



# *Injury Mortality in Michigan*

*2002 – 2006*

*April 2008*

Michigan Department  
of Community Health



Jennifer M. Granholm, Governor  
Janet Olszewski, Director

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## EXECUTIVE SUMMARY

This is the fourth report on deaths due to injury and poisoning among Michigan residents. The report examines demographic characteristics (age, sex, race, county of residence) of those fatally injured during 2002-2006. In addition, it provides temporal injury mortality data for Michigan and U.S. residents for the period 1990-2006. The salient findings are:

- Between 2002 and 2006, an average of 5,409 Michigan residents died each year due to injuries and poisonings. This corresponds to an average annual rate of 53.6 deaths per 100,000 Michigan residents.
- There were an average of 3,360 unintentional injury deaths per year (62% of all injuries), 1,089 suicides (20%) and 680 homicides (13%).
- The rate of injury death in Michigan decreased from 1990 to 1998. From 1999 to 2006, the rate increased slightly. For all years, Michigan's injury death rate was slightly less than the national rate.
- The leading causes of fatal injury were: motor vehicle traffic crashes (22.4% of all injury deaths); unintentional falls (11.2%); unintentional poisonings (10.7%); firearm suicides (10.3%); and firearm homicides (9.1%).
- Between 2002 and 2006, an average of 139 people died annually while working in Michigan. Between 1992 and 2006, Michigan's work-related injury death rate was consistently less than the national rate.
- Trends were clearly evident for several causes of injury death.
  - Upward trend  
*Unintentional poisonings* – Between 1990 and 2006, the death rate increased by 600%.  
*Unintentional falls* – Between 1990 and 2006, the death rate increased by 65%.
  - Downward trend  
*Occupants Killed in Motor Vehicle Crashes* – The 2006 death rate was less than half the 1999 rate.
- For several injury causes, death rates for certain demographic groups greatly exceeded the state rate.
  - Unintentional suffocations/strangulations* – Black males under age one (54 times the state rate)
  - Firearm homicides* – Black males aged 20-29 years (28 times)
  - Firearm suicides* – White males aged 75 years and older (26 times)
  - Unintentional falls* – Ages 75 years and older (11 times)
- Wayne County residents had a firearm homicide rate that was three times the state rate.

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## INTRODUCTION

Injuries are one of the most under-recognized public health problems facing society. In 2006, injuries (unintentional injuries, suicides, and homicides) were the third leading cause of death among Michigan residents.<sup>1</sup> Although information on the overall numbers of injury deaths is reported annually by the Michigan Department of Community Health (MDCH), analyses of specific injury causes and the demographics of injury victims have been limited. Such analyses are an essential component in the process of monitoring the magnitude and characteristics of injury deaths and developing targeted injury prevention programs.

This report illustrates the average annual numbers and rates of injury deaths that occurred among Michigan residents between 2002 and 2006. Age, sex, race, and county of residence of victims are presented. These analyses help to identify segments of the Michigan population at high risk for injury. In addition, temporal analyses, using data for the U.S. as reference, were conducted utilizing data covering the period 1990 to 2006. These temporal analyses illustrate trends and differences in rates between Michigan and the nation.

The format of this report is consistent with the three previous reports on injury mortality in Michigan which covered the periods 1991-1995,<sup>2</sup> 1994-1998,<sup>3</sup> and 1999-2001.<sup>4</sup>

## DATA SOURCES AND METHODS

### Data Sources

Death certificates were the primary source of data for injury deaths. Funeral directors, attending physicians, and medical examiners document cause of death and demographics of the decedent on the death certificate. In Michigan, these data are aggregated and maintained by the MDCH Vital Records and Health Data Development Section. MDCH maintains data on all deaths occurring within Michigan and on Michigan resident deaths occurring out-of-state. Death certificate data pertaining to the United States were obtained from the Web-based Injury Statistics Query and Reporting System (WISQARS)<sup>5</sup> which is managed by the U.S. Centers for Disease Control and Prevention (CDC). WISQARS is an interactive website in which users can generate customized reports by selecting injury cause, region/state of residence, year of death, and decedent demographics. The Census of Fatal Occupational Injuries (CFOI) was the source of data for work-related injury deaths. The U.S. Bureau of Labor Statistics manages this system nationally. In Michigan, the program is administered by the MIOSHA Information Division within the Department of Labor and Economic Growth. Multiple data sources are utilized to maximize identification of cases. The source of Michigan population data – needed to calculate population-based death rates – was the Population Estimates section of the MDCH website.<sup>6</sup> The source of employment data – used to calculate worker-based death rates – was the Current Population Survey (Bureau of Labor Statistics).

### Methods

A Michigan injury death was defined as a death occurring to a Michigan resident for which the underlying cause was coded within the ICD-10<sup>7</sup> range V01 – Y36, Y85 – Y87, Y89 (for deaths occurring between 1999 and 2006) or within the ICD-9<sup>8</sup> range E800 – E869, E880 – E929, E950 – E999 (for 1990-1998 deaths). Excluded were deaths due to adverse effects or complications of

medical care (Y40-Y84, Y88 in ICD-10; E870-E879, E930-E949 in ICD-9) and terrorism (\*U01-\*U03 in ICD-10).

ICD-10 codes V01-Y98 specify the cause of injury, including the mechanism (e.g., struck by object) and the intentionality (e.g., homicide) of the incident. A framework for presenting cause of injury information has been developed by the CDC.<sup>9</sup> This framework defines standard mechanism/intentionality groups. Tables 17 and 18 illustrate the annual average number of deaths for each group and the corresponding annual death rates. Analyses were performed for the cause of injury groups of most significance (e.g., unintentional falls, poisoning suicides, firearm homicides). These analyses included average annual counts and rates by decedent age/sex/race, year of death and county of residence.

To calculate rates for the age/sex/race and county of residence tables, five-year annual average numbers of deaths were divided by corresponding five-year annual average populations for 2002-2006; the result was multiplied by 100,000. For the temporal analyses, an age-adjusted rate was calculated for each year. Age-adjusting minimizes the effect of differences in age distributions of the populations being compared – in this case, Michigan and the United States and Michigan over time (i.e., 1990-2006). To age-adjust Michigan rates, eleven age group (under 1 year, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-75, 75-84, 85 and older) specific rates were calculated. Each of these rates were then applied to the corresponding age groups in the US 2000 Standard Population<sup>10</sup> and the results summed. This total was then divided by the total US 2000 Standard Population and multiplied by 100,000. The number of U.S. deaths and the corresponding crude and age-adjusted death rates were ascertained directly from WISQARS.

To be consistent with previous reports, the first year included in temporal analyses was 1990. However, including pre-1999 deaths meant utilizing data that were coded under ICD-9. Thus, some of the differences in numbers and rates of deaths between the two time periods could have been due to differences between ICD-9 and ICD-10. The CDC National Center for Health Statistics evaluated the effects of implementing ICD-10 on mortality statistics for selected causes of death.<sup>11</sup> The effect on injuries overall was minor: the ICD-10/ICD-9 comparability ratio (the number of deaths coded as injuries using ICD-10 divided by the number coded as injuries using ICD-9) was 1.0159. (A comparability ratio of 1.00 indicates that the same number of deaths would be assigned to a certain cause under both ICD-9 and ICD-10.) However, the ratio varies by injury cause and in some cases is significant. The report notes the appropriate ratio in the temporal analysis for each injury cause.

Rates for cells having less than six deaths over the five-year period were not calculated due to the corresponding lack of statistical stability.<sup>†</sup> In the tables, such instances are noted with an “\*.” Cells in which no deaths occurred are noted by a “-.”

<b><u>SYMBOLS USED IN TABLES</u></b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unstable	*

<sup>†</sup> A rate was considered to be unstable if its relative standard error (RSE) – the rate divided by its standard error – exceeded 41%. The RSE of all rates based on less than six deaths exceeded this limit.

# ALL INJURY & POISONING<sup>1</sup>

TABLE 1  
Average Annual Number of Injury and Poisoning Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	26	21	47	18	15	33	45	37	82
1-4	22	16	38	13	9	22	36	26	62
5-9	14	12	25	10	6	16	25	18	43
10-14	33	18	51	13	6	19	47	25	72
15-19	162	61	223	72	13	85	242	77	319
20-24	213	60	273	108	18	127	335	82	418
25-29	196	52	248	109	17	126	316	72	388
30-34	186	61	247	106	20	126	300	83	383
35-44	504	204	708	137	47	184	661	260	921
45-54	508	203	711	132	54	186	653	263	916
55-64	272	112	385	55	18	73	334	134	468
65-74	195	101	296	27	10	38	226	115	341
75+	451	475	925	35	28	63	489	507	996
Total	2,780	1,395	4,175	834	262	1,096	3,709	1,700	5,409

Includes ICD-10 codes: V01 – Y36, Y85 – Y87, Y89

Numbers in columns and rows may not total exactly due to rounding.

Decedents with unknown age, race, or sex not illustrated but included in totals.

Source: Division for Vital Records and Health Statistics, MDCH

TABLE 2  
Average Annual Injury and Poisoning Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	50.6	43.4	47.1	145.4	128.9	137.3	68.9	59.3	64.2
1-4	10.6	7.9	9.3	25.7	18.7	22.3	13.4	10.3	11.9
5-9	5.0	4.5	4.8	15.3	9.8	12.6	7.1	5.5	6.3
10-14	11.0	6.6	8.8	17.5	7.9	12.8	12.2	6.8	9.6
15-19	53.7	21.5	38.0	112.2	20.8	67.1	64.1	21.6	43.4
20-24	73.8	21.6	48.3	196.6	32.5	113.5	94.2	23.9	59.6
25-29	77.2	21.5	50.0	213.6	30.8	118.4	99.1	23.3	61.7
30-34	69.6	23.5	47.0	205.3	34.0	114.0	89.1	25.0	57.2
35-44	79.9	32.9	56.6	142.1	41.8	88.3	87.6	34.3	60.9
45-54	80.5	32.0	56.2	151.6	51.3	96.9	88.8	34.7	61.4
55-64	62.8	25.0	43.6	105.2	28.3	62.8	67.3	25.5	45.8
65-74	78.1	34.3	54.3	102.4	27.0	58.0	80.6	33.9	55.1
75+	211.5	135.6	164.3	161.3	77.0	108.0	206.4	129.9	158.8
Total	67.9	33.3	50.4	117.8	33.3	73.4	74.8	33.1	53.6

Rates are the number of deaths per 100,000 population.

Decedents with unknown age, race, or sex not illustrated but included in totals.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

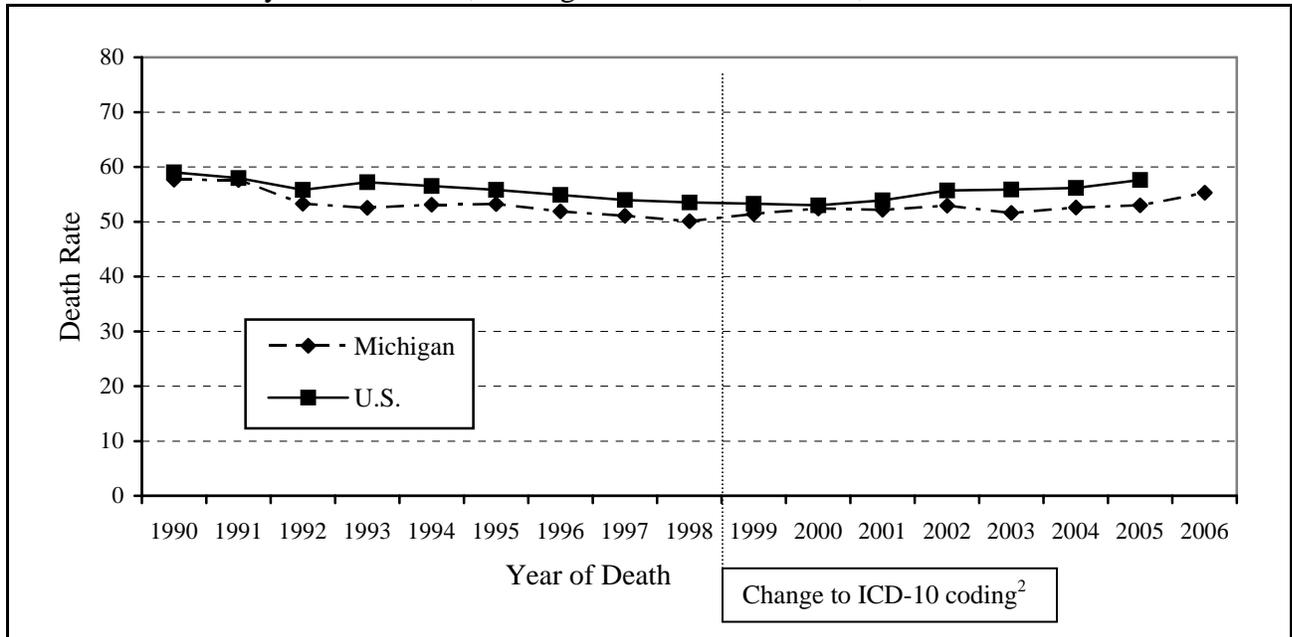
1. Excluded from All Injury & Poisoning are deaths due to terrorism and adverse effects of medical/surgical treatment and therapeutic use of drugs.

# ALL INJURY & POISONING

TABLE 3  
Number of Injury and Poisoning Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	5,294	147,376	56.9	59.1	57.7	59.0
1991	5,308	146,551	56.5	57.9	57.6	58.0
1992	4,981	142,830	52.5	55.7	53.3	55.8
1993	4,958	148,136	52.0	57.0	52.5	57.2
1994	5,027	148,152	52.4	56.3	53.1	56.5
1995	5,072	147,891	52.4	55.5	53.2	55.8
1996	5,000	147,126	51.2	54.6	51.9	54.9
1997	4,942	146,400	50.4	53.7	51.1	54.0
1998	4,880	146,941	49.6	53.3	50.1	53.5
CHANGE TO ICD-10 CODING <sup>2</sup>						
1999	5,034	148,286	50.9	53.1	51.4	53.3
2000	5,172	148,209	51.9	52.7	52.4	53.0
2001	5,209	154,152	52.1	54.1	52.2	53.9
2002	5,319	161,268	53.0	56.0	52.9	55.7
2003	5,244	164,002	52.0	56.4	51.6	55.9
2004	5,368	167,184	53.1	56.9	52.6	56.2
2005	5,446	173,753	53.8	58.6	53.0	57.6
2006	5,669	not available	56.2	not available	55.3	not available

FIGURE 1  
Age-adjusted Injury and Poisoning Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.  
 1990-1998 data based on ICD-9 codes: E800 – E869, E880 – E929, E950 – E999  
 1999-2006 data based on ICD-10 codes: V01 – Y36, Y85 – Y87, Y89  
 Sources: Division for Vital Records and Health Statistics, MDCH  
 Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention  
 Population Estimates released by the National Center for Health Statistics, CDC

2. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for all injuries and poisonings is 1.0159.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

# ALL INJURY & POISONING

TABLE 4

Average Annual Number of Injury and Poisoning Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	10	87.6	Lapeer	46	50.0
Alger	7	74.0	Leelanau	9	41.9
Allegan	61	54.4	Lenawee	42	41.2
Alpena	22	71.3	Livingston	71	40.1
Antrim	15	61.8	Luce	5	75.9
Arenac	10	59.3	Mackinac	8	70.4
Baraga	5	57.1	Macomb	371	45.1
Barry	42	70.3	Manistee	18	72.4
Bay	59	54.4	Marquette	40	61.2
Benzie	10	58.9	Mason	17	58.1
Berrien	89	54.8	Mecosta	23	54.3
Branch	25	53.9	Menominee	16	64.8
Calhoun	94	67.4	Midland	34	40.2
Cass	32	62.4	Missaukee	9	59.3
Charlevoix	17	64.7	Monroe	73	47.9
Cheboygan	17	61.5	Montcalm	40	62.5
Chippewa	17	44.4	Montmorency	6	57.2
Clare	23	72.8	Muskegon	93	53.3
Clinton	29	42.1	Newaygo	32	64.1
Crawford	12	83.4	Oakland	494	40.8
Delta	21	53.8	Oceana	19	68.7
Dickinson	16	58.1	Ogemaw	15	67.9
Eaton	50	46.5	Ontonagon	7	93.6
Emmet	20	59.7	Osceola	15	61.7
Genesee	252	56.9	Oscoda	9	92.0
Gladwin	20	74.0	Otsego	13	51.5
Gogebic	12	68.1	Ottawa	93	36.8
Grand Traverse	41	48.9	Presque Isle	9	64.4
Gratiot	23	53.4	Roscommon	19	72.1
Hillsdale	28	59.4	Saginaw	137	65.9
Houghton	19	54.0	St. Clair	82	48.4
Huron	21	60.2	St. Joseph	38	61.2
Ingham	116	41.6	Sanilac	23	52.4
Ionia	35	54.9	Schoolcraft	6	70.5
Iosco	16	61.0	Shiawassee	45	61.9
Iron	11	89.3	Tuscola	36	61.4
Isabella	30	46.1	Van Buren	56	70.9
Jackson	91	56.0	Washtenaw	119	35.3
Kalamazoo	134	55.5	Wayne	1333	66.3
Kalkaska	10	55.8	Wexford	22	69.9
Kent	292	49.2	Unknown	2	
Keweenaw	2	90.2			
Lake	11	92.9	Michigan	5,409	53.6

Includes ICD-10 codes: V01 – Y36, Y85 – Y87, Y89

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

# UNINTENTIONAL INJURY

TABLE 5  
Average Annual Number of Unintentional Injury Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	21	18	40	15	12	28	38	31	69
1-4	18	13	32	9	5	13	27	19	46
5-9	13	10	23	8	3	11	22	14	36
10-14	26	14	40	9	3	12	35	17	52
15-19	108	48	156	21	4	25	133	54	188
20-24	139	41	181	18	8	26	165	52	217
25-29	106	29	135	21	7	28	135	38	173
30-34	99	33	131	24	8	32	126	42	167
35-44	268	111	380	48	21	69	326	138	464
45-54	278	120	397	72	37	110	358	160	518
55-64	158	71	228	35	13	48	197	86	283
65-74	134	87	220	20	9	29	156	99	255
75+	374	457	830	29	26	55	406	487	892
Total	1,742	1,051	2,793	329	157	486	2,124	1,237	3,360

Includes ICD-10 codes: V01 – X59, Y85, Y86  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

TABLE 6  
Average Annual Unintentional Injury Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	42.0	37.7	39.9	124.2	105.2	114.9	57.9	49.7	53.9
1-4	8.8	6.8	7.8	17.3	9.6	13.5	10.2	7.5	8.9
5-9	4.7	3.9	4.3	12.2	5.4	8.8	6.2	4.1	5.2
10-14	8.7	5.0	6.9	11.7	3.8	7.8	9.1	4.8	7.0
15-19	35.9	16.9	26.7	32.4	6.7	19.7	35.4	15.2	25.5
20-24	48.3	15.0	32.0	33.4	14.1	23.6	46.3	15.2	31.0
25-29	41.8	12.0	27.3	42.1	12.7	26.8	42.4	12.3	27.5
30-34	36.8	12.6	24.9	46.6	13.6	29.0	37.4	12.5	25.0
35-44	42.5	17.9	30.3	49.8	18.5	33.0	43.2	18.1	30.6
45-54	44.0	18.9	31.4	83.2	35.8	57.3	48.7	21.1	34.7
55-64	36.4	15.7	25.9	66.4	20.5	41.1	39.6	16.4	27.7
65-74	53.7	29.4	40.5	73.3	24.4	44.5	55.5	29.2	41.1
75+	175.4	130.4	147.4	135.2	71.6	95.0	171.3	124.6	142.3
Total	42.5	25.1	33.7	46.4	20.0	32.6	42.8	24.1	33.3

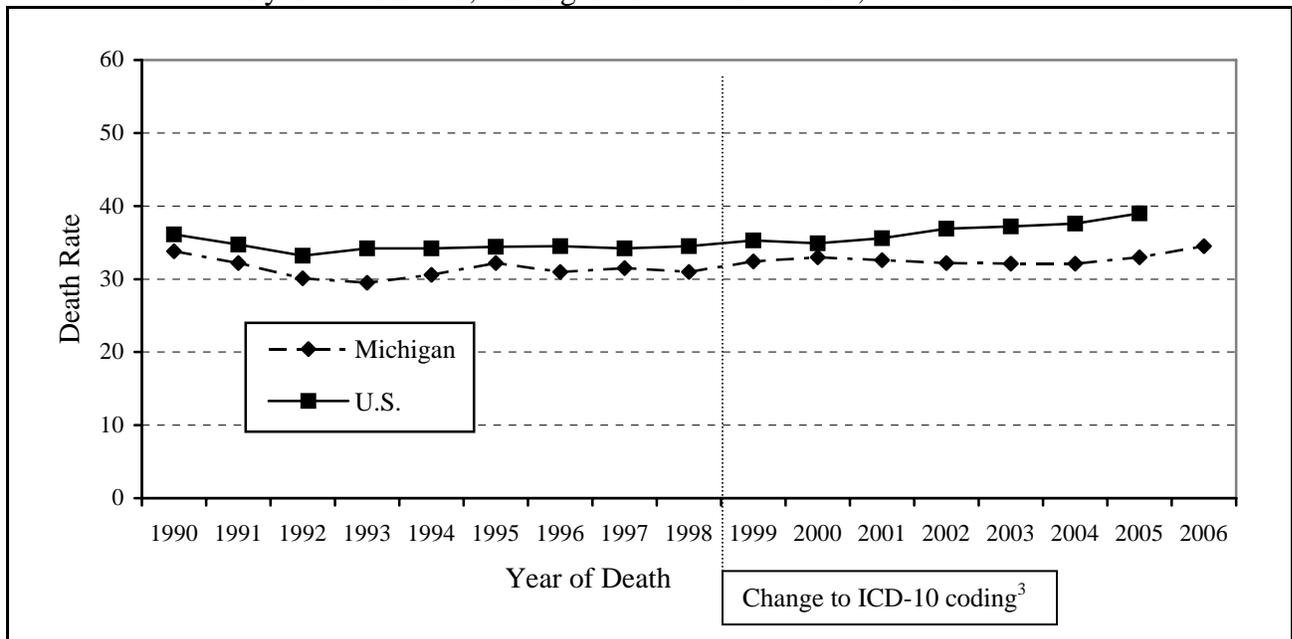
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

# UNINTENTIONAL INJURY

TABLE 7  
Number of Unintentional Injury Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	3,031	89,148	32.6	35.7	33.8	36.1
1991	2,908	86,711	30.9	34.3	32.2	34.7
1992	2,763	83,952	29.1	32.7	30.1	33.2
1993	2,742	87,598	28.7	33.7	29.5	34.2
1994	2,840	88,649	29.6	33.7	30.6	34.2
1995	3,026	90,402	31.3	34.0	32.2	34.4
1996	2,951	91,776	30.2	34.1	31.0	34.5
1997	3,017	92,353	30.8	33.9	31.5	34.2
1998	2,999	94,331	30.5	34.2	31.0	34.5
CHANGE TO ICD-10 CODING <sup>3</sup>						
1999	3,151	97,860	31.8	35.1	32.4	35.3
2000	3,243	97,900	32.6	34.8	33.0	34.9
2001	3,248	101,537	32.5	35.6	32.6	35.6
2002	3,242	106,742	32.3	37.1	32.2	36.9
2003	3,278	109,277	32.5	37.6	32.1	37.2
2004	3,299	112,012	32.6	38.1	32.1	37.6
2005	3,426	117,809	33.9	39.7	33.0	39.0
2006	3,557	not available	35.2	not available	34.5	not available

FIGURE 2  
Age-adjusted Unintentional Injury Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E800 – E869, E880 – E929

1999-2006 data based on ICD-10 codes: V01 – X59, Y85, Y86

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

3. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional injuries is 1.0251.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

