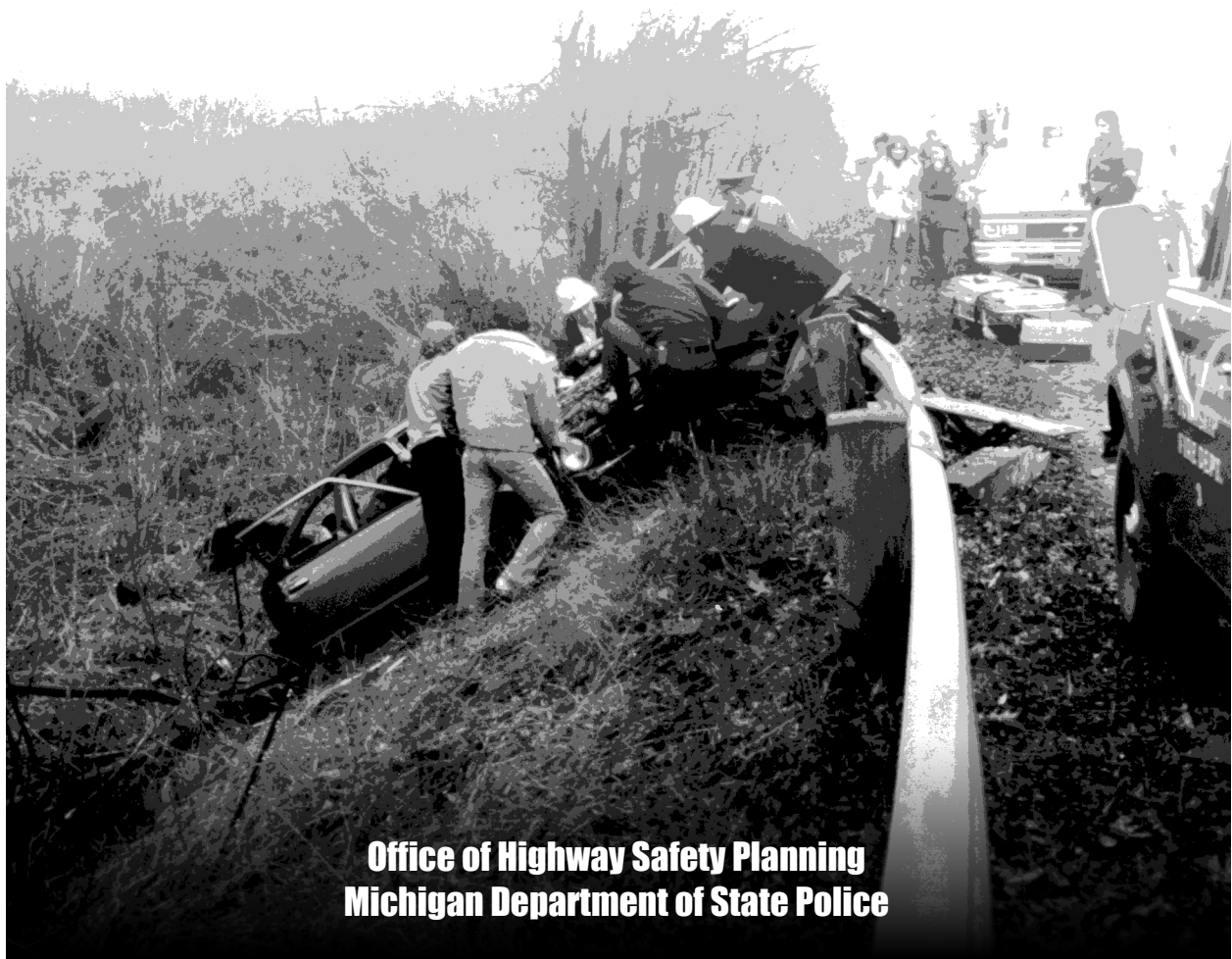


# 1998

## **Michigan Traffic Crash Facts**



**Office of Highway Safety Planning  
Michigan Department of State Police**



## EXECUTIVE SUMMARY


*The 1998 traffic fatality count was 1,367, down 5.5 percent from the 1997 figure of 1,446. Compared with 1997, injuries were down 4.3 percent and total crashes were down 5.2 percent. These figures translated into a death rate of 1.5 per 100 million miles of travel, down 6.3 percent from the death rate of 1.6 reported in 1997. Nationally, fatalities were down 4.6 percent.*

*Exposure factors in 1998 showed increases in vehicle registrations, the number of drivers on Michigan roads, and travel mileage. They included motor vehicle registrations up 1.4 percent to 8.23 million, the number of Drivers of Record up 0.8 percent to 7.15 million, and vehicle travel mileage up 2.7 percent to 91.6 billion.*

*Consumption of alcohol continues to be a major factor in Michigan crashes, particularly the more serious crashes. In 1998, 4.8 percent of all crashes, including property damage only, were reported to involve drinking, and 22.9 percent resulted in injury or death. However, 46.9 percent of alcohol-related crashes involved injury or death, and 38.5 percent of fatal crashes involved drinking. Over 62.4 percent of alcohol-related fatal crashes involved only one vehicle, whereas only 30.2 percent of all crashes involved one vehicle.*

*Data on crashes in this book was obtained from 1998 Michigan Traffic Crash Report Forms (UD-10) submitted by local police departments, sheriff jurisdictions, and the Department of State Police. Other related information was obtained from the Departments of Transportation, State, and Community Health.*

*The University of Michigan Transportation Research Institute produced this publication for the Office of Highway Safety Planning with data on file at the Michigan Department of State Police as of May 1, 1999. We acknowledge, with appreciation, all involved agencies for their assistance.*

  
Col. Michael D. Robinson, Director  
Michigan Department of State Police







JOHN ENGLER, Governor

**DEPARTMENT OF STATE POLICE**

COL. MICHAEL D. ROBINSON, Director

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P.O. BOX 30633  
LANSING, MI 48909-8133PHONE: (517) 336-6477  
FAX: (517) 333-5756**INTRODUCTION**

We are pleased to present the *1998 Michigan Traffic Crash Facts*. Michigan experienced a decrease in the number of traffic deaths in 1998, and in the death rate (calculated on the basis of traffic deaths per 100 million motor vehicle miles traveled). We are encouraged by these decreases, and, have dedicated ourselves to providing traffic safety programs that will foster safer travel on Michigan roads.

The *1998 Michigan Traffic Crash Facts* is divided into two volumes. Volume One provides statewide statistical information on Historical, Special Focus (Age, Alcohol, and Deer), Crash, Vehicle/Driver and Occupant/Person. Volume Two is titled *1998 Michigan Traffic Crash Facts for County/Communities*. This volume provides crash statistics for Michigan counties and communities. Volume Two has been expanded from last year to provide additional local information.

Your comments about this report are important to us. If you discover something that you think would be helpful to see next year, please let us know. We rely on your input to make this document user friendly and a valued technical resource.

This report will also be available after December 1999 on the internet at [www.ohsp.state.mi.us](http://www.ohsp.state.mi.us).

A handwritten signature in cursive script that reads "Betty J. Mercer".

BETTY J. MERCER  
Division Director  
Office of Highway Safety Planning





## **UD-10 (FRONT)**

## **UD-10 (BACK)**



## MICHIGAN VEHICLE CODE Public Act 300 of 1949

Edited by the Office of Highway Safety Planning for discussion purposes.

*Editorial remarks by OHSP appear in italic print.*

**MCL 257.622, Amended 1967** - The driver of a motor vehicle involved in an accident that injures or kills any person, or that damages property to an apparent extent totaling \$400 or more, shall immediately report that accident at the nearest or most convenient police station, or to the nearest or most convenient police officer. The officer receiving the report, or his or her commanding officer, shall immediately forward each report to the director of State Police on forms prescribed by the director of State Police (*State of Michigan Traffic Crash Report, also known as the UD-10*). The forms shall be completed in full by the investigating officer. The director of State Police shall analyze each report relative to the cause of the reported accident and shall prepare information compiled from reports filed under this section for public use. A copy of the report . . . shall be retained for at least three years at the local police department, sheriff's department, or local state police post making the report. (*As the repository of UD-10s submitted by all Michigan law enforcement agencies, the Department of State Police microfilms all UD-10s received at its Criminal Justice Data Center. The Data Center retains a microfilm copy of UD-10s for a period including the current processing year plus the three previous years. Microfilm copies and electronic databases containing information from individual UD-10s for crashes prior to this time period are purged.*)

**MCL 257.624, Amended 1980** - (1) A report required by this chapter shall not be available for use in a court action, but a report shall be for the purpose of furnishing statistical information regarding the number and cause of accidents.

(2) The Office of Highway Safety Planning (OHSP) may authorize scientific studies and research for the reduction of death, injury, and property losses. All information, records of interviews, written reports, statements, notes, memoranda, or other data collected pursuant to the scientific studies and research conducted by the state, or by other persons, agencies, or organizations authorized by OHSP shall be used solely for the purpose of medical or scientific research and shall not disclose the name or identity of a person unless the person authorizes, in writing, the use of his or her name or identity. If a subject of the research study is deceased, the executor or heir of the deceased person may authorize, in writing, the disclosure of the deceased's name or identity. The furnishing of information to OHSP or to a representative of an authorized study or research project shall not subject a person, hospital, sanitarium, rest home, nursing home, or other person or agency furnishing the information to any action for damages or other relief. The information, records, reports, statements, notes, memoranda, or other data shall not be admissible as evidence in a court or before any other tribunal, board, agency, or person. A person participating in an authorized study or research project shall not disclose, directly or indirectly, the information so obtained except in strict conformity with the research project.



## ABBREVIATIONS & ACRONYMS

- **BAC** **Bodily Alcohol Content** (formerly referred to as Blood Alcohol Content or Blood Alcohol Concentration). Determination of percent by weight of ethyl alcohol in blood. Usually measured in grams.
- **CJDC** **Criminal Justice Data Center.** A division of the Michigan Department of State Police.
- **CRD** **Child Restraint Device.** Also called child safety seats.
- **FHWA** **Federal Highway Administration.** A part of the United States Department of Transportation.
- **HBD** **Had Been Drinking** and/or under the influence of drugs.
- **HNBD** **Had Not Been Drinking** and/or under the influence of drugs.
- **KABC** Injury severity scale for traffic crash-related injuries: **K - Fatal, A - Incapacitating, B - Nonincapacitating, C - Possible.** See Glossary for definitions.
- **MALI** **Michigan Accident Location Index** (pronounced “MAY-lie”)
- **MDCH** **Michigan Department of Community Health** (formerly Michigan Department of Public Health)
- **MDOS** **Michigan Department of State**
- **MDOT** **Michigan Department of Transportation** (pronounced “EM-dot”)
- **NHTSA** **National Highway Traffic Safety Administration** (pronounced “NIT-zah”). A part of the United States Department of Transportation.
- **OHSP** **Office of Highway Safety Planning.** A division of the Michigan Department of State Police.
- **OUIL** **Operating Under the Influence of Liquor.** More serious of the drinking and driving violations in Michigan. Refers to driving with bodily alcohol content of 0.10g or more.
- **OWI** **Operating While Impaired.** Less serious of the drinking and driving violations in Michigan. Refers to driving with bodily alcohol content levels of 0.08g or 0.09g.
- **PDO** **Property Damage Only.** Refers to a traffic crash lacking personal injuries.
- **UD-10** Form number ascribed to *Michigan Traffic Crash Report* form, official document used to report traffic crashes in Michigan.
- **UMTRI** **University of Michigan Transportation Research Institute** (pronounced “UM-tree”)
- **USDOT** **United States Department of Transportation**
- **VMT** **Vehicle Miles Traveled** The estimated total number of miles traveled annually by motor vehicles on Michigan trafficways.

# GLOSSARY

- **Crash Rate** - The number of crashes per 100 million vehicle miles traveled.
- **Crash Type** - A crash is typed by the first injury or damage-producing event, which may or may not be the most serious or significant event.
- **Death Rate** - Deaths per 100 million vehicle miles.
- **Driver/Operator** - The person who is in actual physical control of a vehicle in transit.
- **All Drivers** - Includes deceased drivers, out-of-state drivers with Michigan violations, former licensed drivers who hold expired licenses, and no license holders (QVF - Qualified Voter File, Child Support, Identification Card holders). Excludes records with sex code other than M or F, a zero birth date, or a birth date with non-numeric characters.
- **Drivers of Record** - Includes all valid drivers, plus any invalid drivers with any conviction; FAC/FCJ (Failure to Appear in Court/Failure to Comply with Judgement), crash involvement, or action during the listed time period.
- **Fatal Crash** - A fatality is counted when a person dies due to injuries from a traffic crash. Prior to 1979 deaths were counted if they occurred up to one year after the crash, in 1979 this time period was reduced to 90 days. In 1988 this was further reduced to 30 days.
- **Had Been Drinking (HBD) Crash** - Drinking and/or drug use prior to the crash by a driver, pedestrian, or cyclist as reported by the police, the coroner, or other accepted authorities.
- **Injury Severity**
  - K (Fatal)** - Any injury that results in death.
  - A (Incapacitating Injury)** - Any injury, other than a fatal injury, that prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.
  - B (Nonincapacitating Injury)** - Any injury not incapacitating but evident to observers at the scene of the crash in which the injury occurred.
  - C (Possible Injury)** - Any injury reported or claimed that is not a fatal injury, incapacitating injury or nonincapacitating injury.
- **In Transport** - Denotes a motor vehicle in motion or on a roadway.
- **Most Severe Outcome in Crash** - The most severe injury sustained by any person involved in the crash, or property damage only.
- **Most Severe Outcome in Vehicle** - The most severe injury sustained by any person in the vehicle, or property damage only.
- **Motor Vehicle Crash** - A crash that involves a motor vehicle in transport on a public trafficway (in Michigan) and results in injury, death or at least \$400.00 in property damage.
- **Noncollision** - A crash that does not involve a collision with another motor vehicle. Types of noncollision crashes include; explosion or fire in vehicle, rollover, immersion, etc.
- **Occupant** - Any person in or on a motor vehicle, this includes the driver.
- **Property Damage Only (PDO) Crash** - A crash that results in no fatalities or injuries, with a value of \$400.00 as a reporting threshold.
- **Traffic Unit** - Anything in transit on a public trafficway (i.e., motor vehicle, motorcycle, bicycle, pedestrian, snowmobile, farm equipment).
- **Transition Area** - Increase or decrease in the number or travel lanes.
- **Valid Drivers** - Excludes non-valid categories such as no license, out-of-state drivers with Michigan violations, deceased, and licenses expired three months prior to Department of State run date.
- **"Zero Tolerance"** - Law which began November 1, 1994, making it illegal for any person in Michigan under the age of 21 to consume alcohol in the presence of a law enforcement officer, or to have a BAC of 0.02 percent or more. Sometimes referred to as Michigan's "Point Oh Two" law.

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## COUNTY/COMMUNITIES

The following information for County/Communities can now be found in a separate volume entitled **1998 Michigan Traffic Crash Facts for County/Communities**

*Traffic Crash Summary • Alcohol Involved Traffic Crash Summary*

*Deer Involved/Associated Traffic Crash Summary • 1994 - 1998 County Rankings*





**Quick Facts  
& Figures**

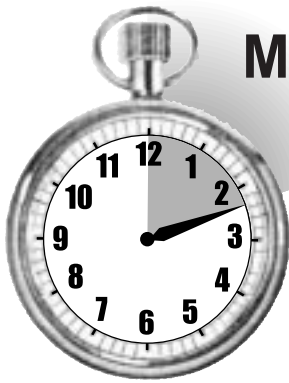
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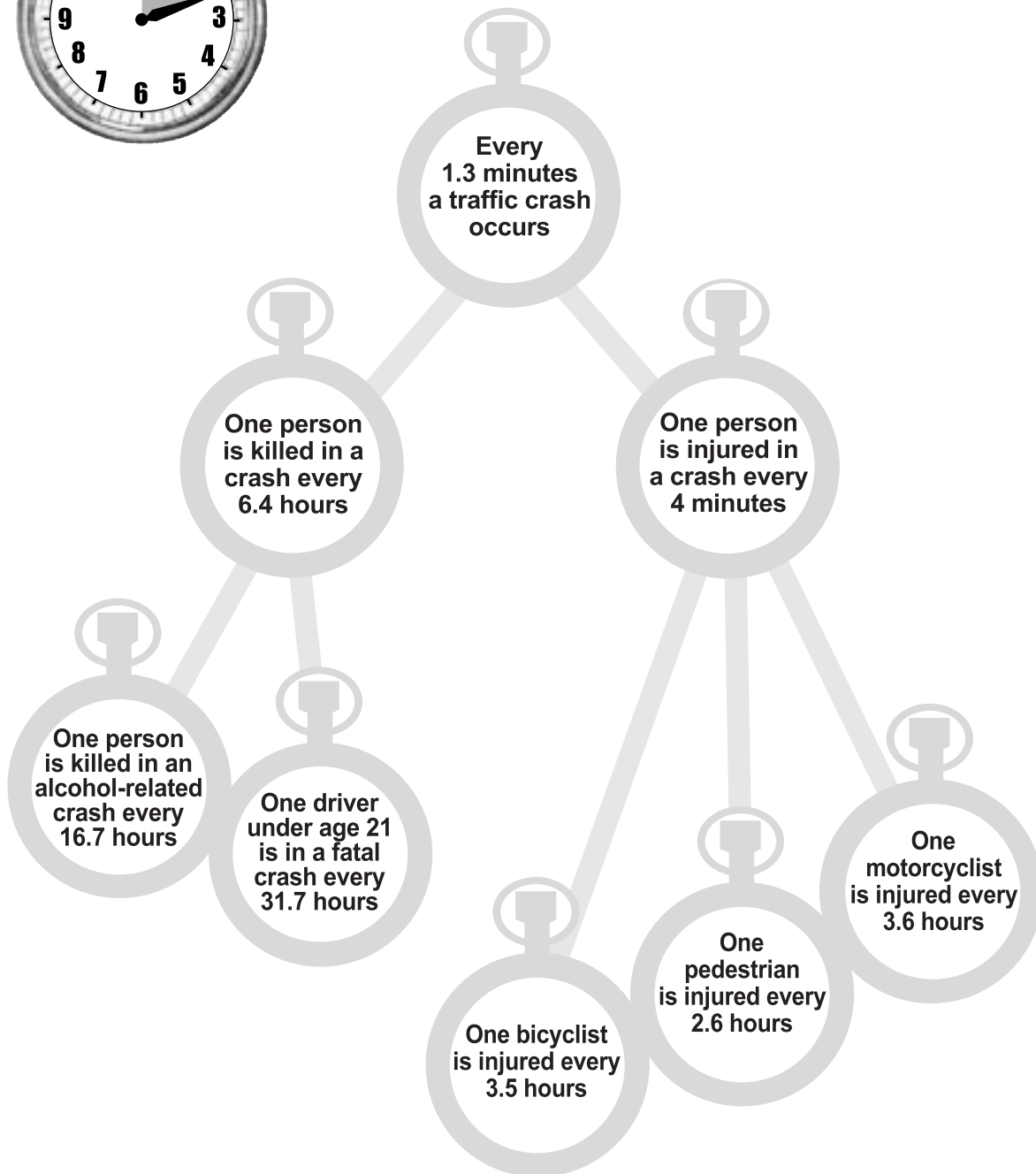
## 1998 QUICK FACTS

- ★ Some exposure factor comparisons between 1998 and 1997 show motor vehicle registrations rose **1.4** percent, number of Drivers of Record on Michigan roads increased **0.8** percent, and vehicle mileage increased **2.7** percent.
- ★ The 1998 death rate fell to **1.5** deaths per 100 million miles of travel. This is a decrease of **6.3** percent from the 1997 death rate of **1.6**, and it is below the ten-year average of **1.7** (1989-1998).
- ★ There were **1,367** persons killed and **131,578** persons injured in **403,766** reported motor vehicle traffic crashes in Michigan during 1998. Compared with 1997 experience, deaths decreased **5.5** percent, injuries decreased **4.3** percent, and total reported crashes showed a decrease of **5.2** percent.
- ★ This year's death toll of **1,367** was down **5.5** percent from the 1997 figure of **1,446**.
- ★ The **1,367** persons killed were the result of **1,235** fatal crashes for an average of **1.1** deaths per fatal crash.
- ★ There were **403,766** reported crashes of which **1,235** were fatal, **91,137** were personal injury, and **311,394** were property damage only crashes.
- ★ Of all fatal crashes, **29.3** percent occurred at intersections.
- ★ Of all fatal crashes, **38.5** percent involved at least one drinking operator or pedestrian.
- ★ Excessive speed was indicated as the hazardous action by **15.3** percent of the drivers involved in fatal crashes.
- ★ In 1998 there were **121,949** single vehicle crashes, a decrease of **5.2** percent over last year's count of **128,617**.
- ★ Of the **403,766** total crashes, **121,949 (30.2%)** involved one vehicle.
- ★ Of the **1,235** fatal crashes, **581 (47.0%)** involved one vehicle.
- ★ Of the **476** alcohol-related fatal crashes, **297 (62.4%)** involved one vehicle. This is a **5.7** percent increase from last year's figure of **281** single vehicle, alcohol-related fatal crashes.
- ★ Of the **2,029** drivers involved in fatal crashes, **13.6** percent were under 21 years of age and **22.0** percent of all drivers involved in fatal crashes were under 25 years of age.
- ★ In the last five years (1994-1998), **7,274** persons have been killed in Michigan traffic crashes. This is an average of **1,455** per year. During the previous five-year period (1993-1997), **7,321** persons were killed, for an average of **1,464** per year.
- ★ Of the **9,817,242** persons living in Michigan [1] one out of every **7,182** was killed in a traffic crash; one out of every **75** persons was injured.
- ★ For each person killed there were **96.3** persons injured.

- ★ There were **131,578** persons injured, crippled, or maimed in crashes.
- ★ According to figures provided by the Michigan Department of Community Health [2], accidental death for children in motor vehicle crashes routinely outpaces the next two most frequent causes: fire and drowning.
- ★ According to the Michigan Department of Community Health, four out of five accidental deaths for teenagers and young adults (ages 15-24) are due to motor vehicle crashes.
- ★ The pedestrian death toll for Michigan stands at **172** persons. This represents an increase of **5** deaths over the 1997 figure.
- ★ For each pedestrian killed, there were **19.3** pedestrians injured.
- ★ Of the pedestrians killed, **46.5** percent were killed while crossing streets other than at intersections.
- ★ Of all pedestrians killed, **23.8** percent were under the age of 21 years and **31.4** percent were 55 and older.
- ★ During the past five years, a total of **903** pedestrians have been killed, an average of **181** per year.
- ★ During the past five years, a total of **145** bicyclists have been killed, an average of **29** per year.
- ★ Children under the age of 16 accounted for **40.7** percent of the bicycle deaths.
- ★ Of the **735,327** drivers and injured passengers involved in crashes, **579,840** or **78.9** percent were *reported* to have been using occupant restraints. Restraint usage among fatal victims, where usage was known, was reported to be **43.8** percent in 1998.
- ★ Motor vehicle occupants age 75 to 98 had the highest reported restraint usage (**93.0%**) among age groups. Children age 11 to 15 had the lowest reported restraint usage (**68.6%**).
- ★ The economic loss in Michigan traffic crashes amounted to **\$9,551,841,400**.



## Michigan's Crash Watch 1998



## WHO DIED IN MICHIGAN MOTOR VEHICLE CRASHES IN 1998?

### THE DAILY TOLL

- ★ **Four people died everyday.**
- ★ One person died in an alcohol-related crash everyday.
- ★ The daily economic cost to Michigan residents was:

\$ \$ \$ \$ \$ **26.2 MILLION DOLLARS** \$ \$ \$ \$ \$

11.3 million — for fatalities

13.4 million — for injuries

1.5 million — for property damage

### THE ANNUAL TOLL

- ★ The economic cost of motor vehicle crashes to Michigan residents was \$9.6 billion last year.
- ★ \$4.1 billion in economic loss was due to Michigan motor vehicle fatalities.
- ★ Alcohol-related fatalities amounted to 525 people in 1998.
- ★ 1,367 people died in 1998 in a motor vehicle crash.
- ★ **Every 6 hours and 24 minutes one person died in a motor vehicle crash.**

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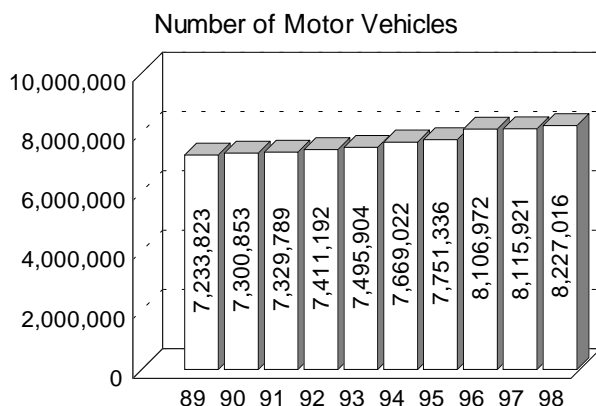
## **Historical Information**





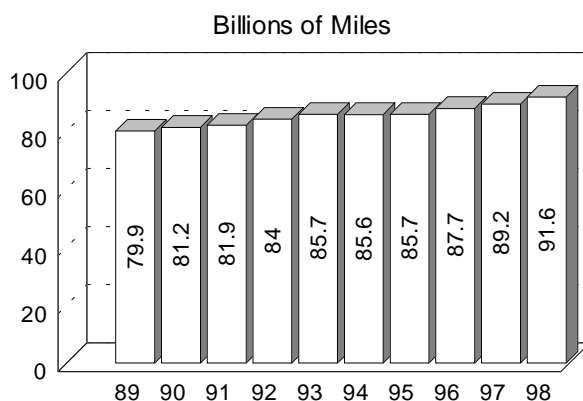
# 10 YEAR

## VEHICLE REGISTRATIONS



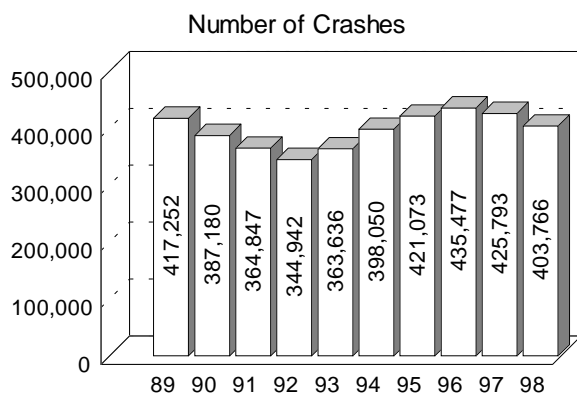
Vehicle Registrations have been increasing steadily since 1988, reaching 8,227,016 in 1998.

## VEHICLES MILES TRAVELED



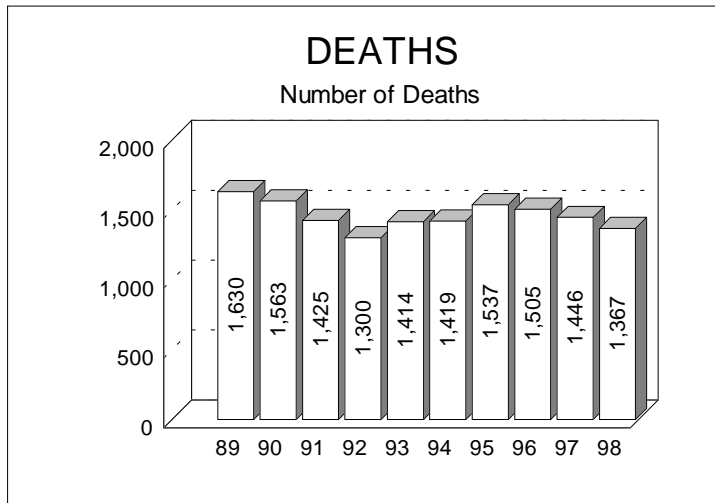
Vehicle miles of travel have increased 14.6 percent since 1989, reaching 91.6 billion miles in 1998.

## CRASHES

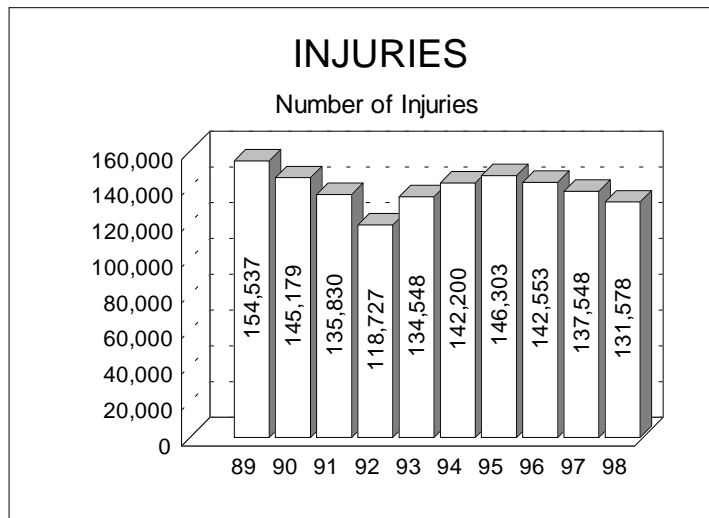


There were 403,766 total crashes statewide in 1998, a 5.2 percent decrease from 1997.

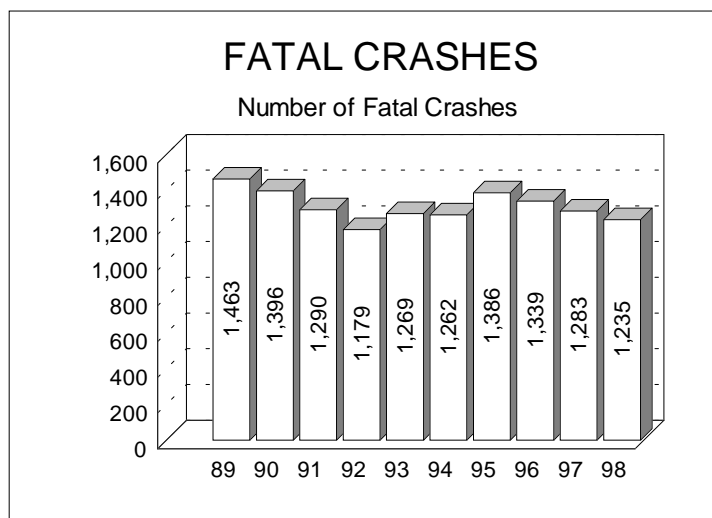
## 10 YEAR TRENDS (continued)



Number of deaths has remained below the high of 1,630 in 1989. In 1998, 1,367 people died in motor vehicle crashes, a decline of 5.5 percent from 1997.



131,578 people received nonfatal injuries in Michigan motor vehicle crashes in 1998, down 14.9 percent from the high of 154,537 in 1989.

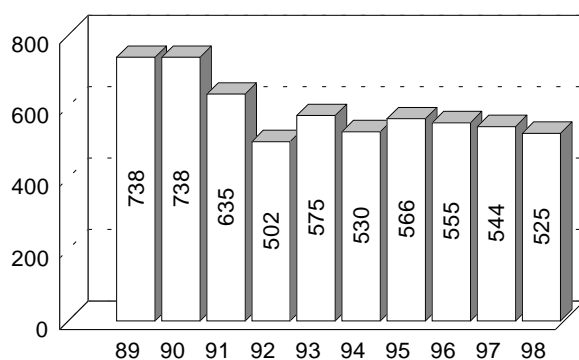


After reaching a peak in 1989, fatal crashes had declined until 1992. In 1998, there were 1,235 fatal crashes, down 3.7 percent from 1997.

# 10 YEAR

## HBD FATALITIES

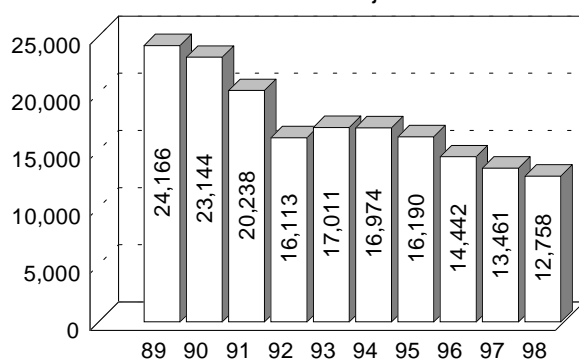
Number of HBD Fatalities



Deaths in alcohol related crashes have decreased over the last ten years. There were 525 HBD fatalities in 1998, down 28.9 percent from 1989.

## HBD INJURIES

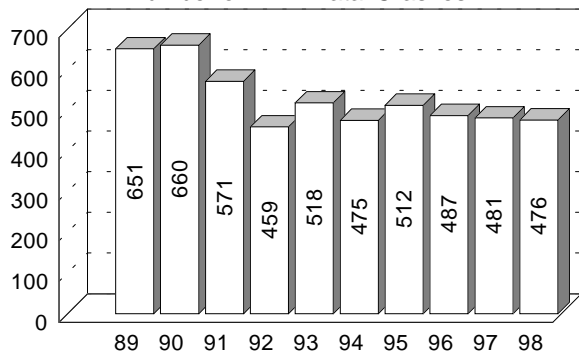
Number of HBD Injuries



Mirroring the trend in deaths, HBD injuries have decreased over the last ten years. There were 12,758 injuries in 1998, down 47.2 percent from 1989.

## HBD FATAL CRASHES

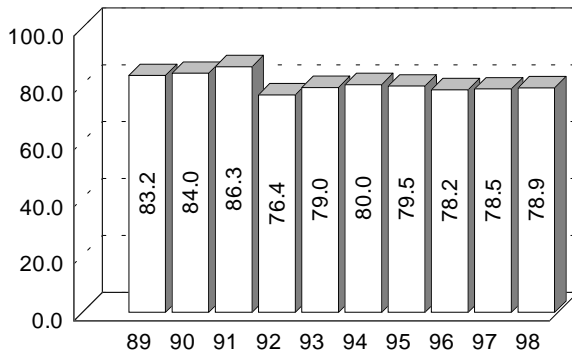
Number of HBD Fatal Crashes



Alcohol involvement in fatal crashes has decreased 26.9 percent since 1989. In 1998, there were 476 HBD fatal crashes, down 1.0 percent from 1997.

## RESTRAINT USAGE

Annual Average Percentage of Occupants



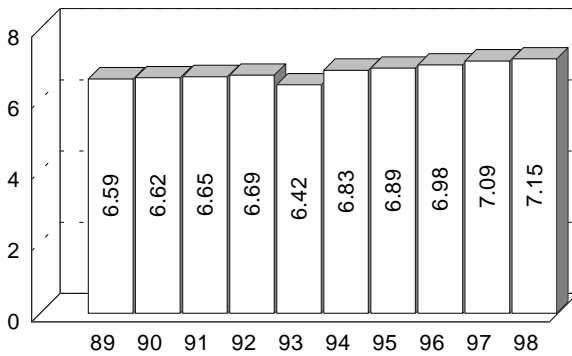
## 10 YEAR TRENDS (continued)

The percentage of motor vehicle occupants using restraints as reported by police in traffic crashes increased dramatically following implementation of Michigan's safety belt use law in July 1985. The ten-year average percentage is 80.4.

Note: Please see additional restraint usage information on page 148.

## DRIVERS IN MICHIGAN

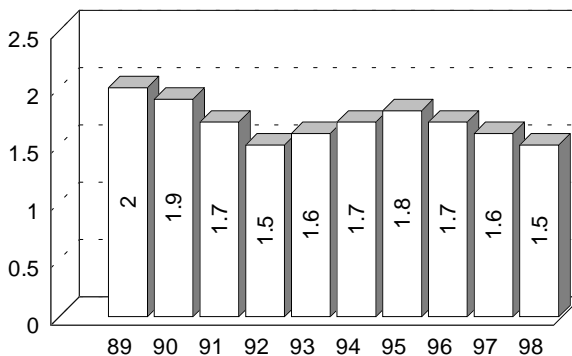
Drivers of Record in Millions



The number of Drivers of Record in Michigan has increased 8.5 percent in the last decade.

## MILEAGE DEATH RATE

Deaths Per 100 Million Vehicle Miles

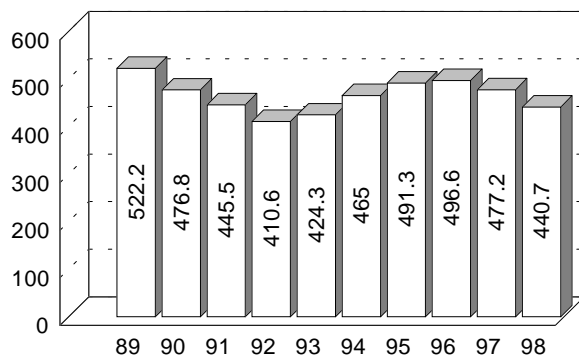


The 1.5 death rate in 1998 is a 25 percent decrease from 1989.

# 10 YEAR

## TOTAL CRASH RATE

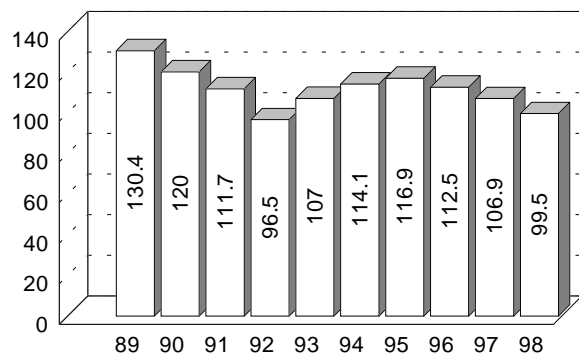
All Crashes Per 100 Million Vehicle Miles



The 440.7 total crash rate in 1998 is a 7.6 percent decrease from 1997, and a 15.6 percent decrease from 1989.

## PERSONAL INJURY CRASH RATE

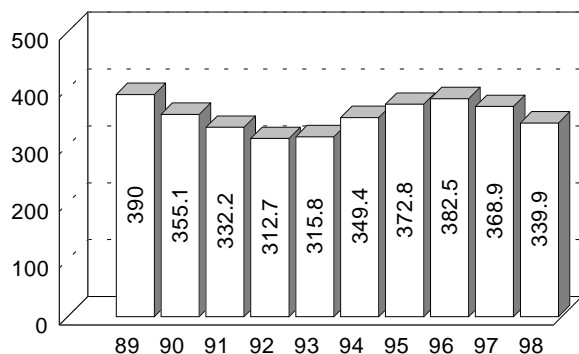
Injury Crashes Per 100 Million Vehicle Miles



The 99.5 personal injury crash rate in 1998 is a 6.9 percent decrease from 1997, and a 23.7 percent decrease from 1989.

## PROPERTY DAMAGE CRASH RATE

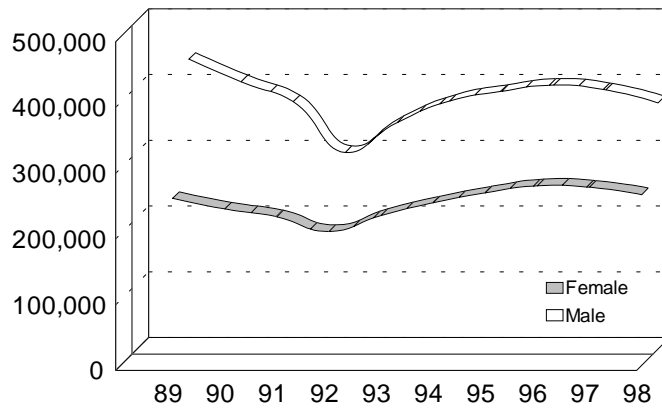
Property Damage Crashes Per 100 Million Vehicle Miles



The 339.9 property damage crash rate in 1998 is a 7.9 percent decrease from 1997, and a 12.8 percent decrease from 1989.

## MALE vs. FEMALE DRIVERS

Number in All Crashes

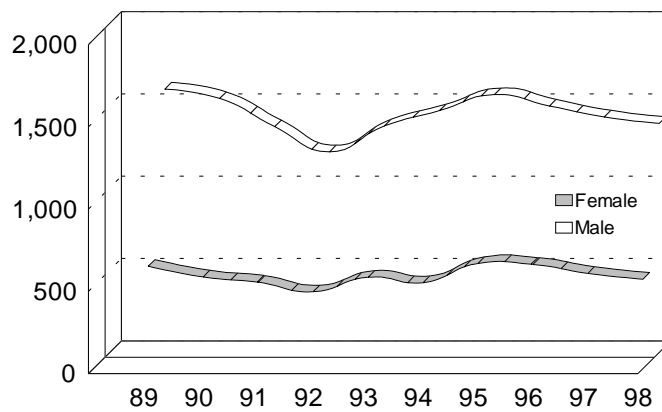


## 10 YEAR TRENDS (continued)



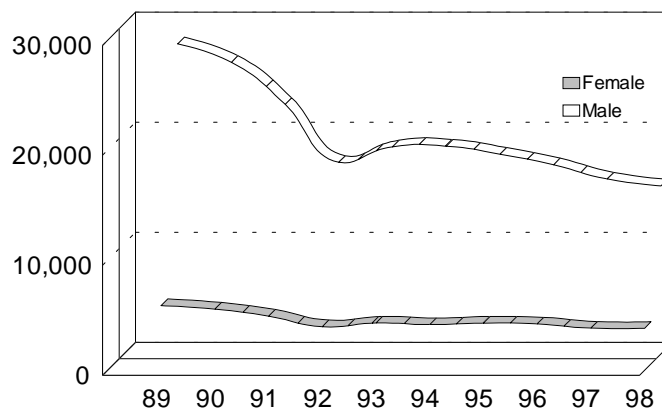
## MALE vs. FEMALE DRIVERS

Number in Fatal Crashes



## MALE vs. FEMALE DRINKING DRIVERS

Number in All Crashes



# 10 YEAR

DRIVERS IN ALL CRASHES		
	Male	Female
1989	440,885	254,185
1990	406,500	238,045
1991	376,157	226,136
1992	299,006	203,795
1993	344,859	228,287
1994	377,212	247,333
1995	392,103	262,577
1996	401,350	273,361
1997	394,044	271,131
1998	374,505	259,843

The crash data collection form (UD-10) was changed in 1992. Prior to 1992, drivers whose gender was not identified were coded as male. 9.5% of all drivers were coded as unknown gender in 1998.

DRIVERS IN FATAL CRASHES		
	Male	Female
1989	1,600	624
1990	1,542	558
1991	1,371	526
1992	1,219	468
1993	1,376	557
1994	1,468	524
1995	1,566	640
1996	1,497	634
1997	1,430	580
1998	1,391	545

Male drivers make up 70-75 percent of all drivers in fatal crashes.

Female driver involvement in fatal crashes generally follows overall fatal crash trends.

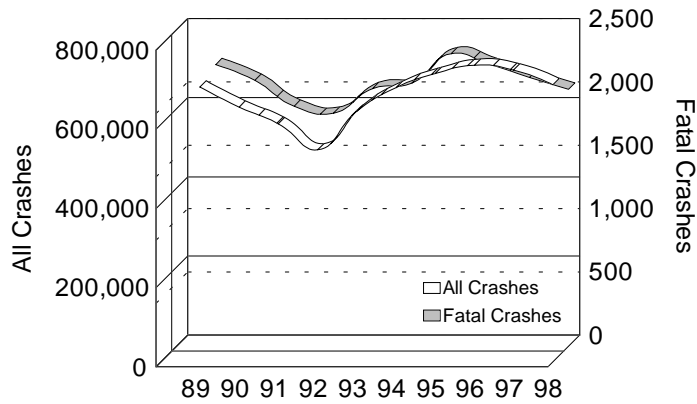
DRINKING DRIVERS IN ALL CRASHES		
	Male	Female
1989	28,185	5,889
1990	26,498	5,568
1991	22,679	4,930
1992	17,414	3,976
1993	18,831	4,308
1994	18,889	4,163
1995	18,153	4,300
1996	17,186	4,225
1997	15,901	3,842
1998	15,280	3,833

Males drivers have always accounted for the majority of all drinking drivers. The number of male drinking drivers decreased 45.8 percent from 1989 to an all time low of 15,280 in 1998.

The number of female drinking drivers decreased to the lowest number of the ten year period, 3,833 in 1998.

## ALL DRIVERS

Number in All and Fatal Crashes

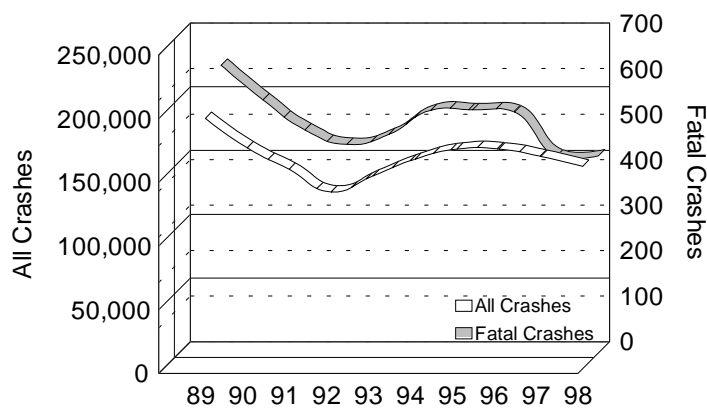


## 10 YEAR TRENDS (continued)



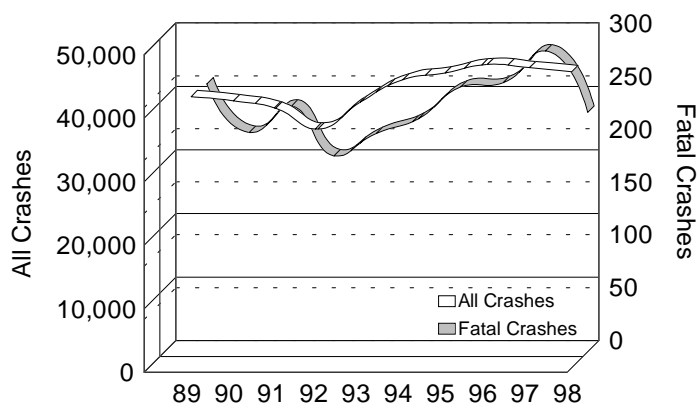
## TEEN/YOUNG ADULT DRIVERS

Age 16-24: Number in All and Fatal Crashes



## ELDERLY DRIVERS

Age 65-98: Number in All and Fatal Crashes





# 10 YEAR

ALL DRIVERS		
	All Crashes	Fatal Crashes
1989	695,070	2,224
1990	644,545	2,100
1991	602,293	1,897
1992	536,279	1,841
1993	633,930	2,035
1994	693,575	2,078
1995	729,050	2,311
1996	750,103	2,226
1997	737,939	2,124
1998	701,056	2,029

Driver involvement in all crashes increased 0.9 percent over the ten year period.

Driver involvement in fatal crashes decreased 8.8 percent over the ten year period.

TEEN/YOUNG ADULT DRIVERS		
	All Crashes	Fatal Crashes
1989	196,547	632
1990	173,316	556
1991	156,548	490
1992	138,781	458
1993	151,284	480
1994	164,421	533
1995	172,373	534
1996	172,442	529
1997	166,693	432
1998	158,887	433

Teen/Young Adult Drivers (age 16-24) represent 15.6 percent of the licensed drivers in 1998.

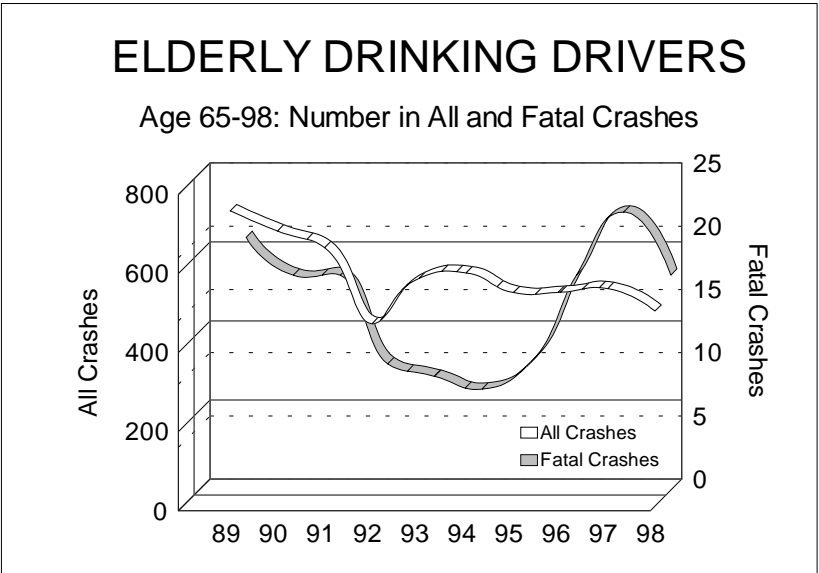
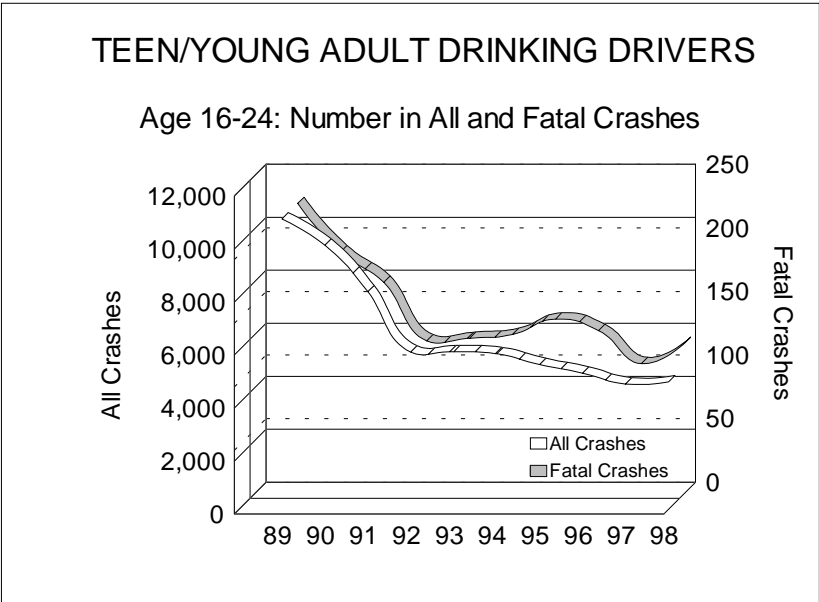
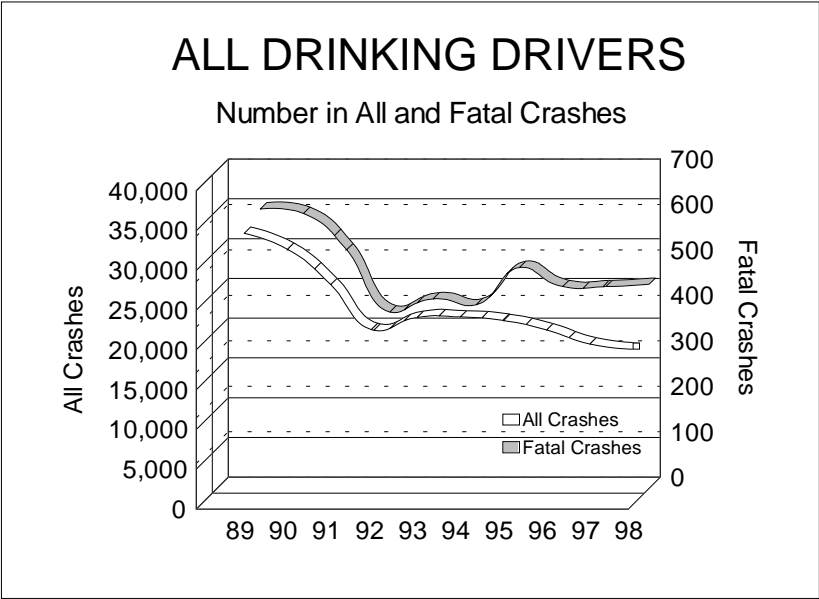
The number of Teen/Young Adult drivers in all crashes has decreased by 19.2 percent since 1989. Their involvement in fatal crashes decreased 31.5 percent during the same time period.

