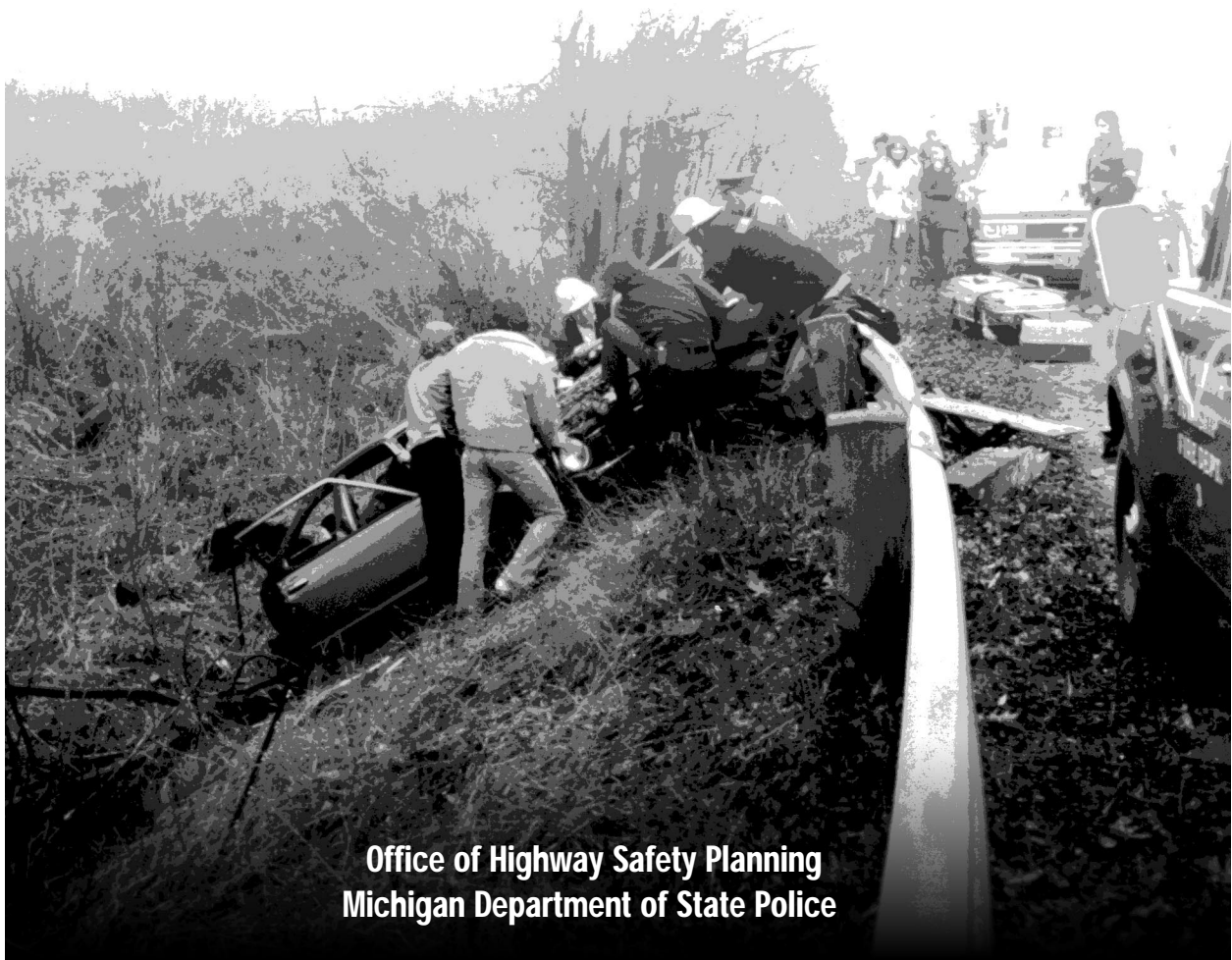


# 1997

## Michigan Traffic Crash Facts



Office of Highway Safety Planning  
Michigan Department of State Police



## EXECUTIVE SUMMARY


*The 1997 traffic fatality count was 1,446, down 3.9 percent from the 1996 figure of 1,505. Compared with 1996, injuries were down 3.5 percent and total crashes were down 2.2 percent. These figures translated into a death rate of 1.6 per 100 million miles of travel, down 5.9 percent from the death rate of 1.7 reported in 1996. Nationally, fatalities were down 0.2 percent.*

*Exposure factors in 1997 showed increases in vehicle registrations, the number of drivers on Michigan roads, and travel mileage. They included motor vehicle registrations up 0.1 percent to 8.12 million, the number of Drivers of Record up 1.6 percent to 7.09 million, and vehicle travel mileage up 1.7 percent to 89.2 billion.*

*Consumption of alcohol continues to be a major factor in Michigan crashes, particularly the more serious crashes. In 1997, 4.7 percent of all crashes, including property damage only, were reported to involve drinking, and 22.7 percent resulted in injury or death. However, 46.3 percent of alcohol-related crashes involved injury or death, and 37.5 percent of fatal crashes involved drinking. Over 58.4 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 1997 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, 1998. We acknowledge, with appreciation, all involved agencies for their assistance.*

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





STATE OF MICHIGAN



JOHN ENGLER, Governor

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## INTRODUCTION

We are pleased to present the *1997 Michigan Traffic Crash Facts*. Michigan experienced a decrease in the number of traffic deaths in 1997, 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.

This year we have divided the *1997 Michigan Traffic Crash Facts* 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 *1997 Michigan Traffic Crash Facts for County/Communities*. This volume provides crash statistics for Michigan counties and communities. Although some of this information was previously provided, the section has been significantly expanded to provide quick access to more 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 1998 on the Internet at [www.ohsp.msp.state.mi.us](http://www.ohsp.msp.state.mi.us).

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

**BETTY J. MERCER**

Division Director

Office of Highway Safety Planning



A PROUD tradition of SERVICE through EXCELLENCE, INTEGRITY, and COURTESY.





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

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



## 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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## Quick Facts & Figures

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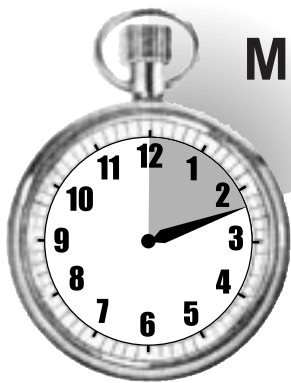




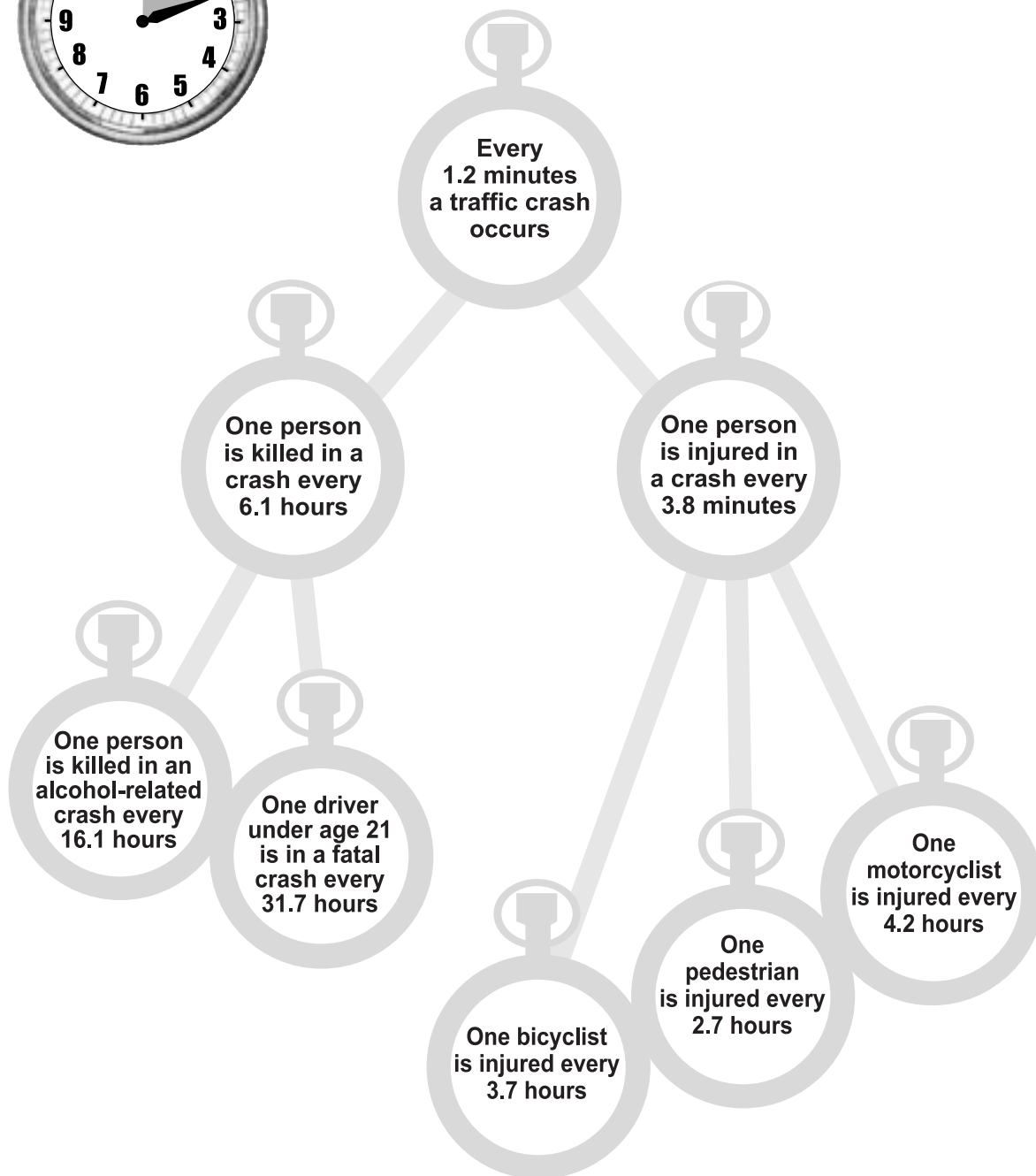
## 1997 QUICK FACTS

- Some exposure factor comparisons between 1997 and 1996 show motor vehicle registrations rose **0.1** percent, number of Drivers of Record on Michigan roads increased **1.6** percent, and vehicle mileage increased **1.7** percent.
- The 1997 death rate fell to **1.6** deaths per 100 million miles of travel. This is a decrease of **5.9** percent from the 1996 death rate of **1.7**, and it is below the ten-year average of **1.8** (1988-1997).
- There were **1,446** persons killed and **137,548** persons injured in **425,793** reported motor vehicle traffic crashes in Michigan during 1997. Compared with 1996 experience, deaths decreased **3.9** percent, injuries decreased **3.5** percent, and total reported crashes showed a decrease of **2.2** percent.
- This year's death toll of **1,446** was down **3.9** percent from the 1996 figure of **1,505**.
- The **1,446** persons killed were the result of **1,283** fatal crashes for an average of **1.1** deaths per fatal crash.
- There were **425,793** reported crashes of which **1,283** were fatal, **95,359** were personal injury, and **329,151** were property damage only crashes.
- Of all fatal crashes, **30.6** percent occurred at intersections.
- Of all fatal crashes, **37.5** percent involved at least one drinking operator or pedestrian.
- Excessive speed was indicated as the hazardous action by **14.3** percent of the drivers involved in fatal crashes.
- In 1997 there were **128,617** single vehicle crashes, a decrease of **4.0** percent over last year's count of **133,997**.
- Of the **425,793** total crashes, **128,617 (30.2%)** involved one vehicle.
- Of the **1,283** fatal crashes, **558 (43.5%)** involved one vehicle.
- Of the **481** alcohol-related fatal crashes, **281 (58.4%)** involved one vehicle. This is a **6.0** percent decrease from last year's figure of **299** single vehicle, alcohol-related fatal crashes.
- Of the **2,124** drivers involved in fatal crashes, **13.0** percent were under 21 years of age and **20.9** percent of all drivers involved in fatal crashes were under 25 years of age.
- In the last five years (1993-1997), **7,321** persons have been killed in Michigan traffic crashes. This is an average of **1,464** per year. During the previous five-year period (1992-1996), **7,175** persons were killed, for an average of **1,435** per year.
- Of the **9,773,892** persons living in Michigan [1] one out of every **6,759** was killed in a traffic crash; one out of every **71** persons was injured.
- For each person killed there were **95.1** persons injured.
- There were **137,548** 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, five out of six accidental deaths for teenagers and young adults (ages 15-24) are due to motor vehicle crashes.
- The pedestrian death toll for Michigan stands at **167** persons. This represents a decrease of **25** deaths over the 1996 figure.
- For each pedestrian killed, there were **19.1** pedestrians injured.
- Of the pedestrians killed, **43.1** percent were killed while crossing streets other than at intersections.
- Of all pedestrians killed, **21.6** percent were under the age of 21 years and **22.8** percent were 55 and older.
- During the past five years, a total of **902** pedestrians have been killed, an average of **180** per year.
- During the past five years, a total of **147** bicyclists have been killed, an average of **29** per year.
- Children under the age of **16** accounted for **34.5** percent of the bicycle deaths.
- Of the **774,717** drivers and injured passengers involved in crashes, **608,173** or **78.5** percent were *reported* to have been using occupant restraints. Restraint usage among fatal victims, where usage was known, was reported to be **43.9** percent in 1997.
- Motor vehicle occupants age 55 to 64 and 65 to 74 tied for the highest reported restraint usage (**93.2%**) among age groups. Children age 11 to 15 had the lowest reported restraint usage (**68.1%**).
- The economic loss in Michigan traffic crashes amounted to **\$9,707,518,300**.



## Michigan's Crash Watch 1997



# ***Who Dies in Michigan Motor Vehicle Crashes?***

## **A Daily Toll**

- Four people dead - ***ONE FAMILY EVERYDAY!***
- One person dead in an alcohol-related crash everyday
- Daily economic costs to Michigan residents of:

*27 MILLION DOLLARS*

11.4 million - for fatalities

13.6 million - for injuries

1.5 million - for property damage

## **An Annual Toll**

- Economic Cost of motor vehicle crashes to Michigan residents is 9.7 billion a year
- 4.2 billion in economic loss due to Michigan motor vehicle fatalities a year
- Alcohol related fatalities amounted to 544 people in 1997
- 1,446 people died in 1997
- ***ONE PERSON DIED EVERY 6 HOURS, 3 MINUTES!***

1997

1997

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1997

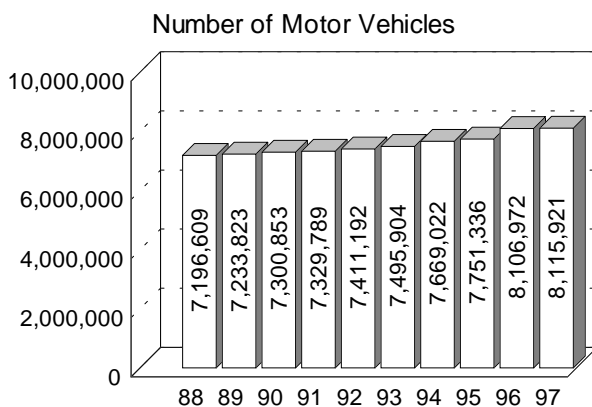
1997

**Historical  
Information**



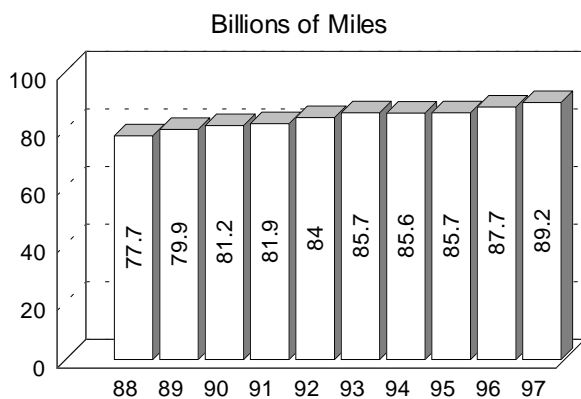
# 10 YEAR

## VEHICLE REGISTRATIONS



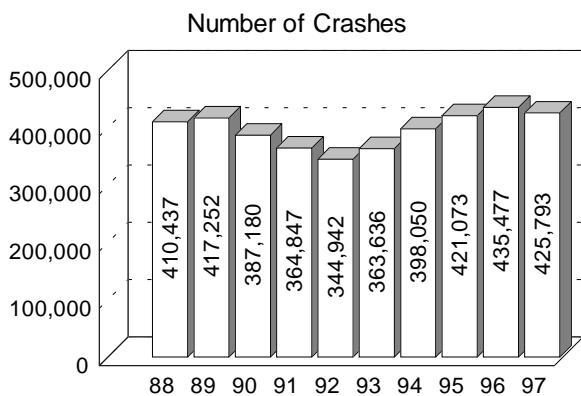
Vehicle Registrations have been increasing steadily since 1988, reaching 8,115,921 in 1997.

## VEHICLES MILES TRAVELED



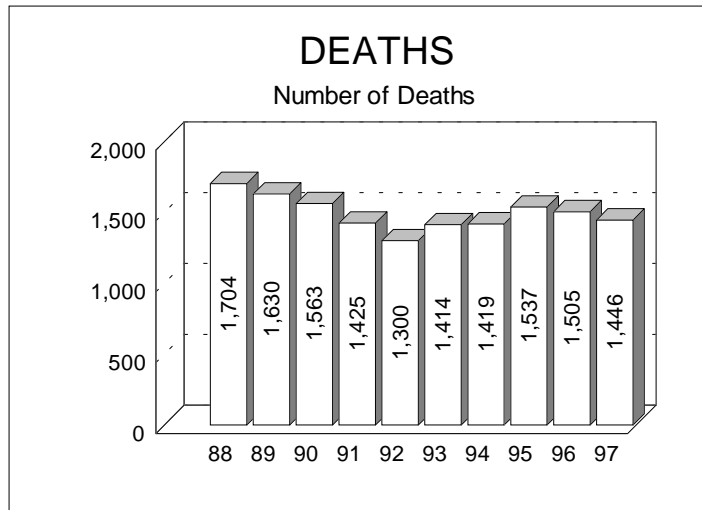
Vehicle miles of travel have increased 14.8 percent since 1988, reaching 89.2 billion miles in 1997.

## CRASHES

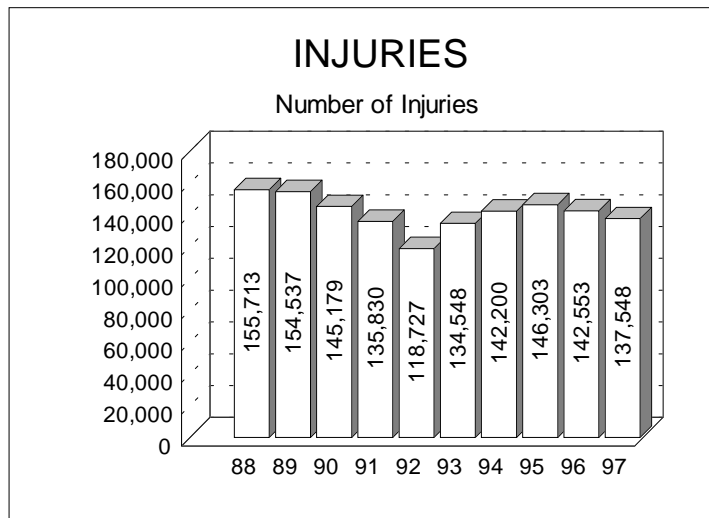


There were 425,793 total crashes statewide in 1997, a 2.2 percent decrease from 1996.

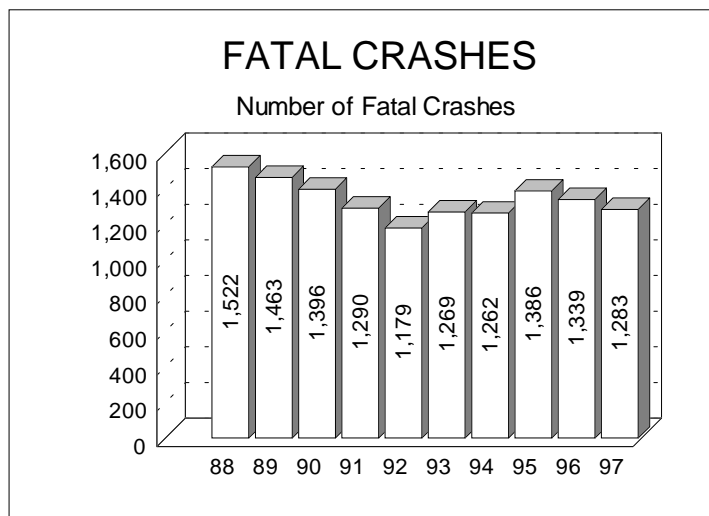
## 10 YEAR TRENDS (continued)



Number of deaths has remained below the high of 1,704 in 1988. In 1997, 1,446 people died in motor vehicle crashes, a decline of 3.9 percent from 1996.



137,548 people received nonfatal injuries in Michigan motor vehicle crashes in 1997, down 11.7 percent from the high of 155,713 in 1988.



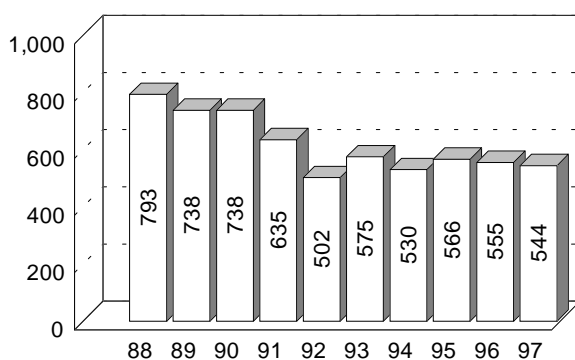
After reaching a peak in 1988, fatal crashes had declined until 1992. In 1997, there were 1,283 fatal crashes, down 4.2 percent from 1996.



# 10 YEAR

## HBD FATALITIES

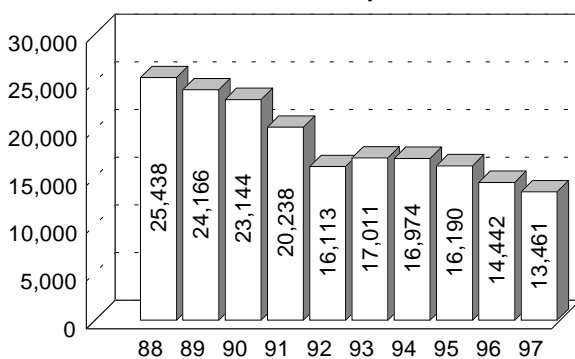
Number of HBD Fatalities



Deaths in alcohol related crashes have decreased over the last ten years. There were 544 HBD fatalities in 1997, down 31.4 percent from 1988.

## HBD INJURIES

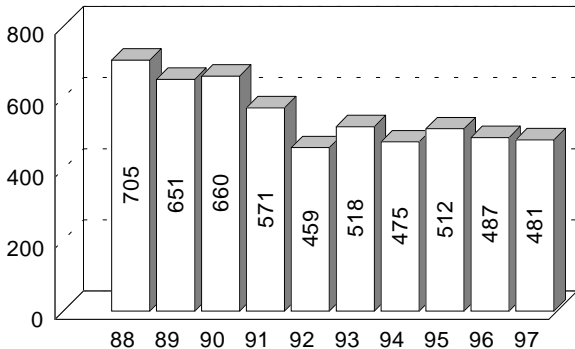
Number of HBD Injuries



Mirroring the trend in deaths, HBD injuries have decreased over the last ten years. There were 13,461 injuries in 1997, down 47.1 percent from 1988.

## HBD FATAL CRASHES

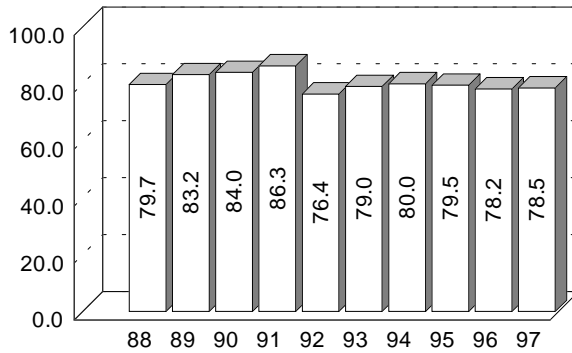
Number of HBD Fatal Crashes



Alcohol involvement in fatal crashes has decreased 31.8 percent since 1988. In 1997, there were 481 HBD fatal crashes, down 1.2 percent from 1996.

## RESTRAINT USAGE

Annual Average Percentage of Occupants



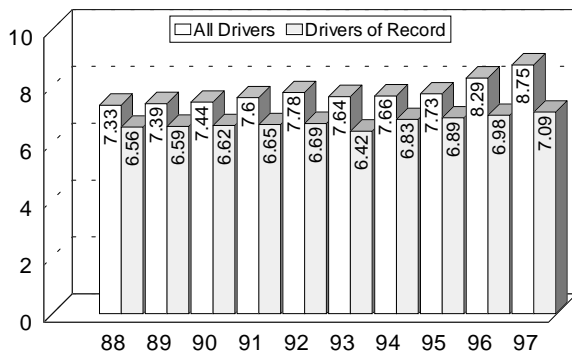
## 10 YEAR TRENDS (continued)

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 80.5.

Note: Please see additional restraint usage information on page 144.

## DRIVERS IN MICHIGAN

Millions of Drivers

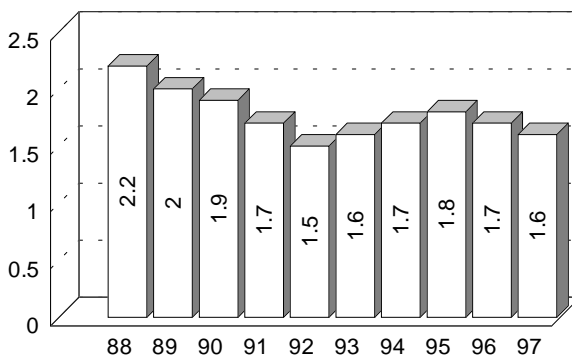


Beginning with this year's Michigan Traffic Crash Facts, we are using Drivers of Record (as defined by the Michigan Department of State, Office of Policy and Planning) for the total number of drivers on Michigan roads. Previously we used the All Drivers number. Both data elements are shown to the left.

For definitions of All Drivers and Drivers of Record, please refer to the Glossary.

## MILEAGE DEATH RATE

Deaths Per 100 Million Vehicle Miles

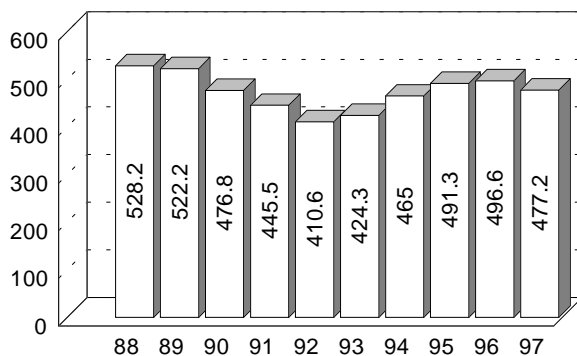


The 1.6 death rate in 1997 is a 5.9 percent decrease from 1996.

# 10 YEAR

## TOTAL CRASH RATE

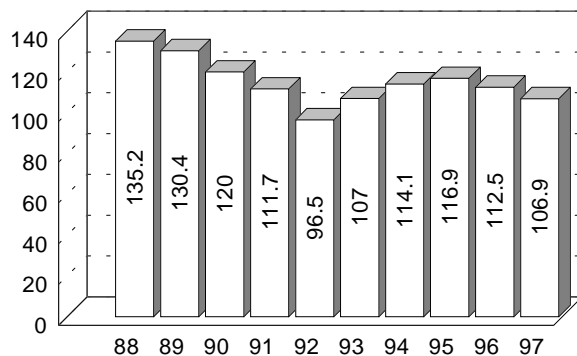
All Crashes Per 100 Million Vehicle Miles



The 477.2 total crash rate in 1997 is a 3.9 percent decrease from 1996.

## PERSONAL INJURY CRASH RATE

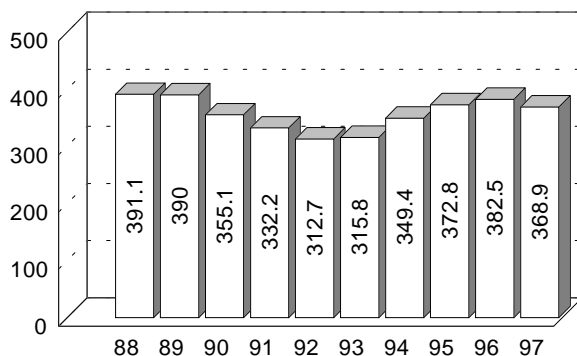
Injury Crashes Per 100 Million Vehicle Miles



The 106.9 personal injury crash rate in 1997 is a 5 percent decrease from 1996.

## PROPERTY DAMAGE CRASH RATE

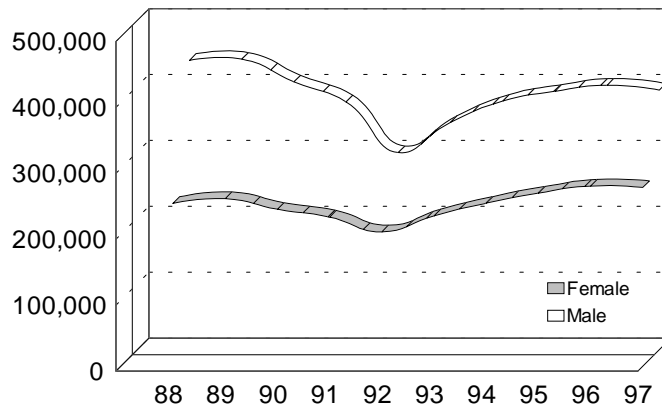
Property Damage Crashes Per 100 Million Vehicle Miles



The 368.9 property damage crash rate in 1997 is a 3.6 percent decrease from 1996.

## MALE vs. FEMALE DRIVERS

Number in All Crashes

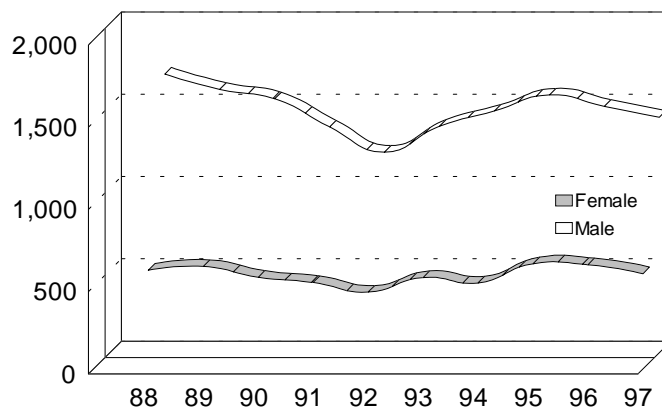


## 10 YEAR TRENDS (continued)



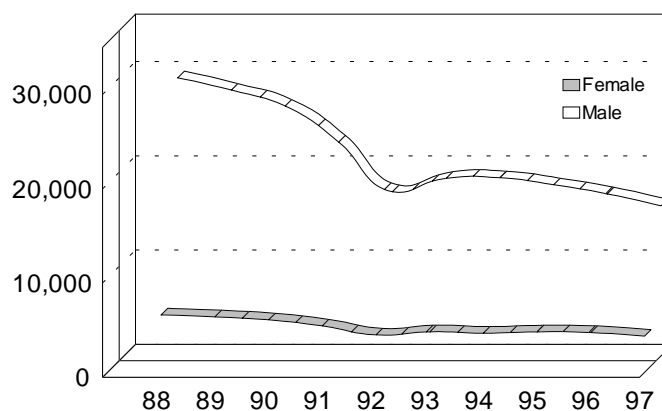
## MALE vs. FEMALE DRIVERS

Number in Fatal Crashes



## MALE vs. FEMALE DRINKING DRIVERS

Number in All Crashes



# 10 YEAR

DRIVERS IN ALL CRASHES		
	Male	Female
1988	439,047	246,916
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

The crash data collection form (UD-10) was changed in 1992. Prior to 1992, drivers whose gender was not identified were coded as male. Slightly less than 10% of drivers were coded as unknown gender in 1997.

DRIVERS IN FATAL CRASHES		
	Male	Female
1988	1,693	601
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

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.

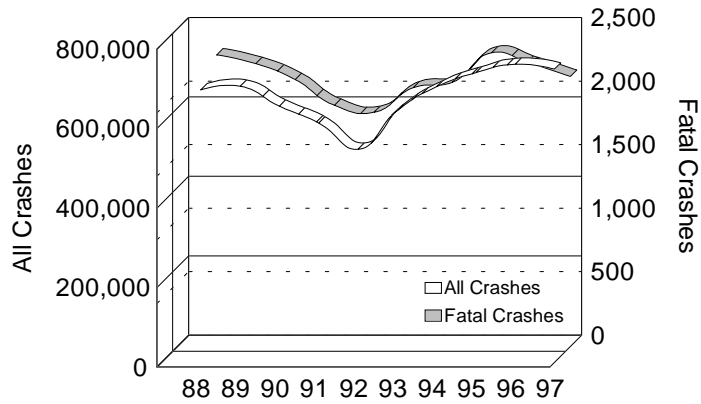
DRINKING DRIVERS IN ALL CRASHES		
	Male	Female
1988	29,496	6,091
1989	28,185	5,889
1990	26,498	5,568
1991	22,679	4,930
1992	17,414	3,976
1993	18,831	4,308
1994	18,889	4,163
1995	18,153	4,300
1996	17,186	4,225
1997	15,901	3,842

Males drivers have always accounted for the majority of all drinking drivers. The number of male drinking drivers has decreased 46.1 percent from 1988 to an all time low of 15,901 in 1997.

The number of female drinking drivers decreased to the lowest number of the ten year period, 3,842 in 1997.

## ALL DRIVERS

Number in All and Fatal Crashes

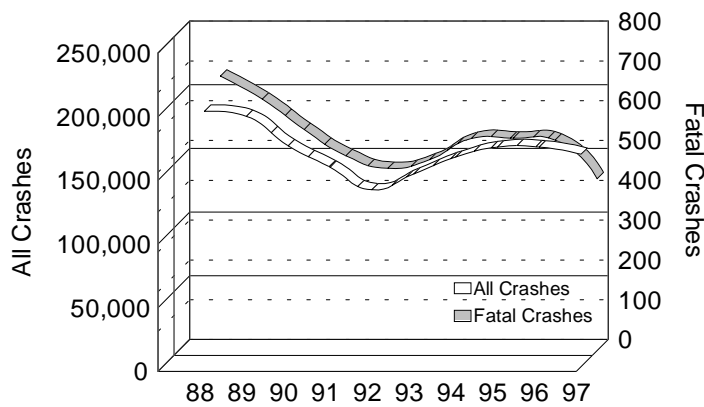


## 10 YEAR TRENDS (continued)



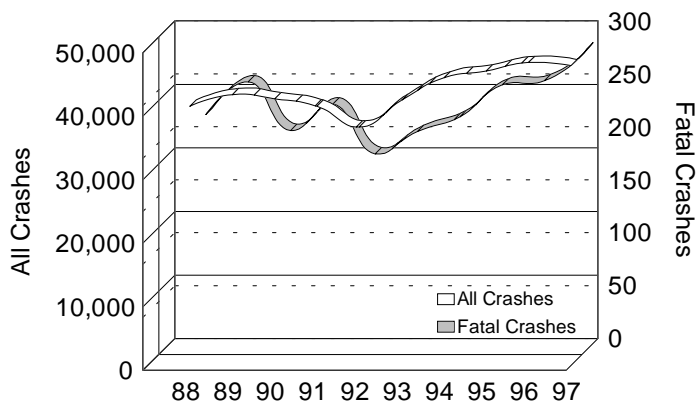
## TEEN/YOUNG ADULT DRIVERS

Age 16-24: Number in All and Fatal Crashes



## ELDERLY DRIVERS

Age 65-102: Number in All and Fatal Crashes



# 10 YEAR

ALL DRIVERS		
	All Crashes	Fatal Crashes
1988	685,963	2,294
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

Driver involvement in all crashes increased 7.6 percent over the ten year period.

Driver involvement in fatal crashes decreased 7.4 percent over the ten year period.

TEEN/YOUNG ADULT DRIVERS		
	All Crashes	Fatal Crashes
1988	200,396	690
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

Teen/Young Adult Drivers (age 16-24) represent 14.8 percent of the licensed drivers in 1997.

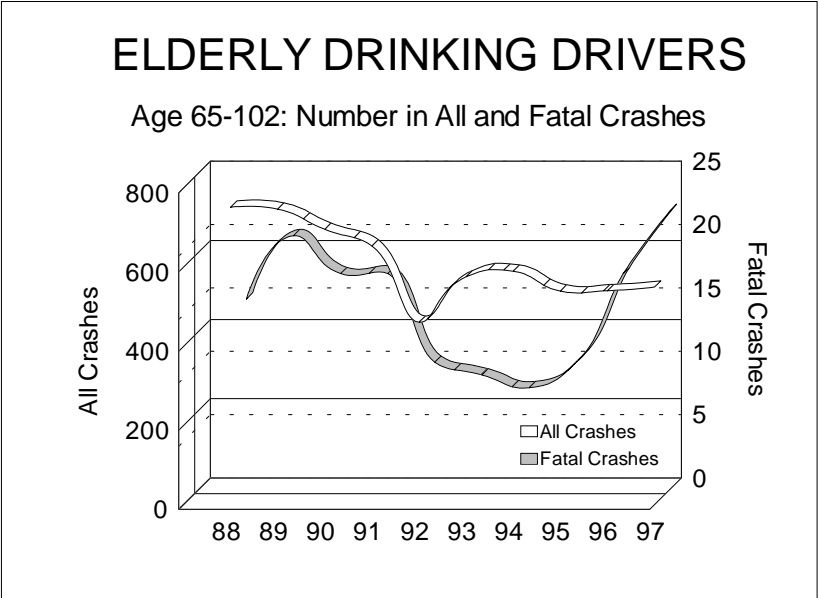
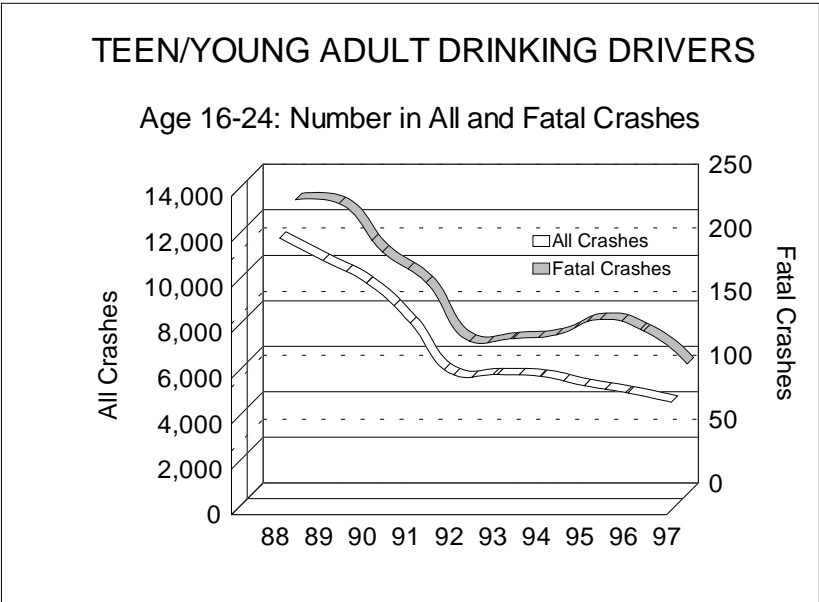
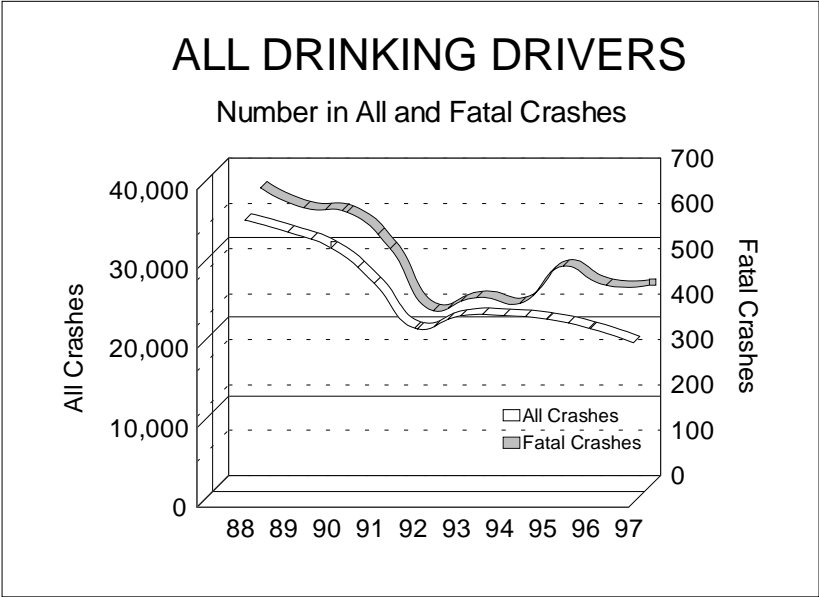
The number of Teen/Young Adult drivers in all crashes has decreased by 16.8 percent since 1988. Their involvement in fatal crashes decreased 37.4 percent during the same time period.

ELDERLY DRIVERS		
	All Crashes	Fatal Crashes
1988	40,812	222
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

Elderly Drivers (age 65-102) represent 14.1 percent of the licensed drivers in 1997.

