

Michigan Health Statistics

Michigan Department
of Community Health

M DCH

*John Engler, Governor
James K. Haveman, Jr., Director*

SYMBOLS USED IN TABLES

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**MICHIGAN
HEALTH STATISTICS**

1998

Division for Vital Records and Health Statistics

Michigan Department of Community Health
Lansing, Michigan October 1999

*Michigan Department
of Community Health*



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INTRODUCTION

The 1998 edition of Michigan Health Statistics is a statistical summary of vital events for calendar year 1998. Data relative to population, births, deaths, fetal deaths, marriages, divorces and communicable diseases are included. Although most of the data in this report pertain to events occurring in 1998, data for prior years have been included to illustrate trends. Most of the tabulations refer to Michigan residents. Some events however, such as marriages and divorces, are tabulated with respect to where the event occurred rather than the residence of the party or parties involved.

As a certain number of Michigan residents either deliver babies or die out of state each year, it is necessary to include data obtained from the certificates of other states in any tabulations pertaining to Michigan residents. This report includes all such out-of-state certificates received prior to April 30, 1999, and all in-state certificates and records received prior to March 15, 1999. Although a few additional records for the calendar year 1998 were received after these filing dates, their exclusion from this report is statistically insignificant.

This report is composed of the following sections and appendices:

1. Natality Section
2. Mortality Section
3. Marriage and Divorce Section
4. Reference Appendix
5. Technical Notes
6. List of Tables and Figures

Comments or suggestions concerning the content and format of this report are always welcome. Any additional needs for data or analyses may be directed to the division. The Division for Vital Records and Health Statistics will make every attempt to comply with requests for data within the limitations of staff and resources.

Additional statistical information for the state of Michigan as well as individual Michigan communities can be found on the Internet. The web site address is:

<http://www.mdch.state.mi.us>

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NATALITY

SECTION I



NATALITY

KEY TRENDS

Demographic Between 1900 and 1998, the number of live births has varied considerably. The general trend has been increasing numbers of live births from 1900 through 1957, declining numbers through 1976 and fairly stable numbers until 1989. During 1989 through 1991 there were more live births each year in Michigan than had been born to Michigan residents in any year since 1971. There was a 13 percent drop in the number of live births between 1990 and 1998.

In the last 25 years fertility rates (births per 1,000 women ages 15-44) for white and black women decreased with the fertility rates for white women reaching a low level by about 1975 and for black women by about 1985. Fertility rates for white women have remained fairly stable since 1975, while rates for black women rose after 1985, peaked in 1990 and have generally declined since then. During this time period there has been an increase in the percent of births to minority race populations from 17 percent in 1978 to 21 percent of the births in 1998.

Since 1980 birth rates for white teenage women have fluctuated from a low in 1983 of 35.3 births per 1,000 white women 15 to 19 years of age to a high of 43.6 in 1990. Rates for black teenage women have fluctuated from a low of 85.9 in 1982 to a high of 137.8 in 1991. The rates have declined to 35.7 and 87.0 in 1998 for white and black teens, respectively.

Prenatal Care A national goal is to increase to at least 90 percent the proportion of pregnant women who initiate prenatal care in the first trimester of pregnancy by the year 2000. In Michigan, the percentage of mothers who initiated care early rose from 69 percent in 1970 to 81 percent in 1985 and has remained at approximately 80 percent since that time. In 1998, the highest percentages of mothers who initiated care early occurred among white and Asian and Pacific Islander mothers and mothers of Arab ancestry (81 to 85 percent). The lowest percentages occurred among black and American Indian mothers and mothers of Hispanic ancestry (65 to 74 percent).

An Overview, 1998

Total Resident Live Births	133,649
Resident Live Births per Day	366.2
Crude Birth Rate (births per 1,000 population)	13.7
Fertility Rate (births per 1,000 women 15-44)	60.0
First Births (percent of total live births)	39.0
Median Birthweight in Grams (live births)	3,374
Low Birthweight Live Births	10,468
Low Birthweight Ratio (per 1,000 live births)	78.3
Median Age of Mother (live births)	27
Live Births with Congenital Anomalies	1,569
Congenital Anomalies per 10,000 Live Births	117
Live Births with No Prenatal Care	1,596
No Prenatal Care Ratio (per 1,000 live births)	11.9
Home Births	817
Live Born Sets of Twins	1,985
Live Born Sets of Triplets	87
Live Born Multiple Births of Four or More	8
Male Live Births per 100 Female Live Births	105.6
Total Resident Fetal Deaths	830

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Birth Outcome A national goal is to have the percentage of infants with low birthweight be no more than 5 percent overall and 9 percent among infants born to black mothers by the year 2000. The low birthweight percentage in Michigan declined from 8.0 percent in 1966 to a low of 6.8 percent in 1985. It increased to 7.8 percent in 1998. The percent for white mothers decreased from 6.6 in 1970 to 6.5 in 1998, while the percent for black mothers fell from 14.3 in 1970 to 13.8 in 1998. Of more concern is the percent of births with extremely low birthweight (less than 750 grams) where about 65 percent of the live births will die within one year, usually in the first day of life. While 0.2 to 0.3 percent of the infants born to white and Asian and Pacific Islander mothers and mothers of Hispanic

ancestry had extremely low birthweight in 1998, 1.2 percent of the live births to black mothers had extremely low birthweight.

Tobacco Use A national goal is to reduce tobacco use by pregnant women to less than 10 percent of the births by the year 2000. In 1998 16.7 percent of pregnant Michigan women used tobacco during their pregnancy.

Tobacco use during pregnancy was highest among American Indian mothers (36 percent). About 3 percent of the Asian and Pacific Islander mothers and 4 percent of the mothers of Arab ancestry smoked. About 9 percent of the mothers of Hispanic ancestry smoked, while 15 and 18 percent of the black and white mothers smoked, respectively.

LIVE BIRTHS

Michigan Trend The smallest number of live births officially recorded in this century was 43,221 in 1901. The actual number of live births was undoubtedly higher. Because of the method of recording, many live births were probably not recorded.

Live births generally increased from 43,699 in 1900 to 208,488 in the peak year of 1957 with major declines occurring during the first years of the Great Depression and towards the end of the Second World War (Figure 1.1). Between 1957 and 1976, live births decreased by 37 percent to 131,378, the lowest total since 1945. Between 1977 and 1988 the number of births fluctuated between a high of 145,162 live births in 1980 and a low of 133,026 in 1983. There was an increase in the number of live births in both 1989 and 1990. Since the recent high of 153,080 live births in 1990, the number of births declined every year to 133,231 in 1996, and rose slightly to 133,649 births in 1998.