# UNINTENTIONAL INJURY

TABLE 8

Average Annual Number of Unintentional Injury Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	6	51.5	Lapeer	30	32.9
Alger	5	55.5	Leelanau	7	33.7
Allegan	46	41.5	Lenawee	32	31.3
Alpena	16	51.7	Livingston	44	25.0
Antrim	13	55.2	Luce	4	61.3
Arenac	8	44.2	Mackinac	6	52.8
Baraga	4	50.3	Macomb	217	26.4
Barry	30	50.3	Manistee	13	50.9
Bay	36	32.6	Marquette	28	43.9
Benzie	7	38.1	Mason	11	37.3
Berrien	64	39.1	Mecosta	17	40.0
Branch	19	40.5	Menominee	11	45.6
Calhoun	64	45.9	Midland	22	26.0
Cass	25	47.7	Missaukee	7	47.4
Charlevoix	12	45.9	Monroe	49	32.2
Cheboygan	13	48.3	Montcalm	30	47.3
Chippewa	12	29.9	Montmorency	4	40.1
Clare	16	51.2	Muskegon	71	40.8
Clinton	20	28.6	Newaygo	22	44.8
Crawford	8	53.8	Oakland	279	23.0
Delta	14	37.6	Oceana	14	48.1
Dickinson	12	42.8	Ogemaw	10	44.0
Eaton	35	32.8	Ontonagon	5	72.2
Emmet	16	47.7	Osceola	11	47.3
Genesee	130	29.3	Oscoda	5	53.5
Gladwin	15	54.8	Otsego	9	37.6
Gogebic	8	49.3	Ottawa	69	27.2
Grand Traverse	30	35.7	Presque Isle	7	47.6
Gratiot	18	43.5	Roscommon	13	49.1
Hillsdale	22	45.8	Saginaw	76	36.2
Houghton	15	42.2	St. Clair	48	28.2
Huron	16	47.0	St. Joseph	31	49.1
Ingham	78	28.0	Sanilac	18	39.4
Ionia	23	36.5	Schoolcraft	5	52.3
Iosco	11	39.4	Shiawassee	33	45.1
Iron	9	70.2	Tuscola	23	39.8
Isabella	23	35.0	Van Buren	41	52.6
Jackson	53	32.6	Washtenaw	66	19.6
Kalamazoo	96	40.0	Wayne	677	33.7
Kalkaska	6	37.2	Wexford	15	47.0
Kent	218	36.7	Unknown	1	
Keweenaw	2	81.2			
Lake	8	65.9	Michigan	3,360	33.3

Includes ICD-10 codes: : V01 – X59, Y85, Y86

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

# SUICIDE

TABLE 9  
Average Annual Number of Suicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	0	-	0	0	-	0
10-14	5	3	8	1	1	1	6	3	9
15-19	42	8	51	4	1	5	48	10	57
20-24	50	8	58	9	2	11	62	10	72
25-29	59	14	73	9	1	10	69	16	85
30-34	63	16	79	9	2	11	74	19	94
35-44	171	46	216	17	4	21	194	53	246
45-54	173	51	225	10	3	12	186	56	242
55-64	95	26	122	6	1	7	103	28	131
65-74	56	10	66	3	0	3	60	10	70
75+	70	9	79	3	0	3	73	9	82
Total	784	192	976	70	14	84	875	214	1,089

Includes ICD-10 codes: X60 – X84, Y870

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

TABLE 10  
Average Annual Suicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	*	-	*	*	-	*
10-14	1.7	1.0	1.4	*	*	0.8	1.6	0.9	1.3
15-19	14.1	2.9	8.6	6.2	*	3.6	12.7	2.7	7.8
20-24	17.5	2.8	10.3	17.1	3.2	10.0	17.3	2.9	10.2
25-29	23.3	5.9	14.8	17.3	*	9.1	21.8	5.0	13.5
30-34	23.4	6.3	15.0	17.8	3.4	10.2	22.1	5.8	14.0
35-44	27.0	7.4	17.3	17.2	3.9	10.1	25.7	6.9	16.3
45-54	27.5	8.1	17.8	11.0	2.7	6.5	25.3	7.4	16.2
55-64	22.0	5.9	13.8	11.1	*	5.7	20.8	5.3	12.8
65-74	22.3	3.4	12.1	9.7	*	4.3	21.2	3.0	11.3
75+	32.8	2.6	14.0	14.0	*	5.5	30.9	2.4	13.1
Total	19.1	4.6	11.8	9.9	1.8	5.6	17.6	4.2	10.8

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

### KEY TO SYMBOLS

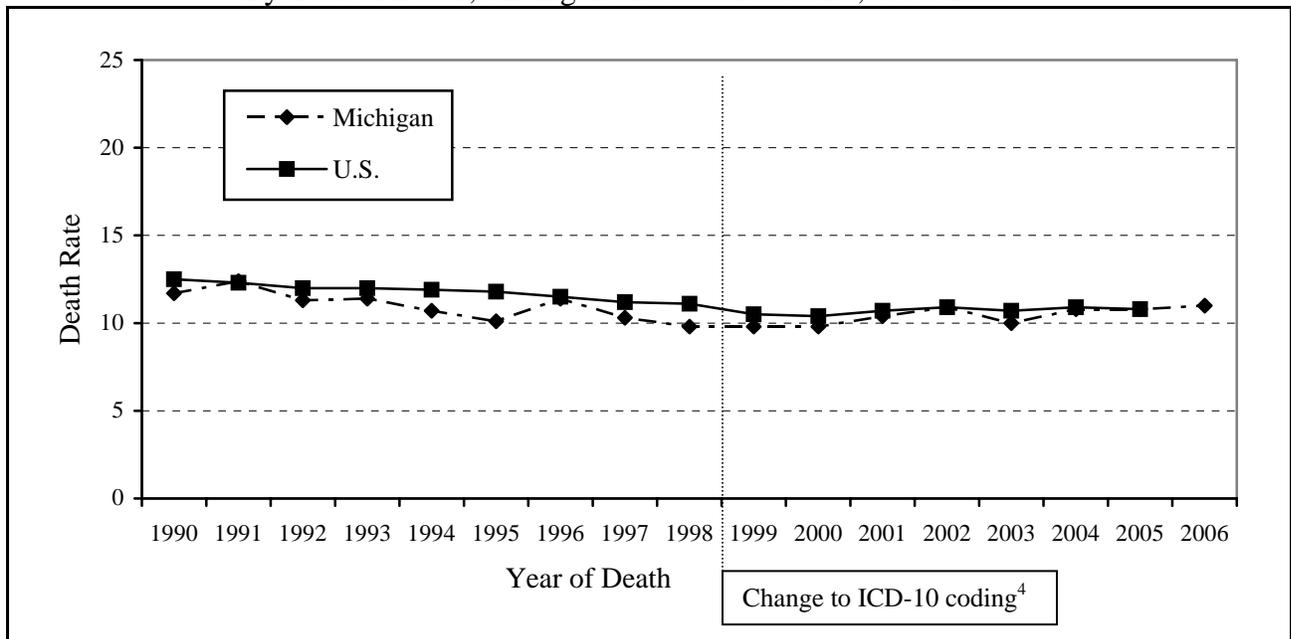
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

# SUICIDE

TABLE 11  
Number of Suicides and Corresponding Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	1,068	30,906	11.5	12.4	11.7	12.5
1991	1,139	30,810	12.1	12.2	12.4	12.3
1992	1,063	30,484	11.2	11.9	11.3	12.0
1993	1,078	31,102	11.3	12.0	11.4	12.0
1994	1,022	31,142	10.6	11.8	10.7	11.9
1995	969	31,284	10.0	11.7	10.1	11.8
1996	1,107	30,903	11.3	11.5	11.4	11.5
1997	1,003	30,535	10.2	11.2	10.3	11.2
1998	965	30,575	9.8	11.1	9.8	11.1
CHANGE TO ICD-10 CODING <sup>4</sup>						
1999	969	29,199	9.8	10.5	9.8	10.5
2000	975	29,350	9.8	10.4	9.8	10.4
2001	1,045	30,618	10.4	10.7	10.4	10.7
2002	1,095	31,655	10.9	11.0	10.9	10.9
2003	1,018	31,484	10.1	10.8	10.0	10.7
2004	1,096	32,439	10.8	11.0	10.8	10.9
2005	1,103	32,637	10.9	11.0	10.8	10.8
2006	1,132	not available	11.2	not available	11.0	not available

FIGURE 3  
Age-adjusted Suicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E950 – E959

1999-2006 data based on ICD-10 codes: X60 – X84, Y870 (excludes deaths due to terrorism)

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

4. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for suicide 1.0022.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

# SUICIDE

TABLE 12  
Average Annual Number of Suicides and Corresponding Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	3	27.5	Lapeer	10	10.4
Alger	1	14.4	Leelanau	1	6.4
Allegan	12	10.6	Lenawee	8	7.5
Alpena	4	13.7	Livingston	18	10.3
Antrim	1	5.8	Luce	1	*
Arenac	2	11.6	Mackinac	2	17.6
Baraga	1	*	Macomb	87	10.6
Barry	10	17.2	Manistee	5	18.3
Bay	14	12.8	Marquette	9	13.9
Benzie	3	18.5	Mason	5	17.3
Berrien	18	11.3	Mecosta	5	11.9
Branch	5	11.2	Menominee	4	16.8
Calhoun	19	14.0	Midland	10	12.4
Cass	7	13.2	Missaukee	1	*
Charlevoix	4	16.5	Monroe	19	12.7
Cheboygan	3	10.2	Montcalm	8	13.3
Chippewa	5	12.9	Montmorency	1	13.4
Clare	5	17.1	Muskegon	16	9.1
Clinton	8	12.3	Newaygo	8	15.3
Crawford	4	26.9	Oakland	121	10.0
Delta	6	15.7	Oceana	4	12.7
Dickinson	3	12.3	Ogemaw	4	19.3
Eaton	12	11.4	Ontonagon	1	16.1
Emmet	4	11.5	Osceola	3	12.7
Genesee	48	10.8	Oscoda	3	27.8
Gladwin	4	16.3	Otsego	3	11.4
Gogebic	3	16.4	Ottawa	19	7.4
Grand Traverse	11	12.8	Presque Isle	2	14.0
Gratiot	3	7.6	Roscommon	5	19.2
Hillsdale	5	11.0	Saginaw	23	10.9
Houghton	4	10.7	St. Clair	21	12.1
Huron	4	11.5	St. Joseph	6	10.2
Ingham	25	9.0	Sanilac	5	10.3
Ionia	11	17.2	Schoolcraft	1	15.9
Iosco	5	17.9	Shiawassee	9	12.9
Iron	2	14.4	Tuscola	9	16.1
Isabella	6	8.6	Van Buren	12	14.8
Jackson	22	13.3	Washtenaw	28	8.2
Kalamazoo	28	11.6	Wayne	195	9.7
Kalkaska	2	14.0	Wexford	6	18.4
Kent	51	8.5	Unknown	0	
Keweenaw	-	-			
Lake	3	22.0	Michigan	1,089	10.8

Includes ICD-10 codes: X60 – X84, Y870

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

### KEY TO SYMBOLS

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

# HOMICIDE

TABLE 13  
Average Annual Number of Homicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	3	2	5	2	2	4	5	5	10
1-4	3	1	4	4	4	8	7	6	13
5-9	0	1	2	1	2	3	2	3	5
10-14	1	1	2	3	2	5	5	4	8
15-19	6	3	9	46	8	54	55	10	65
20-24	14	5	19	79	8	87	97	14	111
25-29	15	5	20	75	9	84	92	15	107
30-34	11	5	17	69	9	78	82	14	96
35-44	24	15	40	68	16	84	95	32	127
45-54	19	10	28	42	8	50	63	18	81
55-64	8	5	13	12	3	15	21	8	29
65-74	5	2	7	5	1	6	10	3	13
75+	4	6	10	2	1	3	6	7	13
Total	113	63	176	409	73	482	539	140	680

Includes ICD-10 codes: X85 – Y09, Y871

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

TABLE 14  
Average Annual Homicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	5.1	4.6	4.8	16.3	20.4	18.3	7.3	8.0	7.7
1-4	1.3	0.7	1.0	7.2	8.7	8.0	2.5	2.4	2.5
5-9	*	0.5	0.3	2.1	3.1	2.6	0.6	1.0	0.8
10-14	*	0.5	0.4	4.2	3.0	3.6	1.2	1.0	1.1
15-19	2.1	1.0	1.6	72.0	12.2	42.5	14.5	2.9	8.8
20-24	4.7	2.0	3.4	143.7	14.1	78.0	27.2	4.1	15.9
25-29	5.8	2.2	4.0	147.9	15.9	79.2	28.9	4.7	17.0
30-34	4.3	2.1	3.2	134.6	14.6	70.7	24.5	4.2	14.4
35-44	3.9	2.4	3.2	70.1	14.7	40.4	12.6	4.2	8.4
45-54	2.9	1.5	2.2	48.7	7.5	26.2	8.6	2.4	5.5
55-64	1.9	1.1	1.5	23.0	5.0	13.1	4.2	1.6	2.8
65-74	1.9	0.7	1.3	17.9	*	8.6	3.6	1.0	2.2
75+	2.0	1.8	1.8	9.3	*	5.1	2.6	1.8	2.1
Total	2.8	1.5	2.1	57.7	9.3	32.3	10.9	2.7	6.7

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

### KEY TO SYMBOLS

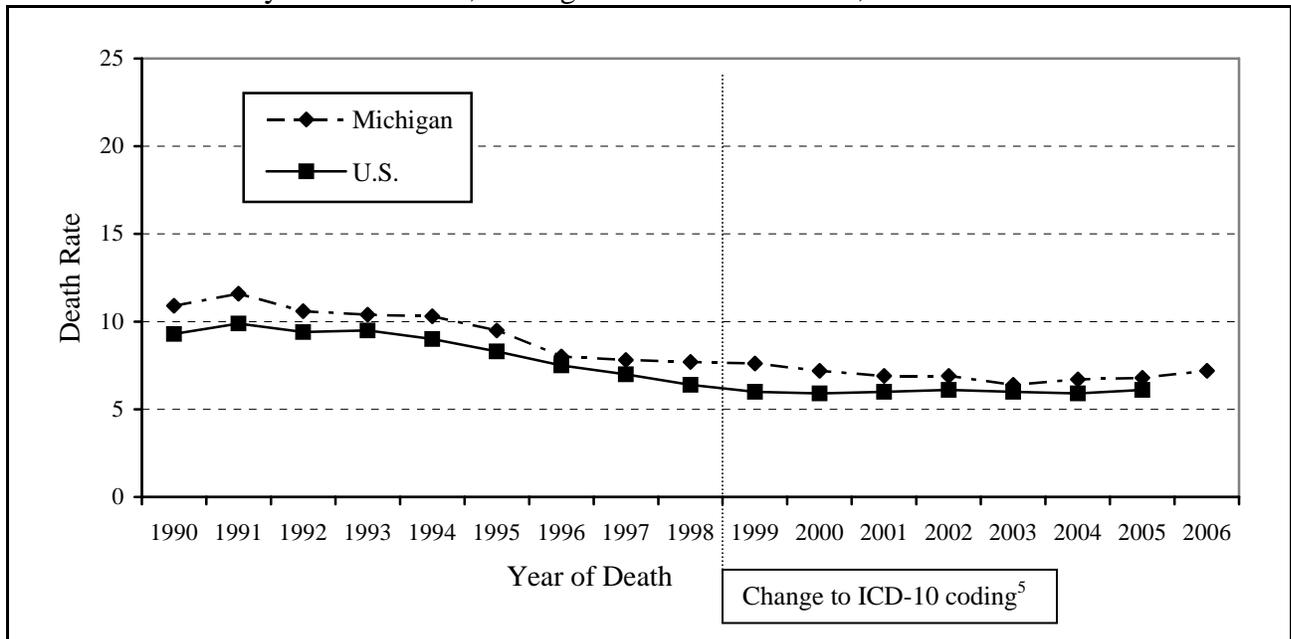
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

# HOMICIDE

TABLE 15  
Number of Homicides and Corresponding Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	1,068	24,614	11.5	9.9	10.9	9.3
1991	1,129	26,254	12.0	10.4	11.6	9.9
1992	1,042	25,144	11.0	9.8	10.6	9.4
1993	1,024	25,653	10.7	9.9	10.4	9.5
1994	1,015	24,547	10.6	9.3	10.3	9.0
1995	938	22,552	9.7	8.5	9.5	8.3
1996	795	20,634	8.1	7.7	8.0	7.5
1997	772	19,491	7.9	7.1	7.8	7.0
1998	763	17,893	7.7	6.5	7.7	6.4
CHANGE TO ICD-10 CODING <sup>5</sup>						
1999	749	16,889	7.6	6.1	7.6	6.0
2000	719	16,765	7.2	6.0	7.2	5.9
2001	684	17,386	6.8	6.1	6.9	6.0
2002	689	17,637	6.9	6.1	6.9	6.1
2003	644	17,732	6.4	6.1	6.4	6.0
2004	672	17,357	6.7	5.9	6.7	5.9
2005	673	18,124	6.6	6.1	6.8	6.1
2006	720	not available	7.1	not available	7.2	not available

FIGURE 4  
Age-adjusted Homicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E960 – E969

1999-2006 data based on ICD-10 codes: X85 – Y09, Y871 (excludes deaths due to terrorism)

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

5. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for homicide is 1.0020.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

# HOMICIDE

TABLE 16  
Average Annual Number of Homicides and Corresponding Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	3	3.5
Alger	0	*	Leelanau	0	*
Allegan	1	*	Lenawee	0	*
Alpena	1	*	Livingston	2	1.4
Antrim	0	*	Luce	0	*
Arenac	0	*	Mackinac	-	-
Baraga	-	-	Macomb	25	3.0
Barry	1	*	Manistee	1	*
Bay	3	2.4	Marquette	1	*
Benzie	0	*	Mason	1	*
Berrien	6	3.8	Mecosta	1	*
Branch	1	*	Menominee	0	*
Calhoun	8	5.5	Midland	1	*
Cass	1	*	Missaukee	0	*
Charlevoix	0	*	Monroe	3	1.7
Cheboygan	0	*	Montcalm	1	*
Chippewa	1	*	Montmorency	0	*
Clare	0	*	Muskegon	5	2.8
Clinton	1	*	Newaygo	1	*
Crawford	0	*	Oakland	40	3.3
Delta	0	*	Oceana	2	6.4
Dickinson	1	*	Ogemaw	1	*
Eaton	2	1.9	Ontonagon	-	-
Emmet	0	*	Osceola	0	*
Genesee	48	10.9	Oscoda	1	*
Gladwin	0	*	Otsego	0	*
Gogebic	0	*	Ottawa	2	0.9
Grand Traverse	0	*	Presque Isle	0	*
Gratiot	1	*	Roscommon	0	*
Hillsdale	1	*	Saginaw	23	10.9
Houghton	-	-	St. Clair	3	1.8
Huron	0	*	St. Joseph	1	*
Ingham	11	3.8	Sanilac	1	*
Ionia	0	*	Schoolcraft	-	-
Iosco	0	*	Shiawassee	0	*
Iron	0	*	Tuscola	1	*
Isabella	1	*	Van Buren	2	2.8
Jackson	6	3.9	Washtenaw	11	3.1
Kalamazoo	7	2.7	Wayne	420	20.9
Kalkaska	0	*	Wexford	1	*
Kent	20	3.4	Unknown	-	-
Keweenaw	-	-			
Lake	0	*	Michigan	680	6.7

Includes ICD-10 codes: X85 – Y09, Y871

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

## KEY TO SYMBOLS

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

TABLE 17  
Average Annual Number of Injury and Poisoning Deaths  
By Mechanism & Manner/Intent  
Michigan Residents, 2002-2006

Mechanism	Manner/Intent					Total
	Unintentional	Suicide	Homicide	Undetermined	Other	
Cut/pierce	2	20	66	0	-	88
Drowning <sup>6</sup>	109	10	2	8		129
<i>Non-boat-related</i>	95					95
<i>Boat-related</i>	14					14
Fall	608	11	1	3		622
Fire/hot object or substance	121	7	9	8		145
<i>Fire/flare/smoke</i>	119	7	9	8		142
<i>Hot object/substance</i>	2	-	-	-		2
Firearm	12	555	494	7	8	1,076
Machinery	19					19
All Transport	1,316	4	2	1	-	1,323
<i>Motor vehicle traffic</i>	1,210					1,210
<i>Occupant</i>	443					443
<i>Motorcyclist</i>	97					97
<i>Pedal Cyclist</i>	24					24
<i>Pedestrian</i>	151					151
<i>Other specified</i>	1					1
<i>Unspecified</i>	496					496
<i>Pedal Cyclist, non-traffic</i>	5					5
<i>Pedestrian, non-traffic</i>	28					28
<i>Other land transport</i>	53					53
<i>Other transport</i>	20					20
Natural/environmental	57					57
Overexertion	-					-
Poisoning	581	216	2	216	-	1,015
Struck by, against	23	-	4	-	-	27
Suffocation, hanging, strangulation	208	249	19	6		482
Other specified & classifiable	47	7	13	1	1	68
Other specified, not elsewhere classifiable	39	7	41	9	0	96
Unspecified	219	3	27	13	-	262
<b>Total</b>	<b>3,360</b>	<b>1,089</b>	<b>680</b>	<b>271</b>	<b>9</b>	<b>5,409</b>

6. National recommendations list boat-related drownings in "Other Transport." These have been separated out here due to local interest in this cause of death. Cells may not sum exactly to row and column totals due to rounding. See Appendix A Table A-1 for ICD-10 codes that comprise each cell. Includes ICD-10 codes: V01 – Y36, Y85 – Y87, Y89  
Source: Division for Vital Records and Health Statistics, MDCH

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0

TABLE 18  
Average Annual Injury and Poisoning Death Rates  
By Mechanism & Manner/Intent  
Michigan Residents, 2002-2006

Mechanism	Manner/Intent					Total
	Unintentional	Suicide	Homicide	Undetermined	Other	
Cut/pierce	0.0	0.2	0.7	*	-	0.9
Drowning <sup>7</sup>	1.1	0.1	0.0	0.1		1.3
<i>Non-boat-related</i>	0.9					0.9
<i>Boat-related</i>	0.1					0.1
Fall	6.0	0.1	*	0.0		6.2
Fire/hot object or substance	1.2	0.1	0.1	0.1		1.4
<i>Fire/flame/smoke</i>	1.2	0.1	0.1	0.1		1.4
<i>Hot object/substance</i>	0.0	-	-	-		0.0
Firearm	0.1	5.5	4.9	0.1	0.1	10.7
Machinery	0.2					0.2
All Transport	13.0	0.0	0.0	0.0	-	13.1
<i>Motor vehicle traffic</i>	12.0					12.0
<i>Occupant</i>	4.4					4.4
<i>Motorcyclist</i>	1.0					1.0
<i>Pedal Cyclist</i>	0.2					0.2
<i>Pedestrian</i>	1.5					1.5
<i>Other specified</i>	*					*
<i>Unspecified</i>	4.9					4.9
<i>Pedal Cyclist, non-traffic</i>	0.1					0.1
<i>Pedestrian, non-traffic</i>	0.3					0.3
<i>Other land transport</i>	0.5					0.5
<i>Other transport</i>	0.2					0.2
Natural/environmental	0.6					0.6
Overexertion	-					-
Poisoning	5.8	2.1	0.0	2.1	-	10.1
Struck by, against	0.2	-	0.0	-	-	0.3
Suffocation, hanging, strangulation	2.1	2.5	0.2	0.1		4.8
Other specified & classifiable	0.5	0.1	0.1	*	*	0.7
Other specified, not elsewhere classifiable	0.4	0.1	0.4	0.1	*	1.0
Unspecified	2.2	0.0	0.3	0.1	-	2.6
<b>Total</b>	<b>33.3</b>	<b>10.8</b>	<b>6.7</b>	<b>2.7</b>	<b>0.1</b>	<b>53.6</b>

7. National recommendations list boat-related drownings in "Other Transport." These have been separated out here due to local interest in this cause of death. Cells may not sum exactly to row and column totals due to rounding. See Appendix A Table A-1 for ICD-10 codes that comprise each cell. Includes ICD-10 codes: V01 – Y36, Y85 – Y87, Y89  
Source: Division for Vital Records and Health Statistics, MDCH

**KEY TO SYMBOLS**

No deaths occurred within category	-
Rate less than 0.05	0.0
Rate is considered statistically unreliable	*

