would normally be equipped with seat belts.

Total occupant injuries and fatalities were up slightly from 36,461 in 1986 to 36,932 in 1987. These totals were about the same as the previous four-year average. However, fatalities were down 5.6 percent from the previous four-year average and down slightly from 402 in 1986 to 396 in 1987.

* The age category with the most injuries was the 15-to-19-year-olds. Nineteen percent of the fatalities and 20 percent of the total occupant injuries occurred in this age group. (Table 3.01)

* The age group with the highest percentage of restraint use recorded was the 61-to-70-year-old age category. Forty percent of fatal and severely injured persons in this age group were recorded as restrained. The lowest recorded restraint use occurred in the 11-20-year-old age group, with 13 percent of fatal and severely injured persons recorded as restrained. (Table 3.02)

* Restraint use among occupants injured seems to have steadily increased over the last five years[1]. (Table 3.03)

* Restraint use seems to be higher on the more heavily traveled roadways. (Table 3.04)

* The metropolitan area appears to have the highest percentage of restraint use in the state, while the northwest region of Minnesota seems to have the lowest. (Table 3.05)

* Actual restraint use observed at various locations in Minnesota shows a jump immediately after the law was implemented and a plateau during the first year after the law. Each of the post-law summertime observations (one in 1986 and one in 1987) show higher percentages of restraint use than the post-law observation performed in November, 1986. This was especially true of occupants in vehicles travelling at higher rates of speed, and also when weather conditions were other than clear. (Table 3.06)

[1]Because of the large percentage of injured persons whose restraint use was unknown, it is impossible to tell if there was an actual increase. However, it is generally accepted and believed that the majority of unknowns were unrestrained.

TABLE 3.01

1987 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE AND SEVERITY OF INJURY

Age Group	Fatal Injuries	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries
0-4	6	49	304	467	826
5-9	11	72	405	514	1,002
10-14	6	112	426	542	1,086
15-19	76	908	3,259	3,166	7,409
20-24	54	705	2,280	2,686	5,725
25-29	50	484	1,613	2,113	4,260
30-34	31	352	1,062	1,647	3,092
35-39	22	289	827	1,400	2,538
40-44	19	223	560	1,023	1,825
45-49	15	171	419	771	1,376
50-54	16	124	345	629	1,114
55-59	10	105	347	527	989
60-64	13	98	286	453	850
65-69	18	75	258	439	790
70-74	12	73	218	328	631
75-79	11	82	199	194	486
80-84	14	53	130	159	356
85 & Over	6	27	75	81	189
Not Stated	6	174	696	1,512	2,388
Total	396	4,176	13,709	18,651	36,932

FIGURE 3.01

1987 Restraint Use of Motor Vehicle Occupants Killed or Injured, by Age Group

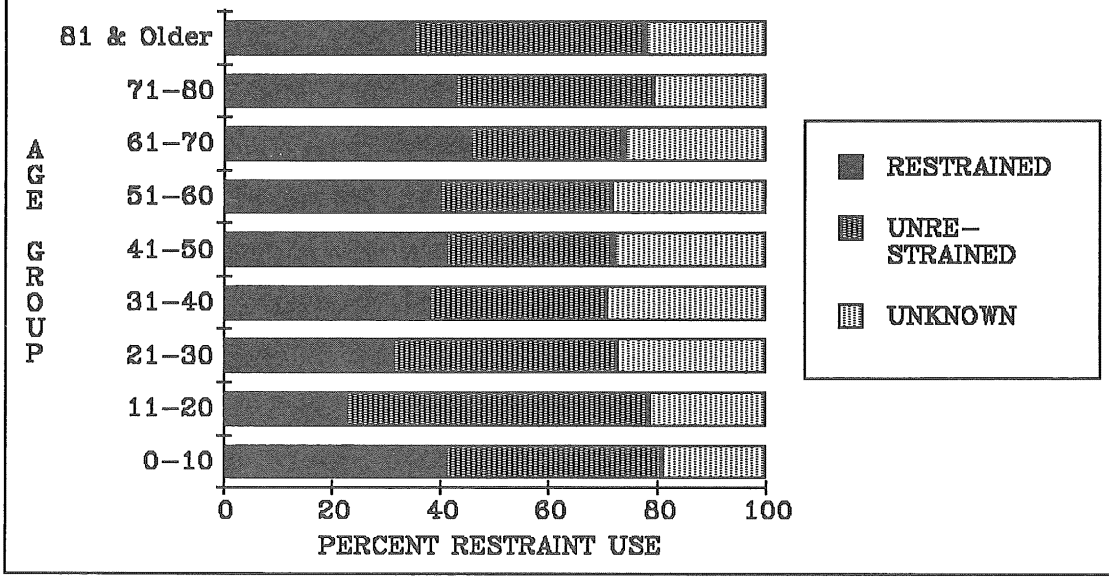


TABLE 3.02

1987 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE, INJURY SEVERITY AND RESTRAINT USE*

Age Group	Restrained	Unrestrained	Unknown	Total	
Under Four					
Fatal & Severe Injuries	18 (39%)	19 (41%)	9 (20%)	46 (100%)	
Moderate & Minor Injuries	313 (55%)	153 (27%)	99 (18%)	565 (100%)	
0-10					
Fatal & Severe Injuries	39 (26%)	82 (54%)	30 (20%)	151 (100%)	
Moderate & Minor Injuries	783 (42%)	723 (39%)	358 (19%)	1,864 (100%)	
11-20					
Fatal & Severe Injuries	171 (13%)	857 (67%)	250 (20%)	1,278 (100%)	
Moderate & Minor Injuries	1,956 (23%)	4,569 (55%)	1,832 (22%)	8,357 (100%)	
21-30					
Fatal & Severe Injuries	222 (19%)	718 (60%)	251 (21%)	1,191 (100%)	
Moderate & Minor Injuries	2,664 (33%)	3,185 (39%)	2,327 (28%)	8,176 (100%)	
31-40					
Fatal & Severe Injuries	160 (24%)	340 (51%)	171 (25%)	671 (100%)	
Moderate & Minor Injuries	1,867(40%)	1,433(30%)	1,407 (30%)	4,707 (100%)	
41-50					
Fatal & Severe Injuries	107 (28%)	198 (51%)	83 (21%)	388 (100%)	
Moderate & Minor Injuries	1,110 (43%)	728 (28%)	753 (29%)	2,591 (100%)	
51-60					
Fatal & Severe Injuries	93 (37%)	103 (41%)	56 (22%)	252 (100%)	
Moderate & Minor Injuries	722 (40%)	564 (31%)	533 (29%)	1,819 (100%)	
61-70					
Fatal & Severe Injuries	83 (40%)	80 (38%)	45 (22%)	208 (100%)	
Moderate & Minor Injuries	631 (46%)	381 (27%)	370 (27%)	1,382 (100%)	
71-80					
Fatal & Severe Injuries	67 (39%)	77 (45%)	26 (15%)	170 (99%)	**
Moderate & Minor Injuries	382 (43%)	306 (35%)	195 (22%)	883 (100%)	
81 & Older					
Fatal & Severe Injuries	21 (25%)	48 (58%)	14 (17%)	83 (100%)	
Moderate & Minor Injuries	137 (37%)	148 (40%)	88 (24%)	373 (101%)	**
Not Stated					
Fatal & Severe Injuries	27 (15%)	69 (38%)	84 (47%)	180 (100%)	
Moderate & Minor Injuries	530 (24%)	604 (27%)	1,074 (49%)	2,208 (100%)	
All Ages					
Fatal & Severe Injuries	990 (22%)	2,572 (56%)	1,010 (22%)	4,572 (100%)	
Moderate & Minor Injuries	10,782 (33%)	12,641 (39%)	8,937 (28%)	32,360 (100%)	
TOTAL INJURIES	11,772 (32%)	15,213 (41%)	9,947 (27%)	36,932 (100%)	

* Includes child restraints and seat belts.

** Percentages may not sum to 100 due to rounding.

TABLE 3.03

PERCENT RESTRAINT USE OF MOTOR VEHICLE OCCUPANTS INJURED OR KILLED,* BY INJURY SEVERITY AND YEAR, 1983-1987

	Percent 1983	Percent 1984	Percent 1985	Percent 1986	Percent 1987
Fatalities					
Restrained	4.3	5.8	8.8	9.2	17.7
Unrestrained	72.8	64.5	70.8	69.7	67.9
Unknown	23.0	29.7	20.4	21.1	14.4
Severe Injuries					
Restrained	5.7	5.9	8.4	16.9	22.0
Unrestrained	51.4	46.3	60.3	57.8	55.1
Unknown	42.9	47.8	31.3	25.4	22.9
Moderate Injuries					
Restrained	6.7	7.4	10.7	20.8	29.3
Unrestrained	46.7	44.8	58.8	53.4	48.4
Unknown	46.6	47.8	30.4	25.9	22.3
Minor Injuries					
Restrained	8.0	9.0	14.4	25.7	36.2
Unrestrained	36.1	34.7	45.6	38.9	32.2
Unknown	55.9	56.3	40.0	35.3	31.6
Total					
Restrained	7.2	8.1	12.5	22.7	31.9
Unrestrained	42.5	41.9	53.8	46.7	41.2
Unknown	50.3	50.0	33.7	30.6	26.9

* Includes child restraints and seat belts.

TABLE 3.04

1987 MOTOR VEHICLE OCCUPANTS INJURED OR KILLED, BY ROADWAY TYPE AND RESTRAINT USE

	Restrained		Unrestrained		Unknown		Total	
Roadway Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Interstate	798	(37.9)	746	(35.5)	560	(26.6)	2,104	(100.0)
Trunk Highway	4,766	(34.9)	5,446	(39.9)	3,449	(25.2)	13,661	(100.0)
County State-Aid Highway	3,350	(31.7)	4,392	(41.5)	2,829	(26.8)	10,571	(100.0)
County Road	302	(25.3)	636	(53.2)	258	(21.6)	1,196	(100.1)
Township Road	227	(18.5)	756	(61.6)	244	(19.9)	1,227	(100.0)
Local Street	2,316	(29.0)	3,094	(38.8)	2,566	(32.2)	7,976	(100.0)
Other Road	13	(6.6)	143	(72.6)	41	(20.8)	197	(100.0)
Total	11,772	(31.9)	15,213	(41.2)	9,947	(26.9)	36,932	(100.0)

TABLE 3.05

1987 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY REGION* AND RESTRAINT USE

Region	Percent Restrained	Percent Unrestrained	Percent Unknown	Number of People
Metropolitan	35.0	33.7	31.3	20,875
Central	31.5	49.7	18.8	4,562
Northeast	29.4	48.0	22.5	2,101
Northwest	19.9	52.0	28.1	1,217
South Central	26.1	53.7	20.2	1,498
Southeast	29.4	49.3	21.3	3,024
Southwest	23.6	57.0	19.4	1,939
West Central	24.0	51.4	24.6	1,469
Unknown	-	-	-	247
Statewide	31.9	41.2	26.9	36,932

*Region as defined by Emergency Medical System.