ELDERLY DRIVERS		
	All Crashes	Fatal Crashes
1989	42,636	253
1990	41,992	207
1991	40,795	232
1992	37,539	185
1993	41,753	206
1994	45,280	220
1995	46,371	250
1996	47,695	254
1997	47,190	284
1998	46,582	226

Elderly Drivers (age 65-98) represent 13.3 percent of the licensed drivers in 1998.

The number of drivers age 65 and older in all crashes has increased 9.3 percent since 1989. Their involvement in fatal crashes decreased 10.7 percent during the same time period.

# 10 YEAR TRENDS (continued)



# 10 YEAR

DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1989	34,074	615
1990	32,066	605
1991	27,609	525
1992	21,879	388
1993	23,500	417
1994	23,546	404
1995	23,097	486
1996	21,919	444
1997	20,139	444
1998	19,483	449

Drinking driver involvement in all crashes decreased 42.8 percent over the ten year period.

Drinking driver involvement in fatal crashes decreased 27 percent over the ten year period.

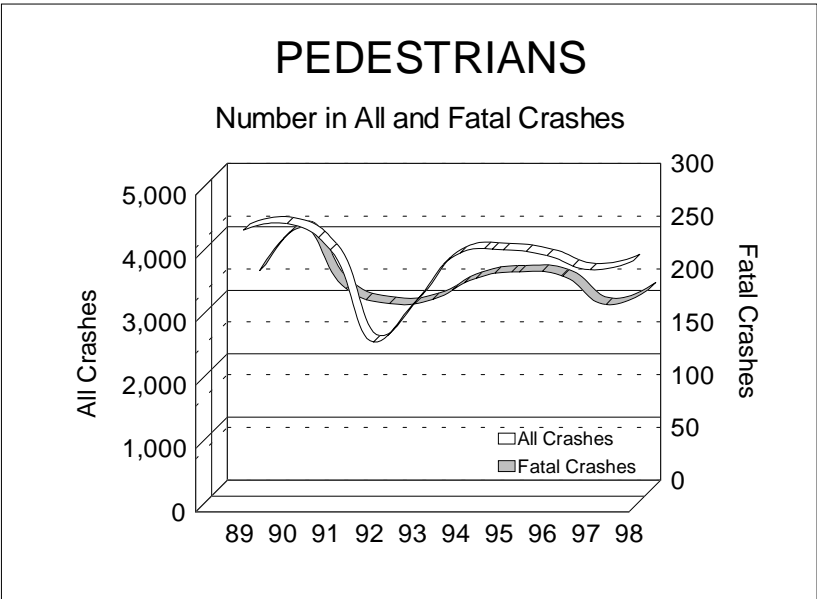
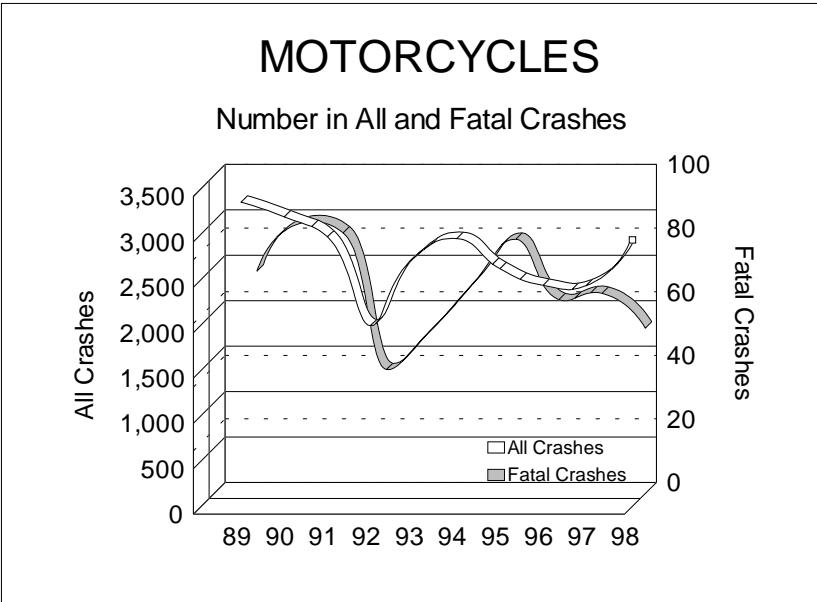
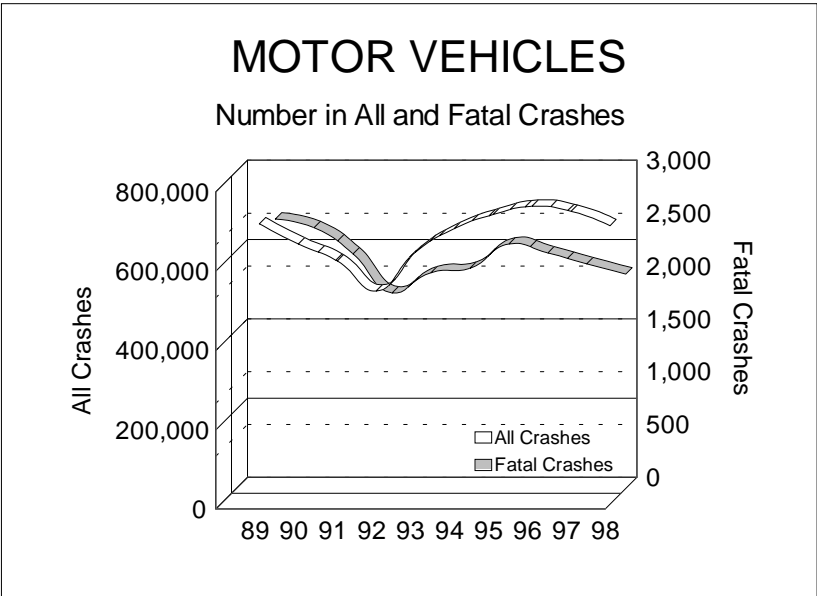
TEEN/YOUNG ADULT DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1989	10,957	228
1990	9,965	190
1991	8,210	166
1992	5,934	120
1993	5,947	122
1994	5,868	125
1995	5,461	137
1996	5,142	128
1997	4,731	102
1998	4,812	118

The number of Teen/Young Adult drinking drivers in all crashes has decreased by 56.1 percent since 1989. Their involvement in fatal crashes decreased 48.2 percent during the same time period.

ELDERLY DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1989	747	20
1990	696	17
1991	654	17
1992	461	10
1993	576	9
1994	590	8
1995	540	10
1996	541	17
1997	550	22
1998	493	17

The number of elderly drinking drivers (age 65-98) in all crashes has decreased 34 percent since 1989. Their involvement in fatal crashes has fluctuated over the same time period with a low of 8 in 1994.

# 10 YEAR TRENDS (continued)



# 10 YEAR

MOTOR VEHICLES		
	All Crashes	Fatal Crashes
1989	707,718	2,550
1990	656,750	2,467
1991	613,936	2,220
1992	538,025	1,851
1993	635,711	2,042
1994	695,423	2,084
1995	730,952	2,313
1996	751,804	2,229
1997	739,538	2,126
1998	702,680	2,029

There has been a 20.4 percent decline in the number of motor vehicles involved in fatal crashes from 2,550 in 1989 to 2,029 in 1998.

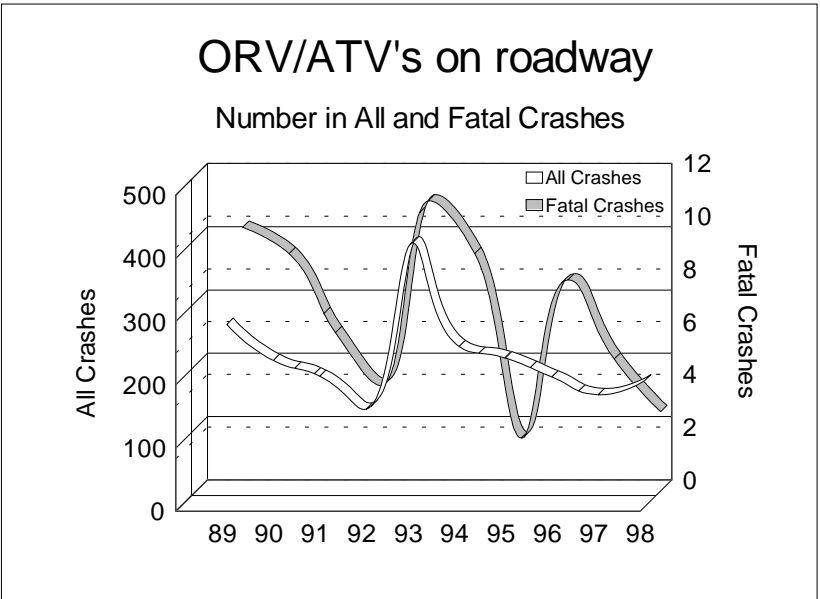
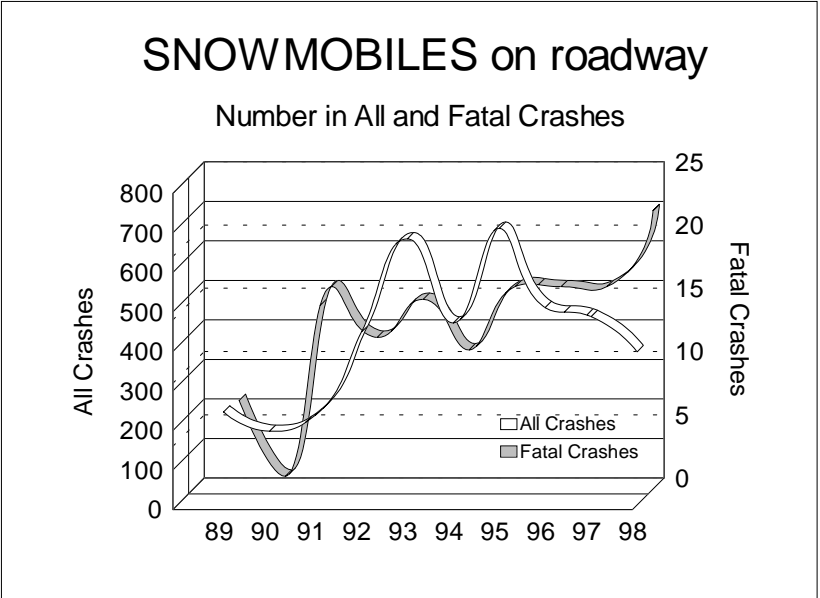
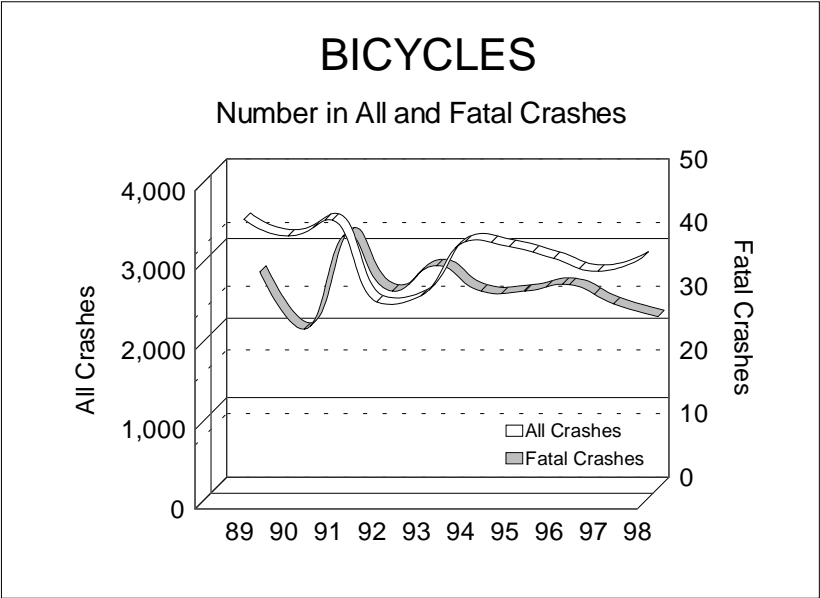
MOTORCYCLES		
	All Crashes	Fatal Crashes
1989	3,383	70
1990	3,222	85
1991	3,001	82
1992	2,022	39
1993	2,768	51
1994	2,982	66
1995	2,651	80
1996	2,468	61
1997	2,465	63
1998	2,931	52

The number of motorcycles involved in fatal crashes decreased by 25.7 percent between 1989 and 1998.

PEDESTRIANS		
	All Crashes	Fatal Crashes
1989	4,374	209
1990	4,476	250
1991	4,061	192
1992	2,609	178
1993	3,275	182
1994	4,014	202
1995	4,064	208
1996	3,971	204
1997	3,749	177
1998	3,891	192

There were 192 pedestrians involved in fatal crashes in 1998, up 8.5 percent from the ten year low of 177 in 1997.

# 10 YEAR TRENDS (continued)



# 10 YEAR

BICYCLES		
	All Crashes	Fatal Crashes
1989	3,582	34
1990	3,372	25
1991	3,573	40
1992	2,544	31
1993	2,620	35
1994	3,298	31
1995	3,239	31
1996	3,091	32
1997	2,929	29
1998	3,097	27

Bicycles involved in fatal crashes decreased 20.6 percent over the ten year period.

SNOWMOBILES on Michigan roadways		
	All Crashes	Fatal Crashes
1989	235	7
1990	186	1
1991	227	16
1992	437	12
1993	673	15
1994	460	11
1995	700	16
1996	499	16
1997	476	16
1998	387	22

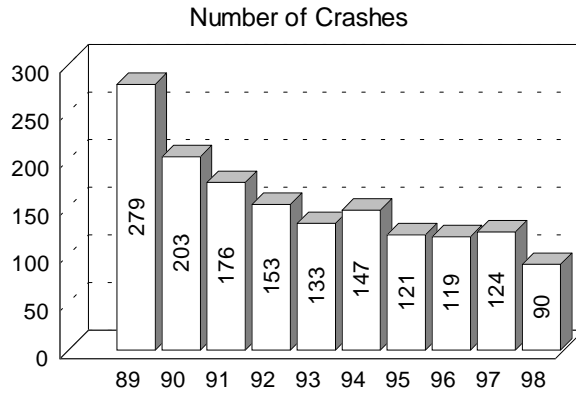
The number of snowmobiles involved in fatal crashes on Michigan public roadways has increased 214.3 percent since 1989.

ORV/ATV's on Michigan roadways		
	All Crashes	Fatal Crashes
1989	288	10
1990	231	9
1991	206	6
1992	154	4
1993	417	11
1994	253	9
1995	235	2
1996	205	8
1997	177	5
1998	199	3

ORV/ATV's on Michigan public roadways involved in fatal crashes have fluctuated between a high of 11 in 1993 to a low of 2 in 1995.

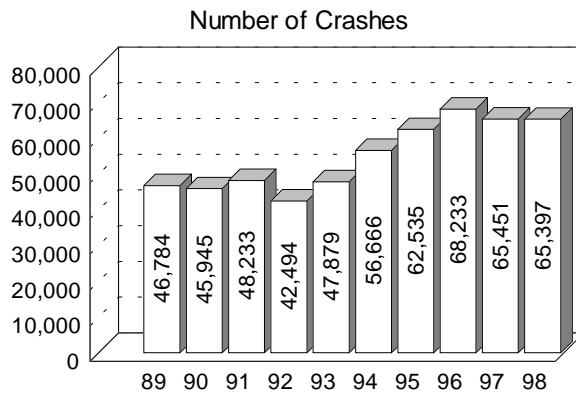
## 10 YEAR TRENDS (continued)

### VEHICLE-TRAIN CRASHES



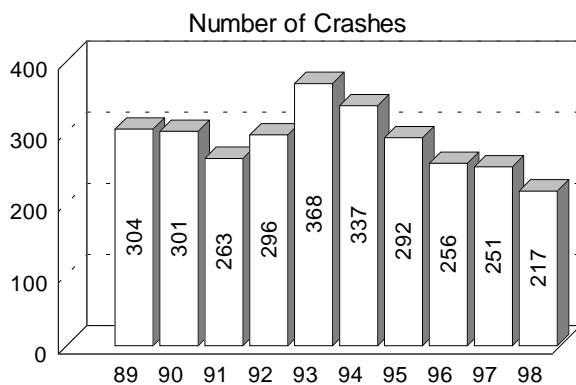
90 vehicle-train crashes occurred in 1998, a 27.4 percent decrease from 1997.

### VEHICLE-DEER CRASHES



There has been a 39.8 percent rise from 46,784 vehicle-deer crashes in 1989 to 65,397 in 1998.

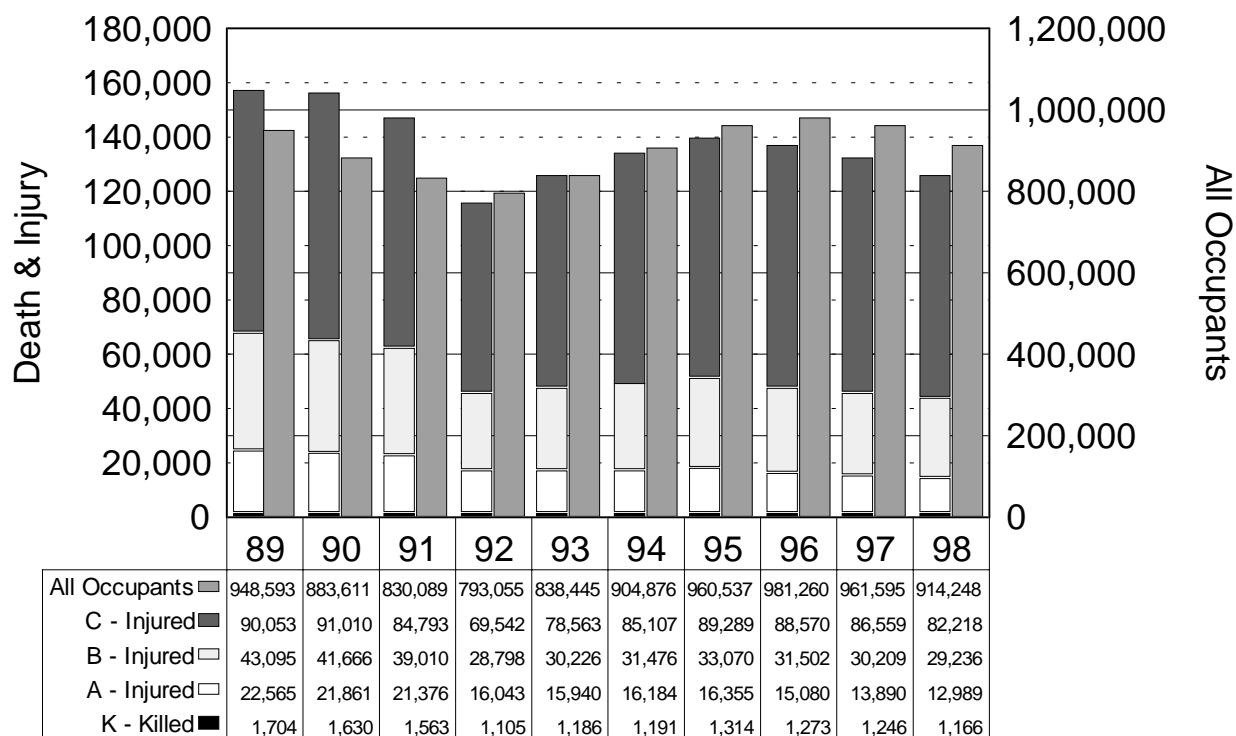
### FARM EQUIPMENT CRASHES



In 1998, there were 217 farm equipment crashes, down 41 percent from the 1993 high of 368.



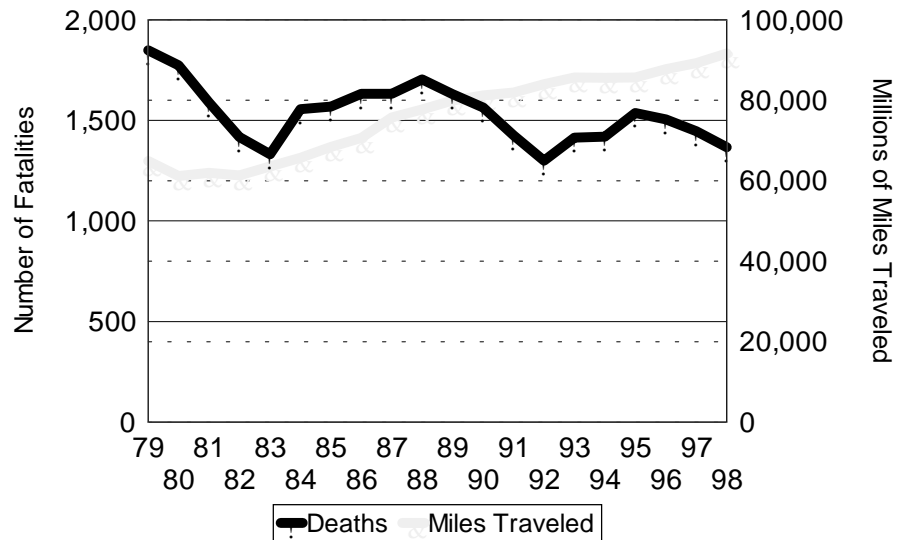
## DEATH AND INJURY PER CRASH INVOLVED OCCUPANT



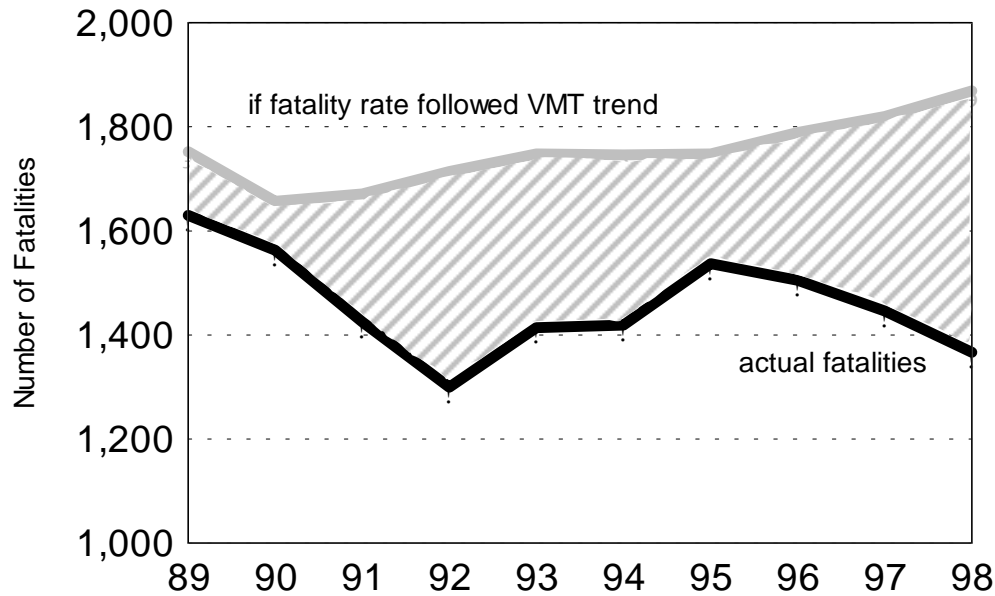
The proportion of death and injury to crash involved occupants has decreased over the last ten years. In 1998, 1,166 occupants of motor vehicles were fatally injured, 12,989 suffered an A (incapacitating) injury, 29,236 sustained a B (nonincapacitating) injury, and 82,218 sustained a C (possible) injury.

# 10 YEAR

## FATALITIES AND VMT TRENDS



## 10 Year Highlight



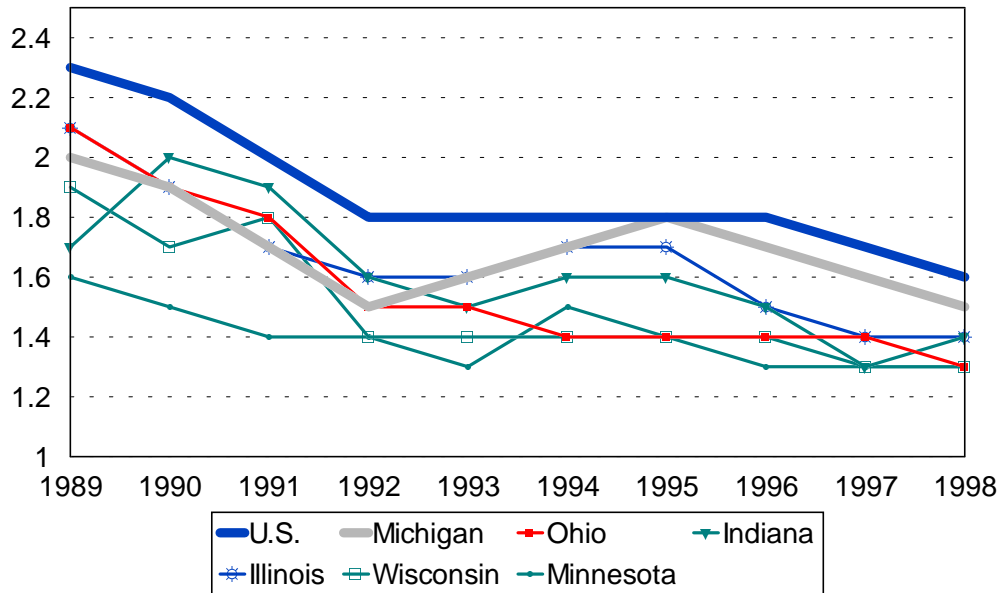
In the decade prior to 1989, the number of fatalities had been steadily increasing, following the VMT trend. A dramatic reversal in the fatality rate began in 1989. A projection of losses that would have been incurred if the fatality rate had continued to follow the VMT trend is provided above.



# 10 YEAR

## MILEAGE DEATH RATES 1989 - 1998

Comparison - Michigan to U.S. and Surrounding States



The chart above compares the Michigan mileage death rates (motor vehicle traffic deaths per 100,000,000 vehicle miles) to those of its neighboring states and the overall U.S. rates for a ten year period.

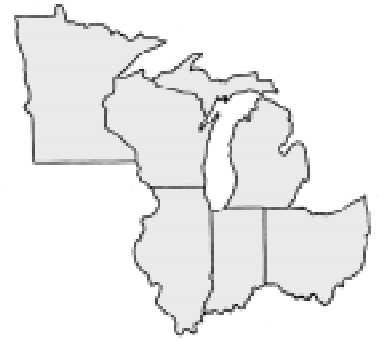
From 1989 to 1992, Michigan placed consistently in the middle of the pack, mirroring the U.S. trend towards a reduced fatality rate. Over the last five years, the Michigan mileage death rate has risen and fallen, never exceeding the U.S. rate.

	U.S.	Michigan	Ohio	Indiana	Illinois	Wisconsin	Minnesota
1989	2.3	2.0	2.1	1.7	2.1	1.9	1.6
1990	2.2	1.9	1.9	2.0	1.9	1.7	1.5
1991	2.0	1.7	1.8	1.9	1.7	1.8	1.4
1992	1.8	1.5	1.5	1.6	1.6	1.4	1.4
1993	1.8	1.6	1.5	1.5	1.6	1.4	1.3
1994	1.8	1.7	1.4	1.6	1.7	1.4	1.5
1995	1.8	1.8	1.4	1.6	1.7	1.4	1.4
1996	1.8	1.7	1.4	1.5	1.5	1.4	1.3
1997	1.7	1.6	1.4	1.3	1.4	1.3	1.3
1998	1.6	1.5	1.3	1.4	1.4	1.3	1.3

U.S. data for this table and tables on the following page were provided by the National Safety Council [3]. State data for this table and tables on the following page were provided by Ohio [4], Indiana [5], Illinois [6], Wisconsin [7], and Minnesota [8].

# 10

YEAR



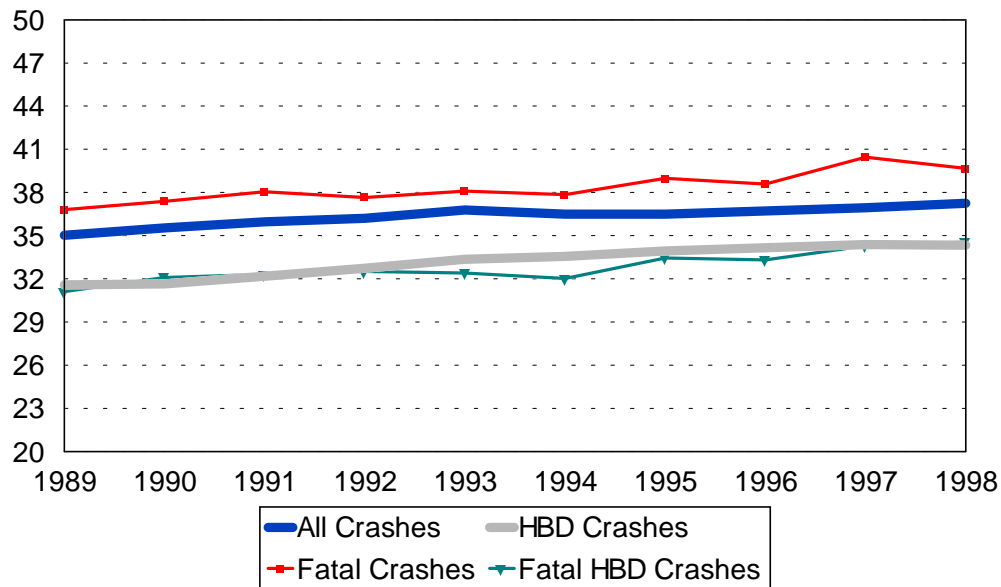
## MICHIGAN AND SURROUNDING STATES COMPARISON OF FATALITIES AND VMT

Year	U.S. Persons Killed	Michigan Persons Killed	Ohio Persons Killed	Indiana Persons Killed	Illinois Persons Killed	Wisconsin Persons Killed	Minnesota Persons Killed
1989	47,575	1,630	1,772	971	1,748	817	605
1990	46,814	1,563	1,637	1,049	1,589	763	568
1991	43,536	1,425	1,635	1,022	1,448	795	531
1992	40,982	1,300	1,440	901	1,384	645	581
1993	41,893	1,414	1,484	901	1,392	703	538
1994	42,700	1,419	1,368	974	1,554	706	644
1995	43,900	1,537	1,357	960	1,586	739	597
1996	43,300	1,505	1,395	982	1,477	759	576
1997	43,200	1,446	1,439	936	1,393	721	600
1998	41,200	1,367	1,423	978	1,393	709	650

Year	U.S. VMT	Michigan VMT	Ohio VMT	Indiana VMT	Illinois VMT	Wisconsin VMT	Minnesota VMT
1989	2,107	79.9	84.1	56.2	81.6	43.1	37.6
1990	2,148	81.2	88.2	53.7	83.6	44.3	38.8
1991	2,172	81.9	93.0	54.3	85.7	45.5	39.3
1992	2,240	84.0	95.2	57.1	87.9	47.5	41.3
1993	2,289	85.7	97.5	60.5	89.8	48.8	42.3
1994	2,347	85.6	99.0	62.1	92.1	50.3	43.4
1995	2,405	85.7	99.7	62.0	94.3	51.4	44.1
1996	2,467	87.7	102.8	66.0	96.9	52.6	45.2
1997	2,531	89.2	104.8	70.4	98.7	53.7	46.9
1998	2,618	91.6	106.0	70.7	100.9	56.0	48.5

VMT described in billions of miles

## AVERAGE AGE OF DRIVERS IN CRASHES 1989 - 1998



Reflecting the demographic trend of increasing age in the general population, the average age of crash-involved drivers has also increased. An aging driving population has implications for law enforcement prioritizing, highway design, traffic signing considerations, and Emergency Medical System procedures.

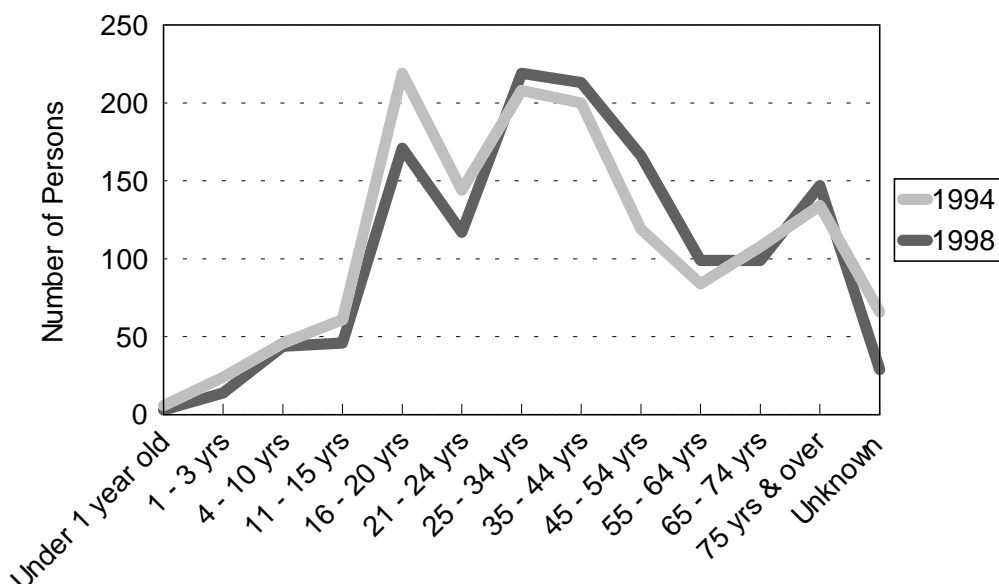


# 5 YEAR

## TREND DATA FOR FATALITIES

TREND DATA FOR FATALITIES	1994	1995	1996	1997	1998
Age of Persons Killed, Total					
Under 1 year old	6	6	9	1	3
1 - 3 years	24	23	22	13	14
4 - 10 years	46	48	41	43	44
11 - 15 years	61	51	66	42	46
16 - 20 years	219	215	211	168	171
21 - 24 years	144	149	125	103	117
25 - 34 years	208	254	261	245	219
35 - 44 years	200	242	215	174	213
45 - 54 years	119	140	158	133	166
55 - 64 years	84	99	89	86	99
65 - 74 years	108	116	106	111	99
75 years and over	134	152	157	158	147
Unknown	66	42	45	169	29
Totals	1,419	1,537	1,505	1,446	1,367

### Age of Persons Killed, Total



The chart above shows the total number of deaths in motor vehicle crashes in Michigan by age, comparing 1994 with 1998.

# 5

## YEAR

TREND DATA FOR FATALITIES	1994	1995	1996	1997	1998
---------------------------	------	------	------	------	------

### Age of Drivers Involved in Fatal Crashes

13 years and under	2	1	2	1	2
14 years	4	4	3	4	2
15 years	7	5	0	7	10
16 years	55	58	55	58	42
17 years	66	62	58	43	53
18 years	59	66	70	72	52
19 years	68	67	59	52	61
20 years	59	61	61	39	54
21 - 24 years	222	220	226	168	171
25 - 34 years	431	466	501	463	410
35 - 44 years	369	442	392	347	374
45 - 54 years	207	260	254	239	261
55 - 64 years	110	146	108	156	149
65 - 69 years	57	58	66	72	58
70 - 74 years	55	63	58	64	52
75 - 79 years	44	65	50	64	55
80 - 84 years	40	37	48	51	39
85 - 89 years	19	22	22	30	16
90 years and over	2	5	10	3	6
Unknown	170	203	183	191	162
Totals	2,046	2,311	2,226	2,124	2,029

### Age of Drivers Involved in Single Vehicle Fatal Crashes

13 years and under	2	1	1	0	1
14 years	1	4	0	3	2
15 years	4	3	0	4	4
16 years	20	21	20	23	12
17 years	24	21	19	18	18
18 years	16	20	21	30	19
19 years	21	19	21	14	24
20 years	17	23	22	10	21
21 - 24 years	68	77	79	46	65
25 - 34 years	89	127	128	149	127
35 - 44 years	88	110	104	87	104
45 - 54 years	48	61	49	54	75
55 - 64 years	25	30	29	35	35
65 - 69 years	7	9	17	19	17
70 - 74 years	12	12	12	12	9
75 - 79 years	6	12	16	10	8
80 - 84 years	6	10	11	7	9
85 - 89 years	3	1	2	3	0
90 years and over	0	0	1	2	0
Unknown	35	58	49	35	34
Totals	492	619	601	561	584



# 5

## YEAR

TREND DATA FOR FATALITIES	1994	1995	1996	1997	1998
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### Age of Bicyclists Killed

Under 1 year old	0	0	0	0	0
1 - 3 years	0	0	0	0	0
4 - 10 years	10	6	3	5	6
11 - 15 years	9	7	9	5	5
16 - 20 years	1	2	1	2	0
21 - 24 years	1	3	1	0	1
25 - 34 years	0	3	6	4	4
35 - 44 years	2	3	4	2	5
45 - 54 years	3	0	3	5	3
55 - 64 years	0	2	2	0	0
65 - 74 years	1	1	2	3	1
75 years and over	1	0	1	3	2
Unknown	1	1	0	0	0
Totals	29	28	32	29	27

### Age of Pedestrians Killed

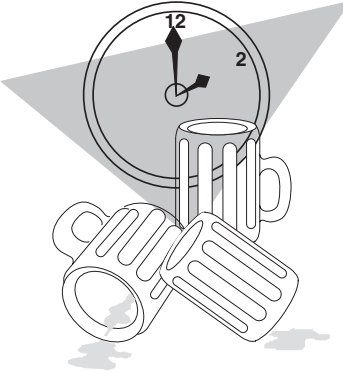
Under 1 year old	0	1	1	0	0
1 - 3 years	10	3	5	1	6
4 - 10 years	13	14	14	16	17
11 - 15 years	10	10	10	9	9
16 - 20 years	17	10	11	10	9
21 - 24 years	11	15	5	8	4
25 - 34 years	21	27	26	27	22
35 - 44 years	29	42	35	32	30
45 - 54 years	11	19	35	26	20
55 - 64 years	15	15	22	6	15
65 - 74 years	15	15	12	17	14
75 years and over	23	12	14	14	25
Unknown	7	7	2	1	1
Totals	182	190	192	167	172

### Action of Pedestrians Killed

Crossing at intersection	25	22	22	14	16
Cross not at intersection	66	64	65	72	80
Getting on/off vehicle	1	1	1	1	1
In road with traffic	12	18	26	19	13
In road against traffic	3	5	1	4	3
Standing or lying in road	14	17	21	13	14
Pushing/working on vehicle	4	4	2	3	1
Other working in road	3	0	1	1	0
Playing in road	0	0	1	3	3
In road for other reason	8	15	15	7	8
Not in road	14	13	10	10	9
Other/Unknown	32	31	27	20	24
Totals	182	190	192	167	172

# 5 YEAR

## FATAL CRASHES AND PERSONS KILLED FOR SELECTED HOLIDAY PERIODS IN MICHIGAN

HOLIDAY PERIOD	Fatal Crashes	Persons Killed	SUMMARY 1998
<b>Memorial Day</b> 1998 (3) 1997 (3) 1996 (3) 1995 (3) 1994 (3)	18 [7] 14 [8] 10 [7] 11 11	21 [8] 16 [9] 11 [7] 12 13	<p>This table shows traffic death tolls in Michigan for the past five years for the major holiday periods.</p> <p>Based on the <i>total 1998</i> experience, deaths averaged <b>3.7</b> per day. Alcohol-related deaths averaged <b>1.4</b> per day.</p> <p>Based on the <i>1998 Holiday Period</i> experience, deaths averaged <b>5.3</b> per day. Alcohol-related deaths averaged <b>2.4</b> per day.</p> 
<b>Fourth of July</b> 1998 (3) 1997 (3) 1996 (4) 1995 (4) 1994 (3)	15 [9] 14 [9] 24 [8] 19 17	16 [10] 16 [10] 27 [8] 19 19	
<b>Labor Day</b> 1998 (3) 1997 (3) 1996 (3) 1995 (3) 1994 (3)	20 [13] 15 [8] 21 [15] 22 9	22 [13] 19 [10] 27 [20] 30 10	
<b>Thanksgiving</b> 1998 (4) 1997 (4) 1996 (4) 1995 (4) 1994 (4)	19 [10] 18 [6] 18 [8] 11 19	22 [10] 20 [6] 23 [8] 12 21	
<b>Christmas</b> 1998 (3) 1997 (4) 1996 (1) 1995 (3) 1994 (3)	8 [2] 11 [3] 4 [0] 15 17	8 [2] 13 [3] 6 [0] 16 23	
<b>New Years</b> 1998 (3) 1997 (4) 1996 (1) 1995 (3) 1994 (3)	12 [2] 18 [8] 4 [0] 13 16	12 [2] 21 [11] 5 [0] 14 16	

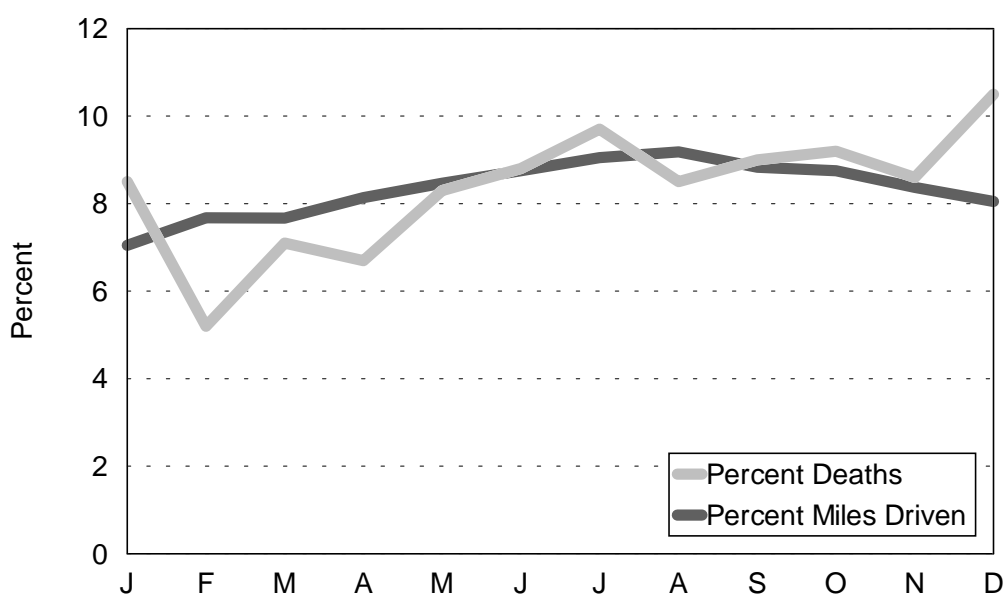
Figures in parentheses in the 1<sup>st</sup> column show number of full days in each holiday period.  
Deaths are for these days plus six hours of the preceding day.  
Figures in brackets in the 2<sup>nd</sup> and 3<sup>rd</sup> columns show the number of alcohol-related fatal crashes and deaths.

# 5 YEAR

## MOTOR VEHICLE DEATHS AND MILEAGE BY MONTH

Month	TRAFFIC DEATHS					1998 PERCENTAGES	
	1994	1995	1996	1997	1998	Percent Deaths	Percent Miles Driven
January	106	122	131	102	116	8.5	7.05
February	86	90	98	106	71	5.2	7.68
March	82	109	103	85	97	7.1	7.67
April	116	111	98	80	91	6.7	8.14
May	111	118	128	128	113	8.3	8.47
June	123	141	135	140	120	8.8	8.75
July	126	127	146	166	133	9.7	9.05
August	143	159	121	130	116	8.5	9.18
September	132	157	138	128	123	9.0	8.83
October	133	134	135	134	126	9.2	8.75
November	123	136	136	125	117	8.6	8.37
December	138	133	136	122	144	10.5	8.05
Totals	1,419	1,537	1,505	1,446	1,367	100.0	100.0

Percent Deaths & Percent Miles Driven



The above chart shows that the *percent deaths* were lower for the months of February, March, April and August than for the other months in 1998 when compared to the *percent miles driven*.



# 1

## YEAR

### 1997 - 1998 SUMMARY TRENDS

- Deaths among vehicle occupants (drivers and passengers) decreased **5.8** percent.
- Alcohol use was indicated in 476 fatal crashes, a decrease of **1.0** percent.
- Persons sustaining "A" level injuries (the most serious) decreased **6.1** percent.

	1997	1998	% CHANGE
<b>NUMBER OF CRASHES</b>			
Property Damage Crashes .....	329,151	311,394	-5.4
Fatal Crashes .....	1,283	1,235	-3.7
Personal Injury Crashes .....	95,359	91,137	-4.4
<b>Total</b>	<b>425,793</b>	<b>403,766</b>	<b>-5.2</b>
<b>ALCOHOL IN FATAL CRASHES</b>			
Had Been Drinking (HBD) .....	481 (37.5%)	476 (38.5%)	-1.0
Had Not (HNBD)/Not Known If Drinking .....	802 (62.5%)	759 (61.5%)	-5.4
<b>PERSONS IN CRASHES</b>			
Killed and Injured .....	138,994	132,945	-4.4
Not Injured .....	567,938	541,296	-4.7
Unknown Injury .....	78,445	72,282	-7.9
<b>Total</b>	<b>785,377</b>	<b>746,523</b>	<b>-4.9</b>
<b>PERSONS INJURED</b>			
Male .....	66,351	63,503	-4.3
Female .....	71,197	68,075	-4.4
<b>Total</b>	<b>137,548</b>	<b>131,578</b>	<b>-4.3</b>
"A" Injury .....	15,291	14,365	-6.1
"B" Injury .....	32,678	31,707	-3.0
"C" Injury .....	89,579	85,506	-4.5
<b>Total</b>	<b>137,548</b>	<b>131,578</b>	<b>-4.3</b>
<b>PERSONS KILLED</b>			
Male .....	918	899	-2.1
Female .....	528	468	-11.4
<b>Total</b>	<b>1,446</b>	<b>1,367</b>	<b>-5.5</b>
Drivers .....	767	764	-0.4
Passengers .....	369	306	-17.1
Pedestrians .....	167	172	3.0
Bicyclists .....	29	27	-6.9
Motorcyclist .....	63	53	-15.9
Farm Equipment .....	2	2	0.0
Train Engineer .....	0	0	0.0
Snowmobile .....	17	21	23.5
ORV/ATV .....	5	4	-20.0
Other/Unknown .....	27	18	-33.3
<b>Total</b>	<b>1,446</b>	<b>1,367</b>	<b>-5.5</b>

# 1 YEAR

## MORE MICHIGAN CRASH FACTS

CRASH FACTS	1997	1998	% Change
Deaths	1,446	1,367	-5.5
Injuries	137,548	131,578	-4.3
Crashes	425,793	403,766	-5.2
Drivers Involved	737,939	701,056	-5.0
Vehicles Involved	739,538	702,680	-5.0
Fatal Crashes	1,283	1,235	-3.7
Estimated MV Mileage Traveled (billions)	89.2	91.6	2.7
Death Rate Per 100 Million Vehicle Miles	1.6	1.5	-6.3
Fatal Crash Rate Per 100 Million Veh Miles	1.4	1.3	-7.1

Michigan experienced a 5.5 percent decrease in traffic fatalities, as well as a 4.3 percent decrease in injuries and a 5.2 percent decrease in crashes. Vehicle mileage increased 2.7 percent and the death rate per 100 million vehicle miles decreased 6.3 percent.

Based on provisional numbers, the National Safety Council estimates a national decrease in traffic fatalities of 4.6 percent between 1997 (43,200) and 1998 (41,200).



## 1998 COST OF CRASHES IN MICHIGAN

The cost estimate for Michigan crashes in 1998 is **\$9,551,841,400**. This estimate is based on the National Safety Council's cost estimating procedures. Average comprehensive costs are based on the following figures:

Comprehensive Costs, 1998	
Death .....	\$3,010,000
Incapacitating injury .....	\$149,000
Nonincapacitating evident injury .....	\$38,200
Possible injury .....	\$18,200
No injury .....	\$1,700

These cost estimates are not intended for comparisons to previous years.