The number of drivers age 65 and older in all crashes has increased 15.6 percent since 1988. Their involvement in fatal crashes increased 27.9 percent during the same time period.

# 10 YEAR TRENDS (continued)





# 10 YEAR

DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1988	35,587	659
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

Drinking driver involvement in all crashes decreased 43.4 percent over the ten year period.

Drinking driver involvement in fatal crashes decreased 32.6 percent over the ten year period.

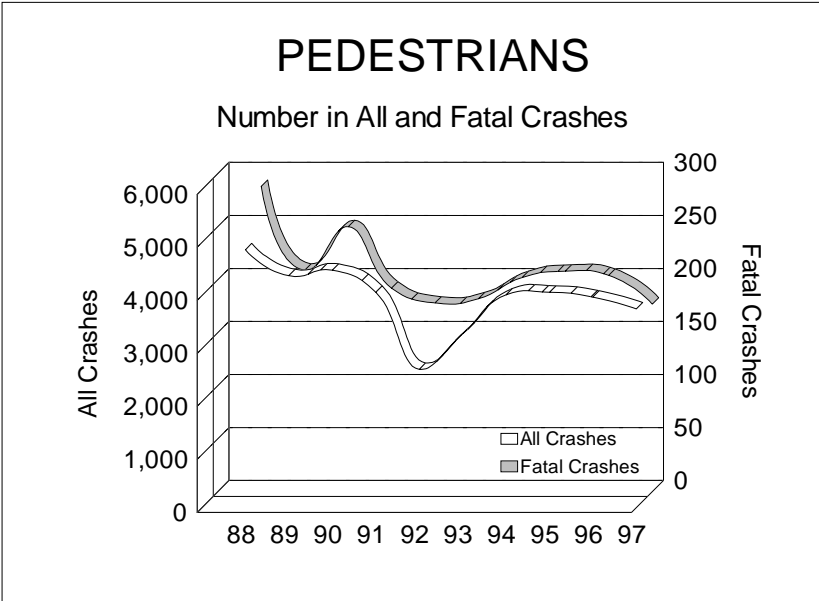
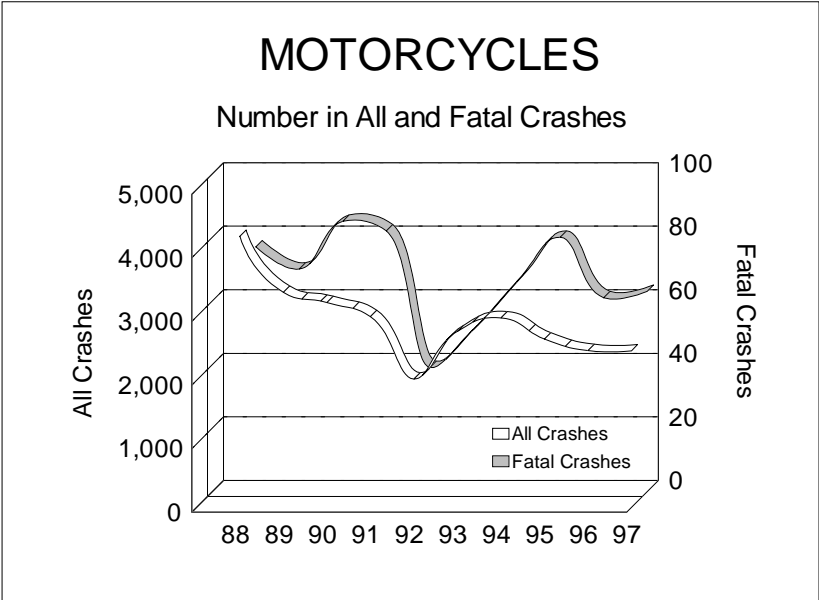
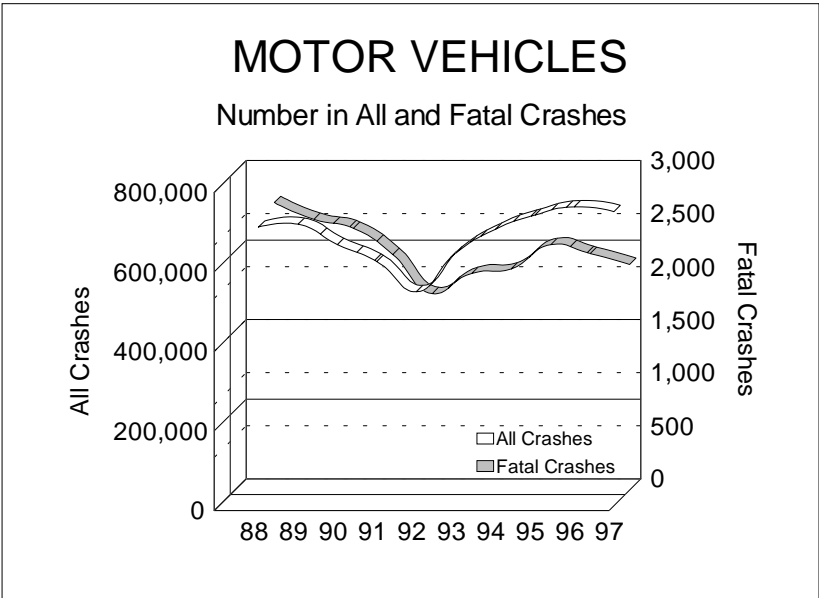
TEEN/YOUNG ADULT DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1988	11,949	231
1989	10,957	228
1990	9,965	190
1991	8,210	166
1992	5,934	120
1993	5,947	122
1994	5,868	125
1995	5,461	137
1996	5,142	128
1997	4,731	102

The number of Teen/Young Adult drinking drivers in all crashes has decreased by 60.4 percent since 1988. Their involvement in fatal crashes decreased 55.8 percent during the same time period.

ELDERLY DRINKING DRIVERS		
	All Crashes	Fatal Crashes
1988	752	15
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

The number of elderly drinking drivers (age 65-102) in all crashes has decreased 26.9 percent since 1988. Their involvement in fatal crashes increased 46.7 percent during the same time period.

# 10 YEAR TRENDS (continued)



# 10 YEAR

MOTOR VEHICLES		
	All Crashes	Fatal Crashes
1988	700,431	2,709
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

There has been a 21.5 percent decline in the number of motor vehicles involved in fatal crashes from 2,709 in 1988 to 2,126 in 1997.

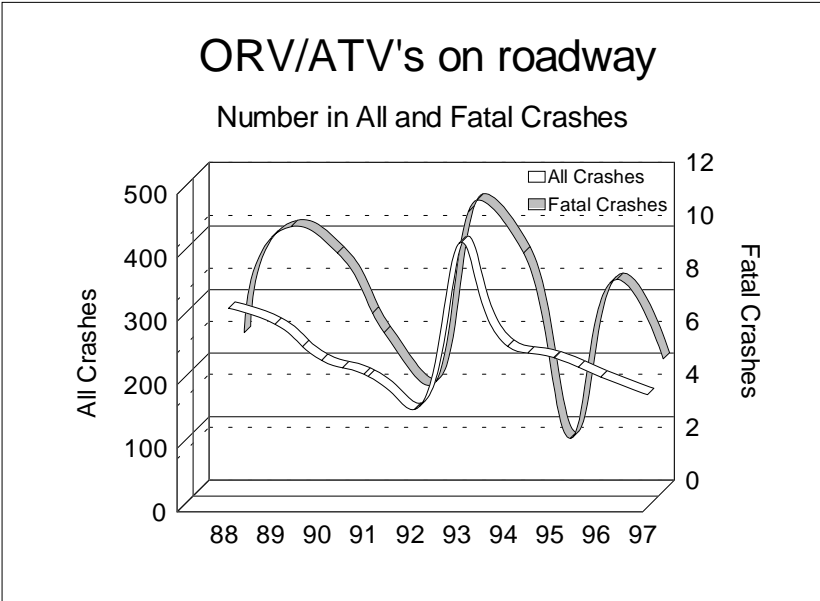
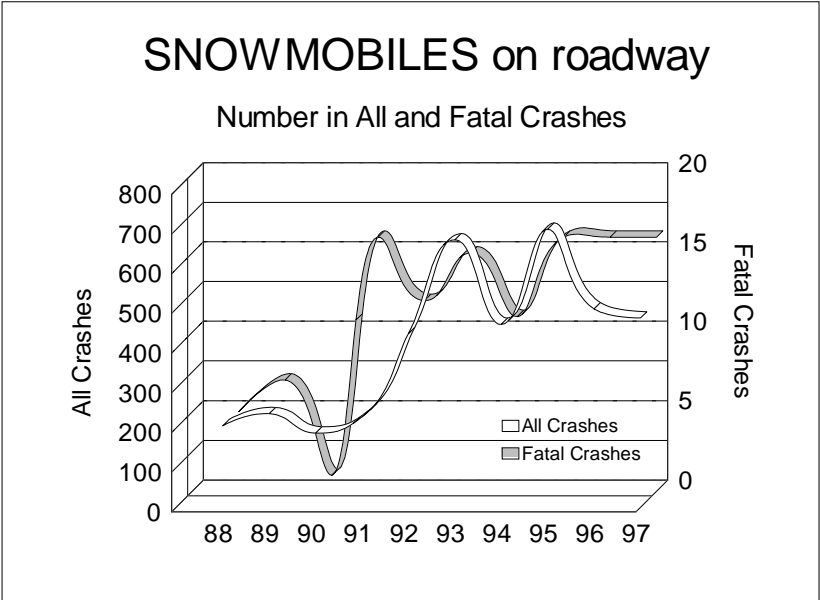
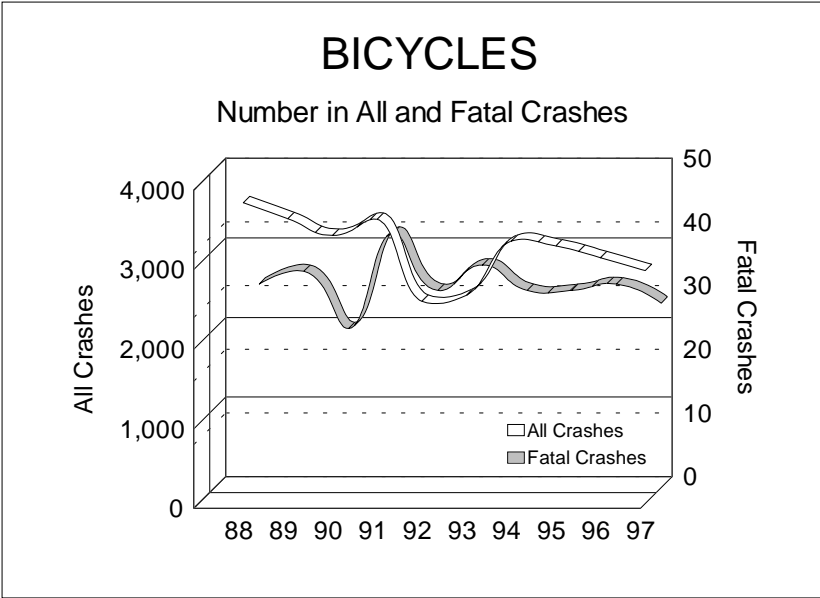
MOTORCYCLES		
	All Crashes	Fatal Crashes
1988	4,265	77
1989	3,383	70
1990	3,222	85
1991	3,001	82
1992	2,022	39
1993	2,768	51
1994	2,982	66
1995	2,651	80
1996	2,468	61
1997	2,465	63

The number of motorcycles involved in fatal crashes decreased by 18.2 percent between 1988 and 1997.

PEDESTRIANS		
	All Crashes	Fatal Crashes
1988	4,863	288
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

There were 177 pedestrians involved in fatal crashes in 1997, a ten year low.

10 YEAR TRENDS  
(continued)



# 10 YEAR

BICYCLES		
	All Crashes	Fatal Crashes
1988	3,782	32
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

Bicycles involved in fatal crashes decreased 9.4 percent over the ten year period.

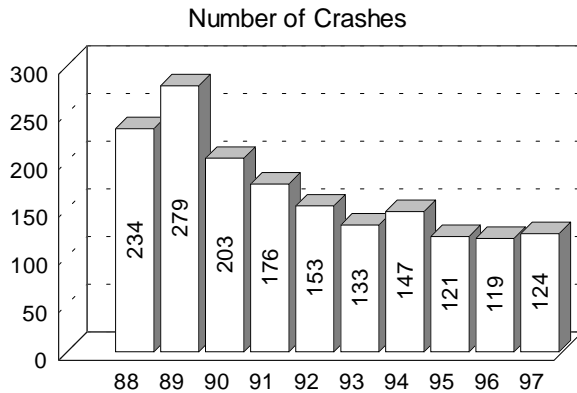
SNOWMOBILES on Michigan roadways		
	All Crashes	Fatal Crashes
1988	205	5
1989	235	7
1990	186	1
1991	227	16
1992	437	12
1993	673	15
1994	460	11
1995	700	16
1996	499	16
1997	476	16

The number of snowmobiles involved in fatal crashes on Michigan roadways has increased 220 percent since 1988.

ORV/ATV's on Michigan roadways		
	All Crashes	Fatal Crashes
1988	313	6
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

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

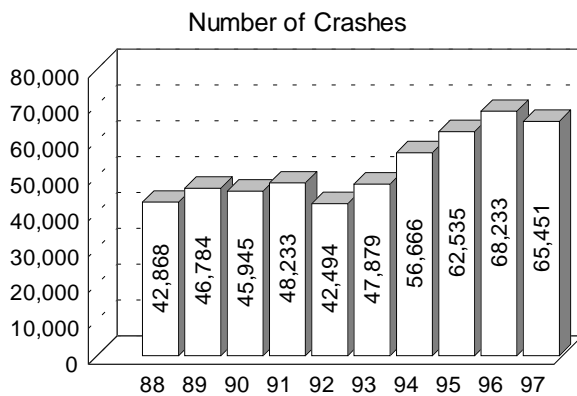
## VEHICLE-TRAIN CRASHES



## 10 YEAR TRENDS (continued)

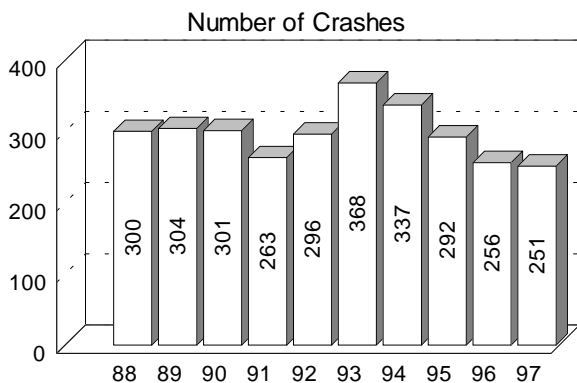
124 vehicle-train crashes occurred in 1997, a 4.2 percent increase from 1996.

## VEHICLE-DEER CRASHES



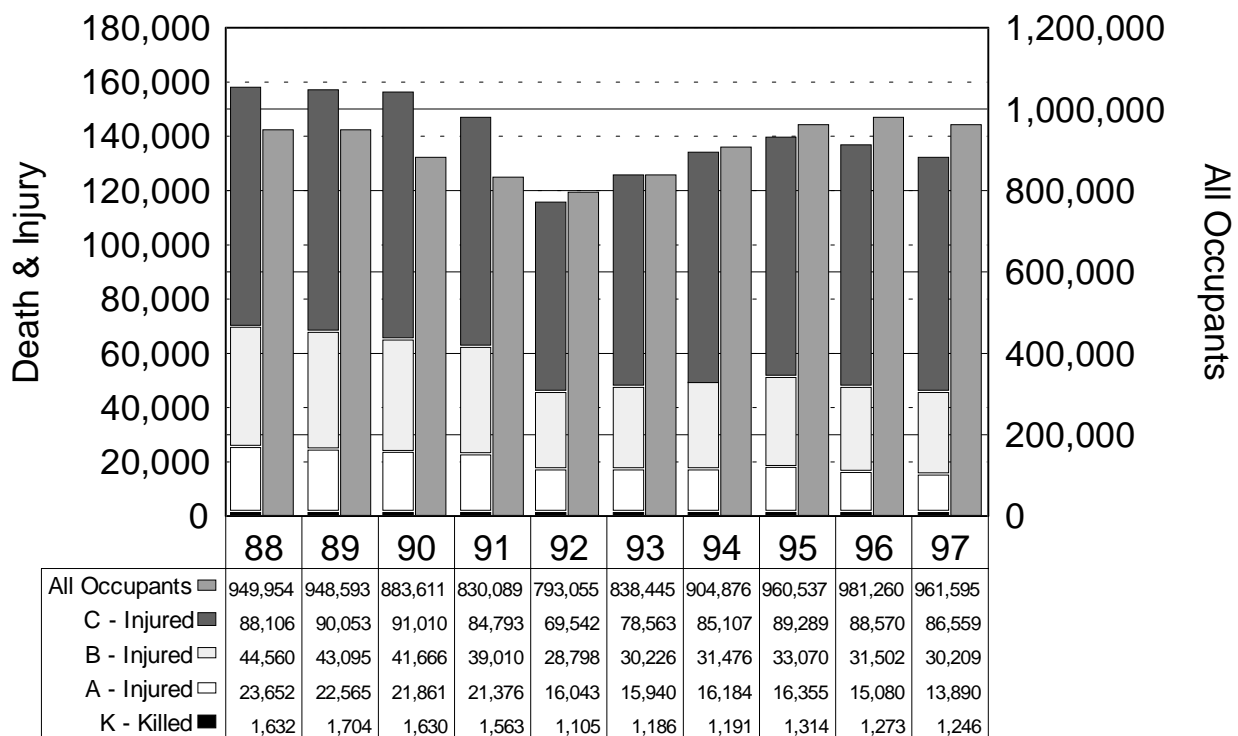
There has been a 52.7 percent rise from 42,868 vehicle-deer crashes in 1988 to 65,451 in 1997.

## FARM EQUIPMENT CRASHES



In 1997, there were 251 farm equipment crashes, down 31.8 percent from the 1993 high of 368.

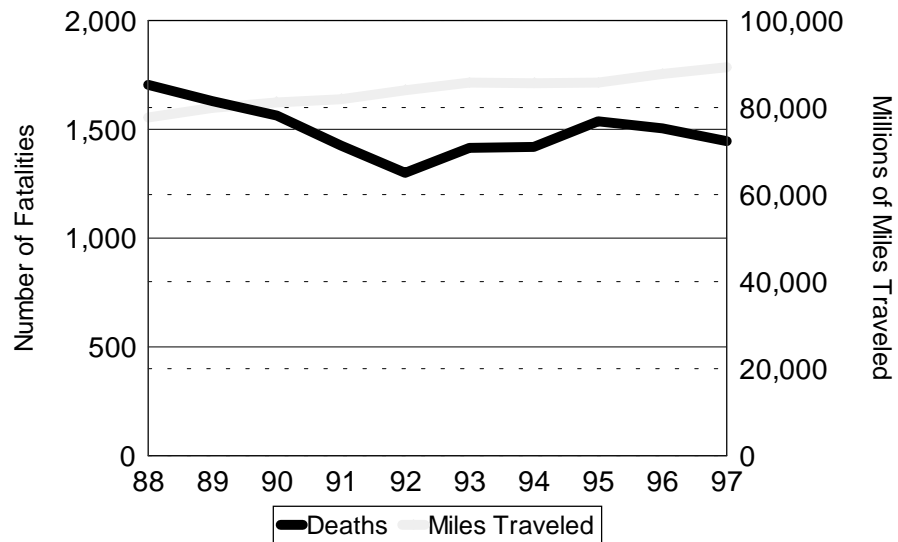
## DEATH AND INJURY PER CRASH INVOLVED OCCUPANT



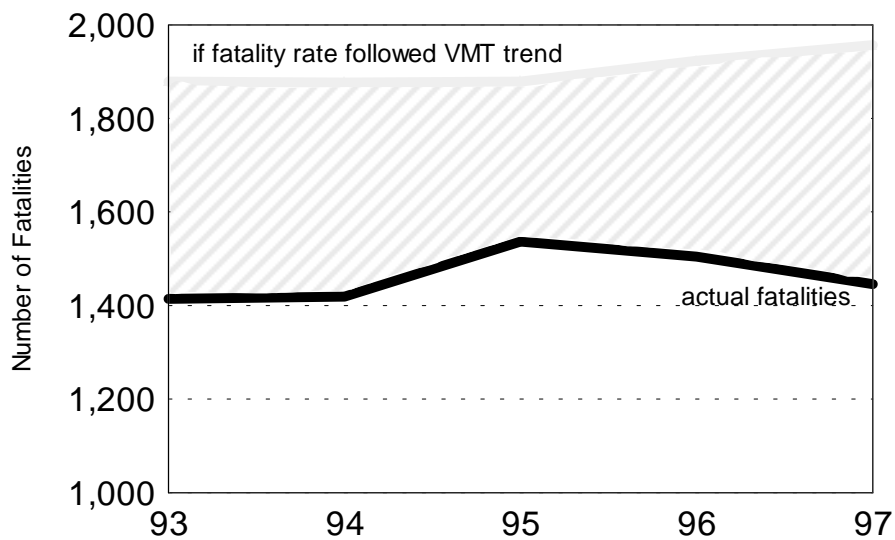
The proportion of death and injury to crash involved occupants has decreased over the last ten years. In 1997, 1,246 occupants of motor vehicles were fatally injured, 13,890 suffered an A (incapacitating) injury, 30,209 sustained a B (nonincapacitating) injury, and 86,559 sustained a C (possible) injury.

# 10 YEAR

## FATALITIES AND VMT TRENDS



## 5 Year Highlight



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 fatality rate had continued to follow the VMT trend.

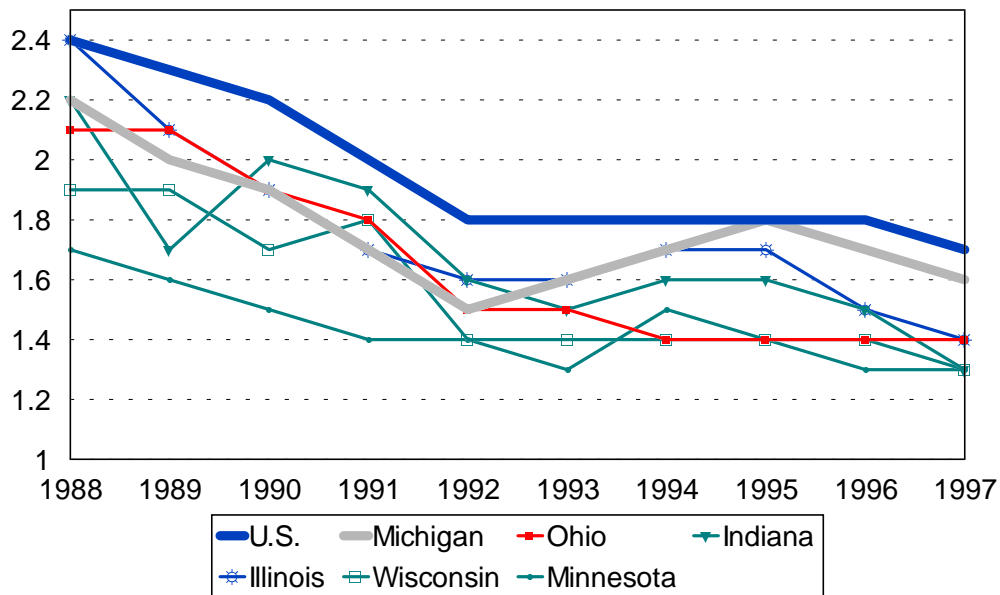




# 10 YEAR

## MILEAGE DEATH RATES 1988 - 1997

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.

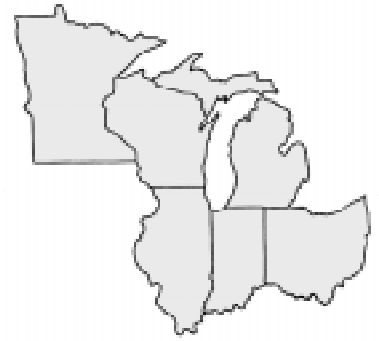
From 1988 to 1992, Michigan placed consistently in the middle of the pack, mirroring the U.S. trend towards a reduced fatality rate. Over the last five years, the Michigan mileage death rate has risen and fallen, never exceeding the U.S. rate.

	U.S.	Michigan	Ohio	Indiana	Illinois	Wisconsin	Minnesota
1988	2.4	2.2	2.1	2.2	2.4	1.9	1.7
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

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



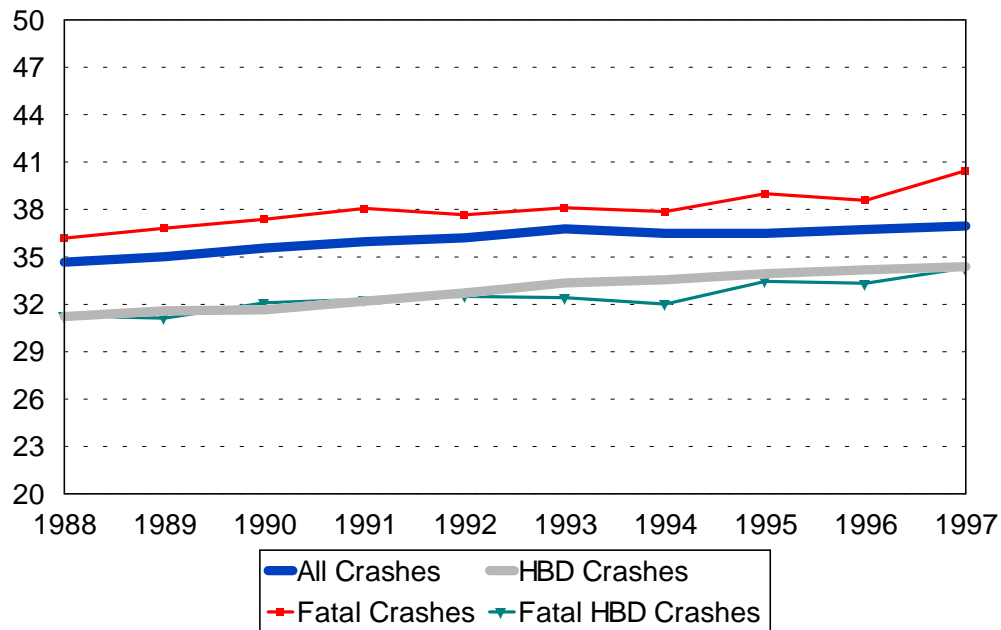
## MICHIGAN AND SURROUNDING STATES COMPARISON OF FATALITIES AND VMT

Year	U.S. Persons Killed	Michigan Persons Killed	Ohio Persons Killed	Indiana Persons Killed	Illinois Persons Killed	Wisconsin Persons Killed	Minnesota Persons Killed
1988	49,078	1,704	1,748	1,099	1,860	813	615
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	1,396	721	600

Year	U.S. VMT	Michigan VMT	Ohio VMT	Indiana VMT	Illinois VMT	Wisconsin VMT	Minnesota VMT
1988	2,026	77.7	81.8	51.1	78.6	42.3	36.4
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

VMT described in billions of miles

## AVERAGE AGE OF DRIVERS IN CRASHES 1988 - 1997



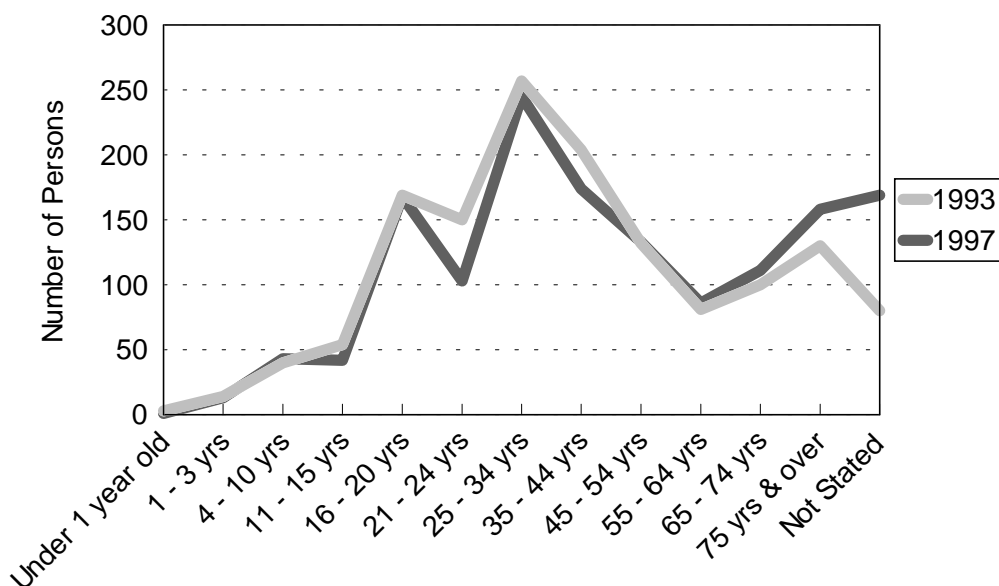
Reflecting the demographic trend of increasing age in the general population, the average age of crash-involved drivers has also increased. An aging driving population has implications for law enforcement prioritizing, highway design, traffic signing considerations, and Emergency Medical System procedures.



## TREND DATA FOR FATALITIES

TREND DATA FOR FATALITIES	1993	1994	1995	1996	1997
Age of Persons Killed, Total					
Under 1 year old	3	6	6	9	1
1 - 3 years	14	24	23	22	13
4 - 10 years	40	46	48	41	43
11 - 15 years	54	61	51	66	42
16 - 20 years	169	219	215	211	168
21 - 24 years	150	144	149	125	103
25 - 34 years	257	208	254	261	245
35 - 44 years	204	200	242	215	174
45 - 54 years	132	119	140	158	133
55 - 64 years	81	84	99	89	86
65 - 74 years	100	108	116	106	111
75 years and over	130	134	152	157	158
Not Stated	80	66	42	45	169
Totals	1,414	1,419	1,537	1,505	1,446

### Age of Persons Killed, Total



The chart above shows the total number of deaths in motor vehicle crashes in Michigan by age, comparing 1993 with 1997.

# 5

## YEAR

TREND DATA FOR FATALITIES	1993	1994	1995	1996	1997
---------------------------	------	------	------	------	------

### Age of Drivers Involved in Fatal Crashes

Under 1 year old	0	1	0	0	0
1 - 3 years	0	0	0	0	0
4 - 10 years	0	1	0	0	0
11 - 15 years	13	11	10	5	12
16 - 20 years	259	307	314	303	264
21 - 24 years	218	222	220	226	168
25 - 34 years	421	431	466	501	463
35 - 44 years	340	369	442	392	347
45 - 54 years	203	207	260	254	239
55 - 64 years	115	110	146	108	156
65 - 74 years	97	112	121	124	136
75 years and over	106	105	129	130	148
Not Stated	217	170	203	183	191
Totals	1,989	2,046	2,311	2,226	2,124

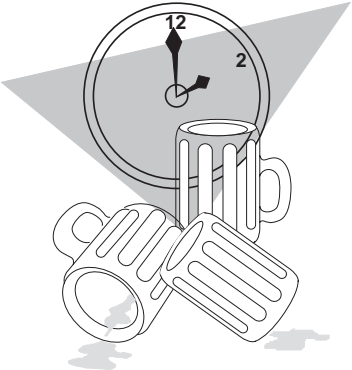
### Age of Pedestrians Killed

Under 1 year old	0	0	1	1	0
1 - 3 years	1	10	3	5	1
4 - 10 years	10	13	14	14	16
11 - 15 years	9	10	10	10	9
16 - 20 years	7	17	10	11	10
21 - 24 years	12	11	15	5	8
25 - 34 years	33	21	27	26	27
35 - 44 years	35	29	42	35	32
45 - 54 years	20	11	19	35	26
55 - 64 years	6	15	15	22	6
65 - 74 years	17	15	15	12	17
75 years and over	15	23	12	14	14
Not Stated	6	7	7	2	1
Totals	171	182	190	192	167

### Action of Pedestrians Killed

Crossing at intersection	21	25	22	22	14
Cross not at intersection	54	66	64	65	72
Getting on/off vehicle	1	1	1	1	1
In road with traffic	14	12	18	26	19
In road against traffic	3	3	5	1	4
Standing or lying in road	15	14	17	21	13
Pushing/working on vehicle	3	4	4	2	3
Other working in road	0	3	0	1	1
Playing in road	0	0	0	1	3
In road for other reason	7	8	15	15	7
Not in road	8	14	13	10	10
Other/Unknown	45	32	31	27	20
Totals	171	182	190	192	167

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

HOLIDAY PERIOD	Fatal Crashes	Persons Killed	SUMMARY 1997
<b>Memorial Day</b> 1997 (3) 1996 (3) 1995 (3) 1994 (3) 1993 (3)	14 [8] 10 [7] 11 11 18	16 [9] 11 [7] 12 13 23	<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 1997</i> experience, deaths averaged <b>4.0</b> per day. Alcohol-related deaths averaged <b>1.5</b> per day.</p> <p>Based on the <i>1997 Holiday Period</i> experience, deaths averaged <b>5.0</b> per day. Alcohol-related deaths averaged <b>2.2</b> per day.</p> 
<b>Fourth of July</b> 1997 (3) 1996 (4) 1995 (4) 1994 (3) 1993 (3)	14 [9] 24 [8] 19 17 11	16 [10] 27 [8] 19 19 14	
<b>Labor Day</b> 1997 (3) 1996 (3) 1995 (3) 1994 (3) 1993 (3)	15 [8] 21 [15] 22 9 7	19 [8] 27 [20] 30 10 7	
<b>Thanksgiving</b> 1997 (4) 1996 (4) 1995 (4) 1994 (4) 1993 (4)	18 [6] 18 [8] 11 19 21	20 [6] 23 [8] 12 21 29	
<b>Christmas</b> 1997 (4) 1996 (1) 1995 (3) 1994 (3) 1993 (3)	11 [3] 4 [0] 15 17 9	13 [3] 6 [0] 16 23 9	
<b>New Years</b> 1997 (4) 1996 (1) 1995 (3) 1994 (3) 1993 (3)	18 [8] 4 [0] 13 16 18	21 [11] 5 [0] 14 16 19	

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.

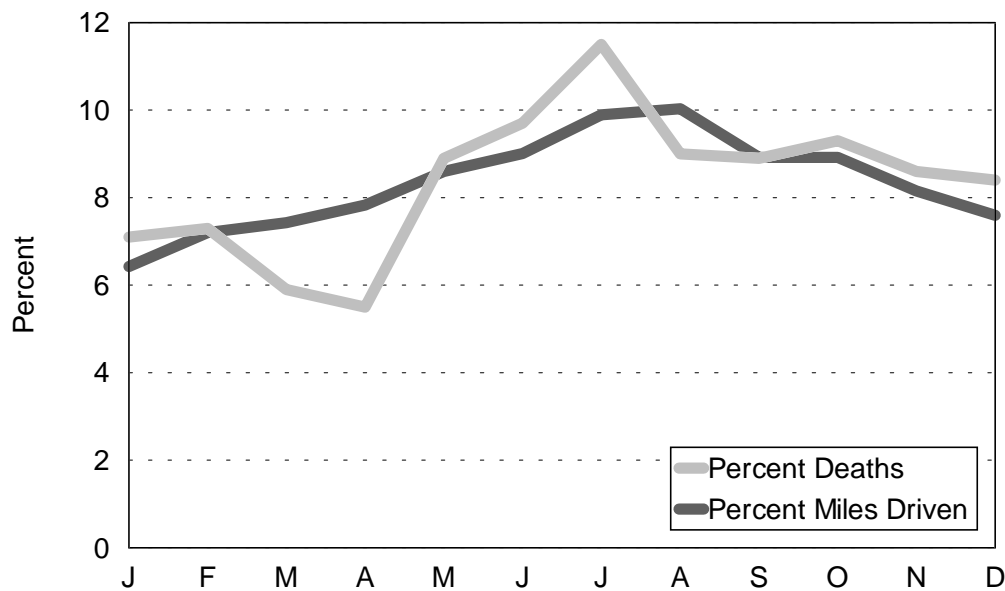
Figures in brackets in the 2<sup>nd</sup> and 3<sup>rd</sup> columns show the number of alcohol-related fatal crashes and deaths.

# 5 YEAR

## MOTOR VEHICLE DEATHS AND MILEAGE BY MONTH

Month	TRAFFIC DEATHS					1997 PERCENTAGES	
	1993	1994	1995	1996	1997	Percent Deaths	Percent Miles Driven
January	123	106	122	131	102	7.1	6.43
February	91	86	90	98	106	7.3	7.20
March	89	82	109	103	85	5.9	7.43
April	72	116	111	98	80	5.5	7.83
May	127	111	118	128	128	8.9	8.60
June	103	123	141	135	140	9.7	9.01
July	149	126	127	146	166	11.5	9.89
August	140	143	159	121	130	9.0	10.03
September	131	132	157	138	128	8.9	8.92
October	146	133	134	135	134	9.3	8.92
November	134	123	136	136	125	8.6	8.15
December	109	138	133	136	122	8.4	7.60
Totals	1,414	1,419	1,537	1,505	1,446	100.0	100.0

Percent Deaths & Percent Miles Driven



The above chart shows that *deaths per miles driven* were lower for the months of March, April and August than for the other months in 1997.



### 1996 - 1997 SUMMARY TRENDS

- Deaths among vehicle occupants (drivers and passengers) decreased **2.6** percent.
- Alcohol use was indicated in 481 fatal crashes, a decrease of **1.2** percent.
- Persons sustaining "A" level injuries (the most serious) decreased **8.0** percent.

	1996	1997	% CHANGE
<b>NUMBER OF CRASHES</b>			
Property Damage Crashes .....	335,495	329,151	-1.9
Fatal Crashes .....	1,339	1,283	-4.2
Personal Injury Crashes .....	98,643	95,359	-3.3
<b>Total</b>	<b>435,477</b>	<b>425,793</b>	<b>-2.2</b>
<b>ALCOHOL IN FATAL CRASHES</b>			
Had Been Drinking (HBD) .....	487 (36.4%)	481 (37.5%)	-1.2
Had Not (HNBD)/Not Known If Drinking .....	852 (63.6%)	802 (62.5%)	-5.9
<b>PERSONS IN CRASHES</b>			
Killed and Injured .....	144,058	138,994	-3.5
Not Injured .....	576,351	567,938	-1.5
Unknown Injury .....	79,034	78,445	-0.7
<b>Total</b>	<b>799,443</b>	<b>785,377</b>	<b>-1.8</b>
<b>PERSONS INJURED</b>			
Male .....	69,106	66,351	-4.0
Female .....	73,447	71,197	-3.1
<b>Total</b>	<b>142,553</b>	<b>137,548</b>	<b>-3.5</b>
"A" Injury .....	16,622	15,291	-8.0
"B" Injury .....	34,063	32,678	-4.1
"C" Injury .....	91,868	89,579	-2.5
<b>Total</b>	<b>142,553</b>	<b>137,548</b>	<b>-3.5</b>
<b>PERSONS KILLED</b>			
Male .....	970	918	-5.4
Female .....	535	528	-1.3
<b>Total</b>	<b>1,505</b>	<b>1,446</b>	<b>-3.9</b>
Drivers .....	822	767	-6.7
Passengers .....	344	369	7.3
Pedestrians .....	192	167	-13.0
Bicyclists .....	32	29	-9.4
Motorcyclist .....	62	63	1.6
Farm Equipment .....	1	2	100.0
Train Engineer .....	0	0	0.0
Snowmobile .....	13	17	30.8
ORV/ATV .....	9	5	-44.4
Other/Unknown .....	30	27	-10.0
<b>Total</b>	<b>1,505</b>	<b>1,446</b>	<b>-3.9</b>

# 1 YEAR

## MORE MICHIGAN CRASH FACTS

CRASH FACTS	1996	1997	% Change
Deaths	1,505	1,446	-3.9
Injuries	142,553	137,548	-3.5
Crashes	435,477	425,793	-2.2
Drivers Involved	750,103	737,939	-1.6
Vehicles Involved	751,804	739,538	-1.6
Fatal Crashes	1,339	1,283	-4.2
Estimated MV Mileage Traveled (billions)	87.7	89.2	1.7
Death Rate Per 100 Million Vehicle Miles	1.7	1.6	-5.9
Fatal Crash Rate Per 100 Million Veh Miles	1.5	1.4	-6.7

Michigan experienced a 3.9 percent decrease in traffic fatalities, as well as a 3.5 percent decrease in injuries and a 2.2 percent decrease in crashes. Vehicle mileage increased 1.7 percent and the death rate per 100 million vehicle miles decreased 5.9 percent.

Based on provisional numbers, the National Safety Council estimates a national decrease in traffic fatalities of 0.2 percent between 1996 (43,300) and 1997 (43,200).



## 1997 COST OF CRASHES IN MICHIGAN

The cost estimate for Michigan crashes in 1997 is **\$9,707,518,300**. This estimate is based on the National Safety Council's cost estimating procedures. Average comprehensive costs are based on the following figures:

Comprehensive Costs, 1997	
Death .....	\$2,890,000
Incapacitating injury .....	\$143,000
Nonincapacitating evident injury .....	\$36,900
Possible injury .....	\$17,600
No injury .....	\$1,700

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

1

## YEAR



# 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
1946	107	98	121	88	110	106	119	130	123	143	160	165	1,470
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	127	154	153	128	144	131	111	1,417
1983	113	94	83	94	91	121	121	117	131	153	115	95	1,331
1984	93	84	104	91	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

## 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
1946	1,470	34,479	110,631	16,191.1	1,619,541	9.1
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

\* Excludes trailers and trailer coaches.