United States The national pattern of birth trends was similar to that observed in Michigan. For 1998, the provisional figure was 3,947,000, an increase of 2 percent from 1997.

Crude Birth Rates Another view of the historic pattern in live births may be obtained through examination of changes in the crude birth rate, the number of births per 1,000 Michigan residents. The historic low rate of 13.7 was achieved in 1996, and remained constant in 1997 and 1998. Prior to 1996, in this century, the crude birth rate ranged from a low of 13.9 per 1,000 residents in 1995 to a high of 27.4 in 1956 (Figure 1.2). Between 1976 and 1988, the rate fluctuated between the high of 15.7 in 1980 and a low of 14.7 in 1983. From 1989 through 1991 the crude birth rate was about 16 live births per 1,000 residents. The 1998 rate of 13.7 is 17 percent lower than the rate in 1990.

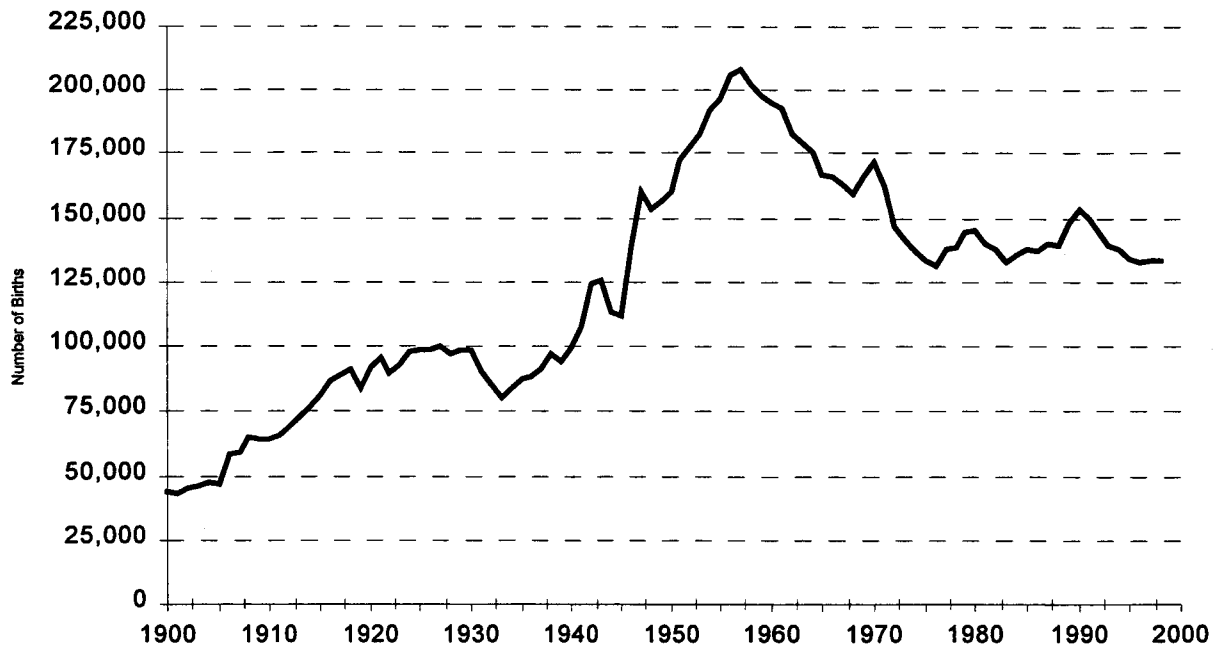
Table 1.1
Live Births and Crude Birth Rates
Michigan and United States Residents
Selected Years, 1900 - 1998

United States		Year	Michigan	
Number	Rate		Number	Rate
—	—	1900	43,699	18.1
2,777,000	30.1	1910	64,109	22.8
2,950,000	27.7	1920	92,245	25.1
2,618,000	21.3	1930	98,882	20.4
2,559,000	19.4	1940	99,106	18.9
3,632,000	24.1	1950	160,055	25.1
4,257,850	23.7	1960	195,056	24.9
3,731,386	18.4	1970	171,667	19.3
3,612,258	15.9	1980	145,162	15.7
4,158,212	16.7	1990	153,080	16.4
4,110,907	16.3	1991	149,478	15.9
4,065,014	15.9	1992	143,827	15.2
4,000,240	15.5	1993	139,560	14.7
3,952,767	15.2	1994	137,844	14.4
3,899,589	14.8	1995	134,169	13.9
3,891,494	14.7	1996	133,231	13.7
3,880,894	14.5	1997	133,549	13.7
3,947,000	14.6	1998	133,649	13.7

Note: Rates are live births per 1,000 population.
1998 U.S. data are provisional.

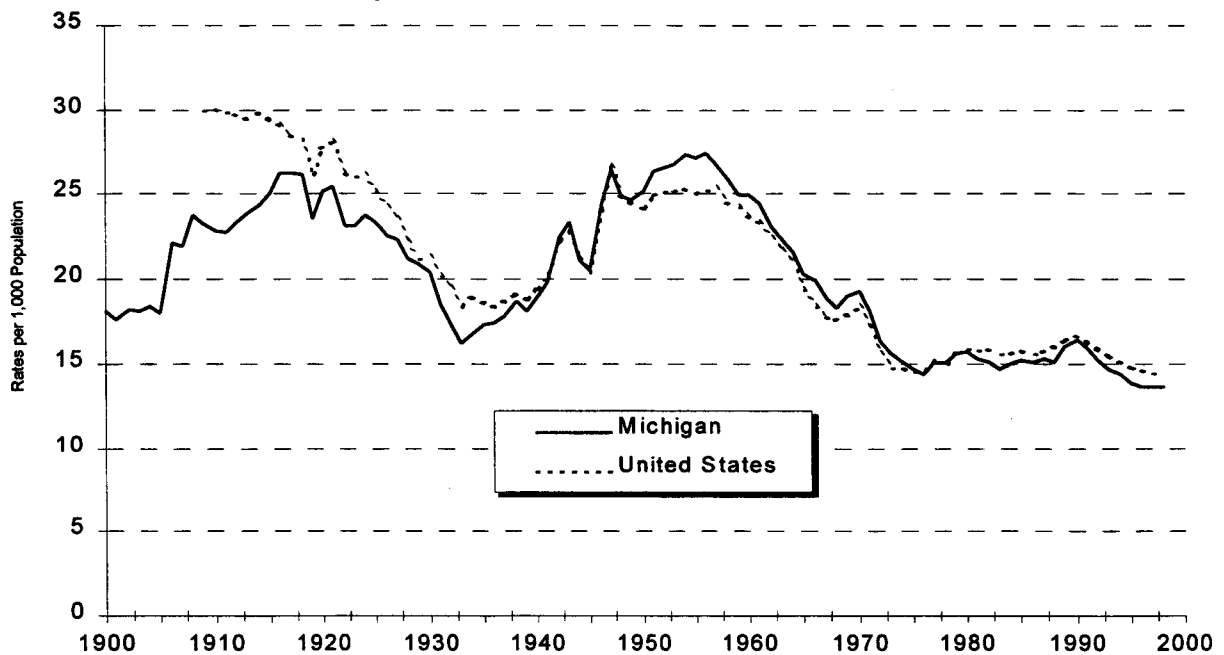
Source: 1900-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Figure 1.1
Live Births
Michigan Residents, 1900-1998