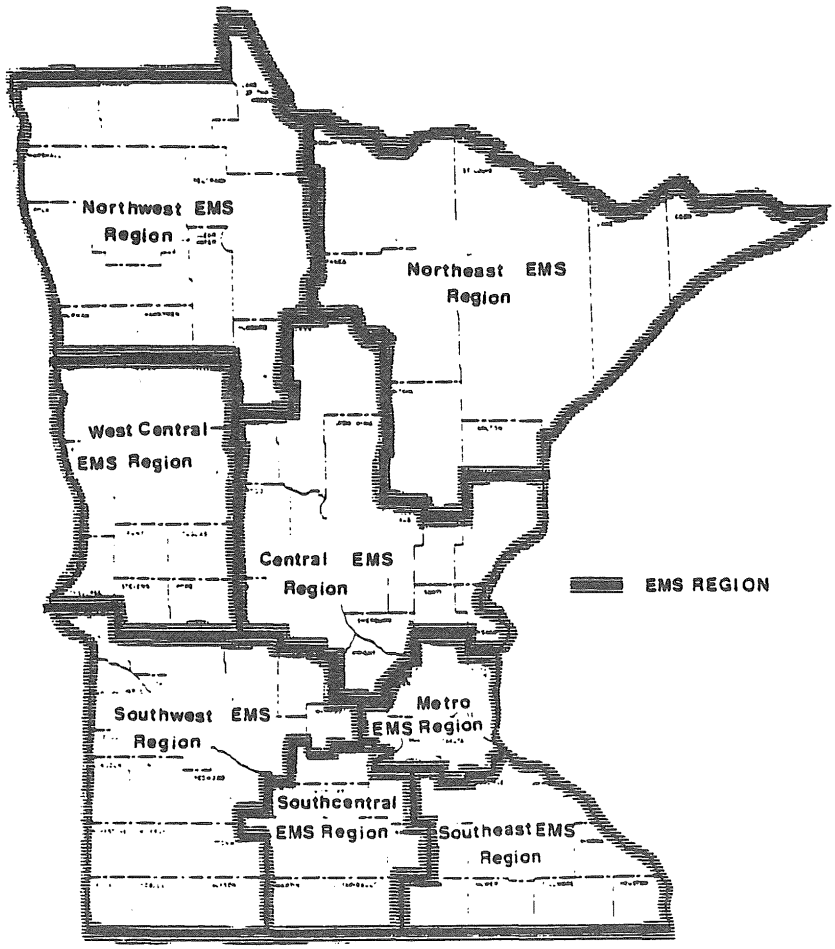


TABLE 3.06

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

	June 1986	August 1986	November 1986	August 1987
Estimation Area				
Statewide	20	33	32	32
Metro	30	43	39	40
Outstate	15	26	24	28
Weather				
Clear	19	32	33	32
Other	23	36	19	41
Time				
Non-rush	20	34	32	33
Rush	21	31	30	30
Day of the Week				
Weekday	19	33	33	32
Weekend	21	33	29	33
Speed				
20 MPH	14	29	33	29
40 MPH	20	32	27	30
60 MPH	28	39	36	41
Road Class				
Major Roads	23	35	31	35
Local Roads	17	31	32	29

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 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.

MOTORCYCLE CRASHES

As with motor vehicle accidents in general, 1987 was a relatively good year for motorcycle accidents. The state had the lowest number of motorcycle-involved crashes since 1972, the lowest number of motorcyclist fatalities since 1974, and the lowest number of motorcyclist injuries since 1971. Compared to the preceding five-year averages, crashes decreased 19%, fatalities 27%, and injuries 25%.

During the 1970s, the number of registered motorcycles in the state increased from year to year. They reached a high of 166,151 in 1981, and have been decreasing each year since then. The relatively low numbers of accidents, injuries, and deaths in 1987 are not just a reflection of the decreased number of motorcycles, however. As a rate per 10,000 registered motorcycles, fatalities were the lowest since 1974 and injuries were the lowest they have even been over the period of time for which figures are available (since 1970).

Compared to standard vehicles, however, motorcycles are still a relatively hazardous means of transportation. In 1987, 24 out of a thousand motorcycle crashes were fatal, compared to five crashes out of a thousand for all vehicles.

* Fatal crashes differed from injury and property damage crashes with respect to both accident type and locales where they occurred. Fifty-five percent of the fatal crashes occurred through collisions with a fixed object or because of overturns, whereas most of the injury and property damage accidents occurred through collisions with another motor vehicle. Also the majority (55%) of fatal crashes occurred in rural areas (areas of 5,000 population or less), while over two-thirds (67%) of injury and property damage crashes occurred in urban areas (Tables 4.02 and 4.03).

* All types of motorcycle accidents increased about equally as the thermometer rose. Fully 89% of the total crashes occurred in the middle six months of the year, from April through September (Table 4.04). With respect to time of day, the fatal crashes were most numerous late at night (between 1:00 and 2:00 am) while total crashes occurred predominantly in the afternoon and earlier evening. All crashes were fairly evenly distributed across days of the week, with only a slightly disproportionately higher number occurring on the weekend days of Friday through Sunday (Table 4.05).

* Motorcycle operators are primarily young males, and these made up the bulk of crash victims. Fully 88% of the 1,904 motorcyclists killed or injured were males, and 61% were males aged 15 to 29 (Tables 4.06 and 4.02).

* Helmet non-use is characteristic of fatally-injured motorcycle drivers. Sixty-five percent were not wearing helmets at the time of their fatal crash. (The mandatory motorcycle helmet law that went into effect May 1, 1968, was repealed effective April 7, 1977.) Alcohol use also characterized fatally injured motorcycle drivers. Sixty percent of those tested for alcohol had been drinking and 52% were drunk, according to the legal definition of intoxication (Tables 4.07, 4.09, 4.10).

* Peace officers investigating motorcycle crashes most often cited illegal or unsafe speed on the part of the motorcycle operator as a contributing factor in the accident. This factor was followed by driver inattention or distraction and then by physical impairment. For non-motorcycle drivers involved in motorcycle crashes, failure to yield right of way was most often cited, followed by driver inattention or distraction (Table 4.11).

* A third of the motorcyle drivers in fatal crashes did not have a valid license to operate a motorcycle, either because their license had been cancelled or otherwise withdrawn, or because their driver's license did not include an endorsement to operate a motorcycle (Table 4.08).

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1978-1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Accidents	2,827	2,872	3,308	3,063	2,518	2,811	2,768	2,748	2,318	2,121
Fatal Accidents	103	95	112	92	72	70	59	75	63	51
Personal Injury Accidents	2,345	2,391	2,728	2,516	2,115	2,377	2,302	2,238	1,891	1,692
Persons Killed:										
Motorcyclists	106	97	121	96	70	73	62	77	66	51
Non-Motorcyclists/Unknown	1	1	1	0	6	0	1	1	0	3
Persons Injured:										
Motorcyclists	2,860	2,833	3,359	2,874	2,381	2,678	2,590	2,500	2,152	1,853
Non-Motorcyclists/Unknown	47	71	34	196	189	191	207	204	142	145
Licensed Operators	184,545	201,075	222,330	238,926	246,134	252,808	256,836	272,317	282,087	288,424
Registered Motorcycles	151,016	156,552	157,815	166,151	159,345	155,502	153,851	151,449	141,261	134,590
Rates:										
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	3.6	3.3	3.4	3.0	2.9	2.5	2.2	2.7	2.7	2.4
Fatal Crashes Per 100 Crashes (All Vehicles)	0.7	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5
Motorcyclist Fatalities Per 10,000 Motorcycle Registrations	7.0	6.2	7.7	5.8	4.5	4.7	4.0	5.1	4.7	3.8
Motorcyclist Injuries Per 10,000 Motorcycle Registrations	189.4	181.0	212.8	173.0	149.4	172.2	165.5	165.1	152.3	137.7
Total Motorcycle Crashes Per 10,000 Motorcycle Registrations	187.2	183.5	209.6	184.4	158.0	180.8	179.9	181.4	164.1	157.6

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

TABLE 4.02

1987 MOTORCYCLE CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:				
Other Motor Vehicle	18	844	245	1,107
Parked Motor Vehicle	0	20	31	51
Railroad Train	1	1	0	2
Bicyclist	0	18	0	18
Pedestrian	2	18	0	20
Animal	2	47	7	56
Fixed Object	19	233	27	279
Other Object	0	35	7	42
Non-Collision:				
Overturn	9	407	52	468
Fire/Explosion	0	2	0	2
Submersion	0	1	0	1
Other/Unknown	0	66	9	75
Total	51	1,692	378	2,121

TABLE 4.03

1987 MOTORCYCLE CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
100,000 and Over	9	353	108	470
50,000 - 99,999	1	86	21	108
25,000 - 49,999	3	305	53	361
10,000 - 24,999	2	229	69	300
5,000 - 9,999	6	138	29	173

TABLE 4.04

1987 MOTORCYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	3	2	5	0	4
February	2	11	1	14	2	13
March	1	53	14	68	1	57
April	5	181	35	221	6	196
May	7	280	56	343	7	320
June	13	291	72	376	13	323
July	4	297	66	367	3	323
August	8	273	63	344	9	305
September	5	197	41	243	4	204
October	3	79	15	97	3	79
November	3	23	12	38	3	25
December	0	4	1	5	0	4
Total	51	1,692	378	2,121	51	1,853

FIGURE 4.01

1987 Fatal Motorcycle Crashes vs. Total Motorcycle Crashes by Time of Day

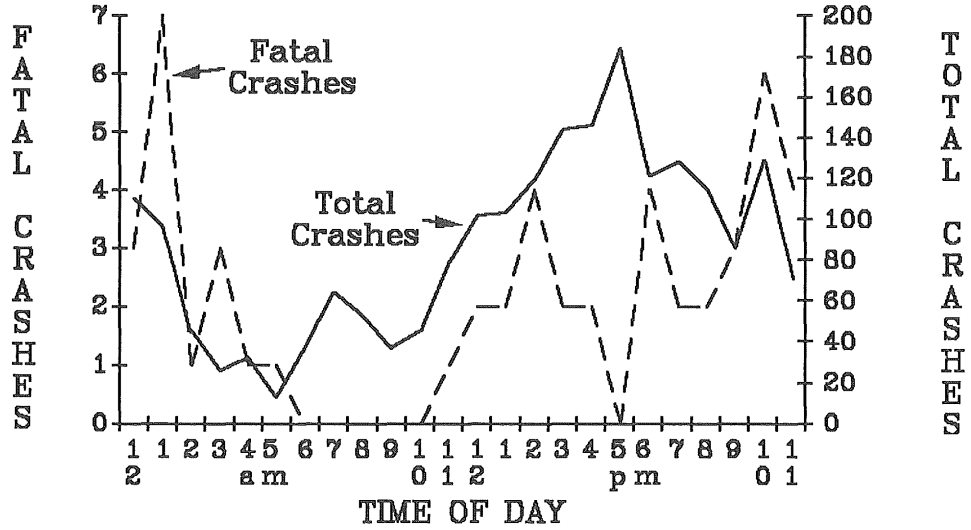


TABLE 4.05

1987 MOTORCYCLE CRASHES BY TIME AND DAY

Hour Beginning	Total Crashes	Fatal Crashes	Sunday All	Sunday Fatal	Monday All	Monday Fatal	Tuesday All	Tuesday Fatal	Wednesday All	Wednesday Fatal	Thursday All	Thursday Fatal	Friday All	Friday Fatal	Saturday All	Saturday Fatal
Midnight	110	3	28	3	9	0	9	0	15	0	13	0	11	0	25	0
1:00	97	7	30	1	5	0	10	0	10	1	10	1	7	1	25	3
2:00	45	1	9	0	4	0	6	0	5	0	8	0	3	0	10	1
3:00	26	3	8	1	2	0	4	0	4	1	0	0	5	0	3	1
4:00	32	1	7	0	3	0	1	0	3	0	6	0	3	1	9	0
5:00	13	1	1	0	1	0	1	0	0	0	1	0	8	1	1	0
6:00	37	0	4	0	6	0	7	0	4	0	4	0	6	0	6	0
7:00	64	0	3	0	13	0	8	0	9	0	19	0	6	0	6	0
8:00	53	0	3	0	6	0	11	0	10	0	10	0	8	0	5	0
9:00	37	0	2	0	6	0	6	0	4	0	4	0	10	0	5	0
10:00	45	0	11	0	5	0	4	0	4	0	6	0	11	0	4	0
11:00	79	1	12	0	11	0	9	0	4	0	8	0	18	0	17	1
Noon	102	2	12	0	7	0	13	0	11	0	18	0	16	0	25	2
1:00	103	2	12	0	9	1	11	0	17	0	16	0	17	1	21	0
2:00	119	4	26	1	9	0	8	1	20	0	10	0	24	1	22	1
3:00	144	2	18	0	18	0	13	0	20	1	30	1	23	0	22	0
4:00	146	2	26	0	24	0	21	0	17	0	16	0	18	1	24	1
5:00	184	0	29	0	15	0	28	0	34	0	19	0	37	0	22	0
6:00	121	4	12	1	14	1	25	1	15	0	16	0	16	1	23	0
7:00	128	2	19	2	9	0	15	0	18	0	30	0	20	0	17	0
8:00	115	2	15	0	10	0	13	0	15	0	18	1	25	0	19	1
9:00	86	3	21	1	11	0	13	1	7	0	8	0	14	0	12	1
10:00	129	6	18	0	14	1	18	1	10	1	25	1	23	1	21	1
11:00	71	4	6	0	7	1	7	1	9	0	13	1	14	0	15	1
Not Stated	35	1	5	0	5	0	7	1	3	0	5	0	4	0	6	0
Total	2,121	51	337	10	223	4	268	6	268	4	313	5	347	8	365	14