1997

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**Special  
Focus**





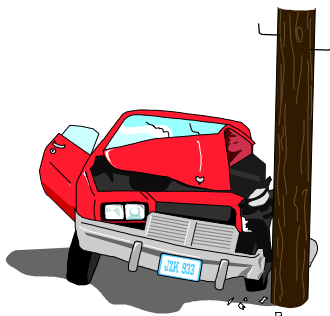
## SPECIAL FOCUS - AGE

### Drivers on Michigan Roads:

The following tables describe driver actions and crash characteristics for motor vehicle drivers age 16-24; 25-64; and 65-102. 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 vehicle-to-vehicle crashes while turning. Older drivers are more likely to commit "Failed to Yield" crashes 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. Younger drivers have an overall drinking rate in crashes that is lower than the age 25-64 group, but a similar drinking rate in fatal crashes. Older drivers are less likely to be drinking than other age groups at any crash severity.



### 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	89,973	54.0	334	77.3	25,221	56.2
Turning left	15,366	9.2	20	4.6	4,739	10.6
Turning right	4,726	2.8	1	0.2	863	1.9
Stopped on roadway	13,454	8.1	10	2.3	4,019	9.0
In prior crash	277	0.2	0	0.0	79	0.2
Changing lanes	4,175	2.5	8	1.9	686	1.5
Backing	3,775	2.3	0	0.0	261	0.6
Slowing/stopping on roadway	15,344	9.2	9	2.1	3,826	8.5
Slowing/stopping other	207	0.1	1	0.2	47	0.1
Starting up on roadway	3,190	1.9	6	1.4	854	1.9
Starting up other	98	0.1	0	0.0	36	0.1
Entering parking	175	0.1	0	0.0	28	0.1
Leaving parking	692	0.4	0	0.0	125	0.3
Entering roadway	3,155	1.9	5	1.2	805	1.8
Leaving roadway	445	0.3	6	1.4	140	0.3
Making U-turn	360	0.2	0	0.0	102	0.2
Overtaking or passing	1,946	1.2	10	2.3	464	1.0
Avoiding object	702	0.4	1	0.2	238	0.5
Avoiding pedestrian	56	0.0	1	0.2	29	0.1
Avoiding vehicle (front/back)	1,739	1.0	7	1.6	485	1.1
Avoiding vehicle (angle)	759	0.5	2	0.5	196	0.4
Driverless moving	44	0.0	0	0.0	7	0.0
Parked	593	0.4	1	0.2	59	0.1
Crossing at intersection	10	0.0	0	0.0	8	0.0
Crossing not at intersection	7	0.0	0	0.0	4	0.0
Getting on/off vehicle	3	0.0	0	0.0	3	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	2	0.0	0	0.0	0	0.0
Pushing/working on vehicle	2	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	3	0.0	0	0.0	0	0.0
Not in roadway	1	0.0	0	0.0	1	0.0
Other	150	0.1	1	0.2	52	0.1
Unknown	5,264	3.2	9	2.1	1,485	3.3
Total Drivers	166,693	100.0	432	100.0	44,862	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	1,692	1.0	1	0.2	462	1.0
Cross center/median	299	0.2	0	0.0	90	0.2
Ran off road left	346	0.2	0	0.0	92	0.2
Ran off road right	463	0.3	1	0.2	117	0.3
Re-enter road	64	0.0	0	0.0	18	0.0
Overtake	3,280	2.0	28	6.5	1,656	3.7
Separation of units	710	0.4	0	0.0	195	0.4
Fire/explosion	250	0.1	3	0.7	41	0.1
Immersion	33	0.0	0	0.0	11	0.0
Jackknife	44	0.0	0	0.0	1	0.0
Downhill runaway	20	0.0	0	0.0	7	0.0
Cargo loss/shift	91	0.1	0	0.0	7	0.0
Individual fell off	131	0.1	2	0.5	113	0.3
Other noncollision	407	0.2	0	0.0	86	0.2
NONCOLLISION Subtotal	7,830	4.7	35	8.1	2,896	6.5

Teens and young adults have the highest incidence of overturn and fire/explosion in fatal crashes when compared to the other two age groups (25-64 and 65-102).

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	617	0.4	27	6.3	536	1.2
Pedalcycle	529	0.3	4	0.9	416	0.9
Motor vehicle in transport	114,988	69.0	267	61.8	32,210	71.8
Parked motor vehicle	3,232	1.9	4	0.9	475	1.1
Railway train	46	0.0	4	0.9	19	0.0
Animal	10,841	6.5	1	0.2	257	0.6
Other nonfixed objects	1,103	0.7	1	0.2	140	0.3
COLLISION NONFIXED Subtotal	131,356	78.8	308	71.3	34,053	75.9

## 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	226	0.1	1	0.2	85	0.2
Bridge parapet end	54	0.0	0	0.0	17	0.0
Bridge rail	150	0.1	0	0.0	44	0.1
Guardrail face	994	0.6	2	0.5	202	0.5
Guardrail end	157	0.1	1	0.2	60	0.1
Median barrier	854	0.5	1	0.2	346	0.8
Highway traffic sign post	855	0.5	1	0.2	60	0.1
Signal post	93	0.1	0	0.0	9	0.0
Luminaire/light support	173	0.1	0	0.0	59	0.1
Utility pole	1,308	0.8	4	0.9	515	1.1
Other pole	360	0.2	0	0.0	75	0.2
Culvert	274	0.2	2	0.5	112	0.2
Curb	693	0.4	1	0.2	110	0.2
Ditch	2,716	1.6	4	0.9	811	1.8
Embankment	703	0.4	3	0.7	251	0.6
Fence	465	0.3	1	0.2	70	0.2
Mailbox	835	0.5	0	0.0	60	0.1
Tree	4,051	2.4	58	13.4	1,697	3.8
Rail crossing signal	23	0.0	0	0.0	5	0.0
Building	280	0.2	0	0.0	112	0.2
Traffic island	21	0.0	0	0.0	4	0.0
Fire hydrant	181	0.1	0	0.0	41	0.1
Impact attenuator	16	0.0	0	0.0	6	0.0
Other fixed object	1,022	0.6	2	0.5	230	0.5
COLLISION FIXED Subtotal	16,504	9.9	81	18.8	4,981	11.1

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	11,003	6.6	8	1.9	2,932	6.5
TOTAL MOST HARMFUL EVENT	166,693	100.0	432	100.0	44,862	100.0

## DRIVER AGE 16-24 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	32,724	19.6	141	32.6	7,471	16.7
Head On	3,499	2.1	82	19.0	1,559	3.5
Head On - Left Turn	7,149	4.3	11	2.5	3,089	6.9
Angle	41,893	25.1	154	35.6	13,050	29.1
Rear End	50,824	30.5	22	5.1	14,410	32.1
Rear End - Left Turn	2,806	1.7	3	0.7	866	1.9
Rear End - Right Turn	1,425	0.9	0	0.0	253	0.6
Sideswipe - Same Direction	13,248	7.9	2	0.5	1,561	3.5
Sideswipe - Opposite Direct	4,700	2.8	5	1.2	697	1.6
Other	6,597	4.0	10	2.3	1,465	3.3
Unknown	1,828	1.1	2	0.5	441	1.0
Total Drivers	166,693	100.0	432	100.0	44,862	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	70,183	42.1	130	30.1	16,739	37.3	228	0.5
Speed too fast	16,139	9.7	117	27.1	5,186	11.6	6,752	14.1
Speed too slow	352	0.2	0	0.0	100	0.2	154	0.3
Failed to yield	19,364	11.6	35	8.1	6,130	13.7	11,648	24.4
Disregard traffic control	4,517	2.7	41	9.5	2,028	4.5	2,951	6.2
Drove wrong way	106	0.1	3	0.7	34	0.1	47	0.1
Drove left of center	1,170	0.7	22	5.1	461	1.0	586	1.2
Improper passing	1,440	0.9	7	1.6	286	0.6	666	1.4
Improper lane use	3,314	2.0	3	0.7	486	1.1	1,680	3.5
Improper turn	2,195	1.3	0	0.0	497	1.1	1,115	2.3
Improper/no signal	275	0.2	0	0.0	46	0.1	88	0.2
Improper backing	2,885	1.7	0	0.0	131	0.3	1,049	2.2
Unable to stop in assured clear distance	29,722	17.8	10	2.3	8,194	18.3	16,437	34.4
Other	10,208	6.1	34	7.9	3,150	7.0	4,048	8.5
Unknown	4,823	2.9	30	6.9	1,394	3.1	282	0.6
Total Drivers	166,693	100.0	432	100.0	44,862	100.0	47,731	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 the driver disregards traffic control.

## 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	147,029	88.2	325	75.2	38,730	86.3
Median	775	0.5	5	1.2	263	0.6
Shoulder	5,602	3.4	22	5.1	1,533	3.4
Outside of Shoulder/Curb	10,932	6.6	75	17.4	3,653	8.1
Gore	235	0.1	1	0.2	65	0.1
Other/Unknown	2,120	1.3	4	0.9	618	1.4
Total Drivers	166,693	100.0	432	100.0	44,862	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.	9,018	5.4	67	15.5	2,691	6.0
03:00 a.m. - 05:59 a.m.	4,088	2.5	25	5.8	1,111	2.5
06:00 a.m. - 08:59 a.m.	17,196	10.3	36	8.3	4,255	9.5
09:00 a.m. - 11:59 a.m.	16,728	10.0	37	8.6	4,427	9.9
12:00 noon - 02:59 p.m.	30,402	18.2	66	15.3	8,532	19.0
03:00 p.m. - 05:59 p.m.	43,680	26.2	64	14.8	11,898	26.5
06:00 p.m. - 08:59 p.m.	26,393	15.8	70	16.2	6,919	15.4
09:00 p.m. - 11:59 p.m.	17,897	10.7	62	14.4	4,737	10.6
Unknown	1,291	0.8	5	1.2	292	0.7
Total Drivers	166,693	100.0	432	100.0	44,862	100.0

9:00 PM to 2:59 AM shows the highest involvement for teen and young adult 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	12,896	7.7	29	6.7	3,621	8.1
U.S. & Michigan Roads	43,269	26.0	119	27.5	11,922	26.6
County & City Roads	110,528	66.3	284	65.7	29,319	65.4
Total Drivers	166,693	100.0	432	100.0	44,862	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	17,354	10.4	73	16.9	4,905	10.9
Monday	22,558	13.5	44	10.2	5,962	13.3
Tuesday	22,695	13.6	59	13.7	6,055	13.5
Wednesday	24,381	14.6	66	15.3	6,500	14.5
Thursday	25,449	15.3	46	10.6	6,841	15.2
Friday	30,397	18.2	59	13.7	8,072	18.0
Saturday	23,859	14.3	85	19.7	6,527	14.5
Total Drivers	166,693	100.0	432	100.0	44,862	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.

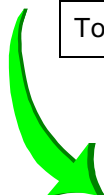
DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	95,621	57.4	295	68.3	24,338	54.3
Female	68,677	41.2	131	30.3	19,848	44.2
Other/Unknown	2,395	1.4	6	1.4	676	1.5
Total Drivers	166,693	100.0	432	100.0	44,862	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	105,586	63.3	214	49.5	25,912	57.8
2 occupants	39,432	23.7	130	30.1	11,739	26.2
3 occupants	11,776	7.1	43	10.0	4,019	9.0
4 occupants	4,623	2.8	21	4.9	1,697	3.8
5 occupants	1,439	0.9	13	3.0	546	1.2
6 + occupants	491	0.3	6	1.4	188	0.4
0 occupants	1,585	1.0	1	0.2	326	0.7
uncoded & errors	1,761	1.1	4	0.9	435	1.0
Total Drivers	166,693	100.0	432	100.0	44,862	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	131,924	79.1	319	73.8	36,092	80.5
Van and Motorhome	6,095	3.7	9	2.1	1,602	3.6
Pickup	23,523	14.1	64	14.8	5,526	12.3
Small Truck (under 10,000 lbs.)	2,191	1.3	6	1.4	554	1.2
Cycle	595	0.4	19	4.4	445	1.0
Moped	47	0.0	0	0.0	37	0.1
Go Cart	3	0.0	0	0.0	3	0.0
Snowmobile	101	0.1	3	0.7	71	0.2
Off Road Vehicle	47	0.0	0	0.0	37	0.1
Other	203	0.1	0	0.0	51	0.1
Uncoded	866	0.5	1	0.2	223	0.5
CDL Truck/Bus (breakdown below)	1,098	0.7	11	2.5	221	0.5
Total Drivers	166,693	100.0	432	100.0	44,862	100.0



CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Uncoded Truck	119	10.8	4	36.4	26	11.8
Commercial Vehicle: Group A	372	33.9	5	45.5	69	31.2
Commercial Vehicle: Group B	318	29.0	1	9.1	65	29.4
Commercial Vehicle: Group C	53	4.8	0	0.0	12	5.4
Other Truck	155	14.1	1	9.1	33	14.9
Unknown Truck	81	7.4	0	0.0	16	7.2
Total Drivers	1,098	100.0	11	100.0	221	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	221,084	53.6	921	76.4	54,453	52.7
Turning left	29,501	7.2	38	3.2	8,549	8.3
Turning right	11,136	2.7	2	0.2	1,954	1.9
Stopped on roadway	49,924	12.1	33	2.7	15,254	14.8
In prior crash	602	0.1	3	0.2	200	0.2
Changing lanes	8,307	2.0	21	1.7	1,370	1.3
Backing	9,718	2.4	5	0.4	581	0.6
Slowing/stopping on roadway	38,322	9.3	28	2.3	10,203	9.9
Slowing/stopping other	498	0.1	1	0.1	117	0.1
Starting up on roadway	7,883	1.9	17	1.4	2,078	2.0
Starting up other	232	0.1	0	0.0	64	0.1
Entering parking	543	0.1	1	0.1	67	0.1
Leaving parking	1,475	0.4	1	0.1	270	0.3
Entering roadway	5,644	1.4	13	1.1	1,384	1.3
Leaving roadway	781	0.2	12	1.0	241	0.2
Making U-turn	938	0.2	4	0.3	280	0.3
Overtaking or passing	3,327	0.8	17	1.4	711	0.7
Avoiding object	1,028	0.2	6	0.5	257	0.2
Avoiding pedestrian	105	0.0	1	0.1	41	0.0
Avoiding vehicle (front/back)	3,835	0.9	22	1.8	1,134	1.1
Avoiding vehicle (angle)	1,675	0.4	15	1.2	462	0.4
Driverless moving	111	0.0	0	0.0	30	0.0
Parked	2,601	0.6	4	0.3	260	0.3
Crossing at intersection	25	0.0	0	0.0	15	0.0
Crossing not at intersection	22	0.0	0	0.0	19	0.0
Getting on/off vehicle	3	0.0	0	0.0	3	0.0
In roadway with traffic	7	0.0	0	0.0	4	0.0
In roadway against traffic	7	0.0	0	0.0	3	0.0
Standing/lying in roadway	4	0.0	0	0.0	2	0.0
Pushing/working on vehicle	5	0.0	0	0.0	3	0.0
Other working in roadway	3	0.0	0	0.0	1	0.0
Playing in roadway	0	0.0	0	0.0	0	0.0
In roadway other reason	3	0.0	0	0.0	2	0.0
Not in roadway	7	0.0	0	0.0	6	0.0
Other	239	0.1	4	0.3	68	0.1
Unknown	12,959	3.1	36	3.0	3,211	3.1
Total Drivers	412,554	100.0	1,205	100.0	103,297	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	3,411	0.8	4	0.3	960	0.9
Cross center/median	664	0.2	1	0.1	134	0.1
Ran off road left	536	0.1	0	0.0	125	0.1
Ran off road right	865	0.2	1	0.1	246	0.2
Re-enter road	114	0.0	1	0.1	38	0.0
Overtake	4,736	1.1	68	5.6	2,350	2.3
Separation of units	1,814	0.4	6	0.5	496	0.5
Fire/explosion	557	0.1	3	0.2	88	0.1
Immersion	69	0.0	3	0.2	19	0.0
Jackknife	252	0.1	1	0.1	38	0.0
Downhill runaway	46	0.0	0	0.0	8	0.0
Cargo loss/shift	456	0.1	0	0.0	30	0.0
Individual fell off	217	0.1	10	0.8	174	0.2
Other noncollision	1,206	0.3	1	0.1	235	0.2
NONCOLLISION Subtotal	14,943	3.6	99	8.2	4,941	4.8

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	1,534	0.4	92	7.6	1,281	1.2
Pedalcycle	1,465	0.4	22	1.8	1,137	1.1
Motor vehicle in transport	279,935	67.9	776	64.4	78,464	76.0
Parked motor vehicle	6,941	1.7	11	0.9	872	0.8
Railway train	97	0.0	2	0.2	40	0.0
Animal	45,397	11.0	1	0.1	991	1.0
Other nonfixed objects	4,143	1.0	6	0.5	449	0.4
COLLISION NONFIXED Subtotal	339,512	82.3	910	75.5	83,234	80.6

## 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	439	0.1	9	0.7	135	0.1
Bridge parapet end	153	0.0	0	0.0	42	0.0
Bridge rail	341	0.1	1	0.1	99	0.1
Guardrail face	1,840	0.4	4	0.3	412	0.4
Guardrail end	283	0.1	2	0.2	107	0.1
Median barrier	1,925	0.5	4	0.3	734	0.7
Highway traffic sign post	1,457	0.4	0	0.0	121	0.1
Signal post	178	0.0	0	0.0	29	0.0
Luminaire/light support	371	0.1	2	0.2	104	0.1
Utility pole	1,969	0.5	19	1.6	757	0.7
Other pole	647	0.2	3	0.2	131	0.1
Culvert	394	0.1	6	0.5	131	0.1
Curb	1,146	0.3	2	0.2	180	0.2
Ditch	4,026	1.0	17	1.4	1,174	1.1
Embankment	1,043	0.3	3	0.2	346	0.3
Fence	732	0.2	0	0.0	97	0.1
Mailbox	1,128	0.3	1	0.1	86	0.1
Tree	5,439	1.3	79	6.6	2,066	2.0
Rail crossing signal	57	0.0	0	0.0	7	0.0
Building	446	0.1	6	0.5	178	0.2
Traffic island	39	0.0	0	0.0	7	0.0
Fire hydrant	299	0.1	1	0.1	70	0.1
Impact attenuator	33	0.0	0	0.0	18	0.0
Other fixed object	2,078	0.5	9	0.7	451	0.4
COLLISION FIXED Subtotal	26,463	6.4	168	13.9	7,482	7.2

	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Unknown Event	31,636	7.7	28	2.3	7,640	7.4
TOTAL MOST HARMFUL EVENT	412,554	100.0	1,205	100.0	103,297	100.0

## DRIVER AGE 25-64 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	81,735	19.8	325	27.0	11,980	11.6
Head On	8,225	2.0	240	19.9	3,635	3.5
Head On - Left Turn	15,206	3.7	36	3.0	6,427	6.2
Angle	95,210	23.1	413	34.3	29,339	28.4
Rear End	130,096	31.5	97	8.0	38,622	37.4
Rear End - Left Turn	5,560	1.3	7	0.6	1,770	1.7
Rear End - Right Turn	4,156	1.0	1	0.1	802	0.8
Sideswipe - Same Direction	35,765	8.7	16	1.3	4,135	4.0
Sideswipe - Opposite Direct	12,208	3.0	24	2.0	1,953	1.9
Other	19,599	4.8	45	3.7	3,629	3.5
Unknown	4,794	1.2	1	0.1	1,005	1.0
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0

HAZARDOUS ACTION	All Crashes		Fatal Crashes		Injury Crashes		Hazardous Citation Issued	
	Number	% of Total	#	% of Fatal	#	% of Injury	#	% of Issued
None	240,678	58.3	581	48.2	55,867	54.1	507	0.7
Speed too fast	21,802	5.3	154	12.8	6,667	6.5	7,203	10.1
Speed too slow	607	0.1	4	0.3	204	0.2	184	0.3
Failed to yield	32,210	7.8	65	5.4	9,798	9.5	17,465	24.5
Disregard traffic control	7,915	1.9	60	5.0	3,550	3.4	4,729	6.6
Drove wrong way	249	0.1	4	0.3	98	0.1	114	0.2
Drove left of center	2,233	0.5	68	5.6	858	0.8	923	1.3
Improper passing	2,532	0.6	7	0.6	441	0.4	970	1.4
Improper lane use	7,362	1.8	13	1.1	1,073	1.0	3,188	4.5
Improper turn	4,608	1.1	0	0.0	957	0.9	1,944	2.7
Improper/no signal	575	0.1	0	0.0	95	0.1	159	0.2
Improper backing	7,457	1.8	0	0.0	303	0.3	2,138	3.0
Unable to stop in assured clear distance	51,304	12.4	41	3.4	14,431	14.0	24,764	34.7
Other	19,709	4.8	122	10.1	5,516	5.3	6,495	9.1
Unknown	13,313	3.2	86	7.1	3,439	3.3	520	0.7
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0	71,303	100.0

Compared to the other two age groups (16-24 and 65-102), 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	379,694	92.0	975	80.9	93,973	91.0
Median	1,803	0.4	19	1.6	570	0.6
Shoulder	9,811	2.4	54	4.5	2,465	2.4
Outside of Shoulder/Curb	16,171	3.9	136	11.3	5,050	4.9
Gore	416	0.1	6	0.5	146	0.1
Other/Unknown	4,659	1.1	15	1.2	1,093	1.1
Total Drivers	412,554	100.0	1,205	100.0	103,297	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.	14,574	3.5	150	12.4	4,042	3.9
03:00 a.m. - 05:59 a.m.	12,902	3.1	59	4.9	2,414	2.3
06:00 a.m. - 08:59 a.m.	58,480	14.2	137	11.4	13,240	12.8
09:00 a.m. - 11:59 a.m.	52,517	12.7	133	11.0	13,457	13.0
12:00 noon - 02:59 p.m.	75,094	18.2	180	14.9	20,528	19.9
03:00 p.m. - 05:59 p.m.	105,431	25.6	222	18.4	27,705	26.8
06:00 p.m. - 08:59 p.m.	58,502	14.2	166	13.8	13,616	13.2
09:00 p.m. - 11:59 p.m.	31,784	7.7	146	12.1	7,563	7.3
Unknown	3,270	0.8	12	1.0	732	0.7
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0

ROADWAY TYPE IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Limited Access Roadway	40,058	9.7	148	12.3	10,580	10.2
U.S. & Michigan Roads	114,682	27.8	423	35.1	29,358	28.4
County & City Roads	257,814	62.5	634	52.6	63,359	61.3
Total Drivers	412,554	100.0	1,205	100.0	103,297	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	36,460	8.8	156	12.9	9,383	9.1
Monday	58,955	14.3	145	12.0	14,631	14.2
Tuesday	60,568	14.7	163	13.5	15,149	14.7
Wednesday	63,713	15.4	140	11.6	15,636	15.1
Thursday	65,642	15.9	179	14.9	16,188	15.7
Friday	73,493	17.8	193	16.0	18,283	17.7
Saturday	53,723	13.0	229	19.0	14,027	13.6
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0

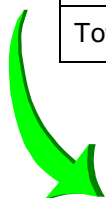
DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	236,744	57.4	857	71.1	56,365	54.6
Female	169,502	41.1	332	27.6	45,339	43.9
Other/Unknown	6,308	1.5	16	1.3	1,593	1.5
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	296,158	71.8	762	63.2	69,559	67.3
2 occupants	69,547	16.9	260	21.6	20,170	19.5
3 occupants	21,323	5.2	84	7.0	6,551	6.3
4 occupants	9,453	2.3	55	4.6	3,020	2.9
5 occupants	3,249	0.8	13	1.1	1,105	1.1
6 + occupants	2,636	0.6	17	1.4	821	0.8
0 occupants	5,086	1.2	2	0.2	877	0.8
uncoded & errors	5,102	1.2	12	1.0	1,194	1.2
Total Drivers	412,554	100.0	1,205	100.0	103,297	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	278,385	67.5	698	57.9	72,138	69.8
Van and Motorhome	40,202	9.7	110	9.1	9,930	9.6
Pickup	66,883	16.2	214	17.8	14,211	13.8
Small Truck (under 10,000 lbs.)	7,962	1.9	12	1.0	1,730	1.7
Cycle	1,595	0.4	39	3.2	1,224	1.2
Moped	87	0.0	0	0.0	64	0.1
Go Cart	2	0.0	0	0.0	1	0.0
Snowmobile	241	0.1	11	0.9	160	0.2
Off Road Vehicle	65	0.0	3	0.2	40	0.0
Other	1,147	0.3	12	1.0	247	0.2
Uncoded	2,621	0.6	6	0.5	638	0.6
CDL Truck/Bus (breakdown below)	13,364	3.2	100	8.3	2,914	2.8
Total Drivers	412,554	100.0	1,205	100.0	103,297	100.0



CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Uncoded Truck	1,393	10.4	9	9.0	308	10.6
Commercial Vehicle: Group A	5,971	44.7	55	55.0	1,289	44.2
Commercial Vehicle: Group B	3,745	28.0	20	20.0	827	28.4
Commercial Vehicle: Group C	464	3.5	4	4.0	110	3.8
Other Truck	831	6.2	5	5.0	187	6.4
Unknown Truck	960	7.2	7	7.0	193	6.6
Total Drivers	13,364	100.0	100	100.0	2,914	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 65-102

DRIVER ACTION PRIOR TO CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Going straight ahead	22,822	48.4	190	66.9	6,207	49.6
Turning left	6,018	12.8	37	13.0	1,854	14.8
Turning right	1,692	3.6	2	0.7	290	2.3
Stopped on roadway	4,406	9.3	7	2.5	1,433	11.4
In prior crash	46	0.1	0	0.0	14	0.1
Changing lanes	1,365	2.9	3	1.1	161	1.3
Backing	1,505	3.2	0	0.0	86	0.7
Slowing/stopping on roadway	3,223	6.8	7	2.5	961	7.7
Slowing/stopping other	59	0.1	0	0.0	13	0.1
Starting up on roadway	1,248	2.6	14	4.9	366	2.9
Starting up other	48	0.1	1	0.4	10	0.1
Entering parking	123	0.3	0	0.0	24	0.2
Leaving parking	378	0.8	0	0.0	69	0.6
Entering roadway	1,324	2.8	10	3.5	310	2.5
Leaving roadway	90	0.2	2	0.7	30	0.2
Making U-turn	178	0.4	1	0.4	47	0.4
Overtaking or passing	343	0.7	0	0.0	49	0.4
Avoiding object	54	0.1	0	0.0	19	0.2
Avoiding pedestrian	15	0.0	0	0.0	9	0.1
Avoiding vehicle (front/back)	236	0.5	2	0.7	72	0.6
Avoiding vehicle (angle)	119	0.3	1	0.4	36	0.3
Driverless moving	8	0.0	0	0.0	0	0.0
Parked	259	0.5	0	0.0	19	0.2
Crossing at intersection	3	0.0	0	0.0	2	0.0
Crossing not at intersection	3	0.0	1	0.4	2	0.0
Getting on/off vehicle	1	0.0	0	0.0	0	0.0
In roadway with traffic	1	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	3	0.0	0	0.0	2	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	2	0.0	0	0.0	1	0.0
Not in roadway	1	0.0	0	0.0	1	0.0
Other	29	0.1	1	0.4	12	0.1
Unknown	1,588	3.4	5	1.8	421	3.4
Total Drivers	47,190	100.0	284	100.0	12,520	100.0

## DRIVER AGE 65-102 (continued)

MOST HARMFUL EVENT IN A NONCOLLISION	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Loss of control	364	0.8	1	0.4	101	0.8
Cross center/median	96	0.2	0	0.0	25	0.2
Ran off road left	50	0.1	0	0.0	13	0.1
Ran off road right	81	0.2	1	0.4	20	0.2
Re-enter road	17	0.0	0	0.0	8	0.1
Overturn	268	0.6	7	2.5	150	1.2
Separation of units	205	0.4	0	0.0	56	0.4
Fire/explosion	45	0.1	1	0.4	12	0.1
Immersion	6	0.0	1	0.4	3	0.0
Jackknife	21	0.0	0	0.0	5	0.0
Downhill runaway	8	0.0	0	0.0	2	0.0
Cargo loss/shift	23	0.0	0	0.0	3	0.0
Individual fell off	12	0.0	1	0.4	6	0.0
Other noncollision	106	0.2	0	0.0	25	0.2
NONCOLLISION Subtotal	1,302	2.8	12	4.2	429	3.4

MOST HARMFUL EVENT IN A COLLISION WITH A NONFIXED OBJECT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Pedestrian	198	0.4	12	4.2	167	1.3
Pedalcycle	208	0.4	2	0.7	165	1.3
Motor vehicle in transport	35,161	74.5	216	76.1	9,942	79.4
Parked motor vehicle	1,186	2.5	1	0.4	130	1.0
Railway train	11	0.0	1	0.4	3	0.0
Animal	3,077	6.5	2	0.7	65	0.5
Other nonfixed objects	338	0.7	0	0.0	47	0.4
COLLISION NONFIXED Subtotal	40,179	85.1	234	82.4	10,519	84.0

## DRIVER AGE 65-102 (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	24	0.1	3	1.1	4	0.0
Bridge parapet end	10	0.0	0	0.0	2	0.0
Bridge rail	11	0.0	0	0.0	6	0.0
Guardrail face	96	0.2	1	0.4	24	0.2
Guardrail end	15	0.0	0	0.0	6	0.0
Median barrier	90	0.2	1	0.4	45	0.4
Highway traffic sign post	115	0.2	0	0.0	13	0.1
Signal post	11	0.0	0	0.0	2	0.0
Luminaire/light support	28	0.1	1	0.4	12	0.1
Utility pole	182	0.4	2	0.7	81	0.6
Other pole	64	0.1	0	0.0	20	0.2
Culvert	35	0.1	1	0.4	18	0.1
Curb	71	0.2	0	0.0	13	0.1
Ditch	290	0.6	4	1.4	96	0.8
Embankment	72	0.2	2	0.7	29	0.2
Fence	82	0.2	0	0.0	16	0.1
Mailbox	110	0.2	0	0.0	10	0.1
Tree	448	0.9	14	4.9	208	1.7
Rail crossing signal	14	0.0	0	0.0	1	0.0
Building	74	0.2	4	1.4	39	0.3
Traffic island	3	0.0	0	0.0	0	0.0
Fire hydrant	30	0.1	1	0.4	9	0.1
Impact attenuator	1	0.0	0	0.0	1	0.0
Other fixed object	153	0.3	0	0.0	35	0.3
COLLISION FIXED Subtotal	2,029	4.3	34	12.0	690	5.5

	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Total	#	% of Total
Unknown Event	3,680	7.8	4	1.4	882	7.0
TOTAL MOST HARMFUL EVENT	47,190	100.0	284	100.0	12,520	100.0

## DRIVER AGE 65-102 (continued)

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Single Vehicle	5,746	12.2	53	18.7	1,027	8.2
Head On	829	1.8	52	18.3	367	2.9
Head On - Left Turn	2,617	5.5	20	7.0	1,088	8.7
Angle	15,816	33.5	121	42.6	4,659	37.2
Rear End	11,732	24.9	20	7.0	3,901	31.2
Rear End - Left Turn	694	1.5	3	1.1	217	1.7
Rear End - Right Turn	403	0.9	0	0.0	95	0.8
Sideswipe - Same Direction	4,890	10.4	2	0.7	439	3.5
Sideswipe - Opposite Direct	1,620	3.4	4	1.4	211	1.7
Other	2,241	4.7	7	2.5	397	3.2
Unknown	602	1.3	2	0.7	119	1.0
Total Drivers	47,190	100.0	284	100.0	12,520	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	22,370	47.4	84	29.6	5,489	43.8	45	0.4
Speed too fast	1,238	2.6	13	4.6	405	3.2	311	3.1
Speed too slow	86	0.2	1	0.4	24	0.2	30	0.3
Failed to yield	8,654	18.3	78	27.5	2,645	21.1	4,454	44.0
Disregard traffic control	1,560	3.3	21	7.4	656	5.2	916	9.1
Drove wrong way	64	0.1	4	1.4	17	0.1	38	0.4
Drove left of center	345	0.7	13	4.6	125	1.0	138	1.4
Improper passing	309	0.7	1	0.4	47	0.4	116	1.1
Improper lane use	1,572	3.3	3	1.1	179	1.4	617	6.1
Improper turn	1,009	2.1	4	1.4	228	1.8	450	4.4
Improper/no signal	75	0.2	0	0.0	14	0.1	11	0.1
Improper backing	1,238	2.6	0	0.0	48	0.4	265	2.6
Unable to stop in assured clear distance	4,728	10.0	14	4.9	1,628	13.0	2,140	21.2
Other	2,278	4.8	27	9.5	598	4.8	529	5.2
Unknown	1,664	3.5	21	7.4	417	3.3	53	0.5
Total Drivers	47,190	100.0	284	100.0	12,520	100.0	10,113	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 65-102 (continued)

LOCATION OF FIRST IMPACT IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
On Road	44,416	94.1	244	85.9	11,668	93.2
Median	135	0.3	3	1.1	43	0.3
Shoulder	822	1.7	4	1.4	192	1.5
Outside of Shoulder/Curb	1,278	2.7	27	9.5	459	3.7
Gore	40	0.1	1	0.4	13	0.1
Other/Unknown	499	1.1	5	1.8	145	1.2
Total Drivers	47,190	100.0	284	100.0	12,520	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.	407	0.9	5	1.8	89	0.7
03:00 a.m. - 05:59 a.m.	341	0.7	7	2.5	62	0.5
06:00 a.m. - 08:59 a.m.	3,247	6.9	21	7.4	839	6.7
09:00 a.m. - 11:59 a.m.	10,139	21.5	55	19.4	2,709	21.6
12:00 noon - 02:59 p.m.	12,877	27.3	71	25.0	3,558	28.4
03:00 p.m. - 05:59 p.m.	12,440	26.4	72	25.4	3,394	27.1
06:00 p.m. - 08:59 p.m.	5,311	11.3	38	13.4	1,322	10.6
09:00 p.m. - 11:59 p.m.	2,030	4.3	14	4.9	446	3.6
Unknown	398	0.8	1	0.4	101	0.8
Total Drivers	47,190	100.0	284	100.0	12,520	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	2,885	6.1	14	4.9	796	6.4
U.S. & Michigan Roads	13,686	29.0	123	43.3	3,690	29.5
County & City Roads	30,619	64.9	147	51.8	8,034	64.2
Total Drivers	47,190	100.0	284	100.0	12,520	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 65-102 (continued)

DAY of WEEK IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Sunday	4,135	8.8	27	9.5	1,128	9.0
Monday	7,090	15.0	43	15.1	1,854	14.8
Tuesday	7,288	15.4	37	13.0	1,965	15.7
Wednesday	7,493	15.9	42	14.8	1,935	15.5
Thursday	7,153	15.2	39	13.7	1,859	14.8
Friday	8,280	17.5	48	16.9	2,216	17.7
Saturday	5,751	12.2	48	16.9	1,563	12.5
Total Drivers	47,190	100.0	284	100.0	12,520	100.0

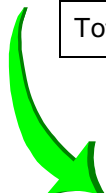
DRIVER GENDER IN CRASH	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Male	27,691	58.7	181	63.7	7,160	57.2
Female	18,798	39.8	95	33.5	5,178	41.4
Other/Unknown	701	1.5	8	2.8	182	1.5
Total Drivers	47,190	100.0	284	100.0	12,520	100.0

NUMBER OF OCCUPANTS IN CAR	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
1 occupant	33,530	71.1	164	57.7	8,445	67.5
2 occupants	10,664	22.6	94	33.1	3,214	25.7
3 occupants	1,215	2.6	16	5.6	402	3.2
4 occupants	452	1.0	8	2.8	133	1.1
5 occupants	110	0.2	0	0.0	37	0.3
6 + occupants	81	0.2	0	0.0	20	0.2
0 occupants	581	1.2	0	0.0	130	1.0
uncoded & errors	557	1.2	2	0.7	139	1.1
Total Drivers	47,190	100.0	284	100.0	12,520	100.0



## DRIVER AGE 65-102 (continued)

VEHICLE TYPE CRASH INVOLVEMENT	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Passenger Car and Station Wagon	38,641	81.9	229	80.6	10,460	83.5
Van and Motorhome	3,072	6.5	20	7.0	794	6.3
Pickup	4,430	9.4	27	9.5	1,004	8.0
Small Truck (under 10,000 lbs.)	426	0.9	2	0.7	104	0.8
Cycle	22	0.0	2	0.7	15	0.1
Moped	12	0.0	2	0.7	7	0.1
Go Cart	0	0.0	0	0.0	0	0.0
Snowmobile	4	0.0	0	0.0	4	0.0
Off Road Vehicle	2	0.0	0	0.0	2	0.0
Other	76	0.2	0	0.0	16	0.1
Uncoded	255	0.5	2	0.7	64	0.5
CDL Truck/Bus (breakdown below)	250	0.5	0	0.0	50	0.4
Total Drivers	47,190	100.0	284	100.0	12,520	100.0



CDL Truck/Bus Sub-category Types	All Crashes		Fatal Crashes		Injury Crashes	
	Number	% of Total	#	% of Fatal	#	% of Injury
Uncoded Truck	34	13.6	0	0.0	7	14.0
Commercial Vehicle: Group A	73	29.2	0	0.0	16	32.0
Commercial Vehicle: Group B	82	32.8	0	0.0	12	24.0
Commercial Vehicle: Group C	19	7.6	0	0.0	7	14.0
Other Truck	20	8.0	0	0.0	3	6.0
Unknown Truck	22	8.8	0	0.0	5	10.0
Total Drivers	250	100.0	0	100.0	50	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	29	7	6
Bicyclists Injured	2,367	132	95
Bicyclists in Crashes	2,929	159	119



<b>PEDESTRIAN</b>	Total	Drinking in Crash	Drinking Pedestrian
Pedestrians Killed	167	71	56
Pedestrians Injured	3,198	324	205
Pedestrians in Crashes	3,749	412	272



<b>MOTORCYCLIST</b>	Total	Drinking in Crash	Drinking Motorcyclist
Motorcyclists Killed	63	30	27
Motorcyclists Injured	2,103	277	236
Motorcyclists in Crashes	2,835	338	287



<b>SNOWMOBILER *</b>	Total	Drinking in Crash	Drinking Snowmobiler
Snowmobilers Killed	17	9	9
Snowmobilers Injured	298	69	68
Snowmobilers in Crashes	516	96	92

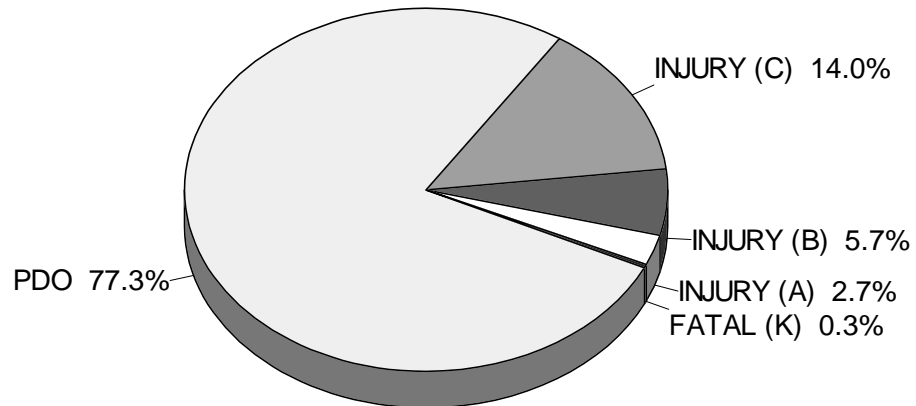


<b>ORV/ATV RIDER *</b>	Total	Drinking in Crash	Drinking ORV/ATV Rider
ORV/ATV Rider Killed	5	3	3
ORV/ATV Rider Injured	135	20	19
ORV/ATV Rider in Crashes	200	25	24

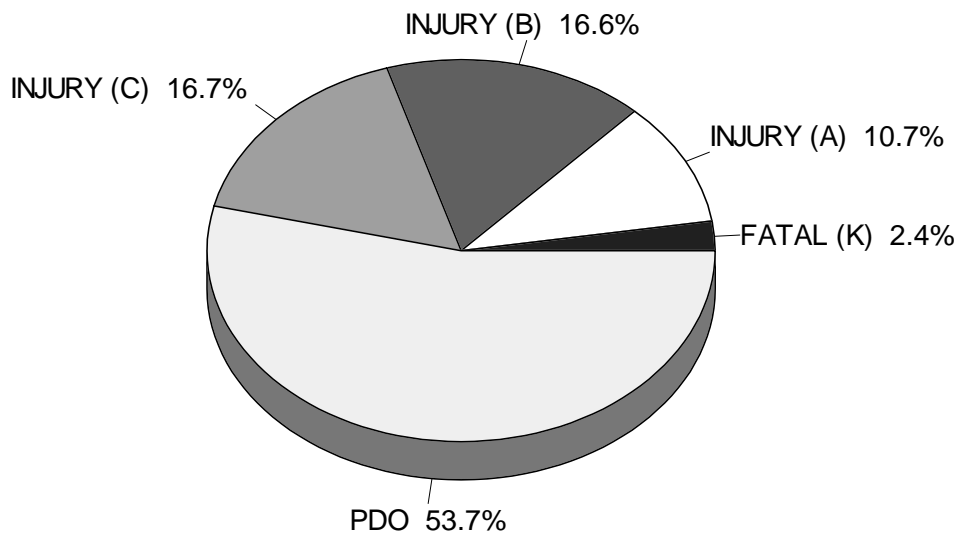


\* on-road crashes

## ALL CRASHES BY INJURY SEVERITY

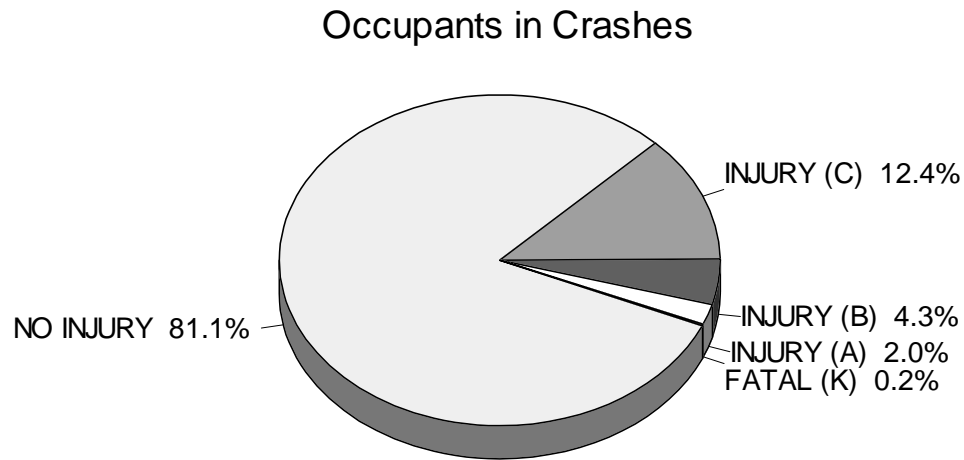


## HBD CRASHES BY INJURY SEVERITY

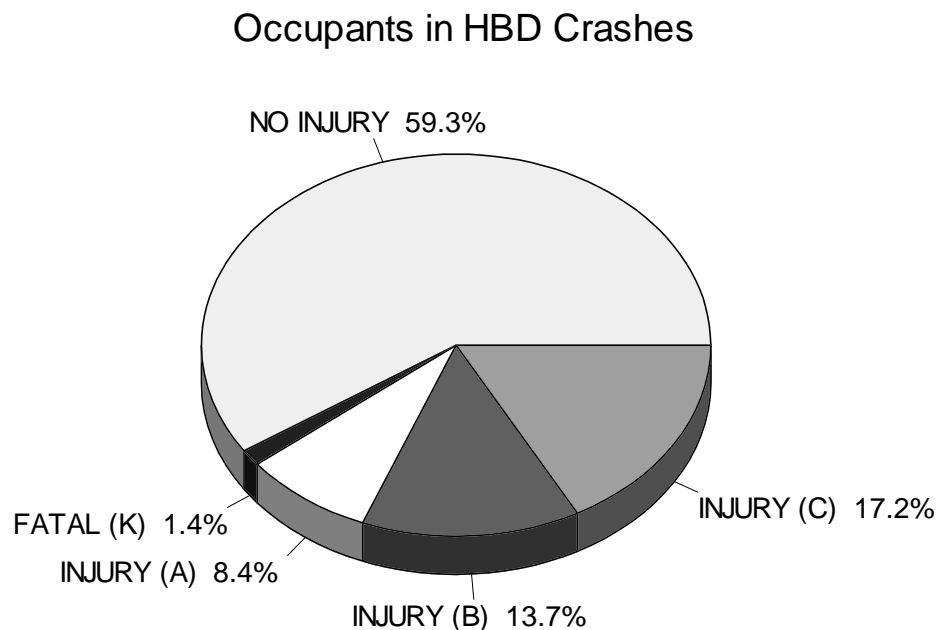


The problem of the drinking driver, pedestrian, and/or cyclist is seen when one compares the two charts on this page. A fatality in the crash is eight times more likely when one of the crash-involved operators is reported as had been drinking.