Source: 1900-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Figure 1.2
Live Birth Rates
Michigan Residents, 1900-1998 and United States Residents, 1909-1998



Note: Rates are live births per 1,000 population. United States rates prior to 1909 are not available. 1998 U.S. data are provisional.

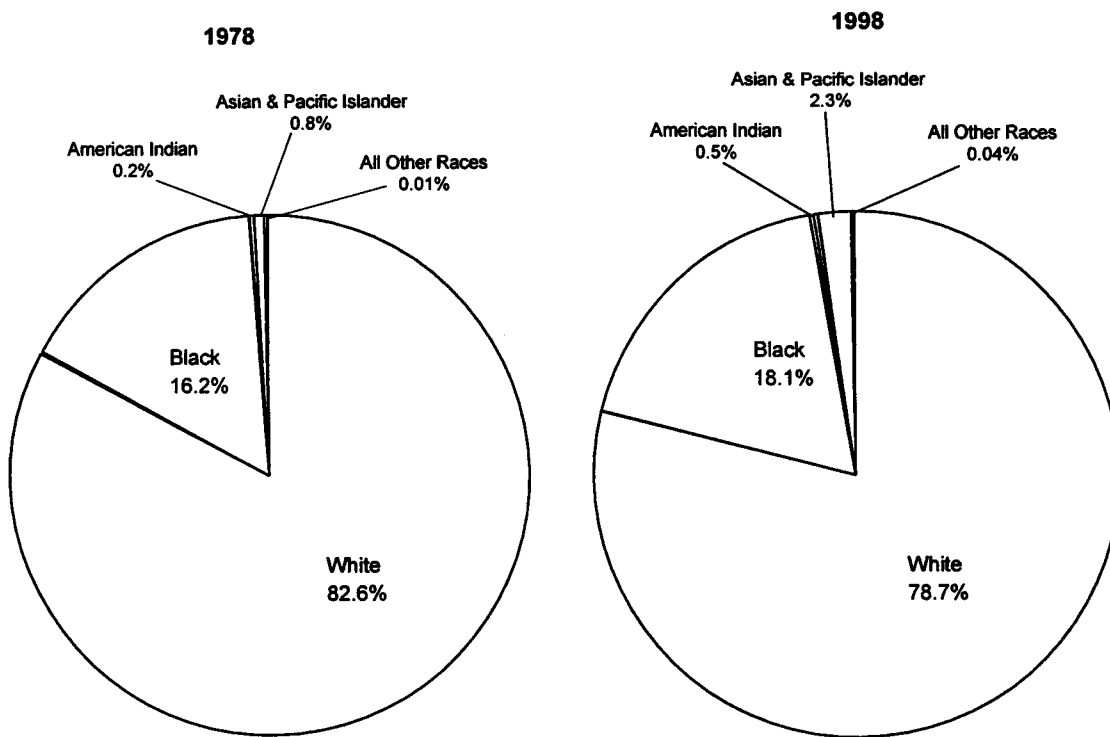
Source: 1900-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

AGE, RACE AND ANCESTRY

Racial Composition As part of the changing demographics in Michigan, the racial composition of women having live births in Michigan changed over the period 1978 through 1998 (Figure 1.3). Live births to white women declined from 82.6 percent of

all live births in 1978 to 78.7 percent in 1998. The percentages of live births born to mothers of minority race groups increased from 17 to 21 percent during the 20-year interval.

Figure 1.3
Live Birth Percents by Mother's Race
 Michigan Residents, 1978 and 1998



Note: Totals may not add to 100 percent due to rounding.

Source: 1978 and 1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Mother's Age In 1998, about 35 percent of all live births were to women less than 25 years of age (Table 1.2). Less than 2 percent occurred to women over 39 years of age. The median age of Michigan mothers was 27 years. Black, American Indian and Hispanic mothers were younger (median: 24 years), while white, Asian and Pacific Islander and Arab mothers were older (median: 27 to 29 years).

Teenage Mothers Differences are reflected in the proportion of teenage births in each race or ancestry group. Although 65 percent of the births to teens are to white mothers, only about one in 10 births to white mothers were born to a teen. Even lower proportions of Asian and Pacific Islander mothers and mothers of Arab ancestry were under age 20, about one in 21 and one in 13 respectively. About one in five births to mothers of Hispanic ancestry, and American Indian and black mothers were born to teenage mothers.

Table 1.2
Live Births and Percent Distribution by Age, Race and Ancestry of Mother
Michigan Residents, 1998

Age of Mother in Years	RACE												ANCESTRY			
	All Races		White		Black		American Indian		Asian and Pacific Is.		All Other Races		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
<15	254	0.2	99	0.1	141	0.6	5	*	8	0.3	-	-	1	*	24	0.4
15 - 19	15,263	11.4	10,002	9.5	4,936	20.4	139	19.3	135	4.4	8	13.6	236	7.9	1,087	18.3
20 - 24	31,063	23.2	22,888	21.8	7,398	30.6	230	31.9	435	14.3	21	35.6	717	24.1	1,858	31.3
25 - 29	39,826	29.8	32,286	30.7	6,098	25.2	198	27.4	1,094	35.8	20	33.9	946	31.8	1,581	26.6
30 - 34	31,379	23.5	26,609	25.3	3,590	14.8	108	15.0	942	30.9	9	15.3	689	23.1	955	16.1
35 - 39	13,287	9.9	11,176	10.6	1,631	6.7	34	4.7	371	12.2	1	*	305	10.2	352	5.9
40+	2,559	1.9	2,085	2.0	384	1.6	8	1.1	67	2.2	-	-	83	2.8	77	1.3
Total	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	59	100.0	2,977	100.0	5,936	100.0
Median age at last birthday	27		28		24		24		29		25		27		24	

Note: Totals may not add to 100 percent due to rounding. Records with race not stated are included only in the "All Races" column. Asterisk (*) indicates that the data do not meet standards of reliability or precision. Records with age not stated are included only in the "Total" row.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

FERTILITY

The fertility rate relates the number of live births to the female population of childbearing age, 15 through 44 years. Similarly, age-specific rates which relate the number of live births to the females in a specific age group provide more detail on the fertility of women in the age group.