TABLE 4.06

MOTORCYCLISTS KILLED AND INJURED BY AGE AND SEX, 1987

	Killed			Severe Injury			Moderate Injury			Possible Injury			Total Injuries**		
Age Group	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0- 4	0	0	0	1	0	1	1	1	2	1	0	1	3	1	4
5- 9	0	0	0	1	0	1	2	0	2	0	1	1	3	1	4
10-14	0	0	0	4	3	7	9	0	9	2	0	2	15	3	18
15-19	12	2	14	79	25	104	151	22	173	57	3	60	287	50	337
20-24	12	0	12	160	18	178	234	23	257	87	8	95	481	49	530
25-29	12	1	13	106	12	118	180	23	204	69	9	79	355	44	401
30-34	5	0	5	57	6	63	84	10	94	37	4	41	178	20	198
35-39	3	0	3	36	2	38	55	8	63	22	6	28	113	16	129
40-44	1	0	1	17	3	20	41	2	43	11	4	15	69	9	78
45-49	1	0	1	13	0	13	17	2	19	11	0	11	41	2	43
50-54	0	0	0	6	0	6	13	0	13	5	1	6	24	1	25
55-59	0	1	1	2	2	4	5	2	7	3	1	4	10	5	15
60-64	1	0	1	1	0	1	1	0	1	1	0	1	3	0	3
65-69	0	0	0	2	0	2	0	0	0	1	0	1	3	0	3
70 & over	0	0	0	0	0	0	1	0	1	1	0	1	2	0	2
Not Stated	0	0	0	12	3	18	18	8	30	9	5	15	39	16	63
Total	47	4	51	497	74	574	812	101	918	317	42	361	1,626	217	1,853

* In some cases, sex was not reported, and columns do not sum to total.
** Does not include fatalities.

FIGURE 4.02

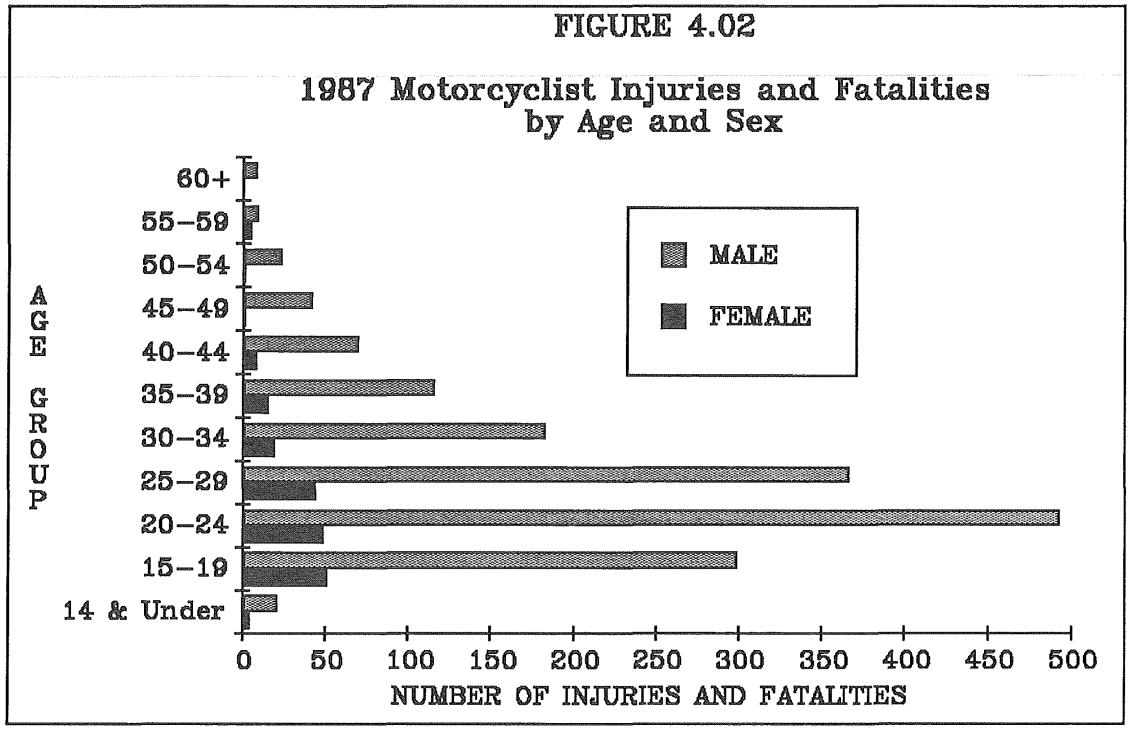


TABLE 4.07

HELMET USE BY MOTORCYCLISTS KILLED AND INJURED, 1984-1987

	Helmet Used		Helmet Not Used		Helmet Use Unknown		Total	
Fatalities								
1984	19	(31%)	32	(51%)	11	(18%)	62	(100%)
1985	16	(21%)	61	(79%)	0	(0%)	77	(100%)
1986	18	(27%)	42	(64%)	6	(9%)	66	(100%)
1987	16	(31%)	33	(65%)	2	(4%)	51	(100%)
Injuries								
1984	686	(26%)	846	(33%)	1,058	(41%)	2,590	(100%)
1985	*		*		*		*	
1986	720	(33%)	1,096	(51%)	336	(16%)	2,152	(100%)
1987	*		*		*		*	

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

TABLE 4.08

ENDORSEMENT STATUS OF MOTORCYCLISTS INVOLVED IN FATAL CRASHES, 1978-1987

	Endorsement Valid*		Permit Only		Cancelled, Suspended, Revoked		No Endorsement		Total For Year	
Year	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1978	71	(68.3)	1	(0.9)	3	(2.9)	29	(27.9)	104	(100.0)
1979	61	(64.2)	9	(9.5)	3	(3.2)	22	(23.1)	95	(100.0)
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)
Total	553	(69.2)	34	(4.3)	46	(5.8)	166	(20.8)	799	(100.0)

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

TABLE 4.09

ALCOHOL USE BY MOTORCYCLE DRIVERS, 1980 - 1987

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%)

*Percentages are based on those tested.

TABLE 4.10

1987 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
16	2	2	2	1		1		1	
17	1	0	0	0					
18	3	3	1	1			1		
19	4	4	1	0		1			
20	3	3	1	1				1	
16 - 20	13	12	5 (42%)	3 (25%)		2	1	2	
21 - 25	10	9	8 (89%)	7 (78%)		1	2	4	1
26 - 30	12	11	8 (73%)	8 (73%)			1	7	
31 - 35	4	4	3 (75%)	3 (75%)			2	1	
36 - 40	3	3	0 (0%)	0 (0%)					
41 - 45	1	1	1 (100%)	1 (100%)				1	
46 - 50	1	1	0 (0%)	0 (0%)					
56 - 60	0	0	0 (0%)	0 (0%)					
61 - 65	1	1	0 (0%)	0 (0%)					
Total	45	42	25 (60%)	22 (52%)		3	6	15	1

TABLE 4.11

CONTRIBUTING FACTORS IN 1987 MOTORCYCLE CRASHES

Contributing Factors	Attributed to Motorcycle Drivers Number	Percent	Attributed to Other Drivers* Number	Percent
Human Factors:				
Illegal/Unsafe Speed	458	(25.0)	42	(3.8)
Driver Inattention/Distraction	355	(19.4)	255	(23.3)
Physical Impairment	233	(12.7)	27	(2.5)
Driver Inexperience	189	(10.3)	18	(1.6)
Improper Passing/Overtaking	77	(4.2)	12	(1.1)
Improper/Unsafe Lane Use	69	(3.8)	72	(6.6)
Failure to Yield Right of Way	59	(3.2)	370	(33.8)
Following Too Closely	67	(3.7)	43	(3.9)
Disregard for Traffic Control Device	39	(2.1)	34	(3.1)
Driving Left of Roadway Center--Not Passing	32	(1.7)	13	(1.2)
Vision Obscured	27	(1.5)	51	(4.7)
Improper Turn	23	(1.3)	60	(5.5)
Impeding Traffic	10	(0.5)	10	(0.9)
Improper Parking/Starting/Stopping/ Stopping	9	(0.5)	12	(1.1)
Improper or No Signal	5	(0.3)	15	(1.4)
Unsafe Backing	1	(0.1)	11	(1.0)
Pedestrian Violation or Error	0	(0.0)	9	(0.8)
Other Human Factor	34	(1.9)	8	(0.7)
Vehicular Factors:				
Defective Equipment	38	(2.1)	10	(0.9)
Skidding	38	(2.1)	11	(1.0)
Other Vehicle Defect	38	(2.1)	8	(0.7)
Miscellaneous Factors (weather, road defects)	31	(1.7)	4	(0.4)
Total**	1,832	(100.0%)	1,095	(100.0%)
No Improper Driving	727		382	
Total Number Drivers	2,161		1,322	

*Includes Pedestrians

**More than one contributing factor may be attributed to a single driver.

TRUCK CRASHES

Truck types included in this section are truck or truck tractor, truck with semi-trailer, truck with twin trailer, and truck with other trailer as coded on police accident reports. Pickup trucks and vans are *not* included.

Truck crashes, fatalities, and injuries declined for the second straight year in 1987. Crashes decreased 18 percent, injuries 14 percent, and fatalities 29 percent. (See Table 5.01)

* Most of the injuries listed in this section, occurred in passenger cars which collided with trucks. Only 27 percent occurred in the truck.

* The contributing factor cited most frequently in truck crashes was driver inattention, both for the truck driver and for the driver of the other vehicle. Second most common for truck drivers was illegal or unsafe speed. For other drivers, failure to yield was second. Unsafe backing was cited more than five times as often for truck drivers as for other drivers; defective brakes was cited more than four times as often; and defective lights three times as often. Truck drivers involved in accidents were more likely to be asleep than other drivers. However, physical impairment (including drinking) and driver inexperience were cited more often for *other* drivers than for truck drivers.

* Twenty-six-to-thirty-year-olds made up the largest age group of truck drivers involved in crashes.

* The peak time of day for truck crashes was 11am to 12 noon, while the peak for all motor vehicle crashes was during afternoon rush hour (between four and six pm).

* More truck crashes occurred in December than any other month, and most fatalities occurred in June.

* Most truck crashes occurred in either very unpopulated or very populated areas. Twenty-five percent occurred in areas with under 1,000 people in 1987, and 22 percent occurred in cities with more than 100,000 people.

* State trunk highways were the scene of more truck crashes than other types of roadways. U.S. trunk and County-State-Aid highways were second.