## DEATH & INJURY PER CRASH INVOLVED OCCUPANT



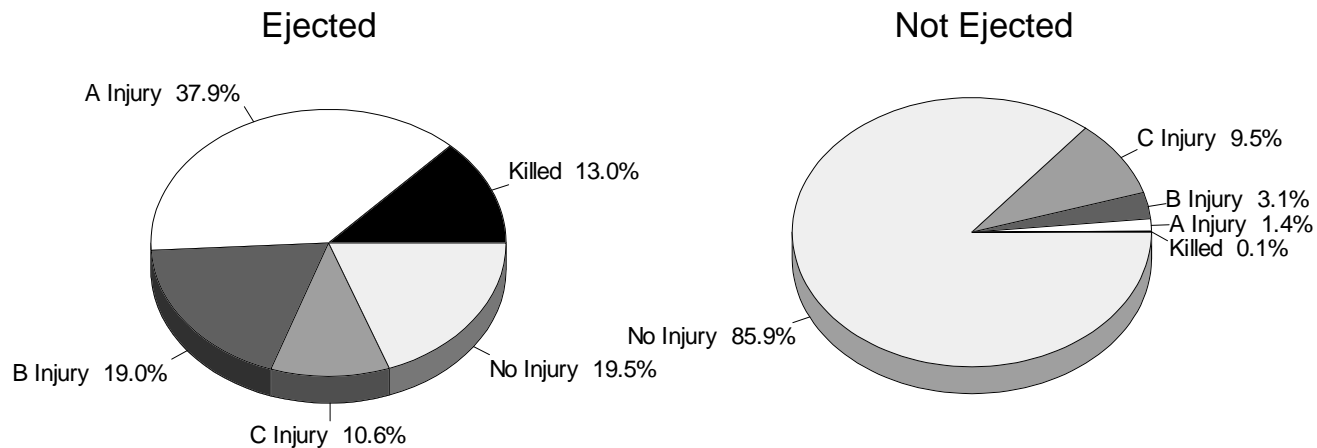
The majority of occupants involved in crashes are not injured (81.1%). Two thirds of those who are injured receive only minor (C) injuries. Increased use of occupant restraints and airbags can reduce the number of killed and injured even further.



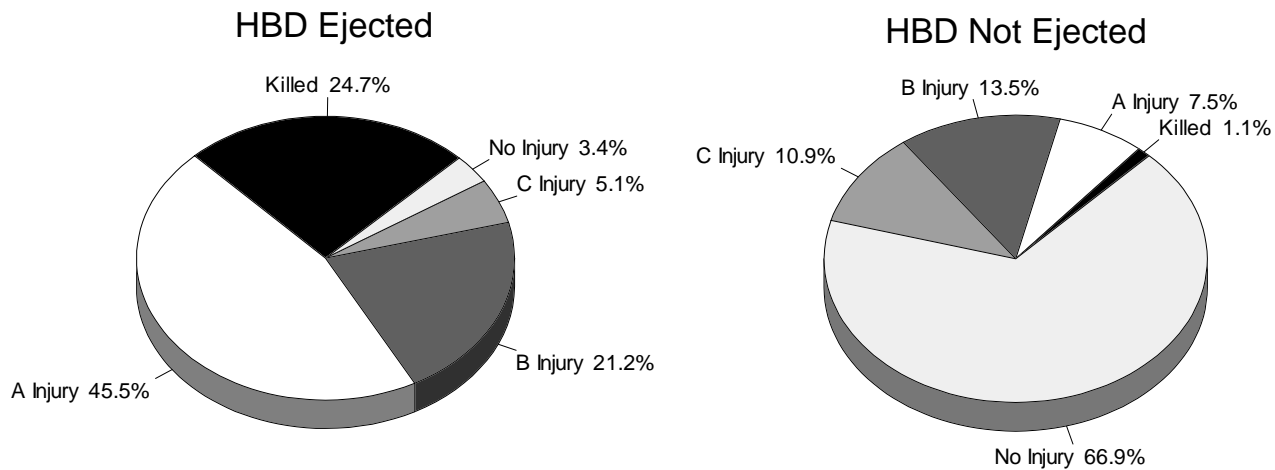
Crashes involving drinking tend to be more serious than nondrinking crashes. The percentage of fatalities is seven times higher than in all crashes and the more serious injury levels are three to four times higher.

## 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.

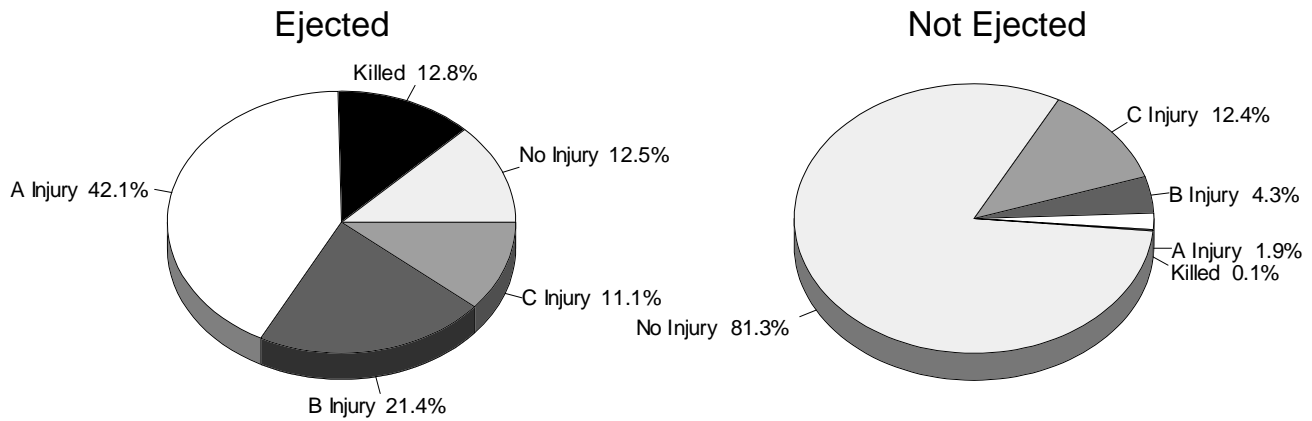


When compared to the charts above, the charts below demonstrate that the injury severity is much worse for drivers who had been drinking in both ejected, and nonejected events.

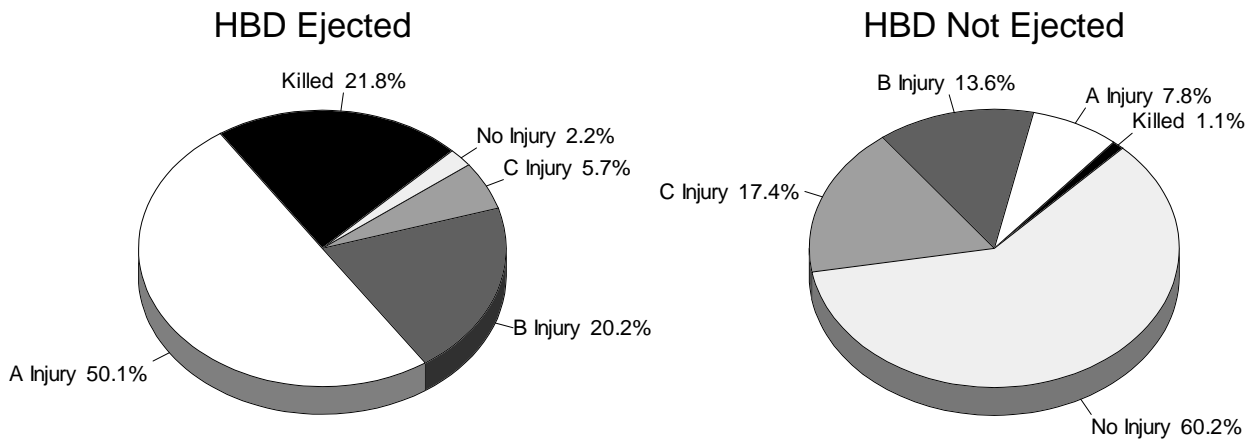


## ALL OCCUPANTS and OCCUPANTS of HBD CRASHES INJURY SEVERITY - EJECTED vs. NOT EJECTED

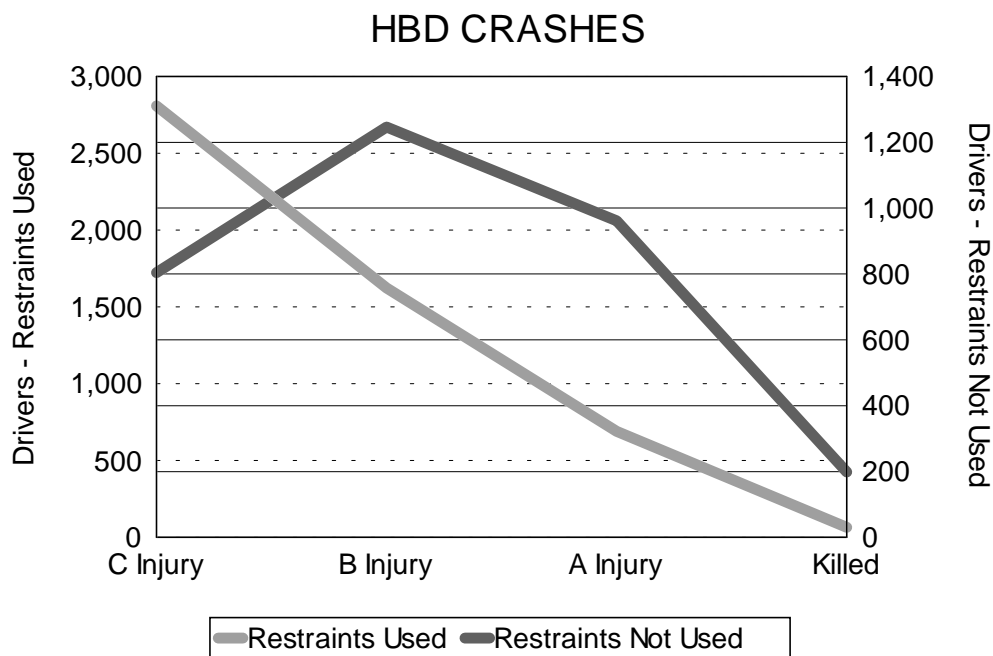
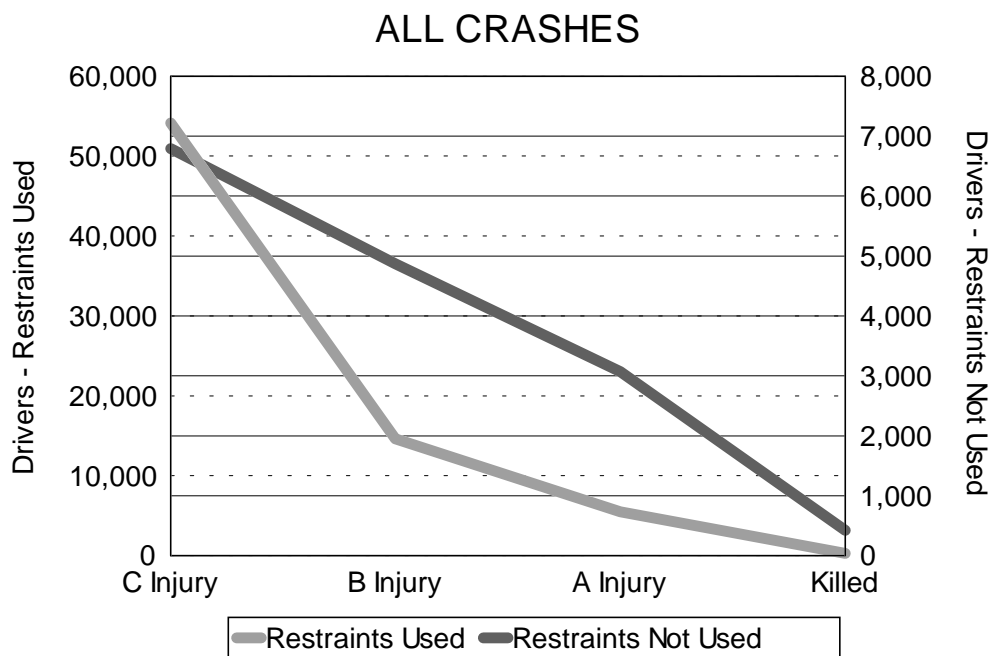
As can be seen in the two charts below, death and injury are much more likely when occupants are ejected from their vehicles.



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.

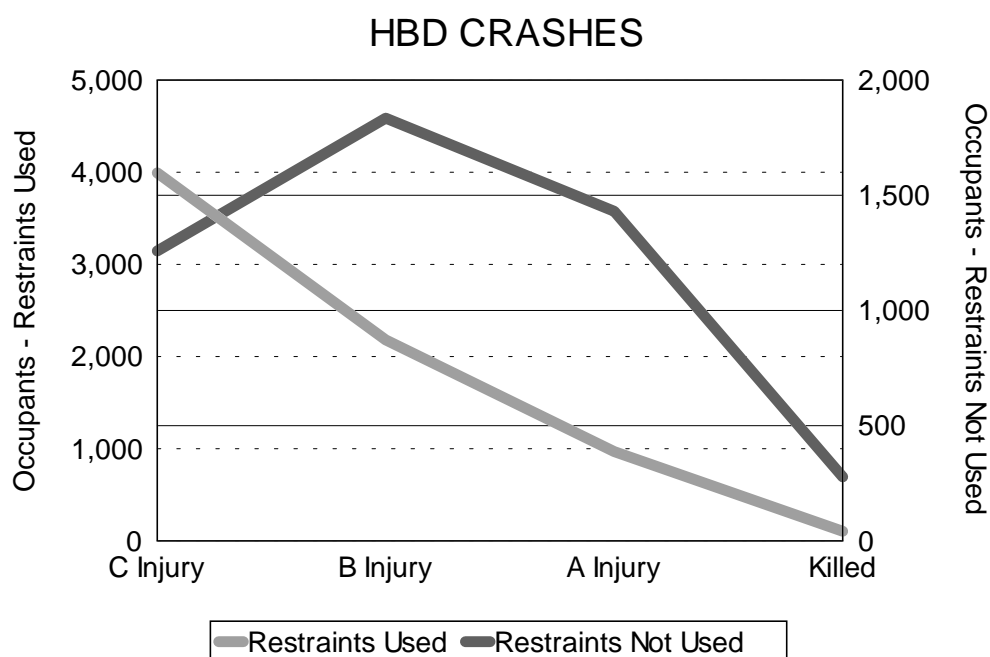
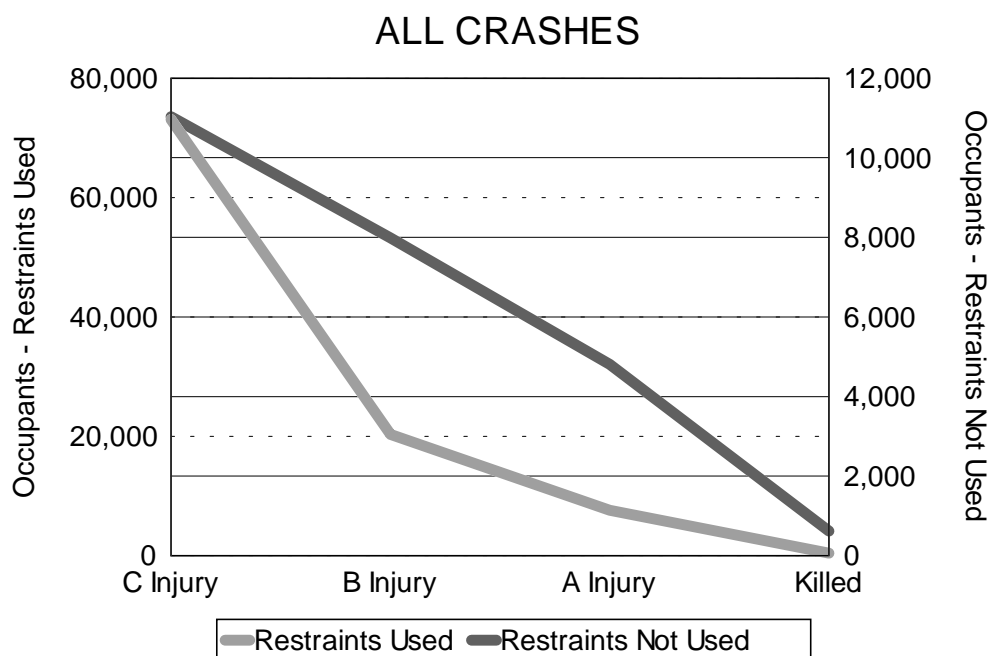


## INJURY SEVERITY & RESTRAINT USE FOR CRASH INVOLVED KABC DRIVERS





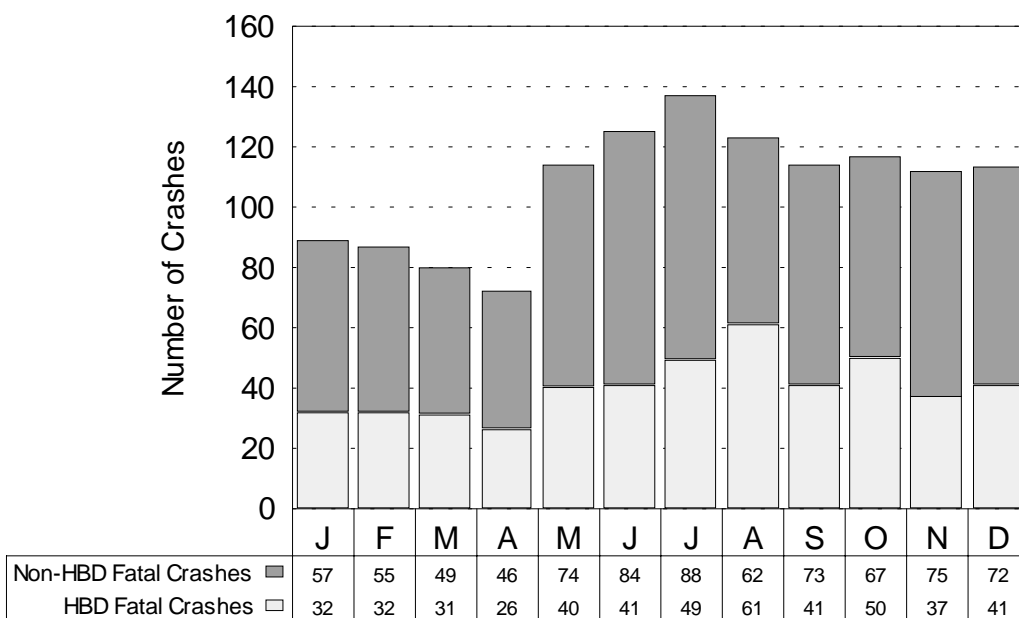
## INJURY SEVERITY & RESTRAINT USE FOR CRASH INVOLVED KABC OCCUPANTS



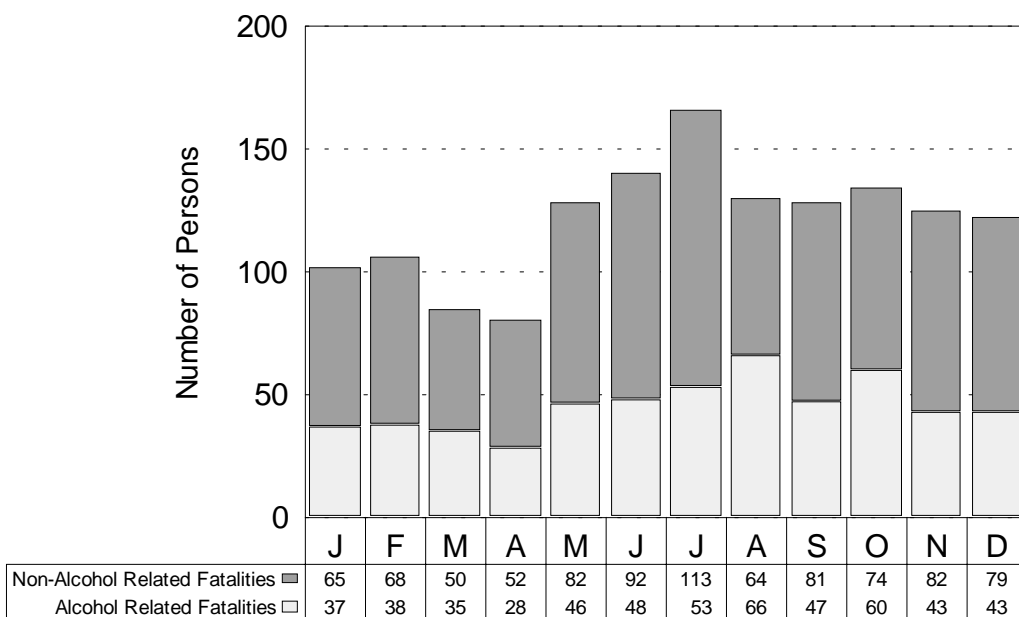
## ALCOHOL INVOLVEMENT IN FATAL CRASHES

Fatal crashes were lowest in number during February, March and April. The number of fatal crashes then increased, peaking in July. These numbers follow the increase in travel during the summer months. The number of HBD fatal crashes peaked in August. Total persons killed in fatal crashes closely follows the number of crashes, as would be expected.

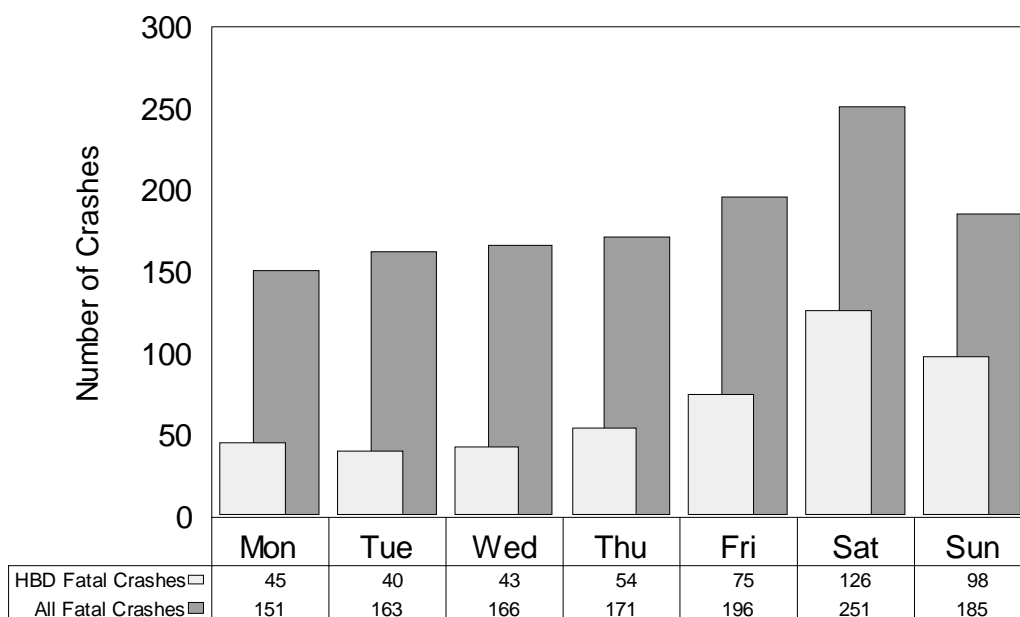
### HBD Fatal Crashes by Month



### Alcohol Related Fatalities by Month

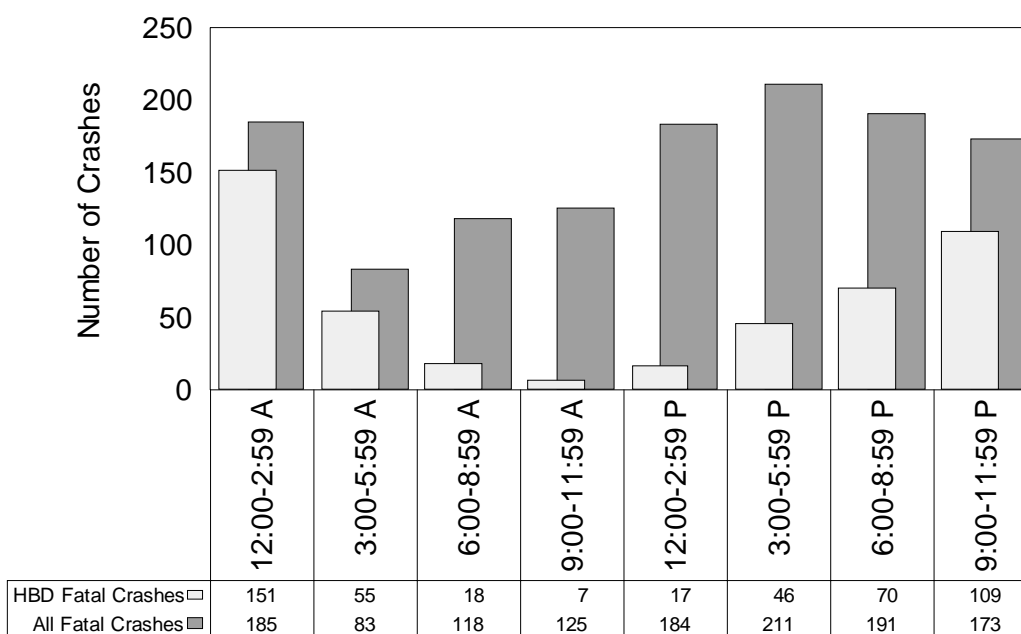


## HBD Fatal Crashes by Day of Week



Saturday had the most fatal crashes in 1997. Saturday and Sunday had the highest proportions of drinking related fatal crashes. Half of the weekend fatal crashes involved drinking, while only 24.5 percent of fatal crashes on Tuesday involved drinking.

## HBD Fatal Crashes by Time of Day



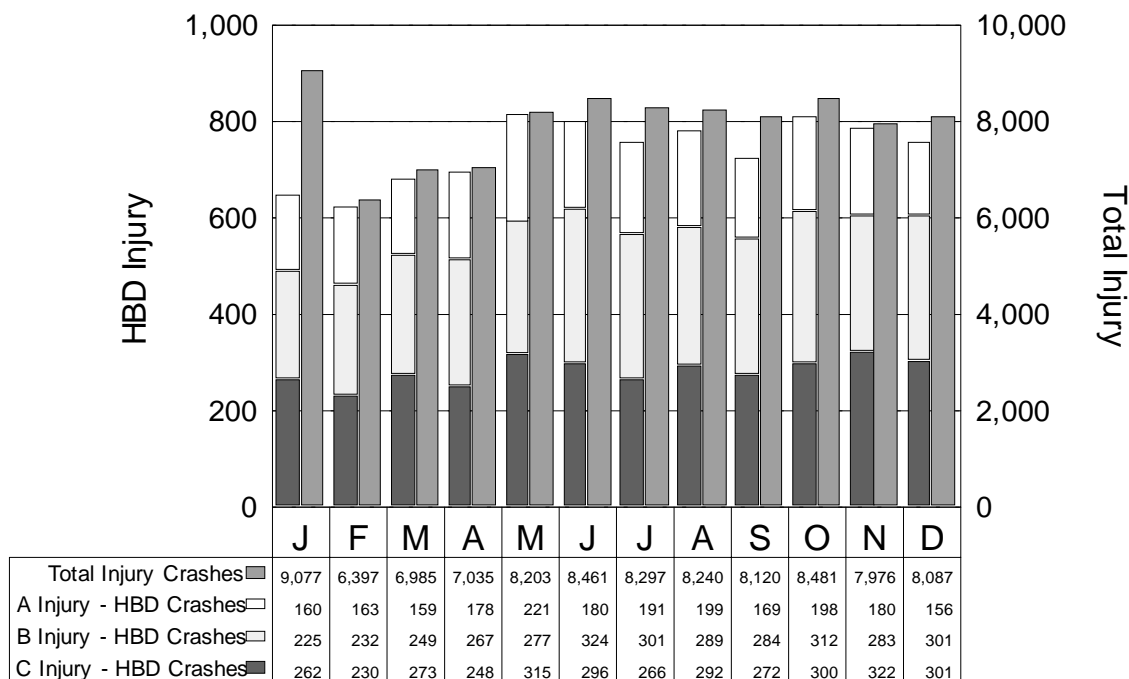
Not surprisingly, the midnight to 2:59 AM time period had the highest rate of drinking involvement (81.6%), while the late morning hours had the lowest (5.6%).

There were 13 fatal crashes where the time of day was unknown. Of these 13 fatal crashes, 8 were HBD.

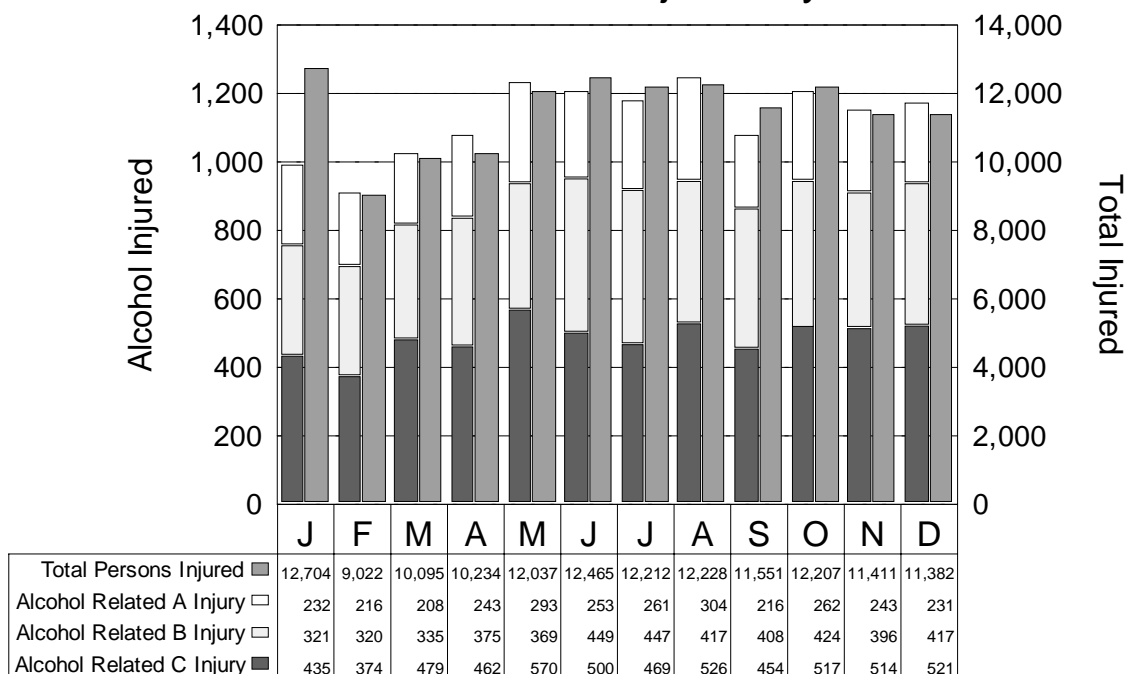
## ALCOHOL INVOLVEMENT IN INJURY CRASHES

Alcohol involvement in injury crashes is an important indicator of the alcohol impaired driving problem. In 1997, the highest number of HBD injury crashes occurred in May with 813. The highest proportion of HBD injury crashes occurred in May with 9.91 percent of the injury crashes in that month involving alcohol.

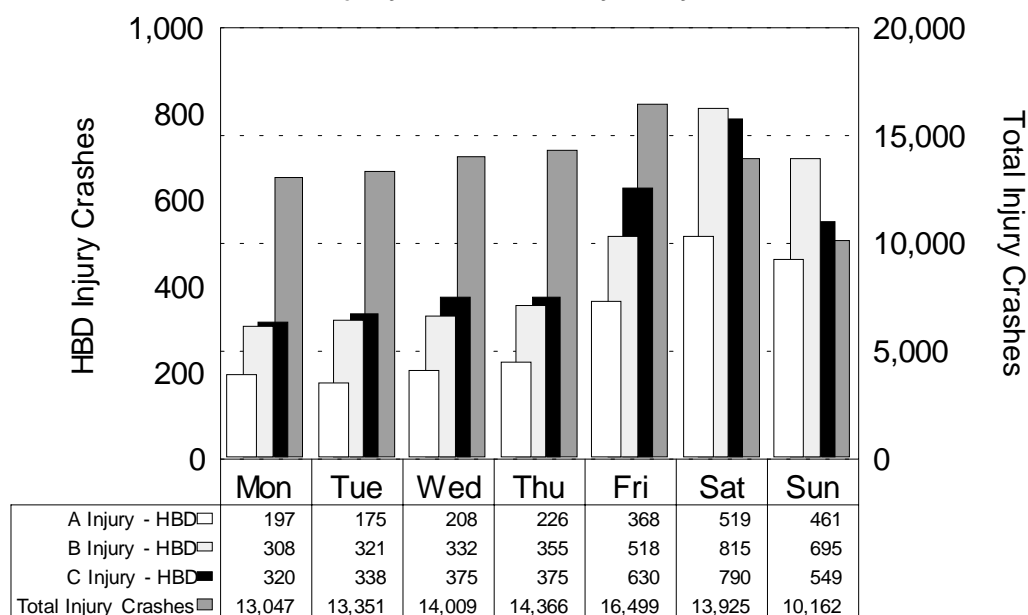
### HBD Injury Crashes by Month



### Alcohol Related Injuries by Month

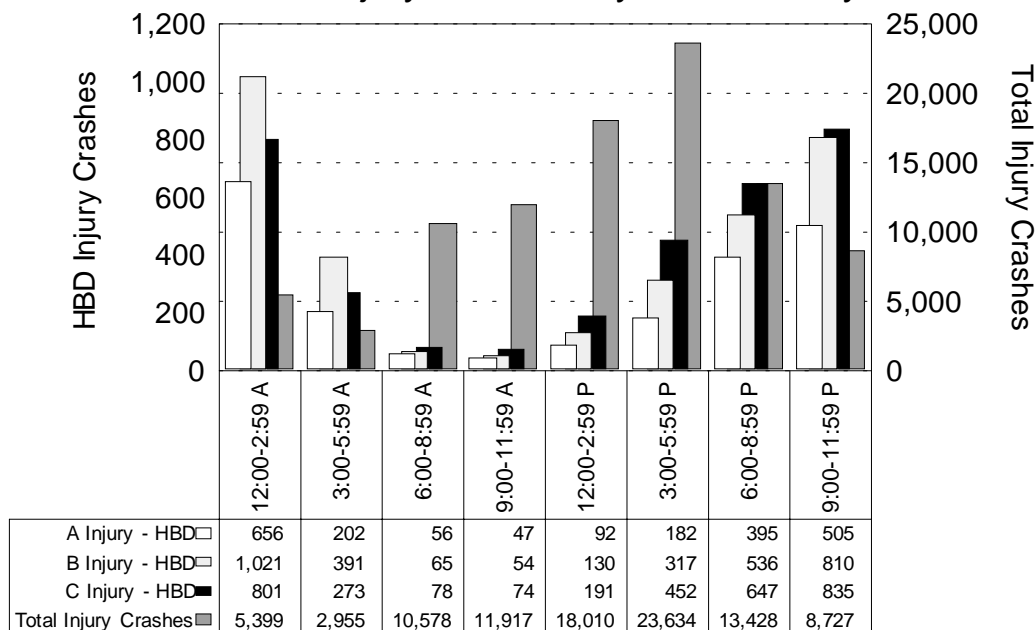


## HBD Injury Crashes by Day of Week



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	49	0	3	4	17	17	4	2	1	0	1
Alger	32	0	2	3	7	5	3	4	2	1	5
Allegan	288	2	35	48	84	70	22	10	4	3	10
Alpena	65	0	8	10	20	17	6	1	0	1	2
Antrim	61	0	6	10	20	12	6	2	3	1	1
Arenac	66	0	10	8	12	19	10	2	1	2	2
Baraga	21	1	0	3	7	7	2	1	0	0	0
Barry	138	2	14	15	43	40	11	5	2	0	6
Bay	359	1	46	54	111	87	34	11	4	1	10
Benzie	41	0	5	6	9	15	1	2	1	0	2
Berrien	326	1	32	55	98	52	27	17	8	2	34
Branch	80	0	8	16	22	23	3	1	3	0	4
Calhoun	344	1	28	43	109	93	42	7	8	1	12
Cass	137	0	8	14	32	39	7	2	1	1	33
Charlevoix	52	0	7	8	18	16	2	0	1	0	0
Cheboygan	71	1	3	10	23	17	7	4	4	0	2
Chippewa	105	0	13	22	24	16	14	2	2	2	10
Clare	64	0	6	9	20	16	5	4	0	1	3
Clinton	126	0	21	22	31	31	12	2	2	3	2
Crawford	39	0	5	4	8	12	6	2	1	0	1
Delta	85	0	13	15	18	18	7	4	3	2	5
Dickinson	62	0	7	6	15	17	5	2	3	0	7
Eaton	208	0	21	32	71	45	20	4	7	0	8
Emmet	60	0	8	7	15	15	8	1	1	0	5
Genesee	1,343	9	105	147	379	312	165	63	20	3	140
Gladwin	60	1	1	3	24	19	4	4	4	0	0
Gogebic	39	0	7	3	2	8	8	1	2	0	8
Grand Traverse	140	0	20	23	36	37	11	6	2	3	2
Gratiot	59	1	6	14	13	16	2	2	1	0	4
Hillsdale	74	0	10	19	18	13	7	4	1	0	2
Houghton	66	0	8	11	18	8	10	5	2	0	4
Huron	62	0	9	16	15	10	5	0	4	1	2
Ingham	566	1	57	90	167	129	59	16	9	7	31
Ionia	157	2	12	25	51	34	21	5	4	1	2
Iosco	80	1	6	8	22	18	16	5	3	1	0
Iron	44	0	7	4	11	13	3	0	2	0	4
Isabella	114	0	15	29	31	23	9	2	2	0	3
Jackson	399	1	37	70	114	105	38	10	9	2	13
Kalamazoo	437	1	53	54	157	82	45	20	9	3	13
Kalkaska	60	1	3	7	20	18	6	3	1	0	1
Kent	1,069	3	114	195	313	244	103	37	21	5	34
Keweenaw	8	0	1	2	1	2	0	1	0	0	1
Lake	31	0	0	4	6	8	8	3	1	0	1
Lapeer	189	2	16	19	62	48	24	10	1	2	5
Leelanau	37	1	4	12	7	6	2	1	0	1	3

## 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	194	0	30	23	57	45	12	6	1	1	19
Livingston	328	0	57	52	78	88	36	5	4	0	8
Luce	10	0	2	1	2	0	1	0	2	0	2
Mackinac	51	0	1	9	15	12	8	1	1	0	4
Macomb	1,540	4	145	188	495	380	185	64	35	5	39
Manistee	60	0	11	10	15	12	4	2	2	1	3
Marquette	135	1	16	29	33	26	12	6	4	0	8
Mason	53	0	9	8	12	16	5	1	0	0	2
Mecosta	119	0	29	19	34	19	9	3	4	0	2
Menominee	68	0	7	10	14	16	5	1	2	0	13
Midland	108	0	11	16	32	30	14	1	1	0	3
Missaukee	24	0	6	4	8	4	1	1	0	0	0
Monroe	355	1	45	42	87	75	24	10	6	0	65
Montcalm	189	0	26	26	66	38	22	4	3	0	4
Montmorency	24	0	2	3	10	4	1	2	1	0	1
Muskegon	287	1	24	41	66	73	46	22	7	5	2
Newaygo	127	0	9	15	46	35	14	4	2	0	2
Oakland	2,132	2	166	260	647	561	264	85	49	18	80
Oceana	86	2	13	5	29	18	10	1	1	1	6
Ogemaw	67	0	3	7	22	14	14	4	0	0	3
Ontonagon	30	0	5	5	7	5	1	1	1	0	5
Osceola	52	1	12	9	14	11	3	1	1	0	0
Oscoda	20	0	0	2	5	7	3	1	1	0	1
Otsego	50	0	9	4	13	10	6	4	1	0	3
Ottawa	315	3	46	48	105	58	24	11	2	2	16
Presque Isle	32	0	3	4	13	7	3	0	2	0	0
Roscommon	86	0	5	14	20	24	13	5	2	1	2
Saginaw	490	1	48	78	155	106	65	18	6	3	10
St. Clair	380	1	53	53	113	89	44	6	4	2	15
St. Joseph	155	0	10	23	47	23	13	6	4	2	27
Sanilac	95	0	15	18	25	19	13	4	0	0	1
Schoolcraft	36	0	5	7	11	6	4	3	0	0	0
Shiawassee	148	1	17	16	56	35	15	4	0	0	4
Tuscola	142	0	23	19	43	37	11	2	3	0	4
Van Buren	220	1	22	36	61	45	18	7	10	1	19
Washtenaw	528	0	50	79	169	127	51	24	8	0	20
Wayne	3,388	8	246	361	915	890	472	172	104	22	198
Wexford	95	0	12	13	37	15	12	0	2	0	4
UNKNOWN	7	0	1	1	4	0	0	0	0	0	1
Totals	20,139	60	1,994	2,737	5,882	4,832	2,268	782	436	114	1,034



## MALE DRIVERS & INJURY SEVERITY IN CRASH

### ALL CRASHES

#### MOST SEVERE OUTCOME IN CRASH

AGE OF DRIVER IN CRASH	Male Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
Under 1 year old	204	0.1	0	0.0	8	14	25	157
1 - 3 years	30	0.0	0	0.0	2	2	5	21
4 - 10 years	89	0.0	0	0.0	11	13	15	50
11 - 15 years	1,063	0.3	9	0.6	68	150	171	665
16 - 20 years	59,968	15.2	177	12.4	1896	4349	9283	44263
21 - 24 years	35,653	9.0	118	8.3	1128	2362	5320	26725
25 - 34 years	85,137	21.6	332	23.2	2596	5105	12890	64214
35 - 44 years	74,538	18.9	252	17.6	2089	4200	11407	56590
45 - 54 years	50,175	12.7	162	11.3	1418	2837	7611	38147
55 - 64 years	26,894	6.8	111	7.8	705	1382	4125	20571
65 - 74 years	17,465	4.4	90	6.3	467	1043	2848	13017
75 years and over	10,226	2.6	91	6.4	336	739	1727	7333
Not Stated	32,602	8.3	88	6.2	739	1523	4531	25721
TOTAL	394,044	100.0	1,430	100.0	11,463	23,719	59,958	297,474

The fatal crash involvement for male drivers is down 4.5 percent from 1996.