Trends A comparison of fertility rates since 1900 for Michigan with those for the United States since 1910 is presented in Table 1.3 and since 1970 in Figure 1.4. The crude birth rate changes discussed above understate the recent decline in fertility for both regions. The fertility rate for Michigan in 1998 was 51 percent below the 1960 rate, while the crude birth rate decreased 45 percent over the 38 years.

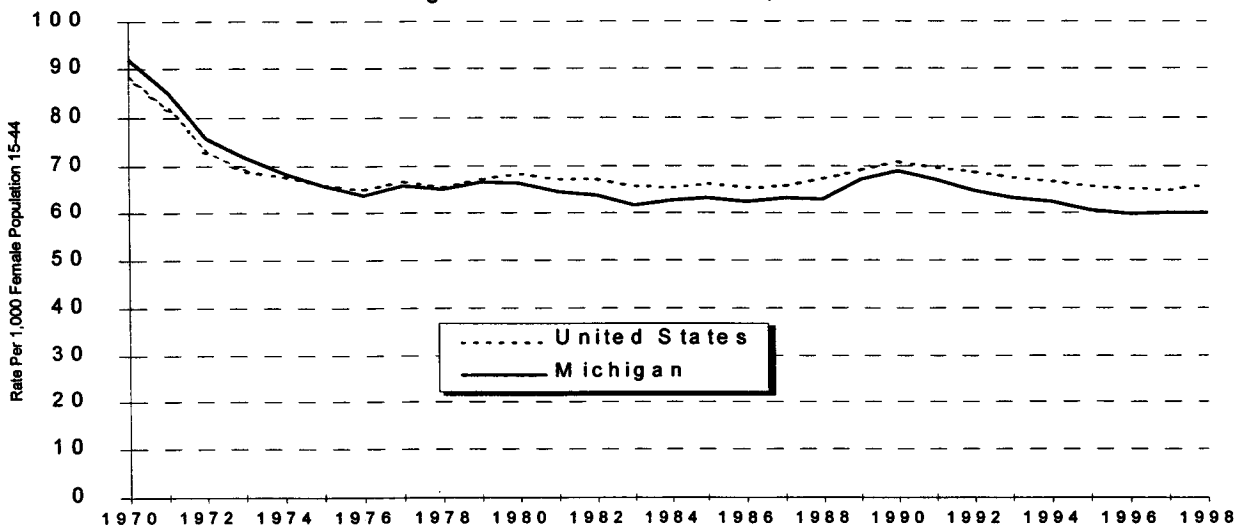
Table 1.3
Fertility Rates
Michigan and United States Residents
Selected Years, 1900-1998

United States	Year	Michigan
—	1900	78.5
126.8	1910	99.0
117.9	1920	111.6
89.2	1930	87.6
79.9	1940	78.9
106.2	1950	110.5
118.0	1960	123.1
87.9	1970	91.7
68.4	1980	66.2
70.9	1990	68.9
69.6	1991	67.0
68.9	1992	64.7
67.6	1993	63.0
66.7	1994	62.2
65.6	1995	60.4
65.3	1996	59.7
65.0	1997	60.0
66.0	1998	60.0

Note: Fertility rates are live births per 1,000 female population ages 15-44. 1998 U.S. data are provisional.

Source: 1900-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Figure 1.4
Fertility Rates
Michigan and United States Residents, 1970-1998



Note: Fertility rates are live births per 1,000 female population ages 15-44. 1998 U.S. data are provisional.

Source: 1970-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Fertility Rates by Race Table 1.4 provides a comparison between fertility rates for white and black women in Michigan for the period since 1970.

The fertility rate for black women was 40 percent above the rate for white women in 1970, fell sharply to 10 percent higher in 1985, increased to 45 percent higher in 1991 then decreased again to 14 percent higher in 1998. Since 1970 the fertility rate for black women has declined 46 percent compared with a 34 percent drop for white women.

The fertility rates for white women declined to a low level of 60.8 per 1,000 white females ages 15-44 in 1976, then rose to a high of 64.5 in 1990. Similarly, rates for black women declined to 68.5 in 1985 and then increased to a high of 92.7 in 1990. Since then, the rates have declined to 58.2 for white women and the lowest rate (66.3) for black women since 1985.

Table 1.4
Fertility Rates by Race of Mother
Michigan Residents, Selected Years, 1970-1998

Year	Fertility Rate	
	White	Black
1970	87.9	123.5
1975	62.6	89.5
1980	64.3	77.9
1985	62.4	68.5
1990	64.5	92.7
1991	62.6	90.9
1992	61.0	85.0
1993	59.6	80.5
1994	59.0	76.7
1995	58.1	69.7
1996	57.8	66.4
1997	58.1	66.4
1998	58.2	66.3
Percent Change 1970-1998	-33.8	-46.3

Note: Fertility rates are live births per 1,000 female population ages 15-44.