**TABLE 19**  
Average Annual Number of Unintentional Drowning Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	1	1	2	-	1	1	1	2	3
1-4	6	5	10	1	0	1	7	5	12
5-9	2	1	2	1	1	2	3	1	5
10-14	1	0	2	2	0	2	3	1	4
15-19	5	0	6	3	-	3	9	0	9
20-24	4	-	4	2	0	2	7	0	7
25-29	4	1	5	1	0	2	7	1	8
30-34	2	-	2	1	-	1	4	-	4
35-44	11	2	13	1	0	2	13	3	16
45-54	10	2	13	1	1	2	12	3	15
55-64	6	2	7	-	0	0	6	2	8
65-74	6	3	8	1	-	1	7	3	9
75+	5	4	9	1	-	1	5	4	10
<b>Total</b>	<b>63</b>	<b>22</b>	<b>85</b>	<b>16</b>	<b>4</b>	<b>20</b>	<b>83</b>	<b>26</b>	<b>109</b>

Includes ICD-10 codes: V90, V92, W65 – W74 (boat-related and non-boat-related incidents)  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 20**  
Average Annual Unintentional Drowning Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	2.5	2.0	-	*	*	*	2.9	2.0
1-4	2.7	2.4	2.6	*	*	1.4	2.5	2.0	2.3
5-9	0.6	*	0.4	2.1	*	1.6	1.0	0.4	0.7
10-14	0.5	*	0.3	2.7	*	1.6	0.9	*	0.6
15-19	1.8	*	1.0	5.3	-	2.7	2.4	*	1.3
20-24	1.5	-	0.8	3.6	*	2.0	2.0	*	1.0
25-29	1.7	*	1.0	2.8	*	1.5	2.1	*	1.2
30-34	0.9	-	0.5	*	-	*	1.1	-	0.5
35-44	1.7	0.4	1.1	1.5	*	0.9	1.7	0.4	1.0
45-54	1.6	0.4	1.0	1.6	*	1.1	1.6	0.4	1.0
55-64	1.3	0.4	0.8	-	*	*	1.2	0.4	0.8
65-74	2.3	0.9	1.5	*	-	*	2.4	0.8	1.5
75+	2.3	1.3	1.6	*	-	*	2.3	1.1	1.6
<b>Total</b>	<b>1.5</b>	<b>0.5</b>	<b>1.0</b>	<b>2.3</b>	<b>0.5</b>	<b>1.4</b>	<b>1.7</b>	<b>0.5</b>	<b>1.1</b>

Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

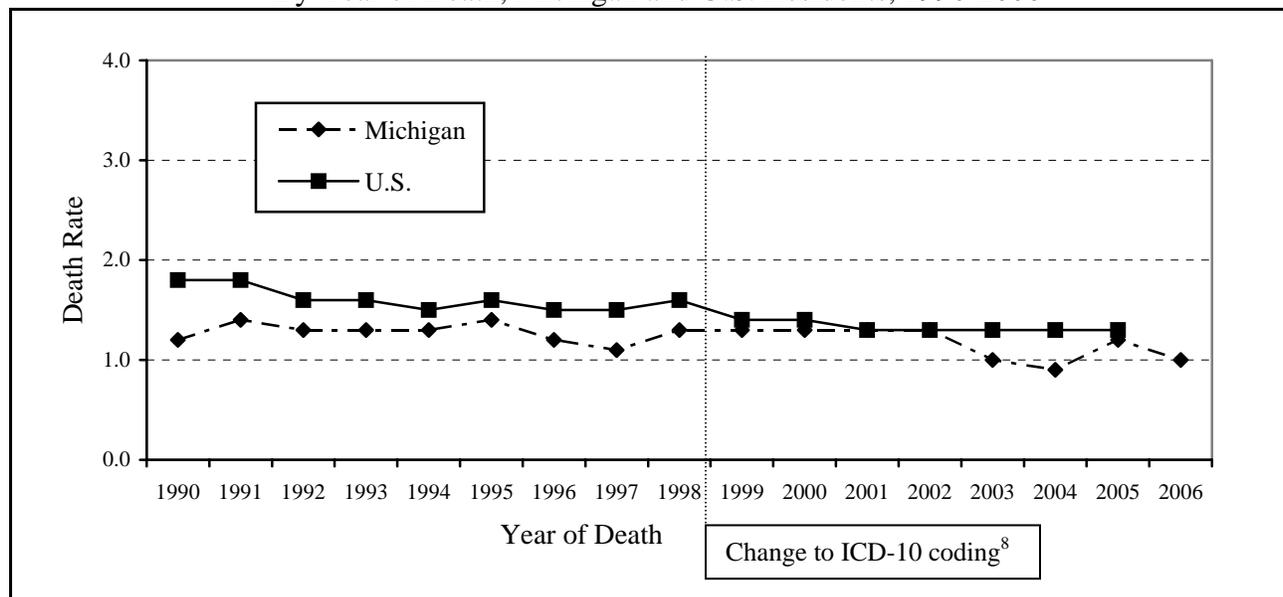
**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 21**  
Number of Unintentional Drowning Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	115	4,685	1.2	1.9	1.2	1.8
1991	137	4,621	1.5	1.8	1.4	1.8
1992	128	4,186	1.4	1.6	1.3	1.6
1993	124	4,390	1.3	1.7	1.3	1.6
1994	120	3,942	1.3	1.5	1.3	1.5
1995	133	4,350	1.4	1.6	1.4	1.6
1996	118	3,959	1.2	1.5	1.2	1.5
1997	107	4,051	1.1	1.5	1.1	1.5
1998	128	4,406	1.3	1.6	1.3	1.6
CHANGE TO ICD-10 CODING <sup>8</sup>						
1999	132	4,030	1.3	1.4	1.3	1.4
2000	124	3,948	1.2	1.4	1.3	1.4
2001	131	3,694	1.3	1.3	1.3	1.3
2002	131	3,860	1.3	1.3	1.3	1.3
2003	100	3,718	1.0	1.3	1.0	1.3
2004	89	3,729	0.9	1.3	0.9	1.3
2005	123	3,976	1.2	1.3	1.2	1.3
2006	103	not available	1.0	not available	1.0	not available

**FIGURE 5**  
Age-adjusted Unintentional Drowning Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E830, E832, E910 (boat-related and non-boat-related incidents)

1999-2006 data based on ICD-10 codes: V90, V92, W65 – W74 (boat-related and non-boat-related incidents)

Sources: Division for Vital Records and Health Statistics, MDCH

Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2005.

Population Estimates released by the National Center for Health Statistics, CDC

8. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional non-boated-related drownings (which comprise about 85% of all drownings) is 1.0297.<sup>12</sup> No comparability ratio for boat-related drowning is available. See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 22**  
Average Annual Number of Unintentional Drowning Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	1	*
Alger	1	*	Leelanau	0	*
Allegan	2	1.6	Lenawee	0	*
Alpena	0	*	Livingston	2	1.4
Antrim	-	-	Luce	0	*
Arenac	0	*	Mackinac	0	*
Baraga	0	*	Macomb	8	1.0
Barry	1	*	Manistee	0	*
Bay	2	1.5	Marquette	1	1.9
Benzie	0	*	Mason	-	-
Berrien	2	1.5	Mecosta	2	3.8
Branch	1	*	Menominee	0	*
Calhoun	1	0.9	Midland	0	*
Cass	1	*	Missaukee	-	-
Charlevoix	0	*	Monroe	2	1.4
Cheboygan	1	*	Montcalm	-	-
Chippewa	0	*	Montmorency	-	-
Clare	0	*	Muskegon	3	2.0
Clinton	0	*	Newaygo	0	*
Crawford	0	*	Oakland	10	0.9
Delta	1	*	Oceana	0	*
Dickinson	0	*	Ogemaw	-	-
Eaton	2	2.1	Ontonagon	-	-
Emmet	1	*	Osceola	-	-
Genesee	3	0.6	Oscoda	-	-
Gladwin	1	*	Otsego	0	*
Gogebic	0	*	Ottawa	1	0.6
Grand Traverse	2	1.9	Presque Isle	1	*
Gratiot	-	-	Roscommon	0	*
Hillsdale	0	*	Saginaw	3	1.6
Houghton	0	*	St. Clair	2	1.4
Huron	1	*	St. Joseph	0	*
Ingham	2	0.7	Sanilac	1	*
Ionia	1	1.9	Schoolcraft	0	*
Iosco	1	*	Shiawassee	1	*
Iron	1	*	Tuscola	1	*
Isabella	0	*	Van Buren	2	2.0
Jackson	1	0.9	Washtenaw	3	0.8
Kalamazoo	3	1.1	Wayne	20	1.0
Kalkaska	0	*	Wexford	0	*
Kent	6	1.0	Unknown	-	
Keweenaw	-	-			
Lake	0	*	Michigan	109	1.1

Includes ICD-10 codes: V90, V92, W65 – W74 (boat-related and non-boat-related incidents)

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 23**  
Average Annual Number of Unintentional Fall Injury Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	1	1	0	0	1	1	1	2
1-4	1	0	1	1	0	1	2	0	2
5-9	1	-	1	-	-	-	1	-	1
10-14	0	-	0	-	-	-	0	-	0
15-19	2	0	2	0	-	0	2	0	2
20-24	2	1	2	0	-	0	2	1	3
25-29	3	-	3	0	1	1	3	1	4
30-34	3	0	3	1	-	1	4	0	4
35-44	14	5	19	1	0	1	16	6	22
45-54	24	11	35	7	2	8	32	13	44
55-64	26	9	36	6	1	7	33	11	44
65-74	37	25	62	5	2	6	42	27	69
75+	171	219	391	10	7	17	183	229	411
Total	283	272	555	31	13	44	319	288	608

Includes ICD-10 codes: W00 – W19  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 24**  
Average Annual Unintentional Fall Injury Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	*	*	*	*	*	*	*	1.3
1-4	*	*	*	*	*	*	0.6	*	0.4
5-9	*	-	*	-	-	-	*	-	*
10-14	*	-	*	-	-	-	*	-	*
15-19	0.6	*	0.4	*	-	*	0.5	*	0.3
20-24	0.6	*	0.4	*	-	*	0.5	*	0.4
25-29	1.0	-	0.5	*	*	*	0.9	*	0.6
30-34	1.0	*	0.6	*	-	*	1.2	*	0.6
35-44	2.2	0.8	1.5	1.2	*	0.7	2.1	0.7	1.4
45-54	3.8	1.7	2.8	7.6	1.7	4.4	4.3	1.7	3.0
55-64	6.1	2.1	4.1	11.5	1.9	6.2	6.6	2.1	4.3
65-74	14.8	8.6	11.4	17.2	4.7	9.8	14.9	8.0	11.1
75+	80.4	62.7	69.4	46.6	20.1	29.8	77.2	58.6	65.6
Total	6.9	6.5	6.7	4.3	1.7	3.0	6.4	5.6	6.0

Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

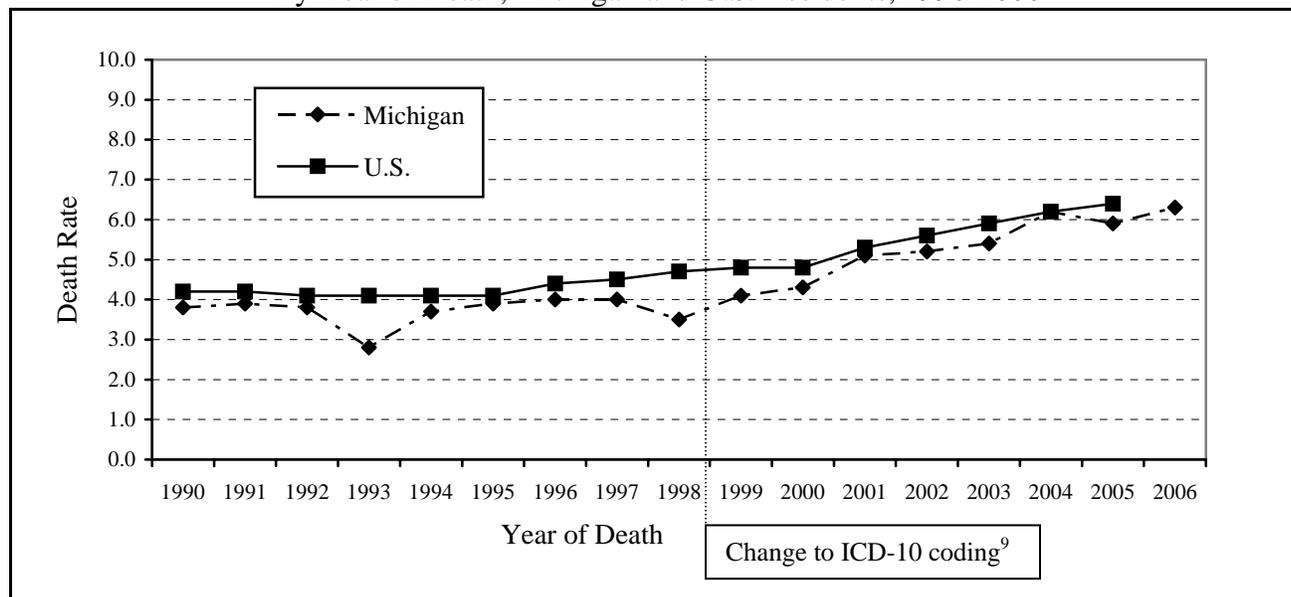
**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 25**  
Number of Unintentional Fall Injury Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	308	9,476	3.3	3.8	3.8	4.2
1991	314	9,655	3.3	3.8	3.9	4.2
1992	322	9,529	3.4	3.7	3.8	4.1
1993	236	9,788	2.5	3.8	2.8	4.1
1994	320	10,088	3.3	3.8	3.7	4.1
1995	349	10,483	3.6	3.9	3.9	4.1
1996	361	11,292	3.7	4.2	4.0	4.4
1997	366	11,858	3.7	4.3	4.0	4.5
1998	328	12,595	3.3	4.6	3.5	4.7
CHANGE TO ICD-10 CODING <sup>9</sup>						
1999	389	13,162	3.9	4.7	4.1	4.8
2000	414	13,322	4.2	4.7	4.3	4.8
2001	508	15,019	5.1	5.3	5.1	5.3
2002	522	16,257	5.2	5.6	5.2	5.6
2003	555	17,229	5.5	5.9	5.4	5.9
2004	654	18,807	6.5	6.4	6.2	6.2
2005	635	19,656	6.3	6.6	5.9	6.4
2006	672	not available	6.7	not available	6.3	not available

**FIGURE 6**  
Age-adjusted Unintentional Fall Injury Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E880 – E886, E888

1999-2006 data based on ICD-10 codes: W00 – W19

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

9. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional falls is 0.9991.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 26**  
Average Annual Number of Unintentional Fall Injury Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	-	-	Lapeer	4	4.3
Alger	1	*	Leelanau	1	*
Allegan	7	6.4	Lenawee	5	5.1
Alpena	1	3.9	Livingston	7	4.2
Antrim	1	4.9	Luce	0	*
Arenac	1	7.0	Mackinac	1	*
Baraga	1	*	Macomb	39	4.8
Barry	6	9.5	Manistee	1	5.6
Bay	6	5.1	Marquette	6	9.0
Benzie	0	*	Mason	0	*
Berrien	7	4.4	Mecosta	2	4.3
Branch	2	4.3	Menominee	2	8.8
Calhoun	7	4.9	Midland	3	3.8
Cass	2	3.9	Missaukee	1	*
Charlevoix	2	7.5	Monroe	6	4.2
Cheboygan	2	8.8	Montcalm	5	7.6
Chippewa	3	7.2	Montmorency	0	*
Clare	3	8.2	Muskegon	20	11.4
Clinton	4	6.1	Newaygo	3	5.6
Crawford	1	*	Oakland	77	6.3
Delta	2	6.3	Oceana	1	5.0
Dickinson	2	8.7	Ogemaw	1	6.4
Eaton	3	3.2	Ontonagon	-	-
Emmet	4	12.1	Osceola	2	9.3
Genesee	14	3.1	Oscoda	1	*
Gladwin	1	4.4	Otsego	1	*
Gogebic	2	10.6	Ottawa	17	6.6
Grand Traverse	3	3.6	Presque Isle	1	9.8
Gratiot	2	5.2	Roscommon	2	6.1
Hillsdale	2	3.4	Saginaw	14	6.9
Houghton	3	9.0	St. Clair	8	4.7
Huron	3	9.8	St. Joseph	3	4.8
Ingham	14	4.9	Sanilac	3	7.6
Ionia	4	6.6	Schoolcraft	0	*
Iosco	1	4.5	Shiawassee	5	6.9
Iron	2	12.8	Tuscola	1	2.1
Isabella	2	3.7	Van Buren	8	9.7
Jackson	16	10.0	Washtenaw	17	5.0
Kalamazoo	32	13.1	Wayne	91	4.5
Kalkaska	1	*	Wexford	2	7.6
Kent	72	12.1	Unknown	0	
Keweenaw	0	*			
Lake	1	10.1	Michigan	608	6.0

Includes ICD-10 codes: W00 – W19

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 27**  
Average Annual Number of Unintentional Fire/Flame/Smoke Injury Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	0	1	0	1	1	0	1	1
1-4	3	1	4	3	2	5	6	4	9
5-9	2	1	3	2	1	3	5	2	6
10-14	2	2	4	2	0	2	4	2	6
15-19	0	1	1	0	-	0	1	1	2
20-24	2	1	3	0	1	1	3	1	4
25-29	2	1	2	1	0	1	2	1	4
30-34	3	1	3	1	1	2	3	1	5
35-44	6	2	9	2	1	3	9	3	12
45-54	10	5	15	5	2	6	15	7	21
55-64	6	4	10	2	1	3	9	5	14
65-74	4	5	10	1	1	3	6	7	12
75+	7	11	18	2	2	4	10	13	23
Total	48	35	83	22	13	35	71	48	119

Includes ICD-10 codes: X00 – X09  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 28**  
Average Annual Unintentional Fire/Flame/Smoke Injury Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	*	*	*	*	*	*	*	1.1
1-4	1.3	0.7	1.0	6.0	4.6	5.3	2.2	1.4	1.8
5-9	0.8	*	0.6	3.7	*	2.6	1.3	0.5	0.9
10-14	0.6	0.7	0.7	2.4	*	1.5	0.9	0.7	0.8
15-19	*	*	*	*	-	*	*	*	0.2
20-24	0.8	*	0.5	*	*	*	0.7	0.4	0.6
25-29	0.6	*	0.5	*	*	*	0.8	0.4	0.6
30-34	1.0	*	0.6	*	*	1.5	1.0	0.4	0.7
35-44	1.0	0.4	0.7	2.3	*	1.4	1.1	0.4	0.8
45-54	1.6	0.8	1.2	5.3	1.5	3.2	2.0	0.9	1.4
55-64	1.4	0.8	1.1	4.2	*	2.8	1.8	0.9	1.3
65-74	1.8	1.8	1.8	4.5	3.6	4.0	2.0	1.9	2.0
75+	3.5	3.1	3.3	11.2	4.9	7.2	4.1	3.3	3.6
Total	1.2	0.8	1.0	3.1	1.6	2.3	1.4	0.9	1.2

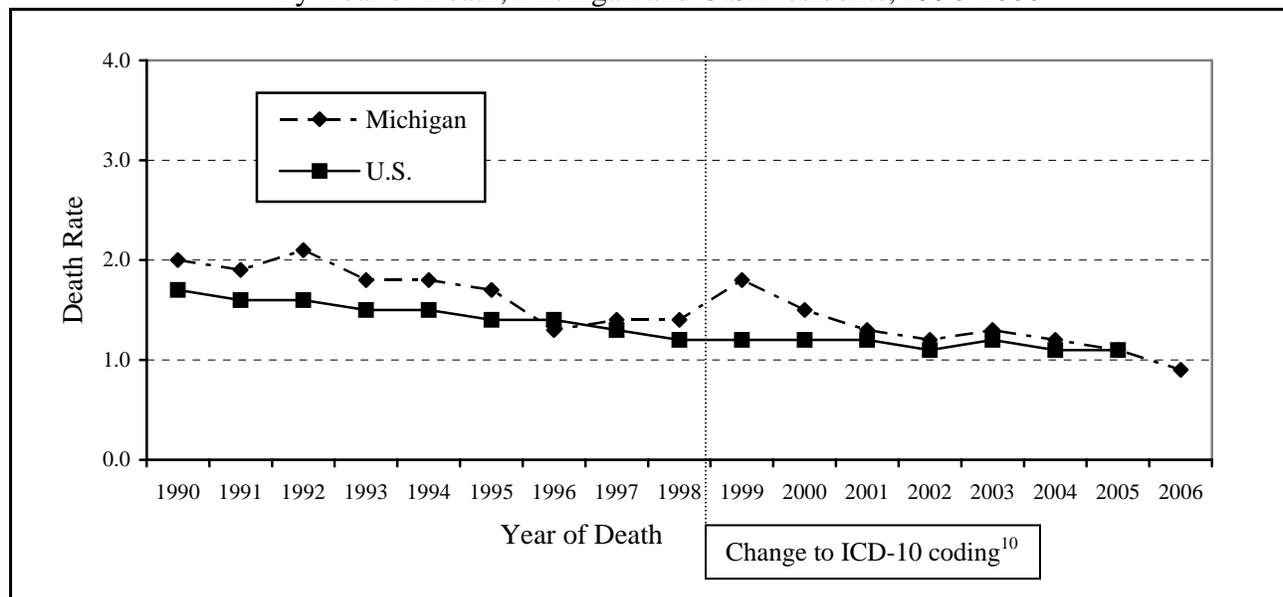
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 29**  
Number of Unintentional Fire/Flame/Smoke Injury Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	177	4,175	1.9	1.7	2.0	1.7
1991	173	4,120	1.8	1.6	1.9	1.6
1992	199	3,958	2.1	1.5	2.1	1.6
1993	172	3,900	1.8	1.5	1.8	1.5
1994	174	3,986	1.8	1.5	1.8	1.5
1995	158	3,761	1.6	1.4	1.7	1.4
1996	128	3,741	1.3	1.4	1.3	1.4
1997	139	3,490	1.4	1.3	1.4	1.3
1998	141	3,255	1.4	1.2	1.4	1.2
CHANGE TO ICD-10 CODING <sup>10</sup>						
1999	181	3,348	1.8	1.2	1.8	1.2
2000	146	3,377	1.5	1.2	1.5	1.2
2001	130	3,309	1.3	1.2	1.3	1.2
2002	125	3,159	1.2	1.1	1.2	1.1
2003	135	3,369	1.3	1.2	1.3	1.2
2004	118	3,229	1.2	1.1	1.2	1.1
2005	120	3,197	1.2	1.1	1.1	1.1
2006	96	not available	1.0	not available	0.9	not available

**FIGURE 7**  
Age-adjusted Unintentional Fire/Flame/Smoke Injury Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E890 – E899

1999-2006 data based on ICD-10 codes: X00 – X09

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

10. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional fire/flames and smoke is 0.9995.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 30**  
Average Annual Number of Unintentional Fire/Flame/Smoke Injury Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	-	-	Lapeer	1	*
Alger	1	*	Leelanau	-	-
Allegan	1	*	Lenawee	0	*
Alpena	1	*	Livingston	0	*
Antrim	1	*	Luce	0	*
Arenac	1	*	Mackinac	0	*
Baraga	0	*	Macomb	4	0.5
Barry	-	-	Manistee	1	4.8
Bay	1	1.1	Marquette	2	3.1
Benzie	0	*	Mason	0	*
Berrien	1	0.9	Mecosta	-	-
Branch	0	*	Menominee	1	*
Calhoun	1	*	Midland	0	*
Cass	1	*	Missaukee	0	*
Charlevoix	0	*	Monroe	1	0.9
Cheboygan	0	*	Montcalm	1	1.9
Chippewa	1	*	Montmorency	0	*
Clare	1	3.8	Muskegon	2	1.3
Clinton	0	*	Newaygo	1	*
Crawford	1	*	Oakland	10	0.9
Delta	1	*	Oceana	0	*
Dickinson	1	*	Ogemaw	-	-
Eaton	0	*	Ontonagon	-	-
Emmet	0	*	Osceola	0	*
Genesee	8	1.8	Oscoda	0	*
Gladwin	0	*	Otsego	0	*
Gogebic	1	*	Ottawa	3	1.1
Grand Traverse	1	*	Presque Isle	1	*
Gratiot	2	3.8	Roscommon	1	*
Hillsdale	1	*	Saginaw	2	1.1
Houghton	0	*	St. Clair	3	1.5
Huron	0	*	St. Joseph	1	*
Ingham	3	1.1	Sanilac	0	*
Ionia	1	*	Schoolcraft	0	*
Iosco	0	*	Shiawassee	0	*
Iron	0	*	Tuscola	1	*
Isabella	1	*	Van Buren	1	1.8
Jackson	1	0.9	Washtenaw	3	0.8
Kalamazoo	2	0.7	Wayne	32	1.6
Kalkaska	1	*	Wexford	0	*
Kent	5	0.9	Unknown	-	-
Keweenaw	0	*			
Lake	0	*	Michigan	119	1.2