1

## YEAR



## A One-Year Comparison

**1998=1,367 / 1997=1,446**

☐ same or decrease

 increase

# MOTOR VEHICLE TRAFFIC DEATHS IN MICHIGAN BY MONTH

Revised December 18, 2006

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1947	86	86	85	113	124	114	134	149	134	142	145	135	1,447
1948	89	64	92	109	125	118	138	134	150	133	165	195	1,512
1949	101	82	160	91	110	99	116	138	169	144	149	136	1,441
1950	105	84	87	139	122	125	153	152	157	174	154	153	1,605
1951	131	103	103	117	119	137	170	163	158	146	160	133	1,640
1952	81	121	125	94	145	169	140	184	181	152	166	178	1,736
1953	139	116	136	132	134	173	176	183	187	187	167	175	1,905
1954	130	126	100	119	149	132	182	167	168	167	153	200	1,793
1955	134	117	116	160	157	192	169	209	160	204	208	190	2,016
1956	166	136	132	140	133	115	149	159	169	144	145	158	1,746
1957	121	98	118	118	130	122	127	152	123	143	135	161	1,548
1958	94	90	95	89	92	112	120	134	132	113	165	146	1,382
1959	76	69	91	126	126	124	148	128	155	125	144	161	1,473
1960	139	76	102	105	107	133	159	154	137	186	152	154	1,604
1961	105	99	113	138	133	114	141	166	128	139	148	143	1,567
1962	94	70	115	110	123	147	166	175	170	172	118	114	1,574
1963	107	95	124	142	148	173	188	177	163	179	196	195	1,887
1964	170	159	158	144	164	167	217	197	177	199	177	193	2,122
1965	153	113	135	143	156	181	211	220	193	214	172	245	2,136
1966	147	156	179	151	207	204	212	206	203	220	205	208	2,298
1967	130	105	141	162	187	140	210	189	223	230	216	204	2,137
1968	130	147	164	150	240	214	208	233	209	248	283	166	2,392
1969	137	158	173	169	239	236	218	254	230	236	219	218	2,487
1970	167	143	160	141	214	205	197	204	213	217	178	138	2,177
1971	137	124	155	144	187	212	222	227	155	209	202	178	2,152
1972	156	161	155	150	204	209	225	210	225	219	174	170	2,258
1973	187	156	173	140	180	230	225	201	204	209	171	137	2,213
1974	111	112	107	116	144	197	189	178	200	195	201	125	1,875
1975	120	97	112	93	149	169	195	203	190	162	161	160	1,811
1976	118	102	134	150	163	169	196	227	189	171	174	162	1,955
1977	126	87	122	143	184	179	223	194	164	189	181	158	1,950
1978	98	104	128	177	178	203	206	229	214	199	183	157	2,076
1979	102	103	129	152	146	155	190	171	174	187	171	169	1,849
1980	117	131	109	116	153	170	142	183	192	152	133	176	1,774
1981	99	100	108	116	116	155	159	171	149	155	113	148	1,589
1982	98	79	93	91	114	121	154	153	128	144	131	111	1,417
1983	113	94	83	91	91	127	121	117	131	153	115	95	1,331
1984	93	84	104	94	125	143	175	174	135	153	134	142	1,556
1985	108	91	77	133	137	167	146	136	131	135	161	147	1,569
1986	86	77	103	127	131	175	186	176	131	144	159	137	1,632
1987	91	104	99	106	138	165	151	176	149	164	161	128	1,632
1988	129	107	103	104	145	152	175	158	178	159	127	167	1,704
1989	138	102	94	96	123	156	156	177	155	146	123	164	1,630
1990	99	84	122	94	135	151	165	170	141	147	130	125	1,563
1991	103	79	115	106	129	145	130	141	125	129	104	119	1,425
1992	83	81	83	86	100	122	134	119	123	129	120	120	1,300
1993	123	91	89	72	127	103	149	140	131	146	134	109	1,414
1994	106	86	82	116	111	123	126	143	132	133	123	138	1,419
1995	122	90	109	111	118	141	127	159	157	134	136	133	1,537
1996	131	98	103	98	128	135	146	121	138	135	136	136	1,505
1997	102	106	85	80	128	140	166	130	128	134	125	122	1,446
1998	116	71	97	91	113	120	133	116	123	126	117	144	1,367



## MOTOR VEHICLE TRAFFIC CRASH AND RELATED DATA

Year	Deaths	Injuries	Crashes	Estimated Mileage (Millions)	Motor Vehicle Registrations*	Death Rate Per 100 million miles of travel
1947	1,447	38,195	137,619	17,661.1	1,850,274	8.2
1948	1,512	40,892	140,172	19,069.2	2,030,685	7.9
1949	1,441	41,197	143,197	19,990.4	2,203,375	7.2
1950	1,605	45,734	161,750	21,494.5	2,439,593	7.5
1951	1,640	48,418	176,587	22,668.1	2,560,652	7.2
1952	1,736	49,119	160,829	23,093.1	2,586,834	7.5
1953	1,905	57,834	184,174	25,346.9	2,808,921	7.5
1954	1,793	56,444	185,534	26,041.2	2,889,740	6.9
1955	2,016	62,234	196,812	28,282.5	3,149,323	7.1
1956	1,746	61,158	197,995	28,429.3	3,173,704	6.1
1957	1,548	60,067	191,915	29,252.2	3,256,150	5.3
1958	1,382	57,767	177,934	29,411.3	3,157,441	4.7
1959	1,473	64,873	198,771	30,679.0	3,252,492	4.8
1960	1,604	91,026	209,724	31,842.4	3,352,234	5.0
1961	1,567	93,350	199,973	32,101.5	3,395,736	4.9
1962	1,574	108,143	233,078	34,498.0	3,498,758	4.6
1963	1,887	126,896	261,794	36,452.2	3,646,080	5.2
1964	2,122	144,623	284,444	38,617.6	3,860,791	5.5
1965	2,136	155,258	310,598	40,857.4	4,066,826	5.2
1966	2,298	156,694	302,880	43,940.1	4,133,199	5.2
1967	2,137	151,297	299,004	45,053.6	4,161,573	4.7
1968	2,392	160,413	305,495	48,047.4	4,327,885	5.0
1969	2,487	175,400	331,223	50,904.9	4,560,097	4.9
1970	2,177	161,719	313,715	53,148.1	4,683,919	4.1
1971	2,152	157,664	314,015	55,539.7	4,835,146	3.9
1972	2,258	178,929	359,745	57,817.1	5,160,985	3.9
1973	2,213	169,485	350,864	58,478.4	5,442,233	3.8
1974	1,875	141,132	324,763	55,748.7	5,652,406	3.4
1975	1,811	147,299	333,560	56,260.5	5,744,441	3.2
1976	1,955	162,894	365,600	61,638.0	5,861,908	3.2
1977	1,950	166,389	374,751	64,853.0	6,138,732	3.0
1978	2,076	169,202	389,193	67,380.0	6,436,365	3.1
1979	1,849	162,571	366,435	64,882.3	6,536,246	2.8
1980	1,774	144,972	314,594	61,190.1	6,570,735	2.9
1981	1,589	136,455	302,831	62,000.0	6,140,286	2.6
1982	1,417	130,061	294,971	61,321.0	6,400,942	2.3
1983	1,331	135,811	300,797	63,560.1	6,443,499	2.1
1984	1,556	150,740	335,193	65,727.0	6,509,192	2.4
1985	1,569	157,417	386,904	68,413.0	6,857,364	2.3
1986	1,632	158,032	400,694	70,622.0	6,952,263	2.3
1987	1,632	156,318	397,224	75,715.0	7,061,339	2.2
1988	1,704	155,713	410,437	77,700.0	7,196,609	2.2
1989	1,630	154,537	417,252	79,900.0	7,233,823	2.0
1990	1,563	145,179	387,180	81,200.0	7,300,853	1.9
1991	1,425	135,830	364,847	81,900.0	7,329,789	1.7
1992	1,300	118,727	344,942	84,000.0	7,411,192	1.5
1993	1,414	134,548	363,636	85,700.0	7,495,904	1.6
1994	1,419	142,200	398,050	85,600.0	7,669,022	1.7
1995	1,537	146,303	421,073	85,699.6	7,751,336	1.8
1996	1,505	142,553	435,477	87,700.0	8,106,972	1.7
1997	1,446	137,548	425,793	89,232.0	8,115,921	1.6
1998	1,367	131,578	403,766	91,616.0	8,227,016	1.5

\* Excludes trailers and trailer coaches.



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**Special  
Focus**

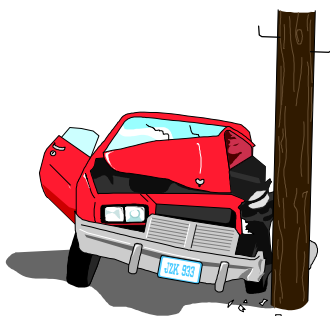


## SPECIAL FOCUS - AGE

### Drivers on Michigan Roads:

The following tables describe driver actions and crash characteristics for motor vehicle drivers age 16-24; 25-64; and 65-98. These tables are provided to demonstrate the differences in the nature of the crashes for these age groups.

Generally, younger drivers are more involved in single-vehicle type off road crashes. Older drivers are more involved in angle type crashes, and are more likely to commit "Failed to Yield" as a hazardous action while younger drivers are more likely to be speeding. Younger drivers are least likely to be alone in their car at the time of the crash.



### Nationally:

*According to the American Academy of Pediatrics [9], motor vehicle-related crashes remain the leading cause of death in youth from 16 through 20 years of age, resulting in more than 5,000 such deaths annually. This age group constitutes only 7 percent of the US population yet accounts for 14 percent of all motor vehicle-related deaths. Youth 16 through 19 years of age constitute 5 percent of all licensed drivers and 3 percent of all vehicle miles traveled, yet teenage drivers are involved in 15 percent of the crashes in which they or other occupants are killed. The motor vehicle fatality rate of teenagers is higher than that of any other age group; on a per-mile-driven basis, 16-year-old drivers are more than 20 times as likely to have a crash as is the general population of drivers, and 17-year-old drivers are more than 6 times as likely.*



## DRIVER AGE 16-24

DRIVER ACTION PRIOR TO CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Going straight ahead	85,873	54.0	332	76.7	24,015	56.1
Turning left	14,666	9.2	18	4.2	4,503	10.5
Turning right	4,483	2.8	1	0.2	852	2.0
Stopped on roadway	13,200	8.3	10	2.3	3,783	8.8
In prior crash	236	0.1	0	0.0	78	0.2
Changing lanes	3,936	2.5	10	2.3	663	1.5
Backing	3,579	2.3	0	0.0	252	0.6
Slowing/stopping on roadway	14,995	9.4	13	3.0	3,796	8.9
Slowing/stopping other	187	0.1	0	0.0	49	0.1
Starting up on roadway	3,219	2.0	0	0.0	871	2.0
Starting up other	95	0.1	0	0.0	34	0.1
Entering parking	172	0.1	0	0.0	23	0.1
Leaving parking	668	0.4	0	0.0	144	0.3
Entering roadway	3,041	1.9	5	1.2	817	1.9
Leaving roadway	361	0.2	7	1.6	115	0.3
Making U-turn	351	0.2	3	0.7	101	0.2
Overtaking or passing	1,784	1.1	15	3.5	446	1.0
Avoiding object	723	0.5	2	0.5	248	0.6
Avoiding pedestrian	55	0.0	0	0.0	24	0.1
Avoiding vehicle (front/back)	1,574	1.0	6	1.4	470	1.1
Avoiding vehicle (angle)	639	0.4	1	0.2	203	0.5
Driverless moving	45	0.0	0	0.0	10	0.0
Parked	561	0.4	1	0.2	60	0.1
Crossing at intersection	16	0.0	0	0.0	7	0.0
Crossing not at intersection	7	0.0	0	0.0	5	0.0
Getting on/off vehicle	3	0.0	0	0.0	1	0.0
In roadway with traffic	2	0.0	0	0.0	2	0.0
In roadway against traffic	2	0.0	0	0.0	1	0.0
Standing/lying in roadway	1	0.0	0	0.0	1	0.0
Pushing/working on vehicle	1	0.0	0	0.0	0	0.0
Other working in roadway	0	0.0	0	0.0	0	0.0
Playing in roadway	0	0.0	0	0.0	0	0.0
In roadway other reason	1	0.0	0	0.0	0	0.0
Not in roadway	1	0.0	0	0.0	1	0.0
Other	136	0.1	1	0.2	48	0.1
Unknown	4,274	2.7	8	1.8	1,197	2.8
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

## DRIVER AGE 16-24 (continued)

MOST HARMFUL EVENT IN A NONCOLLISION	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Loss of control	1,312	0.8	3	0.7	402	0.9
Cross center/median	233	0.1	0	0.0	70	0.2
Ran off road left	314	0.2	1	0.2	87	0.2
Ran off road right	420	0.3	1	0.2	111	0.3
Re-enter road	54	0.0	0	0.0	17	0.0
Overtake	2,992	1.9	39	9.0	1,621	3.8
Separation of units	635	0.4	1	0.2	159	0.4
Fire/explosion	270	0.2	0	0.0	36	0.1
Immersion	38	0.0	0	0.0	12	0.0
Jackknife	46	0.0	0	0.0	6	0.0
Downhill runaway	21	0.0	0	0.0	7	0.0
Cargo loss/shift	97	0.1	0	0.0	7	0.0
Individual fell off	119	0.1	7	1.6	99	0.2
Other noncollision	450	0.3	0	0.0	100	0.2
NONCOLLISION Subtotal	7,001	4.4	52	12.0	2,734	6.4

Teens and young adults have the highest incidence of overturn and "individual fell off" in fatal crashes when compared to the other two age groups (25-64 and 65-98).

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	628	0.4	36	8.3	544	1.3
Pedalcycle	565	0.4	6	1.4	472	1.1
Motor vehicle in transport	110,942	69.8	239	55.2	30,844	72.0
Parked motor vehicle	3,030	1.9	3	0.7	460	1.1
Railway train	39	0.0	2	0.5	18	0.0
Animal	10,939	6.9	0	0.0	262	0.6
Other nonfixed objects	1,176	0.7	2	0.5	152	0.4
COLLISION NONFIXED Subtotal	127,319	80.1	288	66.5	32,752	76.5



## DRIVER AGE 16-24 (continued)

MOST HARMFUL EVENT IN A COLLISION WITH A FIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Bridge/pier/abutment	150	0.1	2	0.5	59	0.1
Bridge parapet end	29	0.0	0	0.0	7	0.0
Bridge rail	131	0.1	0	0.0	40	0.1
Guardrail face	803	0.5	1	0.2	210	0.5
Guardrail end	140	0.1	0	0.0	43	0.1
Median barrier	829	0.5	3	0.7	309	0.7
Highway traffic sign post	780	0.5	1	0.2	67	0.2
Signal post	69	0.0	0	0.0	14	0.0
Luminaire/light support	163	0.1	2	0.5	42	0.1
Utility pole	1,194	0.8	7	1.6	521	1.2
Other pole	295	0.2	0	0.0	62	0.1
Culvert	294	0.2	1	0.2	129	0.3
Curb	711	0.4	0	0.0	88	0.2
Ditch	2,652	1.7	3	0.7	840	2.0
Embankment	585	0.4	1	0.2	230	0.5
Fence	444	0.3	0	0.0	63	0.1
Mailbox	736	0.5	2	0.5	57	0.1
Tree	3,877	2.4	58	13.4	1,651	3.9
Rail crossing signal	22	0.0	0	0.0	3	0.0
Building	220	0.1	0	0.0	80	0.2
Traffic island	14	0.0	0	0.0	3	0.0
Fire hydrant	171	0.1	0	0.0	51	0.1
Impact attenuator	19	0.0	0	0.0	5	0.0
Other fixed object	905	0.6	2	0.5	244	0.6
COLLISION FIXED Subtotal	15,233	9.6	83	19.2	4,818	11.3

Teens and young adults have the highest incidence of collision with ditches and trees in crashes when compared to the other two age groups.

	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Unknown Event	9,334	5.9	10	2.3	2,516	5.9
TOTAL MOST HARMFUL EVENT	158,887	100.0	433	100.0	42,820	100.0

## DRIVER AGE 16-24 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	31,386	19.8	159	36.7	7,397	17.3
Head On	2,914	1.8	73	16.9	1,358	3.2
Head On - Left Turn	7,301	4.6	18	4.2	3,102	7.2
Angle	38,366	24.1	119	27.5	12,118	28.3
Rear End	50,378	31.7	26	6.0	14,024	32.8
Rear End - Left Turn	2,652	1.7	3	0.7	835	2.0
Rear End - Right Turn	1,502	0.9	0	0.0	266	0.6
Sideswipe - Same Direction	12,416	7.8	13	3.0	1,378	3.2
Sideswipe - Opposite Direct	4,168	2.6	8	1.8	737	1.7
Other	6,366	4.0	14	3.2	1,310	3.1
Unknown	1,438	0.9	0	0.0	295	0.7
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

Teen and young adult drivers are involved in the largest proportion of single vehicle fatal crashes when compared to the other two age groups.

HAZARDOUS ACTION	All Crashes		Fatal Crashes		Injury Crashes		Hazardous Citation Issued	
	Number	% of Total	#	% of Fatal	#	% of Injury	#	% of Issued
None	68,288	43.0	136	31.4	16,165	37.8	219	0.5
Speed too fast	13,134	8.3	108	24.9	4,557	10.6	5,815	12.5
Speed too slow	392	0.2	0	0.0	120	0.3	177	0.4
Failed to yield	18,439	11.6	28	6.5	5,814	13.6	11,375	24.5
Disregard traffic control	4,235	2.7	29	6.7	1,958	4.6	2,765	6.0
Drove wrong way	108	0.1	0	0.0	35	0.1	47	0.1
Drove left of center	1,128	0.7	36	8.3	439	1.0	562	1.2
Improper passing	1,302	0.8	5	1.2	234	0.5	612	1.3
Improper lane use	3,231	2.0	5	1.2	467	1.1	1,684	3.6
Improper turn	2,028	1.3	1	0.2	476	1.1	991	2.1
Improper/no signal	249	0.2	0	0.0	53	0.1	86	0.2
Improper backing	2,673	1.7	0	0.0	130	0.3	1,003	2.2
Unable to stop in assured clear distance	29,182	18.4	15	3.5	7,981	18.6	16,701	35.9
Other	9,852	6.2	39	9.0	3,116	7.3	4,103	8.8
Unknown	4,646	2.9	31	7.2	1,275	3.0	325	0.7
Total Drivers	158,887	100.0	433	100.0	42,820	100.0	46,465	100.0

Compared to the other two age groups, teen and young adult drivers have the highest incidence of fatal crashes when their speed is too fast, or they drive left of center.

## DRIVER AGE 16-24 (continued)

LOCATION OF FIRST IMPACT IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
On Road	141,008	88.7	310	71.6	36,870	86.1
Median	752	0.5	4	0.9	278	0.6
Shoulder	5,020	3.2	28	6.5	1,411	3.3
Outside of Shoulder/Curb	9,974	6.3	83	19.2	3,606	8.4
Gore	248	0.2	0	0.0	94	0.2
Other/Unknown	1,885	1.2	8	1.8	561	1.3
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

When compared to the other two age groups in all crashes, teen and young adult drivers have the highest incidence of crashes where the first impact is on the shoulder of the roadway or outside the shoulder/curb.

TIME OF DAY IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
12:00 mid. - 02:59 a.m.	8,699	5.5	69	15.9	2,588	6.0
03:00 a.m. - 05:59 a.m.	3,924	2.5	36	8.3	1,131	2.6
06:00 a.m. - 08:59 a.m.	15,615	9.8	37	8.5	3,938	9.2
09:00 a.m. - 11:59 a.m.	15,242	9.6	24	5.5	4,127	9.6
12:00 noon - 02:59 p.m.	29,204	18.4	51	11.8	8,190	19.1
03:00 p.m. - 05:59 p.m.	42,422	26.7	63	14.5	11,491	26.8
06:00 p.m. - 08:59 p.m.	25,699	16.2	72	16.6	6,685	15.6
09:00 p.m. - 11:59 p.m.	17,123	10.8	78	18.0	4,443	10.4
Unknown	959	0.6	3	0.7	227	0.5
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

6:00 PM to 2:59 AM shows the highest involvement for teen and young adult drivers in all crashes compared to the other two age groups.

ROADWAY TYPE IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Limited Access Roadway	11,447	7.2	36	8.3	3,207	7.5
U.S. & Michigan Roads	38,880	24.5	117	27.0	10,624	24.8
County & City Roads	108,560	68.3	280	64.7	28,989	67.7
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

Teen and young adult drivers have a higher rate of incidence in fatal crashes on County and City roads than the other two age groups.

## DRIVER AGE 16-24 (continued)

DAY OF WEEK IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Sunday	16,312	10.3	60	13.9	4,760	11.1
Monday	22,343	14.1	41	9.5	5,896	13.8
Tuesday	23,844	15.0	59	13.6	6,290	14.7
Wednesday	23,512	14.8	49	11.3	6,176	14.4
Thursday	23,678	14.9	62	14.3	6,273	14.6
Friday	27,894	17.6	77	17.8	7,463	17.4
Saturday	21,304	13.4	85	19.6	5,962	13.9
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

The weekend shows higher involvement of teen and young adult drivers in all crashes and fatal crashes when compared to the other two age groups.

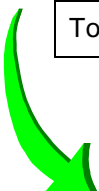
DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	91,213	57.4	312	72.1	23,296	54.4
Female	65,529	41.2	117	27.0	18,916	44.2
Unknown	2,145	1.4	4	0.9	608	1.4
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	101,542	63.9	223	51.5	24,965	58.3
2 occupants	37,322	23.5	130	30.0	11,239	26.2
3 occupants	10,993	6.9	48	11.1	3,657	8.5
4 occupants	4,227	2.7	19	4.4	1,547	3.6
5 occupants	1,267	0.8	5	1.2	490	1.1
6 + occupants	458	0.3	4	0.9	185	0.4
0 occupants	1,397	0.9	2	0.5	284	0.7
Unknown	1,681	1.1	2	0.5	453	1.1
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

## DRIVER AGE 16-24 (continued)

VEHICLE TYPE CRASH INVOLVEMENT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Passenger Car and Station Wagon	124,585	78.4	322	74.4	34,041	79.5
Van and Motorhome	5,922	3.7	16	3.7	1,555	3.6
Pickup	23,331	14.7	65	15.0	5,544	12.9
Small Truck (under 10,000 lbs.)	2,341	1.5	5	1.2	594	1.4
Motorcycle	646	0.4	8	1.8	507	1.2
Moped	43	0.0	1	0.2	37	0.1
Go Cart	0	0.0	0	0.0	0	0.0
Snowmobile	83	0.1	6	1.4	49	0.1
Off Road Vehicle	57	0.0	0	0.0	49	0.1
Other	180	0.1	1	0.2	47	0.1
Unknown	688	0.4	1	0.2	191	0.4
CDL Truck/Bus (breakdown below)	1,011	0.6	8	1.8	206	0.5
Total Drivers	158,887	100.0	433	100.0	42,820	100.0

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.



CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Commercial Vehicle: Group A	322	31.8	6	75.0	63	30.6
Commercial Vehicle: Group B	260	25.7	1	12.5	46	22.3
Commercial Vehicle: Group C	51	5.0	0	0.0	15	7.3
Other Truck	165	16.3	0	0.0	44	21.4
Unknown Truck	213	21.1	1	12.5	38	18.4
Total Drivers	1,011	100.0	8	100.0	206	100.0

Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.



## DRIVER AGE 25-64

DRIVER ACTION PRIOR TO CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Going straight ahead	210,476	53.3	935	78.3	51,647	52.2
Turning left	28,885	7.3	47	3.9	8,522	8.6
Turning right	10,784	2.7	5	0.4	1,848	1.9
Stopped on roadway	48,657	12.3	49	4.1	14,721	14.9
In prior crash	487	0.1	3	0.3	183	0.2
Changing lanes	8,072	2.0	21	1.8	1,318	1.3
Backing	9,634	2.4	9	0.8	531	0.5
Slowing/stopping on roadway	37,216	9.4	24	2.0	10,194	10.3
Slowing/stopping other	525	0.1	3	0.3	155	0.2
Starting up on roadway	7,996	2.0	7	0.6	2,191	2.2
Starting up other	208	0.1	0	0.0	57	0.1
Entering parking	605	0.2	0	0.0	58	0.1
Leaving parking	1,406	0.4	2	0.2	294	0.3
Entering roadway	5,529	1.4	4	0.3	1,338	1.4
Leaving roadway	685	0.2	8	0.7	246	0.2
Making U-turn	837	0.2	1	0.1	227	0.2
Overtaking or passing	3,106	0.8	16	1.3	634	0.6
Avoiding object	986	0.2	2	0.2	272	0.3
Avoiding pedestrian	130	0.0	3	0.3	60	0.1
Avoiding vehicle (front/back)	3,306	0.8	26	2.2	968	1.0
Avoiding vehicle (angle)	1,530	0.4	6	0.5	419	0.4
Driverless moving	83	0.0	0	0.0	13	0.0
Parked	2,446	0.6	2	0.2	232	0.2
Crossing at intersection	17	0.0	0	0.0	8	0.0
Crossing not at intersection	11	0.0	0	0.0	8	0.0
Getting on/off vehicle	3	0.0	1	0.1	0	0.0
In roadway with traffic	2	0.0	0	0.0	2	0.0
In roadway against traffic	3	0.0	0	0.0	0	0.0
Standing/lying in roadway	3	0.0	0	0.0	2	0.0
Pushing/working on vehicle	8	0.0	0	0.0	2	0.0
Other working in roadway	1	0.0	0	0.0	1	0.0
Playing in roadway	0	0.0	0	0.0	0	0.0
In roadway other reason	2	0.0	0	0.0	1	0.0
Not in roadway	3	0.0	0	0.0	3	0.0
Other	250	0.1	3	0.3	87	0.1
Unknown	10,910	2.8	17	1.4	2,767	2.8
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

## DRIVER AGE 25-64 (continued)

MOST HARMFUL EVENT IN A NONCOLLISION	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Loss of control	2,552	0.6	4	0.3	762	0.8
Cross center/median	510	0.1	0	0.0	105	0.1
Ran off road left	414	0.1	2	0.2	115	0.1
Ran off road right	856	0.2	0	0.0	224	0.2
Re-enter road	114	0.0	0	0.0	48	0.0
Overturn	3,907	1.0	80	6.7	2,132	2.2
Separation of units	1,649	0.4	9	0.8	390	0.4
Fire/explosion	546	0.1	9	0.8	86	0.1
Immersion	48	0.0	2	0.2	11	0.0
Jackknife	246	0.1	0	0.0	36	0.0
Downhill runaway	46	0.0	0	0.0	11	0.0
Cargo loss/shift	542	0.1	0	0.0	38	0.0
Individual fell off	237	0.1	3	0.3	198	0.2
Other noncollision	1,129	0.3	2	0.2	204	0.2
NONCOLLISION Subtotal	12,796	3.2	111	9.3	4,360	4.4

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	1,558	0.4	97	8.1	1,303	1.3
Pedalcycle	1,542	0.4	18	1.5	1,216	1.2
Motor vehicle in transport	272,474	69.0	770	64.5	76,314	77.1
Parked motor vehicle	6,873	1.7	6	0.5	811	0.8
Railway train	71	0.0	6	0.5	27	0.0
Animal	45,089	11.4	3	0.3	1,006	1.0
Other nonfixed objects	4,226	1.1	9	0.8	424	0.4
COLLISION NONFIXED Subtotal	331,833	84.1	909	76.1	81,101	81.9



## DRIVER AGE 25-64 (continued)

MOST HARMFUL EVENT IN A COLLISION WITH A FIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Bridge/pier/abutment	424	0.1	5	0.4	128	0.1
Bridge parapet end	95	0.0	0	0.0	17	0.0
Bridge rail	242	0.1	2	0.2	63	0.1
Guardrail face	1,479	0.4	2	0.2	357	0.4
Guardrail end	226	0.1	1	0.1	83	0.1
Median barrier	1,548	0.4	3	0.3	618	0.6
Highway traffic sign post	1,283	0.3	0	0.0	136	0.1
Signal post	150	0.0	1	0.1	22	0.0
Luminaire/light support	299	0.1	2	0.2	91	0.1
Utility pole	1,818	0.5	24	2.0	764	0.8
Other pole	539	0.1	1	0.1	118	0.1
Culvert	346	0.1	7	0.6	131	0.1
Curb	1,049	0.3	1	0.1	144	0.1
Ditch	3,496	0.9	8	0.7	1,070	1.1
Embankment	854	0.2	5	0.4	329	0.3
Fence	610	0.2	0	0.0	99	0.1
Mailbox	933	0.2	0	0.0	68	0.1
Tree	5,044	1.3	86	7.2	1,932	2.0
Rail crossing signal	60	0.0	0	0.0	6	0.0
Building	394	0.1	6	0.5	165	0.2
Traffic island	23	0.0	0	0.0	6	0.0
Fire hydrant	254	0.1	0	0.0	70	0.1
Impact attenuator	32	0.0	0	0.0	13	0.0
Other fixed object	1,751	0.4	5	0.4	431	0.4
COLLISION FIXED Subtotal	22,949	5.8	159	13.3	6,861	6.9

	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Unknown Event	27,224	6.9	15	1.3	6,687	6.8
TOTAL MOST HARMFUL EVENT	394,802	100.0	1,194	100.0	99,009	100.0

## DRIVER AGE 25-64 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	76,857	19.5	341	28.6	11,129	11.2
Head On	6,911	1.8	252	21.1	3,016	3.0
Head On - Left Turn	15,438	3.9	52	4.4	6,571	6.6
Angle	88,484	22.4	349	29.2	28,054	28.3
Rear End	128,858	32.6	102	8.5	38,128	38.5
Rear End - Left Turn	5,460	1.4	23	1.9	1,716	1.7
Rear End - Right Turn	4,115	1.0	2	0.2	745	0.8
Sideswipe - Same Direction	34,126	8.6	25	2.1	3,676	3.7
Sideswipe - Opposite Direct	11,080	2.8	8	0.7	1,744	1.8
Other	19,104	4.8	34	2.8	3,349	3.4
Unknown	4,369	1.1	6	0.5	881	0.9
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

HAZARDOUS ACTION	All Crashes		Fatal Crashes		Injury Crashes		Hazardous Citation Issued	
	Number	% of Total	#	% of Fatal	#	% of Injury	#	% of Issued
None	231,814	58.7	549	46.0	53,960	54.5	417	0.6
Speed too fast	16,152	4.1	173	14.5	5,375	5.4	5,630	8.0
Speed too slow	698	0.2	0	0.0	208	0.2	240	0.3
Failed to yield	31,843	8.1	72	6.0	9,699	9.8	17,646	25.2
Disregard traffic control	7,632	1.9	62	5.2	3,439	3.5	4,470	6.4
Drove wrong way	262	0.1	9	0.8	92	0.1	101	0.1
Drove left of center	2,096	0.5	78	6.5	831	0.8	883	1.3
Improper passing	2,362	0.6	4	0.3	391	0.4	924	1.3
Improper lane use	7,448	1.9	8	0.7	1,072	1.1	3,268	4.7
Improper turn	4,455	1.1	4	0.3	929	0.9	1,830	2.6
Improper/no signal	519	0.1	1	0.1	75	0.1	142	0.2
Improper backing	7,573	1.9	4	0.3	291	0.3	2,223	3.2
Unable to stop in assured clear distance	50,315	12.7	33	2.8	14,103	14.2	25,225	36.0
Other	19,109	4.8	105	8.8	5,387	5.4	6,455	9.2
Unknown	12,524	3.2	92	7.7	3,157	3.2	533	0.8
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0	69,987	100.0

Compared to the other two age groups (16-24 and 65-98), drivers in this age group are cited less frequently for hazardous action.

## DRIVER AGE 25-64 (continued)

LOCATION OF FIRST IMPACT IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
On Road	367,330	93.0	955	80.0	90,601	91.5
Median	1,464	0.4	18	1.5	525	0.5
Shoulder	7,922	2.0	58	4.9	2,121	2.1
Outside of Shoulder/Curb	13,569	3.4	142	11.9	4,583	4.6
Gore	397	0.1	4	0.3	148	0.1
Other/Unknown	4,120	1.0	17	1.4	1,031	1.0
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

TIME OF DAY IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
12:00 mid. - 02:59 a.m.	13,652	3.5	145	12.1	3,860	3.9
03:00 a.m. - 05:59 a.m.	12,028	3.0	82	6.9	2,251	2.3
06:00 a.m. - 08:59 a.m.	53,829	13.6	142	11.9	11,911	12.0
09:00 a.m. - 11:59 a.m.	48,509	12.3	115	9.6	12,409	12.5
12:00 noon - 02:59 p.m.	72,414	18.3	172	14.4	19,967	20.2
03:00 p.m. - 05:59 p.m.	103,664	26.3	215	18.0	27,370	27.6
06:00 p.m. - 08:59 p.m.	58,751	14.9	198	16.6	13,652	13.8
09:00 p.m. - 11:59 p.m.	29,600	7.5	118	9.9	7,052	7.1
Unknown	2,355	0.6	7	0.6	537	0.5
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

ROADWAY TYPE IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Limited Access Roadway	35,251	8.9	108	9.0	9,451	9.5
U.S. & Michigan Roads	102,141	25.9	358	30.0	26,380	26.6
County & City Roads	257,410	65.2	728	61.0	63,178	63.8
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

## DRIVER AGE 25-64 (continued)

DAY OF WEEK IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Sunday	34,104	8.6	145	12.1	8,981	9.1
Monday	59,263	15.0	166	13.9	14,414	14.6
Tuesday	63,092	16.0	170	14.2	15,600	15.8
Wednesday	61,206	15.5	146	12.2	15,189	15.3
Thursday	61,267	15.5	170	14.2	15,116	15.3
Friday	68,412	17.3	184	15.4	17,156	17.3
Saturday	47,458	12.0	213	17.8	12,553	12.7
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	225,886	57.2	851	71.3	53,965	54.5
Female	163,127	41.3	329	27.6	43,523	44.0
Unknown	5,789	1.5	14	1.2	1,521	1.5
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	284,666	72.1	801	67.1	66,844	67.5
2 occupants	66,051	16.7	261	21.9	19,250	19.4
3 occupants	20,381	5.2	71	5.9	6,276	6.3
4 occupants	9,043	2.3	32	2.7	2,795	2.8
5 occupants	3,046	0.8	11	0.9	1,061	1.1
6 + occupants	2,458	0.6	15	1.3	799	0.8
0 occupants	4,549	1.2	0	0.0	818	0.8
Unknown	4,608	1.2	3	0.3	1,166	1.2
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

## DRIVER AGE 25-64 (continued)

VEHICLE TYPE CRASH INVOLVEMENT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Passenger Car and Station Wagon	263,801	66.8	631	52.8	68,603	69.3
Van and Motorhome	38,390	9.7	118	9.9	9,294	9.4
Pickup	65,566	16.6	246	20.6	13,920	14.1
Small Truck (under 10,000 lbs.)	8,945	2.3	29	2.4	1,986	2.0
Motorcycle	1,930	0.5	42	3.5	1,478	1.5
Moped	105	0.0	1	0.1	75	0.1
Go Cart	1	0.0	0	0.0	0	0.0
Snowmobile	209	0.1	16	1.3	133	0.1
Off Road Vehicle	71	0.0	1	0.1	50	0.1
Other	1,123	0.3	5	0.4	239	0.2
Unknown	1,995	0.5	4	0.3	507	0.5
CDL Truck/Bus (breakdown below)	12,666	3.2	101	8.5	2,724	2.8
Total Drivers	394,802	100.0	1,194	100.0	99,009	100.0

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.

CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Commercial Vehicle: Group A	5,827	46.0	71	70.3	1,316	48.3
Commercial Vehicle: Group B	3,493	27.6	17	16.8	746	27.4
Commercial Vehicle: Group C	417	3.3	0	0.0	83	3.0
Other Truck	799	6.3	6	5.9	170	6.2
Unknown Truck	2,130	16.8	7	6.9	409	15.0
Total Drivers	12,666	100.0	101	100.0	2,724	100.0

Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.



## DRIVER AGE 65-98

DRIVER ACTION PRIOR TO CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Going straight ahead	22,708	48.7	151	66.8	6,237	50.5
Turning left	6,032	12.9	32	14.2	1,845	14.9
Turning right	1,685	3.6	1	0.4	265	2.1
Stopped on roadway	4,416	9.5	6	2.7	1,370	11.1
In prior crash	41	0.1	0	0.0	16	0.1
Changing lanes	1,362	2.9	2	0.9	165	1.3
Backing	1,526	3.3	0	0.0	66	0.5
Slowing/stopping on roadway	3,212	6.9	1	0.4	984	8.0
Slowing/stopping other	52	0.1	0	0.0	11	0.1
Starting up on roadway	1,281	2.7	9	4.0	391	3.2
Starting up other	52	0.1	0	0.0	16	0.1
Entering parking	102	0.2	0	0.0	12	0.1
Leaving parking	304	0.7	3	1.3	50	0.4
Entering roadway	1,264	2.7	7	3.1	301	2.4
Leaving roadway	80	0.2	2	0.9	30	0.2
Making U-turn	186	0.4	1	0.4	53	0.4
Overtaking or passing	312	0.7	2	0.9	56	0.5
Avoiding object	41	0.1	0	0.0	12	0.1
Avoiding pedestrian	8	0.0	0	0.0	5	0.0
Avoiding vehicle (front/back)	222	0.5	2	0.9	55	0.4
Avoiding vehicle (angle)	107	0.2	1	0.4	32	0.3
Driverless moving	4	0.0	0	0.0	0	0.0
Parked	224	0.5	0	0.0	17	0.1
Crossing at intersection	4	0.0	0	0.0	3	0.0
Crossing not at intersection	2	0.0	0	0.0	1	0.0
Getting on/off vehicle	0	0.0	0	0.0	0	0.0
In roadway with traffic	0	0.0	0	0.0	0	0.0
In roadway against traffic	0	0.0	0	0.0	0	0.0
Standing/lying in roadway	0	0.0	0	0.0	0	0.0
Pushing/working on vehicle	0	0.0	0	0.0	0	0.0
Other working in roadway	0	0.0	0	0.0	0	0.0
Playing in roadway	0	0.0	0	0.0	0	0.0
In roadway other reason	0	0.0	0	0.0	0	0.0
Not in roadway	1	0.0	0	0.0	1	0.0
Other	33	0.1	0	0.0	8	0.1
Unknown	1,321	2.8	6	2.7	347	2.8
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

## DRIVER AGE 65-98 (continued)

MOST HARMFUL EVENT IN A NONCOLLISION	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Loss of control	265	0.6	1	0.4	75	0.6
Cross center/median	90	0.2	0	0.0	22	0.2
Ran off road left	50	0.1	0	0.0	14	0.1
Ran off road right	68	0.1	0	0.0	23	0.2
Re-enter road	19	0.0	0	0.0	14	0.1
Overtake	208	0.4	10	4.4	128	1.0
Separation of units	184	0.4	1	0.4	45	0.4
Fire/explosion	30	0.1	0	0.0	5	0.0
Immersion	11	0.0	0	0.0	3	0.0
Jackknife	24	0.1	0	0.0	4	0.0
Downhill runaway	5	0.0	0	0.0	0	0.0
Cargo loss/shift	21	0.0	0	0.0	1	0.0
Individual fell off	13	0.0	2	0.9	4	0.0
Other noncollision	92	0.2	0	0.0	30	0.2
NONCOLLISION Subtotal	1,080	2.3	14	6.2	368	3.0

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	219	0.5	12	5.3	194	1.6
Pedalcycle	233	0.5	1	0.4	185	1.5
Motor vehicle in transport	35,214	75.6	167	73.9	9,939	80.5
Parked motor vehicle	1,168	2.5	1	0.4	127	1.0
Railway train	11	0.0	1	0.4	3	0.0
Animal	3,196	6.9	0	0.0	63	0.5
Other nonfixed objects	325	0.7	0	0.0	47	0.4
COLLISION NONFIXED Subtotal	40,366	86.7	182	80.5	10,558	85.5



## DRIVER AGE 65-98 (continued)

MOST HARMFUL EVENT IN A COLLISION WITH A FIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Bridge/pier/abutment	31	0.1	0	0.0	10	0.1
Bridge parapet end	9	0.0	0	0.0	0	0.0
Bridge rail	11	0.0	1	0.4	4	0.0
Guardrail face	73	0.2	1	0.4	21	0.2
Guardrail end	15	0.0	1	0.4	8	0.1
Median barrier	60	0.1	0	0.0	33	0.3
Highway traffic sign post	129	0.3	0	0.0	16	0.1
Signal post	11	0.0	0	0.0	0	0.0
Luminaire/light support	44	0.1	0	0.0	14	0.1
Utility pole	172	0.4	3	1.3	87	0.7
Other pole	53	0.1	3	1.3	13	0.1
Culvert	36	0.1	0	0.0	13	0.1
Curb	98	0.2	1	0.4	8	0.1
Ditch	250	0.5	2	0.9	86	0.7
Embankment	60	0.1	1	0.4	23	0.2
Fence	66	0.1	0	0.0	17	0.1
Mailbox	86	0.2	0	0.0	13	0.1
Tree	425	0.9	11	4.9	197	1.6
Rail crossing signal	15	0.0	1	0.4	1	0.0
Building	79	0.2	1	0.4	31	0.3
Traffic island	2	0.0	0	0.0	1	0.0
Fire hydrant	45	0.1	0	0.0	11	0.1
Impact attenuator	1	0.0	0	0.0	0	0.0
Other fixed object	145	0.3	1	0.4	32	0.3
COLLISION FIXED Subtotal	1,916	4.1	27	11.9	639	5.2

	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Unknown Event	3,220	6.9	3	1.3	784	6.3
TOTAL MOST HARMFUL EVENT	46,582	100.0	226	100.0	12,349	100.0

## DRIVER AGE 65-98 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	5,753	12.4	43	19.0	971	7.9
Head On	793	1.7	30	13.3	363	2.9
Head On - Left Turn	2,610	5.6	20	8.8	1,100	8.9
Angle	15,263	32.8	100	44.2	4,622	37.4
Rear End	11,934	25.6	21	9.3	3,874	31.4
Rear End - Left Turn	635	1.4	3	1.3	214	1.7
Rear End - Right Turn	428	0.9	0	0.0	78	0.6
Sideswipe - Same Direction	4,908	10.5	2	0.9	442	3.6
Sideswipe - Opposite Direct	1,431	3.1	0	0.0	190	1.5
Other	2,293	4.9	6	2.7	386	3.1
Unknown	534	1.1	1	0.4	109	0.9
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

Elderly drivers have the highest incidence of angle type crashes when compared to the other two age groups (16-24 and 25-64) in all crashes and fatal crashes.

HAZARDOUS ACTION	All Crashes		Fatal Crashes		Injury Crashes		Hazardous Citation Issued	
	Number	% of Total	#	% of Fatal	#	% of Injury	#	% of Issued
None	21,969	47.2	65	28.8	5,365	43.4	44	0.4
Speed too fast	898	1.9	9	4.0	308	2.5	266	2.6
Speed too slow	88	0.2	0	0.0	22	0.2	32	0.3
Failed to yield	8,725	18.7	59	26.1	2,679	21.7	4,459	43.6
Disregard traffic control	1,752	3.8	23	10.2	753	6.1	1,023	10.0
Drove wrong way	53	0.1	1	0.4	18	0.1	22	0.2
Drove left of center	324	0.7	13	5.8	138	1.1	133	1.3
Improper passing	297	0.6	1	0.4	38	0.3	103	1.0
Improper lane use	1,464	3.1	3	1.3	161	1.3	580	5.7
Improper turn	1,007	2.2	4	1.8	201	1.6	419	4.1
Improper/no signal	70	0.2	0	0.0	9	0.1	14	0.1
Improper backing	1,220	2.6	0	0.0	34	0.3	275	2.7
Unable to stop in assured clear distance	4,922	10.6	12	5.3	1,631	13.2	2,252	22.0
Other	2,208	4.7	15	6.6	597	4.8	551	5.4
Unknown	1,585	3.4	21	9.3	395	3.2	52	0.5
Total Drivers	46,582	100.0	226	100.0	12,349	100.0	10,225	100.0

Compared to the other two age groups, elderly drivers have the highest incidence of failed to yield, disregard of traffic control, improper lane use, improper turn, and improper backing as a hazardous action in all crashes.

## DRIVER AGE 65-98 (continued)

LOCATION OF FIRST IMPACT IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
On Road	44,049	94.6	190	84.1	11,576	93.7
Median	102	0.2	3	1.3	30	0.2
Shoulder	745	1.6	10	4.4	189	1.5
Outside of Shoulder/Curb	1,183	2.5	22	9.7	418	3.4
Gore	29	0.1	0	0.0	11	0.1
Other/Unknown	474	1.0	1	0.4	125	1.0
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

TIME OF DAY IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
12:00 mid. - 02:59 a.m.	446	1.0	5	2.2	102	0.8
03:00 a.m. - 05:59 a.m.	337	0.7	2	0.9	69	0.6
06:00 a.m. - 08:59 a.m.	3,230	6.9	15	6.6	775	6.3
09:00 a.m. - 11:59 a.m.	9,825	21.1	50	22.1	2,630	21.3
12:00 noon - 02:59 p.m.	12,808	27.5	57	25.2	3,684	29.8
03:00 p.m. - 05:59 p.m.	12,224	26.2	60	26.5	3,279	26.6
06:00 p.m. - 08:59 p.m.	5,468	11.7	19	8.4	1,326	10.7
09:00 p.m. - 11:59 p.m.	1,972	4.2	17	7.5	418	3.4
Unknown	272	0.6	1	0.4	66	0.5
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

9:00 AM to 2:59 PM shows the highest involvement for elderly drivers compared to the other two age groups.

ROADWAY TYPE IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Limited Access Roadway	2,422	5.2	10	4.4	612	5.0
U.S. & Michigan Roads	12,483	26.8	82	36.3	3,412	27.6
County & City Roads	31,677	68.0	134	59.3	8,325	67.4
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

Elderly drivers have a higher rate of incidence in fatal crashes on U.S. and Michigan roads than the other two age groups.

## DRIVER AGE 65-98 (continued)

DAY of WEEK IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Sunday	4,083	8.8	24	10.6	1,133	9.2
Monday	6,953	14.9	40	17.7	1,815	14.7
Tuesday	7,505	16.1	38	16.8	1,990	16.1
Wednesday	7,451	16.0	36	15.9	1,951	15.8
Thursday	7,236	15.5	31	13.7	1,920	15.5
Friday	7,989	17.2	33	14.6	2,141	17.3
Saturday	5,365	11.5	24	10.6	1,399	11.3
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	27,228	58.5	142	62.8	6,897	55.9
Female	18,665	40.1	81	35.8	5,246	42.5
Unknown	689	1.5	3	1.3	206	1.7
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	33,369	71.6	150	66.4	8,429	68.3
2 occupants	10,384	22.3	63	27.9	3,112	25.2
3 occupants	1,187	2.5	8	3.5	389	3.2
4 occupants	419	0.9	0	0.0	126	1.0
5 occupants	116	0.2	2	0.9	47	0.4
6 + occupants	120	0.3	2	0.9	36	0.3
0 occupants	515	1.1	0	0.0	93	0.8
Unknown	472	1.0	1	0.4	117	0.9
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

## DRIVER AGE 65-98 (continued)

VEHICLE TYPE CRASH INVOLVEMENT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Passenger Car and Station Wagon	37,888	81.3	181	80.1	10,231	82.8
Van and Motorhome	3,148	6.8	12	5.3	781	6.3
Pickup	4,412	9.5	22	9.7	1,036	8.4
Small Truck (under 10,000 lbs.)	502	1.1	3	1.3	111	0.9
Motorcycle	29	0.1	0	0.0	25	0.2
Moped	14	0.0	0	0.0	9	0.1
Go Cart	0	0.0	0	0.0	0	0.0
Snowmobile	5	0.0	0	0.0	5	0.0
Off Road Vehicle	5	0.0	1	0.4	3	0.0
Other	61	0.1	2	0.9	18	0.1
Unknown	217	0.5	1	0.4	60	0.5
CDL Truck/Bus (breakdown below)	301	0.6	4	1.8	70	0.6
Total Drivers	46,582	100.0	226	100.0	12,349	100.0

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.

CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Commercial Vehicle: Group A	108	35.9	0	0.0	26	37.1
Commercial Vehicle: Group B	87	28.9	3	75.0	19	27.1
Commercial Vehicle: Group C	21	7.0	0	0.0	6	8.6
Other Truck	24	8.0	1	25.0	5	7.1
Unknown Truck	61	20.3	0	0.0	14	20.0
Total Drivers	301	100.0	4	100.0	70	100.0

Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.



## INJURY EXPERIENCE FOR PERSONS WHO HAD BEEN DRINKING

Alcohol and/or drug use affects the judgment and behavior of persons in addition to motor vehicle drivers. Consider the experience of drinking bicyclists, pedestrians, motorcyclists, snowmobilers, and ORV/ATV riders, when looking at crash statistics. Alcohol should not be used by anyone intending to navigate a roadway.