Source: 1970-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

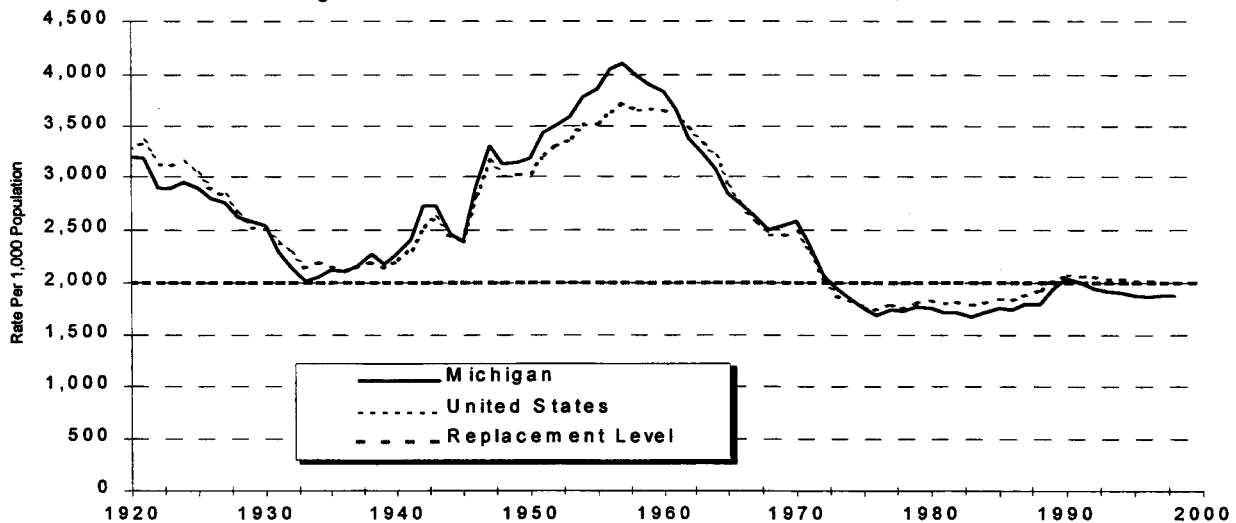
Replacement Level Figure 1.5 displays the changes in the fertility rate between 1920 and 1998 for Michigan and the United States. (See also Table 4.4) The total fertility rate is a hypothetical measure of the number of live births that would occur to every 1,000 women during their reproductive life, if these women experienced the age-specific birth rates observed in a given year. A total fertility rate of over 2,000 is necessary for replacement of the parents, since not all women survive the reproductive years nor would all children survive to adulthood. If the total fertility rate falls below 2,000 for a long period, a natural decrease in population will eventually occur.

Michigan's total fertility rate has generally paralleled that of the nation. The Michigan rate dropped from 3,196 in 1920 to 2,007 in 1933 and then increased between 1933 and 1957, reaching 4,100 in

the latter year. Between 1957 and 1998, the total fertility rate in Michigan declined to a low of 1,676 in 1983 and increased to 1,882 in 1998. The rate was 2,033 in 1997 for the United States. The national rates have been higher than the Michigan rates since 1975.

In 1990, for the first time since 1972, both Michigan and national total fertility rates were above 2,000. In 1992 through 1998, the Michigan total fertility rate was again below 2,000. It should be noted that although the total fertility rate has almost always been below 2,000 since 1973, the rate of natural increase for Michigan remains positive. During the period 1973 through 1998, there were 1,579,868 persons added to the population of Michigan through the excess of live births over deaths. During that period, there has been a net migration of 877,976 people out of Michigan.

Figure 1.5
Total Fertility Rates
 Michigan Residents, 1920-1998 and United States Residents, 1920-1997



Note: Total fertility rate is total children born to 1,000 women in their lifetime assuming constant live birth rates.

Source: 1920-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
 Monthly Vital Statistics Report, National Center for Health Statistics

AGE-SPECIFIC LIVE BIRTH RATES

All Women Figure 1.6 displays age-specific live birth rates for the period 1970-1998. Live birth rates in all age groups dropped between 1970 and 1976. For women under 20 years of age the rate continued to decline throughout the years 1976-1983 reaching a low of 43.1 in 1983. The rate increased after 1983 to a high of 60.5 in 1990 then declined to 44.3 in 1998.

After declining between 1970 and 1976, live birth rates for women between 20-24 and 25-29 years of age remained stable until 1980. The rates decreased through 1983 and then increased to relatively high levels in 1990. These rates decreased again until 1996 but have increased slightly since.

For women in the age groups 30-34 and 35-39, live birth rates decreased from high levels in 1956 and 1957 to century low rates in 1976, then increased by 67 and 93 percent, respectively, by 1998 (Appendix Table 4.4).

Black and White Women Figures 1.7 and 1.8 present the trends in age-specific rates for white and

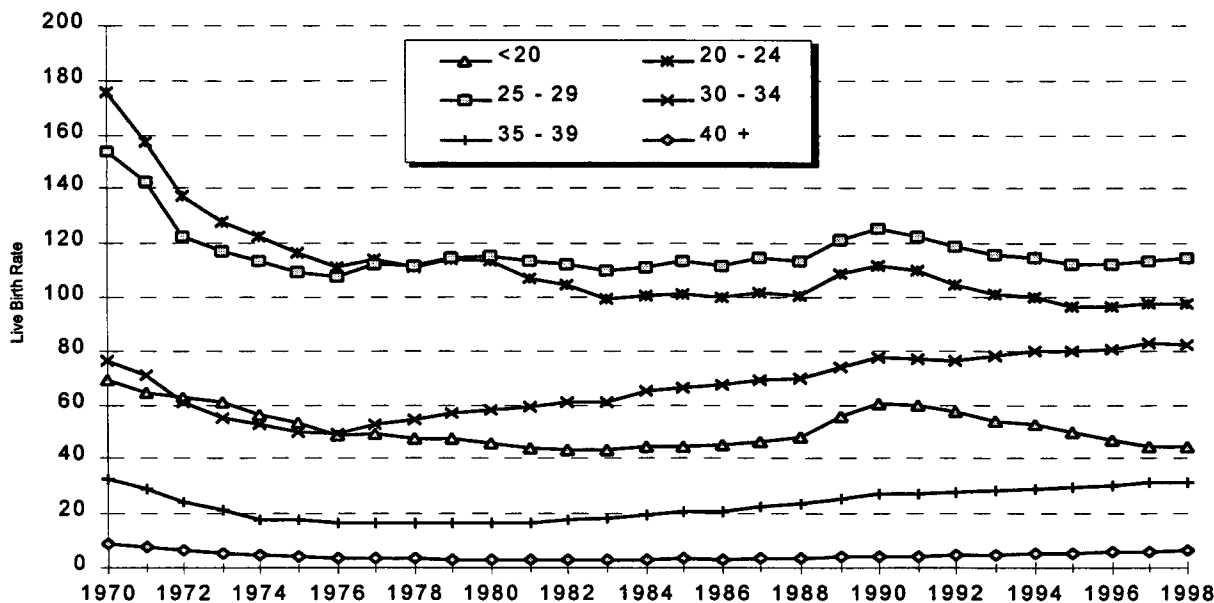
black women respectively for the period 1980-1998. Rates for black women under age 25 were above those for white women during these years. The live birth rates for white and black women aged 25 and over were similar.

Between 1980 and 1998, rates for white females increased for all age groups, ages 30 and over. For black females ages 20-29, rates increased through 1990 then decreased through 1996. There was a gradual increase in rates for ages 30 and above between 1980 and 1998 for both groups.