Includes ICD-10 codes: X00 – X09

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 31**  
Average Annual Number of Unintentional Firearm Injury Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	-	0	-	-	-	0	-	0
1-4	0	0	0	0	-	0	1	0	1
5-9	-	0	0	0	-	0	0	0	1
10-14	0	0	0	0	-	0	0	0	1
15-19	0	-	0	1	-	1	2	-	2
20-24	0	-	0	0	0	0	1	0	1
25-29	0	-	0	0	-	0	1	-	1
30-34	0	-	0	1	-	1	1	-	1
35-44	1	1	1	1	-	1	2	1	2
45-54	1	-	1	-	0	0	1	0	1
55-64	1	0	1	0	-	0	1	0	1
65-74	0	-	0	0	-	0	1	-	1
75+	0	0	0	-	-	-	0	0	0
Total	5	2	7	5	1	5	10	2	12

Includes ICD-10 codes: W32 – W34  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 32**  
Average Annual Unintentional Firearm Injury Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	-	*	-	-	-	*	-	*
1-4	*	*	*	*	-	*	*	*	*
5-9	-	*	*	*	-	*	*	*	*
10-14	*	*	*	*	-	*	*	*	*
15-19	*	-	*	2.2	-	1.1	0.4	-	0.2
20-24	*	-	*	*	*	*	*	*	*
25-29	*	-	*	*	-	*	*	-	*
30-34	*	-	*	*	-	*	0.4	-	0.2
35-44	*	*	0.1	*	-	*	0.2	*	0.1
45-54	*	-	*	-	*	*	*	*	0.1
55-64	*	*	*	*	-	*	*	*	0.1
65-74	*	-	*	*	-	*	*	-	*
75+	*	*	*	-	-	-	*	*	*
Total	0.1	0.0	0.1	0.7	*	0.4	0.2	0.0	0.1

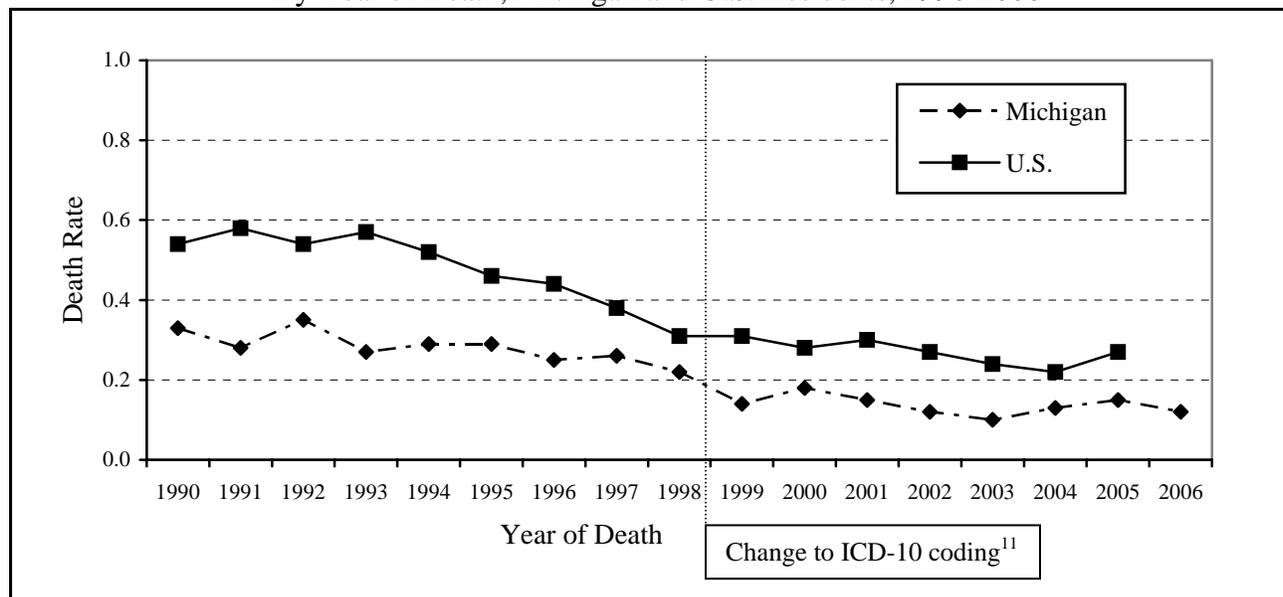
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is less than 0.05	0.0
Rate is considered statistically unreliable	*

**TABLE 33**  
Number of Unintentional Firearm Injury Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	32	1,416	0.34	0.57	0.33	0.54
1991	27	1,441	0.29	0.57	0.28	0.58
1992	34	1,409	0.36	0.55	0.35	0.54
1993	26	1,521	0.27	0.59	0.27	0.57
1994	29	1,356	0.30	0.52	0.29	0.52
1995	28	1,225	0.29	0.46	0.29	0.46
1996	25	1,134	0.26	0.42	0.25	0.44
1997	26	981	0.27	0.36	0.26	0.38
1998	22	866	0.22	0.31	0.22	0.31
CHANGE TO ICD-10 CODING <sup>11</sup>						
1999	14	824	0.14	0.30	0.14	0.31
2000	18	776	0.18	0.28	0.18	0.28
2001	15	802	0.15	0.28	0.15	0.30
2002	12	762	0.12	0.26	0.12	0.27
2003	10	730	0.10	0.25	0.10	0.24
2004	13	649	0.13	0.22	0.13	0.22
2005	15	789	0.15	0.27	0.15	0.27
2006	12	not available	0.12	not available	0.12	not available

**FIGURE 8**  
Age-adjusted Unintentional Firearm Injury Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E922

1999-2006 data based on ICD-10 codes: W32 - W34

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

11. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional firearm injury deaths is 1.0165.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

TABLE 34  
Average Annual Number of Unintentional Firearm Injury Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

A STATISTICALLY RELIABLE DEATH RATE COULD BE  
CALCULATED FOR ONLY ONE COUNTY.  
THUS, COUNTY-LEVEL COUNTS AND RATES ARE NOT PRESENTED.

**TABLE 35**  
Average Annual Number of Motor Vehicle Traffic Crash Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	2	1	3	1	1	1	3	2	5
1-4	4	3	7	2	1	3	6	5	11
5-9	6	6	12	3	1	4	10	8	18
10-14	16	9	25	4	2	5	19	11	31
15-19	80	42	122	14	4	17	96	47	144
20-24	85	30	115	13	6	19	103	38	141
25-29	53	14	67	15	4	18	71	20	91
30-34	42	15	57	14	4	18	58	20	77
35-44	104	44	148	22	8	30	130	54	184
45-54	96	40	136	19	9	28	118	50	168
55-64	66	31	97	11	4	15	79	36	115
65-74	47	29	76	6	2	9	55	33	87
75+	69	59	128	4	5	9	74	64	139
<b>Total</b>	<b>669</b>	<b>324</b>	<b>993</b>	<b>128</b>	<b>50</b>	<b>178</b>	<b>821</b>	<b>389</b>	<b>1,210</b>

Includes ICD-10 codes: V30 – V79 (.4-.9), V83 – V86 (.0-.3), V20 – V28 (.3-.9), V29.4-V29.9, V12 – V14 (.3-.9), V19.4-V19.6, V02 – V04 (.1, .9), V09.2, V80(.3-.5), V81.1, V82.1, V87(.0-.8), V89.2

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 36**  
Average Annual Motor Vehicle Traffic Crash Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	3.5	2.9	3.2	*	*	5.8	4.0	3.5	3.8
1-4	1.7	1.7	1.7	3.6	*	2.9	2.1	2.1	2.1
5-9	2.2	2.5	2.3	4.6	1.9	3.3	2.8	2.4	2.6
10-14	5.3	3.3	4.3	4.8	2.5	3.6	5.1	3.1	4.1
15-19	26.5	14.7	20.7	21.2	5.8	13.6	25.6	13.2	19.5
20-24	29.4	10.9	20.4	23.2	10.2	16.6	28.9	11.0	20.1
25-29	20.8	5.9	13.5	28.7	6.9	17.4	22.3	6.4	14.4
30-34	15.8	5.9	10.9	27.9	6.8	16.7	17.1	5.9	11.5
35-44	16.5	7.1	11.8	22.8	7.0	14.3	17.2	7.1	12.2
45-54	15.2	6.3	10.8	22.1	8.6	14.7	16.0	6.7	11.3
55-64	15.1	6.9	11.0	21.5	6.2	13.1	15.9	6.9	11.3
65-74	18.9	9.7	13.9	23.9	6.2	13.5	19.5	9.6	14.1
75+	32.4	16.7	22.7	20.5	13.6	16.1	31.4	16.4	22.1
<b>Total</b>	<b>16.3</b>	<b>7.7</b>	<b>12.0</b>	<b>18.0</b>	<b>6.4</b>	<b>11.9</b>	<b>16.6</b>	<b>7.6</b>	<b>12.0</b>

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

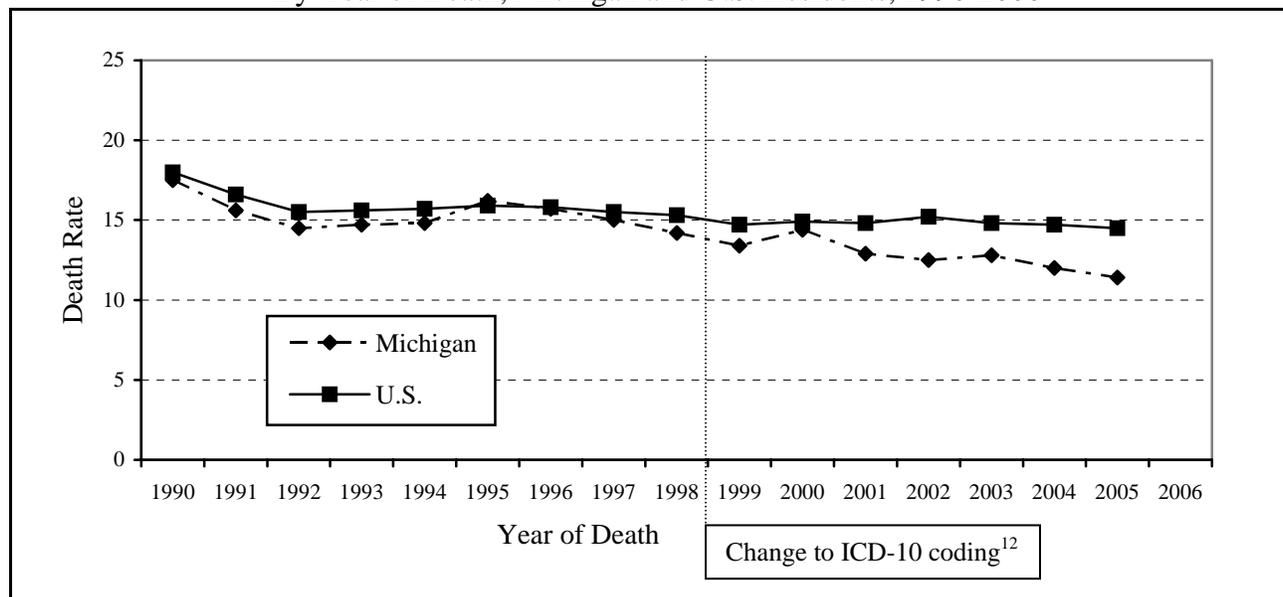
**KEY TO SYMBOL**

Rate is considered statistically unreliable \*

**TABLE 37**  
Number of Motor Vehicle Traffic Crash Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	1,639	45,827	17.6	18.4	17.5	18.0
1991	1,464	42,621	15.6	16.9	15.6	16.6
1992	1,380	39,985	14.6	15.6	14.5	15.5
1993	1,408	40,899	14.8	15.7	14.7	15.6
1994	1,415	41,507	14.7	15.8	14.8	15.7
1995	1,565	42,331	16.2	15.9	16.2	15.9
1996	1,525	42,522	15.6	15.8	15.7	15.8
1997	1,462	42,340	14.9	15.5	15.0	15.5
1998	1,389	42,191	14.1	15.3	14.2	15.3
CHANGE TO ICD-10 CODING <sup>12</sup>						
1999	1,315	40,965	13.3	14.7	13.4	14.7
2000	1,422	41,994	14.3	14.9	14.4	14.9
2001	1,289	42,443	12.9	14.9	12.9	14.8
2002	1,259	44,065	12.5	15.3	12.5	15.2
2003	1,299	43,340	12.9	14.9	12.8	14.8
2004	1,225	43,432	12.1	14.8	12.0	14.7
2005	1,164	43,667	11.5	14.7	11.4	14.5
2006	1,104	not available	10.9	not available	10.8	not available

**FIGURE 9**  
Age-adjusted Motor Vehicle Traffic Crash Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.  
 1990-1998 data based on ICD-9 codes: E810 – E819  
 1999-2006 data based on ICD-10 codes: V30 – V79 (.4-.9), V83 – V86 (0-.3), V20 – V28 (.3-.9), V29.4-V29.9, V12 – V14 (.3-.9), V19.4-V19.6, V02 – V04 (.1, .9), V09.2, V80(.3-.5), V81.1, V82.1, V87(0-.8), V89.2

Sources: Division for Vital Records and Health Statistics, MDCH  
 Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention  
 Population Estimates released by the National Center for Health Statistics, CDC

12. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for motor vehicle traffic crashes is 0.9545.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 38**  
Average Annual Number of Motor Vehicle Traffic Crash Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	3	27.5	Lapeer	15	16.7
Alger	1	*	Leelanau	3	12.7
Allegan	19	16.8	Lenawee	14	13.8
Alpena	5	17.7	Livingston	19	11.0
Antrim	6	23.9	Luce	2	26.3
Arenac	3	18.6	Mackinac	2	19.3
Baraga	1	13.7	Macomb	68	8.3
Barry	13	21.6	Manistee	4	14.3
Bay	15	13.9	Marquette	8	12.7
Benzie	3	17.3	Mason	5	18.0
Berrien	20	12.2	Mecosta	8	18.1
Branch	8	17.2	Menominee	6	22.4
Calhoun	19	13.5	Midland	9	11.0
Cass	10	20.2	Missaukee	3	19.8
Charlevoix	4	14.3	Monroe	17	11.3
Cheboygan	4	13.9	Montcalm	14	21.8
Chippewa	3	8.3	Montmorency	1	*
Clare	7	21.5	Muskegon	24	14.0
Clinton	7	10.2	Newaygo	10	20.6
Crawford	1	9.4	Oakland	96	7.9
Delta	3	8.9	Oceana	7	25.5
Dickinson	3	10.9	Ogemaw	4	16.5
Eaton	14	13.5	Ontonagon	3	40.1
Emmet	4	12.1	Osceola	4	16.1
Genesee	63	14.2	Oscoda	2	23.5
Gladwin	4	16.3	Otsego	3	13.1
Gogebic	2	14.1	Ottawa	28	11.2
Grand Traverse	10	11.8	Presque Isle	2	14.0
Gratiot	7	17.0	Roscommon	4	16.1
Hillsdale	11	24.2	Saginaw	31	15.0
Houghton	6	17.4	St. Clair	19	11.4
Huron	7	20.7	St. Joseph	17	27.1
Ingham	23	8.3	Sanilac	7	15.2
Ionia	9	14.4	Schoolcraft	2	20.5
Iosco	5	17.1	Shiawassee	13	18.4
Iron	3	22.3	Tuscola	13	22.3
Isabella	10	14.7	Van Buren	15	19.4
Jackson	20	12.3	Washtenaw	25	7.3
Kalamazoo	28	11.6	Wayne	212	10.6
Kalkaska	2	14.0	Wexford	4	14.0
Kent	73	12.2	Unknown	0	
Keweenaw	1	*			
Lake	3	23.7	Michigan	1,210	12.0

Includes ICD-10 codes: V30 – V79 (.4-.9), V83 – V86 (.0-.3), V20 – V28 (.3-.9), V29.4-V29.9, V12 – V14 (.3-.9), V19.4-V19.6, V02 – V04 (.1, .9), V09.2, V80(.3-.5), V81.1, V82.1, V87(.0-.8), V89.2

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

Quantity greater than zero but less than 0.5      0  
Rate is considered statistically unreliable            \*

**TABLE 39**  
Average Annual Number of MV Traffic Crash Occupant Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	1	1	2	0	0	0	1	1	2
1-4	1	2	3	0	0	0	1	3	4
5-9	2	3	5	-	0	0	2	3	5
10-14	6	4	10	1	0	1	7	5	12
15-19	38	21	58	3	1	4	42	23	65
20-24	36	13	50	2	2	4	41	16	56
25-29	23	7	30	3	0	3	27	9	36
30-34	16	5	21	2	0	3	19	5	24
35-44	42	18	60	3	3	6	47	22	68
45-54	28	15	43	5	2	7	34	18	52
55-64	20	12	32	2	1	3	23	13	36
65-74	16	11	27	1	0	2	18	11	29
75+	26	24	50	2	2	3	28	25	53
<b>Total</b>	<b>255</b>	<b>136</b>	<b>391</b>	<b>25</b>	<b>12</b>	<b>37</b>	<b>289</b>	<b>153</b>	<b>443</b>

Includes ICD-10 codes: V30 – V79 (.4-.9), V83 – V86 (.0-.3).  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 40**  
Average Annual MV Traffic Crash Occupant Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	2.4	*	1.8	*	*	*	2.1	*	1.7
1-4	*	1.1	0.8	*	*	*	0.4	1.1	0.8
5-9	0.8	1.0	0.9	-	*	*	0.6	0.9	0.8
10-14	2.0	1.5	1.8	*	*	*	1.8	1.4	1.6
15-19	12.5	7.2	9.9	4.7	*	3.0	11.1	6.4	8.8
20-24	12.6	4.8	8.8	3.6	3.2	3.4	11.5	4.5	8.1
25-29	9.1	3.1	6.1	6.3	*	3.2	8.6	2.8	5.7
30-34	6.1	1.9	4.0	4.7	*	2.5	5.6	1.6	3.6
35-44	6.6	3.0	4.8	3.5	2.3	2.9	6.2	2.8	4.5
45-54	4.4	2.4	3.4	5.5	2.1	3.7	4.6	2.3	3.5
55-64	4.6	2.6	3.6	3.5	*	2.4	4.6	2.6	3.5
65-74	6.6	3.7	5.0	5.2	*	2.8	6.4	3.4	4.7
75+	12.2	6.8	8.8	7.5	4.3	5.5	11.7	6.5	8.4
<b>Total</b>	<b>6.2</b>	<b>3.2</b>	<b>4.7</b>	<b>3.5</b>	<b>1.6</b>	<b>2.5</b>	<b>5.8</b>	<b>3.0</b>	<b>4.4</b>

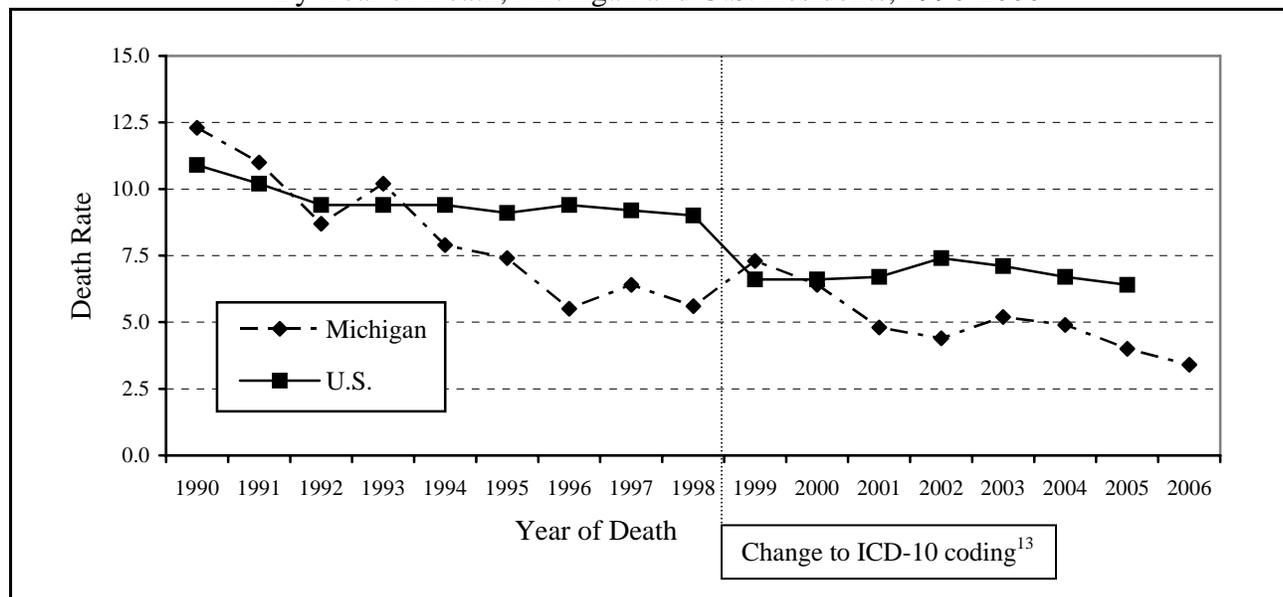
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 41**  
Number of MV Traffic Crash Occupant Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	1,153	27,725	12.4	11.1	12.3	10.9
1991	1,036	26,139	11.0	10.3	11.0	10.2
1992	830	24,299	8.8	9.5	8.7	9.4
1993	975	24,586	10.2	9.5	10.2	9.4
1994	748	24,818	7.8	9.4	7.9	9.4
1995	718	24,359	7.4	9.2	7.4	9.1
1996	533	25,378	5.5	9.4	5.5	9.4
1997	622	25,089	6.3	9.2	6.4	9.2
1998	550	24,783	5.6	9.0	5.6	9.0
CHANGE TO ICD-10 CODING <sup>13</sup>						
1999	717	18,326	7.2	6.6	7.3	6.6
2000	630	18,649	6.3	6.6	6.4	6.6
2001	483	19,270	4.8	6.8	4.8	6.7
2002	438	21,344	4.4	7.4	4.4	7.4
2003	525	20,720	5.2	7.1	5.2	7.1
2004	500	19,965	4.9	6.8	4.9	6.7
2005	407	19,125	4.0	6.5	4.0	6.4
2006	343	not available	3.4	not available	3.4	not available

**FIGURE 10**  
Age-adjusted MV Traffic Crash Occupant Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E810-819 (.0, .1)

1999-2006 data based on ICD-10 codes: V30 - V79 (.4-.9), V83 - V86 (.0-.3)

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

13. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for occupants killed in motor vehicle traffic crashes is 0.6191.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

TABLE 42  
Average Annual Number of MV Traffic Crash Occupant Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	2	13.7	Lapeer	4	4.8
Alger	1	*	Leelanau	0	*
Allegan	7	6.6	Lenawee	4	3.5
Alpena	2	6.5	Livingston	11	6.2
Antrim	3	10.7	Luce	1	*
Arenac	1	8.1	Mackinac	1	12.3
Baraga	-	-	Macomb	23	2.8
Barry	6	10.8	Manistee	2	6.4
Bay	7	6.2	Marquette	3	4.9
Benzie	1	6.9	Mason	2	6.9
Berrien	8	4.9	Mecosta	3	6.2
Branch	4	8.2	Menominee	2	9.6
Calhoun	11	7.6	Midland	4	4.3
Cass	3	6.6	Missaukee	1	*
Charlevoix	2	9.0	Monroe	6	3.9
Cheboygan	2	6.6	Montcalm	8	12.6
Chippewa	2	5.2	Montmorency	1	*
Clare	3	8.9	Muskegon	11	6.2
Clinton	2	3.5	Newaygo	5	9.3
Crawford	0	*	Oakland	24	2.0
Delta	1	*	Oceana	4	14.9
Dickinson	2	8.0	Ogemaw	2	11.0
Eaton	8	7.5	Ontonagon	1	*
Emmet	2	4.8	Osceola	1	5.9
Genesee	23	5.1	Oscoda	1	*
Gladwin	1	4.4	Otsego	1	4.9
Gogebic	1	8.2	Ottawa	13	5.1
Grand Traverse	3	4.1	Presque Isle	0	*
Gratiot	3	7.1	Roscommon	2	9.2
Hillsdale	6	12.7	Saginaw	8	3.8
Houghton	3	7.9	St. Clair	11	6.2
Huron	3	8.6	St. Joseph	7	11.8
Ingham	9	3.4	Sanilac	3	7.6
Ionia	4	5.6	Schoolcraft	1	*
Iosco	2	7.4	Shiawassee	9	12.1
Iron	2	15.9	Tuscola	5	8.9
Isabella	5	8.3	Van Buren	6	7.7
Jackson	11	6.9	Washtenaw	11	3.3
Kalamazoo	11	4.7	Wayne	39	1.9
Kalkaska	1	7.0	Wexford	2	7.0
Kent	28	4.7	Unknown	-	
Keweenaw	-	-			
Lake	2	13.5	Michigan	443	4.4

Includes ICD-10 codes: V30 – V79 (.4-.9), V83 – V86 (.0-.3).