<b>BICYCLIST</b>	Total	Drinking in Crash	Drinking Bicyclist
Bicyclists Killed	27	8	5
Bicyclists Injured	2,510	119	78
Bicyclists in Crashes	3,097	140	94



<b>PEDESTRIAN</b>	Total	Drinking in Crash	Drinking Pedestrian
Pedestrians Killed	172	66	59
Pedestrians Injured	3,314	322	217
Pedestrians in Crashes	3,891	406	286



<b>MOTORCYCLIST</b>	Total	Drinking in Crash	Drinking Motorcyclist
Motorcyclists Killed	53	22	21
Motorcyclists Injured	2,456	326	290
Motorcyclists in Crashes	3,320	396	339



<b>SNOWMOBILER *</b>	Total	Drinking in Crash	Drinking Snowmobiler
Snowmobilers Killed	21	18	18
Snowmobilers Injured	216	57	55
Snowmobilers in Crashes	419	97	90

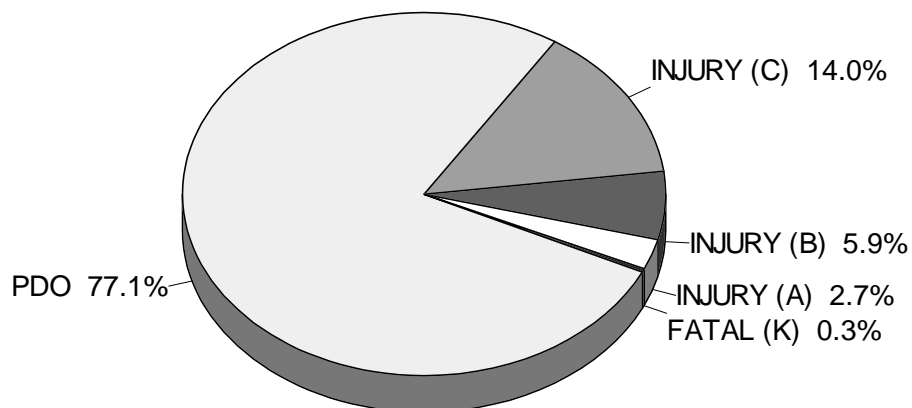


<b>ORV/ATV RIDER *</b>	Total	Drinking in Crash	Drinking ORV/ATV Rider
ORV/ATV Rider Killed	4	1	1
ORV/ATV Rider Injured	155	24	24
ORV/ATV Rider in Crashes	225	29	29

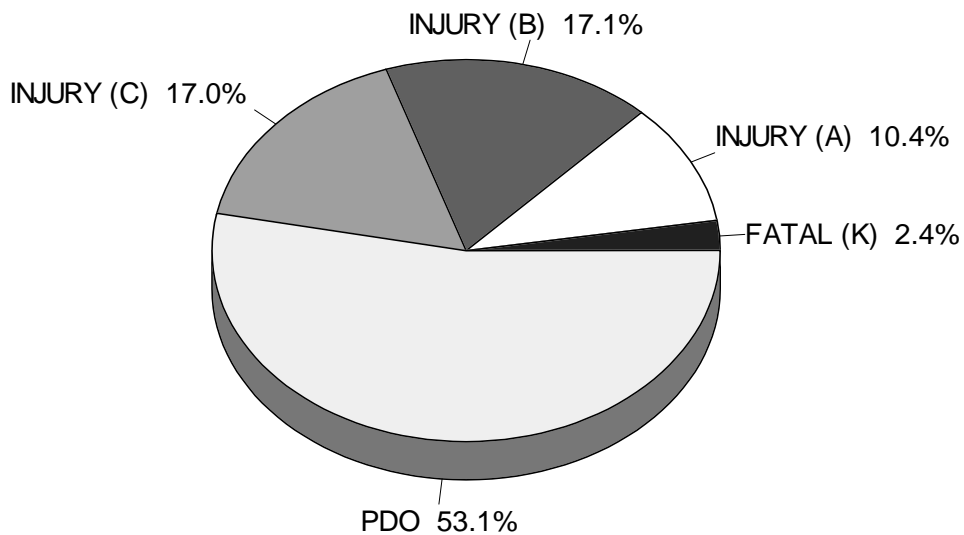


\* on Michigan public roadways

## ALL CRASHES BY INJURY SEVERITY



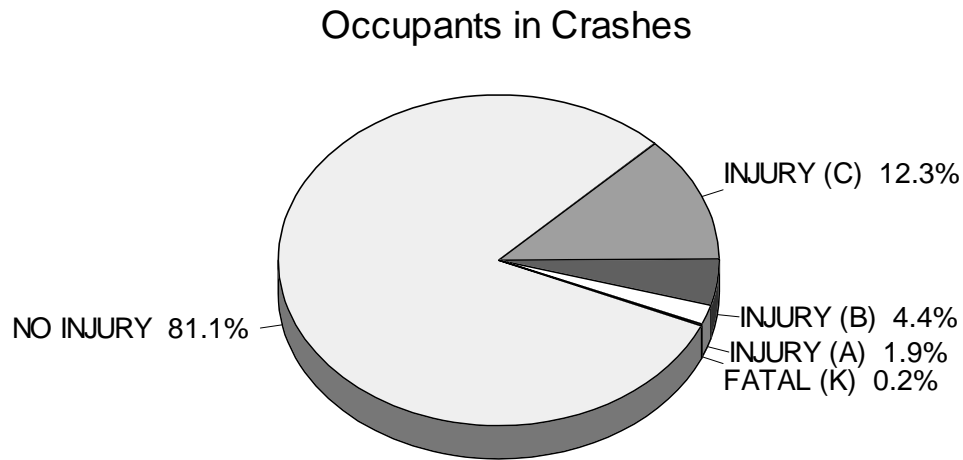
## HBD CRASHES BY INJURY SEVERITY



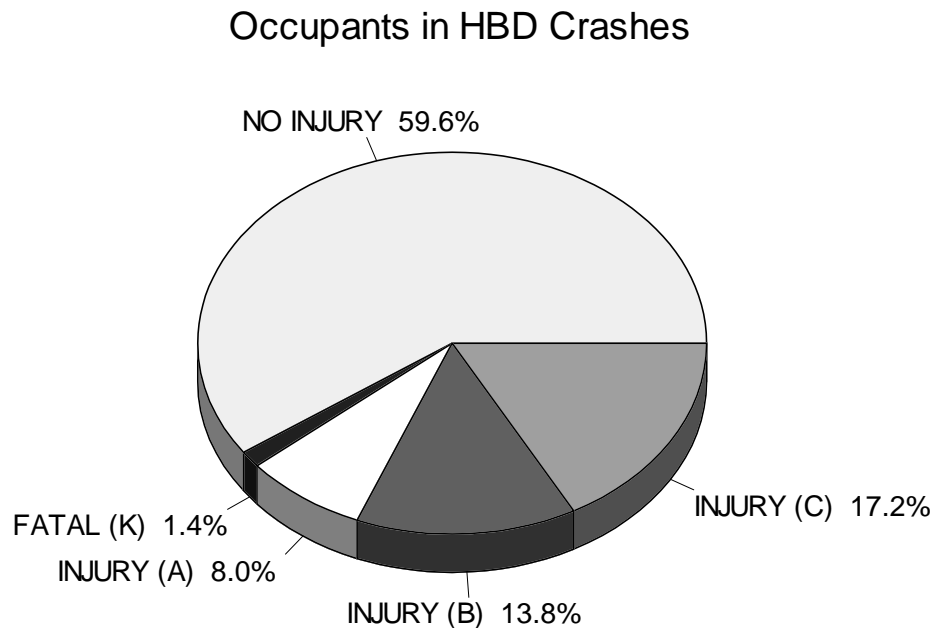
The problem of the drinking driver, pedestrian, and/or cyclist is seen when one compares the two charts on this page. A fatality in the crash is eight times more likely when one of the crash-involved operators is reported as had been drinking.



## DEATH & INJURY PER CRASH INVOLVED OCCUPANT



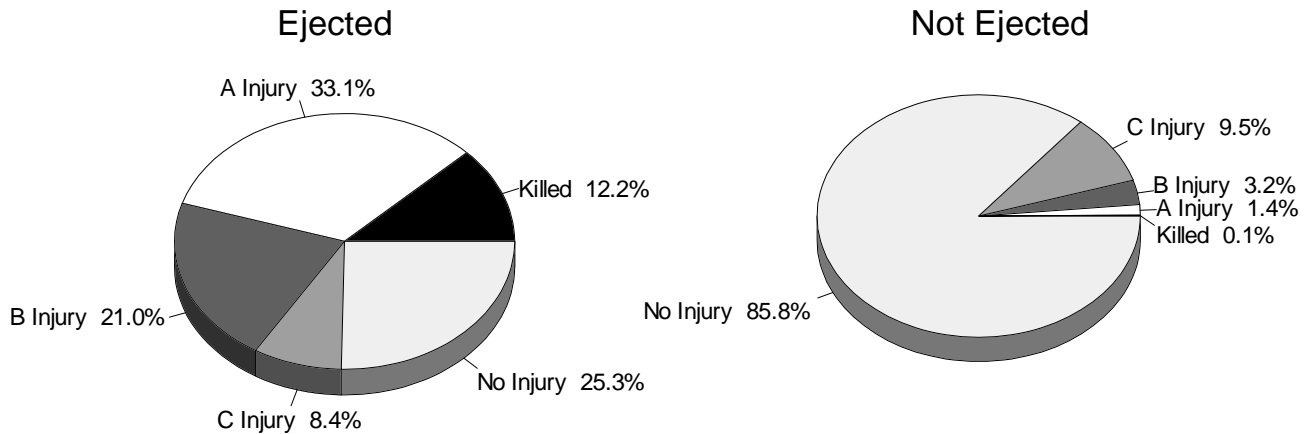
The majority of occupants involved in crashes are not injured (81.1%). Two thirds of those who are injured receive only minor (C) injuries. Increased use of occupant restraints and airbags can reduce the number of killed and injured even further.



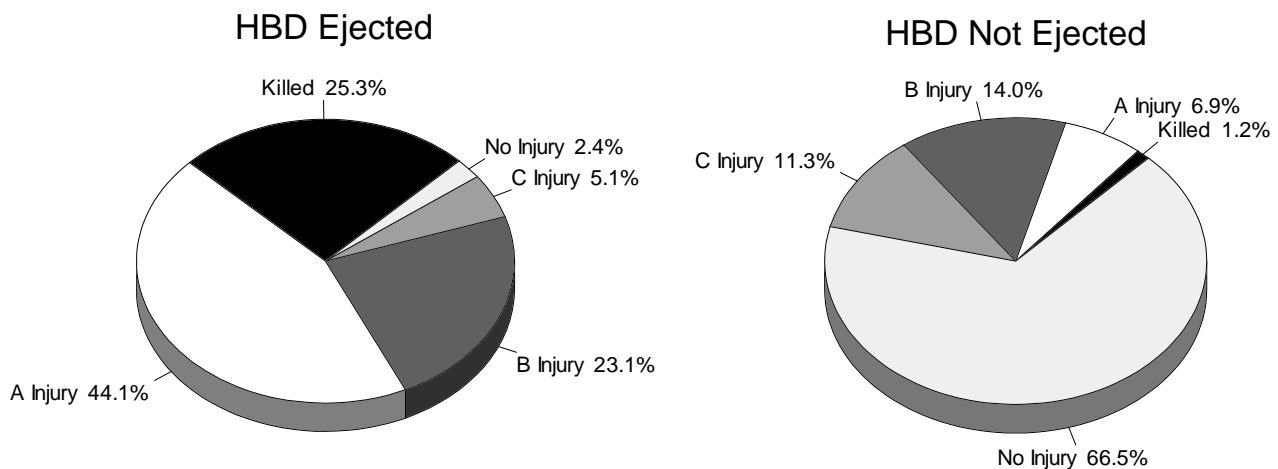
Crashes involving drinking tend to be more serious than nondrinking crashes. The percentage of fatalities is seven times higher than in all crashes and the more serious injury levels are three to four times higher.

## ALL DRIVERS and HBD DRIVERS INJURY SEVERITY - EJECTED vs. NOT EJECTED

As can be seen in the two charts below, death and injury are much more likely when drivers are ejected from their vehicles.

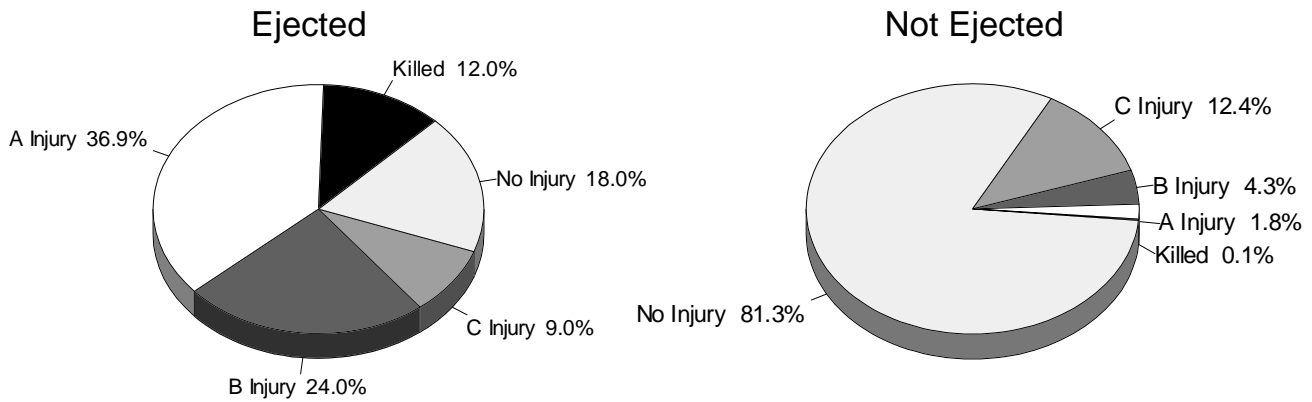


When compared to the charts above, the charts below demonstrate that the injury severity is much worse for drivers who had been drinking in both ejected, and nonejected events.

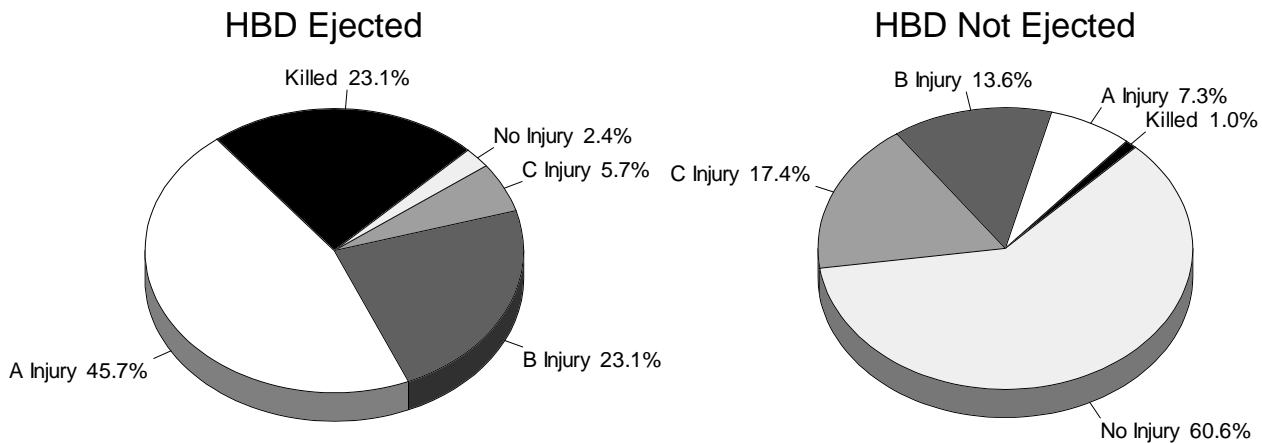


## ALL OCCUPANTS and OCCUPANTS of HBD CRASHES INJURY SEVERITY - EJECTED vs. NOT EJECTED

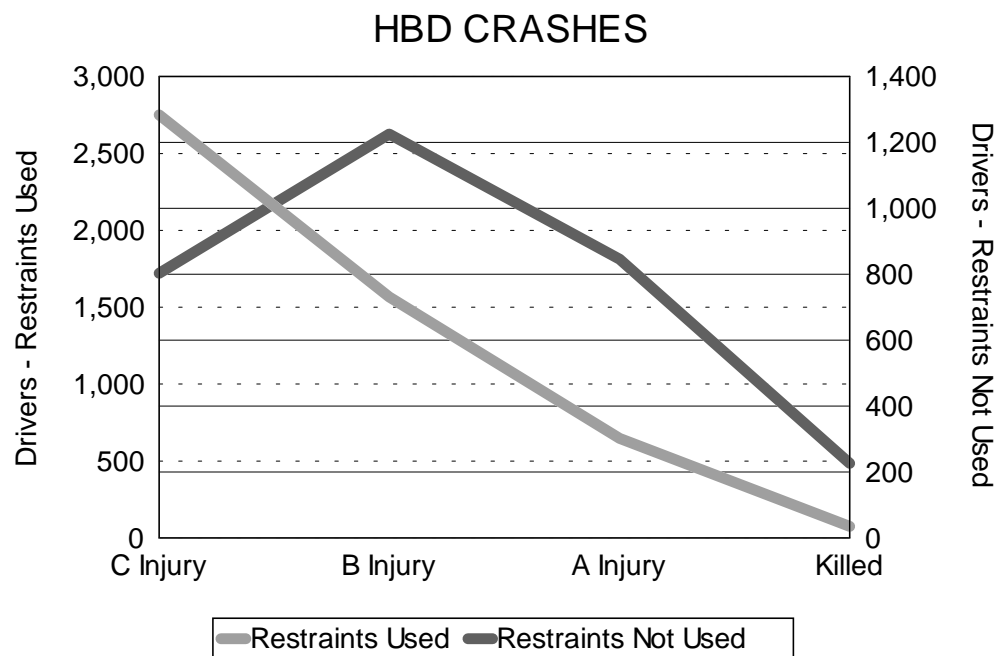
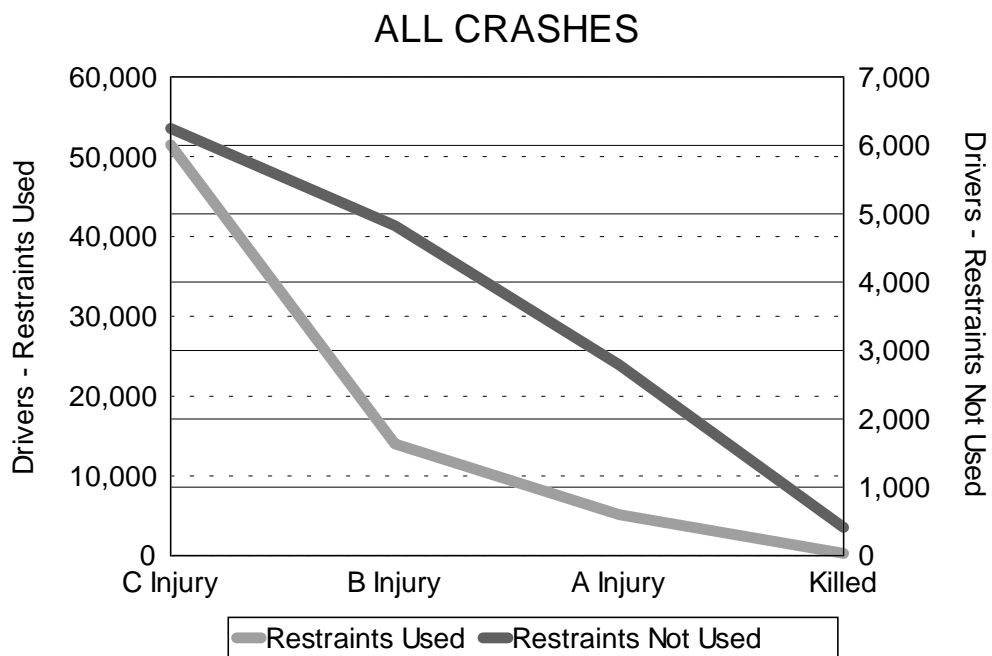
As can be seen in the two charts below, death and injury are much more likely when occupants are ejected from their vehicles.



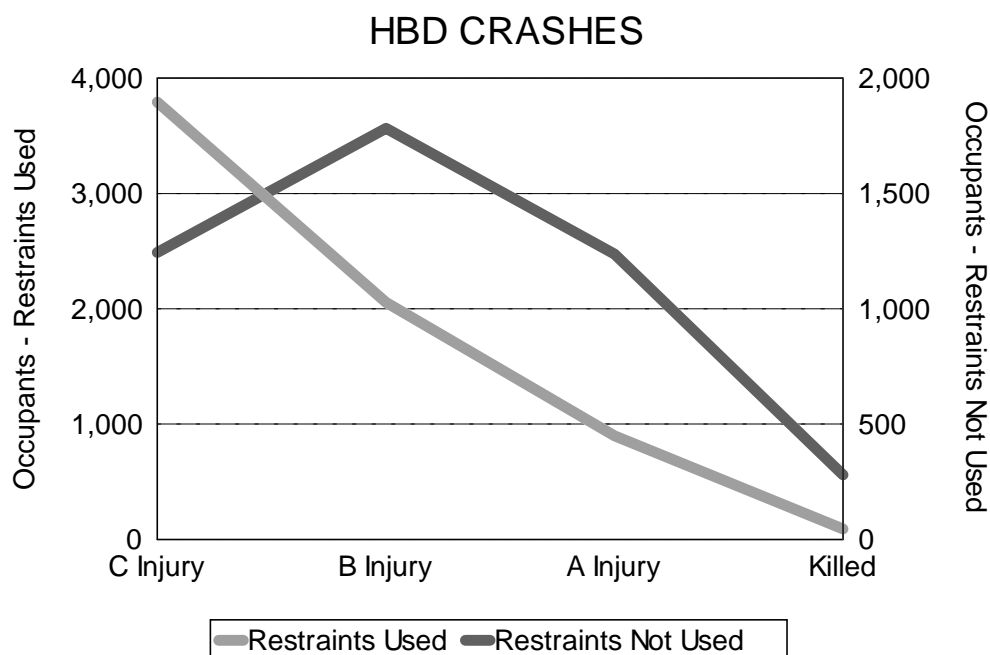
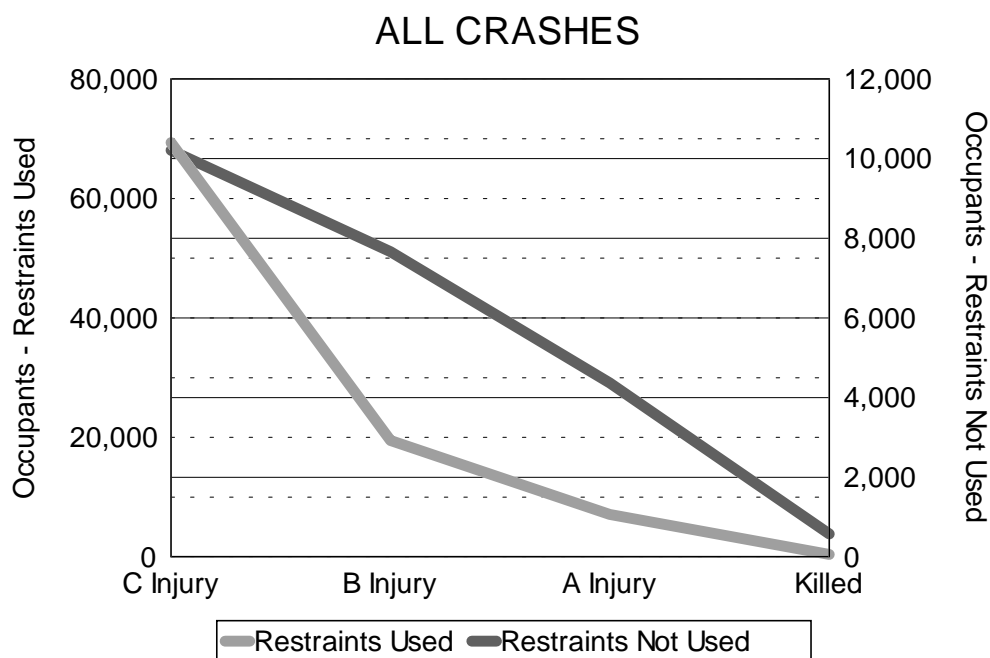
When compared to the charts above, the charts below demonstrate that the injury severity is much worse for occupants in a crash where drinking is reported in both ejected, and nonejected events.



## INJURY SEVERITY & RESTRAINT USE FOR CRASH INVOLVED KABC DRIVERS



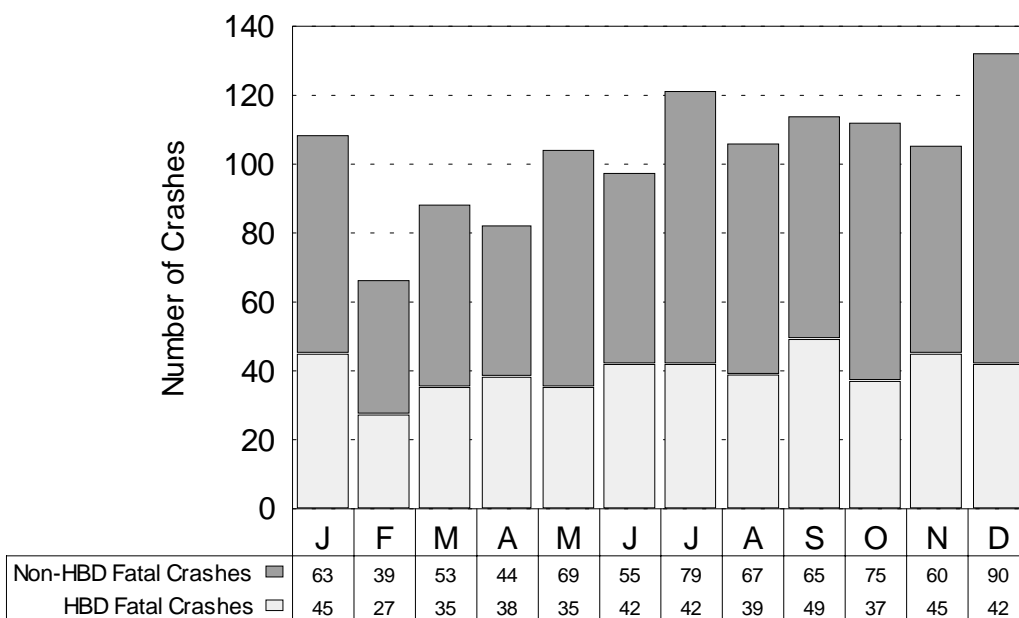
## INJURY SEVERITY & RESTRAINT USE FOR CRASH INVOLVED KABC OCCUPANTS



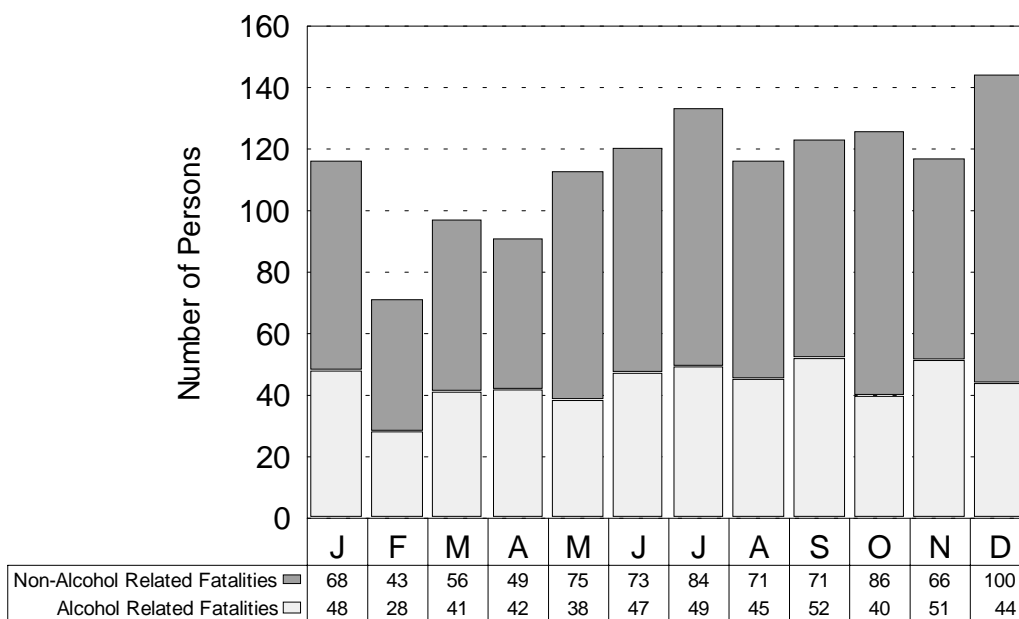
## ALCOHOL INVOLVEMENT IN FATAL CRASHES

Fatal crashes were lowest in number during February, March and April. The number of fatal crashes then increased, hitting a high in July and again in December. The number of HBD fatal crashes does not show a discernable trend. Total persons killed in fatal crashes closely follows the number of crashes, as would be expected.

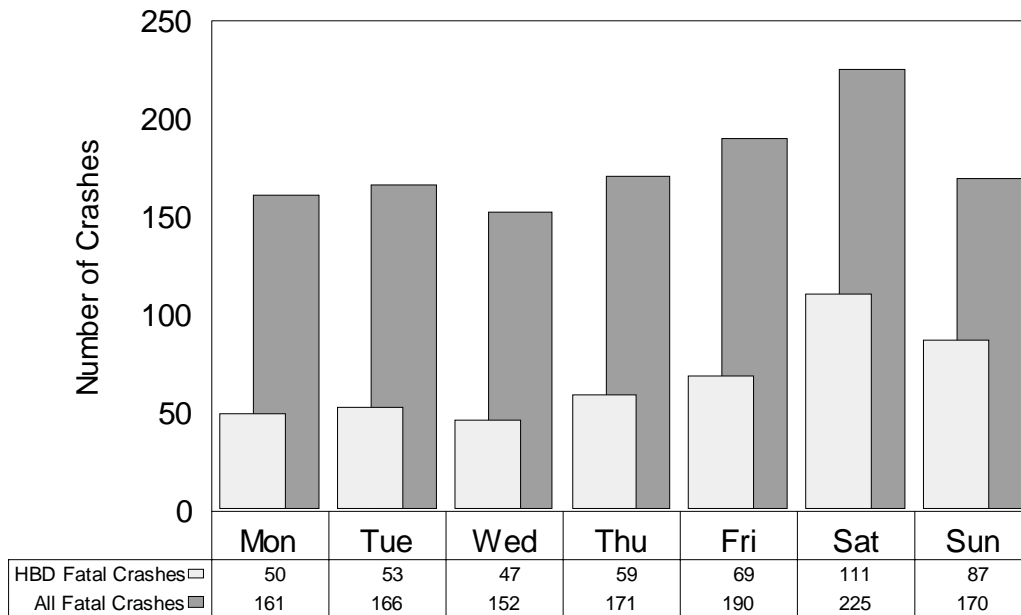
### HBD Fatal Crashes by Month



### Alcohol Related Fatalities by Month

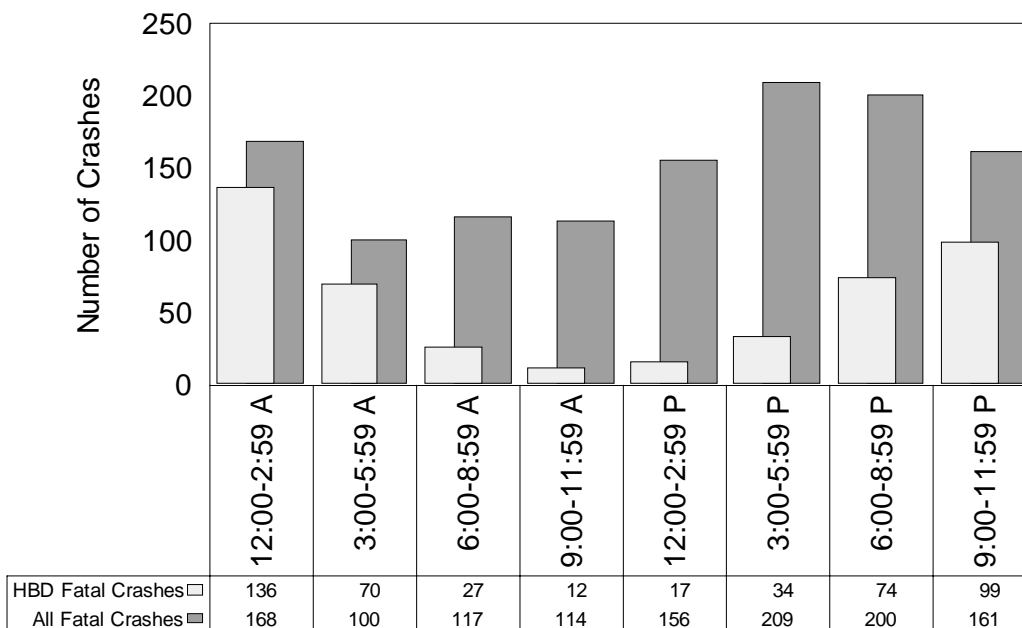


## HBD Fatal Crashes by Day of Week



Saturday had the most fatal crashes in 1998. Saturday and Sunday had the highest proportions of drinking related fatal crashes. Half of the weekend fatal crashes involved drinking, while only 30.9 percent of fatal crashes on Wednesday involved drinking.

## HBD Fatal Crashes by Time of Day



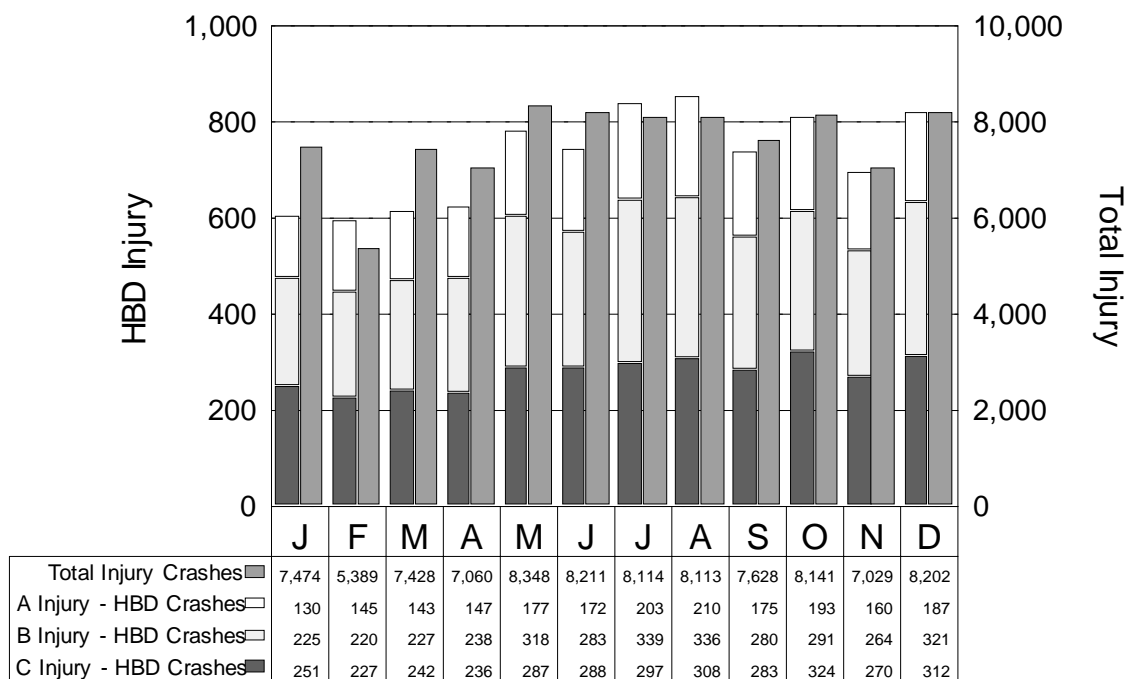
Not surprisingly, the midnight to 2:59 AM time period had the highest rate of drinking involvement (81.0%), while the late morning hours had the lowest (10.5%).

There were 10 fatal crashes where the time of day was unknown. Of these 10 fatal crashes, 7 were HBD.

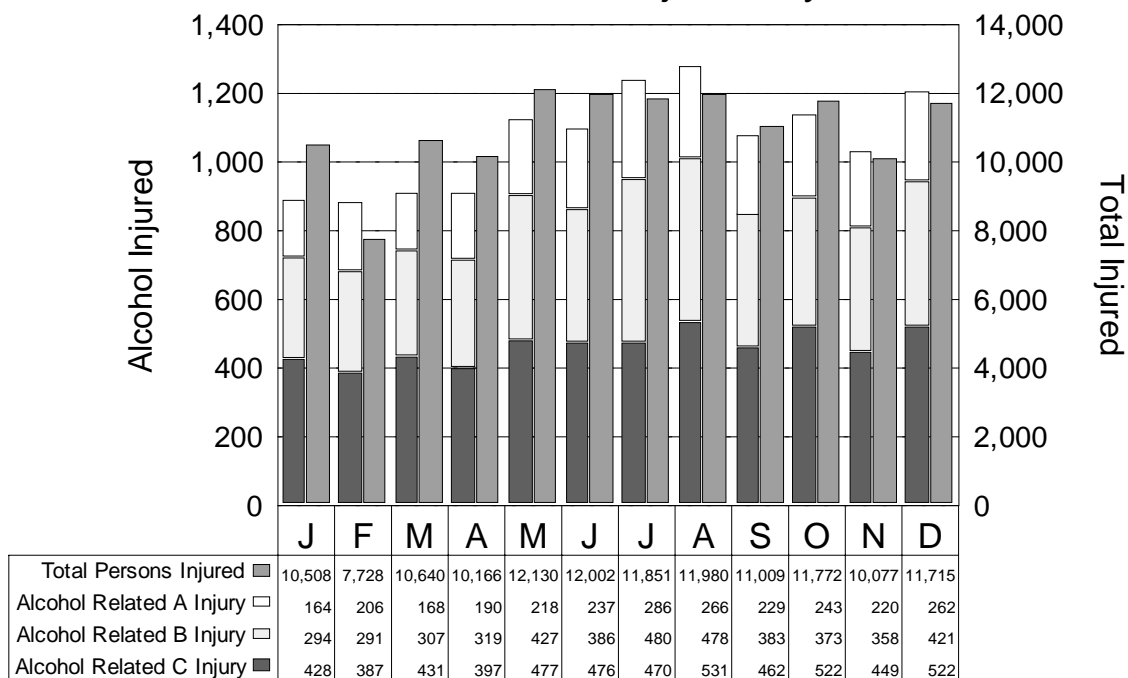
## ALCOHOL INVOLVEMENT IN INJURY CRASHES

Alcohol involvement in injury crashes is an important indicator of the alcohol impaired driving problem. In 1998, the highest number of HBD injury crashes occurred in August with 854. The highest proportion of HBD injury crashes occurred in February with 10.99 percent of the injury crashes in that month involving alcohol.

### HBD Injury Crashes by Month

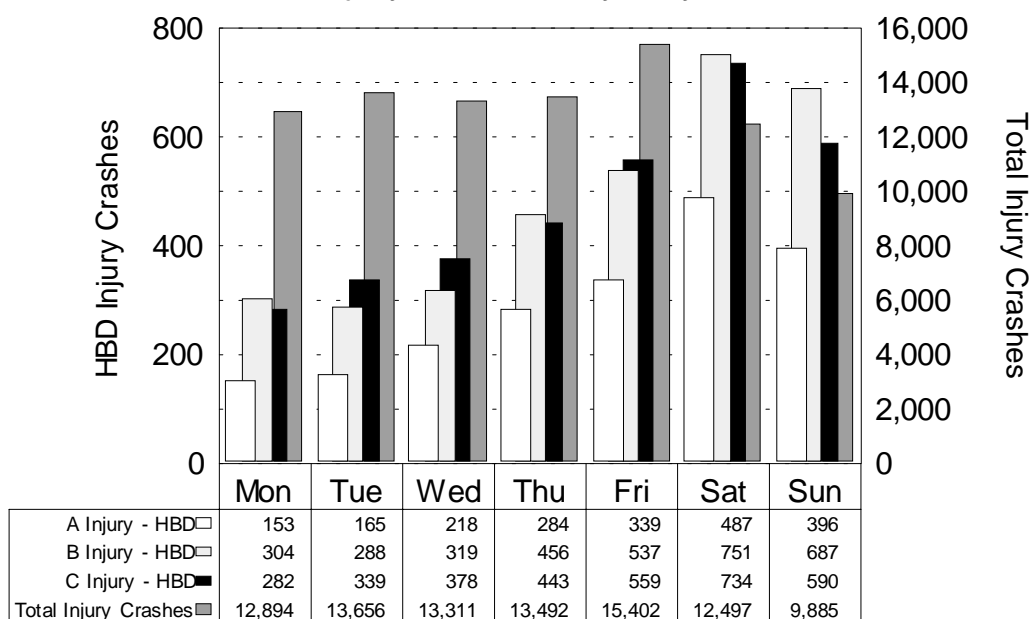


### Alcohol Related Injuries by Month



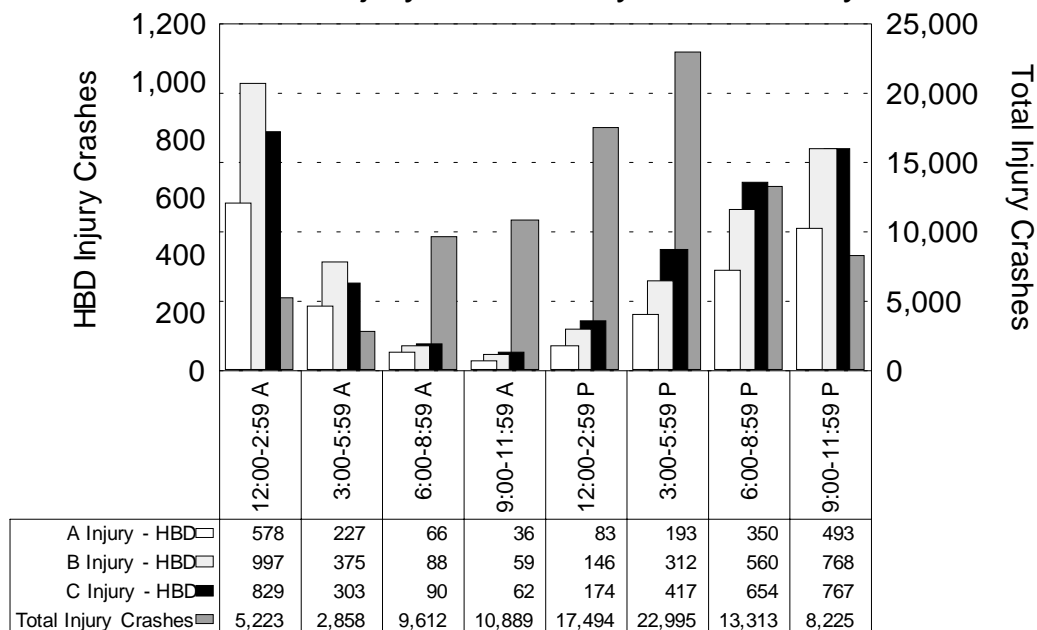


## HBD Injury Crashes by Day of Week



HBD injury crashes follow the same basic trends as total crashes through the work week, but the weekend sees a dramatic increase in the proportion of HBD injury crashes to total injury crashes.

## HBD Injury Crashes by Time of Day



Total injury crash frequencies peak in the hours between 12:00 PM and 5:59 PM, while HBD injury crash frequencies peak between 9:00 PM and 2:59 AM. A particularly hazardous travel period is 12:00 AM to 2:59 AM.

## REPORTED AGE OF DRINKING DRIVERS INVOLVED IN CRASHES

COUNTY	All ages	0-15 years	16-20 years	21-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 yrs & over	DOB unk
Alcona	32	0	4	3	12	5	6	0	2	0	0
Alger	31	0	4	5	7	10	2	0	2	0	1
Allegan	267	0	29	46	79	70	14	9	2	2	16
Alpena	80	0	8	15	20	17	8	3	3	1	5
Antrim	59	0	6	12	13	17	3	2	2	0	4
Arenac	57	0	11	2	16	15	8	1	2	0	2
Baraga	34	1	5	7	9	7	3	1	0	0	1
Barry	140	0	12	20	46	31	19	5	2	2	3
Bay	336	0	34	60	83	98	23	18	7	5	8
Benzie	45	0	4	9	9	13	7	2	0	0	1
Berrien	328	0	27	41	77	70	32	11	11	7	52
Branch	92	0	17	20	24	13	7	3	2	0	6
Calhoun	318	2	27	47	107	58	35	18	4	5	15
Cass	130	0	10	14	33	29	9	2	2	0	31
Charlevoix	59	0	3	13	17	13	6	1	3	1	2
Cheboygan	64	0	9	7	15	19	8	2	2	0	2
Chippewa	87	1	9	13	21	19	8	4	2	0	10
Clare	70	0	3	7	19	16	13	8	1	2	1
Clinton	142	0	30	29	40	19	12	7	1	2	2
Crawford	38	0	7	7	4	14	1	0	3	1	1
Delta	80	0	7	10	30	19	2	5	2	1	4
Dickinson	49	0	6	5	13	6	0	2	2	1	14
Eaton	201	0	22	36	66	42	18	8	2	0	7
Emmet	75	0	8	17	21	14	10	0	1	2	2
Genesee	1,329	4	112	160	307	324	174	59	26	7	156
Gladwin	78	0	6	11	22	25	5	5	2	0	2
Gogebic	42	0	1	4	11	3	7	3	1	1	11
Grand Traverse	169	0	11	19	60	40	18	12	0	2	7
Gratiot	70	0	11	9	20	15	7	3	2	0	3
Hillsdale	93	0	9	16	22	27	9	3	0	1	6
Houghton	69	0	14	12	14	10	9	1	2	1	6
Huron	62	0	9	11	17	11	6	3	1	2	2
Ingham	437	1	55	74	124	105	40	15	6	0	17
Ionia	132	0	22	22	47	25	10	2	2	1	1
Iosco	83	0	9	5	32	25	4	3	1	2	2
Iron	42	0	6	3	9	9	4	2	2	0	7
Isabella	94	0	16	21	25	16	10	1	2	1	2
Jackson	382	3	40	55	99	97	47	7	9	5	20
Kalamazoo	520	1	66	98	150	114	47	17	5	2	20
Kalkaska	47	0	6	8	15	15	2	0	0	0	1
Kent	1,098	4	152	178	332	233	123	34	4	5	33
Keweenaw	10	0	2	0	2	3	1	0	0	0	2
Lake	37	1	4	3	11	8	5	2	1	0	2
Lapeer	207	1	20	31	63	53	22	9	2	1	5
Leelanau	55	0	9	8	15	12	6	0	1	0	4

## REPORTED AGE OF DRINKING DRIVERS INVOLVED IN CRASHES (continued)

COUNTY	All ages	0-15 years	16-20 years	21-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 yrs & over	DOB unk
Lenawee	187	2	25	30	53	40	15	3	2	0	17
Livingston	343	2	41	56	100	96	30	8	0	2	8
Luce	16	0	4	2	4	0	2	2	1	0	1
Mackinac	54	0	5	7	11	16	9	6	0	0	0
Macomb	1,508	3	146	194	424	421	166	70	28	11	45
Manistee	63	2	6	10	16	19	6	2	0	0	2
Marquette	136	0	22	25	29	32	13	4	2	2	7
Mason	44	0	2	5	16	6	7	1	4	1	2
Mecosta	98	0	16	18	26	20	10	5	1	1	1
Menominee	73	0	10	7	14	14	5	3	1	0	19
Midland	134	1	16	22	38	35	13	3	4	1	1
Missaukee	35	0	5	4	9	9	5	1	2	0	0
Monroe	309	1	35	38	78	60	33	8	5	5	46
Montcalm	158	0	22	35	49	34	9	4	2	0	3
Montmorency	29	0	3	6	8	9	2	0	1	0	0
Muskegon	326	1	31	51	91	83	45	9	5	2	8
Newaygo	117	3	18	13	34	28	11	4	2	0	4
Oakland	1,958	7	167	248	567	513	265	79	33	13	66
Oceana	73	1	11	15	20	15	6	0	1	0	4
Ogemaw	52	0	7	5	15	14	4	5	1	0	1
Ontonagon	29	0	3	4	8	8	2	0	0	0	4
Osceola	62	1	7	11	11	22	4	3	1	1	1
Oscoda	26	0	2	4	3	8	7	1	1	0	0
Otsego	50	0	4	4	21	13	5	2	0	0	1
Ottawa	347	0	54	63	98	67	33	10	6	2	14
Presque Isle	29	0	4	4	4	8	3	2	1	0	3
Roscommon	73	0	7	7	23	17	9	4	4	0	2
Saginaw	446	2	47	65	121	112	53	21	8	4	13
St. Clair	360	0	47	53	105	91	35	11	6	6	6
St. Joseph	148	0	19	24	39	34	11	5	1	0	15
Sanilac	80	0	13	14	15	24	7	2	3	0	2
Schoolcraft	20	0	3	2	5	4	1	2	1	0	2
Shiawassee	202	1	27	29	62	50	18	8	5	0	2
Tuscola	121	0	10	23	37	27	11	8	0	0	5
Van Buren	205	0	24	33	67	38	19	8	2	1	13
Washtenaw	512	0	65	81	117	132	61	22	7	2	25
Wayne	3,101	9	242	336	813	835	431	194	77	27	137
Wexford	89	0	10	9	31	21	11	2	2	0	3
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0
Totals	19,483	55	2,062	2,750	5,360	4,779	2,187	815	349	144	982



## MALE DRIVERS & INJURY SEVERITY IN CRASH

### MOST SEVERE OUTCOME IN CRASH

AGE OF DRIVER IN CRASH	Male Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
13 years and under	395	0.1	1	0.1	42	46	66	240
14 years	190	0.1	2	0.1	24	23	27	114
15 years	680	0.2	5	0.4	39	90	112	434
16 years	9,251	2.5	27	1.9	249	723	1,395	6,857
17 years	12,274	3.3	31	2.2	392	899	1,895	9,057
18 years	13,286	3.5	33	2.4	435	938	2,012	9,868
19 years	11,746	3.1	40	2.9	346	854	1,840	8,666
20 years	10,266	2.7	44	3.2	331	743	1,590	7,558
21 - 24 years	34,390	9.2	137	9.8	1,097	2,351	5,206	25,599
25 - 34 years	78,971	21.1	309	22.2	2,423	4,875	11,971	59,393
35 - 44 years	71,420	19.1	261	18.8	2,067	4,156	10,763	54,173
45 - 54 years	48,814	13.0	177	12.7	1,340	2,683	7,437	37,177
55 - 64 years	26,681	7.1	104	7.5	715	1,469	4,066	20,327
65 - 69 years	9,114	2.4	43	3.1	250	516	1,398	6,907
70 - 74 years	7,773	2.1	32	2.3	210	494	1,261	5,776
75 - 79 years	5,511	1.5	28	2.0	182	380	895	4,026
80 - 84 years	3,238	0.9	21	1.5	99	249	529	2,340
85 - 89 years	1,218	0.3	12	0.9	55	95	194	862
90 years and over	374	0.1	6	0.4	14	27	49	278
Not Stated	28,913	7.7	78	5.6	689	1,372	3,981	22,793
<b>TOTAL</b>	<b>374,505</b>	<b>100.0</b>	<b>1,391</b>	<b>100.0</b>	<b>10,999</b>	<b>22,983</b>	<b>56,687</b>	<b>282,445</b>

NOTE: The tables on this page and page 86 exclude 66,708 drivers of unknown gender.

The crash involvement for male drivers is down 5.0 percent from 1997.

The fatal crash involvement for male drivers is down 2.7 percent from 1997.



## MALE DRINKING DRIVERS & INJURY SEVERITY IN CRASH

AGE OF DRINKING DRIVER IN CRASH	MOST SEVERE OUTCOME IN CRASH							
	Male Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
13 years and under	15	0.1	0	0.0	1	2	5	7
14 years	9	0.1	0	0.0	1	2	1	5
15 years	20	0.1	1	0.3	1	4	3	11
16 years	101	0.7	0	0.0	8	19	18	56
17 years	219	1.4	5	1.3	26	46	29	113
18 years	389	2.5	5	1.3	42	66	62	214
19 years	467	3.1	17	4.5	50	88	60	252
20 years	494	3.2	14	3.7	56	107	64	253
21 - 24 years	2,274	14.9	61	16.2	237	401	338	1,237
25 - 34 years	4,147	27.1	107	28.4	466	752	651	2,171
35 - 44 years	3,568	23.4	86	22.8	366	572	632	1,912
45 - 54 years	1,745	11.4	45	11.9	163	262	335	940
55 - 64 years	700	4.6	15	4.0	49	114	127	395
65 - 69 years	176	1.2	6	1.6	25	16	26	103
70 - 74 years	115	0.8	5	1.3	11	13	21	65
75 - 79 years	68	0.4	1	0.3	4	5	16	42
80 - 84 years	46	0.3	1	0.3	2	7	3	33
85 - 89 years	3	0.0	0	0.0	1	1	1	0
90 years and over	4	0.0	1	0.3	0	1	0	2
Not Stated	720	4.7	7	1.9	64	100	113	436
TOTAL	15,280	100.0	377	100.0	1,573	2,578	2,505	8,247

NOTE: The tables on this page and page 87 exclude 370 drinking drivers of unknown gender.

The crash involvement for male drinking drivers is down 3.9 percent from 1997.

The fatal crash involvement for male drinking drivers is up 1.3 percent from 1997.



## FEMALE DRIVERS & INJURY SEVERITY IN CRASH

MOST SEVERE OUTCOME IN CRASH								
AGE OF DRIVER IN CRASH	Female Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
13 years and under	214	0.1	1	0.2	7	21	53	132
14 years	110	0.0	0	0.0	5	10	24	71
15 years	516	0.2	5	0.9	25	60	90	336
16 years	7,433	2.9	15	2.8	238	561	1,433	5,186
17 years	9,206	3.5	21	3.9	275	663	1,749	6,498
18 years	9,067	3.5	18	3.3	263	671	1,715	6,400
19 years	8,065	3.1	20	3.7	206	579	1,533	5,727
20 years	7,286	2.8	10	1.8	192	502	1,388	5,194
21 - 24 years	24,472	9.4	33	6.1	675	1,630	4,643	17,491
25 - 34 years	57,263	22.0	97	17.8	1,449	3,304	10,869	41,544
35 - 44 years	53,407	20.6	107	19.6	1,333	3,034	9,670	39,263
45 - 54 years	35,309	13.6	82	15.0	876	1,859	6,495	25,997
55 - 64 years	17,148	6.6	43	7.9	434	985	3,215	12,471
65 - 69 years	5,680	2.2	14	2.6	144	300	1,082	4,140
70 - 74 years	5,170	2.0	18	3.3	146	320	962	3,724
75 - 79 years	4,201	1.6	27	5.0	138	314	788	2,934
80 - 84 years	2,506	1.0	18	3.3	108	179	453	1,748
85 - 89 years	898	0.3	4	0.7	33	74	147	640
90 years and over	210	0.1	0	0.0	15	12	31	152
Not Stated	11,682	4.5	12	2.2	233	547	1,783	9,107
TOTAL	259,843	100.0	545	100.0	6,795	15,625	48,123	188,755

The crash involvement for female drivers is down 4.2 percent from 1997.