### DRINKING DRIVER

#### MOST SEVERE OUTCOME IN CRASH

AGE OF DRINKING DRIVER IN CRASH	Male Drivers		Fatal		Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
Under 1 year old	15	0.1	0	0.0	1	4	1	9
1 - 3 years	4	0.0	0	0.0	1	1	1	1
4 - 10 years	4	0.0	0	0.0	1	0	1	2
11 - 15 years	23	0.1	1	0.3	3	2	3	14
16 - 20 years	1,610	10.1	34	9.1	175	317	225	859
21 - 24 years	2,259	14.2	51	13.7	257	399	312	1240
25 - 34 years	4,575	28.8	130	34.9	554	776	712	2403
35 - 44 years	3,632	22.8	75	20.2	389	586	649	1933
45 - 54 years	1,858	11.7	35	9.4	164	314	335	1010
55 - 64 years	657	4.1	15	4.0	56	95	136	355
65 - 74 years	388	2.4	16	4.3	34	38	67	233
75 years and over	100	0.6	3	0.8	5	9	21	62
Not Stated	776	4.9	12	3.2	63	109	134	458
TOTAL	15,901	100.0	372	100.0	1,703	2,650	2,597	8,579

The fatal crash involvement for male drinking drivers is up 4.5 percent from 1996.





## FEMALE DRIVERS & INJURY SEVERITY IN CRASH

### ALL CRASHES

AGE OF DRIVER IN CRASH	Female Drivers		Fatal		MOST SEVERE OUTCOME IN CRASH Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
Under 1 year old	135	0.0	0	0.0	2	7	20	106
1 - 3 years	21	0.0	0	0.0	0	3	1	17
4 - 10 years	54	0.0	0	0.0	3	10	11	30
11 - 15 years	747	0.3	3	0.5	43	88	122	491
16 - 20 years	42,945	15.8	85	14.7	1263	3167	8178	30252
21 - 24 years	25,732	9.5	46	7.9	749	1587	4904	18446
25 - 34 years	61,109	22.5	126	21.7	1661	3638	11386	44298
35 - 44 years	55,714	20.5	89	15.3	1385	2997	10335	40908
45 - 54 years	35,769	13.2	72	12.4	920	1896	6631	26250
55 - 64 years	16,910	6.2	45	7.8	436	916	3138	12375
65 - 74 years	11,151	4.1	43	7.4	328	664	1998	8118
75 years and over	7,647	2.8	52	9.0	270	533	1385	5407
Not Stated	13,197	4.9	19	3.3	255	543	1960	10420
TOTAL	271,131	100.0	580	100.0	7,315	16,049	50,069	197,118

The fatal crash involvement for female drivers is down 8.5 percent from 1996.

### DRINKING DRIVER

AGE OF DRINKING DRIVER IN CRASH	Female Drivers		Fatal		MOST SEVERE OUTCOME IN CRASH Injury			PDO
	Number	% of Total	Number	% of Fatal	A	B	C	
Under 1 year old	3	0.1	0	0.0	0	1	0	2
1 - 3 years	0	0.0	0	0.0	0	0	0	0
4 - 10 years	0	0.0	0	0.0	0	0	0	0
11 - 15 years	9	0.2	1	1.5	0	3	1	4
16 - 20 years	354	9.2	7	10.4	28	63	62	194
21 - 24 years	437	11.4	9	13.4	54	63	77	234
25 - 34 years	1,224	31.9	23	34.3	133	214	220	634
35 - 44 years	1,141	29.7	16	23.9	108	176	217	624
45 - 54 years	375	9.8	3	4.5	36	46	78	212
55 - 64 years	115	3.0	4	6.0	8	15	19	69
65 - 74 years	45	1.2	3	4.5	5	4	5	28
75 years and over	11	0.3	0	0.0	1	0	1	9
Not Stated	128	3.3	1	1.5	16	14	20	77
TOTAL	3,842	100.0	67	100.0	389	599	700	2,087

The fatal crash involvement for female drinking drivers is down 14.1 percent from 1996.

The tables on this page and the previous page exclude 396 drinking drivers of unknown gender.

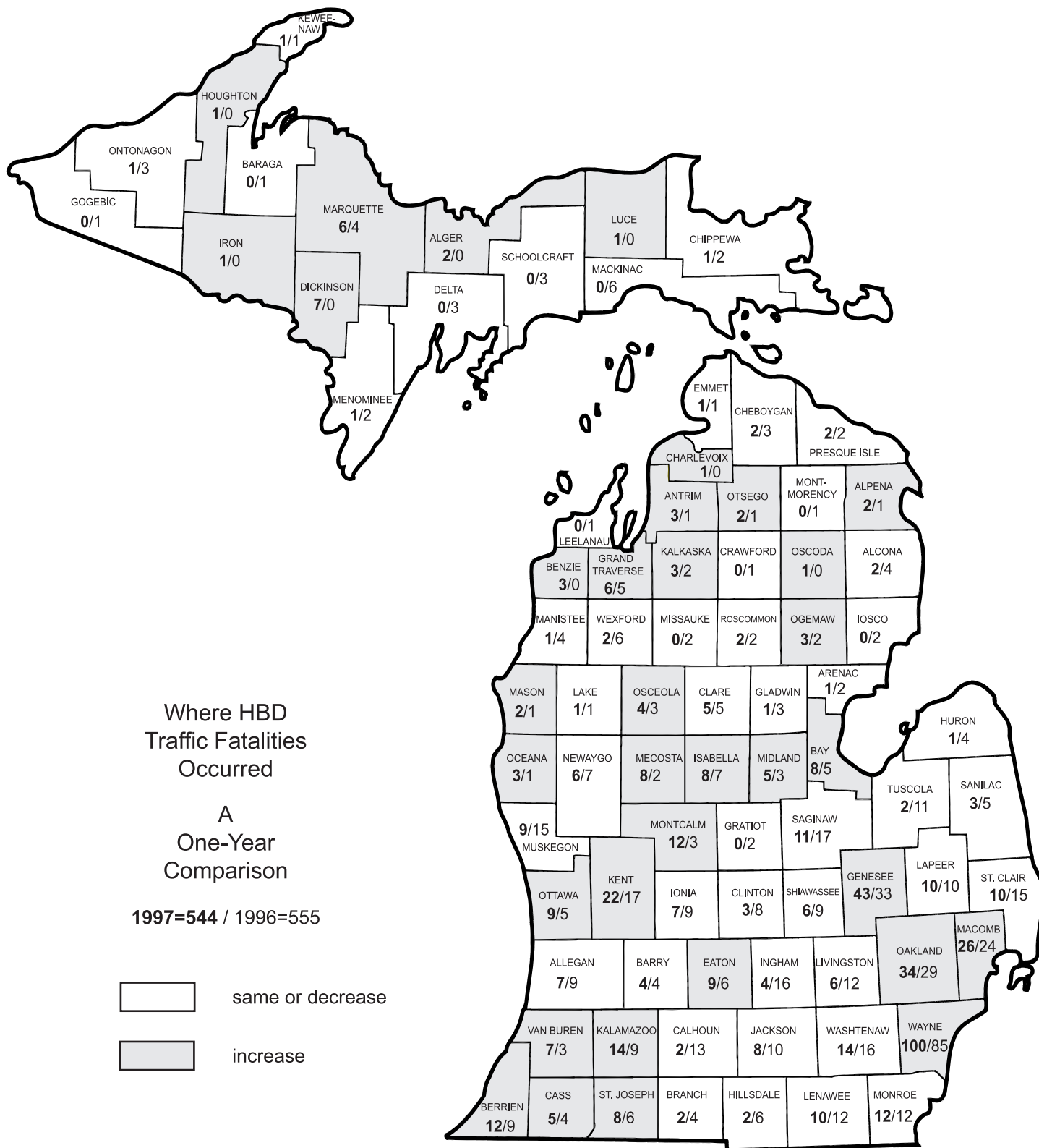
## FATAL CRASHES AND FATALITIES WITH DRINKING INVOLVEMENT BY COUNTY

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	5	2	40.0	8	2	25.0
Alger	2	1	50.0	3	2	66.7
Allegan	18	6	33.3	21	7	33.3
Alpena	4	2	50.0	4	2	50.0
Antrim	5	3	60.0	5	3	60.0
Arenac	3	1	33.3	3	1	33.3
Baraga	4	0	0.0	7	0	0.0
Barry	9	3	33.3	11	4	36.4
Bay	19	7	36.8	22	8	36.4
Benzie	4	3	75.0	4	3	75.0
Berrien	26	11	42.3	28	12	42.9
Branch	8	2	25.0	8	2	25.0
Calhoun	21	2	9.5	24	2	8.3
Cass	11	5	45.5	11	5	45.5
Charlevoix	1	1	100.0	1	1	100.0
Cheboygan	10	2	20.0	14	2	14.3
Chippewa	2	1	50.0	2	1	50.0
Clare	12	4	33.3	16	5	31.3
Clinton	16	3	18.8	18	3	16.7
Crawford	4	0	0.0	4	0	0.0
Delta	6	0	0.0	6	0	0.0
Dickinson	8	6	75.0	10	7	70.0
Eaton	19	9	47.4	19	9	47.4
Emmet	9	1	11.1	11	1	9.1
Genesee	73	39	53.4	82	43	52.4
Gladwin	4	1	25.0	4	1	25.0
Gogebic	0	0	0.0	0	0	0.0
Grand Traverse	16	5	31.3	19	6	31.6
Gratiot	3	0	0.0	3	0	0.0
Hillsdale	9	2	22.2	9	2	22.2
Houghton	1	1	100.0	1	1	100.0
Huron	7	1	14.3	7	1	14.3
Ingham	15	4	26.7	15	4	26.7
Ionia	12	7	58.3	13	7	53.8
Iosco	4	0	0.0	4	0	0.0
Iron	4	1	25.0	4	1	25.0
Isabella	12	6	50.0	14	8	57.1
Jackson	34	7	20.6	47	8	17.0
Kalamazoo	20	13	65.0	22	14	63.6
Kalkaska	6	3	50.0	6	3	50.0
Kent	51	17	33.3	57	22	38.6
Keweenaw	1	1	100.0	1	1	100.0
Lake	6	1	16.7	6	1	16.7
Lapeer	18	9	50.0	19	10	52.6

**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	2	0	0.0	3	0	0.0
Lenawee	23	7	30.4	29	10	34.5
Livingston	14	6	42.9	14	6	42.9
Luce	2	1	50.0	2	1	50.0
Mackinac	2	0	0.0	2	0	0.0
Macomb	57	25	43.9	58	26	44.8
Manistee	1	1	100.0	1	1	100.0
Marquette	9	6	66.7	12	6	50.0
Mason	4	1	25.0	5	2	40.0
Mecosta	14	6	42.9	19	8	42.1
Menominee	2	1	50.0	2	1	50.0
Midland	16	5	31.3	18	5	27.8
Missaukee	1	0	0.0	2	0	0.0
Monroe	28	11	39.3	29	12	41.4
Montcalm	17	9	52.9	20	12	60.0
Montmorency	0	0	0.0	0	0	0.0
Muskegon	22	8	36.4	23	9	39.1
Newaygo	20	5	25.0	23	6	26.1
Oakland	81	27	33.3	93	34	36.6
Oceana	6	3	50.0	6	3	50.0
Ogemaw	9	3	33.3	9	3	33.3
Ontonagon	1	1	100.0	1	1	100.0
Osceola	5	3	60.0	7	4	57.1
Oscoda	2	1	50.0	2	1	50.0
Otsego	4	2	50.0	4	2	50.0
Ottawa	25	8	32.0	27	9	33.3
Presque Isle	5	1	20.0	6	2	33.3
Roscommon	5	2	40.0	8	2	25.0
Saginaw	21	10	47.6	26	11	42.3
St. Clair	25	8	32.0	29	10	34.5
St. Joseph	16	5	31.3	21	8	38.1
Sanilac	11	3	27.3	12	3	25.0
Schoolcraft	1	0	0.0	1	0	0.0
Shiawassee	12	6	50.0	12	6	50.0
Tuscola	6	2	33.3	6	2	33.3
Van Buren	17	7	41.2	17	7	41.2
Washtenaw	36	13	36.1	39	14	35.9
Wayne	235	89	37.9	261	100	38.3
Wexford	4	2	50.0	4	2	50.0
Totals	1,283	481	37.5	1,446	544	37.6

## 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	47	2	12	6	3	24
Alger	33	1	4	8	4	16
Allegan	287	6	43	53	36	149
Alpena	64	2	6	10	6	40
Antrim	62	3	7	12	8	32
Arenac	65	1	7	11	7	39
Baraga	21	0	3	6	1	11
Barry	137	3	20	31	19	64
Bay	358	7	35	67	45	204
Benzie	42	3	8	5	11	15
Berrien	327	11	30	60	60	166
Branch	81	2	11	12	11	45
Calhoun	344	2	37	55	48	202
Cass	138	5	24	23	10	76
Charlevoix	52	1	7	8	5	31
Cheboygan	71	2	4	17	17	31
Chippewa	102	1	17	16	7	61
Clare	64	4	5	11	14	30
Clinton	126	3	11	25	19	68
Crawford	38	0	12	3	0	23
Delta	85	0	11	13	13	48
Dickinson	61	6	7	10	9	29
Eaton	211	9	26	35	27	114
Emmet	61	1	7	10	8	35
Genesee	1,346	39	81	269	241	716
Gladwin	59	1	9	8	9	32
Gogebic	37	0	2	3	6	26
Grand Traverse	140	5	12	21	29	73
Gratiot	59	0	6	10	8	35
Hillsdale	73	2	11	14	14	32
Houghton	68	1	9	9	4	45
Huron	62	1	7	8	7	39
Ingham	574	4	71	87	98	314
Ionia	156	7	24	23	20	82
Iosco	82	0	8	15	13	46
Iron	44	1	7	7	4	25
Isabella	115	6	13	25	12	59
Jackson	398	7	36	65	79	211
Kalamazoo	433	13	48	80	55	237
Kalkaska	61	3	13	8	8	29
Kent	1,073	17	114	160	174	608
Keweenaw	8	1	0	1	0	6

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

COUNTY	All HBD Crashes	Fatal	Injury			PDO
			A	B	C	
Lake	30	1	4	5	5	15
Lapeer	186	9	28	32	28	89
Leelanau	36	0	5	7	3	21
Lenawee	195	7	16	33	32	107
Livingston	329	6	53	76	44	150
Luce	10	1	2	3	1	3
Mackinac	50	0	7	9	8	26
Macomb	1,557	25	145	243	309	835
Manistee	62	1	6	16	5	34
Marquette	137	6	16	27	16	72
Mason	53	1	6	8	9	29
Mecosta	118	6	11	28	9	64
Menominee	69	1	10	16	6	36
Midland	109	5	11	19	16	58
Missaukee	24	0	4	5	7	8
Monroe	351	11	37	67	45	191
Montcalm	187	9	26	33	17	102
Montmorency	24	0	2	4	1	17
Muskegon	283	8	35	55	42	143
Newaygo	125	5	22	19	18	61
Oakland	2,132	27	196	330	423	1156
Oceana	84	3	8	12	6	55
Ogemaw	65	3	8	11	12	31
Ontonagon	31	1	3	3	3	21
Osceola	52	3	5	7	6	31
Oscoda	20	1	2	3	3	11
Otsego	51	2	10	10	6	23
Ottawa	316	8	35	35	61	177
Presque Isle	30	1	6	7	2	14
Roscommon	86	2	10	9	8	57
Saginaw	499	10	74	79	65	271
St. Clair	378	8	53	55	52	210
St. Joseph	156	5	23	23	21	84
Sanilac	93	3	11	10	13	56
Schoolcraft	36	0	5	7	1	23
Shiawassee	146	6	15	34	24	67
Tuscola	141	2	14	25	12	88
Van Buren	220	7	27	36	38	112
Washtenaw	536	13	45	93	107	278
Wayne	3,419	89	322	517	701	1790
Wexford	93	2	11	10	21	49
Unknown	6	0	0	3	2	1
Totals	20,190	481	2,154	3,344	3,377	10,834

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

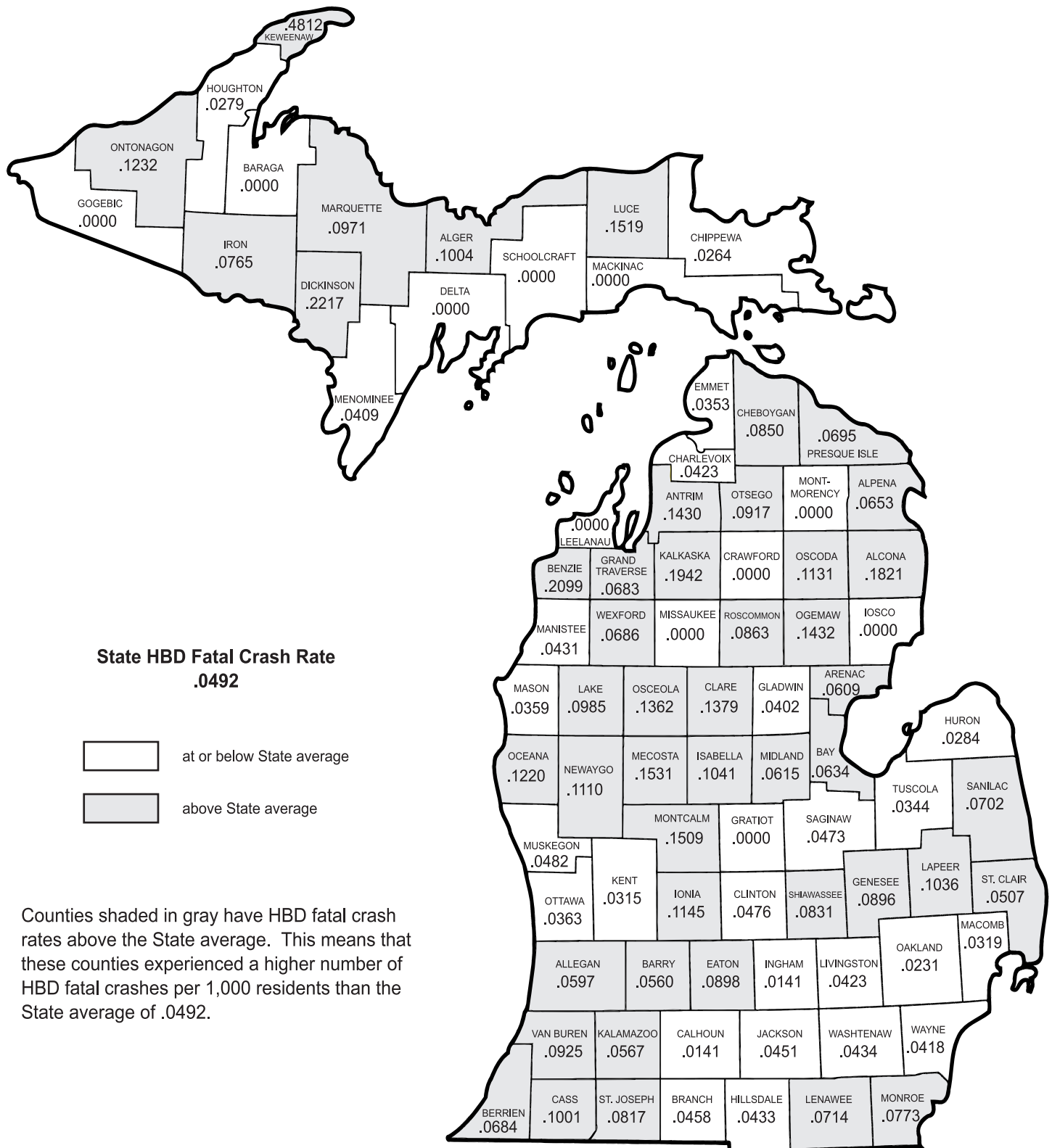
COUNTY	1997 Population Estimate	All Crashes	Fatal Crashes	HBD Crashes	HBD Fatal Crashes	HBD Fatal Crash Rate per 1,000 people	Rank
Keweenaw	2,078	79	1	8	1	0.4812	1
Dickinson	27,062	1,523	8	61	6	0.2217	2
Benzie	14,290	669	4	42	3	0.2099	3
Kalkaska	15,451	867	6	61	3	0.1942	4
Alcona	10,980	989	5	47	2	0.1821	5
Mecosta	39,178	2,891	14	118	6	0.1531	6
Luce	6,584	329	2	10	1	0.1519	7
Montcalm	59,647	3,394	17	187	9	0.1509	8
Ogemaw	20,955	1,310	9	65	3	0.1432	9
Antrim	20,975	1,102	5	62	3	0.1430	10
Clare	29,011	1,666	12	64	4	0.1379	11
Osceola	22,028	1,662	5	52	3	0.1362	12
Ontonagon	8,117	572	1	31	1	0.1232	13
Oceana	24,599	1,252	6	84	3	0.1220	14
Ionia	61,112	2,878	12	156	7	0.1145	15
Oscoda	8,844	535	2	20	1	0.1131	16
Newaygo	45,059	2,218	20	125	5	0.1110	17
Isabella	57,623	2,904	12	115	6	0.1041	18
Lapeer	86,893	3,839	18	186	9	0.1036	19
Alger	9,958	471	2	33	1	0.1004	20
Cass	49,967	2,062	11	138	5	0.1001	21
Lake	10,153	657	6	30	1	0.0985	22
Marquette	61,792	2,765	9	137	6	0.0971	23
Van Buren	75,686	3,112	17	220	7	0.0925	24
Otsego	21,800	1,163	4	51	2	0.0917	25
Eaton	100,173	4,605	19	211	9	0.0898	26
Genesee	435,393	16,330	73	1,346	39	0.0896	27
Roscommon	23,174	1,279	5	86	2	0.0863	28
Cheboygan	23,535	1,132	10	71	2	0.0850	29
Shiawassee	72,236	2,640	12	146	6	0.0831	30
St. Joseph	61,234	2,607	16	156	5	0.0817	31
Monroe	142,301	4,969	28	351	11	0.0773	32
Iron	13,067	897	4	44	1	0.0765	33
Lenawee	97,998	3,809	23	195	7	0.0714	34
Sanilac	42,736	2,038	11	93	3	0.0702	35
Presque Isle	14,392	770	5	30	1	0.0695	36
Wexford	29,147	1,894	4	93	2	0.0686	37
Berrien	160,713	5,995	26	327	11	0.0684	38
Grand Traverse	73,161	3,746	16	140	5	0.0683	39
Alpena	30,638	1,429	4	64	2	0.0653	40
Bay	110,423	4,329	19	358	7	0.0634	41
Midland	81,248	3,232	16	109	5	0.0615	42
Arenac	16,411	1,108	3	65	1	0.0609	43
Allegan	100,585	4,064	18	287	6	0.0597	44
Kalamazoo	229,192	9,748	20	433	13	0.0567	45

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

COUNTY	1997 Population Estimate	All Crashes	Fatal Crashes	HBD Crashes	HBD Fatal Crashes	HBD Fatal Crash Rate per 1,000 people	Rank
Barry	53,533	2,598	9	137	3	0.0560	46
St. Clair	157,704	5,704	25	378	8	0.0507	47
Muskegon	165,882	6,180	22	283	8	0.0482	48
Clinton	63,087	2,890	16	126	3	0.0476	49
Saginaw	211,278	8,967	21	499	10	0.0473	50
Branch	43,628	2,239	8	81	2	0.0458	51
Jackson	155,346	7,439	34	398	7	0.0451	52
Washtenaw	299,503	12,671	36	536	13	0.0434	53
Hillsdale	46,240	2,347	9	73	2	0.0433	54
Manistee	23,179	1,155	1	62	1	0.0431	55
Charlevoix	23,630	1,299	1	52	1	0.0423	56
Livingston	141,914	5,758	14	329	6	0.0423	57
Wayne	2,127,087	92,962	235	3,419	89	0.0418	58
Menominee	24,443	1,743	2	69	1	0.0409	59
Gladwin	24,879	1,195	4	59	1	0.0402	60
Ottawa	220,403	7,968	25	316	8	0.0363	61
Mason	27,854	1,773	4	53	1	0.0359	62
Emmet	28,339	1,782	9	61	1	0.0353	63
Tuscola	58,087	2,349	6	141	2	0.0344	64
Macomb	783,451	28,245	57	1,557	25	0.0319	65
Kent	539,425	25,094	51	1,073	17	0.0315	66
Huron	35,270	2,074	7	62	1	0.0284	67
Houghton	35,810	1,320	1	68	1	0.0279	68
Chippewa	37,900	1,656	2	102	1	0.0264	69
Oakland	1,166,512	49,330	81	2,132	27	0.0231	70
Calhoun	141,821	7,142	21	344	2	0.0141	71
Ingham	284,089	12,930	15	574	4	0.0141	72
Baraga	8,448	493	4	21	0	0.0000	73
Crawford	13,880	870	4	38	0	0.0000	74
Delta	38,801	2,465	6	85	0	0.0000	75
Gogebic	17,439	645	0	37	0	0.0000	76
Gratiot	40,024	1,830	3	59	0	0.0000	77
Iosco	25,129	1,346	4	82	0	0.0000	78
Leelanau	18,755	714	2	36	0	0.0000	79
Mackinac	11,113	1,008	2	50	0	0.0000	80
Missaukee	13,682	815	1	24	0	0.0000	81
Montmorency	9,980	543	0	24	0	0.0000	82
Schoolcraft	8,748	603	1	36	0	0.0000	83
Unknown		121	0	6	0		
State Totals	9,773,892	425,793	1,283	20,190	481	0.04921	



## 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	47	2	21	24	0	6	5	36	2	28
Alger	33	1	16	16	0	1	7	25	2	21
Allegan	287	6	132	149	7	16	26	238	7	199
Alpena	64	2	22	40	0	8	9	47	2	36
Antrim	62	3	27	32	0	8	12	42	3	43
Arenac	65	1	25	39	3	11	2	49	1	44
Baraga	21	0	10	11	0	4	1	16	0	17
Barry	137	3	70	64	0	0	33	104	4	99
Bay	358	7	147	204	15	9	75	259	8	220
Benzie	42	3	24	15	0	6	5	31	3	36
Berrien	327	11	150	166	43	35	38	211	12	238
Branch	81	2	34	45	8	6	6	61	2	48
Calhoun	344	2	140	202	49	5	36	254	2	194
Cass	138	5	57	76	0	13	34	91	5	88
Charlevoix	52	1	20	31	0	6	11	35	1	35
Cheboygan	71	2	38	31	4	4	9	54	2	51
Chippewa	102	1	40	61	12	0	17	73	1	55
Clare	64	4	30	30	0	11	12	41	5	49
Clinton	126	3	55	68	13	14	4	95	3	76
Crawford	38	0	15	23	6	0	4	28	0	24
Delta	85	0	37	48	0	22	15	48	0	53
Dickinson	61	6	26	29	0	15	12	34	7	40
Eaton	211	9	88	114	24	8	49	130	9	142
Emmet	61	1	25	35	0	11	3	47	1	41
Genesee	1,346	39	591	716	121	30	194	1,001	43	894
Gladwin	59	1	26	32	0	0	13	46	1	42
Gogebic	37	0	11	26	0	14	1	22	0	14
Grand Traverse	140	5	62	73	0	28	13	99	6	105
Gratiot	59	0	24	35	0	17	7	35	0	30
Hillsdale	73	2	39	32	0	2	6	65	2	56
Houghton	68	1	22	45	0	15	10	43	1	29
Huron	62	1	22	39	0	0	16	46	1	30
Ingham	574	4	256	314	103	12	92	367	4	369
Ionia	156	7	67	82	17	0	31	108	7	107
Iosco	82	0	36	46	0	12	10	60	0	42
Iron	44	1	18	25	0	4	10	30	1	20
Isabella	115	6	50	59	0	13	14	88	8	88
Jackson	398	7	180	211	58	9	47	284	8	264
Kalamazoo	433	13	183	237	30	29	40	334	14	250
Kalkaska	61	3	29	29	0	8	8	45	3	57
Kent	1,073	17	448	608	52	93	130	798	22	672
Keweenaw	8	1	1	6	0	1	1	6	1	1
Lake	30	1	14	15	0	3	3	24	1	22
Lapeer	186	9	88	89	9	0	53	124	10	154
Leelanau	36	0	15	21	0	0	7	29	0	22
Lenawee	195	7	81	107	0	40	19	136	10	120

## 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	329	6	173	150	70	18	24	217	6	246
Luce	10	1	6	3	0	0	3	7	1	11
Mackinac	50	0	24	26	12	2	6	30	0	30
Macomb	1,557	25	697	835	123	0	411	1,023	26	1,065
Manistee	62	1	27	34	0	8	15	39	1	35
Marquette	137	6	59	72	0	31	12	94	6	79
Mason	53	1	23	29	0	13	3	37	2	34
Mecosta	118	6	48	64	0	21	14	83	8	79
Menominee	69	1	32	36	0	23	6	40	1	49
Midland	109	5	46	58	0	12	18	79	5	61
Missaukee	24	0	16	8	0	0	9	15	0	19
Monroe	351	11	149	191	32	42	33	244	12	232
Montcalm	187	9	76	102	0	8	46	133	12	117
Montmorency	24	0	7	17	0	0	5	19	0	9
Muskegon	283	8	132	143	1	45	26	211	9	202
Newaygo	125	5	59	61	0	0	22	103	6	84
Oakland	2,132	27	949	1,156	307	100	296	1,429	34	1,397
Oceana	84	3	26	55	0	11	7	66	3	41
Ogemaw	65	3	31	31	9	0	7	49	3	52
Ontonagon	31	1	9	21	0	3	8	20	1	11
Osceola	52	3	18	31	0	15	5	32	4	28
Oscoda	20	1	8	11	0	0	6	14	1	12
Otsego	51	2	26	23	14	0	6	31	2	39
Ottawa	316	8	131	177	15	39	24	238	9	205
Presque Isle	30	1	15	14	0	2	4	24	2	20
Roscommon	86	2	27	57	10	2	17	57	2	39
Saginaw	499	10	218	271	29	0	116	354	11	328
St. Clair	378	8	160	210	42	0	58	278	10	261
St. Joseph	156	5	67	84	0	26	19	111	8	109
Sanilac	93	3	34	56	0	0	29	64	3	49
Schoolcraft	36	0	13	23	1	1	3	31	0	15
Shiawassee	146	6	73	67	9	1	23	113	6	110
Tuscola	141	2	51	88	0	0	31	110	2	77
Van Buren	220	7	101	112	30	0	30	160	7	154
Washtenaw	536	13	245	278	57	68	29	382	14	355
Wayne	3,419	89	1,540	1,790	507	222	440	2,250	100	2,466
Wexford	93	2	42	49	0	18	18	57	2	70
UNKNOWN	6	0	5	1	0	0	0	6	0	6
Totals	20,190	481	8,875	10,834	1,842	1,280	2,979	14,089	544	13,461





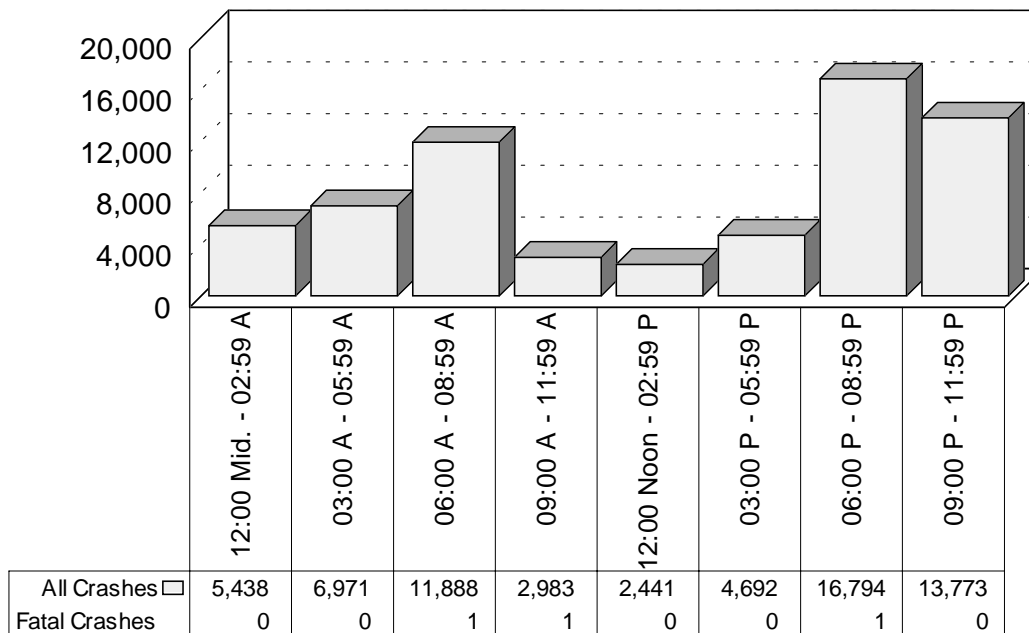


## LIGHT CONDITION AND TIME OF DAY IN MOTOR VEHICLE-DEER CRASHES

LIGHT CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Daylight	12,742	19.5	2	66.7	49	211	325	12,155
Dawn	5,257	8.0	0	0.0	6	31	83	5,137
Dusk	3,400	5.2	0	0.0	8	36	45	3,311
Dark - Lighted	1,978	3.0	0	0.0	2	11	28	1,937
Dark - Unlighted	41,447	63.3	1	33.3	80	298	677	40,391
Other/Unknown	627	1.0	0	0.0	0	2	7	618
Totals	65,451	100.0	3	100.0	145	589	1,165	63,549

Two of the three fatal deer crashes in Michigan in 1997 occurred in daylight conditions. All motor vehicle-deer involved/associated crashes peaked during the 6:00 - 8:59 PM time period. There was 1 fatal deer crash during this time period.