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 43**  
Average Annual Number of Motorcyclist Crash Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	0	0	1	-	-	-	0	0	1
10-14	0	-	0	0	-	0	0	-	0
15-19	3	0	4	0	-	0	4	0	4
20-24	10	0	10	1	-	1	11	0	11
25-29	6	1	7	4	-	4	11	1	11
30-34	7	1	8	4	-	4	11	1	12
35-44	14	1	15	4	-	4	18	1	19
45-54	20	3	22	0	-	0	20	3	23
55-64	11	1	12	0	-	0	12	1	12
65-74	3	-	3	-	-	-	3	-	3
75+	0	0	0	-	-	-	0	0	0
Total	75	6	81	14	-	14	90	6	97

Includes ICD-10 codes: V20 – V28 (.3 - .9), V29.4 – V29.9  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 44**  
Average Annual Motorcyclist Crash Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	*	*	*	-	-	-	*	*	*
10-14	*	-	*	*	-	*	*	-	*
15-19	1.1	*	0.6	*	-	*	1.1	*	0.6
20-24	3.3	*	1.7	*	-	*	3.1	*	1.6
25-29	2.4	*	1.4	7.9	-	3.8	3.3	*	1.8
30-34	2.8	*	1.5	7.4	-	3.4	3.3	*	1.8
35-44	2.2	*	1.2	4.1	-	1.9	2.4	*	1.2
45-54	3.1	0.4	1.8	*	-	*	2.7	0.3	1.5
55-64	2.6	*	1.4	*	-	*	2.4	*	1.2
65-74	1.0	-	0.5	-	-	-	0.9	-	0.4
75+	*	*	*	-	-	-	*	*	*
Total	1.8	0.1	1.0	1.9	-	0.9	1.8	0.1	1.0

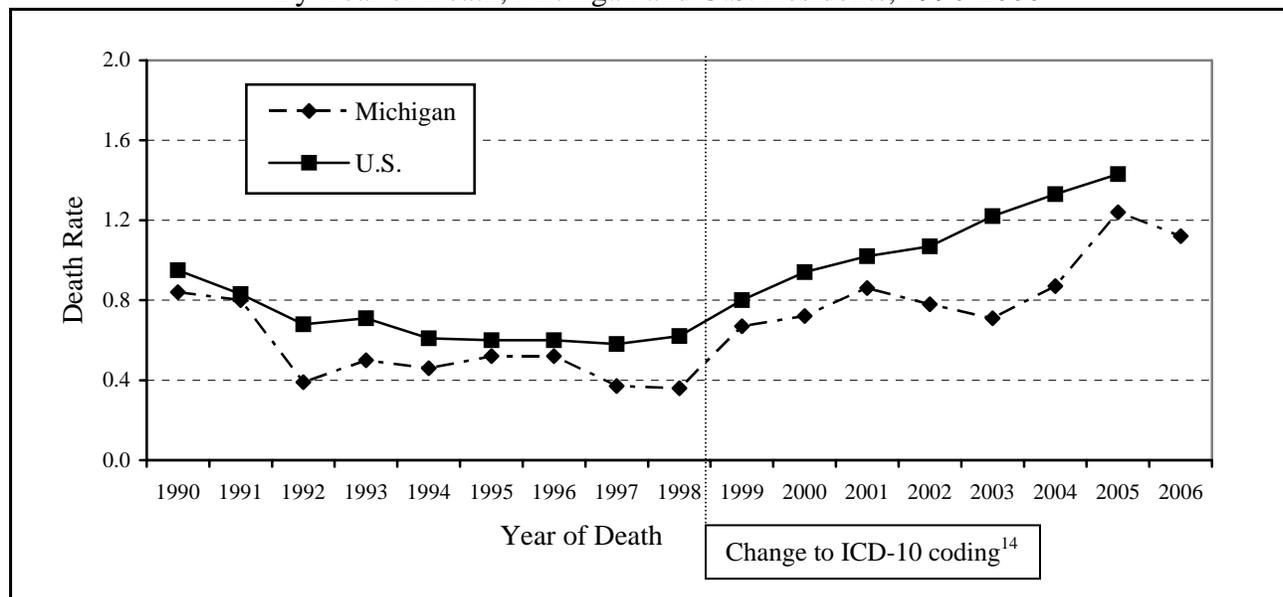
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 45**  
Number of Motorcyclist Crash Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	82	2,600	0.88	1.04	0.84	0.95
1991	77	2,301	0.82	0.91	0.80	0.83
1992	39	1,853	0.41	0.72	0.39	0.68
1993	49	1,927	0.51	0.74	0.50	0.71
1994	45	1,748	0.47	0.66	0.46	0.61
1995	51	1,661	0.53	0.62	0.52	0.60
1996	52	1,641	0.53	0.61	0.52	0.60
1997	37	1,645	0.38	0.60	0.37	0.58
1998	36	1,691	0.37	0.61	0.36	0.62
CHANGE TO ICD-10 CODING <sup>14</sup>						
1999	66	2,254	0.67	0.81	0.67	0.80
2000	72	2,704	0.72	0.96	0.72	0.94
2001	86	2,976	0.86	1.04	0.86	1.02
2002	78	3,153	0.78	1.09	0.78	1.07
2003	73	3,616	0.72	1.24	0.71	1.22
2004	89	3,940	0.88	1.34	0.87	1.33
2005	126	4,296	1.24	1.45	1.24	1.43
2006	117	not available	1.16	not available	1.12	not available

**FIGURE 11**  
Age-adjusted Motorcyclist Crash Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.  
1990-1998 data based on ICD-9 codes: E810 – E819 (.2, .3)  
1999-2006 data based on ICD-10 codes: V20 – V28 (.3 - .9), V29.4 – V29.9

Sources: Division for Vital Records and Health Statistics, MDCH  
Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention  
Population Estimates released by the National Center for Health Statistics, CDC

14. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for motorcyclist crashes is 1.1520.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 46**  
Average Annual Number of Motorcyclist Crash Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	2	1.7
Alger	-	-	Leelanau	0	*
Allegan	1	1.1	Lenawee	1	*
Alpena	0	*	Livingston	3	1.5
Antrim	-	-	Luce	-	-
Arenac	1	*	Mackinac	-	-
Baraga	-	-	Macomb	6	0.7
Barry	1	*	Manistee	0	*
Bay	1	1.1	Marquette	1	*
Benzie	0	*	Mason	1	*
Berrien	2	1.1	Mecosta	0	*
Branch	0	*	Menominee	0	*
Calhoun	1	*	Midland	1	*
Cass	1	*	Missaukee	-	-
Charlevoix	-	-	Monroe	1	0.9
Cheboygan	0	*	Montcalm	0	*
Chippewa	-	-	Montmorency	-	-
Clare	0	*	Muskegon	3	1.5
Clinton	1	*	Newaygo	1	*
Crawford	-	-	Oakland	9	0.8
Delta	0	*	Oceana	0	*
Dickinson	-	-	Ogemaw	0	*
Eaton	1	*	Ontonagon	1	*
Emmet	0	*	Osceola	-	-
Genesee	5	1.1	Oscoda	-	-
Gladwin	1	*	Otsego	-	-
Gogebic	-	-	Ottawa	2	0.8
Grand Traverse	1	*	Presque Isle	0	*
Gratiot	0	*	Roscommon	0	*
Hillsdale	1	*	Saginaw	2	1.0
Houghton	0	*	St. Clair	1	*
Huron	0	*	St. Joseph	1	*
Ingham	3	1.1	Sanilac	1	*
Ionia	0	*	Schoolcraft	0	*
Iosco	0	*	Shiawassee	1	*
Iron	-	-	Tuscola	1	*
Isabella	1	*	Van Buren	0	*
Jackson	1	0.9	Washtenaw	3	0.8
Kalamazoo	1	0.6	Wayne	22	1.1
Kalkaska	0	*	Wexford	0	*
Kent	5	0.9	Unknown	-	-
Keweenaw	-	-			
Lake	0	*	Michigan	97	1.0

Includes ICD-10 codes: V20 – V28 (.3 - .9), V29.4 – V29.9

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 47**  
Average Annual Number of Motor Vehicle - Pedal Cyclist Crash Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	1	0	1	1	-	1	1	0	2
10-14	3	0	3	0	-	0	3	0	3
15-19	1	0	2	1	-	1	2	0	2
20-24	1	0	2	-	-	-	1	0	2
25-29	0	0	0	-	-	-	0	0	0
30-34	0	-	0	-	-	-	0	-	0
35-44	3	1	4	1	-	1	4	1	5
45-54	4	0	4	0	0	1	4	1	5
55-64	1	1	2	-	-	-	1	1	2
65-74	2	0	2	-	-	-	2	0	2
75+	0	0	1	-	-	-	1	0	1
Total	18	3	21	3	0	3	20	4	24

Includes ICD-10 codes: V12 – V14 (.3 - .9), V19.4 – V19.6  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 48**  
Average Annual Motor Vehicle - Pedal Cyclist Crash Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	*	*	*	*	-	*	0.3	*	0.2
10-14	0.9	*	0.6	*	-	*	0.8	*	0.5
15-19	0.5	*	0.3	*	-	*	0.6	*	0.3
20-24	0.5	*	0.3	-	-	-	0.4	*	0.2
25-29	*	*	*	-	-	-	*	*	*
30-34	*	-	*	-	-	-	*	-	*
35-44	0.5	*	0.3	*	-	*	0.5	*	0.3
45-54	0.6	*	0.3	*	*	*	0.6	*	0.3
55-64	*	*	0.2	-	-	-	*	*	0.2
65-74	0.9	*	0.4	-	-	-	0.8	*	0.4
75+	*	*	*	-	-	-	*	*	*
Total	0.4	0.1	0.3	0.4	*	0.2	0.4	0.1	0.2

Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

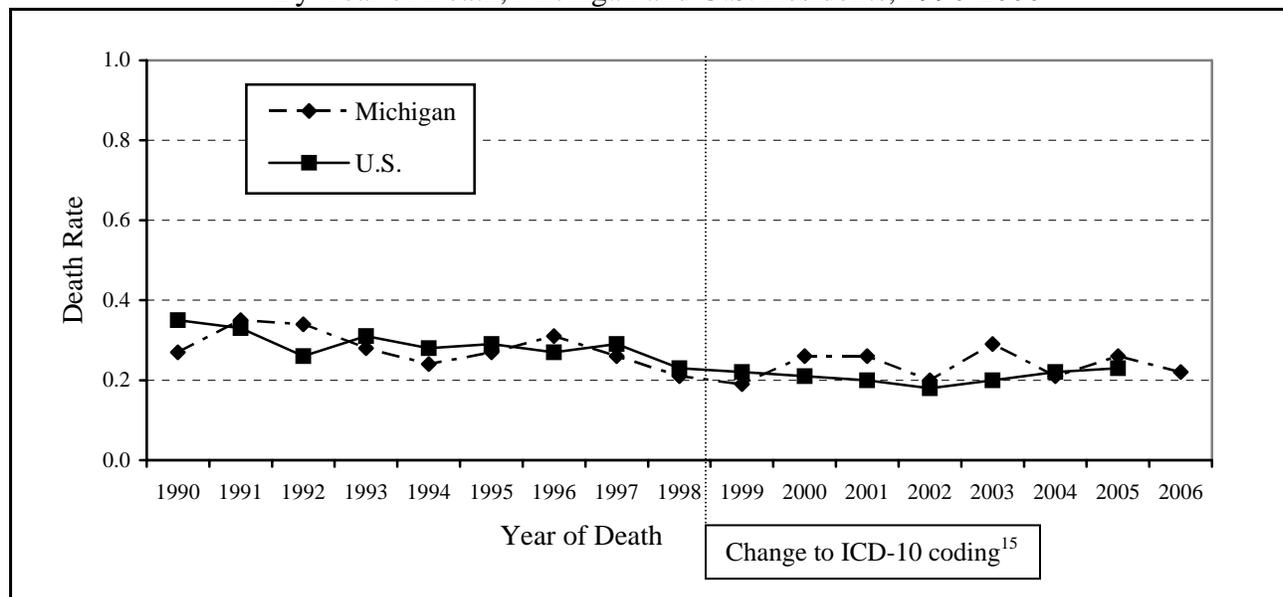
**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 49**  
Number of Motor Vehicle - Pedal Cyclist Crash Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	25	814	0.27	0.33	0.27	0.35
1991	33	794	0.35	0.31	0.35	0.33
1992	32	679	0.34	0.26	0.34	0.26
1993	27	789	0.28	0.30	0.28	0.31
1994	23	730	0.24	0.28	0.24	0.28
1995	27	783	0.28	0.29	0.27	0.29
1996	31	695	0.32	0.26	0.31	0.27
1997	26	757	0.27	0.28	0.26	0.29
1998	21	683	0.21	0.25	0.21	0.23
CHANGE TO ICD-10 CODING <sup>15</sup>						
1999	19	615	0.19	0.22	0.19	0.22
2000	26	572	0.26	0.20	0.26	0.21
2001	26	585	0.26	0.21	0.26	0.20
2002	20	550	0.20	0.19	0.20	0.18
2003	30	572	0.30	0.20	0.29	0.20
2004	22	637	0.22	0.22	0.21	0.22
2005	25	700	0.25	0.24	0.26	0.23
2006	23	not available	0.23	not available	0.22	not available

**FIGURE 11**  
Age-adjusted Motor Vehicle - Pedal Cyclist Crash Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E810 - E819 (.6)

1999-2006 data based on ICD-10 codes: V12 - V14 (.3 - .9), V19.4 - V19.6

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

15. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for motor vehicle - pedal cyclist crashes is 0.8038.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

TABLE 50  
Average Annual Number of Motor Vehicle - Pedal Cyclist Crash Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

STATISTICALLY RELIABLE DEATH RATES COULD BE  
CALCULATED FOR ONLY FOUR COUNTIES.  
THUS, COUNTY-LEVEL COUNTS AND RATES ARE NOT PRESENTED.

**TABLE 51**  
Average Annual Number of Motor Vehicle – Pedestrian Crash Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	-	0	-	-	-	0	-	0
1-4	1	1	2	1	0	1	2	1	3
5-9	1	1	2	2	0	2	3	2	4
10-14	2	2	4	1	1	2	3	2	6
15-19	5	3	8	2	0	2	7	3	10
20-24	5	1	6	2	1	3	7	3	11
25-29	5	0	5	1	1	2	6	1	7
30-34	4	2	6	3	1	3	7	3	9
35-44	13	5	19	8	3	10	22	8	30
45-54	13	5	17	6	3	9	19	8	27
55-64	6	3	9	5	1	5	11	4	15
65-74	7	3	10	1	1	2	8	4	12
75+	8	5	13	1	1	2	10	6	16
<b>Total</b>	<b>70</b>	<b>31</b>	<b>101</b>	<b>33</b>	<b>11</b>	<b>44</b>	<b>106</b>	<b>44</b>	<b>151</b>

Includes ICD-10 codes: V02 – V04 (.1, .9), V09.2  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 52**  
Average Annual Motor Vehicle – Pedestrian Crash Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	-	*	-	-	-	*	-	*
1-4	*	*	0.4	2.4	*	1.4	0.7	0.5	0.6
5-9	*	0.5	0.4	2.4	*	1.6	0.7	0.5	0.6
10-14	0.7	0.6	0.6	1.9	*	1.3	0.9	0.6	0.7
15-19	1.8	0.9	1.4	2.5	*	1.4	1.9	0.8	1.4
20-24	1.7	0.5	1.1	4.0	2.1	3.0	2.1	0.9	1.5
25-29	1.8	*	1.0	2.4	*	1.7	1.9	*	1.1
30-34	1.3	0.8	1.1	5.4	*	3.1	2.0	0.8	1.4
35-44	2.1	0.8	1.5	7.9	2.3	4.9	2.9	1.1	2.0
45-54	2.0	0.8	1.4	7.1	2.5	4.6	2.6	1.0	1.8
55-64	1.4	0.7	1.1	8.8	*	4.6	2.3	0.8	1.5
65-74	2.7	1.0	1.8	4.5	*	3.1	2.9	1.2	2.0
75+	3.9	1.4	2.3	5.6	*	3.1	4.4	1.5	2.6
<b>Total</b>	<b>1.7</b>	<b>0.7</b>	<b>1.2</b>	<b>4.6</b>	<b>1.4</b>	<b>2.9</b>	<b>2.1</b>	<b>0.9</b>	<b>1.5</b>

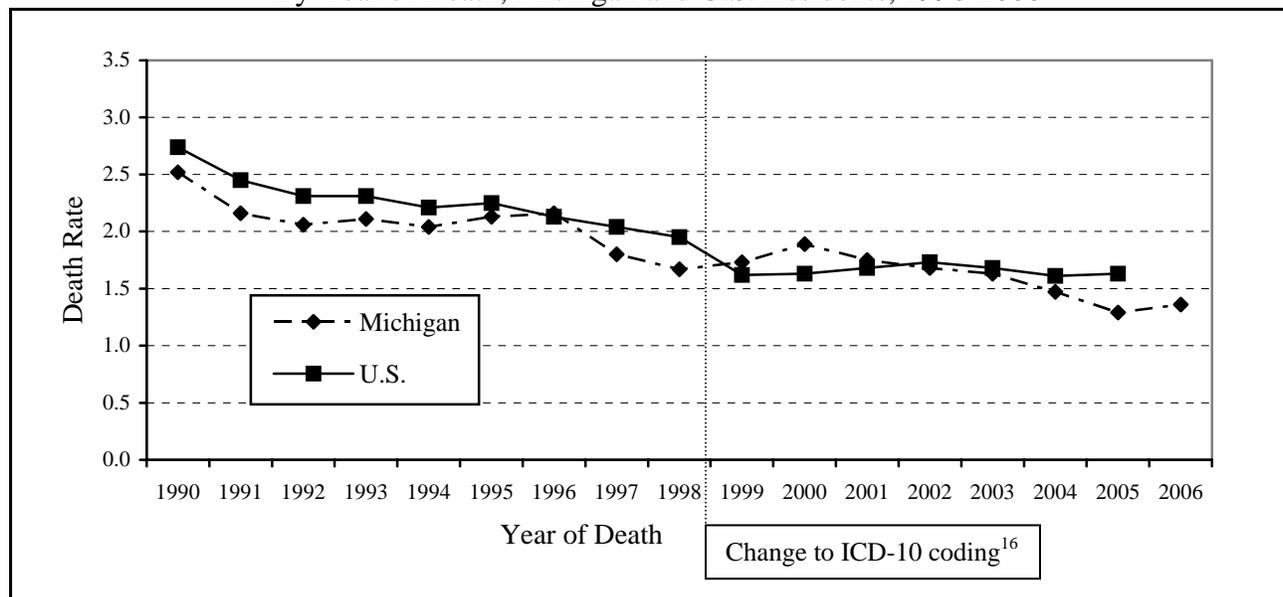
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 53**  
Number of Motor Vehicle – Pedestrian Crash Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	230	6,804	2.47	2.73	2.52	2.74
1991	199	6,189	2.12	2.45	2.16	2.45
1992	195	5,895	2.06	2.30	2.06	2.31
1993	199	5,978	2.09	2.30	2.11	2.31
1994	194	5,786	2.02	2.20	2.04	2.21
1995	203	5,935	2.10	2.23	2.13	2.25
1996	208	5,667	2.13	2.10	2.16	2.13
1997	176	5,497	1.79	2.02	1.80	2.04
1998	163	5,362	1.66	1.94	1.67	1.95
CHANGE TO ICD-10 CODING <sup>16</sup>						
1999	171	4,545	1.73	1.63	1.73	1.62
2000	188	4,598	1.89	1.63	1.89	1.63
2001	175	4,822	1.75	1.69	1.75	1.68
2002	169	5,041	1.68	1.75	1.68	1.73
2003	166	4,951	1.65	1.70	1.63	1.68
2004	149	4,839	1.47	1.65	1.47	1.61
2005	131	4,917	1.29	1.66	1.29	1.63
2006	138	not available	1.37	not available	1.36	not available

**FIGURE 12**  
Age-adjusted Motor Vehicle – Pedestrian Crash Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E810 – E819 (.7)

1999-2006 data based on ICD-10 codes: V02 – V04 (.1, .9), V09.2

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

16. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for motor vehicle – pedestrian crashes is 0.9535.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 54**  
Average Annual Number of Motor Vehicle – Pedestrian Crash Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	1	*
Alger	-	-	Leelanau	0	*
Allegan	1	1.1	Lenawee	1	*
Alpena	0	*	Livingston	2	0.9
Antrim	1	*	Luce	0	*
Arenac	0	*	Mackinac	-	-
Baraga	0	*	Macomb	13	1.6
Barry	1	2.4	Manistee	0	*
Bay	1	*	Marquette	-	-
Benzie	-	-	Mason	1	*
Berrien	2	1.5	Mecosta	0	*
Branch	-	-	Menominee	0	*
Calhoun	1	0.9	Midland	1	1.4
Cass	0	*	Missaukee	0	*
Charlevoix	1	*	Monroe	1	0.8
Cheboygan	0	*	Montcalm	0	*
Chippewa	0	*	Montmorency	-	-
Clare	1	*	Muskegon	2	1.4
Clinton	0	*	Newaygo	0	*
Crawford	0	*	Oakland	13	1.1
Delta	1	*	Oceana	1	*
Dickinson	-	-	Ogemaw	-	-
Eaton	1	1.3	Ontonagon	-	-
Emmet	1	*	Osceola	0	*
Genesee	9	2.0	Oscoda	-	-
Gladwin	-	-	Otsego	0	*
Gogebic	0	*	Ottawa	2	0.8
Grand Traverse	1	*	Presque Isle	0	*
Gratiot	-	-	Roscommon	-	-
Hillsdale	1	*	Saginaw	4	2.0
Houghton	1	*	St. Clair	2	0.9
Huron	0	*	St. Joseph	1	*
Ingham	3	1.2	Sanilac	0	*
Ionia	1	*	Schoolcraft	0	*
Iosco	0	*	Shiawassee	1	1.6
Iron	-	-	Tuscola	1	2.4
Isabella	-	-	Van Buren	1	*
Jackson	2	1.1	Washtenaw	5	1.4
Kalamazoo	3	1.3	Wayne	50	2.5
Kalkaska	0	*	Wexford	-	-
Kent	9	1.5	Unknown	0	
Keweenaw	-	-			
Lake	-	-	Michigan	151	1.5

Includes ICD-10 codes: V02 – V04 (.1, .9), V09.2

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 55**  
Average Annual Number of Unintentional Poisoning Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	0	1	-	-	-	0	0	1
1-4	0	0	1	0	-	0	1	0	1
5-9	-	0	0	-	-	-	-	0	0
10-14	0	1	1	-	-	-	0	1	1
15-19	10	3	13	1	0	1	11	3	14
20-24	30	7	37	2	1	2	32	8	40
25-29	31	11	41	4	2	5	36	13	49
30-34	32	15	47	3	3	6	36	18	55
35-44	92	47	138	14	10	24	108	58	166
45-54	83	49	132	31	21	51	117	70	187
55-64	15	11	26	9	5	14	25	16	41
65-74	3	4	7	1	-	1	5	4	9
75+	7	8	16	1	1	2	8	10	18
Total	305	156	460	66	42	108	379	202	581