The fatal crash involvement for female drivers is down 6.0 percent from 1997.



## FEMALE DRINKING DRIVERS & INJURY SEVERITY IN CRASH

AGE OF DRINKING DRIVER IN CRASH	MOST SEVERE OUTCOME IN CRASH							
	Female Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
13 years and under	2	0.1	0	0.0	0	0	1	1
14 years	3	0.1	0	0.0	0	1	0	2
15 years	6	0.2	1	1.4	0	0	2	3
16 years	29	0.8	1	1.4	2	9	5	12
17 years	60	1.6	2	2.9	10	12	15	21
18 years	91	2.4	7	10.1	12	11	9	52
19 years	92	2.4	0	0.0	8	17	26	41
20 years	96	2.5	1	1.4	12	27	12	44
21 - 24 years	454	11.8	5	7.2	49	95	74	231
25 - 34 years	1,142	29.8	16	23.2	129	181	224	592
35 - 44 years	1,160	30.3	22	31.9	114	199	232	593
45 - 54 years	407	10.6	8	11.6	35	65	74	225
55 - 64 years	104	2.7	2	2.9	6	15	23	58
65 - 69 years	25	0.7	0	0.0	3	3	3	16
70 - 74 years	27	0.7	1	1.4	2	5	8	11
75 - 79 years	16	0.4	2	2.9	2	2	2	8
80 - 84 years	2	0.1	0	0.0	1	0	0	1
85 - 89 years	2	0.1	0	0.0	0	1	0	1
90 years and over	0	0.0	0	0.0	0	0	0	0
Not Stated	115	3.0	1	1.4	11	19	16	68
TOTAL	3,833	100.0	69	100.0	396	662	726	1,980

The crash involvement for female drivers is down 0.2 percent from 1997.

The fatal crash involvement for female drinking drivers is up 3.0 percent from 1997.

## FATAL CRASHES AND FATALITIES WITH DRINKING INVOLVEMENT BY COUNTY

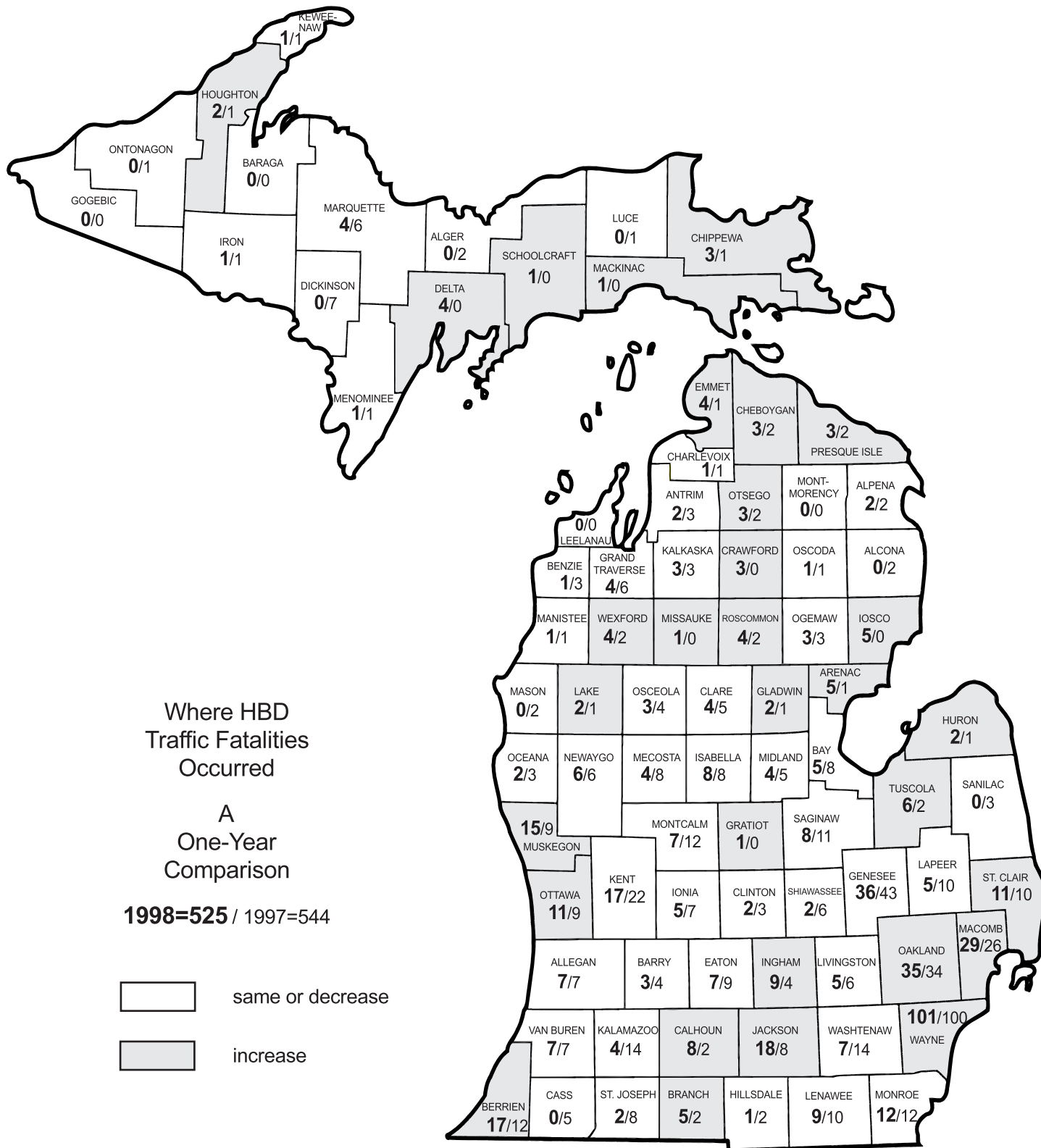
COUNTY	C R A S H E S			P E R S O N S		
	All Fatal Crashes	HBD Fatal Crashes	Percent HBD	Total Fatalities	HBD Fatalities	Percent HBD
Alcona	2	0	0.0	2	0	0.0
Alger	3	0	0.0	3	0	0.0
Allegan	18	7	38.9	23	7	30.4
Alpena	2	2	100.0	2	2	100.0
Antrim	4	2	50.0	4	2	50.0
Arenac	5	4	80.0	6	5	83.3
Baraga	1	0	0.0	1	0	0.0
Barry	8	3	37.5	8	3	37.5
Bay	16	4	25.0	17	5	29.4
Benzie	2	1	50.0	2	1	50.0
Berrien	35	14	40.0	39	17	43.6
Branch	11	4	36.4	12	5	41.7
Calhoun	20	8	40.0	23	8	34.8
Cass	7	0	0.0	9	0	0.0
Charlevoix	8	1	12.5	8	1	12.5
Cheboygan	8	3	37.5	10	3	30.0
Chippewa	8	3	37.5	8	3	37.5
Clare	5	4	80.0	5	4	80.0
Clinton	8	2	25.0	8	2	25.0
Crawford	5	3	60.0	5	3	60.0
Delta	8	2	25.0	12	4	33.3
Dickinson	2	0	0.0	3	0	0.0
Eaton	18	7	38.9	19	7	36.8
Emmet	6	3	50.0	7	4	57.1
Genesee	57	34	59.6	62	36	58.1
Gladwin	4	2	50.0	8	2	25.0
Gogebic	2	0	0.0	3	0	0.0
Grand Traverse	13	4	30.8	14	4	28.6
Gratiot	10	1	10.0	12	1	8.3
Hillsdale	9	1	11.1	10	1	10.0
Houghton	5	2	40.0	6	2	33.3
Huron	5	2	40.0	5	2	40.0
Ingham	18	8	44.4	20	9	45.0
Ionia	9	5	55.6	10	5	50.0
Iosco	7	5	71.4	7	5	71.4
Iron	3	1	33.3	3	1	33.3
Isabella	16	8	50.0	17	8	47.1
Jackson	28	17	60.7	29	18	62.1
Kalamazoo	21	4	19.0	23	4	17.4
Kalkaska	6	3	50.0	6	3	50.0
Kent	45	14	31.1	56	17	30.4
Keweenaw	1	1	100.0	1	1	100.0
Lake	5	2	40.0	7	2	28.6
Lapeer	14	4	28.6	16	5	31.3



**FATAL CRASHES AND FATALITIES  
WITH DRINKING INVOLVEMENT  
BY COUNTY (continued)**

COUNTY	C R A S H E S			P E R S O N S		
	All Fatal Crashes	HBD Fatal Crashes	Percent HBD	Total Fatalities	HBD Fatalities	Percent HBD
Leelanau	3	0	0.0	3	0	0.0
Lenawee	19	7	36.8	22	9	40.9
Livingston	14	4	28.6	17	5	29.4
Luce	0	0	0.0	0	0	0.0
Mackinac	2	1	50.0	2	1	50.0
Macomb	52	26	50.0	55	29	52.7
Manistee	2	1	50.0	2	1	50.0
Marquette	6	2	33.3	10	4	40.0
Mason	4	0	0.0	4	0	0.0
Mecosta	8	4	50.0	9	4	44.4
Menominee	4	1	25.0	4	1	25.0
Midland	13	4	30.8	14	4	28.6
Missaukee	2	1	50.0	2	1	50.0
Monroe	21	10	47.6	23	12	52.2
Montcalm	16	6	37.5	20	7	35.0
Montmorency	0	0	0.0	0	0	0.0
Muskegon	31	15	48.4	34	15	44.1
Newaygo	9	4	44.4	11	6	54.5
Oakland	86	32	37.2	92	35	38.0
Oceana	5	2	40.0	5	2	40.0
Ogemaw	7	3	42.9	7	3	42.9
Ontonagon	2	0	0.0	2	0	0.0
Osceola	8	3	37.5	9	3	33.3
Oscoda	3	1	33.3	3	1	33.3
Otsego	4	3	75.0	4	3	75.0
Ottawa	31	11	35.5	31	11	35.5
Presque Isle	3	2	66.7	4	3	75.0
Roscommon	8	4	50.0	8	4	50.0
Saginaw	24	7	29.2	26	8	30.8
St. Clair	20	10	50.0	22	11	50.0
St. Joseph	10	2	20.0	13	2	15.4
Sanilac	4	0	0.0	5	0	0.0
Schoolcraft	3	1	33.3	4	1	25.0
Shiawassee	10	2	20.0	11	2	18.2
Tuscola	17	5	29.4	21	6	28.6
Van Buren	17	7	41.2	18	7	38.9
Washtenaw	32	5	15.6	34	7	20.6
Wayne	238	91	38.2	255	101	39.6
Wexford	9	4	44.4	10	4	40.0
Totals	1,235	476	38.5	1,367	525	38.4

## TRAFFIC FATALITIES WITH DRINKING INVOLVEMENT BY COUNTY



## MOST SEVERE OUTCOME IN HBD CRASHES BY COUNTY

Note: While the Michigan *Traffic Crash Report* (UD-10) requests officers to report Bodily Alcohol Content (BAC) of all persons tested for alcohol after a traffic crash, only the BAC testing of deceased motor vehicle drivers and deceased railroad train engineers is required by law. Consequently, alcohol involvement in nonfatal crashes is frequently unreported, and is therefore generally believed to be higher than indicated in this table.

### MOST SEVERE OUTCOME IN HBD CRASH

COUNTY	All HBD Crashes	Fatal	Injury			PDO
			A	B	C	
Alcona	31	0	5	7	1	18
Alger	31	0	1	6	2	22
Allegan	261	7	32	50	37	135
Alpena	82	2	11	15	14	40
Antrim	59	2	3	12	9	33
Arenac	56	4	8	11	11	22
Baraga	35	0	8	6	4	17
Barry	140	3	18	31	15	73
Bay	334	4	44	69	41	176
Benzie	44	1	5	14	2	22
Berrien	328	14	28	54	60	172
Branch	92	4	12	13	12	51
Calhoun	321	8	34	46	46	187
Cass	128	0	22	29	11	66
Charlevoix	60	1	8	14	7	30
Cheboygan	65	3	5	17	6	34
Chippewa	88	3	13	17	7	48
Clare	70	4	11	11	7	37
Clinton	139	2	16	39	19	63
Crawford	38	3	5	7	2	21
Delta	80	2	6	16	14	42
Dickinson	49	0	9	6	7	27
Eaton	200	7	22	36	33	102
Emmet	73	3	5	16	10	39
Genesee	1,328	34	66	253	270	705
Gladwin	77	2	13	19	8	35
Gogebic	42	0	5	9	2	26
Grand Traverse	176	4	17	19	35	101
Gratiot	71	1	9	10	12	39
Hillsdale	94	1	8	21	13	51
Houghton	69	2	15	14	6	32
Huron	61	2	14	6	2	37
Ingham	450	8	54	66	67	255
Ionia	135	5	24	21	27	58
Iosco	84	5	15	23	4	37
Iron	42	1	4	9	6	22
Isabella	91	8	10	17	9	47
Jackson	387	17	32	65	72	201
Kalamazoo	523	4	54	91	73	301
Kalkaska	46	3	7	9	2	25
Kent	1,110	14	91	176	187	642
Keweenaw	10	1	2	2	2	3

## MOST SEVERE OUTCOME IN HBD CRASHES BY COUNTY (continued)

COUNTY	All HBD Crashes	Fatal	Injury			PDO
			A	B	C	
Lake	36	2	5	6	4	19
Lapeer	205	4	25	44	29	103
Leelanau	54	0	9	15	2	28
Lenawee	190	7	22	35	23	103
Livingston	343	4	40	60	35	204
Luce	15	0	1	3	2	9
Mackinac	53	1	9	8	3	32
Macomb	1,516	26	127	210	299	854
Manistee	58	1	14	9	5	29
Marquette	134	2	18	26	15	73
Mason	44	0	5	6	9	24
Mecosta	96	4	16	16	17	43
Menominee	73	1	10	14	7	41
Midland	139	4	14	33	28	60
Missaukee	35	1	4	8	3	19
Monroe	308	10	33	61	54	150
Montcalm	160	6	25	28	18	83
Montmorency	28	0	5	8	0	15
Muskegon	326	15	46	55	39	171
Newaygo	117	4	16	26	9	62
Oakland	1,962	32	182	309	399	1040
Oceana	75	2	14	14	10	35
Ogemaw	52	3	13	4	11	21
Ontonagon	27	0	3	5	2	17
Osceola	61	3	9	10	6	33
Oscoda	27	1	5	8	3	10
Otsego	51	3	5	9	10	24
Ottawa	345	11	32	56	54	192
Presque Isle	28	2	5	5	5	11
Roscommon	72	4	10	16	8	34
Saginaw	448	7	61	61	82	237
St. Clair	360	10	33	61	55	201
St. Joseph	144	2	11	31	32	68
Sanilac	79	0	12	12	23	32
Schoolcraft	20	1	3	9	2	5
Shiawassee	199	2	36	46	26	89
Tuscola	122	5	15	23	15	64
Van Buren	208	7	35	38	36	92
Washtenaw	514	5	44	98	103	264
Wayne	3,150	91	285	469	663	1642
Wexford	90	4	14	15	5	52
Unknown	0	0	0	0	0	0
Totals	19,564	476	2,042	3,342	3,325	10,379

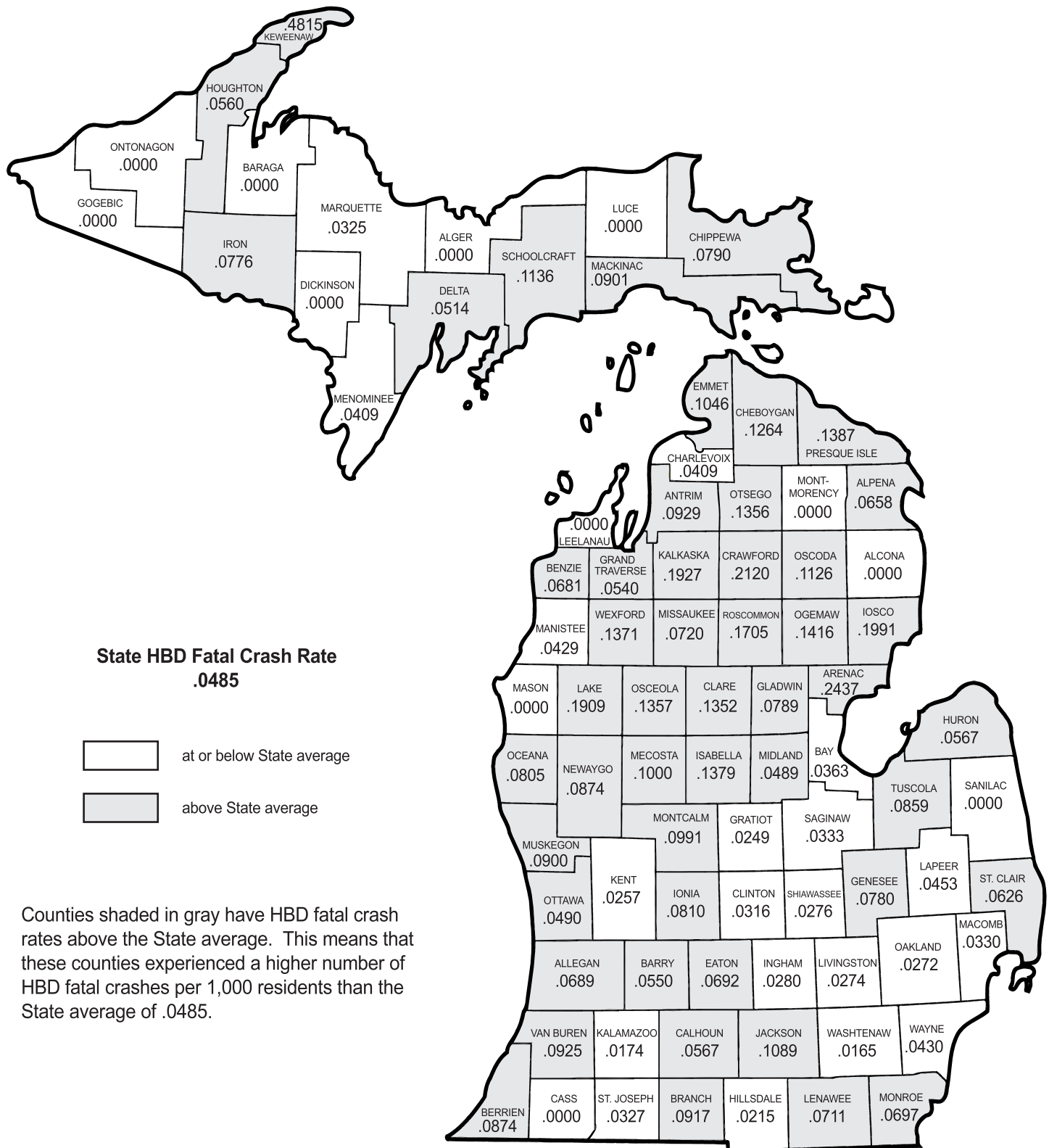
## COUNTY RANKING BY HBD FATAL CRASH RATE per 1,000 Michigan Residents

COUNTY	1998 Population Estimate	All Crashes	Fatal Crashes	HBD Crashes	HBD Fatal Crashes	HBD Fatal Crash Rate per 1,000 people	Rank
Keweenaw	2,077	94	1	10	1	0.4815	1
Arenac	16,413	1,093	5	56	4	0.2437	2
Crawford	14,150	910	5	38	3	0.2120	3
Iosco	25,111	1,374	7	84	5	0.1991	4
Kalkaska	15,568	769	6	46	3	0.1927	5
Lake	10,475	684	5	36	2	0.1909	6
Roscommon	23,467	1,254	8	72	4	0.1705	7
Ogemaw	21,193	1,281	7	52	3	0.1416	8
Presque Isle	14,424	701	3	28	2	0.1387	9
Isabella	58,026	2,286	16	91	8	0.1379	10
Wexford	29,185	1,840	9	90	4	0.1371	11
Osceola	22,106	1,604	8	61	3	0.1357	12
Otsego	22,129	1,095	4	51	3	0.1356	13
Clare	29,578	1,697	5	70	4	0.1352	14
Cheboygan	23,738	1,018	8	65	3	0.1264	15
Schoolcraft	8,805	518	3	20	1	0.1136	16
Oscoda	8,882	563	3	27	1	0.1126	17
Jackson	156,157	6,906	28	387	17	0.1089	18
Emmet	28,677	1,567	6	73	3	0.1046	19
Mecosta	40,006	2,701	8	96	4	0.1000	20
Montcalm	60,559	3,270	16	160	6	0.0991	21
Antrim	21,522	1,043	4	59	2	0.0929	22
Van Buren	75,666	2,889	17	208	7	0.0925	23
Branch	43,634	2,126	11	92	4	0.0917	24
Mackinac	11,097	784	2	53	1	0.0901	25
Muskegon	166,748	6,004	31	326	15	0.0900	26
Berrien	160,245	5,770	35	328	14	0.0874	27
Newaygo	45,784	2,108	9	117	4	0.0874	28
Tuscola	58,181	2,151	17	122	5	0.0859	29
Ionia	61,700	2,803	9	135	5	0.0810	30
Oceana	24,833	1,232	5	75	2	0.0805	31
Chippewa	37,968	1,398	8	88	3	0.0790	32
Gladwin	25,333	1,166	4	77	2	0.0789	33
Genesee	436,084	16,280	57	1,328	34	0.0780	34
Iron	12,883	1,006	3	42	1	0.0776	35
Missaukee	13,892	842	2	35	1	0.0720	36
Lenawee	98,412	3,594	19	190	7	0.0711	37
Monroe	143,499	4,301	21	308	10	0.0697	38
Eaton	101,090	4,265	18	200	7	0.0692	39
Allegan	101,662	3,748	18	261	7	0.0689	40
Benzie	14,678	682	2	44	1	0.0681	41
Alpena	30,405	1,392	2	82	2	0.0658	42
St. Clair	159,769	5,372	20	360	10	0.0626	43
Calhoun	141,005	6,346	20	321	8	0.0567	44
Huron	35,303	2,076	5	61	2	0.0567	45
Houghton	35,719	1,256	5	69	2	0.0560	46

## COUNTY RANKING BY HBD FATAL CRASH RATE per 1,000 Michigan Residents (continued)

COUNTY	1998 Population Estimate	All Crashes	Fatal Crashes	HBD Crashes	HBD Fatal Crashes	HBD Fatal Crash Rate per 1,000 people	Rank
Barry	54,535	2,518	8	140	3	0.0550	47
Grand Traverse	74,134	3,778	13	176	4	0.0540	48
Delta	38,947	2,252	8	80	2	0.0514	49
Ottawa	224,357	7,742	31	345	11	0.0490	50
Midland	81,842	3,268	13	139	4	0.0489	51
Lapeer	88,270	3,843	14	205	4	0.0453	52
Wayne	2,118,129	85,378	238	3,150	91	0.0430	53
Manistee	23,330	1,114	2	58	1	0.0429	54
Charlevoix	24,436	1,246	8	60	1	0.0409	55
Menominee	24,468	1,858	4	73	1	0.0409	56
Bay	110,048	4,094	16	334	4	0.0363	57
Saginaw	210,101	8,392	24	448	7	0.0333	58
Macomb	787,698	26,669	52	1,516	26	0.0330	59
St. Joseph	61,226	2,367	10	144	2	0.0327	60
Marquette	61,565	2,446	6	134	2	0.0325	61
Clinton	63,379	2,692	8	139	2	0.0316	62
Ingham	285,214	11,710	18	450	8	0.0280	63
Shiawassee	72,569	2,555	10	199	2	0.0276	64
Livingston	146,165	5,301	14	343	4	0.0274	65
Oakland	1,176,488	47,445	86	1,962	32	0.0272	66
Kent	545,166	25,181	45	1,110	14	0.0257	67
Gratiot	40,126	1,840	10	71	1	0.0249	68
Hillsdale	46,614	2,320	9	94	1	0.0215	69
Kalamazoo	229,660	10,023	21	523	4	0.0174	70
Washtenaw	303,069	12,227	32	514	5	0.0165	71
Alcona	11,108	923	2	31	0	0.0000	72
Alger	9,887	403	3	31	0	0.0000	73
Baraga	8,413	510	1	35	0	0.0000	74
Cass	49,693	2,053	7	128	0	0.0000	75
Dickinson	27,074	1,494	2	49	0	0.0000	76
Gogebic	17,097	612	2	42	0	0.0000	77
Leelanau	19,142	621	3	54	0	0.0000	78
Luce	6,640	266	0	15	0	0.0000	79
Mason	27,950	1,681	4	44	0	0.0000	80
Montmorency	10,011	505	0	28	0	0.0000	81
Ontonagon	7,878	576	2	27	0	0.0000	82
Sanilac	42,975	1,951	4	79	0	0.0000	83
Unknown		53	0	0	0		
State Totals	9,817,242	403,766	1,235	19,564	476	0.04849	

## COUNTY RANKING BY HBD FATAL CRASH RATE



## REPORTED STATEWIDE ALCOHOL INVOLVED TRAFFIC CRASHES BY COUNTY IN MICHIGAN

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Alcona	31	0	13	18	0	1	1	29	0	16
Alger	31	0	9	22	0	0	10	21	0	12
Allegan	261	7	119	135	10	19	20	212	7	168
Alpena	82	2	40	40	0	14	8	60	2	50
Antrim	59	2	24	33	0	4	4	51	2	33
Arenac	56	4	30	22	6	11	2	37	5	39
Baraga	35	0	18	17	0	5	4	26	0	27
Barry	140	3	64	73	0	0	25	115	3	98
Bay	334	4	154	176	16	9	68	241	5	199
Benzie	44	1	21	22	0	5	7	32	1	25
Berrien	328	14	142	172	31	32	37	228	17	211
Branch	92	4	37	51	2	12	3	75	5	53
Calhoun	321	8	126	187	44	3	34	240	8	162
Cass	128	0	62	66	0	14	30	84	0	80
Charlevoix	60	1	29	30	0	3	10	47	1	37
Cheboygan	65	3	28	34	5	2	8	50	3	43
Chippewa	88	3	37	48	16	0	9	63	3	54
Clare	70	4	29	37	0	5	10	55	4	49
Clinton	139	2	74	63	16	19	7	97	2	103
Crawford	38	3	14	21	5	1	5	27	3	21
Delta	80	2	36	42	0	15	8	57	4	52
Dickinson	49	0	22	27	0	9	8	32	0	31
Eaton	200	7	91	102	19	6	29	146	7	132
Emmet	73	3	31	39	0	14	4	55	4	45
Genesee	1,328	34	589	705	97	35	160	1,036	36	894
Gladwin	77	2	40	35	0	0	16	61	2	53
Gogebic	42	0	16	26	0	11	1	30	0	18
Grand Traverse	176	4	71	101	0	26	15	135	4	106
Gratiot	71	1	31	39	0	13	5	53	1	38
Hillsdale	94	1	42	51	0	10	9	75	1	51
Houghton	69	2	35	32	0	15	9	45	2	49
Huron	61	2	22	37	0	0	14	47	2	34
Ingham	450	8	187	255	58	13	66	313	9	263
Ionia	135	5	72	58	12	0	19	104	5	89
Iosco	84	5	42	37	0	16	9	59	5	62
Iron	42	1	19	22	0	6	7	29	1	29
Isabella	91	8	36	47	0	5	13	73	8	56
Jackson	387	17	169	201	37	19	28	303	18	243
Kalamazoo	523	4	218	301	36	33	50	404	4	319
Kalkaska	46	3	18	25	0	3	5	38	3	28
Kent	1,110	14	454	642	55	99	127	829	17	620
Keweenaw	10	1	6	3	0	2	0	8	1	8
Lake	36	2	15	19	0	7	2	27	2	22
Lapeer	205	4	98	103	15	0	35	155	5	141
Leelanau	54	0	26	28	0	0	18	36	0	40
Lenawee	190	7	80	103	0	40	11	139	9	111



## REPORTED STATEWIDE ALCOHOL INVOLVED TRAFFIC CRASHES BY COUNTY IN MICHIGAN (Continued)

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Livingston	343	4	135	204	45	24	24	250	5	183
Luce	15	0	6	9	0	0	3	12	0	8
Mackinac	53	1	20	32	7	6	4	36	1	28
Macomb	1,516	26	636	854	106	0	338	1,072	29	931
Manistee	58	1	28	29	0	6	7	45	1	34
Marquette	134	2	59	73	0	27	12	95	4	90
Mason	44	0	20	24	0	12	0	32	0	27
Mecosta	96	4	49	43	0	23	8	65	4	75
Menominee	73	1	31	41	0	17	3	53	1	39
Midland	139	4	75	60	0	13	19	107	4	108
Missaukee	35	1	15	19	0	0	5	30	1	19
Monroe	308	10	148	150	30	38	25	215	12	237
Montcalm	160	6	71	83	0	8	30	122	7	107
Montmorency	28	0	13	15	0	0	7	21	0	19
Muskegon	326	15	140	171	3	42	37	244	15	228
Newaygo	117	4	51	62	0	0	21	96	6	73
Oakland	1,962	32	890	1,040	279	81	234	1,368	35	1,391
Oceana	75	2	38	35	0	11	3	61	2	58
Ogemaw	52	3	28	21	7	0	4	41	3	43
Ontonagon	27	0	10	17	0	3	6	18	0	14
Osceola	61	3	25	33	0	11	6	44	3	31
Oscoda	27	1	16	10	0	0	9	18	1	27
Otsego	51	3	24	24	8	0	11	32	3	35
Ottawa	345	11	142	192	14	28	22	281	11	212
Presque Isle	28	2	15	11	0	3	0	25	3	35
Roscommon	72	4	34	34	5	5	14	48	4	51
Saginaw	448	7	204	237	24	0	92	332	8	287
St. Clair	360	10	149	201	33	0	64	263	11	208
St. Joseph	144	2	74	68	0	21	19	104	2	101
Sanilac	79	0	47	32	0	0	18	61	0	67
Schoolcraft	20	1	14	5	0	2	2	16	1	20
Shiawassee	199	2	108	89	15	0	48	136	2	161
Tuscola	122	5	53	64	0	0	22	100	6	71
Van Buren	208	7	109	92	15	0	42	151	7	164
Washtenaw	514	5	245	264	50	68	30	366	7	331
Wayne	3,150	91	1,417	1,642	493	164	359	2,134	101	2,175
Wexford	90	4	34	52	0	12	18	60	4	56
UNKNOWN	0	0	0	0	0	0	0	0	0	0
Totals	19,564	476	8,709	10,379	1,614	1,181	2,536	14,233	525	12,758



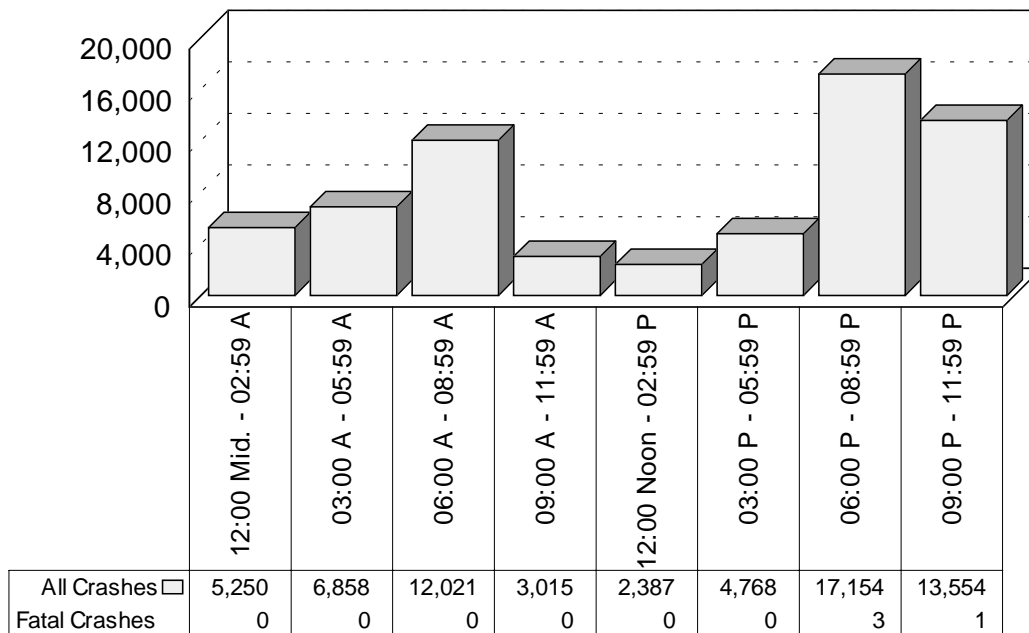


## LIGHT CONDITION AND TIME OF DAY IN MOTOR VEHICLE-DEER CRASHES

LIGHT CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Daylight	12,837	19.6	0	0.0	56	238	310	12,233
Dawn	5,250	8.0	0	0.0	7	37	88	5,118
Dusk	3,554	5.4	1	25.0	9	43	72	3,429
Dark - Lighted	2,003	3.1	0	0.0	3	15	42	1,943
Dark - Unlighted	41,169	63.0	3	75.0	86	306	686	40,088
Other/Unknown	584	0.9	0	0.0	3	7	12	562
Totals	65,397	100.0	4	100.0	164	646	1,210	63,373

Three of the four fatal deer crashes in Michigan in 1998 occurred in dark-unlighted conditions. All motor vehicle-deer involved/associated crashes peaked during the 6:00 - 8:59 PM time period. There were 3 fatal deer crashes during this time period.

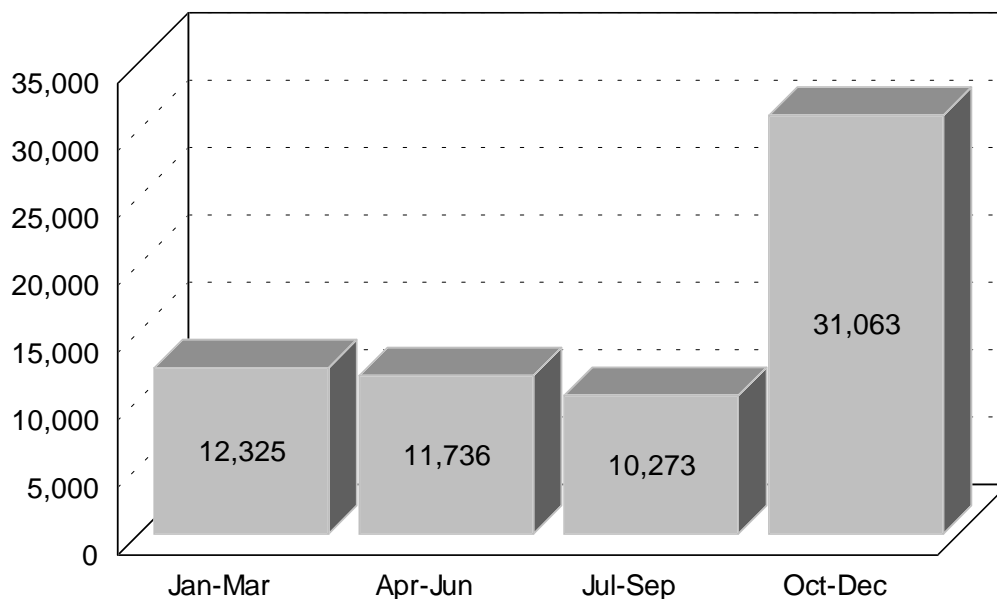
### Time and Severity of All Motor Vehicle-Deer Crashes



## MONTHLY AND SEASONAL RATES FOR MOTOR VEHICLE-DEER CRASHES

MONTH	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
January	5,354	8.2	0	0.0	5	24	57	5,268
February	3,926	6.0	1	25.0	2	22	41	3,860
March	3,045	4.7	0	0.0	3	23	46	2,973
April	3,403	5.2	0	0.0	8	31	72	3,292
May	4,318	6.6	0	0.0	18	68	114	4,118
June	4,015	6.1	0	0.0	10	62	113	3,830
July	3,269	5.0	0	0.0	12	64	89	3,104
August	2,682	4.1	1	25.0	20	51	63	2,547
September	4,322	6.6	0	0.0	27	56	96	4,143
October	10,334	15.8	2	50.0	21	92	183	10,036
November	13,731	21.0	0	0.0	28	114	245	13,344
December	6,998	10.7	0	0.0	10	39	91	6,858
Totals	65,397	100.0	4	100.0	164	646	1,210	63,373

All Motor Vehicle-Deer Crashes



Crashes involving deer occurred most frequently during the first quarter (18.8%) and the fourth quarter (47.5%) of the year for a total of 66 percent of all reported motor vehicle-deer collisions.

## REPORTED STATEWIDE MOTOR VEHICLE-DEER CRASHES BY COUNTY IN MICHIGAN

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Alcona	670	0	15	655	0	111	120	439	0	16
Alger	160	0	2	158	0	16	69	75	0	3
Allegan	1,058	0	37	1,021	59	86	164	749	0	41
Alpena	562	0	24	538	0	70	131	361	0	30
Antrim	522	0	8	514	0	120	92	310	0	11
Arenac	545	0	12	533	49	119	36	341	0	15
Baraga	280	0	11	269	0	113	46	121	0	14
Barry	1,266	0	43	1,223	0	0	401	865	0	48
Bay	386	0	15	371	12	20	63	291	0	18
Benzie	312	0	4	308	0	76	61	175	0	4
Berrien	732	0	26	706	102	134	73	423	0	30
Branch	956	0	25	931	101	79	54	722	0	29
Calhoun	1,766	0	39	1,727	235	0	263	1,268	0	46
Cass	839	0	29	810	1	51	263	524	0	34
Charlevoix	554	0	13	541	0	150	100	304	0	17
Cheboygan	387	0	22	365	77	18	93	199	0	25
Chippewa	516	0	20	496	59	0	197	260	0	22
Clare	770	0	23	747	0	152	136	482	0	28
Clinton	1,130	0	30	1,100	117	193	61	759	0	36
Crawford	392	0	6	386	47	9	104	232	0	7
Delta	1,051	0	21	1,030	0	216	195	640	0	22
Dickinson	809	0	17	792	0	245	211	353	0	19
Eaton	1,430	0	49	1,381	160	35	372	863	0	55
Emmet	464	0	16	448	1	104	32	327	0	17
Genesee	1,193	0	40	1,153	111	20	151	911	0	48
Gladwin	661	0	11	650	0	0	217	444	0	12
Gogebic	242	0	14	228	0	100	12	130	0	14
Grand Traverse	611	0	11	600	0	68	97	446	0	12
Gratiot	809	0	30	779	0	139	120	550	0	46
Hillsdale	1,030	0	33	997	0	64	183	783	0	36
Houghton	346	0	13	333	0	87	94	165	0	18
Huron	1,215	0	16	1,199	0	0	440	775	0	19
Ingham	1,345	0	40	1,305	117	113	157	958	0	44
Ionia	1,203	0	34	1,169	84	0	298	821	0	38
Iosco	676	0	16	660	0	87	202	387	0	23
Iron	692	0	23	669	0	170	216	306	0	27
Isabella	1,157	0	31	1,126	0	138	84	935	0	35
Jackson	1,925	1	46	1,878	97	111	235	1,482	1	57
Kalamazoo	1,319	0	48	1,271	53	69	84	1,113	0	68
Kalkaska	302	0	9	293	0	33	79	190	0	10
Kent	2,108	0	78	2,030	111	91	292	1,614	0	87
Keweenaw	41	0	2	39	0	18	5	18	0	2
Lake	426	0	13	413	0	72	69	285	0	15
Lapeer	1,439	0	38	1,401	93	0	256	1,090	0	41
Leelanau	214	0	4	210	0	0	83	131	0	4
Lenawee	810	0	29	781	0	141	143	526	0	40

## REPORTED STATEWIDE MOTOR VEHICLE-DEER CRASHES BY COUNTY IN MICHIGAN (Continued)

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Livingston	1,089	0	43	1,046	83	54	104	848	0	46
Luce	145	0	4	141	0	0	76	69	0	6
Mackinac	410	0	10	400	52	92	121	145	0	15
Macomb	668	0	36	632	30	0	112	526	0	38
Manistee	508	0	9	499	0	79	108	321	0	10
Marquette	584	0	29	555	0	153	100	331	0	33
Mason	823	0	25	798	0	308	7	508	0	30
Mecosta	1,470	0	26	1,444	0	299	264	907	0	33
Menominee	1,098	0	32	1,066	0	325	87	686	0	41
Midland	1,038	1	27	1,010	0	68	122	848	1	33
Missaukee	548	0	15	533	0	0	173	375	0	16
Monroe	350	0	21	329	38	51	15	246	0	27
Montcalm	1,623	0	53	1,570	0	45	447	1,131	0	62
Montmorency	285	0	4	281	0	0	106	179	0	5
Muskegon	811	0	20	791	14	103	73	621	0	25
Newaygo	896	0	24	872	0	0	235	661	0	28
Oakland	1,668	1	79	1,588	116	9	157	1,386	1	89
Oceana	532	0	19	513	0	148	31	353	0	25
Ogemaw	710	0	18	692	74	0	163	473	0	21
Ontonagon	411	0	8	403	0	81	210	120	0	10
Osceola	932	0	35	897	0	227	124	581	0	44
Oscoda	330	0	7	323	0	0	87	243	0	8
Otsego	248	0	10	238	46	0	27	175	0	13
Ottawa	1,026	0	41	985	77	55	76	818	0	47
Presque Isle	439	0	16	423	0	74	104	261	0	16
Roscommon	567	0	28	539	73	44	104	346	0	31
Saginaw	980	0	21	959	36	0	221	723	0	24
St. Clair	948	0	43	905	102	0	152	694	0	49
St. Joseph	733	1	20	712	0	89	159	485	1	23
Sanilac	1,158	0	33	1,125	0	0	347	811	0	41
Schoolcraft	221	0	5	216	0	75	75	71	0	5
Shiawassee	823	0	18	805	107	0	157	559	0	23
Tuscola	929	0	28	901	0	0	262	667	0	32
Van Buren	795	0	27	768	98	0	168	529	0	32
Washtenaw	1,308	0	73	1,235	73	126	124	985	0	86
Wayne	349	0	16	333	64	12	23	250	0	18
Wexford	607	0	11	596	0	67	246	294	0	13
UNKNOWN	16	0	0	16	0	0	0	16	0	0
Totals	65,397	4	2,020	63,373	2,769	6,222	12,021	44,385	4	2,381



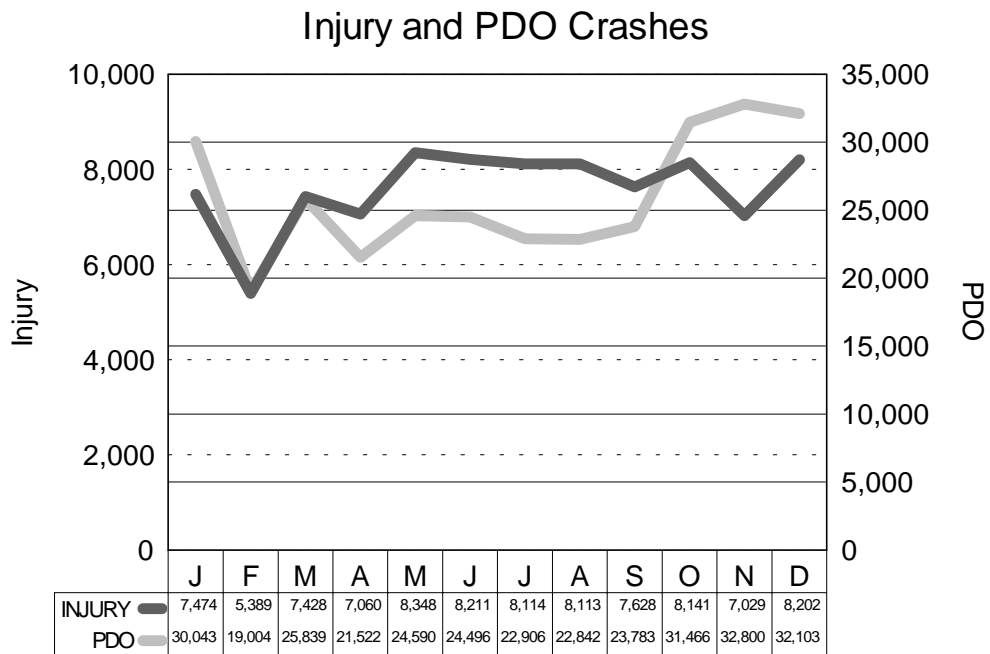
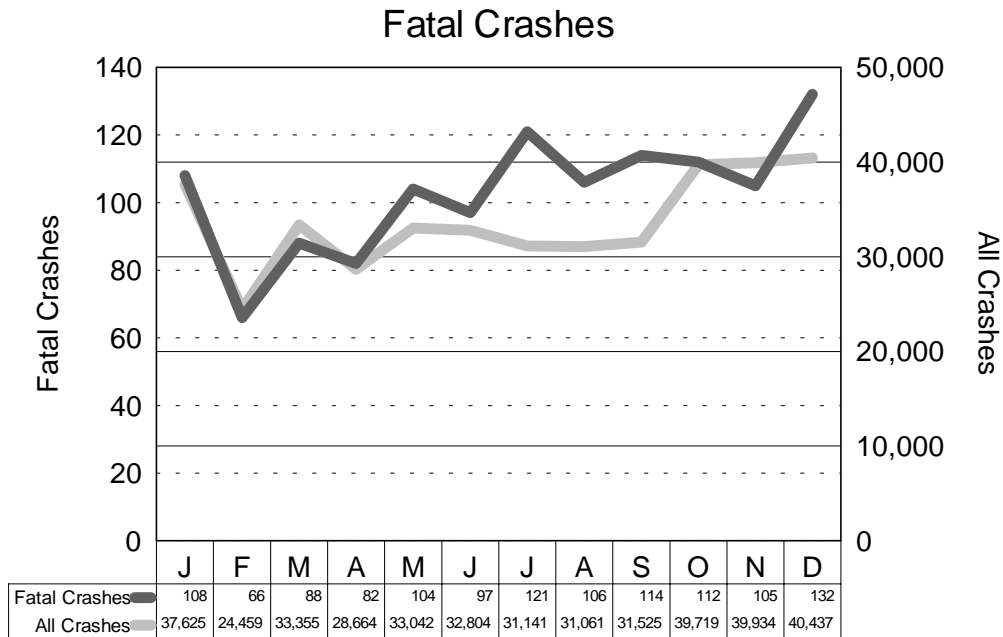


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**Crash**



## ALL CRASHES INJURY SEVERITY BY MONTH

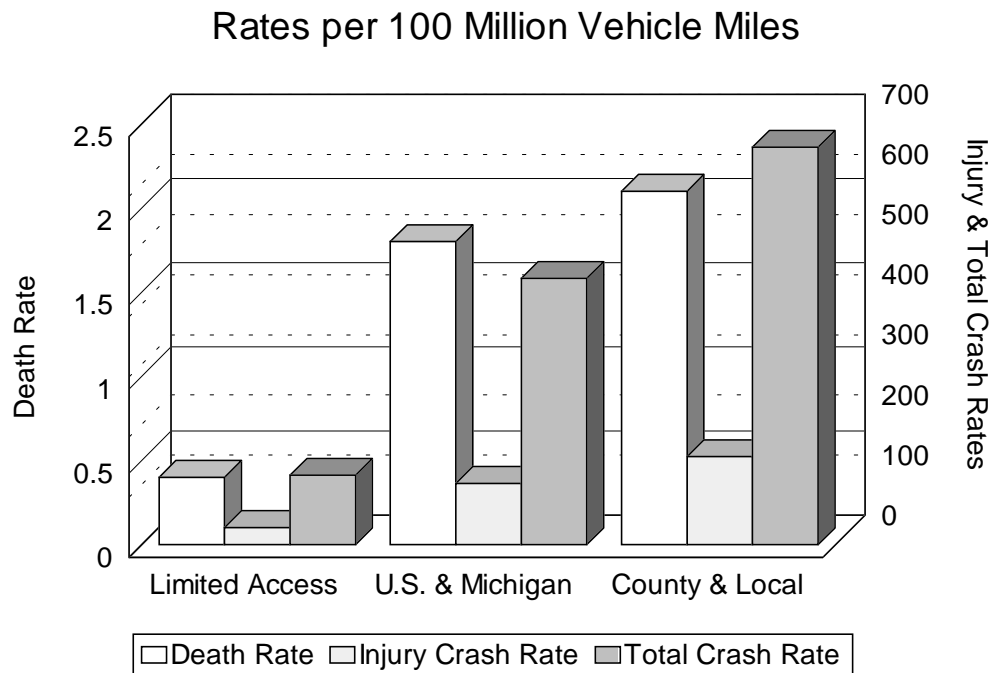


The charts on this page show that the months of April through September are peak months (24% or above) in terms of the percent of the number of crashes involving death or injury to the number of all crashes. That is, if a person was in a motor vehicle crash during one of these months there was a higher chance of that crash resulting in death or injury to one of the involved persons than if that crash happened during one of the other months.

## CRASH EXPERIENCE BY ROADWAY TYPE

The table below provides a detailed breakdown of estimated vehicle mileage, crashes, death rates (deaths per 100 million vehicle miles), and crash rates (crashes per 100 million vehicle miles) for the major roadway types in Michigan. All rates are lowest on limited access highways. 1998 estimated mileage figures were provided by the Michigan Department of Transportation [10].

STATEWIDE	Estimated Mileage (Billions)	All Crashes	Injury Crashes	Deaths	Total Crash Rate	Injury Crash Rate	Death Rate
Limited Access Roadways	28.3	32,648	8,034	119	115.4	28.4	0.4
U.S. & Michigan Roads	21.7	96,119	22,143	383	442.9	102.0	1.8
County & City Roads	41.6	274,999	60,960	865	661.1	146.5	2.1
Totals	91.6	403,766	91,137	1,367	440.8	99.5	1.5



## CRASH TYPE

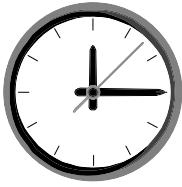
CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Single Vehicle	121,949	30.2	581	47.0	3,746	7,832	9,583	100,207
Head On	7,456	1.8	174	14.1	697	942	1,151	4,492
Head On - Left Turn	13,184	3.3	43	3.5	758	1,683	3,003	7,697
Angle	80,533	19.9	289	23.4	3,082	6,615	14,332	56,215
Rear End	99,471	24.6	67	5.4	1,422	3,918	21,465	72,599
Rear End - Left Turn	4,638	1.1	12	1.0	96	295	983	3,252
Rear End - Right Turn	3,304	0.8	1	0.1	23	63	489	2,728
Sideswipe - Same Direction	34,196	8.5	20	1.6	271	691	2,223	30,991
Sideswipe - Opposite Direct	11,421	2.8	9	0.7	170	394	919	9,929
Other/Unknown	27,614	6.8	39	3.2	701	1,211	2,379	23,284
Totals	403,766	100.0	1,235	100.0	10,966	23,644	56,527	311,394

Single Vehicle, Head On, and Angle crash types produce the highest number of fatal crashes (84.5%). Single Vehicle crashes include rollovers, which are particularly deadly crash types. Rear End-Turning and Sideswipe crashes produce the lowest number of fatal crashes (3.4%).