TABLE 5.01

TRUCK CRASHES 1985 - 1987

	1985	1986	1987
Total Crashes	7,973	6,908	5,668
Fatal Crashes	86	85	65
Fatalities	101	100	71
Injury Crashes	1,941	1,674	1,443
Injuries	2,800	2,371	2,033

TABLE 5.02

PERSONS INJURED OR KILLED IN 1987 TRUCK CRASHES BY VEHICLE OCCUPIED

Vehicle Type	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries*
Automobile	42	172	372	557	1,101
Truck or Truck Tractor	6	32	144	147	323
Truck with Semi-Trailer	3	22	86	97	205
Truck with Twin Trailer	1	0	1	1	2
Truck with Other Trailer	2	2	21	12	35
Pickup Truck	4	27	75	85	187
Van	2	8	34	39	81
Motorcycle	3	9	12	3	24
Motorscooter/Motorbike	0	1	0	0	1
Moped	0	0	1	0	1
All Terrain Vehicle	0	1	1	0	2
School Bus	0	0	1	3	4
Other Bus	0	0	5	4	9
Motorhome Camper	2	0	0	2	2
Taxicab	0	1	0	3	4
Hit Run Vehicle	0	0	1	1	2
Police Vehicle	0	0	0	2	2
Road Maintenance Vehicle	0	0	1	0	1
Other Public Owned Vehicle	0	2	1	1	4
Bicyclist	4	4	7	4	15
Pedestrian	2	10	4	11	25
Other	0	0	0	3	3
Total	71	291	767	975	2,033

* "Total injuries" column does not include fatalities.

TABLE 5.03

CONTRIBUTING FACTORS IN 1987 TRUCK CRASHES

Contributing Factors	Attributed to Truck Driver	Attributed to Other Driver
Driver Inattention	1,069 (25.9%)	819 (27.0%)
Illegal/Unsafe Speed	419 (10.2%)	282 (9.3%)
Failure to Yield	334 (8.1%)	406 (13.4%)
Improper Lane Use	358 (8.7%)	270 (8.9%)
Following Too Closely	285 (6.9%)	163 (5.4%)
Improper Turn	178 (4.3%)	83 (2.7%)
Vision Obscured	163 (4.0%)	80 (2.6%)
Weather	144 (3.5%)	85 (2.8%)
Unsafe Backing	155 (3.8%)	21 (0.7%)
Disregard for Traffic Control Device	122 (3.0%)	122 (3.1%)
Defective Brakes	135 (3.3%)	24 (0.8%)
Driver Inexperience	94 (2.3%)	114 (3.8%)
Improper Passing	90 (2.2%)	126 (4.2%)
Physical Impairment	77 (1.9%)	119 (3.9%)
Skidding	64 (1.6%)	43 (1.4%)
Driving Left of Center	40 (1.0%)	66 (2.2%)
Other Human Factor	57 (1.4%)	44 (1.5%)
Improper Parking	57 (1.4%)	53 (1.7%)
Oversize or Overweight	33 (0.8%)	1 (0.0%)
Defective Tire	25 (0.6%)	11 (0.4%)
Improper or No Signal	30 (0.7%)	17 (0.6%)
Defective Lights	37 (0.9%)	10 (0.3%)
Impeding Traffic	16 (0.4%)	14 (0.5%)
Road Defect	13 (0.3%)	6 (0.2%)
Pedestrian Violation	0 (0.0%)	10 (0.3%)
Other	129 (3.1%)	43 (1.4%)
Total	4,124 (100.0%)	3,032 (100.0%)
No Improper Driving	1,988	1,984
Total Number of Drivers	5,876	5,121

* More than one contributing factor may be attributed to a driver.

TABLE 5.04

TRUCKS IN 1987 CRASHES, BY DRIVER AGE

Driver Age	Total	Truck or Truck Tractor	Truck with Semi-Trailer	Truck with Twin Trailer	Truck with Other Trailer
15 & Below	6	5	1	0	0
16 - 20	278	219	43	1	15
21 - 25	855	487	298	4	66
26 - 30	1,030	528	427	3	72
31 - 35	857	406	403	6	42
36 - 40	652	307	305	4	36
41 - 45	470	205	224	10	31
46 - 50	471	165	278	11	17
51 - 55	314	130	155	4	25
56 - 60	250	117	123	1	9
61 - 65	144	70	59	3	12
66 - 70	46	25	16	0	5
71 - 98	38	24	9	0	5
Not Stated	465	286	156	4	19
Total	5,876	2,974	2,497	51	354

TABLE 5.05

DRIVERS IN 1987 TRUCK CRASHES, BY PHYSICAL CONDITION*

Physical Condition	Truck Driver	Other Driver
Normal	4,610	3,766
Under the Influence	42	93
Had Been Drinking	29	54
Had Been Using Drugs	2	1
Asleep	30	14
Fatigued	17	5
Ill	4	4
Handicapped	0	7
Other	6	12
Unknown	1,136	1,165
Total	5,876	5,121

* As noted by police officer on accident report.

TABLE 5.06

1987 TRUCK CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:						
Other Motor Vehicle	47	182	387	531	3,021	4,168
Parked Motor Vehicle	2	10	18	9	269	308
Railroad Train	0	1	4	2	7	14
Bicyclist	4	4	8	4	4	24
Pedestrian	2	9	6	6	0	23
Animal	0	0	3	4	86	93
Fixed Object	4	7	35	26	388	460
Other Object	0	2	6	6	73	87
Non-Collision:						
Overturn	5	15	76	69	176	341
Fire Explosion	0	0	0	0	12	12
Submersion	0	0	0	0	0	0
Other	1	2	5	6	124	138
Total	65	232	548	663	4,160	5,668

TABLE 5.07

1987 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	48	181	408	495	3,079	4,211
Wet	11	29	71	94	532	737
Snow or Slush	0	6	16	19	132	173
Ice or Snow Packed	5	12	40	41	300	398
Other	1	3	9	6	27	46
Unknown	0	1	4	8	90	103
Total	65	232	548	663	4,160	5,668

TABLE 5.08

1987 TRUCK CRASHES BY TIME OF DAY

Time Period	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight-2:59 AM	258	35	28	37	44	46	40	28
3:00-5:59 AM	198	10	23	33	27	42	30	33
6:00-8:59 AM	868	17	140	197	148	151	156	59
9:00-11:59 AM	1,240	39	219	223	233	240	200	86
Noon-2:59 PM	1,277	44	236	236	221	238	233	69
3:00-5:59 PM	1,056	35	190	207	197	158	213	56
6:00-8:59 PM	438	37	76	52	84	62	92	35
9:00-11:59 PM	239	21	27	32	40	45	47	27
Unknown	94	1	13	14	22	15	20	9
Total	5,668	239	952	1,031	1,016	997	1,031	402

FIGURE 5.01

Total 1987 Truck Crashes vs. All Motor Vehicle Crashes by Time of Day

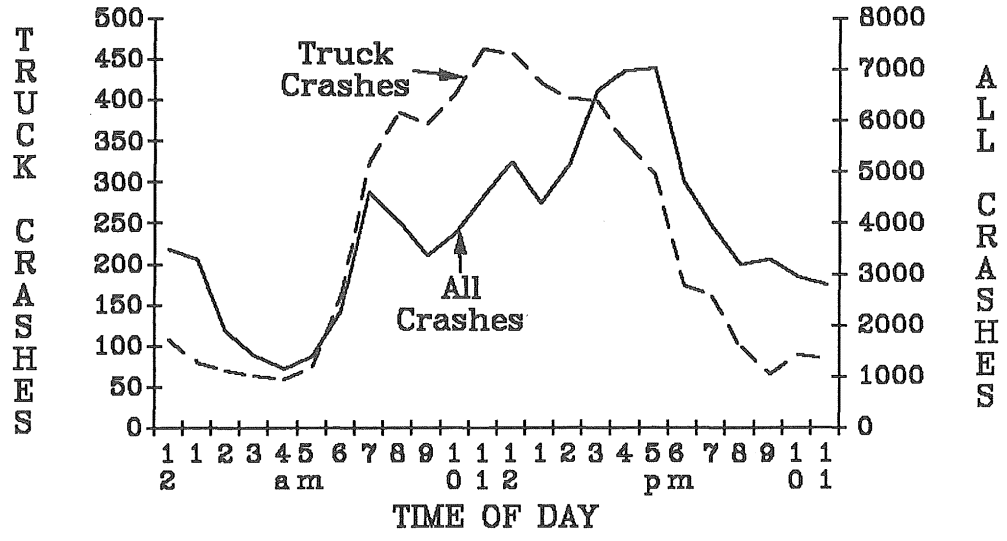


TABLE 5.09

1987 TRUCK CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	3	107	291	401	3	142
February	5	71	219	295	6	101
March	3	82	224	309	4	119
April	1	84	271	356	1	115
May	3	118	317	438	3	168
June	9	152	418	579	12	238
July	10	134	385	529	0	181
August	9	151	395	555	9	210
September	3	129	383	515	3	175
October	6	130	391	527	6	165
November	7	134	401	542	7	195
December	6	151	465	622	7	224
Total	65	1,443	4,160	5,668	71	2,033

TABLE 5.10

1987 TRUCK CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Clear	36	142	327	374	2,338	3,217
Cloudy	21	60	141	188	1,135	1,545
Rain	5	15	36	45	261	362
Snow	1	8	16	29	188	242
Sleet/Hail/Freezing Rain	0	1	6	10	38	55
Fog/Smog/Smoke	2	5	15	13	65	100
Blowing Sand/Dust/Snow	0	1	1	1	12	15
Severe Cross Winds	0	0	1	0	16	17
Other	0	0	2	0	6	8
Unknown	0	0	3	3	101	107
Total	65	232	548	663	4,160	5,668

TABLE 5.11

1987 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	4	34	77	147	991	1,253
50,000 - 99,999	3	4	22	33	228	290
25,000 - 49,999	3	31	93	110	651	888
10,000 - 24,999	4	27	70	88	582	771
5,000 - 9,999	7	17	40	50	299	413
2,500 - 4,999	2	9	22	24	189	246
1,000 - 2,499	4	14	8	12	119	157
Under 1,000	37	90	197	176	933	1,433
Unknown	1	6	19	23	168	217
Total	65	232	548	663	4,160	5,668

TABLE 5.12

1987 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	8	15	54	105	717	899
US Trunk	25	56	110	137	728	1,056
State Trunk	22	57	142	165	964	1,350
County State-Aid	7	55	128	147	763	1,100
Municipal State-Aid	2	26	50	62	506	646
County Road	0	10	16	6	70	102
Township Road	1	6	8	11	44	70
Municipal Street	0	7	39	29	332	407
Other Road	0	0	1	1	36	38
Total	65	232	548	663	4,160	5,668

PEDESTRIAN CRASHES

Minnesota had 1,556 pedestrian crashes in 1987, a three percent decrease from the preceding five-year average of 1,607. These crashes resulted in 62 fatalities and 1,533 injuries to pedestrians. Both were six percent decreases from the preceding five-year average of 66 and 1,630 respectivly.

* Over the past ten years, pedestrian fatalities were concentrated more heavily among younger persons (less than 30 years of age) and among persons in their seventies and early eighties (Figure 6.01).

* Children aged five to nine suffered the greatest number of injuries of any age group. The number of injuries tended to decrease over successive five-year age groups. Under age 45, male pedestrians were considerably more often involved in motor vehicle crashes; after age 45, females were slightly more often involved in crashes (Figure 6.02).

* Pedestrian injuries were fairly evenly distributed across months of the year, On the other hand, 50 percent of the fatalities occurred during the last four months of the year, September through December (Table 6.03).

* Examined by time of day, total pedestrian crashes and fatal pedestrian crashes follow trends similar to one another, although total crashes peaked during the late afternoon (around 5:00 to 6:00 pm) while fatal crashes peaked late at night (between 1:00 and 2:00 am). Throughout the year, Fridays had the most pedestrian crashes and Sundays the least (Figure 6.03 and Table 6.04).

* Fatal crashes differed strongly from injury crashes with respect to the locales where they occurred. Forty percent (25) of the fatal crashes occurred in rural areas (areas of less than 5,000 population), compared to only nine percent (131) of the injury crashes (Table 6.05).

* In both fatal and injury crashes, the most frequent action of the pedestrian prior to the accident was crossing the road where there was no crosswalk and no signal. The next most frequent prior action was crossing the road at an intersection and in compliance with a traffic signal (Table 6.07). Nevertheless, some type of pedestrian violation or error was cited as a contributing factor in a substantial majority of all pedestrian crashes (Table 6.08).

* Nineteen, or 45 percent, of the pedestrians killed in traffic accidents had been drinking, and 17, or 40 percent, were drunk according to the legal definiation of intoxication. Seven of the 19 pedestrians who had been drinking were between the ages of 21 and 25; eight of them died from accidents occurring between midnight and 3:00 am (Figure 6.04, Tables 6.10-6.12).