Includes ICD-10 codes: X40 – X49  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 56**  
Average Annual Unintentional Poisoning Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	*	*	*	-	-	-	*	*	*
1-4	*	*	*	*	-	*	*	*	*
5-9	-	*	*	-	-	-	-	*	*
10-14	*	*	*	-	-	-	*	*	*
15-19	3.3	1.1	2.2	*	*	*	2.9	0.9	2.0
20-24	10.4	2.5	6.5	2.9	*	2.1	9.1	2.3	5.7
25-29	12.1	4.4	8.3	7.1	2.9	4.9	11.3	4.1	7.7
30-34	12.0	5.8	8.9	6.2	5.1	5.6	10.8	5.5	8.2
35-44	14.5	7.5	11.0	14.9	8.8	11.6	14.3	7.7	11.0
45-54	13.2	7.7	10.4	35.1	19.9	26.8	15.8	9.3	12.5
55-64	3.6	2.5	3.0	17.7	7.5	12.0	5.0	3.1	4.0
65-74	1.4	1.3	1.3	5.2	-	2.1	1.7	1.2	1.4
75+	3.4	2.4	2.8	*	3.3	3.4	3.4	2.5	2.8
Total	7.4	3.7	5.6	9.3	5.4	7.2	7.6	3.9	5.8

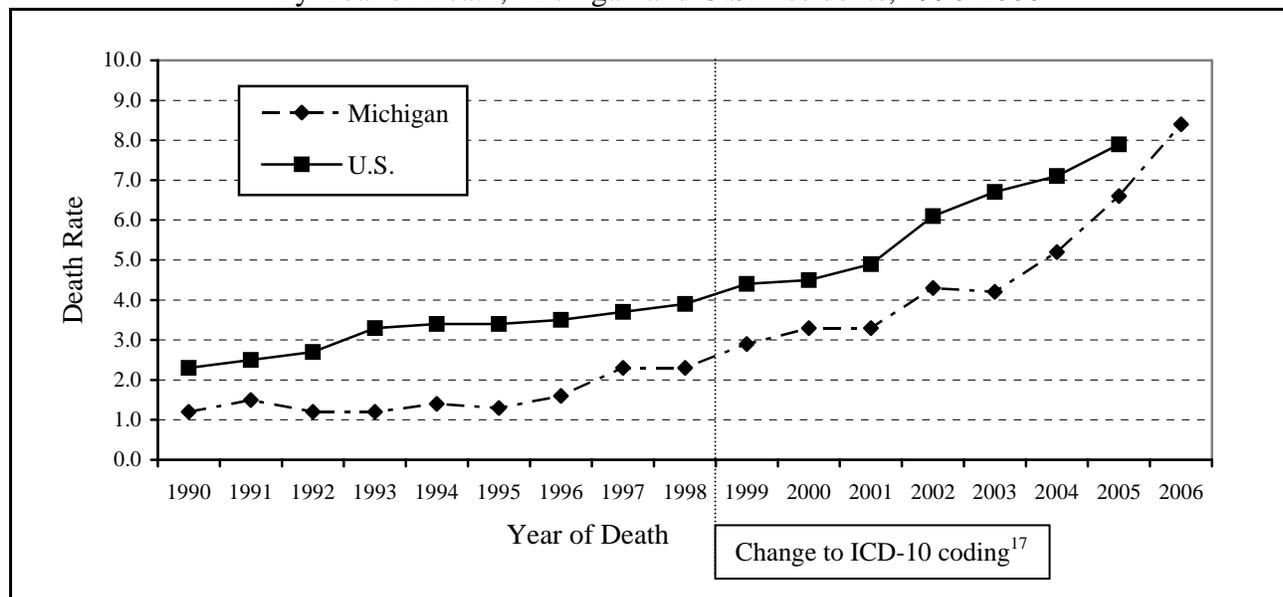
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 57**  
Number of Unintentional Poisoning Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	114	5,803	1.2	2.3	1.2	2.3
1991	138	6,434	1.5	2.5	1.5	2.5
1992	106	7,082	1.1	2.8	1.2	2.7
1993	110	8,537	1.2	3.3	1.2	3.3
1994	129	8,994	1.3	3.4	1.4	3.4
1995	127	9,072	1.3	3.4	1.3	3.4
1996	153	9,510	1.6	3.5	1.6	3.5
1997	222	10,163	2.3	3.7	2.3	3.7
1998	226	10,801	2.3	3.9	2.3	3.9
CHANGE TO ICD-10 CODING <sup>17</sup>						
1999	288	12,186	2.9	4.4	2.9	4.4
2000	325	12,757	3.3	4.5	3.3	4.5
2001	337	14,078	3.4	4.9	3.3	4.9
2002	430	17,550	4.3	6.1	4.3	6.1
2003	421	19,457	4.2	6.7	4.2	6.7
2004	523	20,950	5.2	7.1	5.2	7.1
2005	676	23,618	6.7	8.0	6.6	7.9
2006	855	not available	8.5	not available	8.4	not available

**FIGURE 13**  
Age-adjusted Unintentional Poisoning Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E850 – E869

1999-2006 data based on ICD-10 codes: X40 – X49

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

17. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional poisoning is 1.0365.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 58**  
Average Annual Number of Unintentional Poisoning Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	1	*	Lapeer	3	3.7
Alger	1	*	Leelanau	1	*
Allegan	5	4.5	Lenawee	2	2.4
Alpena	2	7.2	Livingston	5	2.9
Antrim	1	5.8	Luce	0	*
Arenac	1	*	Mackinac	1	*
Baraga	1	*	Macomb	57	6.9
Barry	4	6.1	Manistee	2	9.5
Bay	1	*	Marquette	4	5.9
Benzie	1	6.9	Mason	2	6.2
Berrien	12	7.1	Mecosta	1	*
Branch	3	6.0	Menominee	1	*
Calhoun	21	15.3	Midland	2	2.9
Cass	4	7.8	Missaukee	1	9.2
Charlevoix	1	5.3	Monroe	10	6.7
Cheboygan	3	9.5	Montcalm	4	6.6
Chippewa	2	5.2	Montmorency	1	11.4
Clare	3	8.9	Muskegon	13	7.6
Clinton	3	4.1	Newaygo	4	7.7
Crawford	2	16.2	Oakland	19	1.5
Delta	2	6.3	Oceana	2	5.7
Dickinson	2	8.0	Ogemaw	2	10.1
Eaton	5	4.5	Ontonagon	1	*
Emmet	3	8.4	Osceola	1	5.1
Genesee	10	2.2	Oscoda	1	*
Gladwin	4	14.8	Otsego	3	10.6
Gogebic	1	8.2	Ottawa	8	3.1
Grand Traverse	8	9.2	Presque Isle	1	*
Gratiot	1	3.3	Roscommon	3	12.3
Hillsdale	3	6.4	Saginaw	2	1.0
Houghton	1	*	St. Clair	5	3.2
Huron	1	*	St. Joseph	4	6.1
Ingham	18	6.5	Sanilac	2	4.9
Ionia	3	4.4	Schoolcraft	1	13.6
Iosco	1	*	Shiawassee	7	9.1
Iron	0	*	Tuscola	2	3.4
Isabella	5	7.1	Van Buren	7	8.4
Jackson	3	1.6	Washtenaw	4	1.2
Kalamazoo	19	7.8	Wayne	192	9.6
Kalkaska	0	*	Wexford	4	11.4
Kent	34	5.7	Unknown	0	
Keweenaw	-	-			
Lake	1	*	Michigan	581	5.8

Includes ICD-10 codes: X40 – X49

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 59**  
Average Annual Number of Unintentional Suffocation/Strangulation Deaths  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	17	14	31	14	10	24	32	24	56
1-4	2	1	3	1	0	1	3	2	4
5-9	0	0	1	0	-	0	1	0	1
10-14	2	0	2	1	-	1	2	0	3
15-19	2	-	2	0	-	0	3	-	3
20-24	3	1	3	0	0	0	3	1	4
25-29	2	0	2	0	-	0	2	0	2
30-34	2	0	3	0	-	0	3	0	3
35-44	6	2	8	1	0	1	7	2	10
45-54	7	4	11	3	1	4	10	5	16
55-64	8	4	12	2	1	2	10	5	15
65-74	9	7	15	1	1	2	9	8	17
75+	33	34	67	4	3	6	37	37	74
Total	94	69	162	26	16	42	122	86	208

Includes ICD-10 codes: W75 – W84  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 60**  
Average Annual Unintentional Suffocation/Strangulation Death Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	33.0	29.0	31.0	112.7	83.1	98.2	48.8	38.5	43.8
1-4	1.0	0.7	0.8	*	*	*	1.0	0.7	0.8
5-9	*	*	*	*	-	*	*	*	*
10-14	0.6	*	0.4	*	-	*	0.6	*	0.4
15-19	0.8	-	0.4	*	-	*	0.7	-	0.4
20-24	0.9	*	0.6	*	*	*	0.8	*	0.5
25-29	0.6	*	0.4	*	-	*	0.6	*	0.4
30-34	0.9	*	0.5	*	-	*	0.8	*	0.5
35-44	1.0	0.3	0.7	*	*	0.7	1.0	0.3	0.6
45-54	1.1	0.7	0.9	3.2	*	2.0	1.4	0.7	1.0
55-64	1.9	0.9	1.4	3.1	*	2.1	2.1	0.9	1.5
65-74	3.5	2.2	2.8	*	3.1	2.8	3.3	2.3	2.8
75+	15.5	9.8	12.0	17.7	7.1	11.0	15.5	9.5	11.8
Total	2.3	1.6	2.0	3.7	2.1	2.8	2.5	1.7	2.1

Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

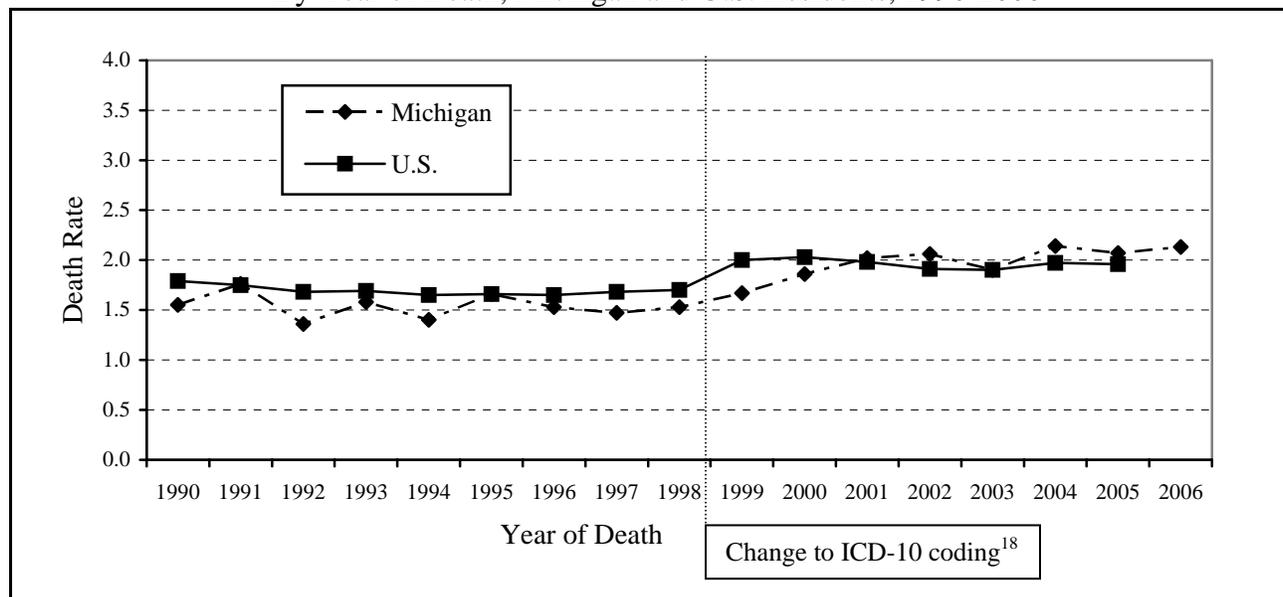
**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 61**  
Number of Unintentional Suffocation/Strangulation Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	135	4,195	1.45	1.68	1.55	1.79
1991	155	4,195	1.65	1.66	1.76	1.75
1992	123	4,062	1.30	1.58	1.36	1.68
1993	144	4,178	1.51	1.61	1.58	1.69
1994	128	4,143	1.33	1.57	1.40	1.65
1995	153	4,247	1.58	1.59	1.66	1.66
1996	143	4,320	1.47	1.60	1.53	1.65
1997	139	4,420	1.42	1.62	1.47	1.68
1998	146	4,585	1.48	1.66	1.53	1.70
CHANGE TO ICD-10 CODING <sup>18</sup>						
1999	160	5,503	1.62	1.97	1.67	2.00
2000	181	5,648	1.82	2.01	1.86	2.03
2001	198	5,555	1.98	1.95	2.02	1.98
2002	204	5,517	2.03	1.91	2.06	1.91
2003	191	5,579	1.90	1.92	1.90	1.90
2004	216	5,891	2.14	2.01	2.14	1.97
2005	212	5,900	2.09	1.99	2.07	1.96
2006	215	not available	2.13	not available	2.13	not available

**FIGURE 14**  
Age-adjusted Unintentional Suffocation/Strangulation Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E911 – E913

1999-2006 data based on ICD-10 codes: W75 – W84

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

18. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for unintentional suffocation/strangulation is 1.2320.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

TABLE 62

Average Annual Number of Unintentional Suffocation/Strangulation Deaths and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	1	1.3
Alger	0	*	Leelanau	0	*
Allegan	2	2.0	Lenawee	1	1.2
Alpena	1	*	Livingston	1	0.7
Antrim	1	*	Luce	-	-
Arenac	0	*	Mackinac	0	*
Baraga	-	-	Macomb	11	1.4
Barry	1	2.4	Manistee	1	*
Bay	2	2.2	Marquette	1	1.9
Benzie	-	-	Mason	1	*
Berrien	6	3.4	Mecosta	2	3.8
Branch	1	*	Menominee	0	*
Calhoun	5	3.6	Midland	1	*
Cass	2	3.1	Missaukee	0	*
Charlevoix	0	*	Monroe	3	2.0
Cheboygan	0	*	Montcalm	1	2.2
Chippewa	0	*	Montmorency	0	*
Clare	0	*	Muskegon	3	1.5
Clinton	1	*	Newaygo	1	*
Crawford	1	*	Oakland	25	2.0
Delta	1	*	Oceana	1	*
Dickinson	1	*	Ogemaw	1	*
Eaton	2	1.9	Ontonagon	0	*
Emmet	1	*	Osceola	0	*
Genesee	12	2.6	Oscoda	0	*
Gladwin	0	*	Otsego	1	*
Gogebic	1	*	Ottawa	3	1.3
Grand Traverse	1	1.7	Presque Isle	0	*
Gratiot	1	*	Roscommon	0	*
Hillsdale	1	*	Saginaw	7	3.4
Houghton	2	5.1	St. Clair	4	2.2
Huron	1	3.4	St. Joseph	1	*
Ingham	7	2.5	Sanilac	1	2.7
Ionia	2	2.8	Schoolcraft	0	*
Iosco	1	*	Shiawassee	2	2.5
Iron	1	*	Tuscola	2	3.8
Isabella	1	*	Van Buren	2	2.0
Jackson	5	2.8	Washtenaw	6	1.7
Kalamazoo	4	1.7	Wayne	46	2.3
Kalkaska	1	*	Wexford	1	*
Kent	8	1.4	Unknown	-	-
Keweenaw	0	*			
Lake	1	*	Michigan	208	2.1

Includes ICD-10 codes: W75 – W84

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 63**  
Average Annual Number of Firearm Suicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	3	-	3	-	-	-	3	-	3
15-19	21	2	23	2	0	3	24	3	27
20-24	24	2	27	5	1	6	31	3	34
25-29	30	5	35	5	0	6	36	5	41
30-34	29	5	34	6	1	7	36	6	42
35-44	81	10	91	8	2	10	92	13	105
45-54	93	13	106	5	1	6	100	15	115
55-64	63	8	71	4	0	4	68	9	76
65-74	45	4	49	2	-	2	47	4	52
75+	56	2	58	3	-	3	58	2	61
Total	443	53	496	41	5	46	495	60	555

Includes ICD-10 codes: X72 – X74

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 64**  
Average Annual Firearm Suicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	0.9	-	0.5	-	-	-	0.7	-	0.4
15-19	6.8	0.8	3.9	3.7	*	2.2	6.4	0.8	3.7
20-24	8.4	0.9	4.7	9.8	*	5.5	8.6	0.9	4.8
25-29	11.8	2.1	7.1	10.2	*	5.3	11.2	1.7	6.5
30-34	10.8	1.8	6.4	12.0	*	6.2	10.7	1.7	6.2
35-44	12.8	1.6	7.2	8.5	1.6	4.8	12.2	1.7	6.9
45-54	14.7	2.1	8.4	6.0	*	3.2	13.5	2.0	7.7
55-64	14.5	1.8	8.1	6.9	*	3.4	13.7	1.6	7.5
65-74	18.0	1.5	9.0	6.7	-	2.8	16.8	1.3	8.3
75+	26.1	0.7	10.3	12.1	-	4.5	24.7	0.6	9.7
Total	10.8	1.3	6.0	5.7	0.7	3.1	10.0	1.2	5.5

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

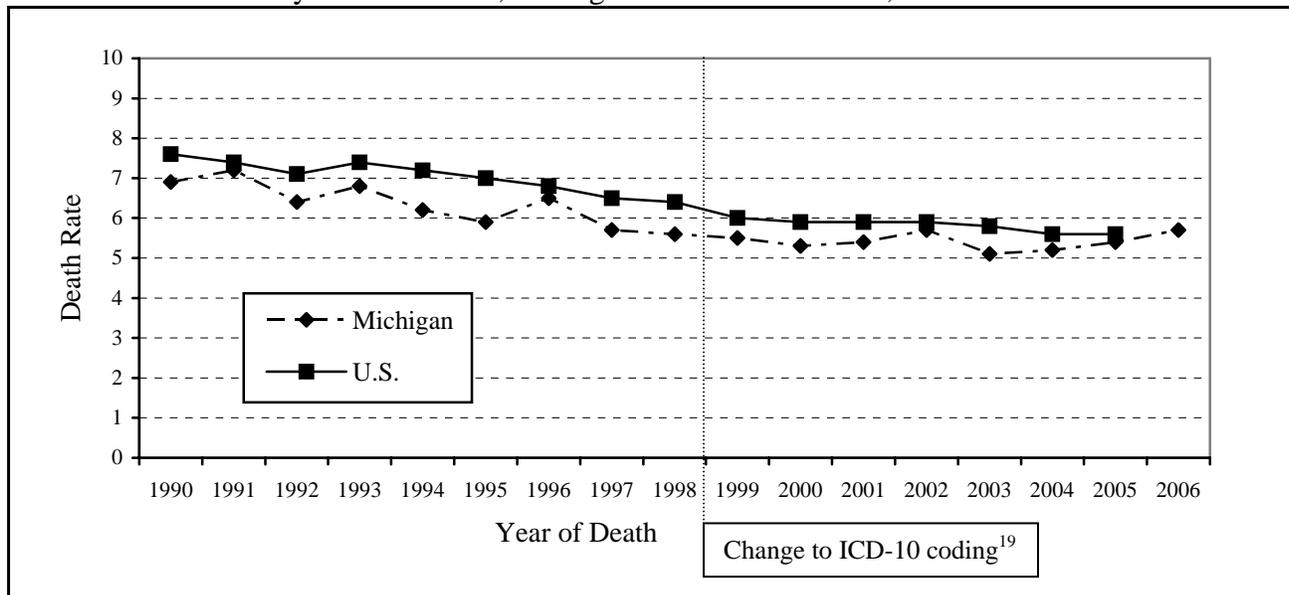
**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 65**  
**Number of Firearm Suicides and Corresponding Death Rates**  
**By Year of Death, Michigan and U.S. Residents, 1990-2006**

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	628	18,885	6.7	7.6	6.9	7.6
1991	658	18,526	7.0	7.3	7.2	7.4
1992	597	18,169	6.3	7.1	6.4	7.1
1993	638	18,940	6.7	7.3	6.8	7.4
1994	594	18,765	6.2	7.1	6.2	7.2
1995	572	18,503	5.9	7.0	5.9	7.0
1996	629	18,166	6.4	6.7	6.5	6.8
1997	555	17,566	5.7	6.4	5.7	6.5
1998	551	17,424	5.6	6.3	5.6	6.4
CHANGE TO ICD-10 CODING <sup>19</sup>						
1999	538	16,599	5.4	6.0	5.5	6.0
2000	529	16,586	5.3	5.9	5.3	5.9
2001	540	16,869	5.4	5.9	5.4	5.9
2002	574	17,108	5.7	5.9	5.7	5.9
2003	519	16,907	5.1	5.8	5.1	5.8
2004	532	16,750	5.3	5.7	5.2	5.6
2005	553	17,002	5.5	5.7	5.4	5.6
2006	595	not available	5.9	not available	5.7	not available

**FIGURE 15**  
**Age-adjusted Firearm Suicide Rates**  
**By Year of Death, Michigan and U.S. Residents, 1990-2006**



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E955.0 – E955.4

1999-2006 data based on ICD-10 codes: X72 – X74

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

19. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for firearm suicides is 1.0012.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 66**  
**Average Annual Number of Firearm Suicides and Corresponding Death Rates**  
**By County of Residence, Michigan Residents, 2002-2006**

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	2	15.5	Lapeer	6	6.5
Alger	1	*	Leelanau	1	*
Allegan	5	4.3	Lenawee	4	3.9
Alpena	3	9.2	Livingston	9	5.0
Antrim	1	*	Luce	1	*
Arenac	1	8.1	Mackinac	1	10.6
Baraga	1	*	Macomb	38	4.6
Barry	4	7.4	Manistee	3	11.1
Bay	10	9.2	Marquette	5	7.1
Benzie	2	10.4	Mason	3	11.8
Berrien	9	5.5	Mecosta	3	8.1
Branch	3	7.3	Menominee	4	14.4
Calhoun	10	7.1	Midland	4	5.2
Cass	5	9.3	Missaukee	1	*
Charlevoix	3	10.5	Monroe	12	7.6
Cheboygan	2	7.3	Montcalm	5	8.2
Chippewa	3	6.7	Montmorency	1	13.4
Clare	3	10.1	Muskegon	8	4.4
Clinton	5	7.9	Newaygo	5	9.7
Crawford	2	16.2	Oakland	51	4.2
Delta	4	11.5	Oceana	3	9.9
Dickinson	2	6.5	Ogemaw	3	12.8
Eaton	9	8.1	Ontonagon	1	*
Emmet	2	6.0	Osceola	2	8.5
Genesee	25	5.7	Oscoda	2	17.1
Gladwin	3	11.8	Otsego	1	5.7
Gogebic	2	12.9	Ottawa	6	2.2
Grand Traverse	4	5.3	Presque Isle	2	12.6
Gratiot	2	5.7	Roscommon	3	10.0
Hillsdale	3	6.8	Saginaw	12	5.9
Houghton	3	8.4	St. Clair	11	6.5
Huron	3	8.6	St. Joseph	4	5.7
Ingham	11	4.1	Sanilac	3	5.8
Ionia	6	8.7	Schoolcraft	1	15.9
Iosco	3	11.9	Shiawassee	5	6.6
Iron	1	11.2	Tuscola	5	9.3
Isabella	4	6.1	Van Buren	7	8.7
Jackson	12	7.5	Washtenaw	11	3.3
Kalamazoo	13	5.4	Wayne	93	4.6
Kalkaska	1	8.1	Wexford	3	10.8
Kent	21	3.6	Unknown	-	
Keweenaw	-	-			
Lake	2	20.3	Michigan	555	5.5