## RELATION TO ROADWAY

LOCATION OF FIRST IMPACT	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
On Road	352,137	87.2	846	68.5	8,151	17,956	49,568	275,616
Median	2,289	0.6	19	1.5	138	292	401	1,439
Shoulder	14,393	3.6	90	7.3	661	1,377	1,648	10,617
Outside of Shoulder/Curb	27,315	6.8	248	20.1	1,685	3,396	3,982	18,004
Gore	685	0.2	4	0.3	36	95	113	437
Other/Unknown	6,947	1.7	28	2.3	295	528	815	5,281
Totals	403,766	100.0	1,235	100.0	10,966	23,644	56,527	311,394

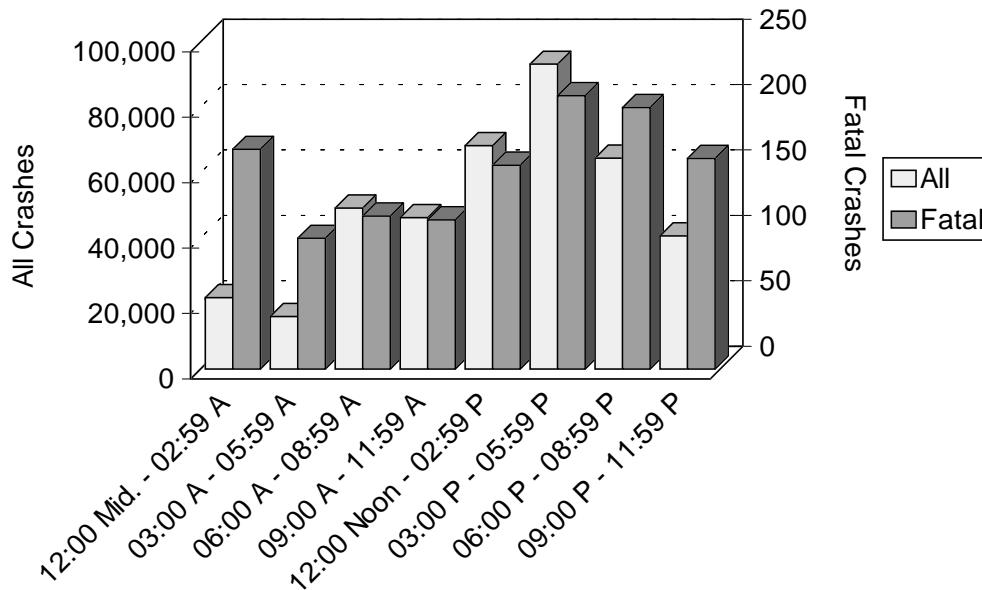
Crashes that happen outside of the normal driving lanes are overrepresented in the fatal count. Only 6.8 percent of crashes occur outside the shoulder of the road, but these crashes account for 20.1 percent of the fatal crashes.



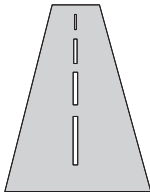
## TIME AND SEVERITY

TIME OF DAY	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
12:00 mid. - 02:59 a.m.	21,841	5.4	168	13.6	1,022	1,837	2,364	16,450
03:00 a.m. - 05:59 a.m.	16,097	4.0	100	8.1	513	964	1,381	13,139
06:00 a.m. - 08:59 a.m.	49,217	12.2	117	9.5	1,031	2,329	6,252	39,488
09:00 a.m. - 11:59 a.m.	46,342	11.5	114	9.2	1,227	2,580	7,082	35,339
12:00 noon - 02:59 p.m.	68,312	16.9	156	12.6	1,798	4,104	11,592	50,662
03:00 p.m. - 05:59 p.m.	93,229	23.1	209	16.9	2,322	5,550	15,123	70,025
06:00 p.m. - 08:59 p.m.	64,535	16.0	200	16.2	1,710	3,698	7,905	51,022
09:00 p.m. - 11:59 p.m.	40,728	10.1	161	13.0	1,261	2,449	4,515	32,342
Unknown	3,465	0.9	10	0.8	82	133	313	2,927
<b>Total</b>	<b>403,766</b>	<b>100.0</b>	<b>1,235</b>	<b>100.0</b>	<b>10,966</b>	<b>23,644</b>	<b>56,527</b>	<b>311,394</b>

Time and Severity



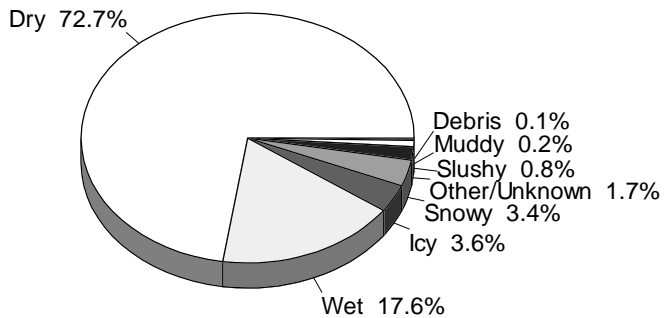
Crash frequencies peak in the late afternoon, then drop off steadily until 6:00 AM (the morning rush hour). Fatal crash frequencies rise with the frequency of other crashes, but continue at a high rate well into the early morning hours. There are proportionally more fatal crashes during the midnight to 2:59 AM time period.



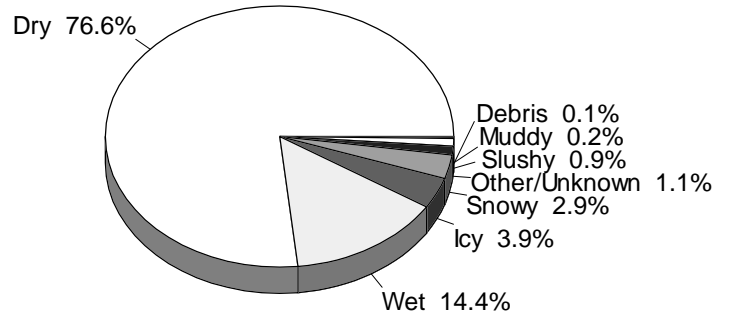
## ROAD CONDITION

ROAD SURFACE CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Dry	293,569	72.7	946	76.6	8,362	17,794	40,501	225,966
Wet	70,913	17.6	178	14.4	1,687	3,973	11,517	53,558
Icy	14,631	3.6	48	3.9	329	748	1,869	11,637
Snowy	13,816	3.4	36	2.9	311	566	1,427	11,476
Muddy	656	0.2	2	0.2	31	58	74	491
Slushy	3,143	0.8	11	0.9	95	174	423	2,440
Debris	276	0.1	1	0.1	7	26	39	203
Other/Unknown	6,762	1.7	13	1.1	144	305	677	5,623
Totals	403,766	100.0	1,235	100.0	10,966	23,644	56,527	311,394

### ALL CRASHES



### FATAL CRASHES



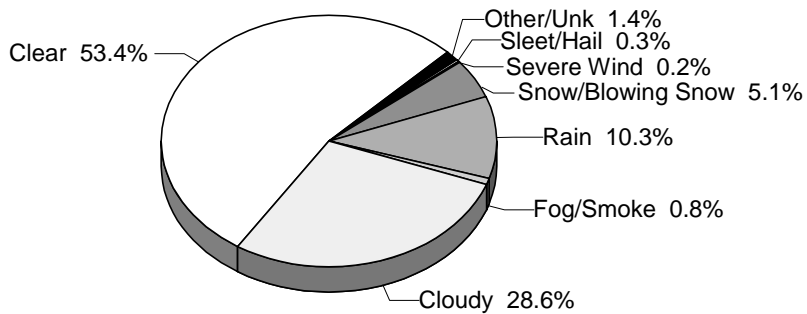
Most crashes (72.7%) and most fatal crashes (76.6%) occur on dry roads. This indicates that Michigan drivers do a good job of adjusting their driving behavior for bad road conditions.



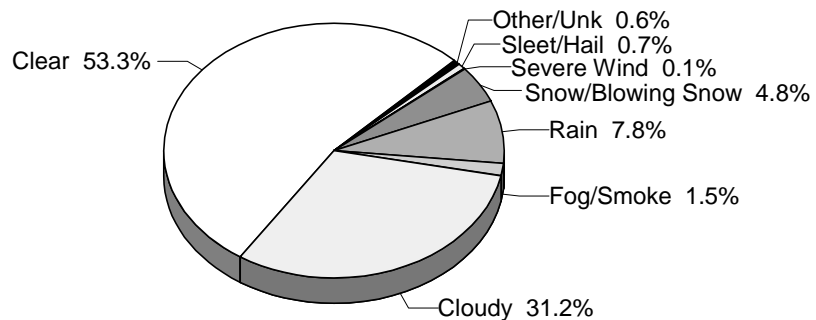
## WEATHER CONDITION

WEATHER CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Clear	215,667	53.4	658	53.3	6,266	13,265	29,801	165,677
Cloudy	115,426	28.6	385	31.2	3,016	6,609	16,153	89,263
Fog/Smoke	3,226	0.8	19	1.5	111	190	316	2,590
Rain	41,555	10.3	96	7.8	1,009	2,372	7,039	31,039
Snow/Blowing Snow	20,586	5.1	59	4.8	445	938	2,554	16,590
Severe Wind	728	0.2	1	0.1	18	43	62	604
Sleet/Hail	1,094	0.3	9	0.7	26	76	136	847
Other/Unknown	5,484	1.4	8	0.6	75	151	466	4,784
Totals	403,766	100.0	1,235	100.0	10,966	23,644	56,527	311,394

### ALL CRASHES

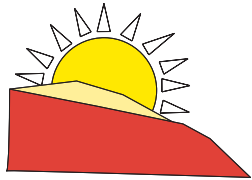


### FATAL CRASHES



The majority of all crashes occur in good weather (53.4%) as do the majority of fatal crashes (53.3%). Fog/smoke is a particularly deadly weather condition as it is overrepresented in fatal crashes.

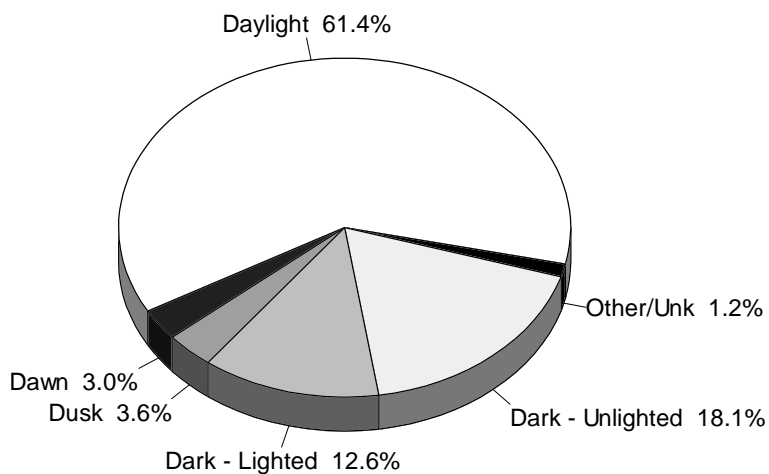




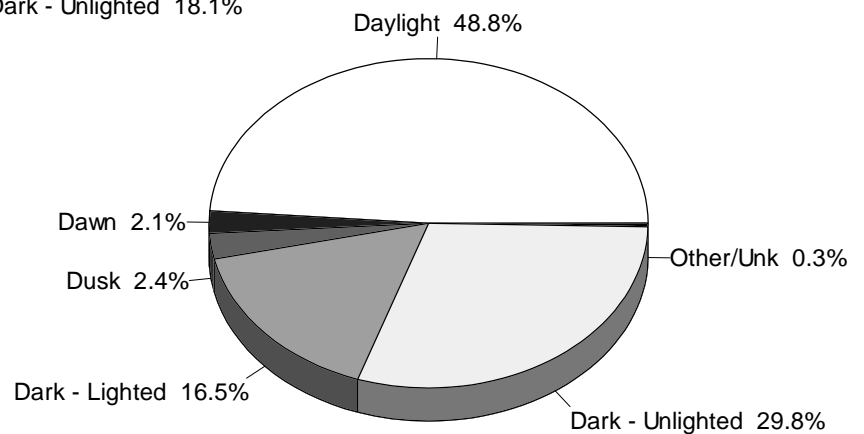
## LIGHT CONDITION

LIGHT CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Daylight	248,103	61.4	603	48.8	6,688	15,213	40,147	185,452
Dawn	12,314	3.0	26	2.1	212	474	1,116	10,486
Dusk	14,387	3.6	30	2.4	318	771	1,841	11,427
Dark – Lighted	50,881	12.6	204	16.5	1,827	3,638	7,847	37,365
Dark – Unlighted	73,153	18.1	368	29.8	1,852	3,401	5,110	62,422
Other/Unknown	4,928	1.2	4	0.3	69	147	466	4,242
Totals	403,766	100.0	1,235	100.0	10,966	23,644	56,527	311,394

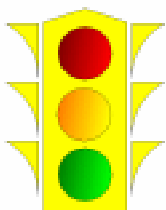
### ALL CRASHES



### FATAL CRASHES



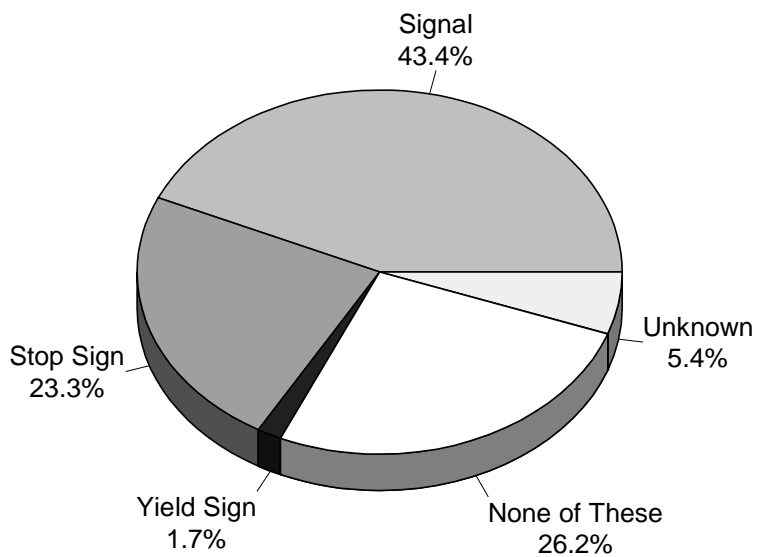
The majority (61.4%) of all crashes happen during daylight hours. Dark conditions create the greatest hazard, as they are overrepresented in fatal crashes. Areas without street lights have the highest fatality rate.



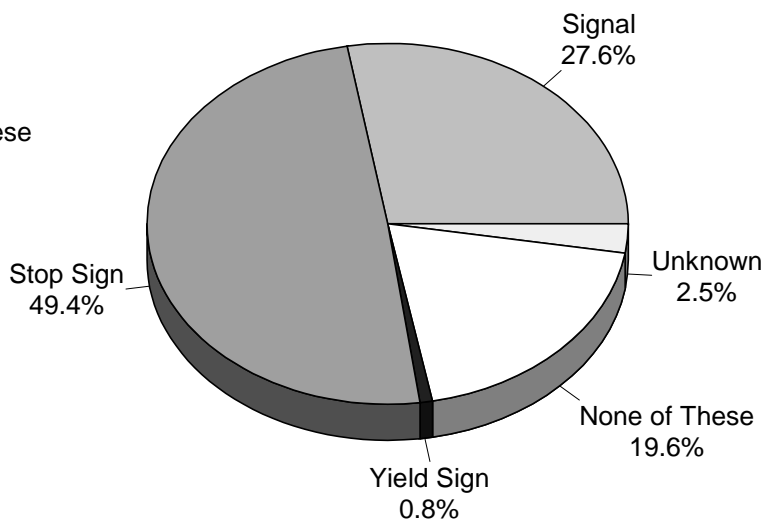
## INTERSECTION CRASHES BY TRAFFIC CONTROL TYPE

TRAFFIC CONTROL TYPE	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Signal	61,849	43.4	100	27.6	1,722	4,153	12,696	43,178
Stop Sign	33,234	23.3	179	49.4	1,334	2,747	6,048	22,926
Yield Sign	2,356	1.7	3	0.8	77	217	448	1,611
None of These	37,330	26.2	71	19.6	1,056	2,352	6,045	27,806
Unknown	7,672	5.4	9	2.5	236	452	1,205	5,770
Totals	142,441	100.0	362	100.0	4,425	9,921	26,442	101,291

### ALL CRASHES



### FATAL CRASHES



Intersections with stop signs are overrepresented in fatal crashes. Driver perception, awareness, and adherence to traffic control signing are all key factors in crashes at intersections.



## CONSTRUCTION ZONE CRASHES

CONSTRUCTION ZONE TYPE	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Construction/Maintenance								
Activity - On Road								
Lane Closed	3,299	46.8	2	9.5	80	135	536	2,546
Lane Open	929	13.2	0	0.0	26	37	143	723
Unknown Lane Closure	177	2.5	0	0.0	3	5	31	138
Activity - Off Road								
Lane Closed	335	4.8	1	4.8	5	18	62	249
Lane Open	529	7.5	0	0.0	19	34	81	395
Unknown Lane Closure	37	0.5	1	4.8	2	1	6	27
Activity - None								
Lane Closed	804	11.4	7	33.3	14	58	135	590
Lane Open	515	7.3	9	42.9	20	41	89	356
Unknown Lane Closure	46	0.7	0	0.0	2	1	9	34
Activity – Unknown								
Lane Closed	156	2.2	0	0.0	1	5	23	127
Lane Open	61	0.9	1	4.8	2	1	10	47
Unknown Lane Closure	161	2.3	0	0.0	4	4	18	135
Sub-Total	7,049	100.0	21	100.0	178	340	1,143	5,367

Utility								
Activity - On Road								
Lane Closed	101	28.1	0	0.0	2	9	16	74
Lane Open	83	23.1	0	0.0	5	6	11	61
Unknown Lane Closure	10	2.8	1	25.0	1	0	0	8
Activity - Off Road								
Lane Closed	26	7.2	0	0.0	1	1	5	19
Lane Open	55	15.3	0	0.0	2	6	6	41
Unknown Lane Closure	3	0.8	0	0.0	0	0	1	2
Activity - None								
Lane Closed	6	1.7	0	0.0	0	0	0	6
Lane Open	15	4.2	1	25.0	0	1	1	12
Unknown Lane Closure	3	0.8	0	0.0	0	1	1	1
Activity - Unknown								
Lane Closed	2	0.6	0	0.0	0	0	0	2
Lane Open	4	1.1	0	0.0	2	0	0	2
Unknown Lane Closure	51	14.2	2	50.0	0	1	8	40
Sub-Total	359	100.0	4	100.0	13	25	49	268

Total	7,408		25		191	365	1,192	5,635
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## REPORTED STATEWIDE TRAFFIC CRASHES BY COUNTY IN MICHIGAN

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Alcona	923	2	81	840	0	144	154	625	2	118
Alger	403	3	70	330	0	26	145	232	3	96
Allegan	3,748	18	805	2,925	245	344	679	2,480	23	1,167
Alpena	1,392	2	226	1,164	0	287	233	872	2	324
Antrim	1,043	4	170	869	0	216	157	670	4	232
Arenac	1,093	5	193	895	129	247	85	632	6	286
Baraga	510	1	74	435	0	189	61	260	1	107
Barry	2,518	8	408	2,102	0	0	766	1,752	8	585
Bay	4,094	16	1,076	3,002	213	112	1,152	2,617	17	1,567
Benzie	682	2	112	568	0	172	101	409	2	165
Berrien	5,770	35	1,447	4,288	740	768	670	3,592	39	2,129
Branch	2,126	11	338	1,777	209	446	81	1,390	12	491
Calhoun	6,346	20	1,164	5,162	1,047	50	808	4,441	23	1,671
Cass	2,053	7	422	1,624	2	153	607	1,291	9	609
Charlevoix	1,246	8	188	1,050	0	356	210	680	8	260
Cheboygan	1,018	8	238	772	183	57	222	556	10	336
Chippewa	1,398	8	236	1,154	319	0	304	775	8	342
Clare	1,697	5	284	1,408	0	413	277	1,007	5	432
Clinton	2,692	8	481	2,203	356	529	168	1,639	8	700
Crawford	910	5	167	738	195	20	156	539	5	266
Delta	2,252	8	301	1,943	0	502	358	1,392	12	425
Dickinson	1,494	2	204	1,288	0	507	320	667	3	267
Eaton	4,265	18	864	3,383	562	141	1,210	2,352	19	1,259
Emmet	1,567	6	266	1,295	24	566	100	877	7	373
Genesee	16,280	57	4,366	11,857	1,634	388	2,244	12,014	62	6,540
Gladwin	1,166	4	181	981	0	0	412	754	8	276
Gogebic	612	2	108	502	0	209	24	379	3	139
Grand Traverse	3,778	13	731	3,034	0	885	363	2,530	14	1,079
Gratiot	1,840	10	279	1,551	0	458	290	1,092	12	427
Hillsdale	2,320	9	373	1,938	0	178	498	1,644	10	549
Houghton	1,256	5	253	998	0	381	277	598	6	353
Huron	2,076	5	254	1,817	0	0	772	1,304	5	392
Ingham	11,710	18	2,616	9,076	1,573	410	2,071	7,656	20	3,601
Ionia	2,803	9	453	2,341	253	0	785	1,765	10	615
Iosco	1,374	7	221	1,146	0	321	314	739	7	311
Iron	1,006	3	106	897	0	215	280	511	3	158
Isabella	2,286	16	359	1,911	0	315	243	1,728	17	538
Jackson	6,906	28	1,307	5,571	923	329	987	4,667	29	1,892
Kalamazoo	10,023	21	2,067	7,935	830	525	1,098	7,570	23	2,889
Kalkaska	769	6	136	627	0	136	144	489	6	221
Kent	25,181	45	5,781	19,355	1,573	1,911	4,466	17,231	56	8,055
Keweenaw	94	1	26	67	0	29	13	52	1	33
Lake	684	5	99	580	0	117	111	456	7	139
Lapeer	3,843	14	731	3,098	239	0	1,088	2,516	16	1,089
Leelanau	621	3	109	509	0	0	246	375	3	156
Lenawee	3,594	19	800	2,775	0	734	599	2,261	22	1,188

## REPORTED STATEWIDE TRAFFIC CRASHES BY COUNTY IN MICHIGAN (Continued)

COUNTY	All	Fatal	Injury	Property Damage	Inter- state	US Route	State Route	Local Street	Persons Killed	Persons Injured
Livingston	5,301	14	1,243	4,044	981	411	620	3,289	17	1,780
Luce	266	0	47	219	0	0	130	136	0	67
Mackinac	784	2	108	674	145	171	151	317	2	162
Macomb	26,669	52	7,000	19,617	1,648	0	6,766	18,255	55	9,958
Manistee	1,114	2	146	966	0	252	159	703	2	191
Marquette	2,446	6	481	1,959	0	753	225	1,468	10	679
Mason	1,681	4	273	1,404	0	674	26	981	4	399
Mecosta	2,701	8	340	2,353	0	728	462	1,511	9	490
Menominee	1,858	4	257	1,597	0	584	124	1,150	4	390
Midland	3,268	13	642	2,613	0	430	462	2,376	14	934
Missaukee	842	2	93	747	0	0	269	573	2	138
Monroe	4,301	21	1,141	3,139	378	745	607	2,571	23	1,762
Montcalm	3,270	16	491	2,763	0	111	1,061	2,098	20	720
Montmorency	505	0	77	428	0	0	169	336	0	106
Muskegon	6,004	31	1,419	4,554	52	1,074	671	4,207	34	2,075
Newaygo	2,108	9	386	1,713	0	0	656	1,452	11	562
Oakland	47,445	86	11,881	35,478	6,006	2,529	6,397	32,513	92	16,921
Oceana	1,232	5	237	990	0	300	79	853	5	345
Ogemaw	1,281	7	214	1,060	246	0	271	764	7	332
Ontonagon	576	2	49	525	0	108	267	201	2	64
Osceola	1,604	8	236	1,360	0	409	192	1,003	9	352
Oscoda	563	3	88	472	0	0	162	401	3	126
Otsego	1,095	4	234	857	254	0	208	633	4	310
Ottawa	7,742	31	1,778	5,933	317	1,112	675	5,638	31	2,557
Presque Isle	701	3	88	610	0	124	153	424	4	129
Roscommon	1,254	8	237	1,009	157	115	283	699	8	348
Saginaw	8,392	24	1,963	6,405	470	0	2,368	5,554	26	2,796
St. Clair	5,372	20	1,394	3,958	735	0	1,170	3,467	22	2,017
St. Joseph	2,367	10	491	1,866	0	613	421	1,333	13	717
Sanilac	1,951	4	304	1,643	0	0	598	1,353	5	471
Schoolcraft	518	3	91	424	0	136	135	247	4	137
Shiawassee	2,555	10	609	1,936	258	0	732	1,565	11	920
Tuscola	2,151	17	388	1,746	0	0	674	1,477	21	570
Van Buren	2,889	17	665	2,207	399	0	581	1,909	18	1,002
Washtenaw	12,227	32	2,829	9,366	1,431	1,628	895	8,273	34	3,914
Wayne	85,378	238	21,712	63,428	7,922	3,894	9,278	64,284	255	31,782
Wexford	1,840	9	330	1,501	0	508	478	854	10	503
UNKNOWN	53	0	4	49	0	0	0	53	0	5
Totals	403,766	1,235	91,137	311,394	32,648	31,195	64,924	274,999	1,367	131,578



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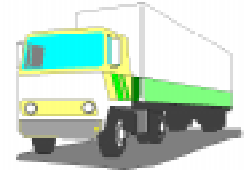
**Vehicle/  
Driver**







## VEHICLE TYPE CRASH INVOLVEMENT



### MOST SEVERE OUTCOME IN CRASH

### MOST SEVERE OUTCOME IN VEHICLE

Vehicle Types	Motor Vehicles		Fatal Crash		Injury	PDO	Fatality in Veh		Injury	No Injury
	Number	% of Total	Number	% of Total			Number	% of Total		
Passenger Car and Station Wagon	486,025	69.2	1,219	60.1	122,764	362,042	754	70.9	79,137	406,134
Van and Motorhome	53,679	7.6	162	8.0	12,760	40,757	63	5.9	6,971	46,645
Pickup	103,199	14.7	347	17.1	22,041	80,811	144	13.5	11,491	91,564
Small Truck (under 10,000 lbs.)	13,293	1.9	40	2.0	2,956	10,297	12	1.1	1,548	11,733
Motorcycle	2,931	0.4	52	2.6	2,198	681	49	4.6	2,152	730
Moped	271	0.0	2	0.1	202	67	2	0.2	191	78
Go Cart	15	0.0	0	0.0	8	7	0	0.0	8	7
Snowmobile	387	0.1	22	1.1	232	133	20	1.9	201	166
Off Road Vehicle	199	0.0	3	0.1	154	42	3	0.3	139	57
Other	1,835	0.3	9	0.4	392	1,434	4	0.4	169	1,662
Unkown	21,359	3.0	17	0.8	2,583	18,759	3	0.3	563	20,793
CDL Truck/Bus (breakdown below)	19,487	2.8	156	7.7	3,932	15,399	10	0.9	1,021	18,456
Totals	702,680	100.0	2,029	100.0	170,222	530,429	1,064	100.0	103,591	598,025

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.

### CDL Truck/Bus Sub-category Types

CDL Truck/Bus Sub-category Types	Motor Vehicles		Fatal Crash		Injury	PDO	Fatality in Veh		Injury	No Injury
	Number	% of Total	Number	% of Total			Number	% of Total		
Commercial Vehicle: Group A	9,476	48.6	113	72.4	2,004	7,359	6	60.0	434	9,036
Commercial Vehicle: Group B	4,202	21.6	24	15.4	881	3,297	1	10.0	303	3,898
Commercial Vehicle: Group C	528	2.7	0	0.0	115	413	0	0.0	46	482
Other Truck	1,124	5.8	8	5.1	238	878	1	10.0	78	1,045
Unknown Truck	4,157	21.3	11	7.1	694	3,452	2	20.0	160	3,995
Totals	19,487	100.0	156	100.0	3,932	15,399	10	100.0	1,021	18,456

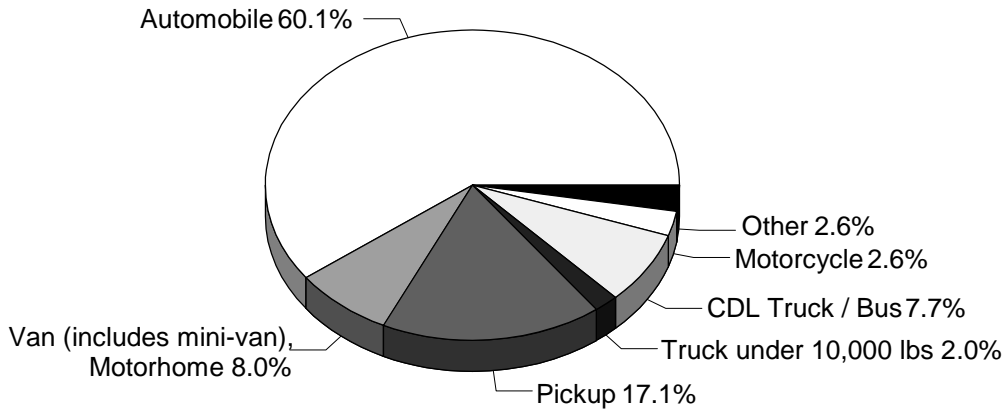
Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.

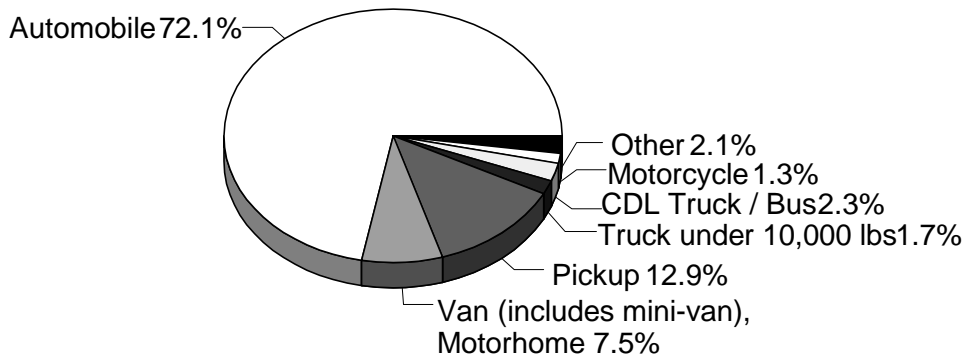
## VEHICLE TYPES IN CRASHES BY CRASH SEVERITY

### FATAL



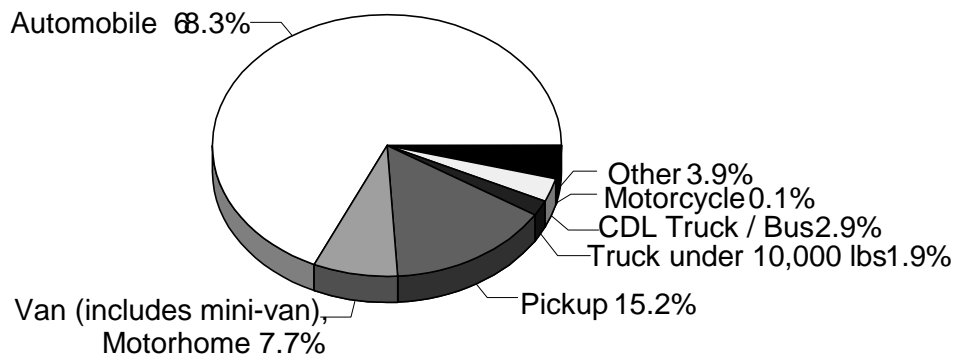
The top chart shows that 3 out of 4 vehicles involved in fatal crashes are automobiles or pickups. Van, Motorhome, the vehicle type that includes the popular minivan, has a fatal crash involvement of 8.0 percent.

### INJURY



Special Note: "Other" consists of Moped, Go Cart, Snowmobile, Off Road Vehicle, Other, and Unknown.

### PROPERTY DAMAGE ONLY



As with fatal crashes, Injury and PDO crashes are represented primarily by cars and pickups. One should also note the decline in proportional representation for motorcycles and heavy trucks compared to their levels in fatal crashes.

## ACTION PRIOR TO CRASH

### MOST SEVERE OUTCOME IN CRASH

DRIVER ACTION	All Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Going straight ahead	355,229	50.6	1,518	11,770	23,754	53,767	264,420
Turning left	54,684	7.8	100	1,830	4,443	9,631	38,680
Turning right	19,863	2.8	8	302	859	2,234	16,460
Stopped on roadway	70,309	10.0	75	1,152	3,323	16,517	49,242
In prior crash	957	0.1	4	38	95	196	624
Changing lanes	16,234	2.3	37	259	521	1,704	13,713
Backing	18,159	2.6	9	96	219	680	17,155
Slowing/stopping on roadway	59,226	8.4	40	780	2,217	12,887	43,302
Slowing/stopping other	835	0.1	3	17	32	185	598
Starting up on roadway	13,385	1.9	19	337	757	2,542	9,730
Starting up other	403	0.1	0	13	34	71	285
Entering parking	1,047	0.1	0	6	24	74	943
Leaving parking	2,865	0.4	5	51	148	327	2,334
Entering roadway	10,904	1.6	16	314	699	1,648	8,227
Leaving roadway	1,355	0.2	17	103	156	177	902
Making U-turn	1,760	0.3	5	62	116	275	1,302
Overtaking or passing	6,194	0.9	36	213	350	704	4,891
Avoiding object	2,010	0.3	4	88	215	289	1,414
Avoiding pedestrian	211	0.0	4	24	37	40	106
Avoiding vehicle (front/back)	5,435	0.8	36	223	417	938	3,821
Avoiding vehicle (angle)	2,421	0.3	8	82	190	419	1,722
Driverless moving	540	0.1	1	11	20	38	470
Parked	29,961	4.3	41	418	840	1,416	27,246
Crossing at intersection	78	0.0	0	8	10	17	43
Crossing not at intersection	48	0.0	0	10	8	13	17
Getting on/off vehicle	9	0.0	1	2	0	0	6
In roadway with traffic	8	0.0	0	2	0	2	4
In roadway against traffic	9	0.0	0	0	0	2	7
Standing or lying in roadway	7	0.0	0	2	1	2	2
Pushing/working on vehicle	17	0.0	0	3	3	1	10
Other working in roadway	5	0.0	0	0	3	0	2
Playing in roadway	3	0.0	1	0	0	1	1
In roadway other reason	7	0.0	0	2	1	1	3
Not in roadway	16	0.0	0	2	4	3	7
Other	649	0.1	5	33	56	90	465
Unknown	27,837	4.0	36	612	1,307	3,607	22,275
TOTAL	702,680	100.0	2,029	18,865	40,859	110,498	530,429

## ACTION PRIOR TO CRASH (continued)

### MOTORCYCLIST – INJURY SEVERITY

MOTORCYCLIST ACTION	All Motorcycles		All Motorcyclists		Fatal	Injury			No Injury
	Number	% of Total	Number	% of Total		A	B	C	
Going straight ahead	1,884	64.3	2,120	63.9	42	495	722	449	361
Turning left	161	5.5	180	5.4	1	24	51	49	50
Turning right	121	4.1	131	3.9	0	18	41	34	35
Stopped on roadway	122	4.2	139	4.2	0	9	14	39	76
In prior crash	3	0.1	3	0.1	0	0	0	0	1
Changing lanes	51	1.7	61	1.8	0	18	22	6	15
Backing	1	0.0	2	0.1	0	1	1	0	0
Slowing/stopping on roadway	154	5.3	167	5.0	2	25	51	36	51
Slowing/stopping other	6	0.2	7	0.2	0	2	2	1	2
Starting up on roadway	43	1.5	52	1.6	2	6	11	11	20
Starting up other	2	0.1	2	0.1	0	0	0	1	0
Entering parking	2	0.1	2	0.1	0	0	0	0	2
Leaving parking	8	0.3	8	0.2	0	0	3	2	3
Entering roadway	31	1.1	43	1.3	0	12	17	8	5
Leaving roadway	17	0.6	19	0.6	0	9	8	1	1
Making U-turn	8	0.3	8	0.2	0	0	4	1	3
Overtaking or passing	65	2.2	75	2.3	1	26	27	7	9
Avoiding object	23	0.8	24	0.7	0	5	7	5	7
Avoiding pedestrian	3	0.1	3	0.1	0	0	1	0	2
Avoiding vehicle (front/back)	65	2.2	67	2.0	0	8	20	21	15
Avoiding vehicle (angle)	36	1.2	44	1.3	2	6	19	9	6
Driverless moving	0	0.0	0	0.0	0	0	0	0	0
Parked	38	1.3	38	1.1	0	0	1	1	8
Crossing at intersection	1	0.0	20	0.6	0	4	3	6	6
Crossing not at intersection	0	0.0	4	0.1	0	0	2	2	0
Getting on/off vehicle	1	0.0	1	0.0	1	0	0	0	0
In roadway with traffic	0	0.0	0	0.0	0	0	0	0	0
In roadway against traffic	0	0.0	3	0.1	0	0	1	1	0
Standing or lying in roadway	0	0.0	0	0.0	0	0	0	0	0
Pushing/working on vehicle	2	0.1	2	0.1	0	0	2	0	0
Other working in roadway	0	0.0	0	0.0	0	0	0	0	0
Playing in roadway	0	0.0	0	0.0	0	0	0	0	0
In roadway other reason	0	0.0	1	0.0	0	0	1	0	0
Not in roadway	1	0.0	2	0.1	0	1	0	0	1
Other	7	0.2	8	0.2	0	0	6	1	0
Unknown	75	2.6	84	2.5	2	21	23	15	14
<b>TOTAL</b>	<b>2,931</b>	<b>100.0</b>	<b>3,320*</b>	<b>100.0</b>	<b>53</b>	<b>690</b>	<b>1,060</b>	<b>706</b>	<b>693</b>

\* Includes 118 motorcyclists (drivers and passengers) with unknown injury severity

## ACTION PRIOR TO CRASH (continued)

### BICYCLIST - INJURY SEVERITY

BICYCLIST ACTION	All Bicycles		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Going straight ahead	1,629	52.6	12	166	565	588	251
Turning left	82	2.6	1	15	27	20	16
Turning right	39	1.3	0	8	14	9	7
Stopped on roadway	22	0.7	0	0	8	10	3
In prior crash	1	0.0	0	0	0	0	1
Changing lanes	40	1.3	1	6	19	7	6
Backing	4	0.1	0	0	3	0	1
Slowing/stopping on roadway	10	0.3	0	0	5	4	1
Slowing/stopping other	6	0.2	0	1	3	0	2
Starting up on roadway	18	0.6	0	3	11	3	1
Starting up other	4	0.1	1	0	1	2	0
Entering parking	3	0.1	0	1	1	1	0
Leaving parking	7	0.2	0	0	3	4	0
Entering roadway	219	7.1	4	31	87	64	31
Leaving roadway	2	0.1	0	0	1	1	0
Making U-turn	9	0.3	0	0	4	1	4
Overtaking or passing	2	0.1	0	1	0	1	0
Avoiding object	3	0.1	0	1	2	0	0
Avoiding pedestrian	1	0.0	0	0	0	0	1
Avoiding vehicle (front/back)	11	0.4	0	0	6	3	1
Avoiding vehicle (angle)	12	0.4	0	1	7	2	2
Driverless moving	0	0.0	0	0	0	0	0
Parked	6	0.2	0	0	2	1	1
Crossing at intersection	404	13.0	0	38	147	157	52
Crossing not at intersection	212	6.8	3	42	77	60	14
Getting on/off vehicle	2	0.1	0	1	0	0	1
In roadway with traffic	37	1.2	1	6	12	13	4
In roadway against traffic	38	1.2	2	1	11	12	9
Standing or lying in roadway	1	0.0	0	0	0	1	0
Pushing/working on vehicle	0	0.0	0	0	0	0	0
Other working in roadway	0	0.0	0	0	0	0	0
Playing in roadway	19	0.6	1	1	3	12	1
In roadway other reason	29	0.9	0	2	12	9	4
Not in roadway	20	0.6	0	1	7	9	2
Other	67	2.2	0	7	22	24	12
Unknown	138	4.5	1	15	46	38	22
TOTAL	3,097*	100.0	27	348	1,106	1,056	450

\* Includes 110 bicyclists with unknown injury severity

## ACTION PRIOR TO CRASH (continued)

### PEDESTRIAN - INJURY SEVERITY

PEDESTRIAN ACTION	All Pedestrians		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Going straight ahead	146	3.8	2	31	40	51	16
Turning left	21	0.5	0	3	8	5	3
Turning right	12	0.3	1	0	4	5	1
Stopped on roadway	6	0.2	0	1	0	2	2
In prior crash	7	0.2	2	2	2	1	0
Changing lanes	1	0.0	0	0	0	1	0
Backing	1	0.0	0	1	0	0	0
Slowing/stopping on roadway	3	0.1	0	0	0	0	3
Slowing/stopping other	0	0.0	0	0	0	0	0
Starting up on roadway	5	0.1	0	2	1	1	1
Starting up other	0	0.0	0	0	0	0	0
Entering parking	1	0.0	0	0	1	0	0
Leaving parking	1	0.0	0	1	0	0	0
Entering roadway	40	1.0	1	10	12	12	2
Leaving roadway	4	0.1	0	0	1	1	2
Making U-turn	0	0.0	0	0	0	0	0
Overtaking or passing	1	0.0	0	0	1	0	0
Avoiding object	0	0.0	0	0	0	0	0
Avoiding pedestrian	0	0.0	0	0	0	0	0
Avoiding vehicle (front/back)	3	0.1	0	1	0	0	1
Avoiding vehicle (angle)	1	0.0	0	1	0	0	0
Driverless moving	3	0.1	0	0	0	0	2
Parked	17	0.4	0	2	0	3	7
Crossing at intersection	885	22.7	16	164	232	369	70
Crossing not at intersection	1,234	31.7	80	314	398	340	49
Getting on/off vehicle	87	2.2	1	25	27	31	2
In roadway with traffic	161	4.1	13	43	48	44	9
In roadway against traffic	52	1.3	3	12	17	14	3
Standing or lying in roadway	153	3.9	14	50	36	47	4
Pushing/working on vehicle	55	1.4	1	17	14	20	1
Other working in roadway	43	1.1	0	13	8	18	3
Playing in roadway	92	2.4	3	15	36	26	8
In roadway other reason	211	5.4	8	48	68	71	10
Not in roadway	180	4.6	9	53	55	50	7
Other	128	3.3	6	32	41	37	8
Unknown	337	8.7	12	71	99	104	15
<b>TOTAL</b>	<b>3,891*</b>	<b>100.0</b>	<b>172</b>	<b>912</b>	<b>1,149</b>	<b>1,253</b>	<b>229</b>

\* Includes 176 pedestrians with unknown injury severity

## MOST HARMFUL EVENT

### MOST SEVERE OUTCOME IN CRASH

NONCOLLISION	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Loss of control	4,864	0.7	8	191	375	806	3,484
Cross center/median	985	0.1	0	45	53	123	764
Ran off road left	897	0.1	3	31	89	116	658
Ran off road right	1,486	0.2	1	56	88	247	1,094
Re-enter road	214	0.0	1	14	29	45	125
Overturn	7,808	1.1	135	842	1,693	1,686	3,452
Separation of units	2,905	0.4	11	56	144	473	2,221
Fire/explosion	1,009	0.1	10	24	36	88	851
Immersion	107	0.0	2	6	4	16	79
Jackknife	385	0.1	0	8	8	39	330
Downhill runaway	90	0.0	0	2	5	18	65
Cargo loss/shift	895	0.1	0	5	16	35	839
Individual fell off	436	0.1	12	105	158	79	82
Other noncollision	2,098	0.3	2	43	115	238	1,700
NONCOLLISION Subtotal	24,179	3.4	185	1,428	2,813	4,009	15,744

### MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH NONFIXED OBJECT	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Pedestrian	3,059	0.4	171	719	924	963	282
Pedalcycle	2,840	0.4	30	303	999	950	558
Motor vehicle in transport	483,381	68.8	1,292	12,242	27,488	88,177	354,182
Parked motor vehicle	20,457	2.9	12	237	542	932	18,734
Railway train	141	0.0	9	15	17	18	82
Animal	61,432	8.7	3	88	439	872	60,030
Other nonfixed objects	6,395	0.9	11	85	226	384	5,689
COLLISION NONFIXED Subtotal	577,705	82.2	1,528	13,689	30,635	92,296	439,557

## MOST HARMFUL EVENT (continued)

HAD A COLLISION WITH FIXED OBJECT	MOST SEVERE OUTCOME IN CRASH						
	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Bridge/pier/abutment	689	0.1	8	44	59	106	472
Bridge parapet end	324	0.0	0	10	14	16	284
Bridge rail	423	0.1	3	13	39	61	307
Guardrail face	2,568	0.4	6	82	188	363	1,929
Guardrail end	418	0.1	3	18	72	59	266
Median barrier	2,604	0.4	6	114	302	591	1,591
Highway traffic sign post	2,416	0.3	1	23	71	136	2,185
Signal post	256	0.0	1	6	15	15	219
Luminaire/light support	590	0.1	5	23	61	69	432
Utility pole	3,670	0.5	35	258	597	610	2,170
Other pole	1,029	0.1	4	39	70	99	817
Culvert	718	0.1	8	71	108	111	420
Curb	1,982	0.3	2	34	64	154	1,728
Ditch	6,861	1.0	13	306	739	1,082	4,721
Embankment	1,678	0.2	8	99	226	316	1,029
Fence	1,470	0.2	0	27	55	113	1,275
Mailbox	2,064	0.3	2	15	57	76	1,914
Tree	10,194	1.5	162	929	1,515	1,581	6,007
Rail crossing signal	118	0.0	1	1	3	6	107
Building	932	0.1	7	57	115	121	632
Traffic island	46	0.0	0	0	6	4	36
Fire hydrant	552	0.1	0	10	54	77	411
Impact attenuator	56	0.0	0	4	9	5	38
Other fixed object	3,202	0.5	8	124	292	339	2,439
COLLISION FIXED Subtotal	44,860	6.4	283	2,307	4,731	6,110	31,429

	MOST SEVERE OUTCOME IN CRASH						
	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Unknown Event	55,936	8.0	33	1441	2,680	8,083	43,699
TOTAL MOST HARMFUL EVENT	702,680	100.0	2,029	18,865	40,859	110,498	530,429



## VEHICLE DEFECTS IN CRASH INVOLVEMENT

VEHICLE DEFECTS	MOST SEVERE OUTCOME IN CRASH						
	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Brakes	1,936	0.3	9	71	128	394	1,334
Lights/reflectors	430	0.1	3	19	17	56	335
Steering	274	0.0	1	6	24	50	193
Tires/wheels	750	0.1	4	30	62	98	556
Windows	142	0.0	2	8	5	24	103
Other	1,438	0.2	3	72	74	150	1,139
Unknown	697,710	99.3	2,007	18,659	40,549	109,726	526,769
<b>TOTAL</b>	<b>702,680</b>	<b>100.0</b>	<b>2,029</b>	<b>18,865</b>	<b>40,859</b>	<b>110,498</b>	<b>530,429</b>

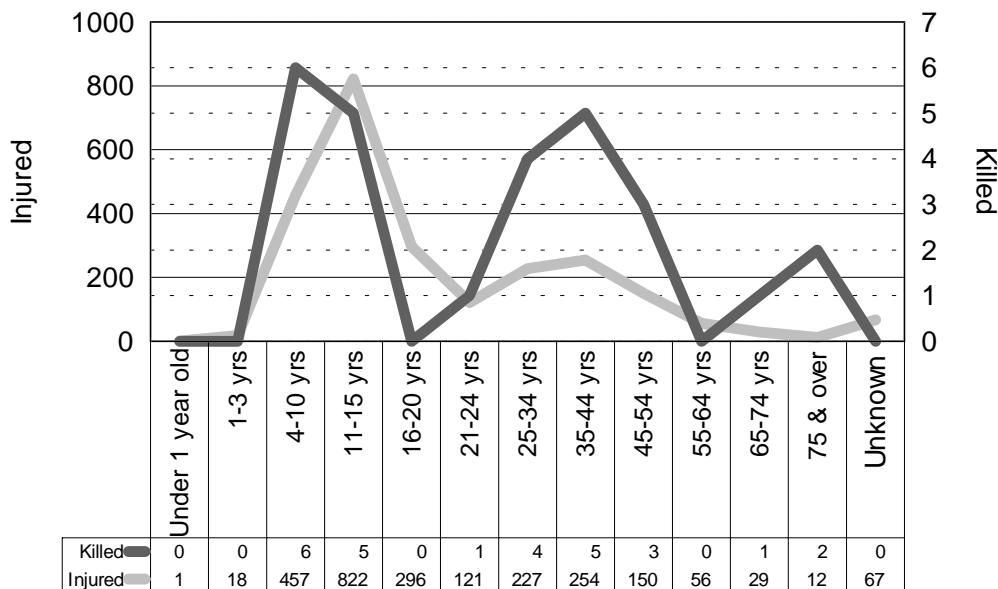
## DRIVER HAZARDOUS ACTION

HAZARDOUS ACTION	MOST SEVERE OUTCOME IN CRASH						
	All Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	359,608	51.2	821	8,270	18,472	54,182	277,863
Speed too fast	33,654	4.8	310	1,939	3,645	5,600	22,160
Speed too slow	1,359	0.2	0	35	78	285	961
Failed to yield	64,567	9.2	169	2,344	5,492	11,743	44,819
Disregard traffic control	16,579	2.4	122	1,060	1,965	3,978	9,454
Drove wrong way	549	0.1	10	36	49	88	366
Drove left of center	4,360	0.6	130	379	530	616	2,705
Improper passing	5,102	0.7	11	111	186	469	4,325
Improper lane use	15,702	2.2	19	225	447	1,339	13,672
Improper turn	9,312	1.3	9	217	469	1,154	7,463
Improper/no signal	970	0.1	1	27	27	109	806
Improper backing	13,820	2.0	4	43	104	400	13,269
Unable to stop in assured clear distance	93,518	13.3	63	1,341	3,905	20,676	67,533
Other	37,351	5.3	171	1,722	3,465	5,007	26,986
Unknown	46,229	6.6	189	1,116	2,025	4,852	38,047
<b>TOTAL</b>	<b>702,680</b>	<b>100.0</b>	<b>2,029</b>	<b>18,865</b>	<b>40,859</b>	<b>110,498</b>	<b>530,429</b>



## MICHIGAN BICYCLE CRASHES

1998 Bicycle Crash Information



In 1998, there were 3,097 bicyclists involved in motor vehicles crashes, with 27 bicyclists killed and 2,510 injured. The number of bicyclists killed represents a 6.9 percent decrease from 1997.