TABLE 6.01

PEDESTRIAN CRASHES, INJURIES, FATALITIES, 1978-1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Pedestrian Crashes*	1,731	1,700	1,629	1,648	1,374	1,516	1,690	1,845	1,610	1,556
Pedestrians Injured	1,723	1,678	1,636	1,658	1,438	1,625	1,682	1,837	1,570	1,533
Pedestrians Killed	115	117	114	100	76	62	55	65	71	62

*A "Pedestrian Crash" is an incident in which a pedestrian is struck by a motor vehicle. Prior to 1984, such an incident was defined as a crash only when the first "object" struck was a pedestrian.

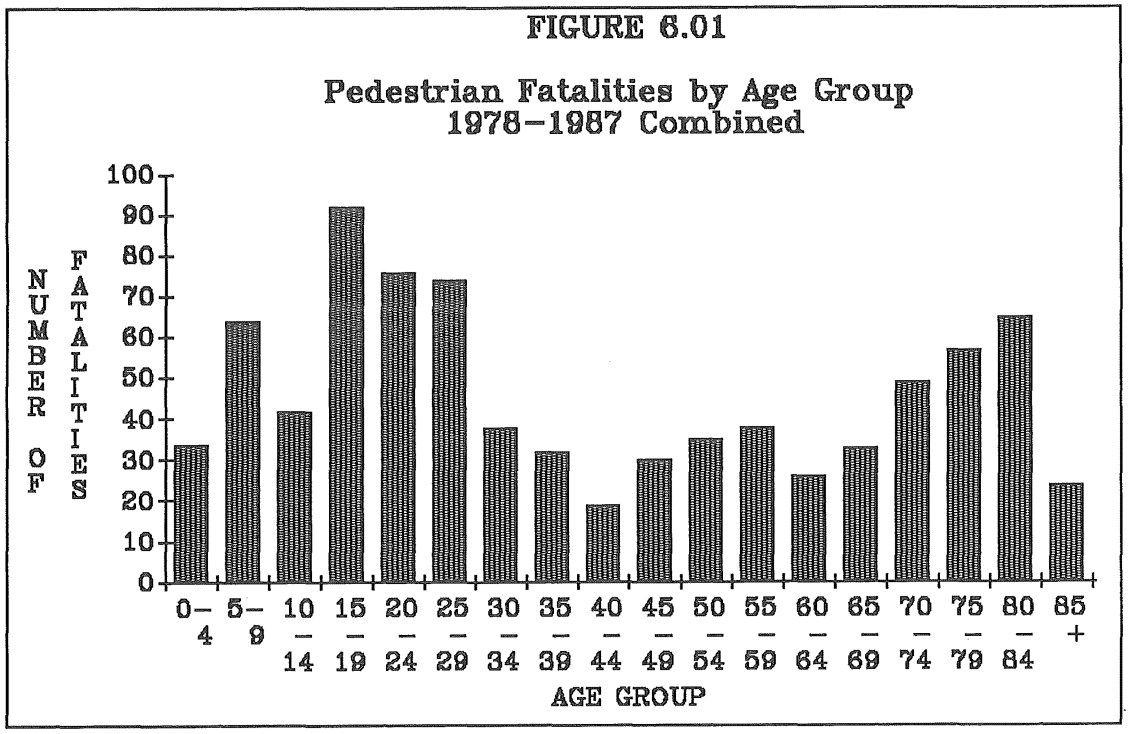


TABLE 6.02

PEDESTRIANS KILLED AND INJURED BY AGE AND SEX, 1987

Age	Killed			Severe Injuries			Moderate Injuries			Possible Injuries			Total Injuries**		
Group	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0- 4	0	1	1	25	4	29	25	21	48	21	15	37	71	40	114
5- 9	3	6	9	32	32	65	70	37	107	47	27	74	149	96	246
10-14	4	1	5	22	19	41	27	36	63	24	16	40	73	71	144
15-19	1	1	2	19	24	43	39	30	69	33	32	65	91	86	177
20-24	7	1	8	28	9	37	33	25	58	17	17	34	78	51	129
25-29	3	0	3	22	9	31	25	22	47	16	17	33	63	48	111
30-34	2	2	4	20	6	27	13	15	28	14	10	24	47	31	79
35-39	2	1	3	9	11	20	11	13	24	19	14	33	39	38	77
40-44	1	0	1	12	5	17	9	13	22	9	4	13	30	22	52
45-49	3	0	3	6	7	13	3	7	10	5	9	14	14	23	37
50-54	4	2	6	7	6	13	5	9	14	3	7	10	15	22	37
55-59	1	1	2	9	8	17	4	7	11	7	6	13	20	21	41
60-64	1	0	1	7	4	11	3	3	6	7	7	14	17	14	31
65-69	0	1	1	7	8	15	2	9	11	4	3	7	13	20	33
70-74	0	1	1	3	8	11	6	7	13	7	6	13	16	21	37
75-79	2	2	4	5	8	13	3	11	14	1	8	9	9	27	36
80-84	2	1	3	4	8	12	3	6	9	2	2	4	9	16	25
85 & Over	2	2	4	3	5	8	2	4	6	1	0	1	6	9	15
Not Stated	1	0	1	5	5	10	5	4	10	52	39	92	62	48	112
Total	39	23	62	245	186	433	288	279	570	289	239	530	822	704	1,533

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

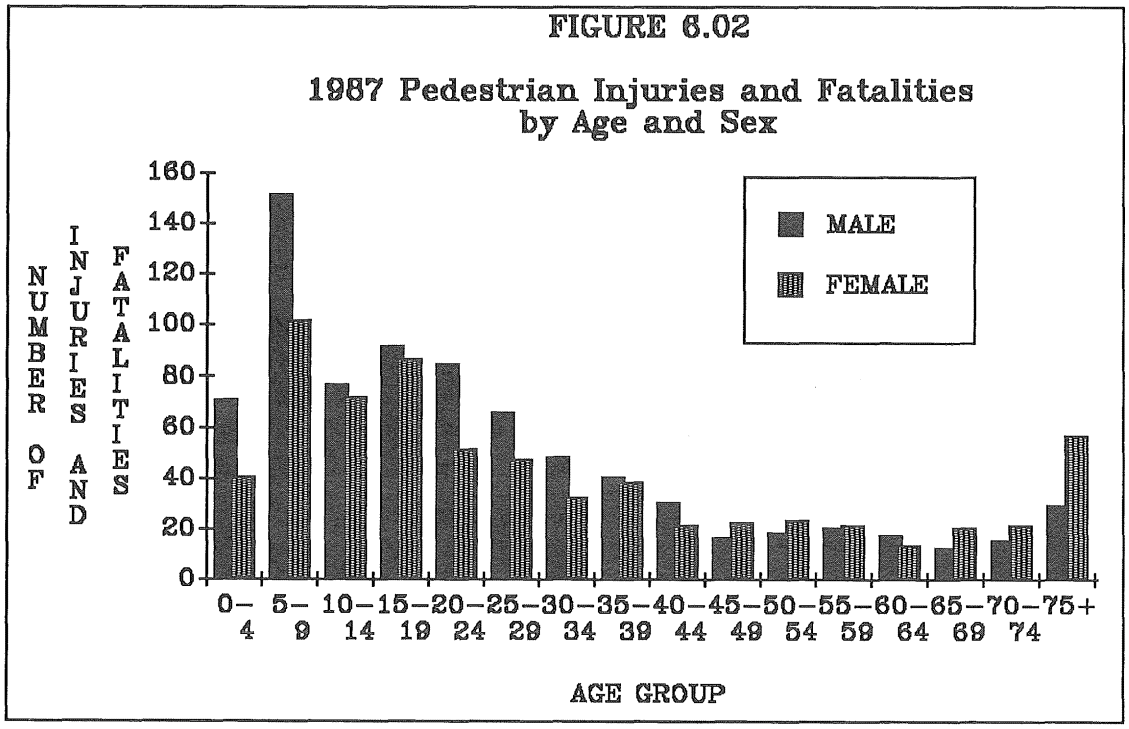


TABLE 6.03

1987 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes	Fatalities	Injuries
January	4	118	124	4	126
February	3	118	121	3	121
March	4	106	110	4	108
April	3	111	114	3	113
May	5	123	130	5	126
June	3	146	151	3	153
July	5	120	128	5	125
August	4	117	123	4	124
September	10	124	136	10	130
October	5	130	136	5	131
November	7	127	136	7	132
December	9	137	147	9	144
Total	62	1,477	1,556	62	1,533

FIGURE 6.03

1987 Pedestrian Crashes by Time of Day

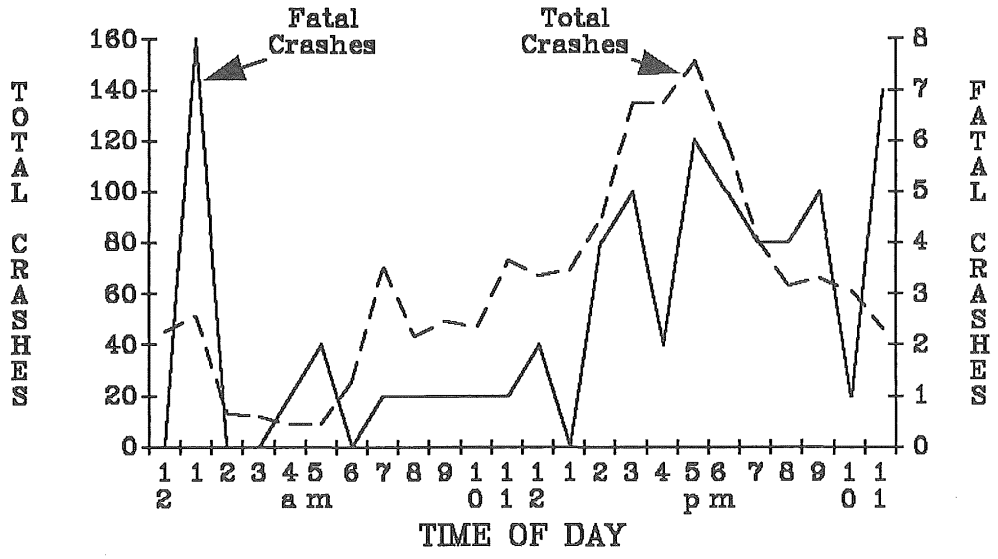


TABLE 6.04

1987 PEDESTRIAN CRASHES BY TIME AND DAY

Hour Beginning	Fatal Crashes	Total Crashes	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight	0	45	8	3	4	3	6	9	12
1:00 am	8	51	16	2	1	7	4	4	17
2:00 am	0	13	3	2	0	0	3	2	3
3:00 am	0	12	2	1	0	2	1	4	2
4:00 am	1	9	1	0	2	3	0	1	2
5:00 am	2	9	2	1	0	1	3	1	1
6:00 am	0	26	0	3	4	6	6	6	1
7:00 am	1	70	1	14	23	7	10	14	1
8:00 am	1	43	1	3	6	9	8	12	3
9:00 am	1	49	6	8	5	13	7	3	7
10:00 am	1	47	6	4	8	12	4	7	6
11:00 am	1	73	7	10	3	11	6	20	14
Noon	2	67	5	5	11	8	10	19	9
1:00 pm	0	69	11	10	6	8	13	13	7
2:00 pm	4	90	5	10	9	15	14	25	9
3:00 pm	5	135	10	17	25	21	20	26	14
4:00 pm	2	135	11	22	27	18	18	26	11
5:00 pm	6	151	14	18	21	24	32	23	16
6:00 pm	5	120	10	23	20	21	19	12	14
7:00 pm	4	81	5	12	12	17	11	13	10
8:00 pm	4	63	10	6	8	7	10	16	6
9:00 pm	5	66	2	7	10	11	8	19	9
10:00 pm	1	61	4	9	15	7	3	15	8
11:00 pm	7	46	5	2	3	6	1	16	13
Unknown	1	25	2	3	2	7	5	1	4
Total	62	1,556	147	195	225	244	222	307	199