Includes ICD-10 codes: X72 – X74

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 67**  
Average Annual Number of Poisoning Suicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	-	0	0	-	-	-	-	0	0
15-19	3	1	4	-	0	0	3	2	4
20-24	5	2	7	0	0	0	5	3	8
25-29	6	5	11	0	-	0	7	5	12
30-34	11	6	17	1	1	1	12	7	19
35-44	36	23	59	2	2	4	38	25	64
45-54	36	26	62	2	1	3	38	28	66
55-64	12	13	25	-	-	-	12	13	25
65-74	3	4	7	-	-	-	3	4	7
75+	7	4	11	0	-	0	7	4	11
Total	118	85	203	6	4	10	125	91	216

Includes ICD-10 codes: X60 – X69

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 68**  
Average Annual Poisoning Suicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	-	*	*	-	-	-	-	*	*
15-19	0.9	0.5	0.7	-	*	*	0.7	0.5	0.6
20-24	1.7	0.9	1.3	*	*	*	1.4	0.8	1.1
25-29	2.4	2.1	2.3	*	-	*	2.1	1.6	1.9
30-34	4.0	2.4	3.2	*	*	1.1	3.5	2.0	2.8
35-44	5.6	3.7	4.7	2.5	1.4	1.9	5.1	3.3	4.2
45-54	5.7	4.1	4.9	2.1	1.3	1.7	5.2	3.7	4.4
55-64	2.8	2.9	2.8	-	-	-	2.4	2.5	2.5
65-74	1.3	1.3	1.3	--	-	-	1.2	1.1	1.2
75+	3.2	1.1	1.9	*	-	*	3.0	1.0	1.8
Total	2.9	2.0	2.4	0.8	0.5	0.7	2.5	1.8	2.1

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

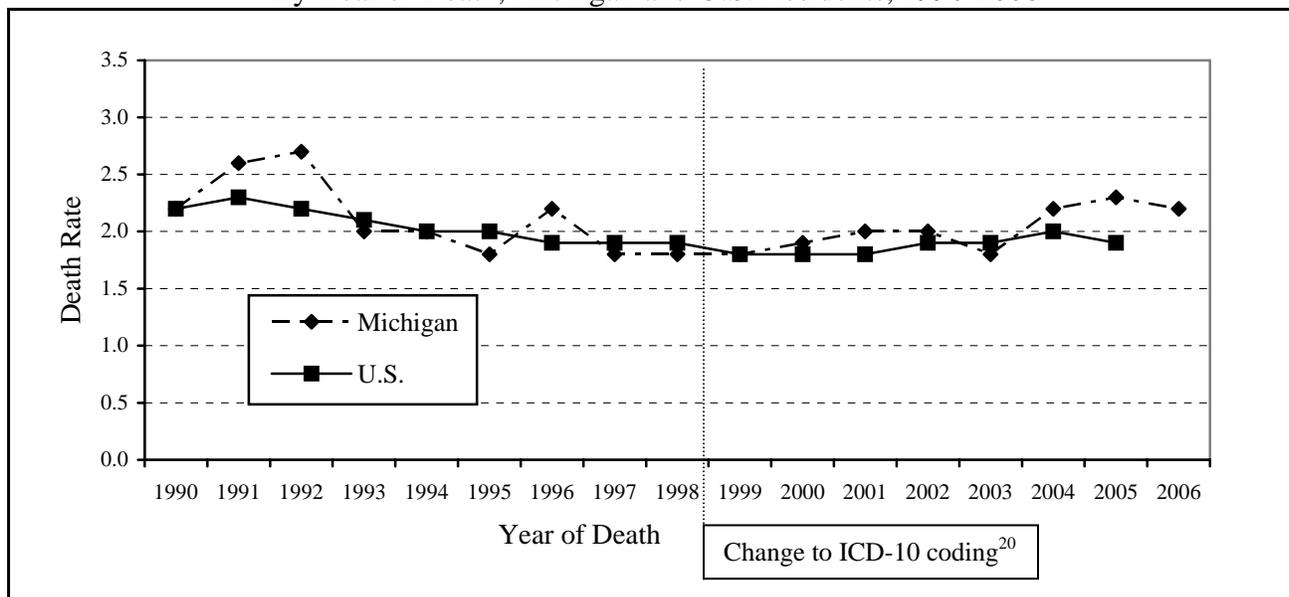
**KEY TO SYMBOLS**

No deaths occurred within category -  
 Quantity greater than zero but less than 0.5 0  
 Rate is considered statistically unreliable \*

**TABLE 69**  
Number of Poisoning Suicides and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	200	5,424	2.1	2.2	2.2	2.2
1991	239	5,544	2.5	2.2	2.6	2.3
1992	250	5,495	2.6	2.1	2.7	2.2
1993	185	5,271	1.9	2.0	2.0	2.1
1994	194	5,273	2.0	2.0	2.0	2.0
1995	170	5,147	1.8	1.9	1.8	2.0
1996	213	5,080	2.2	1.9	2.2	1.9
1997	175	5,128	1.8	1.9	1.8	1.9
1998	176	5,072	1.8	1.8	1.8	1.9
CHANGE TO ICD-10 CODING <sup>20</sup>						
1999	178	4,893	1.8	1.8	1.8	1.8
2000	185	4,859	1.9	1.7	1.9	1.8
2001	203	5,191	2.0	1.8	2.0	1.8
2002	204	5,486	2.0	1.9	2.0	1.9
2003	186	5,462	1.8	1.9	1.8	1.9
2004	226	5,800	2.2	2.0	2.2	2.0
2005	236	5,744	2.3	1.9	2.3	1.9
2006	227	not available	2.2	not available	2.2	not available

**FIGURE 16**  
Age-adjusted Poisoning Suicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E950 – E952

1999-2006 data based on ICD-10 codes: X60 – X69

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

20. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for poisoning suicide is 1.0013.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 70**  
**Average Annual Number of Poisoning Suicides and Corresponding Death Rates**  
**By County of Residence, Michigan Residents, 2002-2006**

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	1	*	Lapeer	2	1.9
Alger	0	*	Leelanau	0	*
Allegan	4	3.4	Lenawee	1	*
Alpena	0	*	Livingston	3	1.8
Antrim	0	*	Luce	-	-
Arenac	0	*	Mackinac	0	*
Baraga	-	-	Macomb	20	2.5
Barry	3	4.7	Manistee	1	*
Bay	1	1.3	Marquette	2	3.1
Benzie	0	*	Mason	1	*
Berrien	4	2.6	Mecosta	1	*
Branch	1	*	Menominee	0	*
Calhoun	4	2.9	Midland	4	4.3
Cass	1	*	Missaukee	-	-
Charlevoix	1	*	Monroe	4	2.5
Cheboygan	0	*	Montcalm	1	*
Chippewa	1	*	Montmorency	-	-
Clare	1	4.4	Muskegon	3	1.8
Clinton	1	*	Newaygo	2	3.6
Crawford	0	*	Oakland	28	2.3
Delta	1	*	Oceana	1	*
Dickinson	1	*	Ogemaw	1	*
Eaton	2	1.5	Ontonagon	-	-
Emmet	1	4.2	Osceola	1	*
Genesee	10	2.3	Oscoda	1	*
Gladwin	1	*	Otsego	1	*
Gogebic	0	*	Ottawa	7	2.6
Grand Traverse	3	4.1	Presque Isle	0	*
Gratiot	0	*	Roscommon	1	5.4
Hillsdale	1	*	Saginaw	3	1.6
Houghton	0	*	St. Clair	2	1.4
Huron	1	*	St. Joseph	1	*
Ingham	4	1.6	Sanilac	1	*
Ionia	1	2.2	Schoolcraft	-	-
Iosco	1	*	Shiawassee	1	1.6
Iron	-	-	Tuscola	2	3.1
Isabella	1	*	Van Buren	2	2.3
Jackson	4	2.6	Washtenaw	6	1.8
Kalamazoo	8	3.4	Wayne	35	1.8
Kalkaska	0	*	Wexford	1	*
Kent	11	1.8	Unknown	0	
Keweenaw	-	-			
Lake	0	*	Michigan	216	2.1

Includes ICD-10 codes: X60 – X69

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 71**  
Average Annual Number of Suffocation/Strangulation/Hanging Suicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	0	-	0	0	-	0
10-14	2	2	5	1	1	1	3	3	6
15-19	17	4	21	2	-	2	19	5	24
20-24	19	2	21	2	1	3	22	3	25
25-29	19	3	23	2	0	2	23	4	27
30-34	20	4	24	2	0	2	23	4	27
35-44	43	9	53	4	0	5	49	11	60
45-54	34	8	43	2	-	2	37	9	47
55-64	15	3	18	1	0	1	16	3	20
65-74	5	0	5	0	-	0	6	0	6
75+	6	2	8	-	-	-	6	2	8
Total	181	40	221	17	2	19	204	45	249

Includes ICD-10 code: X70  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 72**  
Average Annual Suffocation/Strangulation/Hanging Suicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	*	-	*	*	-	*
10-14	0.7	0.9	0.8	*	*	0.8	0.8	0.8	0.8
15-19	5.8	1.4	3.7	2.5	-	1.3	5.1	1.3	3.2
20-24	6.6	0.8	3.8	4.4	*	2.7	6.2	0.9	3.6
25-29	7.6	1.4	4.6	4.3	*	2.3	7.1	1.3	4.2
30-34	7.5	1.6	4.6	4.3	*	2.2	6.8	1.3	4.1
35-44	6.9	1.5	4.2	4.4	*	2.2	6.5	1.4	4.0
45-54	5.4	1.3	3.4	1.8	-	0.8	5.1	1.2	3.1
55-64	3.4	0.7	2.0	2.3	*	1.2	3.3	0.6	1.9
65-74	2.0	*	1.0	*	-	*	2.0	*	1.0
75+	2.6	0.6	1.3	-	-	-	2.4	0.5	1.2
Total	4.4	0.9	2.7	2.3	0.3	1.3	4.1	0.9	2.5

Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

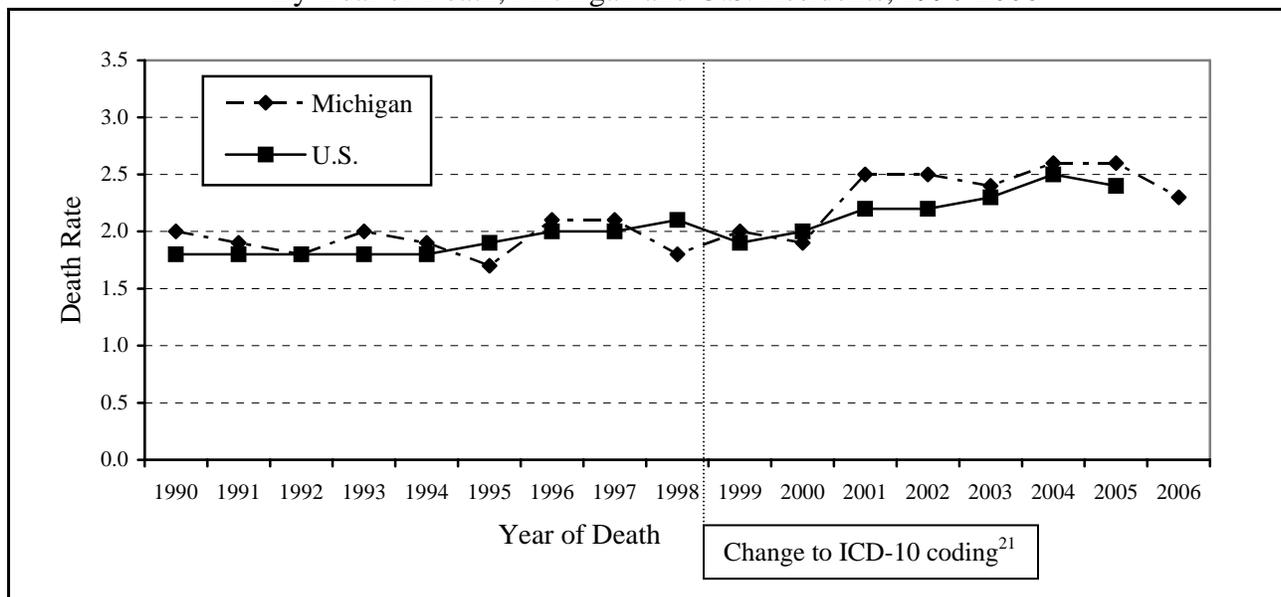
**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 73**  
Number of Suffocation/Strangulation/Hanging Suicides and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	182	4,444	2.0	1.8	2.0	1.8
1991	178	4,561	1.9	1.8	1.9	1.8
1992	167	4,678	1.8	1.8	1.8	1.8
1993	195	4,627	2.0	1.8	2.0	1.8
1994	182	4,745	1.9	1.8	1.9	1.8
1995	169	5,217	1.7	2.0	1.7	1.9
1996	203	5,330	2.1	2.0	2.1	2.0
1997	207	5,413	2.1	2.0	2.1	2.0
1998	173	5,726	1.8	2.1	1.8	2.1
CHANGE TO ICD-10 CODING <sup>21</sup>						
1999	194	5,427	2.0	1.9	2.0	1.9
2000	185	5,688	1.9	2.0	1.9	2.0
2001	246	6,198	2.5	2.2	2.5	2.2
2002	250	6,462	2.5	2.2	2.5	2.2
2003	242	6,635	2.4	2.3	2.4	2.3
2004	260	7,336	2.6	2.5	2.6	2.5
2005	258	7,248	2.5	2.4	2.6	2.4
2006	235	not available	2.3	not available	2.3	not available

**FIGURE 17**  
Age-adjusted Suffocation/Strangulation/Hanging Suicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 code: E953

1999-2006 data based on ICD-10 code: X70

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

21. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for suicide by suffocation/strangulation/hanging is 1.0025.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 74**

**Average Annual Number of Suffocation/Strangulation/Hanging Suicides and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006**

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	1	*	Lapeer	1	1.5
Alger	0	*	Leelanau	1	*
Allegan	3	2.3	Lenawee	2	2.2
Alpena	1	*	Livingston	5	3.0
Antrim	0	*	Luce	-	-
Arenac	0	*	Mackinac	0	*
Baraga	-	-	Macomb	22	2.7
Barry	2	4.1	Manistee	1	*
Bay	2	1.5	Marquette	2	3.7
Benzie	1	*	Mason	0	*
Berrien	4	2.6	Mecosta	0	*
Branch	1	*	Menominee	0	*
Calhoun	5	3.5	Midland	2	1.9
Cass	0	*	Missaukee	0	*
Charlevoix	0	*	Monroe	3	2.0
Cheboygan	1	*	Montcalm	1	2.2
Chippewa	1	3.6	Montmorency	-	-
Clare	1	*	Muskegon	4	2.4
Clinton	1	2.0	Newaygo	1	*
Crawford	1	8.1	Oakland	32	2.6
Delta	1	*	Oceana	0	*
Dickinson	1	*	Ogemaw	1	*
Eaton	1	1.3	Ontonagon	0	*
Emmet	-	-	Osceola	0	*
Genesee	10	2.4	Oscoda	0	*
Gladwin	1	*	Otsego	1	*
Gogebic	0	*	Ottawa	6	2.5
Grand Traverse	3	3.1	Presque Isle	-	-
Gratiot	1	*	Roscommon	1	*
Hillsdale	1	2.5	Saginaw	5	2.5
Houghton	0	*	St. Clair	6	3.5
Huron	0	*	St. Joseph	2	2.9
Ingham	8	2.7	Sanilac	1	*
Ionia	3	4.1	Schoolcraft	-	-
Iosco	1	*	Shiawassee	2	3.3
Iron	0	*	Tuscola	2	2.7
Isabella	1	*	Van Buren	2	2.8
Jackson	4	2.6	Washtenaw	8	2.2
Kalamazoo	4	1.5	Wayne	52	2.6
Kalkaska	1	*	Wexford	1	4.4
Kent	14	2.3	Unknown	-	-
Keweenaw	-	-			
Lake	-	-	Michigan	249	2.5

Includes ICD-10 code: X70

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 75**  
Average Annual Number of Cutting/Piercing Homicides  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	0	-	0	0	-	0
1-4	-	-	-	-	0	0	-	0	0
5-9	-	0	0	0	-	0	0	0	0
10-14	0	0	1	-	1	1	0	1	1
15-19	0	0	0	2	1	3	2	1	3
20-24	1	1	2	3	1	4	4	2	6
25-29	2	1	3	4	1	5	7	3	9
30-34	1	1	2	3	1	4	4	2	6
35-44	3	3	6	6	3	9	9	6	15
45-54	2	3	5	5	2	7	8	5	13
55-64	2	1	3	2	0	2	4	2	6
65-74	1	0	1	1	0	1	2	1	3
75+	1	1	3	0	0	1	1	2	3
Total	14	12	26	26	12	38	41	25	66

Includes ICD-10 code: X99  
Numbers in columns and rows may not total exactly due to rounding.  
Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 76**  
Average Annual Cutting/Piercing Homicide Rates  
By Age, Race, and Sex  
Michigan Residents, 2002-2006

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	*	-	*	*	-	*
1-4	-	-	-	-	*	*	-	*	*
5-9	-	*	*	*	-	*	*	*	*
10-14	*	*	*	-	*	*	*	0.3	0.2
15-19	*	*	*	2.8	*	2.2	0.5	0.3	0.4
20-24	*	*	0.3	5.1	*	3.2	1.1	0.6	0.8
25-29	0.9	0.5	0.7	7.9	2.2	4.9	2.1	0.8	1.5
30-34	0.4	*	0.4	5.0	2.4	3.6	1.2	0.7	1.0
35-44	0.5	0.4	0.4	6.2	2.9	4.4	1.2	0.8	1.0
45-54	0.4	0.4	0.4	5.3	2.3	3.7	1.0	0.7	0.9
55-64	0.4	0.3	0.4	3.8	*	2.1	0.8	0.3	0.5
65-74	*	*	0.3	4.5	*	2.1	0.8	*	0.5
75+	0.6	0.4	0.5	*	*	*	0.6	0.5	0.5
Total	0.3	0.3	0.3	3.6	1.5	2.5	0.8	0.5	0.7

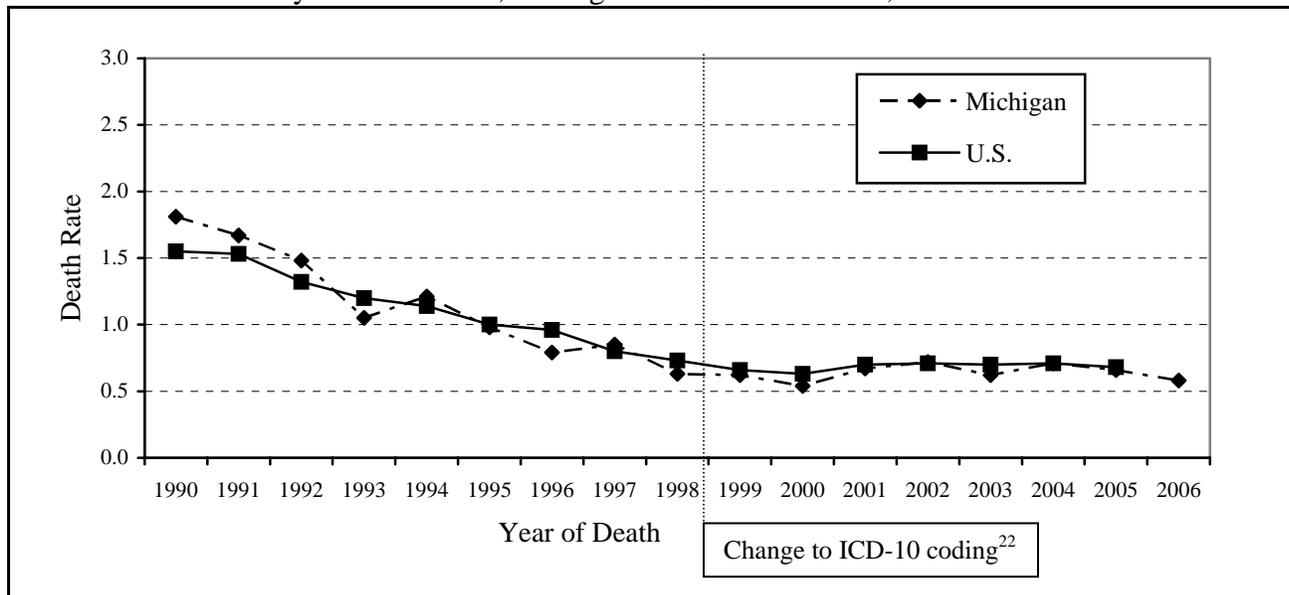
Rates are the number of deaths per 100,000 population.  
Sources: Division for Vital Records and Health Statistics, MDCH  
Population Estimates released by the National Center for Health Statistics, CDC

<b>KEY TO SYMBOLS</b>	
No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 77**  
Number of Cutting/Piercing Homicides and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	177	4,101	1.90	1.64	1.81	1.55
1991	157	4,030	1.67	1.59	1.67	1.53
1992	142	3,528	1.50	1.38	1.48	1.32
1993	103	3,204	1.08	1.23	1.05	1.20
1994	118	3,026	1.23	1.15	1.21	1.14
1995	96	2,780	0.99	1.04	0.98	1.00
1996	78	2,619	0.80	0.97	0.79	0.96
1997	84	2,246	0.86	0.82	0.85	0.80
1998	62	2,087	0.63	0.76	0.63	0.73
CHANGE TO ICD-10 CODING <sup>22</sup>						
1999	61	1,879	0.62	0.67	0.62	0.66
2000	53	1,805	0.53	0.64	0.54	0.63
2001	67	1,971	0.67	0.69	0.67	0.70
2002	72	2,074	0.72	0.72	0.72	0.71
2003	62	2,049	0.62	0.70	0.62	0.70
2004	72	2,079	0.71	0.71	0.71	0.71
2005	66	2,097	0.65	0.71	0.66	0.68
2006	59	not available	0.58	not available	0.58	not available

**FIGURE 18**  
Age-adjusted Cutting/Piercing Homicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 code: E966

1999-2006 data based on ICD-10 code: X99

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

22. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for homicide via cutting/piercing objects is 0.9587.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 78**  
Average Annual Number of Cutting/Piercing Homicides and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	-	-	Lapeer	1	*
Alger	-	-	Leelanau	0	*
Allegan	-	-	Lenawee	-	-
Alpena	-	-	Livingston	0	*
Antrim	-	-	Luce	-	-
Arenac	-	-	Mackinac	-	-
Baraga	-	-	Macomb	2	0.3
Barry	-	-	Manistee	0	*
Bay	1	*	Marquette	0	*
Benzie	-	-	Mason	1	*
Berrien	1	*	Mecosta	-	-
Branch	-	-	Menominee	-	-
Calhoun	1	0.9	Midland	0	*
Cass	-	-	Missaukee	-	-
Charlevoix	-	-	Monroe	1	*
Cheboygan	-	-	Montcalm	0	*
Chippewa	0	*	Montmorency	-	-
Clare	-	-	Muskegon	1	*
Clinton	-	-	Newaygo	-	-
Crawford	-	-	Oakland	4	0.3
Delta	-	-	Oceana	0	*
Dickinson	-	-	Ogemaw	-	-
Eaton	0	*	Ontonagon	-	-
Emmet	-	-	Osceola	-	-
Genesee	5	1.1	Oscoda	0	*
Gladwin	-	-	Otsego	-	-
Gogebic	-	-	Ottawa	0	*
Grand Traverse	-	-	Presque Isle	-	-
Gratiot	-	-	Roscommon	0	*
Hillsdale	-	-	Saginaw	2	1.0
Houghton	-	-	St. Clair	0	*
Huron	-	-	St. Joseph	0	*
Ingham	3	1.0	Sanilac	0	*
Ionia	-	-	Schoolcraft	-	-
Iosco	-	-	Shiawassee	-	-
Iron	0	*	Tuscola	-	-
Isabella	0	*	Van Buren	0	*
Jackson	2	1.0	Washtenaw	1	*
Kalamazoo	1	*	Wayne	32	1.6
Kalkaska	-	-	Wexford	0	*
Kent	4	0.7	Unknown	-	-
Keweenaw	-	-			
Lake	-	-	Michigan	66	0.7

Includes ICD-10 code: X99

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category -  
Quantity greater than zero but less than 0.5 0  
Rate is considered statistically unreliable \*

**TABLE 79**  
**Average Annual Number of Firearm Homicides**  
**By Age, Race, and Sex**  
**Michigan Residents, 2002-2006**

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	0	-	0	0	1	2	1	1	2
5-9	0	1	1	1	1	2	1	2	3
10-14	1	0	1	3	0	3	4	1	4
15-19	5	1	6	42	5	47	49	6	55
20-24	11	3	13	75	6	82	89	9	98
25-29	9	2	12	69	6	75	80	9	89
30-34	8	3	10	65	5	70	74	8	82
35-44	14	9	23	55	9	64	71	17	88
45-54	10	3	14	29	4	33	41	7	48
55-64	4	2	6	6	1	7	10	4	14
65-74	2	1	3	2	0	3	5	2	6
75+	1	2	2	1	0	1	2	2	4
<b>Total</b>	<b>65</b>	<b>28</b>	<b>92</b>	<b>349</b>	<b>39</b>	<b>388</b>	<b>426</b>	<b>68</b>	<b>494</b>

Includes ICD-10 codes: X93 – X95

Numbers in columns and rows may not total exactly due to rounding.