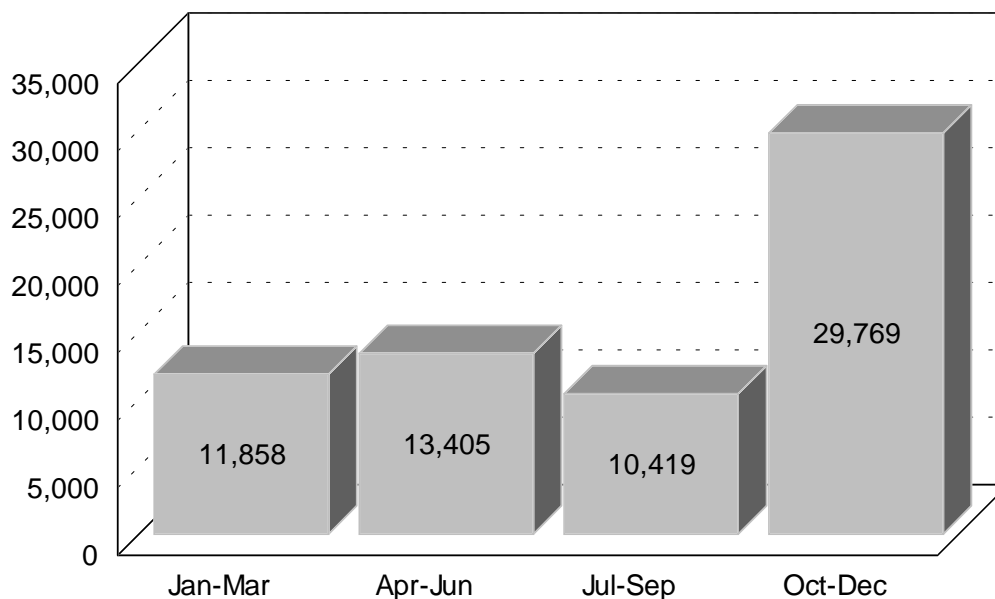
## Time and Severity of All Motor Vehicle-Deer Crashes



## 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	4,321	6.6	0	0.0	3	12	49	4,257
February	3,584	5.5	0	0.0	2	12	46	3,524
March	3,953	6.0	0	0.0	3	12	53	3,885
April	4,075	6.2	0	0.0	9	22	77	3,967
May	4,404	6.7	0	0.0	14	49	107	4,234
June	4,926	7.5	0	0.0	26	67	121	4,712
July	3,705	5.7	0	0.0	16	65	86	3,538
August	2,805	4.3	2	66.7	15	54	65	2,669
September	3,909	6.0	0	0.0	15	53	71	3,770
October	9,533	14.6	0	0.0	17	100	171	9,245
November	12,499	19.1	1	33.3	18	93	206	12,181
December	7,737	11.8	0	0.0	7	50	113	7,567
Totals	65,451	100.0	3	100.0	145	589	1,165	63,549

### All Motor Vehicle-Deer Crashes



Crashes involving deer occurred most frequently during the second quarter (20.5%) and the fourth quarter (45.5%) 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	700	0	13	687	0	122	158	420	0	15
Alger	192	0	7	185	0	17	88	87	0	8
Allegan	1,079	0	35	1,044	72	67	197	743	0	41
Alpena	546	0	5	541	0	84	118	344	0	5
Antrim	552	0	11	541	0	101	136	315	0	15
Arenac	515	0	18	497	48	121	32	314	0	20
Baraga	288	0	6	282	0	109	54	125	0	7
Barry	1,317	0	41	1,276	0	0	465	852	0	47
Bay	384	0	17	367	17	20	69	278	0	24
Benzie	310	0	6	304	0	78	49	183	0	7
Berrien	672	0	23	649	113	100	60	399	0	25
Branch	880	0	34	846	97	90	41	652	0	38
Calhoun	1,871	0	46	1,825	244	0	311	1,316	0	56
Cass	746	0	23	723	0	51	234	461	0	25
Charlevoix	588	0	12	576	0	170	116	302	0	18
Cheboygan	412	0	13	399	54	33	100	225	0	15
Chippewa	470	0	17	453	47	0	196	227	0	20
Clare	769	0	17	752	0	166	148	455	0	24
Clinton	1,075	0	22	1,053	125	142	73	735	0	24
Crawford	394	0	7	387	46	9	128	211	0	7
Delta	1,056	0	19	1,037	0	284	169	603	0	22
Dickinson	733	0	8	725	0	203	228	302	0	12
Eaton	1,459	0	33	1,426	169	45	382	863	0	38
Emmet	569	0	14	555	4	129	69	367	0	16
Genesee	1,220	0	42	1,178	119	31	156	914	0	47
Gladwin	709	0	17	692	0	0	262	447	0	21
Gogebic	150	0	8	142	0	87	14	49	0	10
Grand Traverse	546	0	8	538	0	50	100	396	0	12
Gratiot	709	1	13	695	0	121	135	453	1	15
Hillsdale	977	0	33	944	0	86	193	698	0	38
Houghton	272	0	5	267	0	78	75	119	0	5
Huron	1,188	0	23	1,165	0	0	438	750	0	25
Ingham	1,374	0	34	1,340	131	100	191	952	0	40
Ionia	1,133	0	33	1,100	90	0	274	769	0	35
Iosco	671	0	15	656	0	102	209	360	0	19
Iron	520	0	12	508	0	157	147	216	0	14
Isabella	1,168	0	29	1,139	0	127	112	929	0	32
Jackson	1,965	0	50	1,915	119	151	313	1,382	0	59
Kalamazoo	1,385	0	38	1,347	55	113	118	1,099	0	40
Kalkaska	315	0	8	307	0	31	89	195	0	8
Kent	2,035	0	61	1,974	126	91	353	1,465	0	69
Keweenaw	18	0	1	17	0	6	1	11	0	1
Lake	355	0	6	349	0	69	49	237	0	7
Lapeer	1,249	0	34	1,215	84	0	239	926	0	37
Leelanau	277	0	4	273	0	0	107	170	0	6
Lenawee	861	0	28	833	0	173	186	502	0	31



## 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	1,240	0	47	1,193	122	68	150	900	0	56
Luce	167	0	5	162	0	0	90	77	0	5
Mackinac	546	0	19	527	96	113	168	169	0	19
Macomb	691	0	29	662	28	0	127	536	0	35
Manistee	500	0	7	493	0	106	121	273	0	7
Marquette	563	0	22	541	0	141	109	313	0	25
Mason	866	0	27	839	0	290	12	564	0	35
Mecosta	1,535	0	30	1,505	0	260	267	1,008	0	40
Menominee	1,078	0	37	1,041	0	350	106	622	0	51
Midland	949	0	28	921	0	80	81	788	0	31
Missaukee	523	0	12	511	0	0	179	344	0	14
Monroe	338	0	15	323	21	83	13	221	0	17
Montcalm	1,621	0	44	1,577	0	31	454	1,136	0	59
Montmorency	298	0	4	294	0	0	117	181	0	4
Muskegon	798	0	19	779	15	99	68	616	0	27
Newaygo	949	0	23	926	0	0	264	685	0	26
Oakland	1,553	0	75	1,478	144	10	178	1,221	0	86
Oceana	564	0	21	543	0	152	47	365	0	26
Ogemaw	719	0	27	692	71	0	199	449	0	30
Ontonagon	356	0	10	346	0	98	156	102	0	12
Osceola	1,011	0	24	987	0	263	162	586	0	30
Oscoda	334	0	7	327	0	0	110	224	0	8
Otsego	249	0	15	234	44	0	38	167	0	21
Ottawa	1,116	0	29	1,087	102	52	100	862	0	32
Presque Isle	470	0	10	460	0	103	129	238	0	10
Roscommon	551	0	15	536	73	42	89	347	0	17
Saginaw	985	0	37	948	66	0	255	664	0	45
St. Clair	1,097	1	43	1,053	117	0	194	786	1	50
St. Joseph	735	0	22	713	0	113	117	505	0	26
Sanilac	1,202	0	34	1,168	0	0	384	818	0	40
Schoolcraft	279	0	8	271	1	84	74	120	0	9
Shiawassee	801	0	33	768	86	0	156	559	0	41
Tuscola	944	0	33	911	0	0	308	636	0	35
Van Buren	817	1	41	775	85	0	188	544	1	47
Washtenaw	1,362	0	61	1,301	86	104	115	1,057	0	65
Wayne	361	0	22	339	43	14	39	265	0	30
Wexford	581	0	15	566	0	82	233	266	0	15
UNKNOWN	28	0	0	28	0	0	0	28	0	0
Totals	65,451	3	1,899	63,549	2,960	6,452	12,979	43,060	3	2,226

## *The Michigan Deer Crash Coalition [10] offers this advice to drivers:*

- 1) Stay aware, alert, awake, and sober.*
- 2) Wear your seatbelts.*
- 3) 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.*
- 4) Drive at moderate speeds through posted deer areas at all times of the day and night.*
- 5) Deliberately look for deer and if you see them, slow down.*
- 6) Don't rely on deer whistles or high-beam headlights to deter deer. Drive cautiously at all times.*
- 7) When possible, adjust travel time during peak evening crash periods, especially in October, November and December.*
- 8) Striking the deer is frequently the safest action to take. Motorists making evasive maneuvers may be involved in a more serious crash.*
- 9) 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.*



1997

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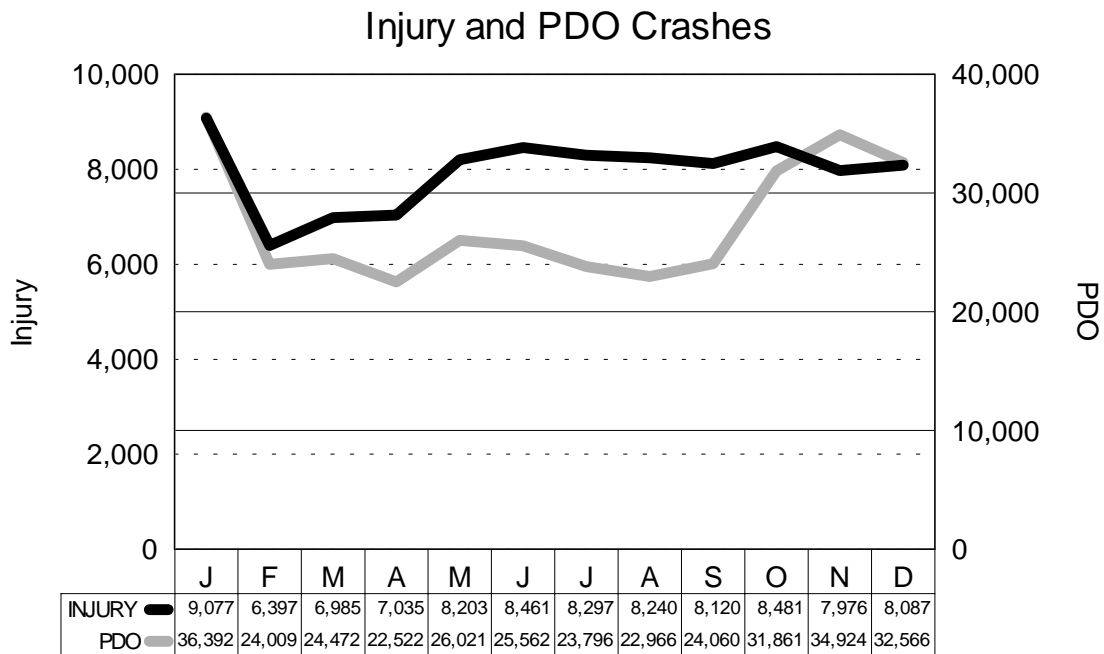
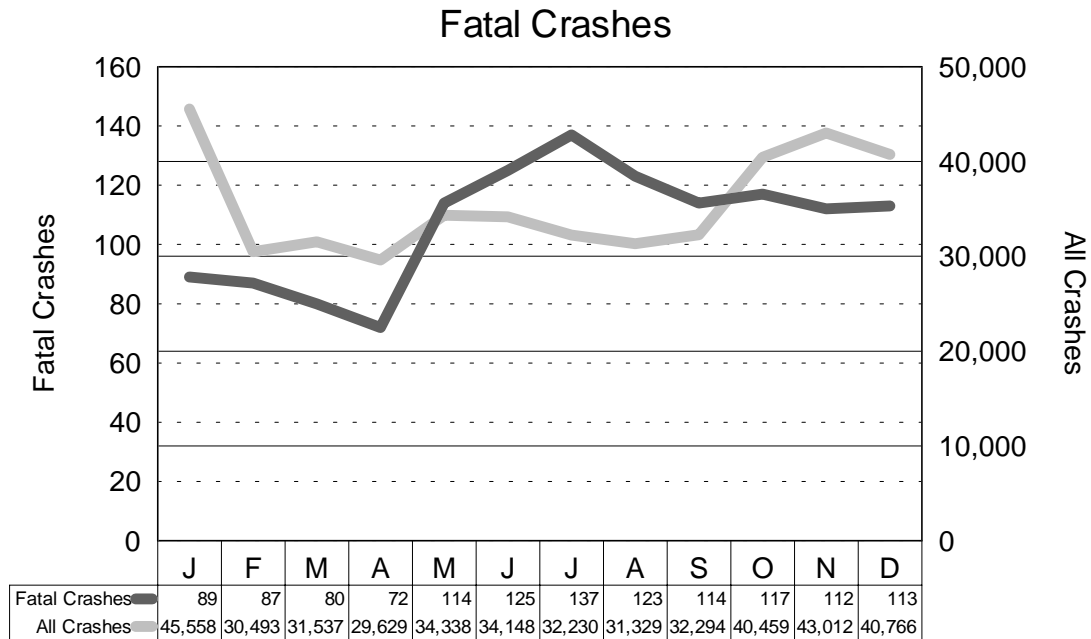
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**Crash**



## ALL CRASHES INJURY SEVERITY BY MONTH

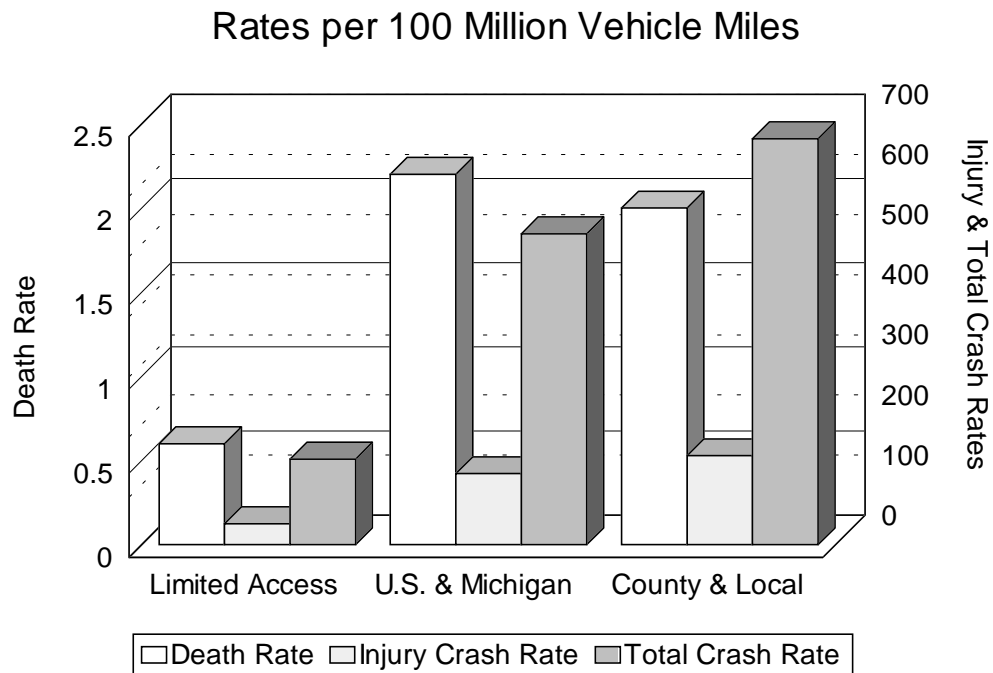


The charts on this page show that the months of April through September are peak months in terms of the ratio of the number of crashes involving death or injury to the number of noninjury crashes. That is, if a person was in a motor vehicle crash during one of these months there was a higher chance of 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. 1997 estimated mileage figures were provided by the Michigan Department of Transportation [11].

STATEWIDE	Estimated Mileage (Billions)	All Crashes	Injury Crashes	Deaths	Total Crash Rate	Injury Crash Rate	Death Rate
Limited Access Roadways	26.9	38,310	9,422	161	142.4	35.0	0.6
U.S. & Michigan Roads	21.0	108,606	24,829	461	517.2	118.2	2.2
County & City Roads	41.3	278,877	61,108	824	675.2	148.0	2.0
Totals	89.2	425,793	95,359	1,446	477.3	106.9	1.6



## CRASH TYPE

CRASH TYPE	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Single Vehicle	128,617	30.2	558	43.5	3,816	7,954	10,354	105,935
Head On	8,789	2.1	186	14.5	839	1,035	1,401	5,328
Head On - Left Turn	13,069	3.1	36	2.8	766	1,633	3,002	7,632
Angle	87,419	20.5	350	27.3	3,167	6,751	15,224	61,927
Rear End	102,009	24.0	76	5.9	1,541	4,050	21,966	74,376
Rear End - Left Turn	4,783	1.1	6	0.5	116	279	992	3,390
Rear End - Right Turn	3,278	0.8	1	0.1	21	84	504	2,668
Sideswipe - Same Direction	35,875	8.4	13	1.0	337	751	2,469	32,305
Sideswipe - Opposite Direct	12,537	2.9	15	1.2	177	406	991	10,948
Other	23,809	5.6	40	3.1	659	1,081	1,979	20,050
Unknown	5,608	1.3	2	0.2	121	231	662	4,592
Totals	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

Single Vehicle, Head On, and Angle crash types produce the highest number of fatal crashes (85.3%). Single Vehicle crashes include rollovers, which are particularly deadly crash types. Rear End - Turning and Sideswipe crashes produce the lowest number of fatal crashes (2.8%).

## 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	366,313	86.0	903	70.4	8,644	18,363	51,661	286,742
Median	2,756	0.6	23	1.8	135	275	477	1,846
Shoulder	16,906	4.0	74	5.8	680	1,465	2,035	12,652
Outside of Shoulder/Curb	31,364	7.4	252	19.6	1,764	3,502	4,366	21,480
Gore	723	0.2	8	0.6	41	83	110	481
Other/Unknown	7,731	1.8	23	1.8	296	567	895	5,950
Totals	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

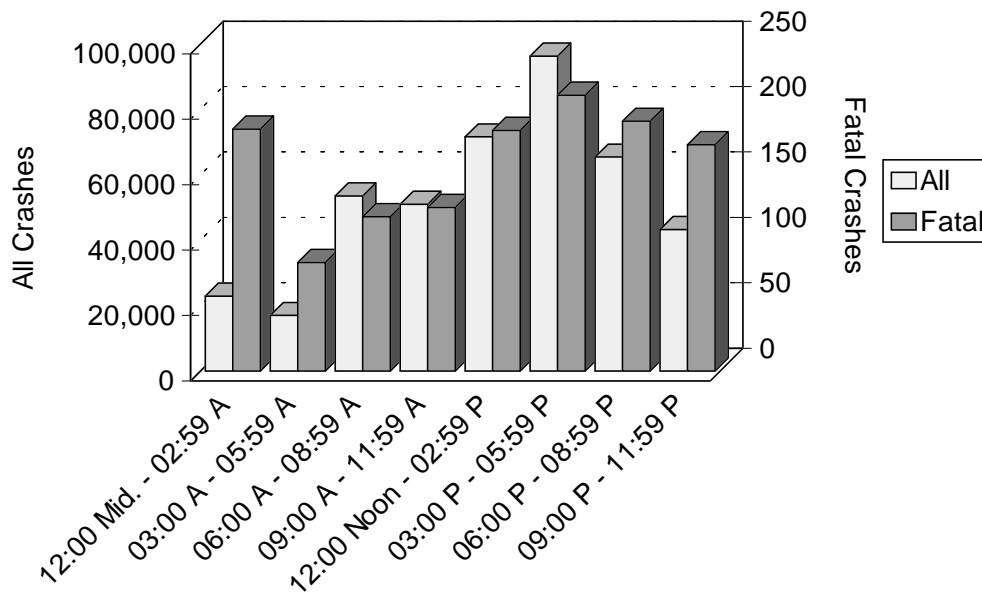
Crashes that happen outside of the normal driving lanes are overrepresented in the fatal count. Only 7.4 percent of crashes occur outside the shoulder of the road, but these crashes account for 19.6 percent of the fatal crashes.



## TIME AND SEVERITY

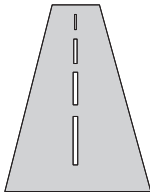
TIME OF DAY	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
12:00 mid. - 02:59 a.m.	22,920	5.4	185	14.4	1,079	1,909	2,411	17,336
03:00 a.m. - 05:59 a.m.	16,999	4.0	83	6.5	516	1,009	1,430	13,961
06:00 a.m. - 08:59 a.m.	53,565	12.6	118	9.2	1,207	2,361	7,010	42,869
09:00 a.m. - 11:59 a.m.	51,005	12.0	125	9.7	1,301	2,741	7,875	38,963
12:00 noon - 02:59 p.m.	71,611	16.8	184	14.3	1,854	4,225	11,931	53,417
03:00 p.m. - 05:59 p.m.	96,288	22.6	211	16.4	2,426	5,688	15,520	72,443
06:00 p.m. - 08:59 p.m.	65,436	15.4	191	14.9	1,757	3,564	8,107	51,817
09:00 p.m. - 11:59 p.m.	43,310	10.2	173	13.5	1,331	2,596	4,800	34,410
Unknown	4,659	1.1	13	1.0	89	162	460	3,935
Total	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

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.

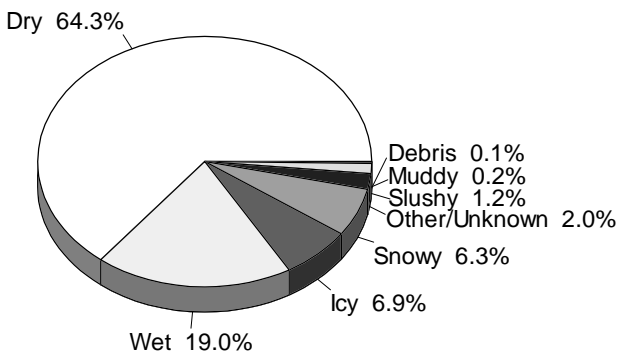




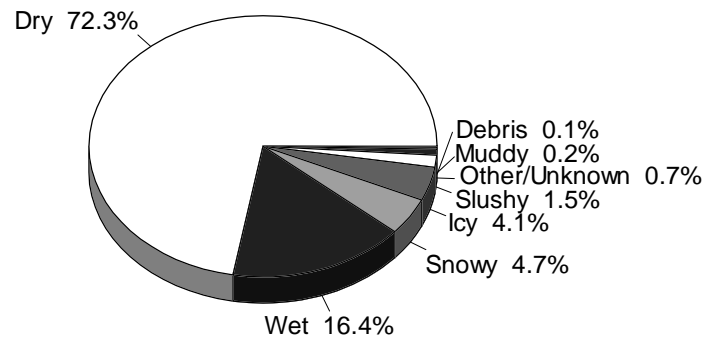
## ROAD CONDITION

ROAD SURFACE CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Dry	273,945	64.3	928	72.3	7,882	16,453	37,357	211,325
Wet	80,849	19.0	210	16.4	2,094	4,512	13,494	60,539
Icy	29,572	6.9	53	4.1	711	1,422	4,017	23,369
Snowy	26,682	6.3	60	4.7	508	1,078	2,931	22,105
Muddy	766	0.2	3	0.2	22	68	97	576
Slushy	5,280	1.2	19	1.5	140	355	764	4,002
Debris	257	0.1	1	0.1	12	27	37	180
Other/Unknown	8,442	2.0	9	0.7	191	340	847	7,055
Totals	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

### ALL CRASHES



### FATAL CRASHES



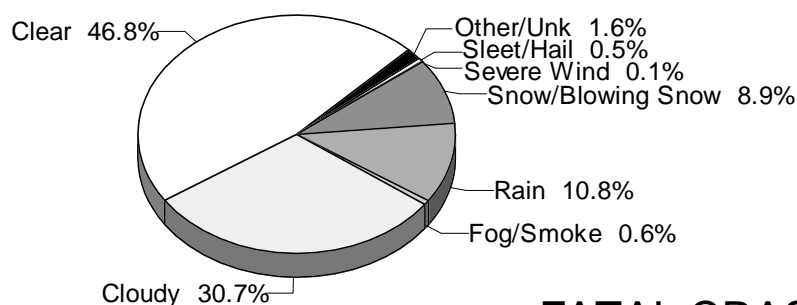
Most crashes (64.3%) and most fatal crashes (72.3%) occur on dry roads. This indicates that Michigan drivers do a good job of adjusting their driving behavior for bad road conditions.



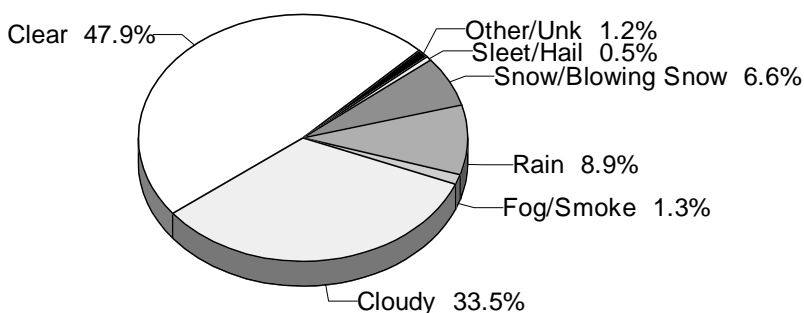
## WEATHER CONDITION

WEATHER CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Clear	199,272	46.8	615	47.9	5,840	11,925	26,957	153,935
Cloudy	130,808	30.7	430	33.5	3,430	7,437	18,576	100,935
Fog/Smoke	2,606	0.6	17	1.3	104	158	262	2,065
Rain	45,838	10.8	114	8.9	1,192	2,664	7,960	33,908
Snow/Blowing Snow	38,027	8.9	85	6.6	807	1,756	4,827	30,552
Severe Wind	317	0.1	0	0.0	16	16	38	247
Sleet/Hail	2,112	0.5	7	0.5	63	126	336	1,580
Other/Unknown	6,813	1.6	15	1.2	108	173	588	5,929
Totals	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

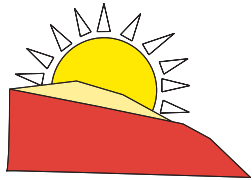
### ALL CRASHES



### FATAL CRASHES



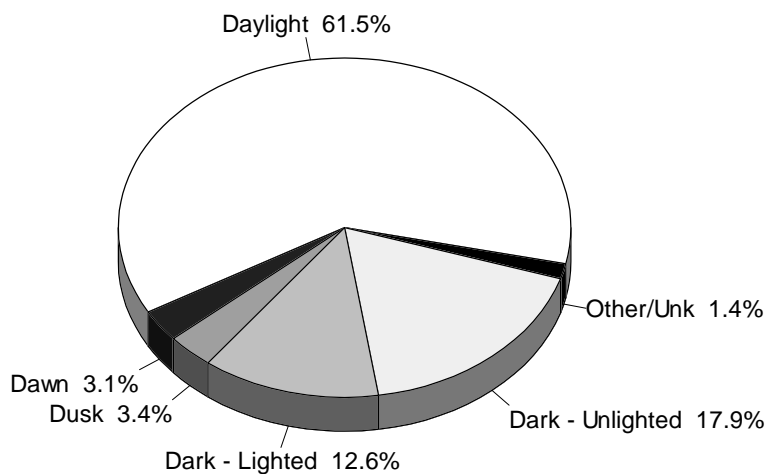
The majority of all crashes occur in good weather (46.8%) as do the majority of fatal crashes (47.9%).



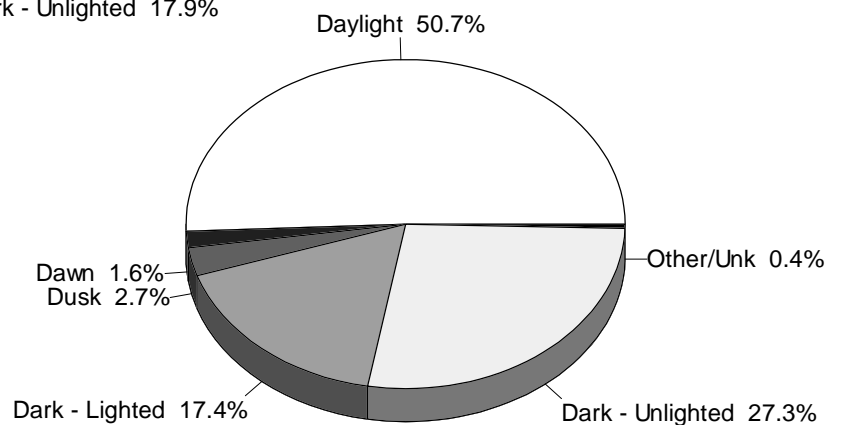
## LIGHT CONDITION

LIGHT CONDITION	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Daylight	261,949	61.5	650	50.7	7,047	15,520	42,352	196,380
Dawn	13,372	3.1	20	1.6	264	505	1,322	11,261
Dusk	14,471	3.4	35	2.7	342	733	1,767	11,594
Dark - Lighted	53,547	12.6	223	17.4	1,983	3,779	8,175	39,387
Dark - Unlighted	76,354	17.9	350	27.3	1,838	3,558	5,366	65,242
Other/Unknown	6,100	1.4	5	0.4	86	160	562	5,287
Totals	425,793	100.0	1,283	100.0	11,560	24,255	59,544	329,151

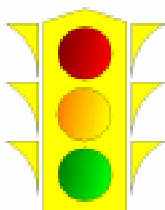
### ALL CRASHES



### FATAL CRASHES



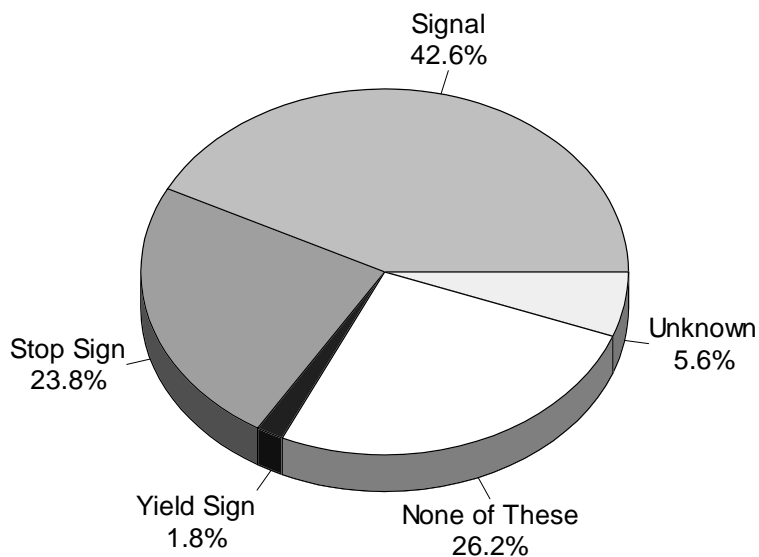
The majority (61.5%) of all crashes happen during daylight hours. Dark conditions create the greatest hazard, as they are overrepresented in fatal crashes. Areas without street lights have the highest fatality rate.



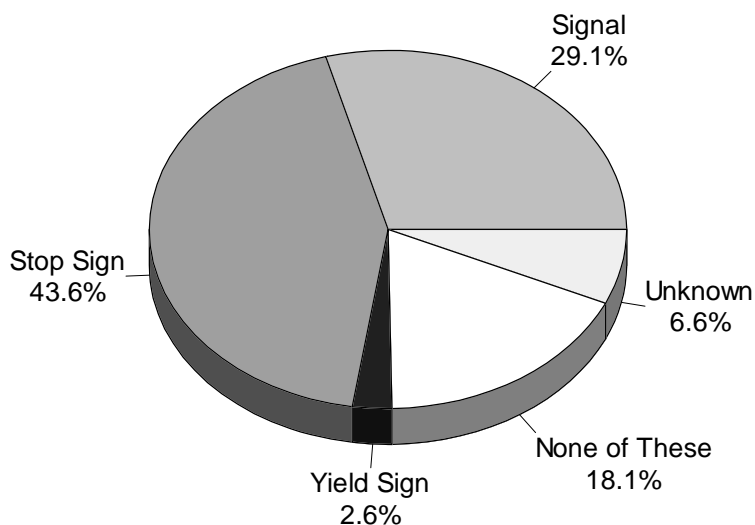
## INTERSECTION CRASHES BY TRAFFIC CONTROL TYPE

TRAFFIC CONTROL TYPE	All Crashes		Fatal Crashes		Injury Crashes			PDO Crashes
	Number	% of Total	Number	% of Fatal	A	B	C	
Signal	64,273	42.6	114	29.1	1,875	4,271	13,236	44,777
Stop Sign	35,861	23.8	171	43.6	1,343	2,797	6,420	25,130
Yield Sign	2,785	1.8	10	2.6	86	199	571	1,919
None of These	39,515	26.2	71	18.1	1,112	2,432	6,521	29,379
Unknown	8,462	5.6	26	6.6	244	436	1,308	6,448
Totals	150,896	100.0	392	100.0	4,660	10,135	28,056	107,653

### 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	2,873	43.3	6	40.0	57	127	484	2,199
Lane Open	881	13.3	1	6.7	28	47	153	652
Unk Lane Closure	173	2.6	1	6.7	4	3	25	140
Activity - Off Road								
Lane Closed	302	4.5	1	6.7	6	12	57	226
Lane Open	581	8.8	0	0.0	14	31	95	441
Unk Lane Closure	40	0.6	0	0.0	2	0	6	32
Activity - None								
Lane Closed	798	12.0	3	20.0	27	47	167	554
Lane Open	574	8.6	3	20.0	16	50	78	427
Unk Lane Closure	53	0.8	0	0.0	0	2	12	39
Activity – Unknown								
Lane Closed	144	2.2	0	0.0	2	7	18	117
Lane Open	56	0.8	0	0.0	0	3	10	43
Unk Lane Closure	163	2.5	0	0.0	6	7	25	125
Sub-Total	6,638	100.0	15	100.0	162	336	1,130	4,995

Utility								
Activity - On Road								
Lane Closed	118	28.7	2	100.0	1	7	22	86
Lane Open	88	21.4	0	0.0	6	8	12	62
Unk Lane Closure	4	1.0	0	0.0	0	1	0	3
Activity - Off Road								
Lane Closed	37	9.0	0	0.0	1	2	10	24
Lane Open	63	15.3	0	0.0	3	7	8	45
Unk Lane Closure	3	0.7	0	0.0	0	0	1	2
Activity - None								
Lane Closed	13	3.2	0	0.0	0	2	5	6
Lane Open	16	3.9	0	0.0	0	1	3	12
Unk Lane Closure	4	1.0	0	0.0	0	0	2	2
Activity - Unknown								
Lane Closed	4	1.0	0	0.0	0	1	0	3
Lane Open	5	1.2	0	0.0	0	0	1	4
Unk Lane Closure	56	13.6	0	0.0	2	1	8	45
Sub-Total	411	100.0	2	100.0	13	30	72	294

Total	7,049		17		175	366	1,202	5,289
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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	989	5	87	897	0	163	204	622	8	131
Alger	471	2	99	370	0	22	202	247	3	142
Allegan	4,064	18	840	3,206	294	342	841	2,587	21	1,231
Alpena	1,429	4	223	1,202	0	309	229	891	4	313
Antrim	1,102	5	150	947	0	194	223	685	5	246
Arenac	1,108	3	190	915	157	276	80	595	3	284
Baraga	493	4	51	438	0	175	64	254	7	80
Barry	2,598	9	415	2,174	0	0	850	1,748	11	600
Bay	4,329	19	1,141	3,169	208	165	1,211	2,745	22	1,683
Benzie	669	4	117	548	0	191	89	389	4	173
Berrien	5,995	26	1,411	4,558	1,017	780	709	3,489	28	2,114
Branch	2,239	8	391	1,840	231	507	77	1,424	8	549
Calhoun	7,142	21	1,273	5,848	1,406	73	944	4,719	24	1,833
Cass	2,062	11	379	1,672	3	173	586	1,300	11	574
Charlevoix	1,299	1	176	1,122	0	364	229	706	1	259
Cheboygan	1,132	10	248	874	200	73	238	621	14	401
Chippewa	1,656	2	304	1,350	408	0	352	896	2	427
Clare	1,666	12	272	1,382	0	443	295	928	16	426
Clinton	2,890	16	508	2,366	391	572	174	1,753	18	730
Crawford	870	4	140	726	228	21	192	429	4	202
Delta	2,465	6	371	2,088	0	637	343	1,485	6	520
Dickinson	1,523	8	231	1,284	0	508	386	629	10	329
Eaton	4,605	19	889	3,697	659	176	1,323	2,447	19	1,316
Emmet	1,782	9	278	1,495	23	599	173	987	11	389
Genesee	16,330	73	4,557	11,700	1,955	439	2,422	11,514	82	6,751
Gladwin	1,195	4	163	1,028	0	0	463	732	4	233
Gogebic	645	0	117	528	0	301	30	314	0	156
Grand Traverse	3,746	16	717	3,013	0	982	392	2,372	19	1,071
Gratiot	1,830	3	286	1,541	0	478	330	1,022	3	419
Hillsdale	2,347	9	397	1,941	0	232	599	1,516	9	570
Houghton	1,320	1	222	1,097	0	428	288	604	1	310
Huron	2,074	7	291	1,776	0	0	859	1,215	7	421
Ingham	12,930	15	2824	10,091	1,908	424	2,419	8,179	15	3,866
Ionia	2,878	12	481	2,385	313	0	820	1,745	13	682
Iosco	1,346	4	184	1,158	0	303	319	724	4	260
Iron	897	4	104	789	0	206	242	449	4	135
Isabella	2,904	12	512	2,380	0	541	307	2,056	14	760
Jackson	7,439	34	1,435	5,970	1,044	374	1,143	4,878	47	2,119
Kalamazoo	9,748	20	1,967	7,761	805	671	1,202	7,070	22	2,683
Kalkaska	867	6	193	668	0	159	188	520	6	292
Kent	25,094	51	5,577	19,466	1,649	2,014	4,580	16,851	57	7,874
Keweenaw	79	1	13	65	0	22	7	50	1	13
Lake	657	6	103	548	0	116	104	437	6	155
Lapeer	3,839	18	750	3,071	247	0	1,202	2,390	19	1,147
Leelanau	714	2	108	604	0	0	273	441	3	162
Lenawee	3,809	23	812	2,974	0	887	733	2,189	29	1,187

## 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	5,758	14	1,306	4,438	1,201	413	711	3,433	14	1,872
Luce	329	2	53	274	0	0	166	163	2	76
Mackinac	1,008	2	142	864	243	210	211	344	2	202
Macomb	28,245	57	7,325	20,863	1,788	0	7,480	18,977	58	10,434
Manistee	1,155	1	184	970	0	286	190	679	1	259
Marquette	2,765	9	493	2,263	0	766	299	1,700	12	685
Mason	1,773	4	274	1,495	0	696	26	1,051	5	428
Mecosta	2,891	14	423	2,454	0	747	482	1,662	19	646
Menominee	1,743	2	234	1,507	0	604	142	997	2	345
Midland	3,232	16	590	2,626	0	413	446	2,373	18	853
Missaukee	815	1	104	710	0	0	292	523	2	150
Monroe	4,969	28	1,265	3,676	463	926	733	2,847	29	1,859
Montcalm	3,394	17	580	2,797	0	109	1,133	2,152	20	883
Montmorency	543	0	78	465	0	0	167	376	0	119
Muskegon	6,180	22	1,451	4,707	57	1,034	751	4,338	23	2,048
Newaygo	2,218	20	380	1,818	0	0	728	1,490	23	567
Oakland	49,330	81	12,333	36,916	6,421	2,953	7,276	32,680	93	17,207
Oceana	1,252	6	217	1,029	0	317	95	840	6	329
Ogemaw	1,310	9	198	1,103	231	0	317	762	9	293
Ontonagon	572	1	68	503	0	122	232	218	1	89
Osceola	1,662	5	187	1,470	0	471	215	976	7	275
Oscoda	535	2	59	474	0	0	173	362	2	84
Otsego	1,163	4	262	897	268	1	264	630	4	358
Ottawa	7,968	25	1,759	6,184	421	1,122	713	5,712	27	2,539
Presque Isle	770	5	87	678	0	172	202	396	6	110
Roscommon	1,279	5	232	1,042	197	101	264	717	8	355
Saginaw	8,967	21	2,083	6,863	591	0	2,679	5,697	26	2,998
St. Clair	5,704	25	1,330	4,349	746	0	1,127	3,831	29	1,997
St. Joseph	2,607	16	526	2,065	0	614	400	1,593	21	785
Sanilac	2,038	11	287	1,740	1	0	729	1,308	12	399
Schoolcraft	603	1	79	523	4	142	138	319	1	110
Shiawassee	2,640	12	632	1,996	233	2	729	1,676	12	909
Tuscola	2,349	6	446	1,897	0	0	826	1,523	6	647
Van Buren	3,112	17	699	2,396	545	0	636	1,931	17	1,052
Washtenaw	12,671	36	2,949	9,686	1,535	1,662	1,012	8,462	39	4,145
Wayne	92,962	235	23,687	69,040	10,219	5,796	11,570	65,377	261	34,706
Wexford	1,894	4	328	1,562	0	566	531	797	4	466
UNKNOWN	121	0	32	89	0	0	0	121	0	51
Totals	425,793	1,283	95,359	329,151	38,310	35,585	73,021	278,877	1,446	137,548





1997

1997

1997

1997

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1997

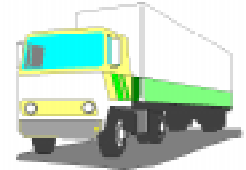
1997

**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	515,608	69.7	1348	63.4	129,405	384,855	821	73.2	83,775	431,012
Van and Motorhome	56,281	7.6	153	7.2	13,588	42,540	62	5.5	7,403	48,816
Pickup	105,040	14.2	329	15.5	22,414	82,297	129	11.5	11,721	93,190
Small Truck (under 10,000 lbs.)	12,035	1.6	26	1.2	2,642	9,367	11	1.0	1,381	10,643
Cycle	2,465	0.3	63	3.0	1,828	574	59	5.3	1,801	605
Moped	246	0.0	3	0.1	174	69	3	0.3	166	77
Go Cart	16	0.0	1	0.0	10	5	1	0.1	8	7
Snowmobile	476	0.1	16	0.8	306	154	15	1.3	273	188
Off Road Vehicle	177	0.0	5	0.2	129	43	5	0.4	116	56
Other	1,878	0.3	12	0.6	409	1,457	5	0.4	152	1,721
Uncoded	24,634	3.3	23	1.1	2,841	21,770	5	0.4	705	23,924
CDL Truck/Bus (breakdown below)	20,682	2.8	147	6.9	4,294	16,241	5	0.4	1,048	19,629
Totals	739,538	100.0	2,126	100.0	178,040	559,372	1,121	100.0	108,549	629,868

### 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		
Uncoded Truck	2,804	13.6	14	9.5	525	2,265	1	20.0	112	2,691
Commercial Vehicle: Group A	9,856	47.7	93	63.3	2,074	7,689	3	60.0	425	9,428
Commercial Vehicle: Group B	4,501	21.8	23	15.6	969	3509	1	20.0	315	4,185
Commercial Vehicle: Group C	577	2.8	4	2.7	140	433	0	0.0	55	522
Other Truck	1,149	5.6	6	4.1	258	885	0	0.0	62	1,087
Unknown Truck	1,795	8.7	7	4.8	328	1,460	0	0.0	79	1,716
Totals	20,682	100.0	147	100.0	4,294	16,241	5	100.0	1,048	19,629

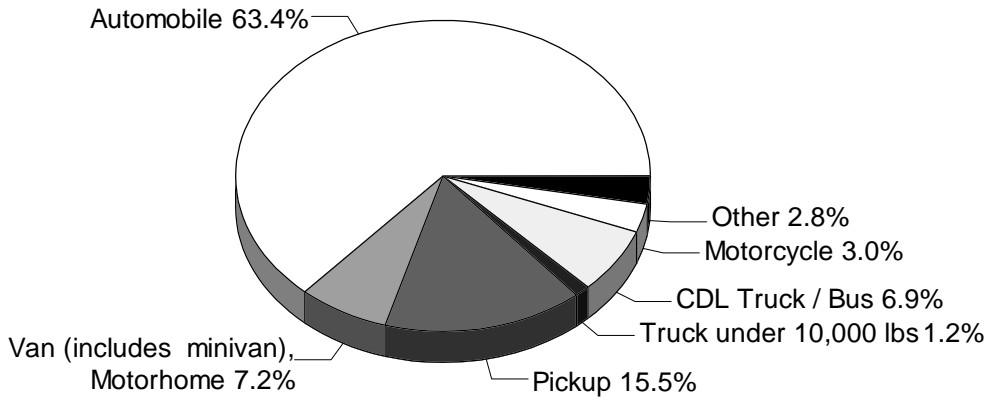
Group "A" is any vehicle that is towing a vehicle or trailer that has a gross vehicle weight rating (GVWR) over 10,000 lbs.