TABLE 6.05

1987 PEDESTRIAN CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Total Crashes
100,000 and Over	16	723	751
50,000 - 99,999	2	92	94
25,000 - 49,999	8	168	177
10,000 - 24,999	7	175	183
5,000 - 9,999	2	82	84
2,500 - 4,999	4	30	35
1,000 - 2,499	1	22	23
Under 1,000	20	81	101
Unknown	2	104	108
Total	62	1,477	1,556

TABLE 6.06

VEHICLE MOVEMENT IN 1987 PEDESTRIAN CRASHES

Vehicle Movement	Fatal Crashes	Injury Crashes	Total Crashes
Vehicle Going Straight	47	1,010	1,070
Vehicle Turning Left	3	160	164
Vehicle Turning Right	3	100	103
Vehicle Backing	0	34	35
Moving Vehicle Colliding with Parked Vehicle	0	12	12
Two Vehicles Colliding at Intersection	0	10	10
Moving Vehicle Colliding with Vehicle Stopped in Traffic	1	7	8
All Others	7	137	146
Not Stated	1	7	8
Total	62	1,477	1,556

TABLE 6.07

PRIOR ACTION OF PEDESTRIANS KILLED AND INJURED IN 1987

Action	Perons Killed		Persons Injured	
	Number	Percent	Number	Percent
Crossing With Signal	8	(12.9%)	218	(14.2%)
Crossing Against Signal	1	(1.6%)	103	(6.7%)
Crossing In Crosswalk (No Signa)	2	(3.2%)	88	(5.7%)
Crossing Road (No Crosswalk and no Signal)	13	(20.9%)	424	(27.7%)
Walking In Road With Traffic	6	(9.7%)	62	(4.0%)
Walking In Road Against Traffic	6	(9.7%)	57	(3.7%)
Standing In Road	4	(6.5%)	68	(4.4%)
Emerging From Front/Behind Parked Car	4	(6.5%)	115	(7.5%)
Child Getting On/Off School Bus	1	(1.6%)	5	(0.3%)
Getting On/Off Vehicle	0	(0.0%)	12	(0.8%)
Pushing/Working On Vehicle	0	(0.0%)	5	(0.3%)
Working In Road	0	(0.0%)	4	(0.3%)
Playing In Road	1	(1.6%)	35	(2.3%)
Not In Road	6	(9.7%)	35	(2.3%)
Other Pedestrian Action	10	(16.1%)	302	(19.7%)
Total	62	(100%)	1,533	(100%)

TABLE 6.08

CONTRIBUTING FACTORS IN 1987 PEDESTRIAN CRASHES

Contributing Factors	Attributed to Pedestrians* Number**	Percent	Attributed to Motor Vehicle Drivers* Number**	Percent
Human factors				
Pedestrian Violation	663	(90.8%)	0	(0.0%)
Physical Impairment	59	(8.1%)	52	(4.4%)
Driver Inattention	0	(0.0%)	394	(33.4%)
Failure to Yield Right of Way	0	(0.0%)	257	(21.8%)
Illegal or Unsafe Speed	0	(0.0%)	95	(8.1%)
Vision Obscured	0	(0.0%)	93	(7.9%)
Improper Lane Use	0	(0.0%)	43	(3.6%)
Disregard for Traffic Control Device	0	(0.0%)	36	(3.1%)
Driver Inexperience	0	(0.0%)	37	(3.1%)
Unsafe Backing	0	(0.0%)	24	(2.0%)
Improper Parking	0	(0.0%)	19	(1.6%)
Driving Left ofCenter	0	(0.0%)	16	(1.4%)
Improper Passing	0	(0.0%)	14	(1.2%)
Improper Turn	0	(0.0%)	12	(1.0%)
Other Human Factors	1	(0.1%)	37	(3.1%)
Vehicular Factors				
Defective Equipment	0	(0.0%)	10	(1.0%)
Skidding	0	(0.0%)	13	(1.1%)
Other Vehicular Factors	0	(0.0%)	9	(1.0%)
Miscellaneous Factors				
Weather Conditions	7	(1.0%)	17	(1.4%)
Road Defects	0	(0.0%)	2	(0.2%)
Total Contributing Factors Cited	730	(100.0%)	1,180	(100%)
No improper actions:	306		677	
Total number of pedestrians/drivers	1,615		1,678	

* Percentages are based on the total number of contributing factors cited for all pedestrians and drivers.

** One or two contributing factors may be cited for each pedestrian or motor vehicle driver.

TABLE 6.09

DRINKING PEDESTRIAN FATALITY SUMMARY 1978-1987

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1978	115	54	33 (61%)	22 (41%)
1979	117	56	29 (52%)	26 (46%)
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%)

* Percentages based on those tested.

FIGURE 6.04

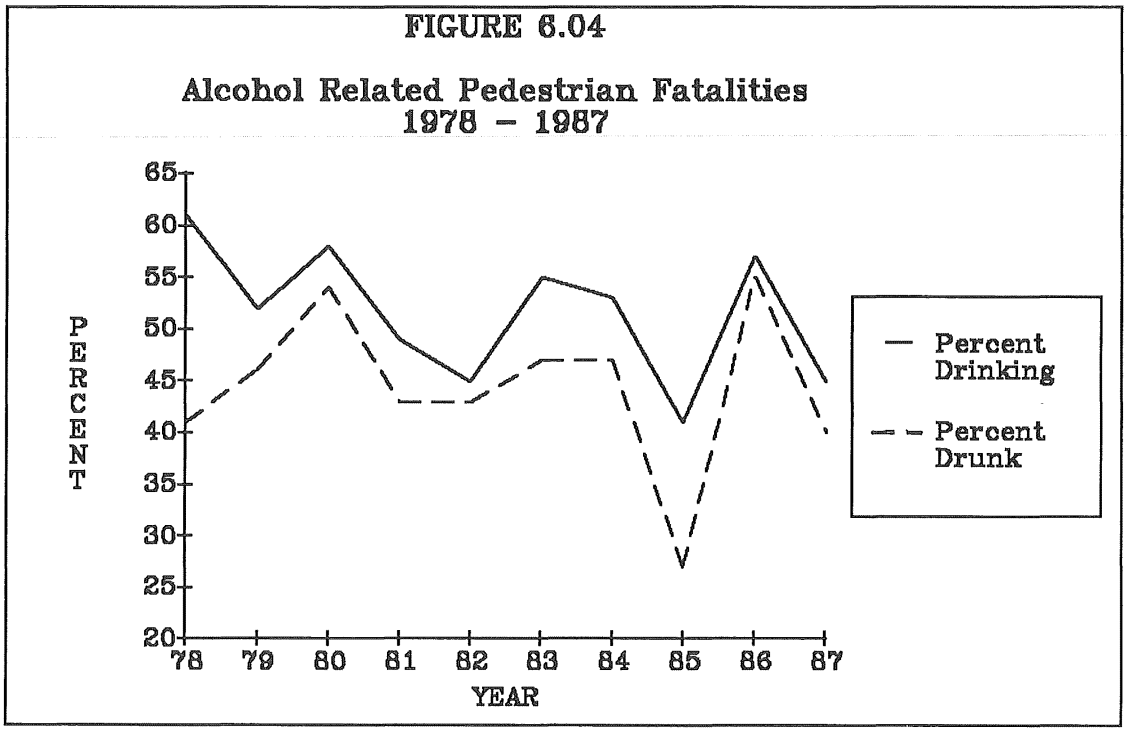


TABLE 6.10

1987 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
15 & below	15	4	0	0
16-20	2	2	0	0
21-25	9	8	7	1
26-30	2	1	1	1
31-35	4	2	0	0
36-40	3	3	3	3
41-45	1	0	0	0
46-50	3	3	2	2
51-55	6	6	2	2
56-60	3	3	2	1
61-65	1	1	0	0
66 & Above	13	9	2	1
Unknown	0	0	0	0
Total	62	42	19	17

TABLE 6.11

1987 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY TIME OF DAY

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Midnight - 2:59 AM	8	8	8	7
3 - r:59 AM	3	3	2	2
6 - 8:59 AM	2	2	0	0
9 - 11:59 AM	3	2	0	0
Noon - 2:59 PM	6	5	1	0
3 - 5:59 PM	13	4	1	1
6 - 8:59 PM	13	9	3	3
9 - 11:59 PM	14	9	4	4
Unknown	0	0	0	0
Total	62	42	19	17

BICYCLE CRASHES

Bicycles are subject to the same traffic laws as motor vehicles, but bicycle accidents are not reported to the State unless they involve a collision with a motor vehicle.

Prior to 1984, such collisions were counted as bicycle crashes only if the bicyclist was the first "object" struck by the motor vehicle. Since then, any collision between a bicycle and a motor vehicle is reported as a bicycle crash, regardless of the sequence of events in the accident. This definitional change caused a small increase, beginning in 1984, in the number of bicycle crashes reported here.

Unlike total motor vehicle crashes, which peaked during the late 1970s, bicycle crashes have followed an uneven but generally upward trend over the past 25 years. In 1987, bicycle crashes and injuries both reached historic highs. There were 1,574 crashes and 1,452 injuries to bicyclists, up 23 percent and 17 percent, respectively, from the preceding five-year averages. Bicyclist fatalities increased 19 percent (to 15) over the prior five-year average, but this was not an historic high. There were as many or more fatalities in 15 out of the past 26 years for which records are available (since 1962).

* Eighty-five percent of the bicycle crashes occurred during the warmer weather months, April through September. One-third of the total crashes occurred during the late afternoon hours from 3:00 to 6:00 pm. The weekdays were relatively more risky to bicyclists than Saturdays and Sundays. Each of the weekdays had 16 percent of the total bike crashes; Saturday had 11 percent and Sunday had nine percent (Tables 7.02, 7.03, and Figure 7.01).

* Bicyclist injuries and fatalities were concentrated among young persons, particularly males. The 10-to-14 year-old age group accounted for 28 percent of the total fatalities and injuries, the 15-to-19 year-old group for 18 percent, and the five-to-nine year-old group for 17 percent. At every age level, males typically suffered at least two to three times as many injuries as females (Table 7.04 and Figure 7.02).

* Contributing factors in bike crashes were more often associated with bicyclists than with motor vehicle drivers. Investigating officers reported that there had been "no improper driving" among 21 percent of the the bicyclists, while they made the same report of "no improper driving" for 44 percent of the motor vehicle drivers. Among bicyclists, the contributing factors most often cited were driver inattention or distraction, failure to yield right of way, driver inexperience, disregard for traffic control device, and improper or unsafe lane use. For motor vehicle drivers, driver inattention or distraction was cited most frequently, followed by failure to yield right of way, and then by obscured vision (Table 7.05).

* For those crashes where the prior action of the bicyclist was reported (i.e., excluding "unknowns"), officers reported that 39 percent of the bicyclists were riding with traffic prior to the accident; another 38 percent were attempting to ride across the road prior to their collision (Table 7.06).

* Half of the fatal crashes occurred in rural areas (areas of 5,000 population or less) whereas fully 85 percent of the injury and property damage crashes occurred in urban areas (Table 7.07).

TABLE 7.01

BICYCLE CRASHES, INJURIES, FATALITIES, 1978-1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Bicycle Crashes	1,154	1,067	1,276	1,255	1,130	1,220	1,282	1,375	1,367	1,574
Bicyclists Injured	1,105	993	1,295	1,213	1,105	1,194	1,258	1,342	1,309	1,452
Bicyclists Killed	23	14	19	10	12	14	15	10	12	15

TABLE 7.02

1987 BICYCLE CRASHES BY MONTH

Month	Fatal Crashes*	Injury Crashes	Property Damage Crashes	All Crashes	Bicyclist Fatalities	Injuries
January	0	6	3	9	0	6
February	0	20	0	20	0	20
March	1	68	2	71	1	70
April	3	154	15	172	3	160
May	2	204	17	223	2	203
June	1	248	27	276	1	250
July	2	240	27	269	2	243
August	5	215	16	236	4	219
September	2	159	7	168	2	160
October	0	75	4	79	0	74
November	0	35	3	38	0	35
December	0	12	1	13	0	12
Total	16	1,436	122	1,574	15	1,452

* There were 16 fatal crashes, but 15 bicyclist fatalities because one of the five fatal crashes in August involved the death of a motor vehicle driver; the bicyclist was injured, but not killed.