Source: Division for Vital Records and Health Statistics, MDCH

**TABLE 80**  
**Average Annual Firearm Homicide Rates**  
**By Age, Race, and Sex**  
**Michigan Residents, 2002-2006**

Age	White			Black			All Races		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	-	-	-	-	-	-	-	-	-
1-4	*	-	*	*	2.9	1.6	*	0.6	0.4
5-9	*	*	*	*	1.9	1.7	0.3	0.6	0.5
10-14	*	*	*	3.4	*	2.0	1.0	*	0.6
15-19	1.7	0.4	1.1	65.8	7.7	37.1	13.0	1.7	7.5
20-24	3.7	1.0	2.4	136.4	11.3	73.0	24.9	2.7	14.0
25-29	3.6	1.0	2.3	136.5	10.9	71.1	25.1	2.8	14.1
30-34	2.9	1.0	2.0	125.7	8.5	63.3	22.0	2.3	12.2
35-44	2.2	1.4	1.8	57.1	7.7	30.6	9.4	2.3	5.8
45-54	1.6	0.5	1.1	33.5	3.4	17.1	5.5	1.0	3.2
55-64	0.9	0.5	0.7	11.5	2.2	6.4	2.1	0.7	1.4
65-74	0.8	0.5	0.6	9.0	*	4.3	1.6	0.5	1.0
75+	*	0.5	0.4	*	*	2.1	0.8	0.5	0.6
<b>Total</b>	<b>1.6</b>	<b>0.7</b>	<b>1.1</b>	<b>49.3</b>	<b>5.0</b>	<b>26.0</b>	<b>8.6</b>	<b>1.3</b>	<b>4.9</b>

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

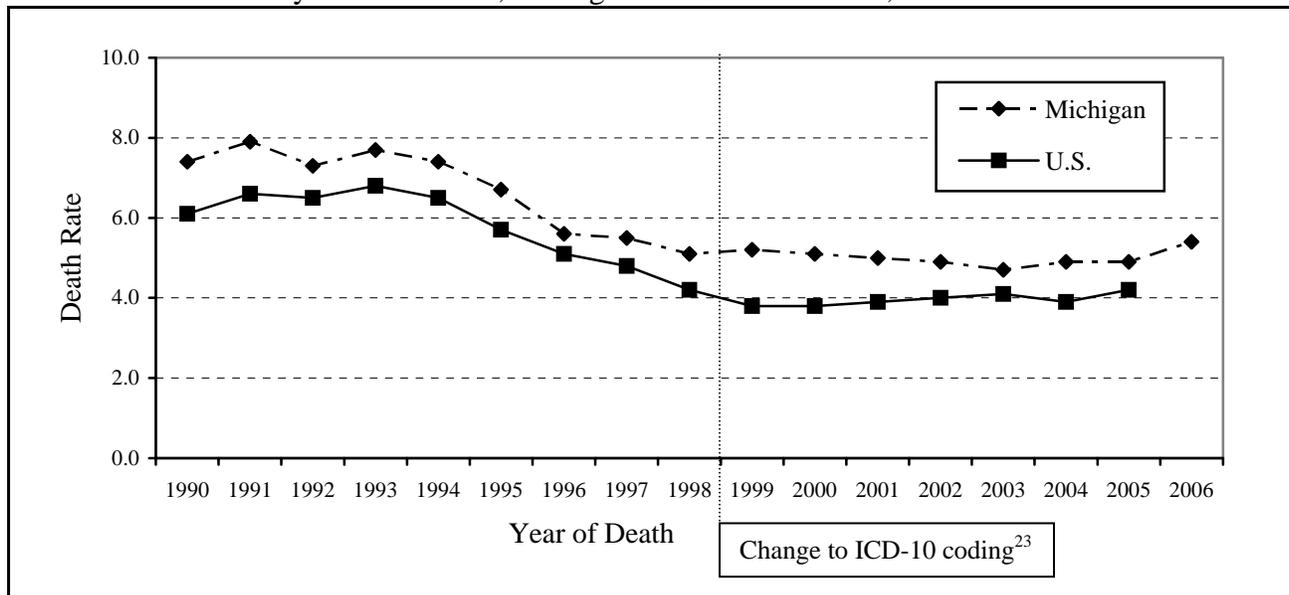
**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

**TABLE 81**  
Number of Firearm Homicides and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006

Year	Number		Crude Rate		Age-adjusted Rate	
	MI	US	MI	US	MI	US
1990	731	16,218	7.9	6.5	7.4	6.1
1991	783	17,746	8.3	7.0	7.9	6.6
1992	728	17,488	7.7	6.8	7.3	6.5
1993	762	18,253	8.0	7.0	7.7	6.8
1994	732	17,527	7.6	6.7	7.4	6.5
1995	662	15,551	6.8	5.8	6.7	5.7
1996	562	14,037	5.8	5.2	5.6	5.1
1997	543	13,252	5.5	4.9	5.5	4.8
1998	506	11,798	5.1	4.3	5.1	4.2
CHANGE TO ICD-10 CODING <sup>23</sup>						
1999	512	10,828	5.2	3.9	5.2	3.8
2000	503	10,801	5.1	3.8	5.1	3.8
2001	497	11,348	5.0	4.0	5.0	3.9
2002	487	11,829	4.9	4.1	4.9	4.0
2003	473	11,920	4.7	4.1	4.7	4.1
2004	486	11,624	4.8	4.0	4.9	3.9
2005	489	12,352	4.8	4.2	4.9	4.2
2006	534	not available	5.3	not available	5.4	not available

**FIGURE 19**  
Age-adjusted Firearm Homicide Rates  
By Year of Death, Michigan and U.S. Residents, 1990-2006



Rates are the number of deaths per 100,000 population.

1990-1998 data based on ICD-9 codes: E965.0 – E965.4

1999-2006 data based on ICD-10 codes: X93 – X95

Sources: Division for Vital Records and Health Statistics, MDCH

Web-based Injury Statistics Query and Reporting System, U.S. Centers for Disease Control and Prevention

Population Estimates released by the National Center for Health Statistics, CDC

23. Since 1999, cause of death has been coded using ICD-10, a completely different coding system than ICD-9. The comparability ratio for firearm homicides is 1.0019.<sup>12</sup> See Appendix B for a description of comparability ratios and how they were calculated.

**TABLE 82**  
Average Annual Number of Firearm Homicides and Corresponding Death Rates  
By County of Residence, Michigan Residents, 2002-2006

County	Number	Crude Rate	County	Number	Crude Rate
Alcona	0	*	Lapeer	2	1.9
Alger	0	*	Leelanau	-	-
Allegan	1	*	Lenawee	0	*
Alpena	0	*	Livingston	1	0.8
Antrim	0	*	Luce	0	*
Arenac	0	*	Mackinac	-	-
Baraga	-	-	Macomb	15	1.8
Barry	0	*	Manistee	0	*
Bay	1	1.3	Marquette	0	*
Benzie	0	*	Mason	0	*
Berrien	5	2.8	Mecosta	0	*
Branch	1	*	Menominee	0	*
Calhoun	5	3.5	Midland	0	*
Cass	1	*	Missaukee	0	*
Charlevoix	0	*	Monroe	1	*
Cheboygan	0	*	Montcalm	0	*
Chippewa	0	*	Montmorency	-	-
Clare	0	*	Muskegon	3	1.7
Clinton	0	*	Newaygo	1	*
Crawford	-	-	Oakland	26	2.2
Delta	0	*	Oceana	1	4.2
Dickinson	1	*	Ogemaw	-	-
Eaton	1	1.1	Ontonagon	-	-
Emmet	-	-	Osceola	0	*
Genesee	35	8.0	Oscoda	1	*
Gladwin	0	*	Otsego	0	*
Gogebic	-	-	Ottawa	1	*
Grand Traverse	0	*	Presque Isle	0	*
Gratiot	1	*	Roscommon	-	-
Hillsdale	1	*	Saginaw	18	8.7
Houghton	-	-	St. Clair	1	0.8
Huron	0	*	St. Joseph	-	-
Ingham	5	1.6	Sanilac	-	-
Ionia	0	*	Schoolcraft	-	-
Iosco	0	*	Shiawassee	0	*
Iron	0	*	Tuscola	1	*
Isabella	1	*	Van Buren	2	2.0
Jackson	3	2.0	Washtenaw	7	2.0
Kalamazoo	4	1.5	Wayne	331	16.5
Kalkaska	-	-	Wexford	1	*
Kent	10	1.8	Unknown	-	-
Keweenaw	-	-			
Lake	0	*	Michigan	494	4.9

Includes ICD-10 codes: X93 – X95

Rates are the number of deaths per 100,000 population.

Sources: Division for Vital Records and Health Statistics, MDCH

Population Estimates released by the National Center for Health Statistics, CDC

**KEY TO SYMBOLS**

No deaths occurred within category	-
Quantity greater than zero but less than 0.5	0
Rate is considered statistically unreliable	*

## WORK-RELATED INJURY DEATHS

TABLE 83  
Average Annual Number of Work-related Injury Deaths by Cause  
Michigan Occurrences, 2002-2006

Cause of Injury	Number of Deaths	%
Transportation	50	36.0
Contact with objects, equipment, machinery including struck by objects/crushed	27	19.1
Fall	18	12.9
Homicide	17	11.9
Electrocution	8	5.5
Suicide	6	4.6
Fire/explosion	4	2.9
Other and Unknown	10	7.1
<b>Total</b>	<b>139</b>	<b>100.0</b>

Data Source: MIOSHA Information Division, Michigan Department of Labor and Economic Growth

Cells may not sum to totals due to rounding.

Out-of-state residents sustaining an injury in Michigan are included. Michigan residents sustaining an injury out-of-state are excluded.

TABLE 84  
Average Annual Number and Rate of  
Work-related Injury Deaths, by Age  
Michigan Occurrences, 2002-2006

Age Group	Number of Deaths	Rate
< 20	4	1.5
20-24	11	2.3
25-34	24	2.4
35-44	34	2.9
45-54	35	3.0
55-64	19	3.5
65+	13	8.8
<b>Total</b>	<b>139</b>	<b>2.9</b>

TABLE 85  
Average Annual Number and Rate of  
Work-related Injury Deaths, by Sex  
Michigan Occurrences, 2002-2006

Sex	Number	Rate
Male	129	5.1
Female	10	0.4
<b>Total</b>	<b>139</b>	<b>2.9</b>

For Tables 84 and 85:

Rates are the number of deaths per 100,000 workers.

Data Sources: MIOSHA Information Division, Michigan Department of Labor and Economic Growth; Bureau of Labor Statistics, Current Population Survey

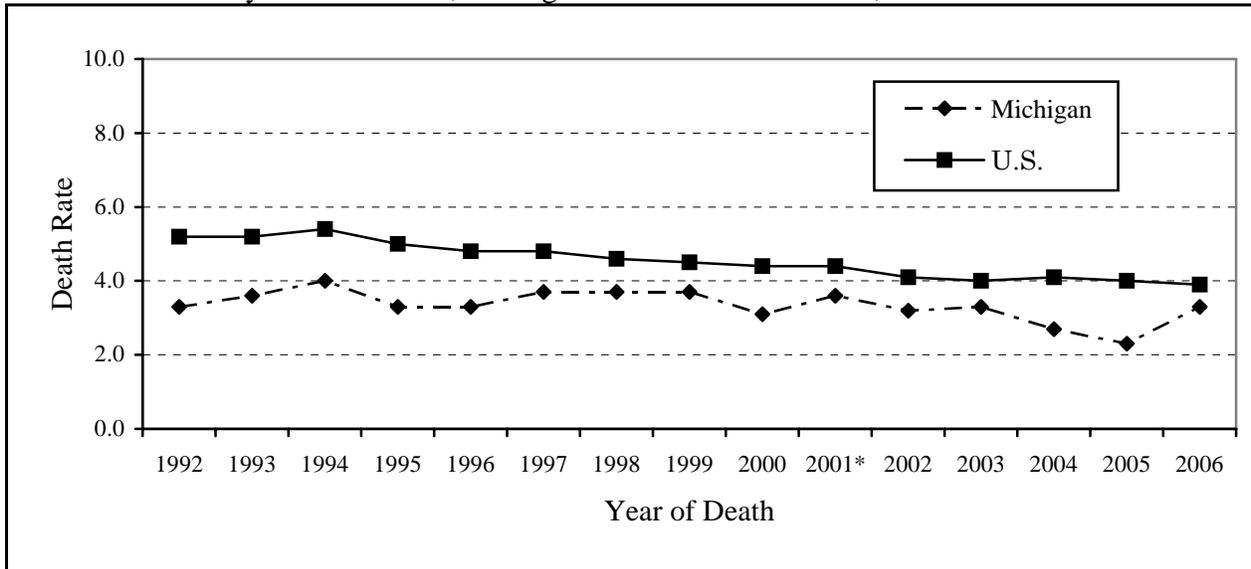
## WORK-RELATED INJURY DEATHS

TABLE 86  
Number of Work-related Injury Deaths and Corresponding Death Rates  
By Year of Death, Michigan and U.S. Occurrences, 1992-2006

Year	Number		Rate	
	Michigan	U.S.	Michigan	U.S.
1992	143	6,217	3.3	5.2
1993	160	6,271	3.6	5.2
1994	180	6,588	4.0	5.4
1995	149	6,210	3.3	5.0
1996	155	6,112	3.3	4.8
1997	174	6,218	3.7	4.8
1998	179	6,026	3.7	4.6
1999	182	6,023	3.7	4.5
2000	156	5,920	3.1	4.4
2001	175	5,900*	3.6	4.4*
2002	152	5,534	3.2	4.1
2003	152	5,575	3.3	4.0
2004	127	5,764	2.7	4.1
2005	110	5,734	2.3	4.0
2006	155 <sup>p</sup>	5,703 <sup>p</sup>	3.3 <sup>p</sup>	3.9 <sup>p</sup>

p = data are preliminary as of April 2008

FIGURE 20  
Work-related Injury Death Rates  
By Year of Death, Michigan and U.S. Occurrences, 1992-2006



Rates are the number of deaths per 100,000 workers.

Data Sources: MIOSHA Information Division, Michigan Department of Labor and Economic Growth  
Census of Fatal Occupational Injuries, Bureau of Labor Statistics, U.S. Department of Labor  
Bureau of Labor Statistics, Current Population Survey

\* The 2,886 work-related deaths caused by terrorists on September 11, 2001 are not included.

# **APPENDIX A**

## **Index of ICD-10 Codes for Tables 17 and 18**

Table A-1 (Page 1 of 2)  
Index of ICD-10 Codes for Tables 17 & 18

Mechanism	Manner/Intent				
	Unintentional	Suicide	Homicide	Undetermined	Other
Cut/pierce	W25-W29, W45	X78	X99	Y28	Y35.4
Drowning*	W65-W74, V90, V92	X71	X92	Y21	
Non-boat-related	W65-W74				
Boat-related	V90, V92				
Fall	W00-W19	X80	Y01	Y30	
Fire/hot object or substance	X00-X19	X76, X77	X97, X98	Y26, Y27	Y36.3
Fire/flame/smoke	X00-X09	X76	X97	Y26	
Hot object/substance	X10-X19	X77	X98	Y27	
Firearm	W32-W34	X72-X74	X93-X95	Y22-Y24	Y35.0
Machinery	W24, W30, W31				
All Transport	V01-V89, V91, V93-V99	X82	Y03	Y32	Y36.1
Motor vehicle traffic					
Occupant	V30-V79 (.4-.9), V83-V86 (.0-.3)				
Motorcyclist	V20-V28 (.3-.9), V29.4-V29.9				
Pedal Cyclist	V12-V14 (.3-.9), V19 (.4-.6)				
Pedestrian	V02-V04 (.1, .9), V09.2				
Other specified	V80 (.3-.5), V81.1, V82.1				
Unspecified	V87 (.0-.8), V89.2				

\*The ICD-10 injury mortality matrix<sup>9</sup> developed by the International Collaborative Effort (ICE) on Injury Statistics and the Injury Control and Emergency Health Services (ICEHS) section of APHA does not include boat-related drownings among the Drowning category (it is grouped in Other Transport). It is separated out here due to local interest in this cause of death.

Table A-1 (Page 2 of 2)  
Index of ICD-10 Codes for Tables 17 & 18

Mechanism	Manner/Intent				
	Unintentional	Suicide	Homicide	Undetermined	Other
Pedal Cyclist, non-traffic	V10, V11, V12-V14 (.0-.2), V15-V18, V19 (.0-.3, .8, .9)				
Pedestrian, non-traffic	V01, V02-V04 (.0), V05, V06, V09 (.0, .1, .3, .9)				
Other land transport	V20-V28 (.0-.2), V29 (.0-.3), V30-V79 (.0-.3), V80 (.0-.2, .6-.9), V81-V82 (.0, .2-.9), V83-V86 (.4-.9), V87.9, V88, V89 (.0, .1, .3, .9)	X82	Y03	Y32	
Transport, other	V91, V93-V99				Y36.1
Natural/environmental	W42, W43, W53-W64, W92-W99, X20-X39, X51-X57				
Overexertion	X50				
Poisoning	X40-X49	X60-X69	X85-X90	Y10-Y19	Y35.2
Struck by, against	W20-W22, W50-W52	X79	Y00, Y04	Y29	Y35.3
Suffocation, strangulation, hanging	W75-W84	X70	X91	Y20	
Other specified & classifiable	W23, W35-W41, W44, W49, W85-W91, Y85	X75, X81	X96, Y02, Y05-Y07	Y25, Y31	Y35 (.1, .5), Y36 (.0, .2, .4-.8)
Other specified, not elsewhere classifiable	X58, Y86	X83, Y87.0	Y08, Y87.1	Y33, Y87.2	Y35.6, Y89 (.0, .1)
Unspecified	X59	X84	Y09	Y34, Y89.9	Y35.7, Y36.9
Total	V01 – X59, Y85, Y86	X60 – X84, Y87.0	X85 – Y09, Y87.1	Y10-Y34, Y87.2, Y89.9	Y35 (.0-.7), Y36, Y89 (.0, .1)

Table does not include ICD-10 codes for deaths pertaining to terrorism. It also excludes deaths due to adverse effects of drugs and medical care.  
Source: U.S. Centers for Disease Control and Prevention, National Center for Health Statistics<sup>9</sup>



# **APPENDIX B**

## **Effects of change from ICD-9 to ICD-10 coding**

## ICD-9/ICD-10 COMPARABILITY RATIOS

Death certificates contain descriptions of the underlying and contributing causes of death. These descriptions are translated by nosologists into codes to allow statistical management and analysis of mortality data. This translation into codes is possible via the International Classification of Diseases (ICD). The ICD has been revised approximately every ten years since 1900. While these revisions are necessary to reflect advances in medical science, they create challenges in analyzing long-term trends of disease and injury mortality.

The International Classification of Disease – 9<sup>th</sup> Revision (ICD-9) was used to code deaths occurring between 1979 and 1998. To specify the cause of injury deaths, nosologists used supplemental ICD-9 codes. These codes became known as “E-codes” because they indicated the external cause. Starting in 1999, deaths were coded using ICD-10 and codes for injury deaths were no longer labeled E-codes. Under ICD-10, cause of injury codes, which begin with the letters V, W, X, and Y, generally are more detailed and injury categories have been narrowed or broadened.

In 2001, the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention released preliminary results of a study of the comparability of cause of death coding under ICD-9 and ICD-10.<sup>11</sup> Comparability studies involve examining similar categories in successive ICD revisions to measure the extent of breaks in trends caused by the revision. The data in the study were based on cause-of-death information from a non-random sample of 1,852,671 U.S. resident deaths occurring in 1996. The underlying cause of death for each record was originally classified by ICD-9. These cases were subsequently coded using ICD-10. The preliminary results published in the original report were revised and the final comparability ratios were provided in a subsequent report.<sup>12</sup> All cases were classified according to the List of 113 Selected Causes of Death that is used as the standard method to present mortality statistics.

Comparability ratios represent the number of deaths due to a specific cause as classified by ICD-10 divided by the number of deaths of the same cause as classified by ICD-9. A comparability ratio less than 1.00 indicates that fewer deaths were classified to a specific cause under ICD-10 as compared with ICD-9. A ratio greater than 1.00 indicates that a larger number of deaths were classified to a specific cause under ICD-10 as compared with ICD-9.

Table B-1 illustrates the comparability ratios for each of the injury categories examined in this report.

TABLE B-1  
Comparability Ratios for Selected Causes of Injury Death

Cause of Death	Estimated comparability ratio
<b>All Injury</b>	<b>1.0159</b>
<b>Unintentional Injury</b>	<b>1.0251</b>
Drowning	1.0297
Fall	0.9991
Fire/Flames	0.9995
Firearm	1.0165
Motor Vehicle Traffic Crash	0.9545
Occupant	0.6191
Motorcyclist	1.1520
Pedal Cyclist	0.8038
Pedestrian	0.9535
Poisoning	1.0365
Suffocation/Strangulation	1.2320
<b>Suicide</b>	<b>1.0022</b>
Firearm	1.0012
Poisoning	1.0013
Suffocation/Strangulation/Hanging	1.0025
<b>Homicide</b>	<b>1.0020</b>
Cutting/Piercing Object	0.9587
Firearm	1.0019

Source: *Deaths: Injuries, 2001*.<sup>12</sup>

## REFERENCES

1. Michigan Department of Community Health , Vital Records and Health Data Development Section. Data available on the following website:  
<http://www.mdch.state.mi.us/pha/osr/deaths/causRScty.asp>.
2. Wojcik C, DeGuire P, Scarpetta L. *Injury-related mortality in Michigan, 1991-1995*. Michigan Department of Community Health. Lansing, Michigan. December 1997.
3. Largo T, Ginnebaugh J, DeGuire P, Scarpetta L. *Injury Mortality in Michigan, 1994-1998*. Michigan Department of Community Health. Lansing, Michigan. October, 2001.
4. Largo T, Scarpetta L. *Injury Mortality in Michigan, 1999-2001*. Michigan Department of Community Health. Lansing, Michigan. April, 2003.
5. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). Available from URL: [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars).
6. Available from URL: <http://www.mdch.state.mi.us/pha/osr/CHI/POP/frame.asp>.
7. *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision*. World Health Organization, Geneva, Switzerland, 1992. Updated and corrected by the U.S. National Center for Health Statistics, October 1998.
8. *International Classification of Diseases, Ninth Revision (ICD-9)*. World Health Organization, Geneva, Switzerland, 1977.
9. Matrix available from the United States Centers for Disease Control and Prevention, National Center for Health Statistics on the following website:  
<http://www.cdc.gov/nchs/about/otheract/ice/matrix10.htm>.
10. US Standard 2000 Population can be found at the following website:  
[http://www.cdc.gov/nchs/dataawh/nchsdefs/tables/tableI\\_hus.htm](http://www.cdc.gov/nchs/dataawh/nchsdefs/tables/tableI_hus.htm).
11. Anderson RN, Minino AM, Hoyert DL, Rosenberg HM. *Comparability of cause of death between ICD-9 and ICD-10: Preliminary estimates*. National vital statistics reports; 49(2). Hyattsville, Maryland: National Center for Health Statistics; 2001. Available from [http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49\\_02.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_02.pdf).
12. Minino AM, Anderson RN, Fingerhut LA, Boudreault MA, Warner M. Deaths: Injuries, 2002. National vital statistics reports; vol 54 no 10. Hyattsville, Maryland: National Center for Health Statistics. 2006.