For black teenage women, birth rates fluctuated between 1980 and 1985, increased from 1986 to 1991, and decreased by 37 percent in 1998. The rates for white teenagers fell from 1980 through 1983, remained fairly constant until 1988, rose through 1990 and decreased by 18 percent in 1998.

Rates for black and white teens were mirrored by their counterparts ages 20-29 for most years between 1980 and 1998.

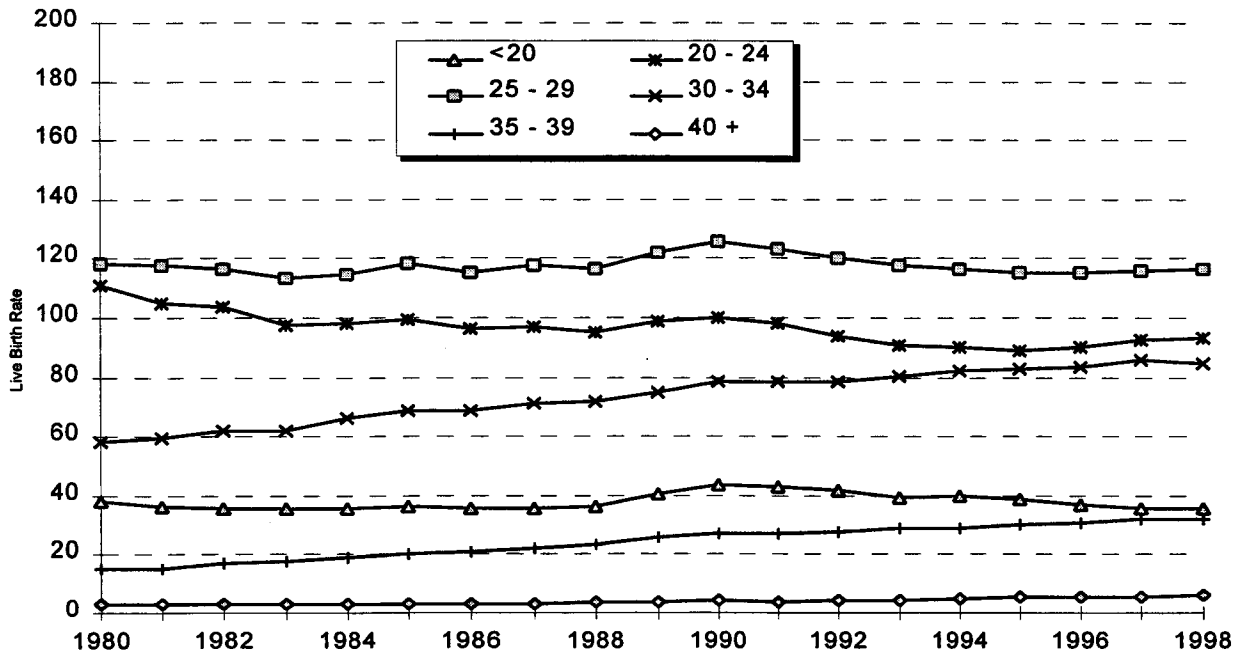
Figure 1.6
Age-Specific Live Birth Rates
Michigan Residents, 1970-1998



Note: Age-specific birth rate is the number of resident live births to women of a specific age group per 1,000 female population of that specific age group. Rate for ages under 20 is based on live births to women under 20 and population of females 15-19. Rate for ages 40 or over is based on live births to women 40 and over and population of females 40-44.

Source: 1970-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

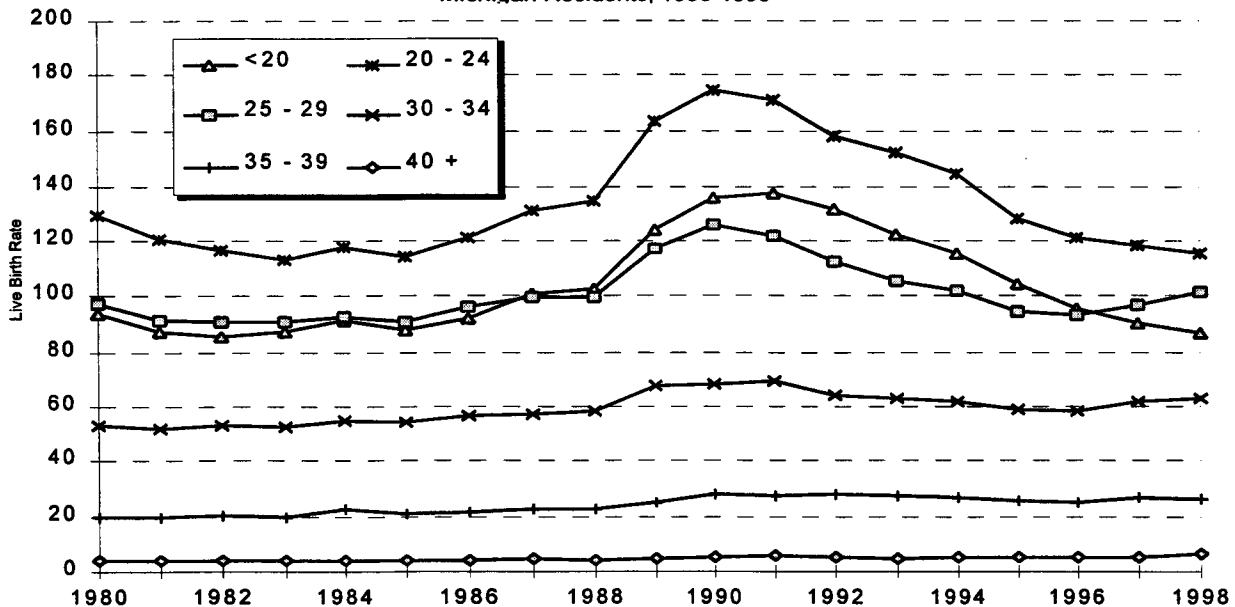
Figure 1.7
Age-Specific Live Birth Rates to White Mothers
 Michigan Residents, 1980-1998



Note: Age-specific birth rate is the number of resident live births to women of a specific age group per 1,000 female population of that specific age group. Rate for ages under 20 is based on live births to women under 20 and population of females 15-19. Rate for ages 40 or over is based on live births to women 40 and over and population of females 40-44.