TABLE 7.03

1987 BICYCLE CRASHES BY TIME AND DAY

Time Period	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	46	6	4	8	6	5	8	9
3:00 - 5:59 AM	24	3	2	1	4	5	8	1
6:00 - 8:59 AM	107	2	21	20	16	21	22	5
9:00 - 11:59 AM	163	20	17	30	23	23	27	23
Noon - 2:59 AM	284	40	49	40	32	29	49	45
3:00 - 5:59 PM	526	43	92	80	96	88	79	48
6:00 - 8:59 PM	307	19	44	61	58	60	39	26
9:00 - 11:59 AM	93	8	13	9	20	11	20	12
Unknown	24	5	6	3	3	6	0	1
Total	1,574	146	248	252	258	248	252	170

FIGURE 7.01

1987 Bicycle Crashes by Time of Day

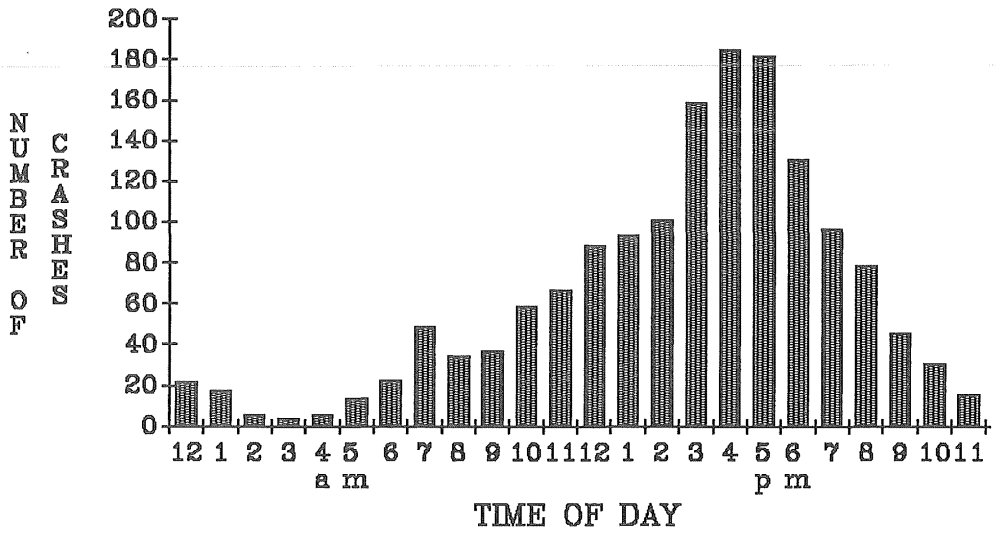


TABLE 7.04

AGE AND SEX OF BICYCLISTS BY INJURY SEVERITY IN 1987 CRAHSES

	Killed			Severe Injury			Moderate Injury			Possible Injury			Total Injuries**		
Age Group	M	F	Total	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*
0- 4	0	0	0	1	1	2	10	3	13	5	1	6	16	5	21
5- 9	1	1	2	27	12	39	85	43	128	56	24	80	168	79	247
10-14	2	1	3	53	21	74	154	56	210	88	30	118	295	107	402
15-19	4	0	4	36	12	48	92	44	136	52	24	76	180	80	260
20-24	1	0	1	21	6	27	52	25	77	32	15	47	105	46	151
25-29	3	0	3	16	6	22	45	19	64	31	15	46	92	40	132
30-34	0	0	0	4	2	6	20	11	31	22	8	30	46	21	67
35-39	0	0	0	13	2	15	15	9	24	10	3	13	38	14	52
40-44	0	0	0	3	1	4	7	4	11	2	2	4	12	7	19
45-49	0	0	0	2	0	2	7	1	8	2	0	2	11	1	12
50-54	0	0	0	2	2	4	2	0	2	4	0	4	8	2	10
55-59	0	0	0	1	1	2	1	0	1	1	0	1	3	1	4
60-64	0	0	0	3	0	3	2	0	2	2	0	2	7	0	7
65-69	0	0	0	2	0	2	2	0	2	1	1	2	5	1	6
70-74	0	1	1	2	0	2	1	0	1	2	0	2	5	0	5
75 & Over	0	0	0	3	0	3	1	0	1	1	1	2	5	1	6
Not Stated	1	0	1	2	1	3	9	3	13	21	9	35	32	13	51
Total	12	3	15	191	67	258	505	218	724	332	133	470	1,028	418	1,452

* Where columns do not add across, sex was not stated on the accident report.
** Does not include fatalities.

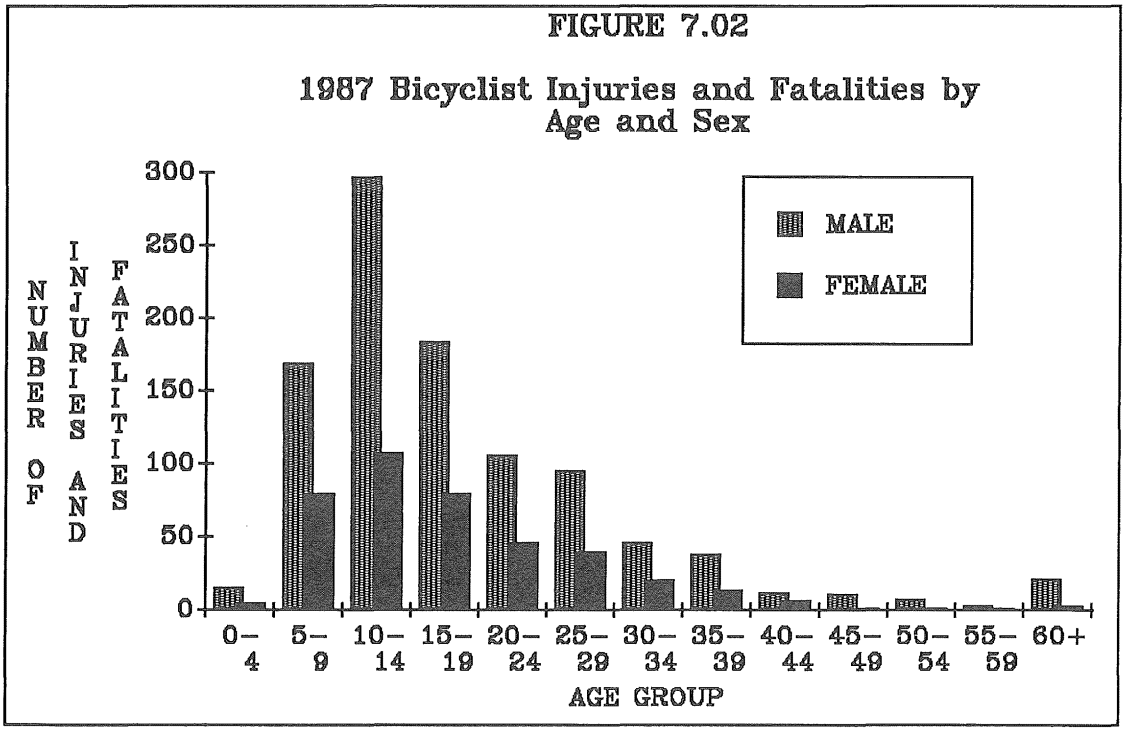


TABLE 7.05

CONTRIBUTING FACTORS IN 1987 BICYCLE CRASHES

Contributing Factors	Attributed to Bicycle Drivers Number*	Percent	Attributed to Motor Vehicle Drivers Number*	Percent
Human Factors				
Driver Inattention/distraction	343	(27.1)	366	(36.2)
Failure to Yield Right of Way	199	(15.7)	269	(26.6)
Driver Inexperience	130	(10.3)	20	(2.0)
Disregard for Traffic Control Device	129	(10.2)	33	(3.3)
Improper/Unsafe Lane Use	127	(10.0)	33	(3.3)
Improper Turn	48	(3.8)	35	(3.5)
Vision Obscured	45	(3.5)	100	(9.9)
Driving Left of Roadway Center--Not Passing	40	(3.2)	8	(0.8)
Illegal/Unsafe Speed	25	(2.0)	39	(3.9)
Physical Impairment	21	(1.7)	21	(2.1)
Improper Parking/ Starting/Stopping	9	(0.7)	12	(1.2)
Improper Passing/Overtaking	8	(0.6)	20	(2.0)
Impeding Traffic	7	(0.6)	4	(0.4)
Following Too Closely	6	(0.5)	14	(1.4)
Improper or No Signal	5	(0.4)	2	(0.2)
Other Human Factors	68	(5.4)	17	(1.7)
Vehicular Factors				
Defective Equipment	36	(2.8)	3	(0.3)
Skidding	2	(0.2)	2	(0.2)
Other Vehicular Factors	13	(1.0)	4	(0.4)
Miscellaneous Factors				
Weather	7	(0.6)	8	(0.8)
Total	1,268	(100.0)	1,010	(100.0)
No Improper Driving	332		706	
Total Number of Bicyclists/ Drivers	1,587		1,599	

* More than one contributing factor may be attributed to a driver.

TABLE 7.06

PRIOR ACTION OF BICYCLE DRIVERS INVOLVED IN 1987 CRASHES

Action	Bicyclists In Fatal Crashes	Bicyclists In Injury Crashes	Bicyclists In Property Damage Crashes	Bicyclists In All Crashes*
Riding With Traffic	4	411	30	445
Riding Against Traffic	3	113	10	126
Making Left Turn	2	73	6	81
Making Right Turn	1	25	3	29
Making U Turn	1	6	0	7
Riding Across Road	2	399	26	427
Slowing, Starting, Stopping	0	12	1	13
Other/Unknown	3	410	46	459
Total	16	1,449	122	1,587

* 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

1987 BICYCLE CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Possible Injury Crashes	Property Damage Crashes	All Crashes
100,000 and Over	2	86	218	204	59	569
50,000 - 99,999	0	12	41	14	2	69
25,000 - 49,999	3	61	148	72	24	308
10,000 - 24,999	1	41	152	63	22	279
5,000 - 9,999	1	19	57	30	8	115
2,500 - 4,999	2	10	29	12	2	55
1,000 - 2,499	0	6	10	5	0	21
Under 1,000	6	11	19	20	2	58
Unknown	1	14	42	40	3	100
Total	16	260	716	460	122	1,574

SCHOOL BUS CRASHES

In 1987, there were 530 school bus crashes--the lowest number since the mid 1970s and a 24 percent reduction from the preceding five-year average. There were 141 injury crashes, again the lowest number since the mid 1970s, and a 17 percent reduction from the preceding five-year average. The injury crashes resulted in 244 injuries to school bus passengers, pedestrians, or occupants of other vehicles. This is the lowest number over the period of time for which comparable figures are available (since 1982), and a 22 percent reduction from the prior five-year average.

There were six fatal school bus crashes, resulting in six fatalities. Fatal crashes have ranged in number from one to nine per year since the mid-1960s. In 1987, four of the fatally injured persons were occupants of other vehicles that collided with school buses, one was an elderly female pedestrian, and one was a five year old child who got off the bus and then slipped on the snow and fell beneath the bus.

* Of all persons killed and injured, 100 were school bus occupants, eight were pedestrians, and the remaining 142 were occupants of other vehicles. Females suffered 58 percent more of the total injuries than males (Table 8.02).

* About a quarter of the injuries and fatalities occurred in crashes in rural areas (areas with less than 5,000 population) and about a quarter occurred in crashes in cities of 100,000 or more--that is, in Minneapolis or St. Paul (Table 8.03).

* Of the total crashes, fully 86% involved collision with another motor vehicle that was moving; the majority of the remaining crashes involved collision with a parked motor vehicle (Table 8.04).