Children under 16 years of age accounted for 11 (40.7%) of the bicycle deaths in 1998.

## BICYCLE HELMET USE AND INJURY SEVERITY

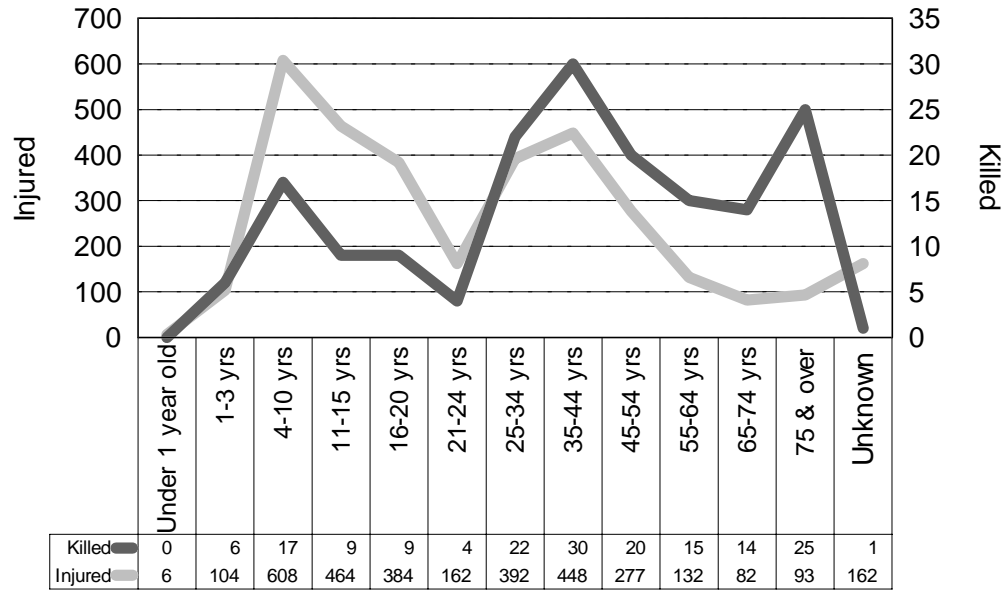
HELMET USE	Fatality	Injury			No Injury
		A	B	C	
Worn	2	7	62	45	10
Not Worn	12	113	346	337	105
Unknown	13	228	698	674	335
<b>TOTALS</b>	<b>27</b>	<b>348</b>	<b>1,106</b>	<b>1,056</b>	<b>450</b>

The National Center for Statistics and Analysis of the National Highway Traffic Safety Administration cites a study by the Centers for Disease Control [11] in giving us the following information: "Bicycle helmets are 85 to 88 percent effective in mitigating head and brain injuries, making the use of helmets the **single most effective countermeasure** available to reduce head injuries and fatalities resulting from bicycle crashes."



## MICHIGAN PEDESTRIAN CRASHES

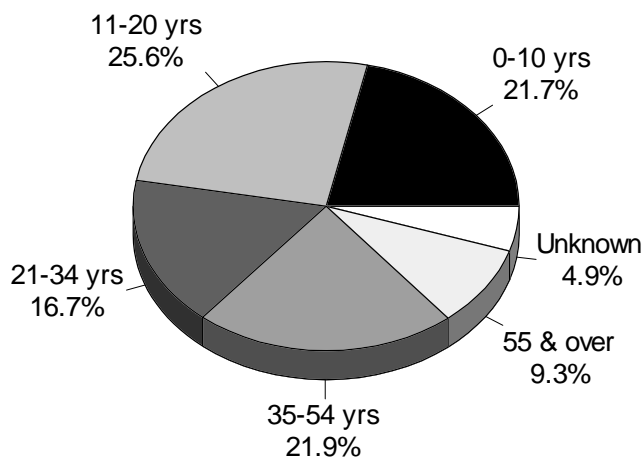
1998 Pedestrian Crash Information



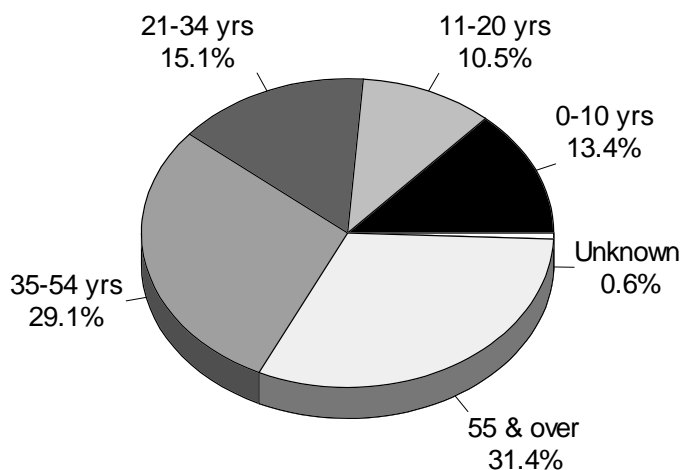
In 1998, there were 3,891 pedestrians involved in motor vehicles crashes, with 172 pedestrians killed and 3,314 injured. The number killed represents a 3.0 percent increase in fatalities from 1997.

Children under 16 years of age accounted for 32 (18.6%) of the pedestrian deaths in 1998. Adults over the age of 54 accounted for 54 (31.4%) of the pedestrian deaths in 1998.

Pedestrians Injured



Pedestrians Killed





## MICHIGAN SNOWMOBILE ON PUBLIC ROADWAY CRASHES

### Most Harmful Event

MOST SEVERE OUTCOME IN CRASH

NONCOLLISION	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Loss of control	15	3.9	0	6	4	3	2
Cross center/median	0	0.0	0	0	0	0	0
Ran off road left	1	0.3	0	0	0	0	1
Ran off road right	1	0.3	0	0	0	0	1
Re-enter road	0	0.0	0	0	0	0	0
Overturn	30	7.8	0	8	12	4	6
Separation of units	5	1.3	0	1	0	1	3
Fire/explosion	0	0.0	0	0	0	0	0
Immersion	1	0.3	0	0	0	0	1
Jackknife	0	0.0	0	0	0	0	0
Downhill runaway	0	0.0	0	0	0	0	0
Cargo loss/shift	1	0.3	0	0	0	0	1
Individual fell off	21	5.4	1	10	8	2	0
Other noncollision	3	0.8	0	0	0	0	3
NONCOLLISION Subtotal	78	20.2	1	25	24	10	18

MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH NONFIXED OBJECT	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Pedestrian	7	1.8	1	5	0	1	0
Pedalcycle	0	0.0	0	0	0	0	0
Motor vehicle in transport	134	34.6	5	40	17	19	53
Parked motor vehicle	12	3.1	2	3	2	0	5
Railway train	0	0.0	0	0	0	0	0
Animal	12	3.1	0	0	0	2	10
Other nonfixed objects	10	2.6	2	1	2	2	3
COLLISION NONFIXED Subtotal	175	45.2	10	49	21	24	71



## MICHIGAN SNOWMOBILE ON PUBLIC ROADWAY CRASHES (continued)

### Most Harmful Event

#### MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH FIXED OBJECT	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Bridge/pier/abutment	0	0.0	0	0	0	0	0
Bridge parapet end	0	0.0	0	0	0	0	0
Bridge rail	3	0.8	0	0	1	0	2
Guardrail face	0	0.0	0	0	0	0	0
Guardrail end	0	0.0	0	0	0	0	0
Median barrier	0	0.0	0	0	0	0	0
Highway traffic sign post	2	0.5	0	0	0	0	2
Signal post	0	0.0	0	0	0	0	0
Luminaire/light support	0	0.0	0	0	0	0	0
Utility pole	4	1.0	0	2	0	0	2
Other pole	3	0.8	0	0	0	0	3
Culvert	3	0.8	0	0	1	1	1
Curb	0	0.0	0	0	0	0	0
Ditch	3	0.8	0	2	1	0	0
Embankment	6	1.6	0	2	1	2	1
Fence	6	1.6	0	1	1	1	3
Mailbox	4	1.0	0	0	2	0	2
Tree	59	15.2	11	20	16	5	7
Rail crossing signal	0	0.0	0	0	0	0	0
Building	2	0.5	0	0	1	0	1
Traffic island	0	0.0	0	0	0	0	0
Fire hydrant	1	0.3	0	1	0	0	0
Impact attenuator	1	0.3	0	0	0	0	1
Other fixed object	10	2.6	0	4	1	3	2
COLLISION FIXED Subtotal	107	27.6	11	32	25	12	27

Unknown Event	27	7.0	0	6	4	0	17
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<b>TOTAL MOST HARMFUL EVENT</b>	<b>387</b>	<b>100.0</b>	<b>22</b>	<b>112</b>	<b>74</b>	<b>46</b>	<b>133</b>
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A total of 387 snowmobiles were reported in crashes on Michigan public roadways during 1998. Of these snowmobiles, 22 were involved in fatal crashes with 18 of their drivers, 3 passengers and 1 pedestrian killed.



## MICHIGAN ORV/ATV ON PUBLIC ROADWAY CRASHES

### Most Harmful Event

### MOST SEVERE OUTCOME IN CRASH

	ORV/ATV		Fatal	Injury			PDO
NONCOLLISION	Number	% of Total		A	B	C	
Loss of control	6	3.0	0	2	3	1	0
Cross center/medium	1	0.5	0	0	0	0	1
Ran off road right	1	0.5	0	0	0	0	1
Overturn	24	12.1	0	11	9	4	0
Separation of Unit	1	0.5	0	0	0	0	1
Individual fell off	9	4.5	0	5	1	3	0
Other noncollision	3	1.5	0	1	2	0	0
NONCOLLISION Subtotal	45	22.6	0	19	15	8	3
HAD A COLLISION WITH NONFIXED OBJECT							
Pedestrian	2	1.0	0	1	1	0	0
Pedalcycle	0	0.0	0	0	0	0	0
Motor vehicle in transport	78	39.2	3	25	16	13	21
Parked motor vehicle	6	3.0	0	0	0	0	6
Animal	5	2.5	0	0	3	0	2
Other nonfixed objects	4	2.0	0	0	2	1	1
COLLISION NONFIXED Subtotal	95	47.7	3	26	22	14	30
HAD A COLLISION WITH FIXED OBJECT							
Bridge pier/abutment	1	0.5	0	0	0	1	0
Traffic sign post	1	0.5	0	0	0	0	1
Luminaire support	0	0.0	0	0	0	0	0
Utility pole	0	0.0	0	0	0	0	0
Culvert	1	0.5	0	1	0	0	0
Curb	1	0.5	0	0	1	0	0
Ditch	10	5.0	0	3	3	4	0
Embankment	4	2.0	0	2	2	0	0
Mailbox	2	1.0	0	2	0	0	0
Tree	17	8.5	0	10	3	2	2
Building	1	0.5	0	0	0	0	1
Other fixed object	10	5.0	0	0	5	3	2
COLLISION FIXED Subtotal	48	24.1	0	18	14	10	6
Unknown Event	11	5.5	0	3	5	0	3
TOTAL MOST HARMFUL EVENT	199	100.0	3	66	56	32	42

A total of 199 Off Road Vehicles/All Terrain Vehicles were reported in crashes on Michigan public roadways during 1998. Of these ORV/ATVs, 3 were involved in fatal crashes and 3 of their operators and 1 passenger were killed.

## MICHIGAN SNOWMOBILE ON PUBLIC ROADWAY CRASHES

### MOST SEVERE OUTCOME IN CRASH

Driver Hazardous Action	All Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	107	27.6	0	26	21	16	44
Speed too fast	126	32.6	18	46	30	9	23
Speed too slow	1	0.3	0	0	1	0	0
Failed to yield	28	7.2	0	10	4	3	11
Disregard traffic control	2	0.5	0	0	0	0	2
Drove wrong way	4	1.0	0	1	0	1	2
Drove left of center	2	0.5	0	0	0	0	2
Improper passing	1	0.3	0	0	0	0	1
Improper lane use	9	2.3	0	1	1	0	7
Improper turn	4	1.0	0	1	0	0	3
Improper/no signal	2	0.5	0	0	0	0	2
Improper backing	3	0.8	0	0	0	0	3
Unable to stop in assured clear distance	25	6.5	3	10	3	5	4
Other	46	11.9	0	11	8	9	18
Unknown	27	7.0	1	6	6	3	11
<b>TOTAL</b>	<b>387</b>	<b>100.0</b>	<b>22</b>	<b>112</b>	<b>74</b>	<b>46</b>	<b>133</b>

## MICHIGAN ORV/ATV ON PUBLIC ROADWAY CRASHES

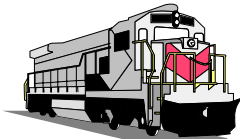
### MOST SEVERE OUTCOME IN CRASH

Driver Hazardous Action	All ORV/ATVs		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	32	16.1	0	7	10	5	10
Speed too fast	46	23.1	0	18	16	9	3
Speed too slow	1	0.5	0	0	0	0	1
Failed to yield	23	11.6	2	9	3	4	5
Disregard traffic control	3	1.5	1	2	0	0	0
Drove wrong way	2	1.0	0	2	0	0	0
Drove left of center	1	0.5	0	0	0	0	1
Improper passing	1	0.5	0	0	0	0	1
Improper lane use	2	1.0	0	0	0	1	1
Improper turn	5	2.5	0	1	3	1	0
Improper/no signal	1	0.5	0	0	0	1	0
Improper backing	3	1.5	0	0	0	0	3
Unable to stop in assured clear distance	14	7.0	0	6	1	1	6
Other	54	27.1	0	19	18	8	9
Unknown	11	5.5	0	2	5	2	2
<b>TOTAL</b>	<b>199</b>	<b>100.0</b>	<b>3</b>	<b>66</b>	<b>56</b>	<b>32</b>	<b>42</b>



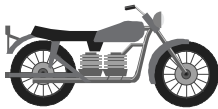
## MICHIGAN FARM EQUIPMENT CRASHES

A total of 217 crashes involving farm equipment were reported on Michigan roadways during 1998. Of these crashes, 5 were fatal crashes with 1 driver and 1 passenger of the farm equipment killed, and 3 fatalities in other vehicles.



## MICHIGAN VEHICLE - TRAIN CRASHES

A total of 90 crashes involving trains were reported in Michigan during 1998. The National Highway Traffic Safety Administration's 1998 Fatal Accident Reporting System [12] reported 9 fatal train crashes in Michigan, and 10 persons killed as a result of those collisions.



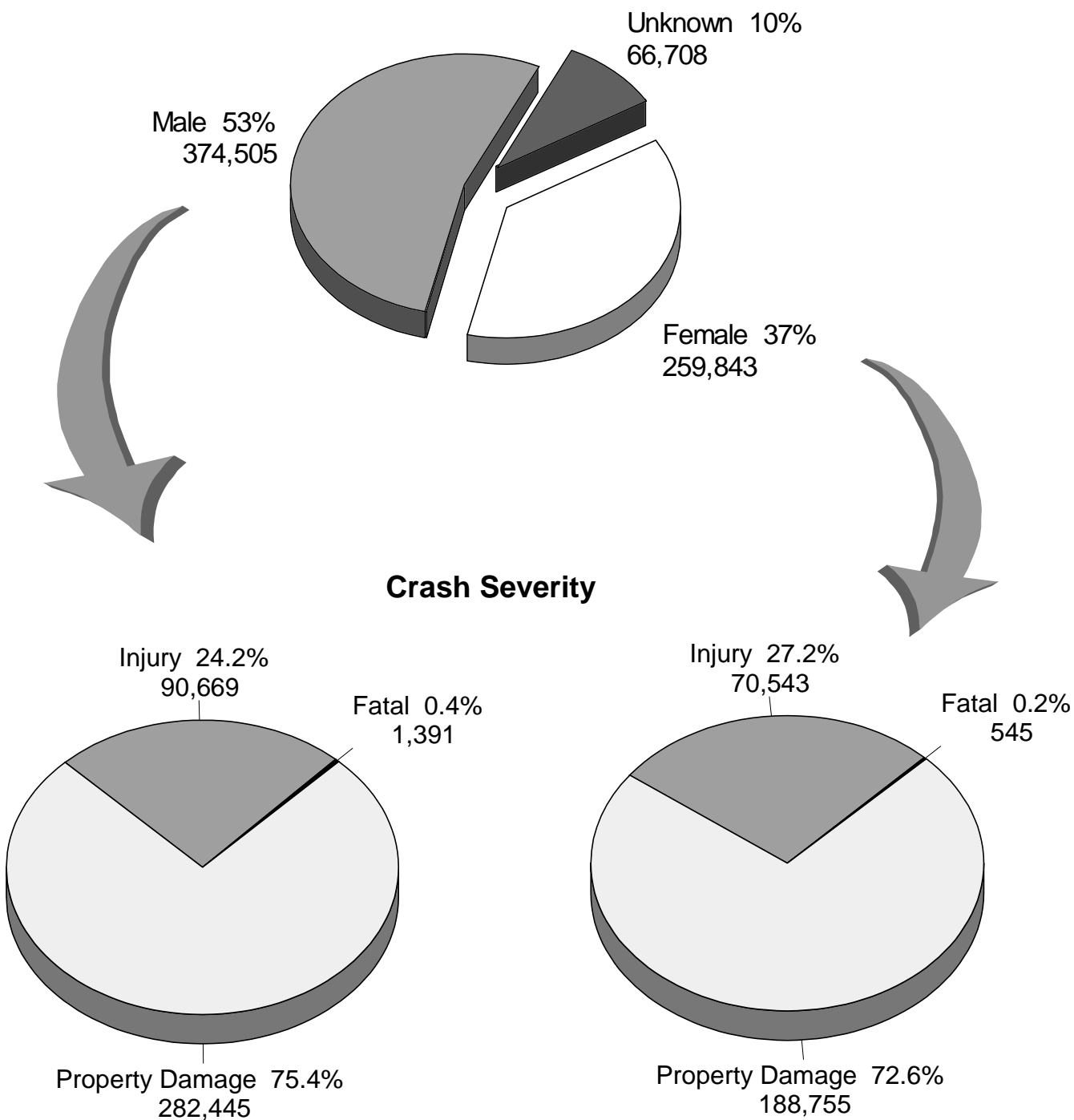
## MICHIGAN MOTORCYCLE CRASHES

MOTORCYCLE DATA	1997	1998	% Change
Registrations	136,030.0	147,056.0	8.1
Crashes	2,465.0	2,931.0	18.9
Deaths	63.0	53.0	-15.9
Persons Injured	2,103.0	2,456.0	16.8
Death Rate based on 10,000 motorcycle registrations	4.6	3.6	-21.7
Estimated Mileage based on 3,000 miles per motorcycle	408,090,000.0	441,168,000.0	8.1
Death Rate based on deaths per 100 million vehicle miles traveled	15.4	12.0	-22.1

Motorcycles were involved in 0.73 percent of all traffic crashes in Michigan in 1998. Injuries were proportionately more severe to motorcyclists than to persons in motor vehicles. The 1998 death rate for motorcyclists was 12.0 per 100 million vehicle miles traveled compared to the overall 1.5 mileage death rate per 100 million vehicle miles traveled.



## DRIVER GENDER INFORMATION - ALL CRASHES



A higher proportion of crashes involved male drivers than female drivers. When we examine the severity of crashes involving drivers of each gender, we see that fatal crashes are more prevalent among male drivers than female drivers (0.4% vs. 0.2%).

This 1998 chart was processed with numbers for all drivers (vehicle level).

## REPORTED AGE OF DRIVERS INVOLVED IN ALL CRASHES

COUNTY	All ages	0-15 years	16-20 years	21-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 yrs & over	DOB unk
Alcona	1,019	3	124	70	214	211	171	109	56	34	27
Alger	532	3	75	36	72	104	87	41	29	20	65
Allegan	5,495	25	970	471	1,137	1,122	655	341	176	129	469
Alpena	1,983	2	362	174	351	364	258	167	106	78	121
Antrim	1,293	3	184	106	249	245	183	115	73	30	105
Arenac	1,387	6	215	95	254	302	203	133	69	47	63
Baraga	619	3	79	48	103	119	87	69	29	16	66
Barry	3,235	12	590	304	668	640	447	230	107	82	155
Bay	7,037	23	1,207	603	1,150	1,311	838	494	352	275	784
Benzie	886	2	133	58	154	180	133	74	41	25	86
Berrien	9,608	43	1,334	709	1,616	1,520	1,091	683	468	388	1,756
Branch	2,889	10	470	240	544	538	351	204	119	80	333
Calhoun	9,746	56	1,444	778	1,837	1,654	1,236	641	466	323	1,311
Cass	2,725	10	418	228	458	483	310	174	85	65	494
Charlevoix	1,689	5	265	133	306	340	227	131	82	53	147
Cheboygan	1,304	6	204	93	236	221	195	101	73	46	129
Chippewa	1,985	11	299	171	371	363	234	127	88	59	262
Clare	2,240	4	320	182	479	431	298	215	142	76	93
Clinton	3,689	11	644	307	727	744	511	264	129	92	260
Crawford	1,239	3	140	92	203	232	174	106	71	29	189
Delta	3,155	8	471	207	520	585	438	253	177	108	388
Dickinson	2,031	8	263	108	304	367	261	144	100	89	387
Eaton	6,513	29	1,076	545	1,238	1,266	971	425	275	185	503
Emmet	2,403	8	383	207	433	439	358	174	99	85	217
Genesee	29,452	109	4,526	2,507	5,727	5,396	3,752	1,941	1,265	739	3,490
Gladwin	1,425	4	214	98	288	310	189	134	98	38	52
Gogebic	880	2	113	38	112	108	76	54	54	50	273
Grand Traverse	6,545	26	1,157	536	1,206	1,312	894	439	279	208	488
Gratiot	2,486	11	406	225	494	463	343	215	99	89	141
Hillsdale	3,152	7	519	306	580	593	381	212	123	92	339
Houghton	1,948	6	357	202	268	293	245	127	93	74	283
Huron	2,611	10	447	223	486	522	323	230	131	110	129
Ingham	21,156	47	3,440	2,601	4,249	3,638	2,677	1,222	723	434	2,125
Ionia	3,777	11	664	353	795	737	528	236	125	69	259
Iosco	1,815	8	272	115	316	422	234	177	113	90	68
Iron	1,180	2	132	57	146	224	184	104	83	52	196
Isabella	2,991	11	522	377	622	565	408	188	105	58	135
Jackson	10,769	54	1,717	867	2,021	2,002	1,482	724	482	302	1,118
Kalamazoo	17,812	55	3,016	2,132	3,466	3,107	2,091	1,043	620	453	1,829
Kalkaska	1,016	4	153	76	190	238	155	86	48	24	42
Kent	47,156	170	7,563	4,862	10,401	8,542	5,440	2,612	1,595	1,072	4,899
Keweenaw	103	1	18	7	19	18	13	10	3	5	9
Lake	803	5	86	61	147	173	134	67	49	26	55
Lapeer	5,508	12	996	458	1,156	1,184	747	342	189	108	316
Leelanau	831	3	137	53	141	149	124	64	43	26	91

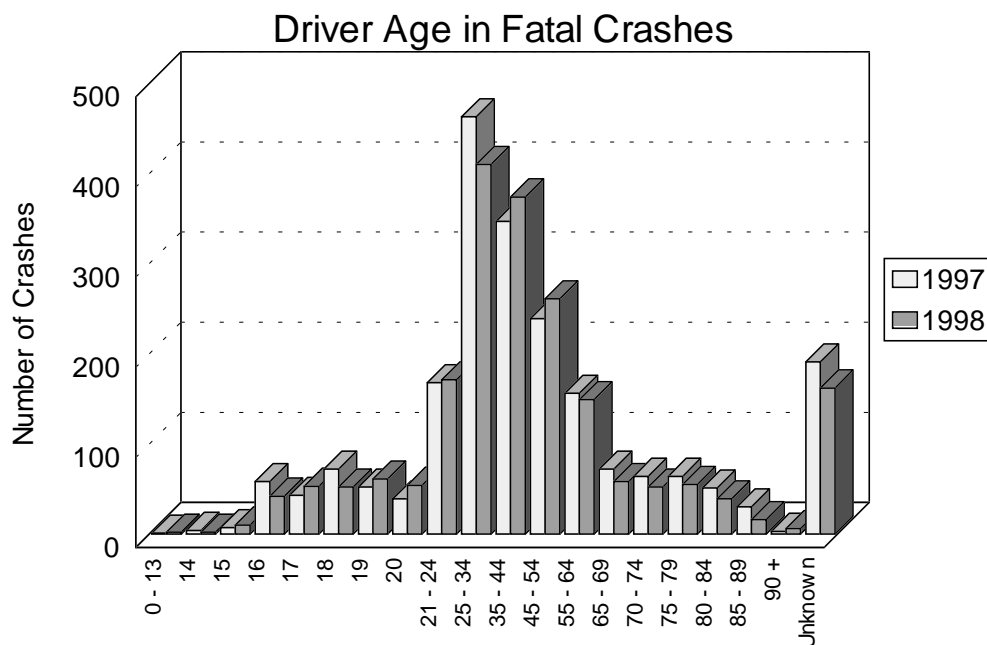
## REPORTED AGE OF DRIVERS INVOLVED IN ALL CRASHES (continued)

COUNTY	All ages	0-15 years	16-20 years	21-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 yrs & over	DOB unk
Lenawee	5,646	31	1,011	465	941	950	752	387	272	180	657
Livingston	8,506	40	1,668	767	1,666	1,762	1,100	539	258	157	549
Luce	312	3	36	29	62	45	53	32	18	8	26
Mackinac	959	4	88	69	173	190	149	90	39	24	133
Macomb	52,388	136	7,861	4,391	10,734	9,707	6,229	3,401	2,266	1,658	6,005
Manistee	1,486	9	214	108	253	286	222	106	98	58	132
Marquette	3,817	15	650	341	558	663	496	238	168	125	563
Mason	2,265	6	376	189	414	444	292	161	110	80	193
Mecosta	3,556	8	674	464	654	611	438	277	142	93	195
Menominee	2,392	12	344	158	343	417	277	158	110	66	507
Midland	5,020	19	952	428	982	971	655	374	204	158	277
Missaukee	993	3	179	69	203	208	141	80	47	32	31
Monroe	7,227	26	1,320	549	1,217	1,179	797	407	262	148	1,322
Montcalm	4,288	16	702	389	916	856	532	328	183	123	243
Montmorency	616	4	73	58	121	139	82	63	35	15	26
Muskegon	10,286	47	1,761	876	1,986	1,894	1,261	667	526	419	849
Newaygo	2,806	21	515	234	569	596	354	219	98	74	126
Oakland	93,133	220	12,372	7,679	20,915	18,856	12,397	6,153	3,569	2,229	8,743
Oceana	1,554	13	259	124	309	296	195	120	64	43	131
Ogemaw	1,576	5	246	129	285	362	214	135	85	52	63
Ontonagon	644	3	73	36	102	126	101	57	26	19	101
Osceola	1,961	11	320	181	407	427	248	134	98	50	85
Oscoda	678	4	88	38	125	132	102	92	50	29	18
Otsego	1,613	1	305	126	312	306	204	115	71	47	126
Ottawa	13,495	54	2,694	1,365	2,765	2,425	1,481	776	463	387	1,085
Presque Isle	828	4	120	67	146	173	122	77	51	32	36
Roscommon	1,621	9	250	103	295	345	236	144	83	66	90
Saginaw	14,580	50	2,303	1,274	2,834	2,626	1,916	1,080	711	502	1,284
St. Clair	8,944	23	1,683	800	1,671	1,655	1,034	573	373	264	868
St. Joseph	3,499	14	610	287	636	610	382	223	128	99	510
Sanilac	2,375	10	399	218	471	497	349	171	105	63	92
Schoolcraft	691	3	96	56	101	120	87	51	42	33	102
Shiawassee	3,723	8	671	334	730	703	502	242	148	113	272
Tuscola	2,846	14	535	255	574	569	358	241	108	84	108
Van Buren	4,189	15	733	354	761	729	499	249	179	117	553
Washtenaw	21,772	60	3,047	2364	4,462	3,987	2,692	1,288	712	376	2,784
Wayne	167,772	352	15,428	11,967	31,610	26,502	17,922	9,154	6,362	3,813	44,662
Wexford	2,799	6	431	202	488	521	375	231	129	81	335
UNKNOWN	82	1	9	4	11	11	10	5	5	2	24
Totals	701,056	2,132	99,221	59,666	138,256	126,673	85,393	44,480	28,130	18,452	98,653

## DRIVER AGE

AGE OF DRIVERS IN FATAL CRASHES	1997	1998	% Change	% 1998 Fatal Crash Involvement	Percent Active Driving Population*
13 years and under	1	2	100.0	0.1	0.0
14 years	4	2	-50.0	0.1	0.2
15 years	7	10	42.9	0.5	1.1
16 years	58	42	-27.6	2.1	1.5
17 years	43	53	23.3	2.6	1.6
18 years	72	52	-27.8	2.6	1.8
19 years	52	61	17.3	3.0	1.9
20 years	39	54	38.5	2.7	1.8
21-24 years	168	171	1.8	8.4	7.0
25 - 34 years	463	410	-11.4	20.2	19.6
35 - 44 years	347	374	7.8	18.4	21.8
45 - 54 years	239	261	9.2	12.9	17.4
55 - 64 years	156	149	-4.5	7.3	11.0
65 - 69 years	72	58	-19.4	2.9	4.2
70 - 74 years	64	52	-18.8	2.6	3.9
75 - 79 years	64	55	-14.1	2.7	2.8
80 - 84 years	51	39	-23.5	1.9	1.6
85 - 89 years	30	16	-46.7	0.8	0.6
90 years and over	3	6	100.0	0.3	0.2
Unknown	191	162	-15.2	8.0	---
TOTALS	2,124	2,029	-4.5	100.0	100.0

\* Figures courtesy of the Michigan Department of State [13]



## REGISTRATION TRANSACTIONS

(Includes Original, Renewal, Correction, and Replacements)

Registration data courtesy of the Michigan Department of State [14]

VEHICLE							OTHER		
COUNTY	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Alcona	7,088	3,676	2,821	172	13,757	751,008.08	2,640	884	64
Alger	5,012	3,104	1,743	230	10,089	540,623.57	1,831	1,414	21
Allegan	58,195	25,472	16,563	1,771	102,001	6,444,291.27	11,163	2,787	296
Alpen	18,638	9,664	6,480	531	35,313	2,175,258.03	4,664	2,289	48
Antrim	13,791	6,236	4,544	424	24,995	1,460,852.17	5,080	1,826	60
Arenac	9,714	5,168	3,528	592	19,002	1,101,830.32	4,036	1,367	46
Baraga	3,943	2,528	1,300	139	7,910	463,475.22	1,080	669	9
Barry	32,461	14,648	9,839	1,110	58,058	3,236,931.32	8,974	1,502	106
Bay	69,928	24,176	18,874	1,731	114,709	7,228,797.39	10,420	4,685	240
Benzie	9,809	4,377	3,128	267	17,581	944,400.61	3,758	1,130	35
Berrien	102,627	32,937	18,560	2,646	156,770	9,545,094.80	13,661	2,529	466
Branch	24,199	11,839	7,240	734	44,012	2,718,856.01	6,324	713	146
Calhoun	87,765	27,787	16,003	2,195	133,750	8,025,180.33	10,406	1,375	369
Cass	28,805	12,875	7,791	909	50,380	2,888,546.59	8,529	1,699	140
Charlevoix	16,178	7,310	4,847	587	28,922	1,761,552.42	4,809	2,202	51
Cheboygan	14,922	7,787	5,180	459	28,348	1,697,442.68	5,278	2,878	85
Chippewa	17,518	9,196	5,897	491	33,102	1,998,342.97	4,694	3,743	76
Clare	17,498	8,963	6,120	531	33,112	1,938,739.10	4,622	1,819	65
Clinton	37,811	15,618	10,809	1,030	65,268	4,042,596.99	6,311	2,284	188
Crawford	7,148	3,779	2,694	252	13,873	786,238.51	2,777	1,213	23
Delta	23,354	12,352	8,243	665	44,614	2,669,514.37	4,902	2,988	125
Dickinson	16,351	8,330	5,563	625	30,869	1,924,370.33	3,615	1,857	150
Eaton	61,011	22,117	13,972	1,767	98,867	7,637,121.32	8,414	1,994	202
Emmet	19,871	8,301	5,371	566	34,109	2,195,399.79	5,254	2,489	84
Genesee	271,749	81,098	45,732	6,634	405,213	25,802,221.17	32,239	10,389	546
Gladwin	15,085	7,769	5,386	490	28,730	1,599,682.45	4,845	1,584	67
Gogebic	9,061	4,763	2,456	270	16,550	920,054.17	2,452	1,451	51
Grand Traverse	52,254	17,896	14,040	1,354	85,544	5,629,338.72	12,732	4,255	140

### REGISTRATION TRANSACTIONS (continued)

VEHICLE							OTHER		
COUNTY	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Gratiot	22,876	10,479	7,304	633	41,292	2,458,846.55	3,469	1,375	86
Hillsdale	25,597	13,167	7,230	803	46,797	2,743,983.96	4,946	764	101
Houghton	17,844	7,667	3,847	552	29,910	1,733,313.97	3,773	2,180	67
Huron	23,064	12,053	7,040	563	42,720	2,807,714.18	3,502	2,338	201
Ingham	175,081	41,831	22,540	3,687	243,139	15,599,161.37	15,804	3,289	492
Ionia	32,287	14,403	8,792	931	56,413	3,256,140.65	5,238	1,290	165
Iosco	17,031	8,033	5,983	455	31,502	1,822,332.51	5,209	1,547	109
Iron	7,326	4,327	2,509	295	14,457	813,803.86	2,441	1,016	39
Isabella	28,019	12,487	8,060	740	49,306	3,493,924.53	4,543	1,529	77
Jackson	93,332	34,341	20,342	2,850	150,865	9,425,327.09	15,636	2,762	329
Kalamazoo	148,650	38,248	23,866	3,685	214,449	14,189,823.28	18,819	2,574	448
Kalkaska	8,841	5,682	3,664	298	18,485	1,468,951.72	2,679	1,684	20
Kent	359,898	106,312	67,640	7,885	541,735	43,767,971.38	45,008	8,600	1,016
Keweenaw	1,119	544	256	28	1,947	104,416.07	383	139	4
Lake	5,750	3,164	1,984	181	11,079	592,893.54	2,298	799	30
Lapeer	49,590	24,089	13,336	1,833	88,848	5,693,454.09	7,155	3,393	93
Leelanau	13,021	4,881	4,050	330	22,282	1,327,118.19	5,217	1,339	75
Lenawee	58,058	23,991	13,412	1,848	97,309	5,861,753.32	9,026	2,614	315
Livingston	92,875	33,189	21,415	3,317	150,796	10,264,654.54	17,248	4,748	172
Luce	3,151	2,220	1,585	61	7,017	458,206.60	1,333	1,014	17
Mackinac	6,439	3,722	2,317	163	12,641	726,013.92	3,057	1,988	28
Macomb	535,815	125,876	61,775	11,542	735,008	52,703,505.95	48,972	14,206	1,121
Manistee	14,616	6,878	4,781	443	26,718	1,546,909.35	3,807	1,211	73
Marquette	35,988	15,870	8,842	1,222	61,922	3,625,305.79	6,930	3,983	126
Mason	17,108	7,608	5,112	520	30,348	1,821,502.56	4,214	1,096	78
Mecosta	20,055	9,358	6,061	589	36,063	2,081,981.76	4,921	1,329	44
Menominee	13,500	6,839	4,812	465	25,616	1,505,907.91	2,850	1,412	313
Midland	54,428	17,193	14,006	1,552	87,179	5,216,085.27	9,217	2,314	155
Missaukee	7,241	4,693	3,024	251	15,209	914,310.28	2,120	1137	25

### REGISTRATION TRANSACTIONS (continued)

COUNTY	VEHICLE						OTHER		
	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Monroe	87,662	35,321	18,203	2,983	144,169	9,360,813.52	10,862	3,817	382
Montcalm	33,149	16,185	10,363	938	60,635	3,517,990.68	7,083	1,676	160
Montmorency	5,773	3,640	2,515	144	12,072	744,786.25	2,289	1,292	13
Muskegon	104,017	32,281	22,665	3,254	162,217	9,269,546.62	15,281	3,822	477
Newaygo	25,896	12,723	8,693	821	48,133	2,629,861.83	6,817	2,084	99
Oakland	842,340	174,114	92,076	17,743	1,126,273	87,103,011.88	81,989	19,436	1,399
Oceana	15,204	7,681	4,136	452	27,473	1,559,837.52	2,877	1,411	93
Ogemaw	12,280	6,928	4,758	447	24,413	1,465,588.19	3,336	1,561	42
Ontonagon	4,450	2,816	1,569	140	8,975	492,805.38	1,115	1,167	18
Osceola	12,813	7,181	4,253	345	24,592	1,511,450.16	2,694	1,339	26
Oscoda	5,170	3,028	1,871	186	10,255	566,540.18	1,960	916	10
Otsego	13,423	7,293	4,556	441	25,713	1,913,541.25	3,138	2,466	29
Ottawa	138,589	41,805	34,999	3,476	218,869	14,487,097.20	23,546	5,200	812
Presque Isle	8,605	5,330	3,138	213	17,286	1,022,053.90	2,991	1,584	35
Roscommon	16,003	7,184	5,712	432	29,331	1,684,155.43	6,390	3,218	161
Saginaw	133,357	39,001	27,730	2,748	202,836	13,144,353.59	16,576	6,400	364
St. Clair	99,586	37,622	20,008	2,992	160,208	10,097,176.30	14,838	4,721	297
St. Joseph	36,236	15,731	9,638	1,428	63,033	3,547,165.04	8,515	806	190
Sanilac	25,245	13,265	6,921	824	46,255	2,967,553.31	2,218	1,595	78
Schoolcraft	4,745	3,041	2,055	167	10,008	594,492.59	1,801	1,242	32
Shiawassee	43,615	19,236	11,622	1,348	75,821	4,674,715.34	6,059	2,651	169
Tuscola	34,126	17,653	10,937	1,152	63,868	3,707,930.82	4,859	2,793	151
Van Buren	42,977	18,059	9,891	1,321	72,248	4,180,671.37	8,362	1,758	176
Washtenaw	189,669	42,605	20,720	4,287	257,281	17,487,201.24	15,131	3,284	429
Wayne	1,266,438	248,068	98,823	21,022	1,634,351	120,032,567.51	70,483	13,683	2,088
Wexford	18,173	8,041	5,625	526	32,365	1,975,548.56	4,643	2,049	61
Non-Resident	53,898	23,750	12,710	332	90,690	38,635,383.20	37,134	4,545	124
Unknown County							325	90	9
Totals	6,213,825	1,848,493	1,066,496	147,056	9,275,870	\$664,526,913.75	818,637	236,291	17,642



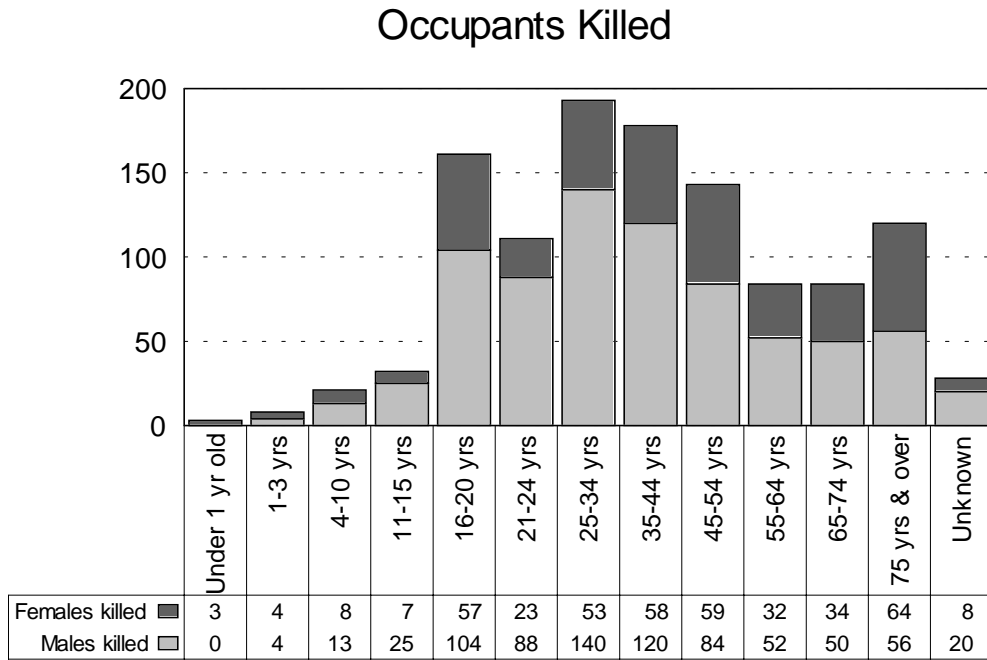


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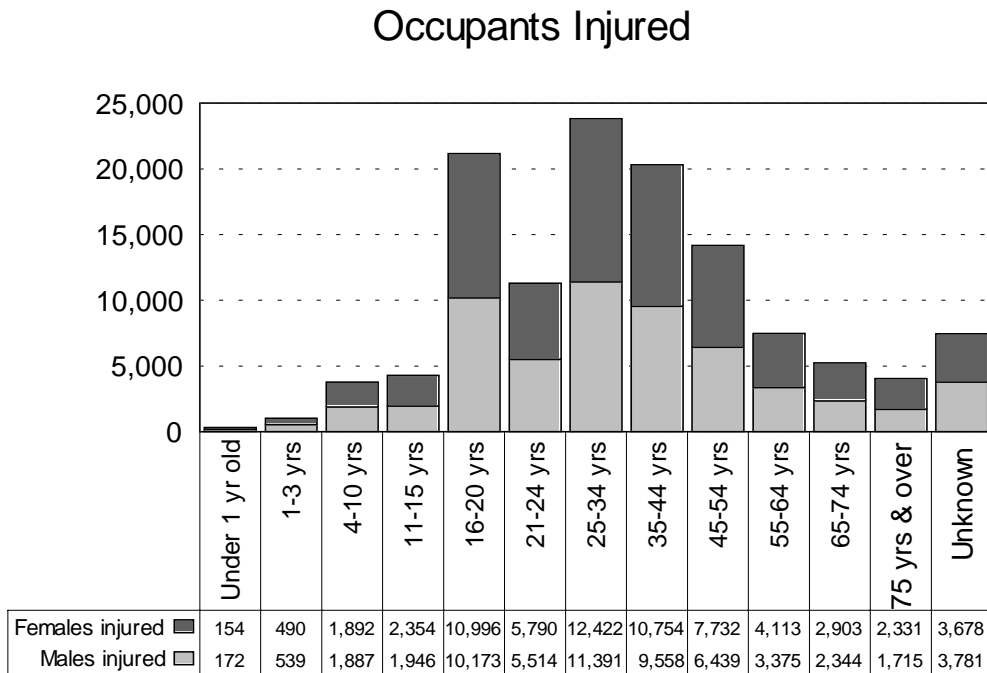
**Occupant/  
Person**



## AGE AND GENDER OF OCCUPANTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

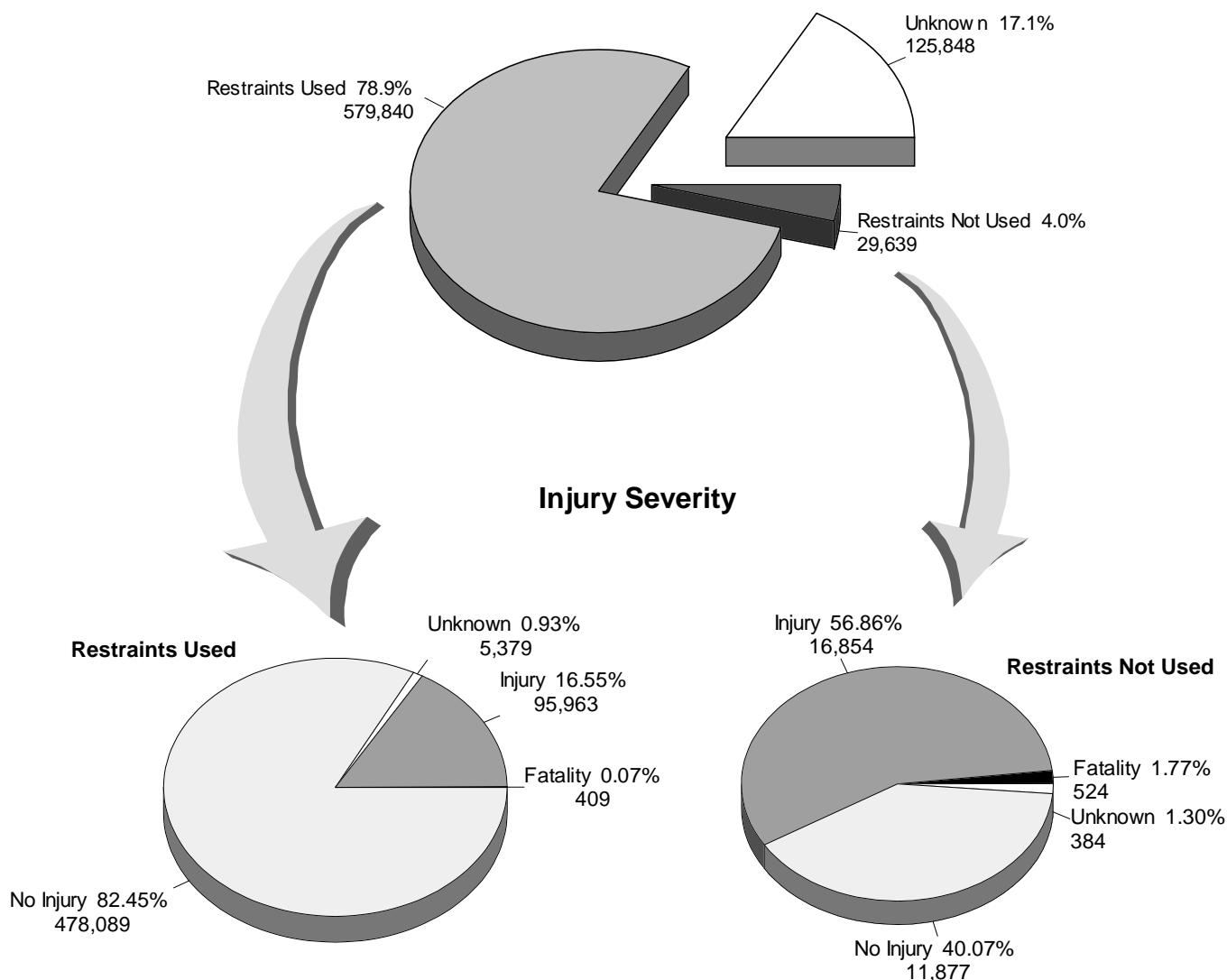


The majority (64.8%) of occupants killed in traffic crashes in 1998 were male.



The majority (52.7%) of occupants injured in traffic crashes in 1998 were female.

## REPORTED OCCUPANT RESTRAINT USAGE FOR ALL DRIVERS AND INJURED PASSENGERS

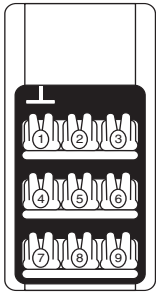


Restraint use by motorists is measured two ways: by what motorists **REPORT** to police at the scene of a traffic crash (reported usage), and by **DIRECT OBSERVATION** studies where motorists are totally unaware of the presence of researchers (observed usage). As expected, reported usage is routinely higher than observed usage.

Of the 735,327 drivers and injured passengers involved in crashes, 579,840 (78.9%) were **REPORTED** to be using occupant restraints.

However, a **DIRECT OBSERVATION** study by the University of Michigan Transportation Research Institute [15] estimated overall safety belt use was 72.6 percent for passenger cars, 73.1 percent for sport-utility vehicles, 75.7 percent for vans, and 54.1 percent for pickup trucks in 1998.

**Occupants in crashes were twenty-five times more likely to be killed if they were not wearing their restraints.**



## MOTOR VEHICLE OCCUPANTS & INJURY SEVERITY BY SEATING POSITION AND KNOWN BELT USAGE

Seating Position	Belts Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	549,206	95.8	293	5,202	14,150	52,026	477,535
Center Front	600	0.1	0	34	151	389	26
Right Front	17,746	3.1	89	1,401	3,683	12,384	189
Left Rear	2,176	0.4	5	140	467	1,435	129
Center Rear	610	0.1	4	68	126	400	12
Right Rear	2,203	0.4	9	164	487	1,540	3
Left Rear Third Seat	316	0.1	1	25	51	213	26
Center Rear Third Seat	139	0.0	0	18	36	80	5
Right Rear Third Seat	321	0.1	1	15	82	220	3
Unknown	121	0.0	0	5	19	30	67
<b>TOTAL</b>	<b>573,438*</b>	<b>100.0</b>	<b>402</b>	<b>7,072</b>	<b>19,252</b>	<b>68,717</b>	<b>477,995</b>

\* Lap belt, shoulder belt or a combination of lap and shoulder belts used. Children who were coded as using or not using a child restraint device appear in separate tables on pages 150-151.

\* This total does not include 5,371 occupants with unknown injury severity.

Seating Position	Belts Not Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	20,887	71.9	366	2,191	3,623	3,492	11,215
Center Front	287	1.0	2	60	101	111	13
Right Front	4,105	14.1	99	842	1,480	1,624	60
Left Rear	1,346	4.6	15	161	285	487	398
Center Rear	396	1.4	7	66	114	202	7
Right Rear	1,062	3.7	13	152	338	559	0
Left Rear Third Seat	145	0.5	2	26	47	69	1
Center Rear Third Seat	87	0.3	1	14	30	41	1
Right Rear Third Seat	170	0.6	4	28	42	88	8
Unknown	573	2.0	14	74	134	253	98
<b>TOTAL</b>	<b>29,058*</b>	<b>100.0</b>	<b>523</b>	<b>3,614</b>	<b>6,194</b>	<b>6,926</b>	<b>11,801</b>

\* No belts available or no belts used. Children who were coded as using or not using a child restraint device appear in separate tables on page 150-151.

\* This total does not include 371 occupants with unknown injury severity.