Source: 1980-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Figure 1.8
Age-Specific Live Birth Rates to Black Mothers
 Michigan Residents, 1980-1998

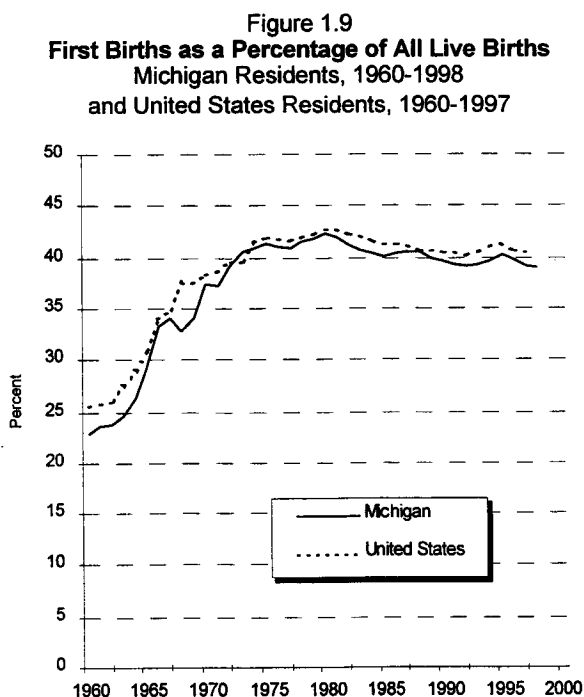


Note: Age-specific birth rate is the number of resident live births to women of a specific age group per 1,000 female population of that specific age group. Rate for ages under 20 is based on live births to women under 20 and population of females 15-19. Rate for ages 40 or over is based on live births to women 40 and over and population of females 40-44.

Source: 1980-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

BIRTH ORDER

About 60 percent of the births in 1998 were to women who had given birth previously; 39.0 percent of the births were to first-time mothers. The percent of live births which were first-order births is displayed in Figure 1.9 for Michigan and the United States for the period 1960 to 1998. Between 1960 and 1980, the percent of first-order births increased from 22.9 to 42.4 in Michigan. Then the percentage generally decreased to 39.0 in 1998. Percentages for the United States followed a similar pattern.



Source: 1960-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

INTERPREGNANCY TIME PERIOD

In 1998, women having live births whose most recent prior termination was a miscarriage, fetal death or induced abortion had a median time span of one year and nine months between their previous termination and current birth (Table 1.5). This compares to a median of two years 10 months for women having prior live births. A spacing of less than one year was observed for 14 percent of all women reporting a prior termination and for less than 2 percent of the women reporting a prior live birth.

Table 1.5
Live Births to Women Reporting Prior
Pregnancy Terminations by Time Span
Between Last and Current Termination and
by Whether Prior Termination Resulted
in a Live Birth or Other Termination
Michigan Residents, 1998

Time Span In Years	Total		Prior Live Birth		Other Prior Termination	
	Number	%	Number	%	Number	%
Total	85,891	100.0	67,347	100.0	18,544	100.0
<1	3,631	4.2	1,084	1.6	2,547	13.7
1 - 2	24,816	28.9	17,052	25.3	7,764	41.9
2 - 3	20,413	23.8	17,522	26.0	2,891	15.6
3 - 5	20,034	23.3	17,621	26.2	2,413	13.0
5 +	16,997	19.8	14,068	20.9	2,929	15.8
Median Time Span	2 yrs.,8 mos		2 yrs.,10 mos		1 yr.,9 mos	

Note: Terminations with time spans of zero years (i.e., second or later births in plural deliveries) and terminations with unknown time spans are excluded. Other prior terminations include miscarriages, fetal deaths or induced abortions. The methodology for calculating interpregnancy time span was altered slightly in 1984. Hence, median time spans and percentages are not comparable to statistics published prior to 1984.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

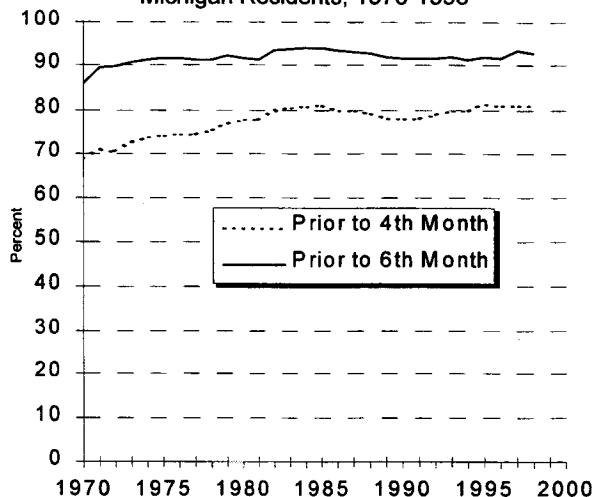
PRENATAL CARE

Trend Pregnant women are encouraged to initiate prenatal care during the first trimester and to receive care on a regular, prescribed basis until delivery occurs. The percentage of women delivering live born infants who initially obtained prenatal care in the first trimester of pregnancy increased steadily between 1970, when the figure was 69 percent and 1985 when it rose to 81 percent (Figure 1.10). Between 1986 and 1998 it fluctuated between 78.0 percent and 81.3 percent.

Race, Ancestry and Age The proportion of live births to women receiving early prenatal care varied considerably by race, ancestry and age of mother (Table 1.6). In 1998, 84.9 percent of infants born to white women were born to mothers who began their prenatal care in the first trimester. Similar percentages of Asian and Pacific Islander mothers and mothers of Arab ancestry initiated care early, 81.4 and 83.4 percent respectively. Lower percentages of black and American Indian mothers and mothers of Hispanic ancestry initiated care early.

Eighty-three or more percent of live births to women aged 25 or over were to women who sought care promptly. The proportion fell to 42.1 percent for women under 15 years. About two in three (64.7 percent) infants born to mothers 15-19 years of age were to mothers who received care early.

Figure 1.10
Percent of Women Having Live Births Who Received Care Prior to the 4th Month and 6th Month of Pregnancy Michigan Residents, 1970-1998



Source: 1970-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Similar patterns in the proportion of mothers initiating care early by age of mother are evident for the race and ancestry groups. However, the proportions were generally highest in each age group for white mothers and mothers of Arab ancestry, and next highest for Asian and Pacific Islander mothers. In each age group lower proportions of American Indian mothers, mothers of Hispanic ancestry and black mothers initiated care early.