* Thirty-three percent of the total crashes occurred between 6:00 and 9:00 am, 28 percent between 3:00 and 6:00 pm. The three summer months combined accounted for only one-fifteenth of the total accidents. December had the most accidents, followed by January and May (Table 8.05 and 8.06).

* Officers investigating school bus crashes reported "no improper driving" in the case of 42 percent of the school bus drivers, compared to 29 percent of the drivers of other vehicles in school bus crashes. The two contributing factors cited most often for both school bus and other vehicle drivers were driver inattention or distraction and failure to yield right of way (Table 8.07).

* Almost half the crashes occurred where there was no traffic signal present. Twenty-two percent occurred where there was a stop sign present at an intersection, but not at all approaches. Close to a fifth occurred at a traffic light (Table 8.08).

TABLE 8.01

SCHOOL BUS CRASHES, 1978 - 1987

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Crashes	698	852	672	681	729	687	675	723	662	530
Fatal Crashes	2	6	1	2	2	7	3	4	3	6
Fatalities	2	6	1	2	2	8	3	4	3	6
Injury Crashes	166	184	171	155	160	161	176	191	160	141
Injuries	*	*	*	*	282	321	340	366	265	244
School Buses Involved in Crashes	708	866	678	692	737	694	686	729	667	534

* Not Available.

TABLE 8.02

AGE AND SEX OF PERSONS KILLED AND INJURED IN 1987 SCHOOL BUS CRASHES

Age	Total	In Bus	Pedestrian	In Other Vehicle	Male	Female
0 - 4	5	0	0	5	2	3
5 - 9	26	18	5	3	9	17
10 - 14	21	18	0	3	6	15
15 - 19	48	19	0	29	11	37
20 - 24	21	3	0	18	7	14
25 - 29	23	4	1	18	11	12
30 - 34	13	6	0	7	6	7
35 - 39	8	2	0	6	3	5
40 - 44	8	2	0	6	5	3
45 - 54	15	6	0	9	10	5
55 - 64	14	4	0	10	4	10
65 & Over	21	3	2	16	10	11
Unknown	27	15	0	12	13	14
Total	250	100	8	142	97	153

TABLE 8.03

PERSONS INJURED OR KILLED IN 1987 SCHOOL BUS CRASHES BY POPULATION AREA

Population of City or Township	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Injuries & Fatalities
100,000 and Over	1	8	18	41	68
50,000 - 99,999	0	0	5	2	7
25,000 - 49,999	0	2	12	18	32
10,000 - 24,999	0	1	16	13	30
5,000 - 9,999	1	4	8	17	30
2,500 - 4,999	1	0	1	11	13
1,000 - 2,499	0	0	2	0	2
Under 1,000	2	6	23	20	51
Unknown	1	2	3	11	17
Total	6	23	88	133	250

TABLE 8.04

1987 SCHOOL BUS CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:				
Other Motor Vehicle	4	122	331	457
Parked Motor Vehicle	0	5	34	39
Bicyclist	0	2	0	2
Pedestrian	2	6	0	8
Animal	0	0	2	2
Fixed Object	0	2	11	13
Other Object	0	1	2	3
Non-collision:				
Overturn	0	2	1	3
Other	0	1	2	3
Total	6	141	383	530

TABLE 8.05

1987 SCHOOL BUS CRASHES BY TIME OF DAY

Time of Day	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Midnight - 2:59 AM	0	1	11	12
3:00 AM - 5:59 AM	0	1	5	6
6:00 AM - 8:59 AM	1	39	134	174
9:00 AM - 11:59 AM	0	20	52	72
Noon - 2:59 PM	0	27	61	88
3:00 PM - 5:59 PM	5	43	99	147
6:00 PM - 8:59 PM	0	1	11	12
9:00 PM - 11:59 PM	0	4	4	8
Unknown	0	5	6	11
Total	6	141	383	530

TABLE 8.06

1987 SCHOOL BUS CRASHES AND INJURIES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	16	46	62	0	21
February	0	14	32	46	0	33
March	0	7	27	34	0	9
April	0	12	42	54	0	20
May	0	23	39	62	0	30
June	0	4	15	19	0	6
July	0	6	6	12	0	12
August	0	2	3	5	0	3
September	2	18	27	47	2	34
October	1	17	41	59	1	33
November	3	8	38	49	3	15
December	0	14	67	81	0	28
Total	6	141	383	530	6	244

TABLE 8.07

CONTRIBUTING FACTORS IN 1987 SCHOOL BUS CRASHES

Contributing Factors	Attributed to School Bus Drivers Number **	Percent	Attributed to Drivers of Other Vehicles* Number **	Percent
Human Factors				
Driver Inattention/Distraction	77	(30.0)	111	(27.0)
Failure to Yield Right of Way	43	(16.4)	57	(13.9)
Illegal or Unsafe Speed	20	(7.7)	45	(10.9)
Following Too Closely	16	(6.1)	33	(8.0)
Driver Inexperience	16	(6.1)	13	(3.2)
Improper or Unsafe Lane Use	14	(5.4)	15	(3.6)
Unsafe Backing	11	(4.2)	6	(1.5)
Vision Obscured	10	(3.8)	9	(2.2)
Improper Turn	9	(3.4)	6	(1.5)
Disregard for Traffic Control Device	6	(2.3)	20	(4.9)
Driving Left of Roadway Center--Not Passing	4	(1.5)	4	(1.0)
Improper Parking/Starting/ Stopping	2	(0.8)	7	(1.7)
Improper or No Signal	1	(0.4)	3	(0.7)
Physical Impairment	0	(0.0)	5	(1.2)
Improper Passing/Overtaking	0	(0.0)	11	(2.7)
Other Human Factors	3	(1.1)	10	(2.4)
Vehicular Factors				
Skidding	7	(2.7)	17	(4.1)
Defective Equipment	4	(1.5)	8	(1.9)
Other Vehicular Factors	3	(1.1)	4	(1.0)
Miscellaneous Factors				
Weather Conditions	14	(5.4)	27	(6.6)
Road Defects	1	(0.4)	0	(0.0)
Total	261	(100.0)	411	(100.0)
No Improper Driving	225		165	
Total Number of Drivers	534		568	

* Includes pedestrians.

** One or two contributing factors may be attributed to a single driver.

TABLE 8.08

1987 SCHOOL BUS CRASHES AND INJURIES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
None	5	69	174	248	5	131
Traffic Signal	0	26	74	100	0	40
Stop Sign--All Approaches	0	1	9	10	0	1
Other Stop Sign	0	29	89	118	0	47
Yield Sign	0	3	9	12	0	6
School Bus Stop Arm	1	2	6	9	1	3
Railroad Crossing Device	0	4	6	10	0	5
No Passing Zone	0	0	1	1	0	0
Other	0	5	3	8	0	6
Unknown	0	2	12	14	0	5
Total	6	141	383	530	6	244

MOTOR VEHICLE/TRAIN CRASHES

In 1987 there were 119 total motor vehicle/train crashes, resulting in four fatalities and 74 injuries. Total crashes were down 19 percent from their previous five-year average, and injuries were down eight percent. Fatalities, which had averaged 12 per year over the preceding five years, were the lowest they have been over the 23-year period of time for which records are available (since 1965).

Although motor vehicle/train crashes are few in number, they tend to be serious in their consequences for motor vehicle occupants. In 1987, there were 3.4 fatalities and 62 injuries per 100 motor vehicle/train crashes, compared to .6 fatalities and 45 injuries per 100 crashes for all motor vehicle crashes.

* Injuries were most commonly suffered by persons in their twenties, then equally by persons in their thirties and persons aged 10 to 19 (Table 9.02).

* December and November had the most crashes; May, June, and July the fewest. Of the days of the week, Mondays had the most crashes, Saturdays and Sundays the fewest. Within the day, almost two-thirds of the accidents occurred during the twelve-hour period between noon and midnight, with the 9:00 pm to midnight period having the most (Tables 9.03 and 9.04).

* The Contributing factor most often associated with the motor vehicle drivers involved in the crashes was driver inattention, followed by failure to yield, then by disregard for traffic control device (Table 9.05).

* There was a standard railroad crossing sign at the site of 33 percent of the crashes, flashing lights at 22 percent. Even when railroad crossing gates were present, there were 13 accidents, or 11 percent of the total (Table 9.06).

TABLE 9.01

MOTOR VEHICLE/TRAIN CRASHES, 1982 - 1987

	1982	1983	1984	1985	1986	1987
Total Crashes	164	174	149	134	116	119
Fatal Crashes	5	11	7	8	5	4
Fatalities	7	15	11	13	12	4
Injury Crashes	73	69	56	63	53	55
Injuries	92	85	73	87	66	74
Property Damage Crashes	86	94	86	63	58	60

TABLE 9.02

AGE OF PERSONS KILLED AND INJURED IN 1987 MOTOR VEHICLE/TRAIN CRASHES

Age Group	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries*
0- 9	0	3	4	2	9
10-19	0	3	5	5	13
20-29	2	6	6	6	18
30-39	0	4	5	4	13
40-49	1	3	4	2	9
50-59	0	1	2	1	4
60-69	0	0	2	0	2
70 & Over	1	1	3	0	4
Not Stated	0	0	0	2	2
Total	4	21	31	22	74

* Total injuries does not include fatalities.

TABLE 9.03

1987 MOTOR VEHICLE/TRAIN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	5	5	10	0	8
February	0	3	6	9	0	3
March	0	4	5	9	0	4
April	0	7	3	10	0	8
May	0	1	3	4	0	1
June	2	2	3	7	2	2
July	0	2	4	6	0	3
August	2	7	2	11	2	10
September	0	4	6	10	0	5
October	0	2	8	10	0	2
November	0	5	10	15	0	5
December	0	13	5	18	0	23
Total	4	55	60	119	4	74

TABLE 9.04

1987 MOTOR VEHICLE/TRAIN CRASHES BY TIME AND DAY

	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	15	2	1	4	3	2	1	2
3:00- 5:59 AM	10	2	2	1	1	1	1	2
6:00- 8:59 AM	7	0	0	1	3	2	1	0
9:00-11:59 AM	11	1	3	3	2	2	0	0
Noon- 2:59 PM	20	1	4	3	4	4	2	2
3:00- 5:59 PM	18	0	4	2	1	4	5	2
6:00- 8:59 PM	13	0	4	2	2	1	4	0
9:00-11:59 PM	23	1	7	2	4	1	5	3
Unknown	2	0	0	0	0	0	1	1
Total	119	7	25	18	20	17	20	12

TABLE 9.05

CONTRIBUTING FACTORS IN 1987 MOTOR VEHICLE/TRAIN CRASHES*

Contributing Factor	Number	Percent
Human Factors:		
Driver Inattention	48	(28.7)
Failure to Yield	40	(24.0)
Disregard for Traffic Control Device	31	(18.6)
Physical Impairment	14	(8.4)
Illegal or Unsafe Speed	15	(9.0)
Vision Obscured	10	(6.0)
Driver Inexperience	1	(0.6)
Unsafe Backing	1	(0.6)
Improper Parking	1	(0.6)
Improper Lane Use	1	(0.6)
Vehicular Factors		
Defective Equipment	2	(1.2)
Other Vehicular Factors	1	(0.6)
Miscellaneous Factors		
Weather Conditions	1	(0.6)
Road Defect	1	(0.6)
Total	167	(100.1)
No Improper Driving	9	
Number of Drivers	124	

* Factors are cited only for motor vehicle drivers, not for train operators.

TABLE 9.06

1987 MOTOR VEHICLE/TRAIN CRASHES BY TRAFFIC CONTROL DEVICE PRESENT

Traffic Control Device	Number	Percent
Standard Crossing Sign	39	(32.8)
RR Flashing Lights	26	(21.8)
RR Crossing Stop Sign	14	(11.8)
Stop Sign	7	(5.9)
RR Crossing Gate	13	(10.9)
Flagman, Officer or School Patrol	3	(2.5)
Other	3	(2.5)
None	14	(11.8)
Total	119	(100.0)

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