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.

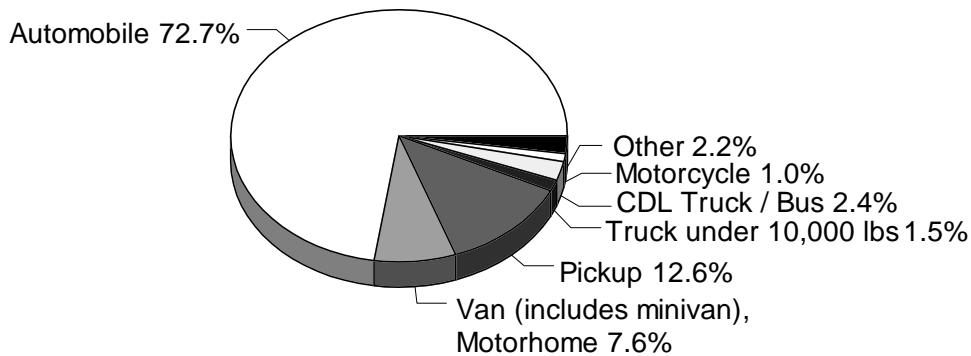
## VEHICLE TYPES IN CRASHES BY CRASH SEVERITY

### FATAL



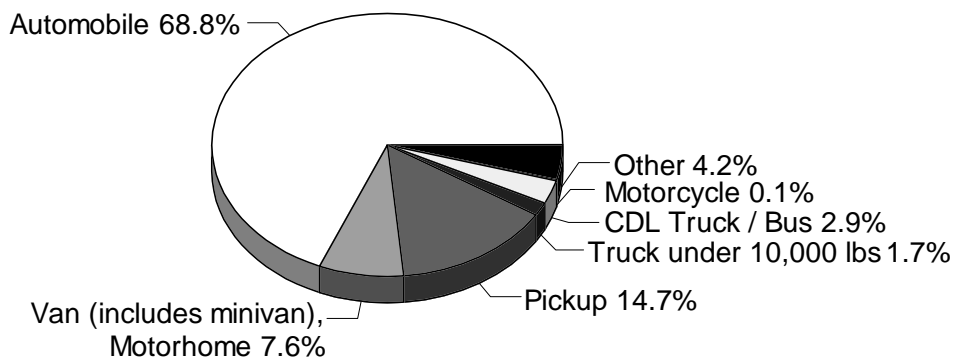
The top chart shows that 4 out of 5 vehicles involved in fatal crashes are automobiles or pickups. Van, Motorhome, the vehicle type that includes the popular minivan, has a fatal crash involvement of 7.2 percent.

### INJURY



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.

### PROPERTY DAMAGE ONLY



## 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	374,254	50.6	1,550	12,360	24,460	57,231	278,653
Turning left	56,455	7.6	102	1,960	4,396	9,832	40,165
Turning right	20,764	2.8	6	329	822	2,414	17,193
Stopped on roadway	72,102	9.7	58	1,265	3,409	17,154	50,216
In prior crash	1,235	0.2	5	48	71	255	856
Changing lanes	17,143	2.3	36	259	628	1,737	14,483
Backing	18,707	2.5	7	80	254	748	17,618
Slowing/stopping on roadway	61,071	8.3	51	794	2,287	12,922	45,017
Slowing/stopping other	873	0.1	2	12	52	142	665
Starting up on roadway	13,218	1.8	39	360	823	2,320	9,676
Starting up other	456	0.1	2	25	31	69	329
Entering parking	1,033	0.1	1	14	36	87	895
Leaving parking	3,106	0.4	1	48	107	363	2,587
Entering roadway	11,308	1.5	28	300	689	1,723	8,568
Leaving roadway	1,562	0.2	21	97	173	186	1,085
Making U-turn	1,878	0.3	5	69	120	298	1,386
Overtaking or passing	6,716	0.9	29	238	361	774	5,314
Avoiding object	2,044	0.3	7	93	161	304	1,479
Avoiding pedestrian	198	0.0	3	31	25	31	108
Avoiding vehicle (front/back)	6,243	0.8	34	219	463	1,109	4,418
Avoiding vehicle (angle)	2,724	0.4	18	87	200	443	1,976
Driverless moving	628	0.1	2	19	19	44	544
Parked	31,702	4.3	52	460	908	1,460	28,822
Crossing at intersection	86	0.0	0	7	9	25	45
Crossing not at intersection	65	0.0	1	11	14	18	21
Getting on/off vehicle	14	0.0	0	3	2	3	6
In roadway with traffic	17	0.0	0	1	1	4	11
In roadway against traffic	13	0.0	0	0	1	4	8
Standing or lying in roadway	9	0.0	0	0	2	2	5
Pushing/working on vehicle	11	0.0	0	3	0	3	5
Other working in roadway	5	0.0	0	1	0	1	3
Playing in roadway	6	0.0	0	1	0	2	3
In roadway other reason	21	0.0	0	1	5	2	13
Not in roadway	14	0.0	0	1	4	5	4
Other	636	0.1	6	34	46	85	465
Unknown	33,221	4.5	60	726	1,465	4,240	26,730
TOTAL	739,538	100.0	2,126	19,956	42,044	116,040	559,372

## 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	1,587	64.4	1,842	65.0	48	471	605	384	291
Turning left	132	5.4	149	5.3	0	30	46	38	30
Turning right	89	3.6	101	3.6	0	14	33	23	30
Stopped on roadway	90	3.7	95	3.4	1	8	10	18	58
In prior crash	0	0.0	0	0.0	0	0	0	0	0
Changing lanes	39	1.6	45	1.6	0	9	18	6	8
Backing	7	0.3	10	0.4	0	0	5	3	2
Slowing/stopping on roadway	113	4.6	123	4.3	3	22	26	33	39
Slowing/stopping other	1	0.0	2	0.1	0	0	0	2	0
Starting up on roadway	29	1.2	33	1.2	0	4	11	7	11
Starting up other	5	0.2	5	0.2	0	2	0	0	1
Entering parking	1	0.0	1	0.0	0	0	0	1	0
Leaving parking	4	0.2	4	0.1	0	0	1	0	3
Entering roadway	23	0.9	34	1.2	0	7	8	6	10
Leaving roadway	11	0.4	11	0.4	2	0	3	3	2
Making U-turn	10	0.4	12	0.4	1	3	3	2	2
Overtaking or passing	60	2.4	64	2.3	4	15	11	16	13
Avoiding object	24	1.0	26	0.9	0	4	5	6	10
Avoiding pedestrian	0	0.0	0	0.0	0	0	0	0	0
Avoiding vehicle (front/back)	62	2.5	66	2.3	1	7	23	16	19
Avoiding vehicle (angle)	37	1.5	41	1.4	1	5	17	12	5
Driverless moving	2	0.1	2	0.1	0	1	0	0	0
Parked	30	1.2	30	1.1	0	0	0	0	8
Crossing at intersection	1	0.0	6	0.2	0	2	1	3	0
Crossing not at intersection	0	0.0	4	0.1	0	1	1	1	1
Getting on/off vehicle	0	0.0	0	0.0	0	0	0	0	0
In roadway with traffic	0	0.0	1	0.0	0	0	0	1	0
In roadway against traffic	1	0.0	6	0.2	0	0	2	3	1
Standing or lying in roadway	0	0.0	0	0.0	0	0	0	0	0
Pushing/working on vehicle	0	0.0	1	0.0	0	0	0	0	1
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	0	0.0	0	0	0	0	0
Not in roadway	0	0.0	0	0.0	0	0	0	0	0
Other	6	0.2	7	0.2	1	0	5	1	0
Unknown	101	4.1	114	4.0	1	22	36	21	21
<b>TOTAL</b>	<b>2,465</b>	<b>100.0</b>	<b>2,835*</b>	<b>100.0</b>	<b>63</b>	<b>627</b>	<b>870</b>	<b>606</b>	<b>566</b>

\* Includes 103 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	1,579	53.9	15	173	554	541	228
Turning left	88	3.0	0	17	34	25	7
Turning right	41	1.4	0	7	10	14	9
Stopped on roadway	23	0.8	1	1	9	7	4
In prior crash	1	0.0	0	0	1	0	0
Changing lanes	36	1.2	0	4	12	13	7
Backing	4	0.1	0	0	2	1	1
Slowing/stopping on roadway	5	0.2	0	1	1	1	2
Slowing/stopping other	8	0.3	0	1	2	5	0
Starting up on roadway	22	0.8	0	2	6	8	6
Starting up other	2	0.1	0	0	0	1	1
Entering parking	3	0.1	0	0	2	0	0
Leaving parking	7	0.2	0	2	3	1	1
Entering roadway	204	7.0	5	40	71	66	17
Leaving roadway	4	0.1	0	0	3	1	0
Making U-turn	9	0.3	1	1	2	3	2
Overtaking or passing	4	0.1	0	1	2	0	0
Avoiding object	2	0.1	0	0	0	1	1
Avoiding pedestrian	0	0.0	0	0	0	0	0
Avoiding vehicle (front/back)	9	0.3	1	1	2	3	2
Avoiding vehicle (angle)	10	0.3	1	3	2	3	1
Driverless moving	2	0.1	0	2	0	0	0
Parked	3	0.1	0	0	1	0	1
Crossing at intersection	340	11.6	0	36	112	128	55
Crossing not at intersection	149	5.1	2	27	65	37	15
Getting on/off vehicle	1	0.0	0	0	1	0	0
In roadway with traffic	32	1.1	0	3	15	12	2
In roadway against traffic	50	1.7	2	10	15	16	6
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	1	0.0	0	1	0	0	0
Playing in roadway	13	0.4	0	2	5	6	0
In roadway other reason	22	0.8	0	4	8	8	1
Not in roadway	26	0.9	0	2	7	9	6
Other	70	2.4	1	4	30	17	12
Unknown	158	5.4	0	15	64	38	19
TOTAL	2,929*	100.0	29	360	1,041	966	406

\* Includes 127 bicyclists with unknown injury severity

## ACTION PRIOR TO CRASH (continued)

PEDESTRIAN ACTION	PEDESTRIAN - INJURY SEVERITY						
	All Pedestrians		Fatal	Injury			No Injury
	Number	% of Total		A	B	C	
Going straight ahead	170	4.5	3	34	41	60	22
Turning left	31	0.8	2	8	5	11	5
Turning right	12	0.3	1	3	2	3	2
Stopped on roadway	13	0.3	0	4	6	2	0
In prior crash	9	0.2	2	1	3	2	0
Changing lanes	0	0.0	0	0	0	0	0
Backing	1	0.0	0	0	1	0	0
Slowing/stopping on roadway	2	0.1	0	1	0	0	1
Slowing/stopping other	2	0.1	0	0	0	2	0
Starting up on roadway	1	0.0	0	1	0	0	0
Starting up other	0	0.0	0	0	0	0	0
Entering parking	0	0.0	0	0	0	0	0
Leaving parking	3	0.1	0	0	1	2	0
Entering roadway	31	0.8	1	6	13	5	2
Leaving roadway	4	0.1	0	3	1	0	0
Making U-turn	1	0.0	0	0	0	1	0
Overtaking or passing	3	0.1	0	0	1	1	1
Avoiding object	1	0.0	0	0	1	0	0
Avoiding pedestrian	1	0.0	0	0	1	0	0
Avoiding vehicle (front/back)	4	0.1	0	2	2	0	0
Avoiding vehicle (angle)	0	0.0	0	0	0	0	0
Driverless moving	2	0.1	0	1	0	0	1
Parked	17	0.5	0	4	1	2	7
Crossing at intersection	819	21.8	14	173	236	321	42
Crossing not at intersection	1,135	30.3	72	299	387	286	38
Getting on/off vehicle	72	1.9	1	20	18	28	2
In roadway with traffic	182	4.9	19	39	52	49	15
In roadway against traffic	57	1.5	4	10	17	14	10
Standing or lying in roadway	150	4.0	13	43	42	38	9
Pushing/working on vehicle	47	1.3	3	15	9	16	3
Other working in roadway	42	1.1	1	5	6	27	3
Playing in roadway	91	2.4	3	24	26	33	1
In roadway other reason	194	5.2	7	44	64	66	9
Not in roadway	186	5.0	10	53	53	65	3
Other	124	3.3	1	26	42	45	6
Unknown	342	9.1	10	87	88	94	19
<b>TOTAL</b>	<b>3,749*</b>	<b>100.0</b>	<b>167</b>	<b>906</b>	<b>1,119</b>	<b>1,173</b>	<b>201</b>

\* Includes 183 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	6,481	0.9	6	202	446	1,052	4,775
Cross center/median	1,260	0.2	1	52	85	152	970
Ran off road left	1,070	0.1	0	30	75	143	822
Ran off road right	1,574	0.2	3	50	106	249	1,166
Re-enter road	232	0.0	1	15	16	47	153
Overturn	9,080	1.2	109	854	1,674	2,007	4,436
Separation of units	3,196	0.4	6	74	171	586	2,359
Fire/explosion	989	0.1	7	23	33	96	830
Immersion	126	0.0	4	9	14	17	82
Jackknife	434	0.1	2	4	11	42	375
Downhill runaway	91	0.0	0	3	5	13	70
Cargo loss/shift	795	0.1	0	5	10	37	743
Individual fell off	431	0.1	13	118	152	72	76
Other noncollision	2,171	0.3	1	60	124	233	1,753
NONCOLLISION Subtotal	27,930	3.8	153	1,499	2,922	4,746	18,610

### MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH NONFIXED OBJECT	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Pedestrian	3,019	0.4	160	754	894	897	314
Pedalcycle	2,658	0.4	29	308	888	863	570
Motor vehicle in transport	500,835	67.7	1,389	12,989	28,408	90,970	367,079
Parked motor vehicle	21,493	2.9	20	274	537	1,004	19,658
Railway train	184	0.0	9	29	18	16	112
Animal	61,417	8.3	4	88	414	891	60,020
Other nonfixed objects	6,281	0.8	7	95	183	432	5,564
COLLISION NONFIXED Subtotal	595,887	80.6	1,618	14,537	31,342	95,073	453,317

## 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	802	0.1	15	38	74	129	546
Bridge parapet end	499	0.1	1	6	29	42	421
Bridge rail	556	0.1	1	18	49	95	393
Guardrail face	3,202	0.4	7	84	213	409	2,489
Guardrail end	502	0.1	3	37	82	67	313
Median barrier	3,090	0.4	6	115	358	724	1,887
Highway traffic sign post	2,704	0.4	1	19	58	130	2,496
Signal post	327	0.0	0	10	13	20	284
Luminaire/light support	682	0.1	3	38	76	80	485
Utility pole	3,932	0.5	28	225	562	652	2,465
Other pole	1,229	0.2	4	50	64	126	985
Culvert	748	0.1	9	56	110	108	465
Curb	2,040	0.3	3	46	90	186	1,715
Ditch	7,539	1.0	25	304	755	1,138	5,317
Embankment	2,023	0.3	9	104	251	324	1,335
Fence	1,649	0.2	1	27	56	119	1,446
Mailbox	2,401	0.3	1	15	50	103	2,232
Tree	10,758	1.5	159	964	1,586	1,665	6,384
Rail crossing signal	125	0.0	0	3	6	5	111
Building	1,059	0.1	11	69	128	157	694
Traffic island	68	0.0	0	1	6	4	57
Fire hydrant	610	0.1	2	11	47	72	478
Impact attenuator	55	0.0	0	4	12	10	29
Other fixed object	3,713	0.5	12	131	280	363	2,927
COLLISION FIXED Subtotal	50,313	6.8	301	2,375	4,955	6,728	35,954

	MOST SEVERE OUTCOME IN CRASH						
	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Unknown Event	65,408	8.8	54	1,545	2,825	9,493	51,491
TOTAL MOST HARMFUL EVENT	739,538	100.0	2,126	19,956	42,044	116,040	559,372

## VEHICLE DEFECTS IN CRASH INVOLVEMENT

VEHICLE DEFECTS	MOST SEVERE OUTCOME IN CRASH						
	Motor Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Brakes	2,050	0.3	2	62	139	401	1,446
Lights/reflectors	464	0.1	0	22	26	58	358
Steering	252	0.0	0	5	24	45	178
Tires/wheels	785	0.1	6	36	75	113	555
Windows	155	0.0	0	9	12	29	105
Other	1,410	0.2	2	58	78	167	1,105
Unknown/None	734,422	99.3	2,116	19,764	41,690	115,227	555,625
<b>TOTAL</b>	<b>739,538</b>	<b>100.0</b>	<b>2,126</b>	<b>19,956</b>	<b>42,044</b>	<b>116,040</b>	<b>559,372</b>

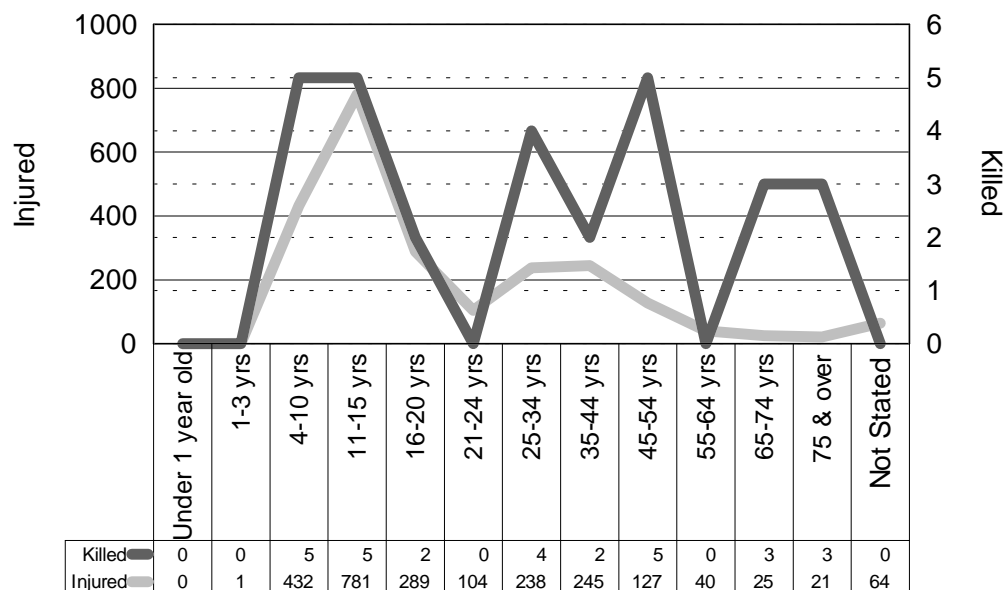
## DRIVER HAZARDOUS ACTION

HAZARDOUS ACTION	MOST SEVERE OUTCOME IN CRASH						
	All Vehicles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	373,266	50.5	882	8,861	18,858	56,222	288,443
Speed too fast	43,671	5.9	305	2,199	4,186	7,021	29,960
Speed too slow	1,250	0.2	8	31	76	263	872
Failed to yield	66,252	9.0	192	2,396	5,483	12,103	46,078
Disregard traffic control	17,314	2.3	129	1,120	2,039	4,014	10,012
Drove wrong way	595	0.1	12	35	49	92	407
Drove left of center	4,646	0.6	109	413	536	641	2,947
Improper passing	5,536	0.7	16	110	224	566	4,620
Improper lane use	16,210	2.2	22	201	483	1,424	14,080
Improper turn	9,891	1.3	5	218	456	1,262	7,950
Improper/no signal	1,062	0.1	0	12	52	106	892
Improper backing	14,072	1.9	2	27	118	423	13,502
Unable to stop in assured clear distance	96,401	13.0	67	1,499	4,148	21,107	69,580
Other	38,751	5.2	197	1,723	3,382	5,299	28,150
Unknown	50,621	6.8	180	1,111	1,954	5,497	41,879
<b>TOTAL</b>	<b>739,538</b>	<b>100.0</b>	<b>2,126</b>	<b>19,956</b>	<b>42,044</b>	<b>116,040</b>	<b>559,372</b>



## MICHIGAN BICYCLE CRASHES

1997 Bicycle Crash Information



In 1997, there were 2,929 bicyclists involved in motor vehicles crashes, with 29 bicyclists killed and 2,367 injured. The number of bicyclists killed represents a 9.4 percent decrease from 1996.

Children under 16 years of age accounted for 10 (34.5%) of the bicycle deaths in 1997.

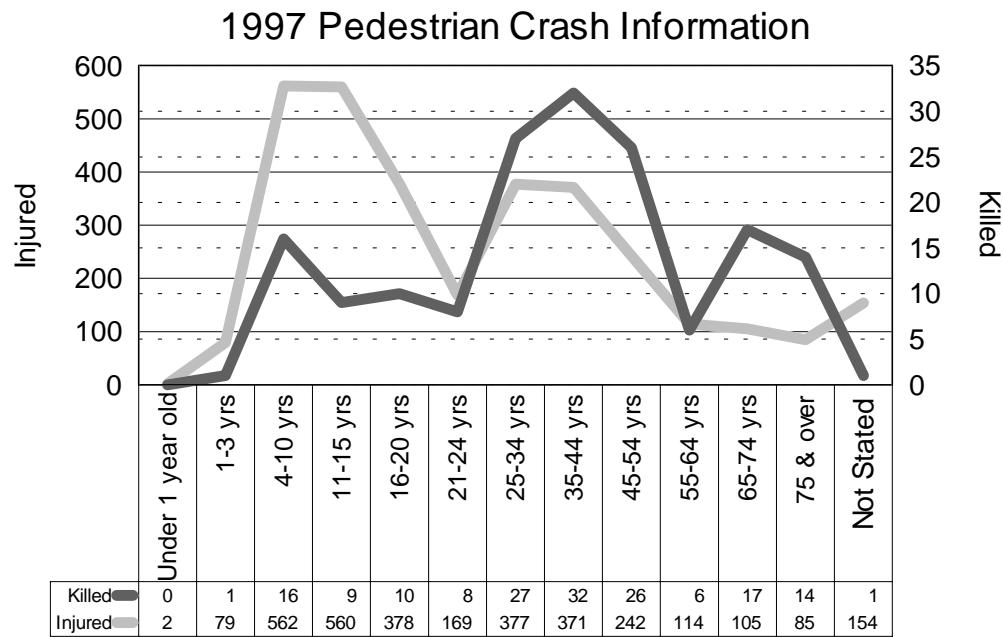
## BICYCLE HELMET USE AND INJURY SEVERITY

HELMET USE	Fatality	Injury			No Injury
		A	B	C	
Worn	4	16	47	31	15
Not Worn	14	130	340	300	102
Unknown	11	214	654	635	289
<b>TOTALS</b>	<b>29</b>	<b>360</b>	<b>1,041</b>	<b>966</b>	<b>406</b>

The National Center for Statistics and Analysis of the National Highway Traffic Safety Administration cites a study by the Centers for Disease Control [12] 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."



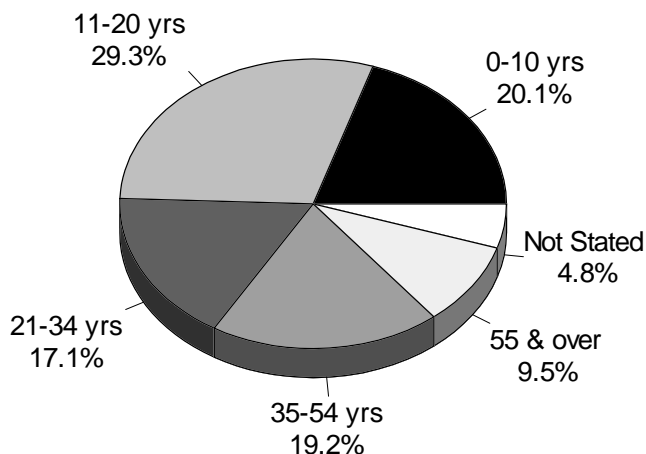
## MICHIGAN PEDESTRIAN CRASHES



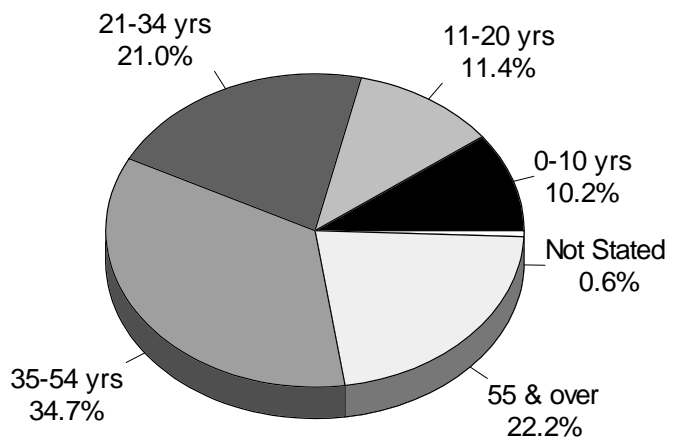
In 1997, there were 3,749 pedestrians involved in motor vehicles crashes, with 167 pedestrians killed and 3,198 injured. The number killed represents a 13.0 percent decrease in fatalities from 1996.

Children under 16 years of age accounted for 26 (15.6%) of the pedestrian deaths in 1997. Adults over the age of 54 accounted for 37 (22.2%) of the pedestrian deaths in 1997.

### Pedestrians Injured



### Pedestrians Killed





## MICHIGAN SNOWMOBILE ON ROADWAY CRASHES

### Most Harmful Event

#### MOST SEVERE OUTCOME IN CRASH

NONCOLLISION	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Loss of control	10	2.1	0	6	2	0	2
Cross center/median	0	0.0	0	0	0	0	0
Ran off road left	1	0.2	0	0	0	0	1
Ran off road right	2	0.4	0	1	0	1	0
Re-enter road	0	0.0	0	0	0	0	0
Overturn	28	5.9	0	8	10	5	5
Separation of units	2	0.4	0	0	0	0	2
Fire/explosion	0	0.0	0	0	0	0	0
Immersion	0	0.0	0	0	0	0	0
Jackknife	0	0.0	0	0	0	0	0
Downhill runaway	0	0.0	0	0	0	0	0
Cargo loss/shift	1	0.2	0	0	0	0	1
Individual fell off	32	6.7	0	11	12	9	0
Other noncollision	4	0.8	0	0	2	1	1
NONCOLLISION Subtotal	80	16.8	0	26	26	16	12

#### MOST SEVERE OUTCOME IN CRASH

HAD A COLLISION WITH NONFIXED OBJECT	Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Pedestrian	4	0.8	0	2	1	1	0
Pedalcycle	1	0.2	0	0	0	1	0
Motor vehicle in transport	201	42.2	9	53	22	41	76
Parked motor vehicle	21	4.4	1	7	1	4	8
Railway train	1	0.2	0	0	0	0	1
Animal	17	3.6	0	2	0	3	12
Other nonfixed objects	6	1.3	0	2	2	1	1
COLLISION NONFIXED Subtotal	251	52.7	10	66	26	51	98



## MICHIGAN SNOWMOBILE ON 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	2	0.4	0	1	0	1	0
Bridge parapet end	0	0.0	0	0	0	0	0
Bridge rail	0	0.0	0	0	0	0	0
Guardrail face	1	0.2	0	0	0	1	0
Guardrail end	0	0.0	0	0	0	0	0
Median barrier	1	0.2	0	1	0	0	0
Highway traffic sign post	4	0.8	0	3	0	0	1
Signal post	0	0.0	0	0	0	0	0
Luminaire/light support	1	0.2	0	0	0	0	1
Utility pole	4	0.8	0	1	0	1	2
Other pole	3	0.6	0	0	0	0	3
Culvert	5	1.1	0	0	1	3	1
Curb	0	0.0	0	0	0	0	0
Ditch	4	0.8	0	2	0	0	2
Embankment	10	2.1	0	3	6	0	1
Fence	3	0.6	0	0	1	0	2
Mailbox	3	0.6	0	0	2	0	1
Tree	50	10.5	5	20	9	7	9
Rail crossing signal	0	0.0	0	0	0	0	0
Building	2	0.4	0	0	1	0	1
Traffic island	0	0.0	0	0	0	0	0
Fire hydrant	0	0.0	0	0	0	0	0
Impact attenuator	0	0.0	0	0	0	0	0
Other fixed object	19	4.0	1	6	3	1	8
COLLISION FIXED Subtotal	112	23.5	6	37	23	14	32
Unknown Event	33	6.9	0	10	6	5	12
<b>TOTAL MOST HARMFUL EVENT</b>	<b>476</b>	<b>100.0</b>	<b>16</b>	<b>139</b>	<b>81</b>	<b>86</b>	<b>154</b>

A total of 476 snowmobiles were reported in crashes on Michigan roadways during 1997. Of these snowmobiles, 16 were involved in fatal crashes with 15 of their drivers and 1 passenger killed.



## MICHIGAN ORV/ATV ON ROADWAY CRASHES

### Most Harmful Event

### MOST SEVERE OUTCOME IN CRASH

NONCOLLISION	ORV/ATV		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Loss of control	5	2.8	0	1	3	1	0
Ran off road left	0	0.0	0	0	0	0	0
Overturn	29	16.4	1	11	13	3	1
Separation of Unit	1	0.6	0	0	0	1	0
Individual fell off	12	6.8	0	5	6	1	0
Other noncollision	4	2.3	0	1	2	0	1
NONCOLLISION Subtotal	51	28.8	1	18	24	6	2

### HAD A COLLISION WITH NONFIXED OBJECT

Pedestrian	0	0.0	0	0	0	0	0
Pedalcycle	1	0.6	0	0	0	1	0
Motor vehicle in transport	67	37.9	0	13	12	13	29
Parked motor vehicle	5	2.8	0	2	0	0	3
Animal	4	2.3	0	0	0	0	4
Other nonfixed objects	2	1.1	0	0	0	1	1
COLLISION NONFIXED Subtotal	79	44.6	0	15	12	15	37

### HAD A COLLISION WITH FIXED OBJECT

Bridge rail	1	0.6	0	0	1	0	0
Guardrail face	0	0.0	0	0	0	0	0
Traffic sign post	0	0.0	0	0	0	0	0
Luminaire support	0	0.0	0	0	0	0	0
Utility pole	2	1.1	1	0	0	1	0
Culvert	0	0.0	0	0	0	0	0
Ditch	6	3.4	1	1	1	1	2
Embankment	0	0.0	0	0	0	0	0
Mailbox	2	1.1	0	0	2	0	0
Tree	17	9.6	2	8	3	4	0
Building	1	0.6	0	0	1	0	0
Other fixed object	7	4.0	0	2	3	2	0
COLLISION FIXED Subtotal	36	20.3	4	11	11	8	2

Unknown Event	11	6.2	0	2	4	3	2
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TOTAL MOST HARMFUL EVENT	177	100.0	5	46	51	32	43
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A total of 177 Off Road Vehicles/All Terrain Vehicles were reported in crashes on Michigan roadways during 1997. Of these ORV/ATVs, 5 were involved in fatal crashes and 5 of their operators were killed.



## MICHIGAN SNOWMOBILE ON ROADWAY CRASHES

### MOST SEVERE OUTCOME IN CRASH

Driver Hazardous Action	All Snowmobiles		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	125	26.3	4	28	21	21	51
Speed too fast	126	26.5	4	53	24	23	22
Speed too slow	2	0.4	0	0	2	0	0
Failed to yield	63	13.2	1	14	5	10	33
Disregard traffic control	5	1.1	0	3	0	0	2
Drove wrong way	3	0.6	1	1	1	0	0
Drove left of center	9	1.9	1	3	0	2	3
Improper passing	3	0.6	0	0	0	2	1
Improper lane use	4	0.8	0	0	1	2	1
Improper turn	4	0.8	0	1	0	2	1
Improper/no signal	0	0.0	0	0	0	0	0
Improper backing	2	0.4	0	0	0	0	2
Unable to stop in assured clear distance	36	7.6	1	12	9	4	10
Other	63	13.2	4	14	14	13	18
Unknown	31	6.5	0	10	4	7	10
<b>TOTAL</b>	<b>476</b>	<b>100.0</b>	<b>16</b>	<b>139</b>	<b>81</b>	<b>86</b>	<b>154</b>

## MICHIGAN ORV/ATV ON ROADWAY CRASHES

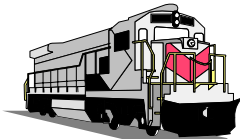
### MOST SEVERE OUTCOME IN CRASH

Driver Hazardous Action	All ORV/ATVs		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
None	39	22.0	0	8	8	11	12
Speed too fast	37	20.9	3	13	10	9	2
Speed too slow	0	0.0	0	0	0	0	0
Failed to yield	20	11.3	0	6	4	4	6
Disregard traffic control	2	1.1	0	0	2	0	0
Drove wrong way	0	0.0	0	0	0	0	0
Drove left of center	2	1.1	0	1	0	0	1
Improper passing	1	0.6	0	0	0	1	0
Improper lane use	4	2.3	0	1	0	0	3
Improper turn	2	1.1	0	1	0	0	1
Improper/no signal	0	0.0	0	0	0	0	0
Improper backing	2	1.1	0	0	0	0	2
Unable to stop in assured clear distance	8	4.5	0	2	1	1	4
Other	47	26.6	0	10	21	6	10
Unknown	13	7.3	2	4	5	0	2
<b>TOTAL</b>	<b>177</b>	<b>100.0</b>	<b>5</b>	<b>46</b>	<b>51</b>	<b>32</b>	<b>43</b>



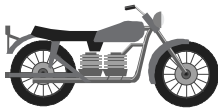
## MICHIGAN FARM EQUIPMENT CRASHES

A total of 251 crashes involving farm equipment were reported on Michigan roadways during 1997. Of these crashes, 2 were fatal crashes with 1 driver and 1 passenger of the farm equipment killed.



## MICHIGAN VEHICLE - TRAIN CRASHES

A total of 124 crashes involving trains were reported in Michigan during 1997. The National Highway Traffic Safety Administration's 1997 Fatal Accident Reporting System [13] reported 11 fatal train crashes in Michigan, and 14 persons killed as a result of those collisions.

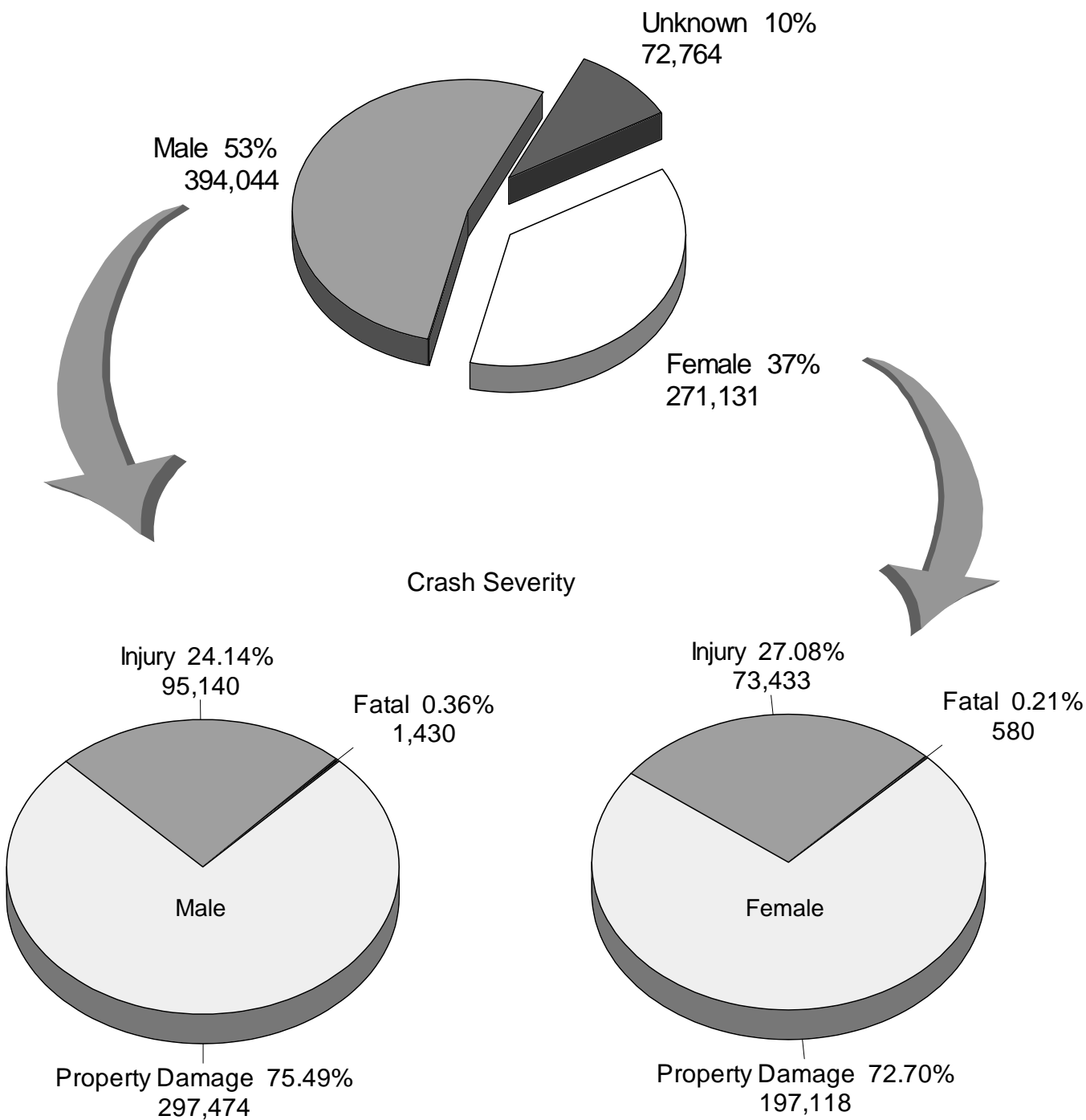


## MOTORCYCLE AND MOTOR SCOOTER DATA

MOTORCYCLE & MOTOR SCOOTER DATA	1996	1997	% Change
Registrations	128,335.0	136,030.0	6.0
Crashes	2,468.0	2,465.0	-0.1
Deaths	62.0	63.0	1.6
Persons Injured	2,200.0	2,103.0	-4.4
Death Rate based on 10,000 cycle registrations	4.8	4.6	-4.2
Estimated Mileage based on 3,000 miles per cycle	385,005,000.0	408,090,000.0	6.0
Death Rate based on deaths per 100 million vehicle miles traveled	16.1	15.4	-4.3

Motorcycles were involved in 0.58 percent of all traffic crashes in Michigan in 1997. Injuries were proportionately more severe to motorcyclists than to persons in motor vehicles. The 1997 death rate for motorcyclists was 15.4 per 100 million vehicle miles traveled compared to the overall 1.6 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 1997 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	1,098	3	105	65	245	238	180	105	78	26	53
Alger	616	6	81	51	103	126	81	44	28	17	79
Allegan	5,937	31	998	558	1,296	1,159	688	364	202	147	494
Alpena	2,075	7	389	146	331	400	254	174	133	83	158
Antrim	1,402	4	207	122	276	276	195	108	70	41	103
Arenac	1,405	5	219	102	273	303	200	125	70	40	68
Baraga	612	4	70	49	122	123	90	44	30	19	61
Barry	3,301	18	544	263	735	663	461	262	125	67	163
Bay	7,394	27	1,296	643	1,337	1,311	861	459	341	263	856
Benzie	860	4	116	65	163	195	118	63	43	25	68
Berrien	9,864	41	1,412	742	1,772	1,572	1,111	659	452	290	1,813
Branch	3,119	11	518	276	591	574	388	193	124	89	355
Calhoun	11,030	53	1,645	908	2,126	2,019	1,331	710	519	311	1,408
Cass	2,764	15	386	200	513	485	298	180	94	55	538
Charlevoix	1,782	9	282	114	323	402	216	134	87	48	167
Cheboygan	1,449	7	213	112	270	294	184	107	82	41	139
Chippewa	2,394	6	354	228	454	414	268	146	94	60	370
Clare	2,196	6	332	172	447	469	301	186	117	63	103
Clinton	4,123	15	655	366	816	833	586	281	161	100	310
Crawford	1,114	4	135	75	223	236	177	83	52	26	103
Delta	3,546	11	560	248	573	656	470	247	204	138	439
Dickinson	2,146	4	277	92	332	409	269	135	111	99	418
Eaton	7,024	20	1,246	591	1,412	1,339	980	479	264	158	535
Emmet	2,695	7	422	186	545	536	362	199	113	74	251
Genesee	29,140	138	4,547	2,487	5,805	5,322	3,605	1,840	1,233	719	3,444
Gladwin	1,439	7	216	98	331	303	200	132	71	41	40
Gogebic	1,049	3	157	45	125	140	98	53	62	58	308
Grand Traverse	6,468	16	1,145	487	1,238	1,295	870	442	280	193	502
Gratiot	2,501	11	413	253	494	460	323	187	111	92	157
Hillsdale	3,164	9	545	296	642	562	394	219	104	98	295
Houghton	2,136	3	354	217	347	332	245	148	99	75	316
Huron	2,597	6	471	194	502	489	358	197	138	105	137
Ingham	23,426	75	3,738	2,889	4,840	4,106	2,818	1,300	731	488	2,441
Ionia	3,889	18	670	396	853	774	514	238	118	96	212
Iosco	1,746	3	267	130	341	336	245	159	91	78	96
Iron	1,107	3	130	64	146	199	153	95	86	46	185
Isabella	4,056	16	728	544	785	722	463	280	158	83	277
Jackson	11,588	40	1,897	907	2,355	2,151	1,447	749	465	359	1,218
Kalamazoo	17,061	74	2,724	1,910	3,527	2,969	2,066	984	646	440	1,721
Kalkaska	1,170	2	181	97	240	237	172	82	52	35	72
Kent	46,687	192	7,335	4,845	10,386	8,686	5,263	2,507	1,546	1,067	4,860
Keweenaw	102	0	14	13	18	16	8	5	6	5	17
Lake	799	5	79	47	164	176	132	79	42	27	48
Lapeer	5,587	30	1,008	458	1,247	1,201	726	350	172	90	305
Leelanau	952	4	132	82	156	198	125	81	45	22	107