*Michigan law requires that all persons must wear a safety belt  
when riding in the front seat of a motor vehicle*



## REPORTED RESTRAINT USE - CHILDREN

*Michigan law requires:*

*Any child **under one year of age** riding in either the front or back seat of a vehicle must be in a Child Restraint Device (CRD).*

*Sitting in all seats excluding Left Front Seats:*

Restraint Usage	Children age 0		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	51	17.3	0	2	9	40	0
No Belts Used	10	3.4	0	1	3	5	1
CRD Used	210	71.2	2	7	52	149	0
CRD Not Used	14	4.7	1	2	5	6	0
Restraint Failed	0	0.0	0	0	0	0	0
Unknown	10	3.4	0	1	1	8	0
TOTAL	295	100.0	3	13	70	208	1

*Any child between the **ages of one and four** must be in a CRD when riding in the front seat of a vehicle and must either be in a CRD or restrained with a safety belt when riding in the back seat.*

*Sitting in the Front Right and Front Center Seats:*

Restraint Usage	Children age 1-3		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	112	54.4	0	4	31	77	0
No Belts Used	24	11.7	1	5	7	11	0
CRD Used	33	16.0	0	4	5	24	0
CRD Not Used	20	9.7	0	2	11	7	0
Restraint Failed	1	0.5	0	0	0	1	0
Unknown	16	7.8	0	1	8	7	0
TOTAL	206	100.0	1	16	62	127	0

## REPORTED RESTRAINT USE - CHILDREN (continued)

*Sitting in the Rear Seats and Other:*

Restraint Usage	Children age 1-3		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	248	30.7	1	25	65	157	0
No Belts Used	63	7.8	1	8	23	31	0
CRD Used	425	52.5	4	25	116	280	0
CRD Not Used	26	3.2	0	7	9	10	0
Restraint Failed	2	0.2	0	0	2	0	0
Unknown	45	5.6	1	11	11	22	0
<b>TOTAL</b>	<b>809</b>	<b>100.0</b>	<b>7</b>	<b>76</b>	<b>226</b>	<b>500</b>	<b>0</b>

*Any child between the **ages of four and sixteen** must wear a safety belt when riding in either the front or back seat of a vehicle.*

*Sitting in all seats excluding Left Front Seats:*

Restraint Usage	Children age 4-15		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Belts Used	5,405	71.7	20	402	1,354	3,629	0
No Belts Used	1,598	21.2	21	285	535	757	0
CRD Used	83	1.1	0	4	24	55	0
CRD Not Used	25	0.3	0	5	10	10	0
Restraint Failed	2	0.0	0	1	0	1	0
Unknown	430	5.7	8	79	135	205	3
<b>TOTAL</b>	<b>7,543</b>	<b>100.0</b>	<b>49</b>	<b>776</b>	<b>2,058</b>	<b>4,657</b>	<b>3</b>

Note: Safety equipment usage is often self-reported and may not reflect actual usage.

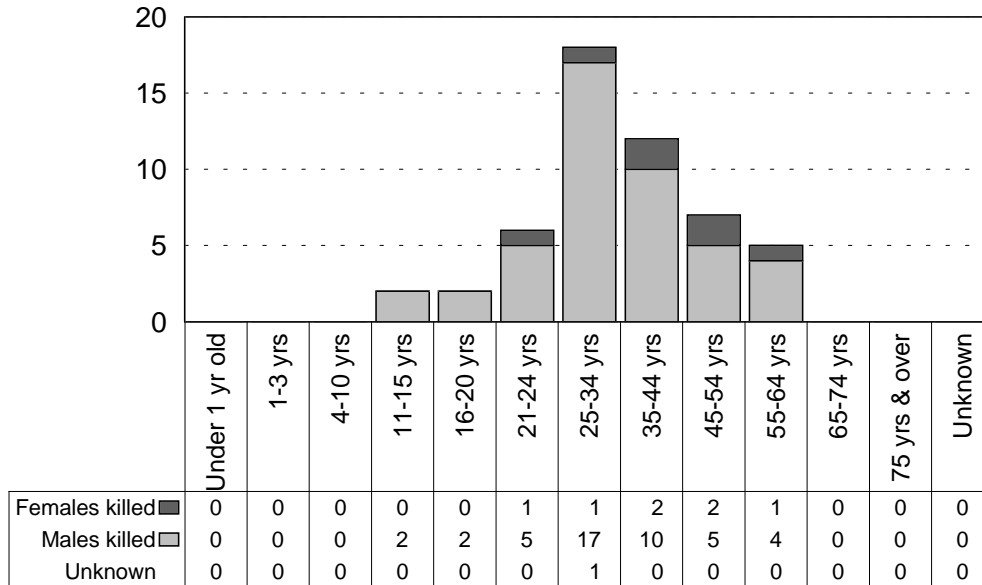
In a pilot study of Child Restraint Device (CRD) use and misuse in Michigan [16] at the University of Michigan Transportation Research Institute, researchers discovered at least some degree of improper CRD use in 88.5 percent of case studies.

*The driver of the vehicle will receive a citation for any child not restrained.*

*Placing a CRD in the front seat is not recommended in vehicles with passenger side airbags.*

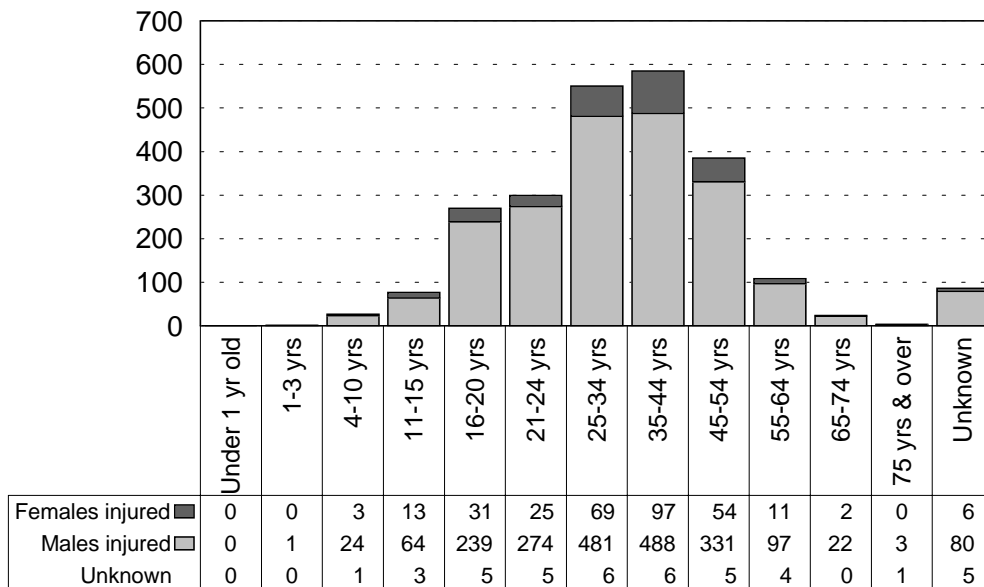
## AGE AND GENDER OF MOTORCYCLISTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Motorcyclists Killed



84.9 percent of the motorcyclists killed in traffic crashes in 1998 were male.  
In comparison, 63.9 percent of all persons killed in crashes were male.

### Motorcyclists Injured



85.7 percent of the motorcyclists injured in traffic crashes in 1998 were male.  
In comparison, 45.6 percent of all persons injured in crashes were male.



## MOTORCYCLE HELMET USE AND INJURY SEVERITY

Helmet Worn Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	1	0	0	0
4 - 10 years	0	0	5	4	1
11 - 15 years	2	11	14	8	3
16 - 20 years	2	50	91	45	49
21 - 24 years	4	57	88	54	49
25 - 34 years	13	105	158	94	106
35 - 44 years	9	115	161	118	118
45 - 54 years	5	97	116	72	71
55 - 64 years	5	27	33	19	21
65 - 74 years	0	7	6	2	3
75 years and over	0	1	1	0	0
Unknown	0	0	2	2	0
Subtotal	40	471	675	418	421



Drivers killed 35  
Passengers killed 5

Helmet Not Worn Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	0	0	0
4 - 10 years	0	2	1	1	1
11 - 15 years	0	4	5	7	3
16 - 20 years	0	5	9	6	3
21 - 24 years	1	2	7	2	0
25 - 34 years	2	8	7	3	2
35 - 44 years	2	10	9	3	0
45 - 54 years	1	2	4	2	0
55 - 64 years	0	0	0	0	1
65 - 74 years	0	1	0	0	0
75 years and over	0	0	0	1	0
Unknown	0	1	0	0	0
Subtotal	6	35	42	25	10

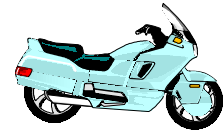


Drivers killed 5  
Passengers killed 1

Helmet Use Unknown Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	0	0	0	1
4 - 10 years	0	5	6	4	1
11 - 15 years	0	8	9	14	6
16 - 20 years	0	15	29	25	16
21 - 24 years	1	25	43	26	33
25 - 34 years	4	37	76	68	70
35 - 44 years	1	37	79	59	58
45 - 54 years	1	25	42	30	24
55 - 64 years	0	4	22	7	14
65 - 74 years	0	1	4	3	1
75 years and over	0	0	1	0	0
Unknown	0	27	32	27	38
Subtotal	7	184	343	263	262
<b>TOTAL</b>	<b>53</b>	<b>690</b>	<b>1,060</b>	<b>706</b>	<b>693</b>

In Michigan, helmet use law (Michigan Vehicle Code Public Act 300 of 1949, Section 257.658) requires that all motorcycle riders wear a helmet. As a result, according to studies by UMTRI [17], approximately 99 percent of the motorcyclists in Michigan wear helmets when riding. The fact that most fatalities (where helmet use is known) are wearing their helmets does not indicate that helmets are not an effective safety device.

## OCCUPANT INJURY OUTCOME BY VEHICLE TYPE



Vehicle Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Passenger Car and Station Wagon	835	9,219	21,533	64,499	96,086	76.5
Van (Minivan) and Motorhome	69	874	1,974	6,065	8,982	7.2
Pickup	150	1,571	3,550	8,214	13,485	10.7
Small Truck (under 10,000 lbs.)	14	201	518	1,206	1,939	1.5
Motorcycle	53	670	1,007	664	2,394	1.9
Moped	2	64	74	66	206	0.2
Go Cart	0	5	0	4	9	0.0
Snowmobile	21	91	74	49	235	0.2
Off Road Vehicle	4	62	58	33	157	0.1
Other	4	34	48	110	196	0.2
Unknown	3	76	128	415	622	0.5
CDL Truck/Bus (breakdown below)	11	122	272	893	1,298	1.0
<b>TOTAL</b>	<b>1,166</b>	<b>12,989</b>	<b>29,236</b>	<b>82,218</b>	<b>125,609</b>	<b>100.0</b>

Special Note: School bus is not recorded on the UD-10 and cannot be broken out of CDL Truck/Bus.

CDL Truck/Bus Sub-category Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Commercial Vehicle: Group A	7	68	125	258	458	35.3
Commercial Vehicle: Group B	1	28	77	387	493	38.0
Commercial Vehicle: Group C	0	2	13	50	65	5.0
Other Truck	1	9	27	55	92	7.1
Unknown Truck	2	15	30	143	190	14.6
<b>TOTAL</b>	<b>11</b>	<b>122</b>	<b>272</b>	<b>893</b>	<b>1,298</b>	<b>100.0</b>

Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

Group "C" is any single vehicle with a GVWR of less than 26,001 lbs. or a combination of vehicles having a combined GVWR under 26,001 lbs. when the vehicle is required to display placards for hazardous material or designed to carry 16 passengers (including driver). Group "C" is also any vehicle carrying 15 or less people (including driver) transporting children to or from school and home on a regular basis for compensation.

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- [1] Estimated Population of Michigan Regions and Counties, 1990 - 1998. Michigan Information Center, Michigan Department of Management and Budget, P.O. Box 30026, Lansing, MI 48909.
- [2] Table 31DP Deaths by County Underlying Cause of Death by Age Michigan Residents, 1997. Michigan Department of Community Health, Office of the State Registrar and Division for Vital Records and Health Statistics, 3423 N Martin Luther King Blvd, PO Box 30195, Lansing, MI 48909.
- [3] ACCIDENT FACTS 1999 Edition. National Safety Council, 1121 Spring Lake Drive, Itasca, IL 60143, 1998.
- [4] The Ohio Department of Public Safety, Office of the Governor's Highway Safety Representative, 240 Parsons Avenue, Columbus, OH 43215.
- [5] Indiana Department of Transportation, Roadway Management Division, 100 N. Senate Avenue, Room N808, Indianapolis, IN 46204-2218.
- [6] Illinois Department of Transportation, Division of Traffic Safety, 3215 Executive Park Drive, P.O. Box 19245, Springfield, IL 62794-9245.
- [7] Wisconsin Bureau of Transportation Safety, P.O. Box 7913, Madison, WI 53707-7913.
- [8] Minnesota Department of Public Safety, Office of Traffic Safety, 444 Cedar Street, Suite 100-B, Town Square, St. Paul, MN 55101-2156.
- [9] American Academy of Pediatrics. The Teenage Driver (RE9642). *Pediatrics. Volume 98, Number 5*. Department of Government Liaison, 601 13th Street, NW Suite 400 North, Washington, DC 20005, November 1996.
- [10] Michigan Department of Transportation, Bureau of Transportation Planning, Lansing, MI 48909.
- [11] Traffic Safety Facts 1997 - Children. National Center for Statistics & Analysis, Research & Development, 400 Seventh Street, S.W., Washington, D.C. 20590. (Source: Robert Thompson, *A Case Control Study of the Effectiveness of Bicycle Safety Helmets*. Centers for Disease Control).
- [12] 1998 Fatal Accident Reporting System Version Annual Report File. U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, Washington, D.C. 20590.
- [13] DR/8005 Report 3 Counts for All Ages. Michigan Department of State, Office of Policy and Planning, Research Section, Lansing, MI 48918.
- [14] Summary of Fees Collected and Number of Transactions October 1, 1997 through September 30, 1998. Michigan Department of State, Bureau of Research and Management Systems, Finance Division, Lansing, MI 48918.
- [15] Eby, David W. and Hopp, Michelle L. Direct Observation of Safety Belt Use in Michigan: Fall 1998. UMTRI-98-46, University of Michigan Transportation Research Institute, Ann Arbor, MI 48109-2150, October 1998.
- [16] Eby, David W., Kostyniuk, Lidia P., Christoff, Carl. Child Restraint Device Use and Misuse in Michigan. Fall 1997. UMTRI-97-36, University of Michigan Transportation Research Institute, Ann Arbor, MI 48109-2150, September 1997.

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- [17] Streff, Fredrick M.; Eby, David W.; Molnar, Lisa J.; Joks, Hans C.; and Wallace, Richard R. Direct Observation of Safety Belt Use and Motorcycle Helmet Use in Michigan: Fall 1993. UMTRI-93-44, University of Michigan Transportation Research Institute, Ann Arbor, MI 48109-2150, November 1993.

## RESOURCES

### Websites:

[www.ohsp.state.mi.us](http://www.ohsp.state.mi.us) Michigan Traffic Crash Facts

Please refer to this site for more crash information on Age of Driver by Crash Severity by County, Type of Roadway by County/Community and Hazardous Action by County/Community.

[www.msp.state.mi.us](http://www.msp.state.mi.us) Michigan State Police

[www.sos.state.mi.us](http://www.sos.state.mi.us) Michigan Department of State

[www.mdot.state.mi.us](http://www.mdot.state.mi.us) Michigan Department of Transportation

[www.mdch.state.mi.us](http://www.mdch.state.mi.us) Michigan Department of Community Health

[www.state.mi.us/dmb/dir](http://www.state.mi.us/dmb/dir) Michigan Department of Management and Budget (MDMB)

[www.state.mi.us/dmb/mic](http://www.state.mi.us/dmb/mic) MDMB Michigan Information Center

[www.wearemerc.org](http://www.wearemerc.org) Michigan Resource Center

[www.dnr.state.mi.us](http://www.dnr.state.mi.us) Michigan Department of Natural Resources

[www.dot.state.wi.us](http://www.dot.state.wi.us) Wisconsin Traffic Crash Facts

[www.dps.state.mn.us](http://www.dps.state.mn.us) Minnesota Traffic Crash Facts

[www.state.oh.us/odps](http://www.state.oh.us/odps) Ohio Traffic Crash Reports/Facts

[www.nsc.org](http://www.nsc.org) National Safety Council Accident Facts

[www.nhtsa.dot.gov](http://www.nhtsa.dot.gov) NHTSA - Fatality Analysis Reporting Systems, Traffic Safety Fact Sheets

[www.umtri.umich.edu](http://www.umtri.umich.edu) University of Michigan Transportation Research Institute

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1998  
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## 1998 Michigan Traffic Crash FACT SHEET



# The Big Picture

## Traffic Crashes

**The driver, the roadway, and the motor vehicle contribute in some measure to every crash. A preponderance of evidence, however, points to driver error as a chief cause in the majority of crashes.**



There were 403,766 reported crashes of which 1,235 were fatal type, 91,137 were personal injury type, and 311,394 were property damage only type. Compared to 1997 this is a 5.2 percent decrease in total reported crashes, a 3.7 percent decrease in fatal crashes, a 4.4 percent decrease in personal injury crashes, and a 5.4 percent decrease in property damage crashes.



1,367 persons were killed as a result of the 1,235 fatal crashes for an average of 1.1 deaths per fatal crash.



One out of every 7,182 persons in Michigan was killed in a traffic crash; one out of every 75 persons was injured.



A traffic crash was reported every 1 minute 18 seconds.



One person was killed every 6 hours and 24 minutes as a result of a traffic crash.



One person was injured every 4 minutes in a traffic crash.



For each person killed there were 96 persons injured in crashes.



14,365 persons received A-injuries. An A-injury is incapacitating. It prevents normal activities and generally requires hospitalization.

**The estimated economic loss due to traffic crashes was \$9.6 billion. This translated into a loss of almost \$1,000 per state resident, if costs were spread across the state's population.**





# 1998 Michigan Traffic Crash FACT SHEET



## General Facts



**Motor vehicle crashes are the leading cause of death among persons living in Michigan 1 to 24 years old.**



702,680 motor vehicles were involved in 403,766 reported crashes. 1,235 of these were fatal crashes. These fatal crashes resulted in 1,367 deaths, compared to the 1,446 deaths that were the result of 1,283 fatal crashes in 1997.



Of the 1,367 motor vehicle deaths in 1998, 764 (55.9%) were drivers of vehicles, 306 (22.4%) were passengers in motor vehicles, 172 (12.6%) were pedestrians, 53 (3.9%) were motorcyclists, 27 (2.0%) were bicyclists, 21 (1.5%) were snowmobile riders (18 drivers, 3 passengers), 4 (0.3%) were ORV/ATV operators, 2 (0.1%) were operators of farm equipment (1 driver, 1 passenger). The person type is unknown/other for 18 (1.3%) of the fatalities.



Of the 1,070 drivers and passengers killed, 524 (49%) were not wearing seatbelts and 409 (38.2%) were wearing seatbelts. It is unknown whether 137 (12.8%) of the fatalities were belted.



607 deaths resulted from 581 single vehicle fatal crashes.



A higher proportion of crashes involved male drivers than female drivers. Fatal crashes were twice as prevalent among male drivers than female drivers (0.4% vs. 0.2%).



Excessive speed was reported by police as the hazardous action of 15.3 percent of the drivers in fatal crashes.



Of all fatal crashes, 29.3 percent occurred at intersections.



Most fatal crashes occurred on dry roadways (76.6%) in clear weather conditions (53.3%).



The majority of all crashes occurred during daylight hours (61.4%). Dark conditions created the greatest hazard, as they were overrepresented in fatal crashes.



In 1998:

More fatal crashes occurred between 3:00 and 5:59 PM than any other time period.

More fatal crashes occurred on Saturday than any other day.

More fatal crashes occurred in December than any other month.





# 1998 Michigan Traffic Crash FACT SHEET



## Age

### CHILDREN

**0-15** The number one cause of accidental death for children ages 0-15 in Michigan is motor vehicle crashes.

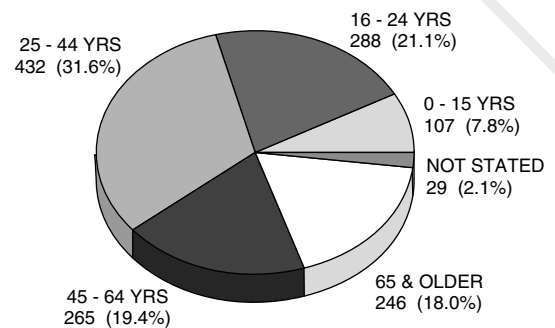
**0-15** 107 children (0-15 years old) died, and 12,097 children were injured in traffic crashes.

**0-15** 59.8 percent of children ages 0-15 killed in traffic crashes were motor vehicle passengers.

**0-15** Children accounted for 18.6 percent of the pedestrians killed in Michigan in 1998, and 35.7 percent of all pedestrian injuries.

**0-15** According to figures provided by the Michigan Department of Community Health, accidental death for children in motor vehicle crashes routinely outpaces the next two most frequent causes: fire and drowning.

**AGE OF PERSONS KILLED  
IN MOTOR VEHICLE CRASHES**



### TEENS/ YOUNG ADULTS

**16-24** Teenagers and young adults ages 16-24 are disproportionately involved in motor vehicle crashes.

**16-24** 288 persons (16-24 years old) were killed in traffic crashes, of which 192 (66.7%) were drivers. The 16-24 age group accounted for almost one fifth of all traffic deaths.

**16-24** In addition 33,561 teenagers and young adults were injured in traffic crashes.

**16-24** The 16-24 age group represented 15.6 percent of Michigan's active driving population, yet drivers in this group were involved in 22.7 percent of all crashes and in 21.3 percent of all fatal crashes.

**16-24** According to the Michigan Department of Community Health, four out of five accidental deaths for this age group are due to motor vehicle crashes.

### ELDERLY

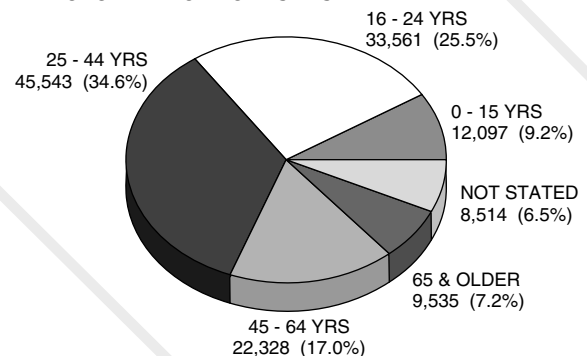
**65+** Drivers age 65 and older made up 13.3 percent of Michigan's active driving population. They were involved in 6.6 percent of all crashes and 11.1 percent of the fatal crashes.

**65+** 246 persons (65 and older) were killed in traffic crashes, of which 187 (76.0%) were drivers.

**65+** In addition 9,535 persons age 65 and older were injured in traffic crashes.

**65+** 22.7 percent of the pedestrians killed in Michigan in 1998 were age 65 and older; 5.3 percent of the pedestrians injured were age 65 and older.

**AGE OF PERSONS INJURED  
IN MOTOR VEHICLE CRASHES**









# 1998 Michigan Traffic Crash FACT SHEET





Information regarding alcohol involvement was collected from all investigated fatal motor vehicle traffic crashes in Michigan during 1998. A fatal crash is alcohol related if any driver, pedestrian, or bicyclist involved was reported by the police officer on the Traffic Crash Report as "had been drinking."


## Alcohol impairment has major effects on traffic safety.


 A total of 1,235 fatal crashes occurred in Michigan in 1998. 476 or 38.5 percent of those fatal crashes were alcohol-related.


 The fatality count of persons involved in alcohol-related fatal crashes was 525 in 1998. This accounts for 38.4 percent of the total number of persons killed (1,367).


 Crashes involving drinking tend to be more serious than nondrinking crashes. The percentage of fatalities is seven times higher than in all crashes and the more serious injury levels are three to four times higher.

 62.4 percent of all alcohol-related fatal crashes involved one vehicle.

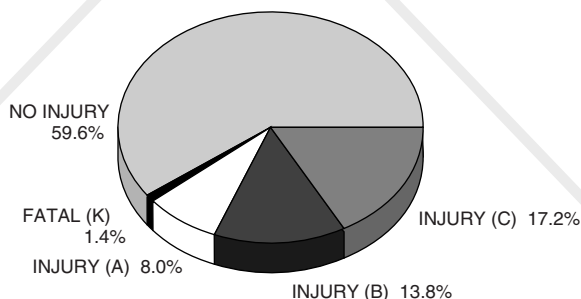
 Of the pedestrians killed in 1998, 66 deaths were the result of a had-been-drinking crash and 59 (89.4%) of these pedestrians had been drinking.

 Of the motorcyclists killed in 1998, 22 deaths were the result of a had-been-drinking crash and 21 (95.5%) of these motorcyclists had been drinking.

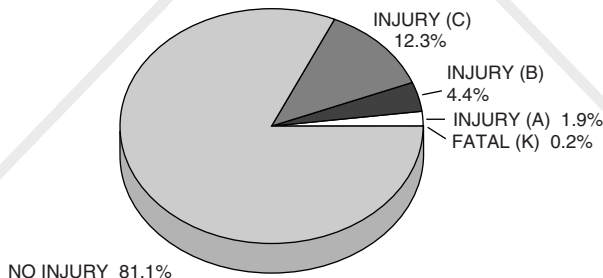
 Of the bicyclists killed in 1998, 8 deaths were the result of a had-been-drinking crash and 5 (62.5%) of these bicyclists had been drinking.

 Of the snowmobilers killed on Michigan roadways in 1998, 18 deaths were the result of a had-been-drinking crash and 18 (100%) of these snowmobilers had been drinking.

OCCUPANTS IN HBD CRASHES



OCCUPANTS IN CRASHES

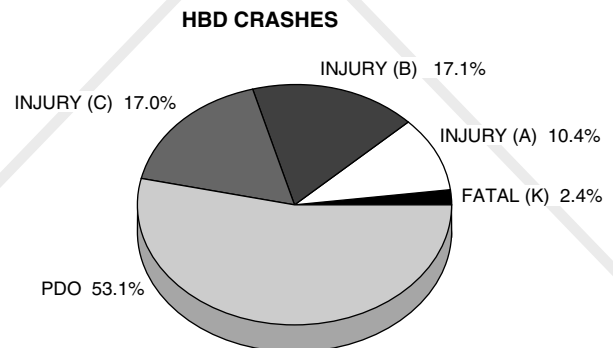
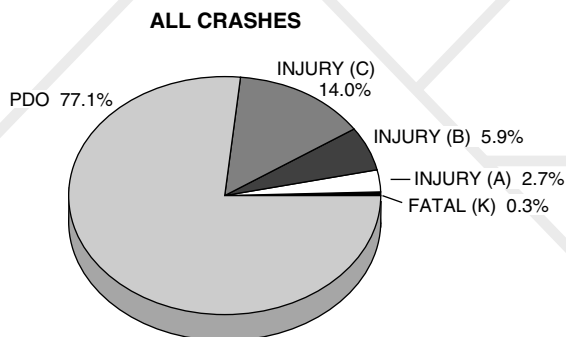


INJURY (A) - Incapacitating  
INJURY (B) - Nonincapacitating  
INJURY (C) - Possible Injury



# Alcohol

- ☒ Had-been-drinking **injury** crashes peak on Friday, Saturday and Sunday, and in the hours between 9:00 PM and 2:59 AM. Midnight to 2:59 AM is a particularly hazardous travel period.
- ☒ In 1998, had-been-drinking injury crashes were highest in July (839), August (854), and December (820).
- ☒ The highest number of HBD **fatal** crashes, 49, occurred in September.
- ☒ The midnight to 2:59 AM time period had the highest rate of had-been-drinking **fatal** crashes (28.6%), while the late morning hours had the lowest (2.5%).
- ☒ Saturday and Sunday had the highest proportions of alcohol-related **fatal** crashes. 267 out of 585 of the weekend fatal crashes involved drinking.
- ☒ The severity of injuries is much worse for drivers and passengers who had been drinking.
- ☒ Of the 19,113 (gender reported) drinking drivers involved in crashes, 15,280 (79.9%) were male and 3,833 (20.1%) were female.
- ☒ 4,821 (25.2%) of the (gender reported) drinking drivers in crashes were age 24 and younger.
- ☒ **A fatality in a crash is eight times more likely when one of the crash-involved operators is reported as had been drinking.**



INJURY (A) - Incapacitating  
 INJURY (B) - Nonincapacitating  
 INJURY (C) - Possible Injury  
 PDO - Property Damage Only



# 1998 Michigan Traffic Crash FACT SHEET



## Bicycles

This sheet addresses the problem of deaths and serious injuries among bicyclists involved in vehicle-related crashes. At least one motor vehicle needs to be involved for the crash to be reportable as a motor vehicle crash.



**3,097 bicyclists were involved in motor vehicle crashes in Michigan in 1998.**



27 bicyclists were killed on Michigan roadways in 1998, two less than reported in 1997.



2,510 bicyclist injuries were reported to police agencies.



At all ages, males (2,377) were involved in more bicycle crashes than females (720). The male to female ratio of bicycle deaths was 12:1, with 25 male bicyclists killed and 2 female bicyclists killed.



12 of the bicyclists killed (44.4%) were reported by police to be "going straight ahead" just prior to crash.



81.8 percent of all bicyclists in motor vehicle crashes and 20 of the 27 bicyclists killed were riding during daylight hours.



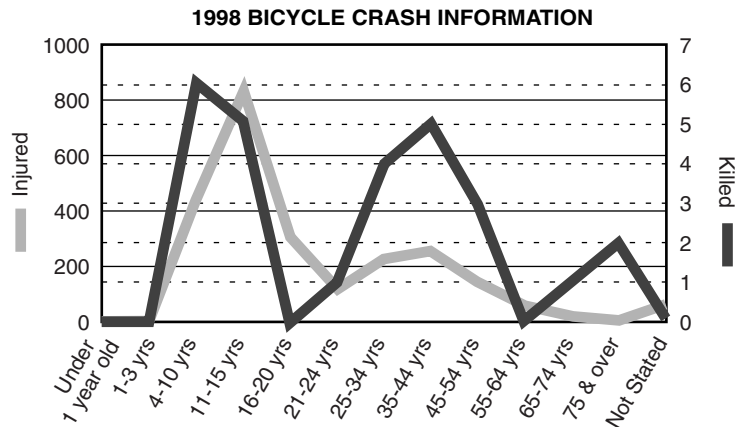
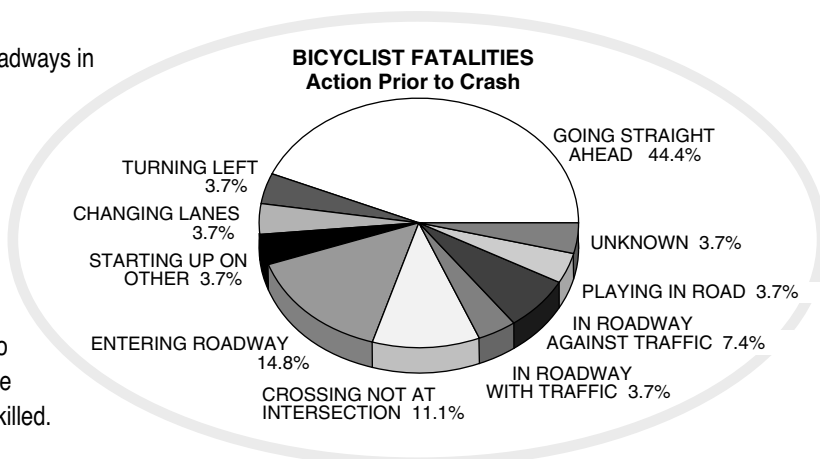
3:00 PM - 5:59 PM were the peak hours for bicyclist involvement in all crashes and injuries to bicyclists.  
3:00 PM - 5:59 PM were the peak hours for bicyclist fatalities.



Of the bicyclists killed in 1998, 8 deaths were the result of a had-been-drinking crash and 5 (62.5%) of these bicyclists had been drinking.



40.7 percent of all bicyclist deaths occurred to children under 16 years of age. Children aged 11 to 15 years represented 18.5 percent of the total number of bicyclist fatalities. Children aged 4 to 10 years represented 22.2 percent of the total number of bicyclist fatalities.





# 1998 Michigan Traffic Crash FACT SHEET



## Deer

Contrary to common belief, motor vehicle-deer crashes are happening most often in Michigan's southern, heavily populated counties; Kent County had the highest number with 2,108 such crashes in 1998.



Michigan had 65,397 reported motor vehicle-deer crashes during 1998. This is a 39.8 percent rise from 46,784 vehicle-deer crashes in 1989.



63.4 percent of the vehicles involved in vehicle-deer crashes in 1998 were passenger cars.



2,381 people were injured and 4 people were killed as a result of those collisions.



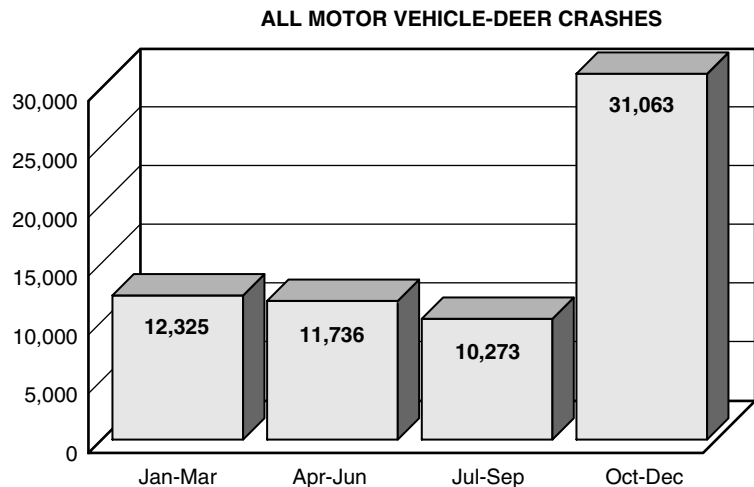
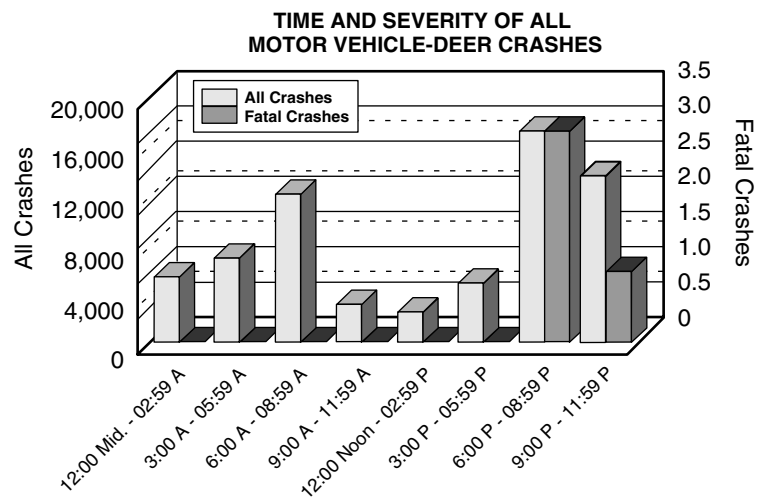
All motor vehicle-deer involved/associated crashes peaked during the 6:00 PM - 8:59 PM time period. Fatal deer crashes occurred during the 6:00 PM - 11:59 PM time period.



The top ten counties, each experiencing over 1,300 vehicle-deer crashes in 1998, were: Kent 2,108, Jackson 1,925, Calhoun 1,766, Oakland 1,668, Montcalm 1,623, Mecosta 1,470, Lapeer 1,439, Eaton 1,430, Ingham 1,345 and Kalamazoo 1,319.



Crashes involving deer occurred most frequently during the first quarter (18.8%) and the fourth quarter (47.5%) of the year for a total of 66.3 percent of all reported motor vehicle-deer collisions.



Deer  
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## **The Michigan Deer Crash Coalition offers this advice to drivers:**



Stay aware, alert, awake, and sober.



Wear your seatbelts.



Heed deer crossing and speed limit signs. Deer crossing signs are an excellent reminder for driving cautiously in areas where the deer population is heaviest.



Drive at moderate speeds through posted deer areas at all times of the day and night.



Deliberately look for deer and if you see them, slow down.



Don't rely on deer whistles or high-beam headlights to deter deer. Drive cautiously at all times.



When possible, adjust travel time during peak evening crash periods, especially in October, November and December.



Striking the deer is frequently the safest action to take. Motorists making evasive maneuvers may be involved in a more serious crash.



Beware: Deer are unpredictable when faced with headlights, blowing horns, and fast-moving vehicles. They dart into traffic and often move in groups running zigzag courses across roadways.



# 1998 Michigan Traffic Crash FACT SHEET



In a crash, motorcyclists lack the protection of an enclosed vehicle.



The 1998 death rate for motorcyclists was 12.0 per 100 million vehicle miles traveled compared to the overall mileage death rate of 1.5 per 100 million vehicle miles traveled.



Injuries to motorcyclists were proportionately more severe than injuries to persons in other motor vehicles.



There were 2,931 motorcycle-involved crashes in which 53 people were killed and 2,456 injured.



Motorcycles were involved in 0.73 percent of all traffic crashes in Michigan in 1998.



Because motorcycles have a low profile, they tend to be less visible than other motor vehicles. 42 (79.2%) of the 53 motorcyclists killed were reported by police as "going straight ahead" just prior to crash.



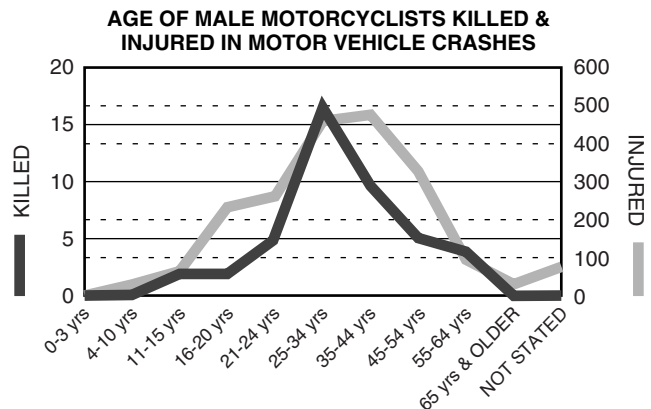
Of the motorcyclists killed in traffic crashes in 1998, 84.9 percent were male.



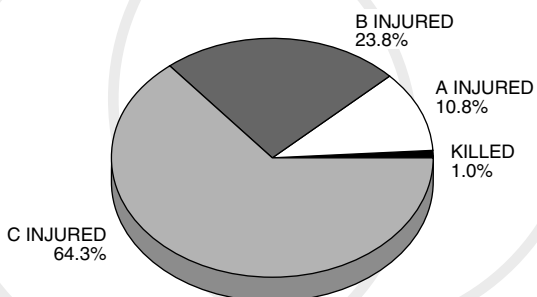
Of the motorcyclists killed in 1998, 22 deaths were the result of a had-been-drinking crash and 21 (95.5%) of these motorcyclists had been drinking.



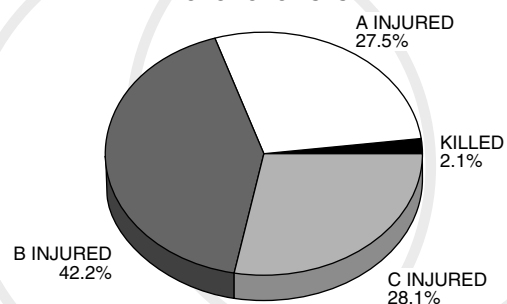
Of the male motorcyclists injured, 488 (23.2%) were 35 - 44 years old.



**KILLED & ABC INJURED OCCUPANTS**



**KILLED & ABC INJURED MOTORCYCLISTS**







## 1998 Michigan Traffic Crash FACT SHEET



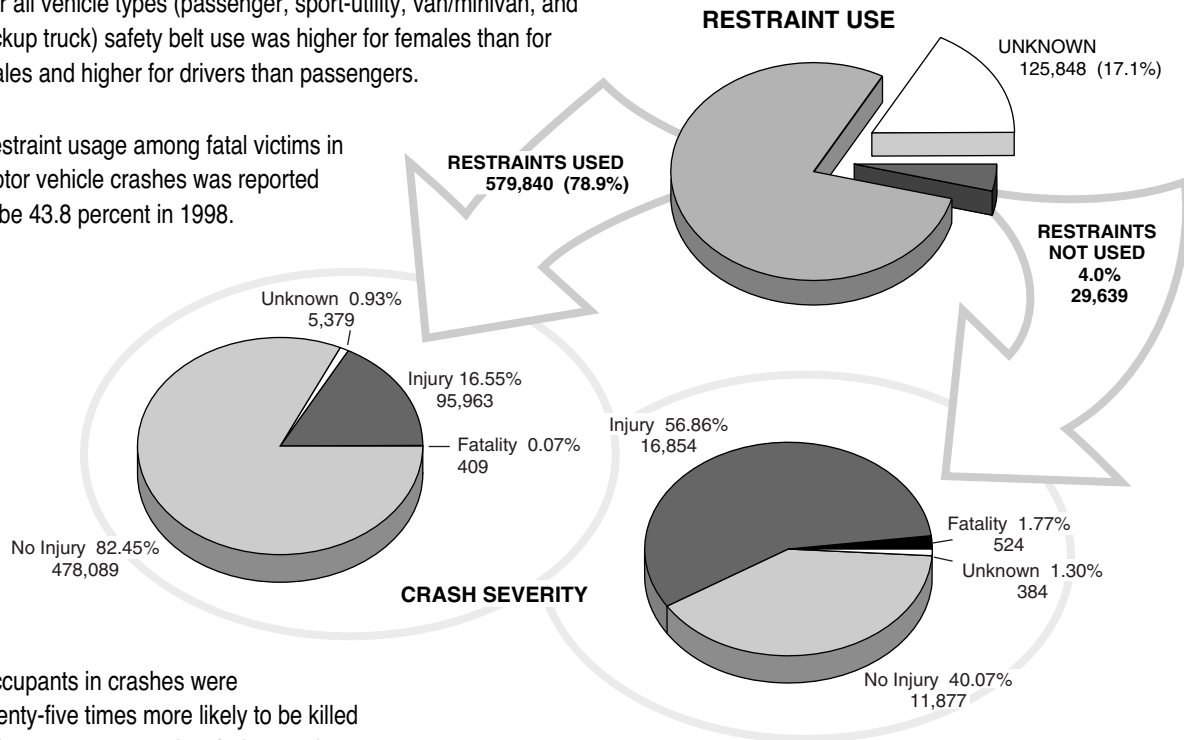
# Occupant Protection

**R**estraint use by motorists is measured two ways: by what motorists **REPORT** to police at the scene of a traffic crash (reported usage), and by **DIRECT OBSERVATION** studies where motorists are totally unaware of the presence of researchers (observed usage). As expected, reported usage is routinely much higher than observed usage.

Of the 735,327 drivers and injured passengers involved in crashes, 579,840 or 78.9 percent were **REPORTED** to have been using occupant restraints. However, a **DIRECT OBSERVATION** study by the University of Michigan Transportation Research Institute estimated overall safety belt use was 72.6 percent for passenger cars, 73.1 percent for sport-utility vehicles, 75.7 percent for vans/minivans, and 54.1 percent for pickup trucks in 1998.

For all vehicle types (passenger, sport-utility, van/minivan, and pickup truck) safety belt use was higher for females than for males and higher for drivers than passengers.

Restraint usage among fatal victims in motor vehicle crashes was reported to be 43.8 percent in 1998.



Occupants in crashes were twenty-five times more likely to be killed if they were not wearing their restraints.

Motor vehicle occupants aged 75 to 98 had the highest reported restraint usage (93.0%) of any age group. Children age 11 to 15 had the lowest reported restraint usage (68.6%).

In a pilot study of Child Restraint Device (CRD) use and misuse in Michigan at the University of Michigan Transportation Research Institute, researchers discovered at least some degree of improper CRD use in 88.5 percent of case studies.

Restraint use can prevent ejection from a motor vehicle. Ejection is associated with higher levels of injury severity and greater numbers of fatalities. 12.0 percent of the occupants ejected from motor vehicles died, compared to 0.1 percent killed that were not ejected.








# 1998 Michigan Traffic Crash FACT SHEET





This sheet addresses the problem of deaths and serious injuries among pedestrians involved in vehicle-related crashes. At least one motor vehicle needs to be involved for the crash to be reportable as a motor vehicle crash.


 Since 1989, a total of 1,840 pedestrians have been killed, accounting for 12.6 percent of all traffic crash deaths during that period.


 There were 3,891 pedestrians involved in motor vehicle crashes, with 172 pedestrians killed and 3,314 pedestrians injured.


 The male to female ratio of pedestrian deaths was 2:1.

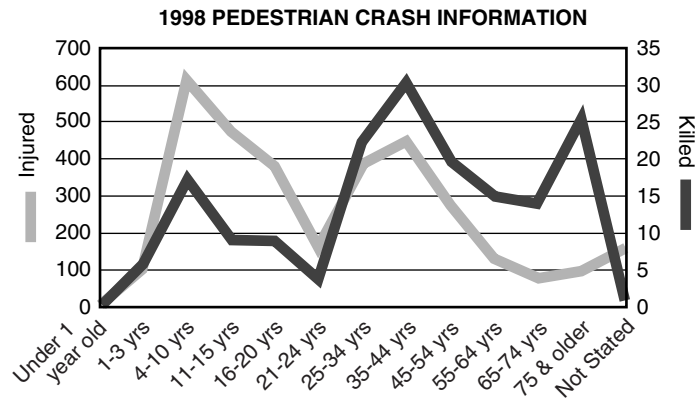
 The 172 pedestrian fatality count is a decrease of 5 deaths (3%) from the 1997 figure. For each pedestrian killed, there were 19.3 pedestrians injured.

 Most pedestrian crashes occurred during the late afternoon hours (3:00 PM - 5:59 PM) under clear conditions. However, most pedestrian fatalities occurred during hours of darkness. Friday was the deadliest day for pedestrians in 1998 with 33 fatalities.

 Of the pedestrians killed in 1998, 66 deaths were the result of a had-been-drinking crash and 59 (89.4%) of these pedestrians had been drinking.

 Of all pedestrian actions prior to a crash, "crossing not at an intersection" is the most deadly, accounting for 46.5 percent of the pedestrian fatalities.

 Of all pedestrians killed, 18.6 percent were children 0-15, 7.6 percent were age 16-24, 30.2 percent were age 25-44, 20.3 percent were age 45-64, and 22.7 percent were 65 and older.



## 1998 PEDESTRIAN FATALITIES BY AGE

Pedestrian Action Prior to Crash	Total	0-3	4-10	11-15	16-20	21-24	25-44	45-64	65 & over	Not Stated
Going straight ahead	2	0	0	0	0	0	0	1	1	0
Turning right	1	1	0	0	0	0	0	0	0	0
In prior crash	2	0	0	0	0	0	1	1	0	0
Entering roadway	1	0	0	1	0	0	0	0	0	0
Crossing at intersection	16	0	4	0	1	0	2	4	5	0
Crossing not at intersection	80	1	9	4	4	0	24	13	24	1
Getting on/off vehicle	1	0	0	0	0	0	1	0	0	0
In roadway with traffic	13	0	0	2	1	1	3	5	1	0
In roadway against traffic	3	0	0	0	0	0	1	2	0	0
Standing or lying in roadway	14	0	0	0	0	1	8	4	1	0
Pushing/working on vehicle	1	0	0	0	0	0	0	0	1	0
Playing in roadway	3	2	1	0	0	0	0	0	0	0
In roadway for other reason	8	1	1	0	0	0	2	2	2	0
Not in roadway	9	0	0	1	1	0	4	0	3	0
Other/Unknown	18	1	2	1	2	2	6	3	1	0
<b>Totals</b>	<b>172</b>	<b>6</b>	<b>17</b>	<b>9</b>	<b>9</b>	<b>4</b>	<b>52</b>	<b>35</b>	<b>39</b>	<b>1</b>





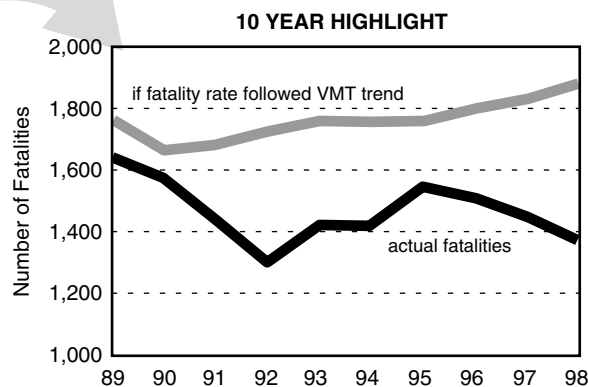
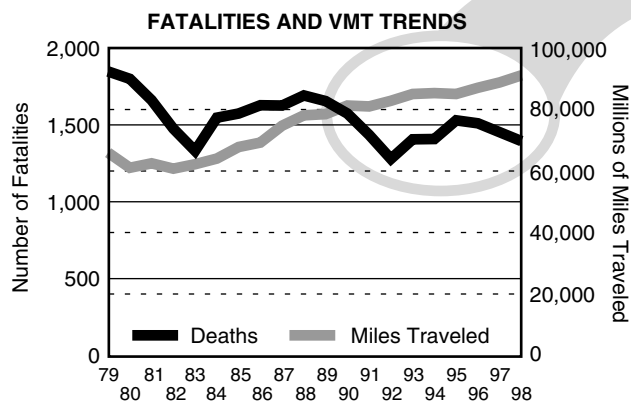
# 1998 Michigan Traffic Crash FACT SHEET



## Trends

### 10 YEAR

➔ These charts show the dramatic reversal in the fatality rate that began in 1988, and a projection of losses that would have been incurred if the rate had continued to follow the VMT trend.



### 5 YEAR

➔ In the last five years (1994-1998), 7,274 persons have been killed in Michigan traffic crashes. This is an average of 1,455 per year. During the previous five-year period (1993-1997), 7,321 persons were killed, for an average of 1,464 per year.

### 1 YEAR

- ➔ Total traffic crashes decreased 5.2 percent statewide.
- ➔ Fatal crashes decreased 3.7 percent.
- ➔ Persons killed decreased 5.5 percent.
- ➔ Injury crashes decreased 4.4 percent.
- ➔ Persons injured decreased 4.3 percent.
- ➔ Persons sustaining A-injuries (the most serious) decreased 6.1 percent.
- ➔ Motor vehicle occupant (driver and passenger) deaths decreased 5.8 percent.
- ➔ Deaths among pedestrians, bicyclists, motorcyclists and their passengers, and farm equipment/snowmobile/ORV/ATV operators and their passengers decreased 1.4 percent.
- ➔ Alcohol use was indicated in 476 fatal crashes, a decrease of 1.0 percent.
- ➔ Between 1997 and 1998 motor vehicle registrations rose 1.4 percent to 8.23 million; the number of drivers of record increased 0.8 percent to 7.15 million and vehicle travel mileage was up 2.7 percent to 91.6 billion.