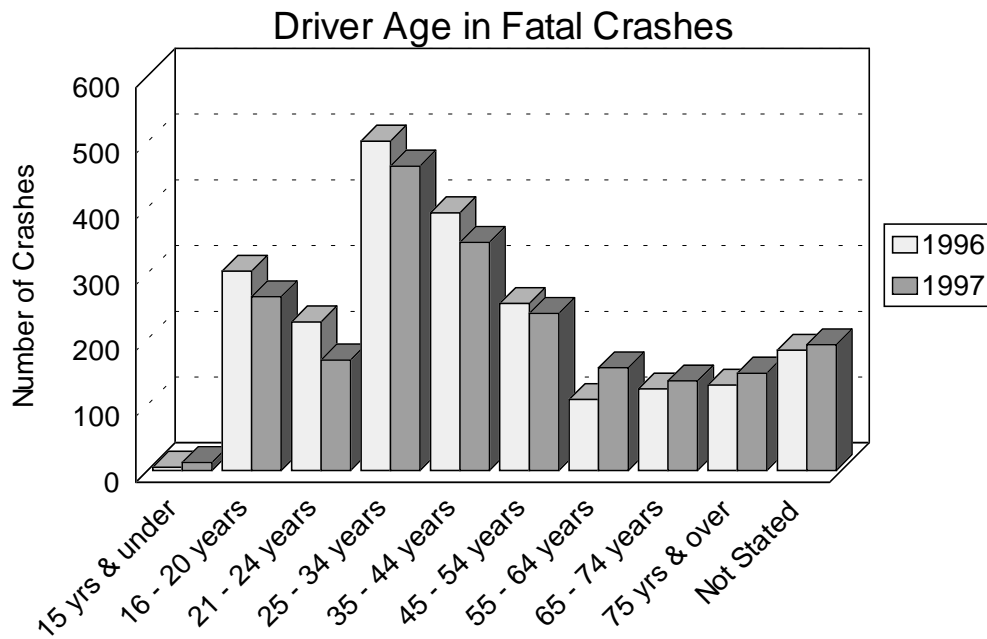
## REPORTED AGE OF DRIVERS INVOLVED IN ALL CRASHES (continued)

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	5,996	19	1,151	467	1,074	962	778	403	250	218	674
Livingston	9,113	36	1,756	740	1,914	1,927	1,157	539	272	155	617
Luce	407	4	60	34	77	83	46	34	10	17	42
Mackinac	1,217	1	138	89	208	266	182	111	58	26	138
Macomb	55,462	134	8,284	4,675	11,825	10,145	6,391	3,497	2,463	1,580	6,468
Manistee	1,523	9	208	102	309	318	213	117	77	63	107
Marquette	4,475	16	806	383	711	776	541	226	190	110	716
Mason	2,395	12	400	187	421	478	336	184	118	71	188
Mecosta	3,755	16	704	483	707	640	476	273	155	89	212
Menominee	2,229	7	315	116	341	426	256	140	101	69	458
Midland	4,982	14	926	426	1,023	958	683	342	197	122	291
Missaukee	958	1	154	79	185	202	126	89	48	23	51
Monroe	8,359	37	1,466	589	1,411	1,392	862	449	287	191	1,675
Montcalm	4,427	27	795	402	945	856	572	294	190	119	227
Montmorency	660	6	88	54	138	128	98	60	43	20	25
Muskegon	10,522	33	1,868	946	2,115	1,924	1,314	679	504	352	787
Newaygo	2,902	17	511	227	624	611	384	222	123	80	103
Oakland	96,291	277	12,971	8,047	21,936	19,542	12,481	5,925	3,629	2,221	9,262
Oceana	1,560	6	253	114	334	312	205	119	52	30	135
Ogemaw	1,602	4	213	126	312	368	245	150	82	33	69
Ontonagon	682	3	76	43	90	130	89	62	46	16	127
Osceola	1,993	8	260	173	464	412	255	172	83	44	122
Oscoda	617	2	68	32	125	143	107	63	38	15	24
Otsego	1,706	2	316	134	327	339	228	106	79	42	133
Ottawa	13,801	53	2,803	1,399	2,905	2,558	1,520	787	472	355	949
Presque Isle	930	0	150	92	159	146	121	101	69	33	59
Roscommon	1,657	7	242	122	296	353	235	135	115	63	89
Saginaw	15,379	45	2,469	1,340	3,021	2,852	1,918	1,097	725	466	1,446
St. Clair	9,306	32	1,806	817	1,790	1,609	1,104	514	354	277	1,003
St. Joseph	3,855	14	662	327	714	636	418	283	157	83	561
Sanilac	2,477	9	434	202	511	514	330	184	132	65	96
Schoolcraft	773	3	91	60	142	132	93	61	54	24	113
Shiawassee	3,879	21	725	335	776	733	487	243	166	113	280
Tuscola	3,157	14	562	259	664	648	419	227	130	85	149
Van Buren	4,477	18	718	394	826	792	560	297	184	121	567
Washtenaw	22,427	59	3,143	2,346	4,831	4,017	2,843	1,117	676	388	3,007
Wayne	182,281	432	17,085	12,923	33,860	27,595	18,502	9,369	6,718	3,792	52,005
Wexford	2,907	9	451	207	573	562	395	196	137	78	299
UNKNOWN	190	0	20	8	42	42	24	6	7	3	38
Totals	737,939	2,380	104,361	62,332	148,546	132,233	87,288	44,487	29,041	18,149	109,122

## DRIVER AGE

AGE OF DRIVERS IN FATAL CRASHES	1996	1997	% Change	% 1997 Fatal Crash Involvement	Percent Active Driving Population*
15 years and under	5	12	140.0	0.6	1.5
16 - 20 years	303	264	-12.9	12.4	8.5
21 - 24 years	226	168	-25.7	7.9	7.0
25 - 34 years	501	463	-7.6	21.8	20.2
35 - 44 years	392	347	-11.5	16.3	21.8
45 - 54 years	254	239	-5.9	11.3	17.1
55 - 64 years	108	156	44.4	7.3	10.6
65 - 74 years	124	136	9.7	6.4	8.2
75 years and over	130	148	13.8	7.0	5.1
Not Stated	183	191	4.4	9.0	---
<b>TOTALS</b>	<b>2,226</b>	<b>2,124</b>	<b>-4.6</b>	<b>100.0</b>	<b>100.0</b>

\* Figures courtesy of the Michigan Department of State [14]



**REGISTRATION TRANSACTIONS**  
**(Includes Original, Renewal, Correction, and Replacements)**  
Registration data courtesy of the Michigan Department of State [15]

VEHICLE							OTHER		
COUNTY	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Alcona	7,017	3,625	2,641	155	13,438	\$ 694,733.50	2,534	828	70
Alger	4,950	3,006	1,585	196	9,737	483,939.15	1,714	1,411	15
Allegan	57,687	24,600	15,475	1,591	99,353	5,748,036.71	10,752	2,771	287
Alpen	18,545	10,217	6,140	480	35,382	2,801,505.08	4,521	2,109	47
Antrim	13,468	5,832	4,206	372	23,878	1,304,949.21	4,854	1,708	53
Arenac	9,752	4,953	3,314	270	18,289	1,001,774.08	3,761	1,273	42
Baraga	3,945	2,471	1,197	126	7,739	418,330.22	1,044	685	10
Barry	31,576	14,027	9,340	1,011	55,954	2,908,838.98	8,676	1,448	97
Bay	70,541	23,153	18,177	1,649	113,520	6,540,021.49	10,156	4,630	262
Benzie	9,501	4,136	2,977	258	16,872	838,298.77	3,696	1,120	31
Berrien	102,781	32,096	17,998	2,474	155,349	8,795,240.44	13,557	2,551	486
Branch	23,872	11,406	6,905	658	42,841	2,444,734.85	6,135	727	148
Calhoun	87,247	26,781	15,201	2,083	131,312	7,331,684.48	10,161	1,414	371
Cass	28,474	12,592	7,456	855	49,377	2,654,513.80	8,375	1,764	147
Charlevoix	15,813	6,991	4,601	507	27,912	1,560,355.77	4,652	2,168	53
Cheboygan	14,757	7,491	4,831	418	27,497	1,530,159.35	5,088	2,812	88
Chippewa	17,588	9,089	5,586	444	32,707	1,794,370.38	4,532	3,794	78
Clare	17,406	8,683	5,716	469	32,274	1,722,630.97	4,389	1,691	61
Clinton	37,603	14,947	10,527	939	64,016	3,653,197.34	6,152	2,167	196
Crawford	7,094	3,627	2,506	218	13,445	713,603.24	2,690	1,239	26
Delta	23,464	12,092	7,804	648	44,008	2,383,656.06	4,801	2,872	118
Dickinson	16,214	8,254	5,252	557	30,277	1,722,009.77	3,415	1,830	141
Eaton	61,563	20,966	13,479	1,636	97,644	6,782,416.78	8,297	1,951	208
Emmet	19,724	8,023	5,076	509	33,332	1,957,046.37	4,983	2,352	95
Genesee	274,791	75,544	44,676	6,267	401,278	23,727,159.05	32,081	10,032	570
Gladwin	14,856	7,527	5,039	439	27,861	1,466,643.33	4,745	1,596	69
Gogebic	9,206	4,753	2,243	240	16,442	844,006.80	2,379	1,439	42
Grand Traverse	51,605	17,365	13,203	1,248	83,421	4,961,611.57	12,286	4,161	148

### REGISTRATION TRANSACTIONS (continued)

COUNTY	VEHICLE						OTHER		
	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Gratiot	22,900	10,235	7,161	593	40,889	2,264,190.59	3,452	1,292	99
Hillsdale	25,381	12,489	6,701	743	45,314	2,471,915.02	4,768	776	112
Houghton	17,925	7,465	3,562	510	29,462	1,592,375.95	3,511	2,189	70
Huron	23,029	11,561	6,714	513	41,817	2,526,347.49	3,395	2,393	191
Ingham	176,729	41,481	22,276	3,524	244,010	14,568,948.59	15,709	3,238	563
Ionia	31,946	13,898	8,305	857	55,006	2,939,207.26	5,039	1,267	162
Iosco	17,034	7,853	5,681	408	30,976	1,670,972.04	5,114	1,455	107
Iron	7,429	4,226	2,376	243	14,274	735,175.05	2,381	986	44
Isabella	27,504	12,087	7,350	699	47,640	3,143,672.70	4,396	1,437	77
Jackson	92,422	32,929	19,398	2,622	147,371	8,525,244.89	15,347	2,712	359
Kalamazoo	147,920	36,920	23,271	3,496	211,607	12,802,555.25	18,535	2,573	502
Kalkaska	8,765	5,634	3,549	290	18,238	1,359,097.13	2,532	1,509	29
Kent	355,157	98,427	69,978	7,336	530,898	36,071,955.08	44,425	8,481	1,093
Keweenaw	1,097	496	248	21	1,862	94,250.79	356	127	5
Lake	5,538	3,061	1,840	163	10,602	530,081.34	2,163	750	26
Lapeer	49,509	22,808	12,564	1,728	86,609	5,087,182.27	6,810	3,178	111
Leelanau	12,558	4,757	3,928	310	21,553	1,195,191.99	5,036	1,287	72
Lenawee	57,703	23,231	12,864	1,757	95,555	5,348,944.11	8,844	2,604	326
Livingston	91,048	31,761	20,714	2,995	146,518	9,584,898.74	16,385	4,567	171
Luce	3,163	2,137	1,486	61	6,847	400,789.19	1,304	1,006	15
Mackinac	6,426	3,680	2,246	141	12,493	676,492.75	2,955	1,983	30
Macomb	535,337	121,553	59,947	10,637	727,474	47,814,509.18	48,402	13,521	1,201
Manistee	14,386	6,689	4,563	410	26,048	1,400,839.51	3,650	1,111	79
Marquette	35,682	15,787	8,381	1,130	60,980	3,336,688.83	6,730	4,066	126
Mason	16,823	7,384	4,860	484	29,551	1,624,486.69	4,114	1,072	94
Mecosta	19,800	8,894	5,711	540	34,945	1,874,433.75	4,756	1,241	52
Menominee	13,503	6,604	4,476	421	25,004	1,350,548.88	2,735	1,301	304
Midland	54,629	16,303	13,461	1,429	85,822	4,750,968.05	9,096	2,237	173
Missaukee	7,109	4,485	2,879	223	14,696	820,283.76	2,037	1,105	29



### REGISTRATION TRANSACTIONS (continued)

VEHICLE							OTHER		
COUNTY	Passenger	Commercial	Trailer	Motorcycle	Total Plates	Total Revenue	Watercraft	Snowmobile	Moped
Monroe	86,799	33,414	17,307	2,725	140,245	8,376,086.04	10,709	3,772	411
Montcalm	32,393	15,255	9,635	838	58,121	3,145,560.07	6,861	1,649	175
Montmorency	5,714	3,553	2,335	135	11,737	673,120.29	2,213	1,200	11
Muskegon	102,848	31,264	21,685	3,068	158,865	8,419,276.44	14,895	3,525	527
Newaygo	25,546	11,995	8,190	738	46,469	2,369,055.48	6,517	1,969	109
Oakland	841,667	161,675	89,302	16,648	1,109,292	78,713,069.59	80,618	19,142	1,538
Oceana	15,018	7,475	3,839	430	26,762	1,428,663.35	2,854	1,280	97
Ogemaw	12,164	6,604	4,374	387	23,529	1,288,429.53	3,317	1,458	41
Ontonagon	4,593	2,808	1,526	129	9,056	467,957.02	1,072	1,264	14
Osceola	12,370	6,853	3,827	292	23,342	1,309,935.21	2,560	1,274	29
Oscoda	5,235	2,931	1,773	159	10,098	517,961.37	1,872	882	8
Otsego	13,250	6,705	4,210	370	24,535	1,599,047.32	2,970	2,385	32
Ottawa	136,231	40,052	33,487	3,292	213,062	12,904,635.58	22,659	5,062	793
Presque Isle	8,760	5,144	3,097	221	17,222	933,308.82	2,937	1,389	39
Roscommon	15,961	6,729	5,367	375	28,432	1,523,917.64	6,282	3,147	158
Saginaw	134,366	37,225	27,064	2,526	201,181	11,938,285.13	16,291	6,263	375
St. Clair	99,200	36,036	18,973	2,767	156,976	9,133,746.93	14,258	4,563	322
St. Joseph	35,989	15,109	9,179	1,321	61,598	3,285,181.29	8,325	815	201
Sanilac	25,283	12,719	6,504	734	45,240	2,637,232.45	2,222	1,584	71
Schoolcraft	4,670	2,914	1,863	123	9,570	528,915.82	1,786	1,196	31
Shiawassee	43,658	18,413	11,295	1,300	74,666	4,272,596.09	5,896	2,528	196
Tuscola	34,264	16,845	10,442	1,096	62,647	3,400,330.26	4,736	2,874	136
Van Buren	42,891	17,571	9,425	1,223	71,110	3,804,274.19	8,078	1,701	200
Washtenaw	188,947	40,855	19,854	4,094	253,750	15,943,469.74	14,881	3,249	488
Wayne	1,270,237	235,084	99,597	19,222	1,624,140	109,068,327.80	70,303	13,521	2,241
Wexford	18,024	7,813	5,295	497	31,629	1,738,757.88	4,460	2,041	70
Non-Resident	52,926	20,648	12,417	319	86,310	29,225,229.03	36,424	4,354	116
Unknown County							394	56	14
Totals	6,198,496	1,762,771	1,031,503	136,030	9,128,800	\$593,994,084.77	800,793	230,150	18,624



1997

1997

1997

1997

1997

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1997

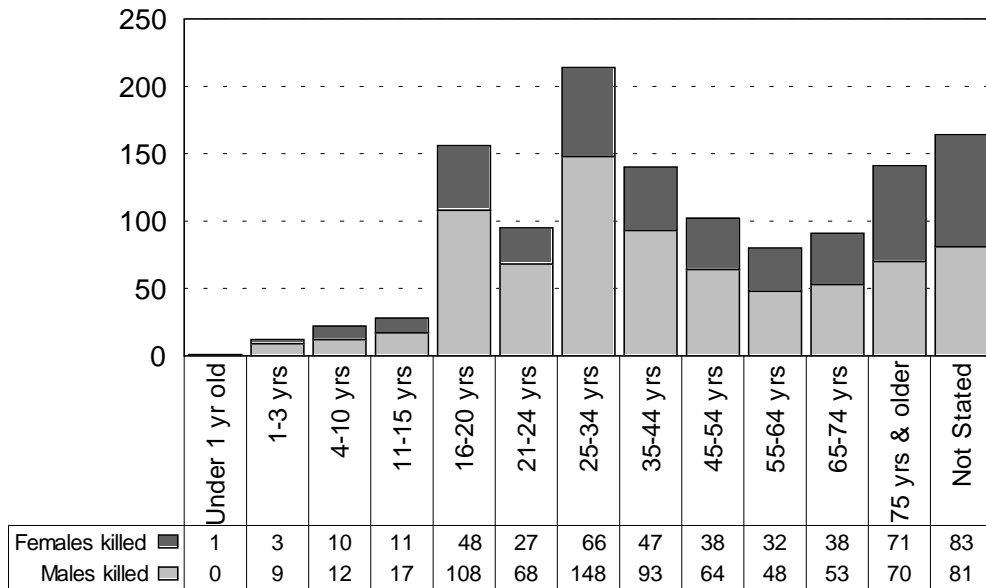
1997

**Occupant/  
Person**



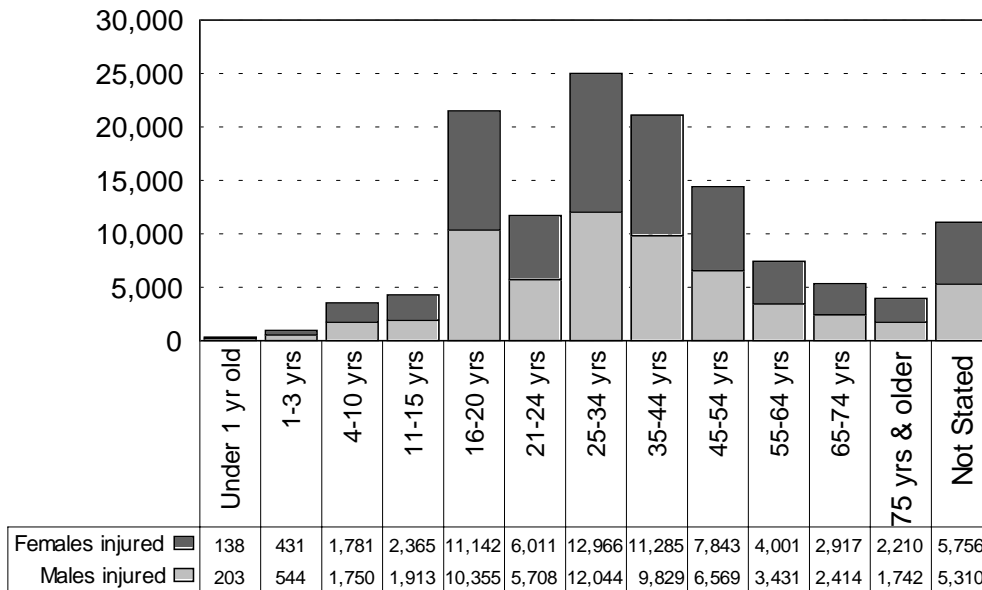
## AGE AND GENDER OF OCCUPANTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Occupants Killed



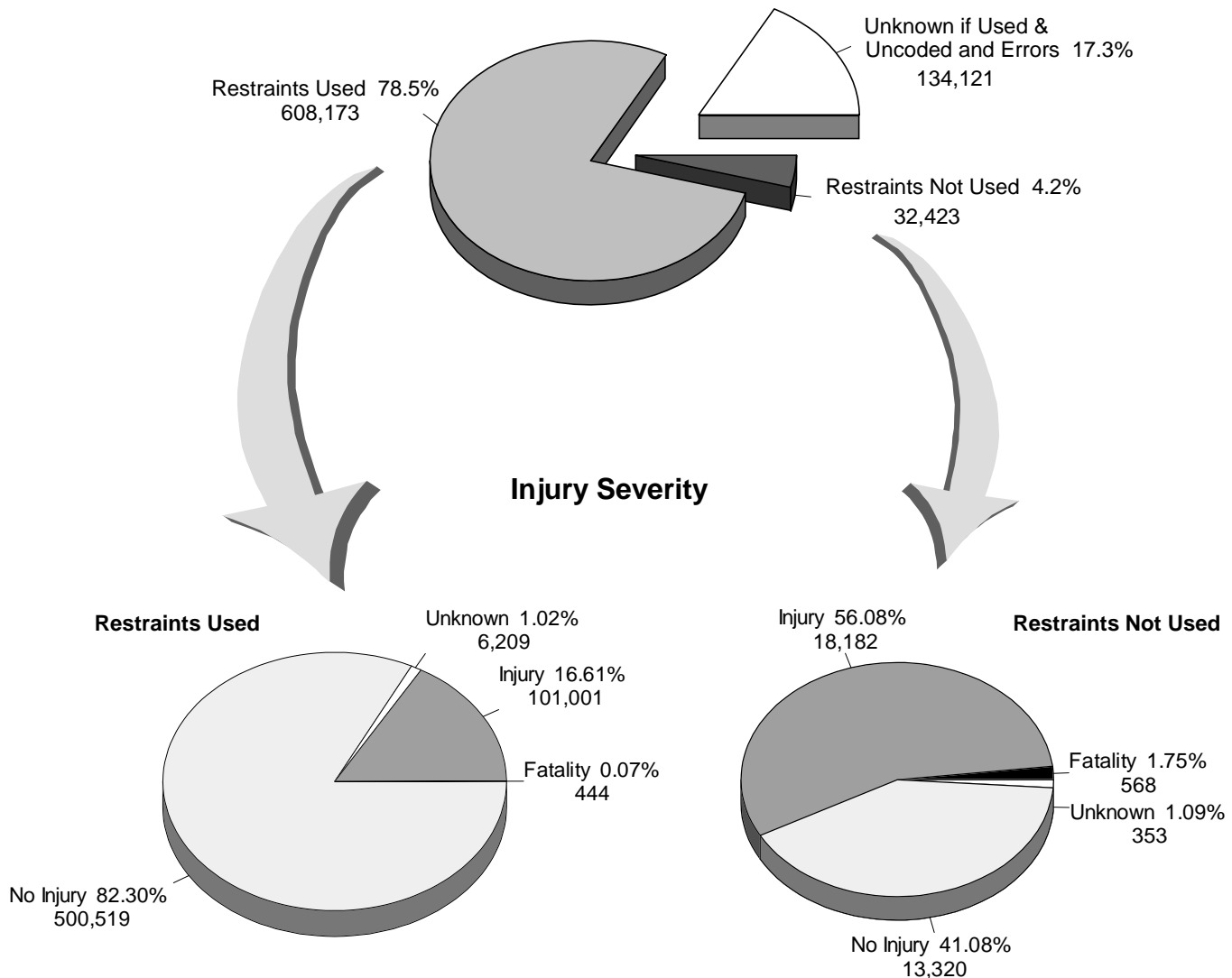
The majority (61.9%) of occupants killed in traffic crashes in 1997 were male.

### Occupants Injured



The majority (52.7%) of occupants injured in traffic crashes in 1997 were female.

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

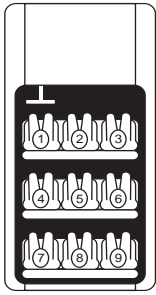


Restraint use by motorists is measured two ways: by what motorists **REPORT** to police at the scene of a traffic crash (reported usage), and by **DIRECT OBSERVATION** studies where motorists are totally unaware of the presence of researchers (observed usage). As expected, reported usage is routinely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

Of the 774,717 drivers and injured passengers involved in crashes, 608,173 (78.5%) were **REPORTED** to be using occupant restraints.

However, a **DIRECT OBSERVATION** study by the University of Michigan Transportation Research Institute [16] estimated overall safety belt use was 70.1 percent for passenger cars, 69.5 percent for sport-utility vehicles, 68.7 percent for vans, and 56.6 percent for pickup trucks in 1997.

**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	575,125	95.7	285	5,538	14,737	54,585	499,980
Center Front	713	0.1	2	52	155	474	30
Right Front	19,101	3.2	124	1,557	3,864	13,330	226
Left Rear	2,178	0.4	8	124	502	1,408	136
Center Rear	579	0.1	3	56	136	373	11
Right Rear	2,344	0.4	12	143	499	1,686	4
Left Rear Third Seat	309	0.1	1	24	63	202	19
Center Rear Third Seat	114	0.0	0	13	34	64	3
Right Rear Third Seat	359	0.1	0	34	68	249	8
Unknown	117	0.0	0	5	14	46	52
<b>TOTAL</b>	<b>600,939*</b>	<b>100.0</b>	<b>435</b>	<b>7,546</b>	<b>20,072</b>	<b>72,417</b>	<b>500,469</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 146-147.

\* This total does not include 6,209 occupants with unknown injury severity.

Seating Position	Belts Not Used*		Fatal	Injury			PDO
	Number	% of Total		A	B	C	
Left Front	23,036	72.4	381	2,391	3,675	3,880	12,709
Center Front	328	1.0	3	76	97	131	21
Right Front	4,419	13.9	107	918	1,638	1,702	54
Left Rear	1,372	4.3	11	161	319	517	364
Center Rear	459	1.4	7	102	150	192	8
Right Rear	1,159	3.6	25	174	354	606	0
Left Rear Third Seat	159	0.5	4	29	41	84	1
Center Rear Third Seat	113	0.4	0	28	27	58	0
Right Rear Third Seat	206	0.6	6	34	62	95	9
Unknown	579	1.8	19	67	144	283	66
<b>TOTAL</b>	<b>31,830*</b>	<b>100.0</b>	<b>563</b>	<b>3,980</b>	<b>6,507</b>	<b>7,548</b>	<b>13,232</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 146-147.

\* This total does not include 352 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	37	12.8	0	2	7	28	0
No Belts Used	11	3.8	0	4	4	3	0
CRD Used	221	76.2	1	11	40	169	0
CRD Not Used	14	4.8	0	1	4	9	0
Restraint Failed	0	0.0	0	0	0	0	0
Restraint Use Unknown	5	1.7	0	2	1	2	0
Uncoded & Errors	2	0.7	0	0	0	2	0
TOTAL	290	100.0	1	20	56	213	0

*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	130	51.0	2	14	46	68	0
No Belts Used	31	12.2	0	7	7	16	1
CRD Used	63	24.7	0	3	22	38	0
CRD Not Used	25	9.8	1	2	11	9	2
Restraint Failed	0	0.0	0	0	0	0	0
Restraint Use Unknown	5	2.0	0	3	2	0	0
Uncoded & Errors	1	0.4	0	0	1	0	0
TOTAL	255	100.0	3	29	89	131	3



## 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	241	33.6	2	14	73	152	0
No Belts Used	68	9.5	2	7	24	35	0
CRD Used	351	49.0	4	16	108	223	0
CRD Not Used	26	3.6	0	5	7	14	0
Restraint Failed	0	0.0	0	0	0	0	0
Restraint Use Unknown	11	1.5	1	3	5	2	0
Uncoded & Errors	20	2.8	0	2	9	9	0
TOTAL	717	100.0	9	47	226	437	0

*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	5,163	71.7	16	352	1,297	3,495	3
No Belts Used	1,612	22.4	22	277	555	756	2
CRD Used	95	1.3	1	4	23	67	0
CRD Not Used	38	0.5	3	6	12	17	0
Restraint Failed	4	0.1	0	0	3	1	0
Restraint Use Unknown	173	2.4	0	29	68	76	0
Uncoded & Errors	118	1.6	1	16	37	64	0
TOTAL	7,203	100.0	43	684	1,995	4,476	5

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

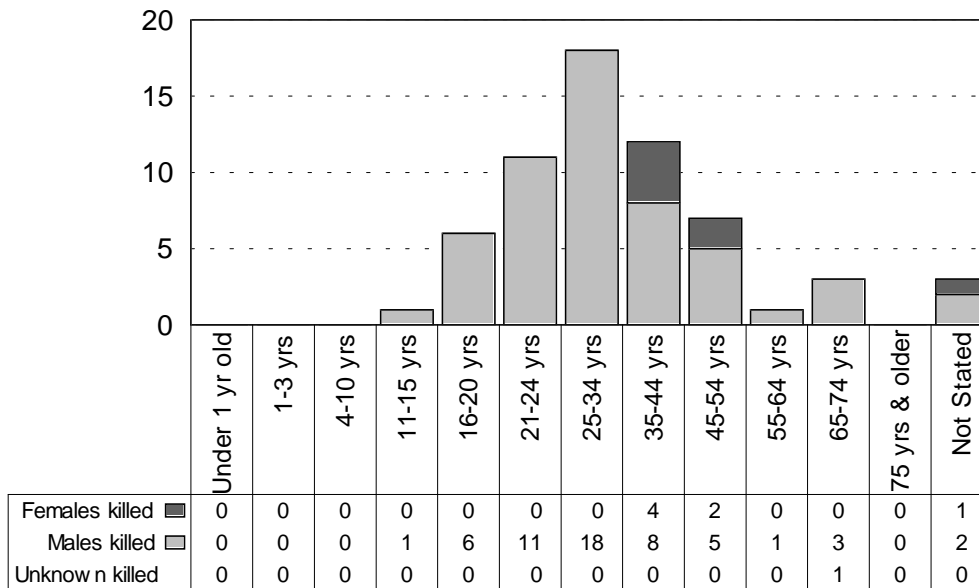
In a pilot study of Child Restraint Device (CRD) use and misuse in Michigan [17] at the University of Michigan Transportation Research Institute, researchers discovered at least some degree of improper CRD use in 88.5 percent of case studies.

*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.*

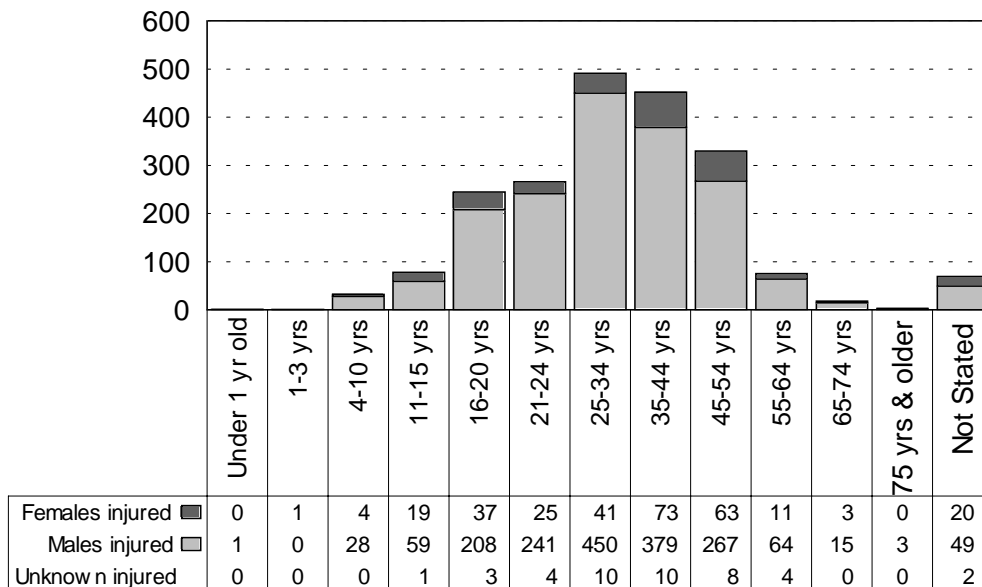
## AGE AND GENDER OF MOTORCYCLISTS KILLED & INJURED IN MOTOR VEHICLE CRASHES

### Motorcyclists Killed



87.3 percent of the motorcyclists killed in traffic crashes in 1997 were male.  
In comparison, 63.5 percent of all persons killed in crashes were male.

### Motorcyclists Injured



83.9 percent of the motorcyclists injured in traffic crashes in 1997 were male.  
In comparison, 48.2 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	0	1	0	1
4 - 10 years	0	3	5	4	1
11 - 15 years	0	10	17	8	1
16 - 20 years	3	43	78	39	37
21 - 24 years	8	51	68	64	50
25 - 34 years	11	83	139	108	66
35 - 44 years	5	103	133	87	79
45 - 54 years	5	74	116	56	61
55 - 64 years	0	26	25	12	15
65 - 74 years	2	5	3	3	1
75 years and over	0	0	0	1	1
Not Stated	1	4	4	3	0
Subtotal	35	402	589	385	313



Drivers killed 32  
Passengers killed 3

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	3	3	0
11 - 15 years	0	6	7	6	1
16 - 20 years	1	8	9	1	4
21 - 24 years	2	7	5	3	1
25 - 34 years	0	5	5	2	2
35 - 44 years	1	4	6	1	3
45 - 54 years	1	1	1	1	0
55 - 64 years	0	0	2	0	0
65 - 74 years	2	0	2	1	0
75 years and over	0	0	0	0	0
Not Stated	0	1	0	0	1
Subtotal	7	34	40	18	12

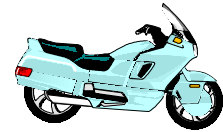


Drivers killed 5  
Passengers killed 2

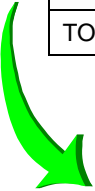
Helmet Use Unknown Age of Motorcyclist	Fatality	Injury			No Injury
		A	B	C	
3 years and under	0	1	0	0	1
4 - 10 years	0	1	7	4	2
11 - 15 years	1	3	9	13	6
16 - 20 years	2	17	26	27	20
21 - 24 years	1	17	28	27	32
25 - 34 years	7	60	55	44	56
35 - 44 years	6	39	53	36	45
45 - 54 years	1	28	36	25	34
55 - 64 years	1	3	4	7	7
65 - 74 years	0	2	1	1	5
75 years and over	0	1	1	0	0
Not Stated	2	19	21	19	33
Subtotal	21	191	241	203	241
<b>TOTAL</b>	<b>63</b>	<b>627</b>	<b>870</b>	<b>606</b>	<b>566</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 [18], 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	918	10,130	22,594	68,196	101,838	77.2
Van (Minivan) and Motorhome	68	881	2,060	6,501	9,510	7.2
Pickup	148	1,600	3,650	8,416	13,814	10.5
Small Truck (under 10,000 lbs.)	12	191	411	1,117	1,731	1.3
Cycle	60	606	824	571	2,061	1.6
Moped	3	39	89	54	185	0.1
Go Cart	1	5	2	3	11	0.0
Snowmobile	16	128	76	91	311	0.2
Off Road Vehicle	5	47	54	30	136	0.1
Other	5	37	40	101	183	0.1
Uncoded	5	106	147	556	814	0.6
CDL Truck/Bus (breakdown below)	5	120	262	923	1,310	1.0
<b>TOTAL</b>	<b>1,246</b>	<b>13,890</b>	<b>30,209</b>	<b>86,559</b>	<b>131,904</b>	<b>100.0</b>



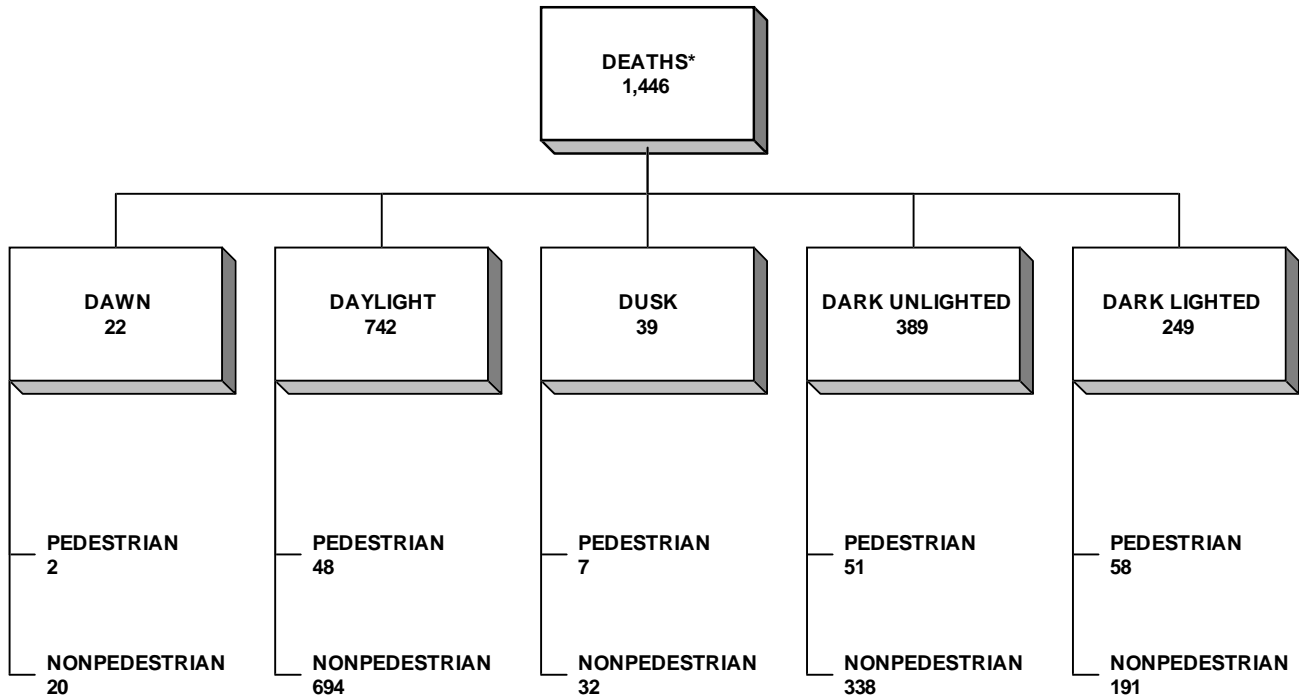
CDL Truck/Bus Sub-category Types	Killed	A Injured	B Injured	C Injured	Total KABC	% of All Crash Involved KABC Occupants
Uncoded Truck	1	15	19	94	129	9.8
Commercial Vehicle: Group A	3	47	111	279	440	33.6
Commercial Vehicle: Group B	1	35	80	380	496	37.9
Commercial Vehicle: Group C	0	8	19	56	83	6.3
Other Truck	0	8	19	51	78	6.0
Unknown Truck	0	7	14	63	84	6.4
<b>TOTAL</b>	<b>5</b>	<b>120</b>	<b>262</b>	<b>923</b>	<b>1,310</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.

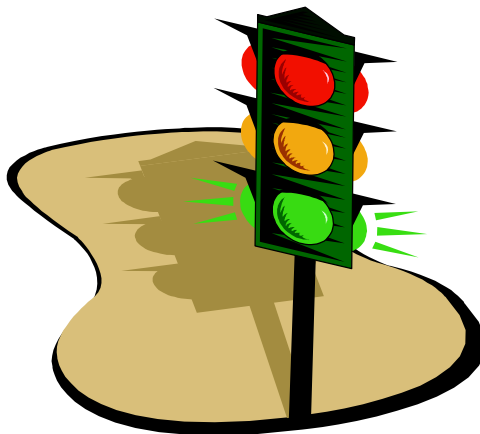
Group "B" is any single vehicle (including buses) with a GVWR of 26,001 lbs. or more. This would include a combination of vehicles with a combined GVWR over 26,000 lbs. when towing a trailer that has a GVWR of 10,000 lbs. or less.

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.

## PRINCIPAL CLASSES OF MOTOR VEHICLE DEATHS



Of the 1,446 motor vehicle deaths in Michigan in 1997, almost half occurred in daylight crashes. Nonpedestrians (mostly occupants of motor vehicles) accounted for 88.5 percent of the deaths. \*5 of the 1,446 cases were lost due to unknown lighting conditions (1 pedestrian, 4 nonpedestrians).





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**County/  
Communities**





## **1997 Michigan Traffic Crash Facts for County/Communities**

This year we have divided the *1997 Michigan Traffic Crash Facts* 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 *1997 Michigan Traffic Crash Facts for County/Communities*. This volume provides crash statistics for Michigan counties and communities. Although some of this information was previously provided, the section has been significantly expanded to provide quick access to more local information.

To receive a copy *1997 Michigan Traffic Crash Facts for County/Communities* please contact:

Michigan Department of State Police  
Office of Highway Safety Planning  
Phone: (517) 333-5325.



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- [2] Michigan Department of Community Health, Office of the State Registrar and Division of Health Statistics, 3423 N Martin Luther King Blvd, PO Box 30195, Lansing, MI 48909.
- [3] ACCIDENT FACTS 1998 Edition. National Safety Council, 1121 Spring Lake Drive, Itasca, IL 60143, 1997.
- [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.
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- [13] 1997 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.
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- [17] 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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## RESOURCES

### Websites:

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

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

[www.nhtsa.dot.gov](http://www.nhtsa.dot.gov) Fatality Analysis Reporting Systems

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

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

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

## **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.





**SPECIAL NOTE: Pages 1-154 are contained in the Michigan 1997 Traffic Crash Facts book  
Pages 155-276 are contained in the Michigan 1997 Traffic Crash Facts for  
County/Communities book**

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