Table 1.6
Numbers and Percents of Live Births with Prenatal Care Beginning in the First Trimester by Age, Race and Ancestry of Mother Michigan Residents, 1998

Age of Mother in Years	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
<15	107	42.1	46	46.5	56	39.7	1	*	4	*	1	*	9	37.5
15 - 19	9,871	64.7	7,026	70.2	2,650	53.7	92	66.2	79	58.5	172	72.9	619	56.9
20 - 24	23,416	75.4	18,192	79.5	4,674	63.2	169	73.5	323	74.3	584	81.5	1,237	66.6
25 - 29	33,880	85.1	28,376	87.9	4,341	71.2	160	80.8	925	84.6	801	84.7	1,182	74.8
30 - 34	27,457	87.5	23,934	89.9	2,572	71.6	79	73.1	798	84.7	590	85.6	724	75.8
35 - 39	11,388	85.7	9,893	88.5	1,111	68.1	25	73.5	307	82.7	265	86.9	278	79.0
40+	2,121	82.9	1,790	85.9	268	69.8	7	87.5	47	70.1	69	83.1	58	75.3
Total	108,250	81.0	89,267	84.9	15,672	64.8	533	73.8	2,483	81.4	2,482	83.4	4,109	69.2

Note: Percents are calculated by using the numbers in Table 1.2 as the denominator. Records of other races or with race not stated are included only in the "All Races" column. Records with age not stated are included only in the "Total" row. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

No Prenatal Care In 1998, 1,596 resident live births, or 11.9 of every 1,000, occurred with the mother having had no prenatal care (Table 1.7). This figure includes only those where it was specified on the birth record that the mother received no prenatal care. The comparative statistics were 6.3 in 1985 and 22.6 in 1970.

Those who received no prenatal care were for the most part younger mothers (median age of 25). Also, the lack of prenatal care was disproportionately high among black mothers (31.1 per 1,000 live births).

Table 1.7
Live Births and Birth Ratios with No Prenatal Care by Age and Race of Mother
Michigan Residents, 1998

Age of Mother in Years	Race							
	All Races		White		Black		All Other Races	
	Number	Ratio	Number	Ratio	Number	Ratio	Number	Ratio
<15	20	78.7	13	131.3	7	49.6	-	-
15-19	342	22.4	157	15.7	176	35.7	7	24.8
20-24	432	13.9	212	9.3	202	27.3	11	16.0
25-29	371	9.3	199	6.2	163	26.7	6	4.6
30-34	278	8.9	151	5.7	119	33.1	7	6.6
35-39	118	8.9	49	4.4	68	41.7	1	*
40+	35	13.7	19	9.1	16	41.7	-	-
Total	1,596	11.9	800	7.6	751	31.1	32	8.3
Median Age at Last Birthday	25		25		24		23	

Note: Records with race not stated are included in the "All Races" column only. Records with age not stated are included only in the "Total" row. Ratios are per 1,000 live births to mothers in the specific age and race group (Table 1.2). Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Adequacy of Care A measure of the quality of care developed by Dr. D. W. Kessner combines information on the month prenatal care began, the gestational age at birth and the number of prenatal visits (see Technical Notes). Adequate prenatal care was obtained by mothers of 74.8 percent of the live births (Table 1.8). The proportions of live births to white mothers, Asian and Pacific Islander mothers and mothers of Arab ancestry who received an adequate level of care (79.0, 74.9 and 78.7 percent) were higher than the corresponding proportions for black and American Indian mothers (57.2 and 67.3 percent) and mothers of Hispanic ancestry (60.0 percent).

Inadequate level of care was received by the mothers of 9.6 percent of all live births. The proportions of live births to mothers who received an inadequate level of care were 6.7 percent for white mothers, 8.6 to 13.3 percent for Asian and Pacific

Islander mothers, American Indian mothers and mothers of Arab and Hispanic ancestry and 21.7 percent for black mothers.

Although the mothers of 81.0 percent of all live births received prenatal care during the first trimester, only 74.8 percent received adequate care as defined by the *Kessner Index*. Overall, this means that of the mothers who initiated prenatal care most promptly, 7.7 percent (8,343 women) did not receive the minimum number of visits they should have received (Tables 1.6 and 1.8).

Considered as a proportion of the live births to mothers who did not receive adequate care (33,007 women), 25.3 percent of the live births to mothers not receiving adequate care were to mothers who initiated care within the recommended first trimester, but did not continue to receive the appropriate minimum number of prenatal care visits.

Table 1.8
Numbers and Percents of Live Births by Level of Prenatal Care, Race and Ancestry of Mother
Michigan Residents, 1998

Level of Prenatal Care (Kessner Index)	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Adequate	99,907	74.8	83,052	79.0	13,836	57.2	486	67.3	2,286	74.9	2,343	78.7	3,564	60.0
Intermediate	20,132	15.1	14,518	13.8	4,942	20.4	169	23.4	434	14.2	310	10.4	1,536	25.9
Inadequate	12,875	9.6	7,057	6.7	5,243	21.7	62	8.6	319	10.5	311	10.4	792	13.3
Unknown	735	0.5	534	0.5	158	0.7	5	*	13	0.4	13	0.4	44	0.7
<i>Total</i>	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0

Note: The *Kessner Index* is a classification of prenatal care based on the month of pregnancy in which prenatal care began, the number of prenatal visits and the length of pregnancy (i.e., for shorter pregnancies, fewer prenatal visits constitute adequate care.) Records of other races or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

BIRTHWEIGHT

The mean weight for all live births was 3,332 grams or approximately 7 pounds 6 ounces (Table 1.9). The median birthweight was 3,374 grams or about 7 pounds 7 ounces. The median birthweight was lowest for infants born to black mothers, and highest for white and American Indian mothers. The medians were somewhat lower for mothers of Arab and Hispanic ancestry. The median birthweight for infants born to Asian and Pacific Islander mothers was about 170 and 199 grams lower than the medians for infants born to white and American Indian

mothers, respectively, and 85 grams higher than the median for infants born to black mothers.

Infants born to black mothers had a higher proportion of birthweights with extremely low birthweight below 750 grams (1.2 percent). Other race and ancestry groups ranged from 0.2 to 0.3 percent of the births below 750 grams. Infants born with this extremely low birthweight have very high mortality rates (approximately 65 percent mortality).

Table 1.9
Numbers and Percents of Live Births by Birthweight, Race and Ancestry of Mother
Michigan Residents, 1998

Weight at Birth in Grams	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
<750	679	0.5	363	0.3	297	1.2	2	*	9	0.3	4	*	10	0.2
750 - 1,499	1,427	1.1	897	0.9	491	2.0	9	1.2	27	0.9	27	0.9	57	1.0
1,500 - 2,499	8,362	6.3	5,540	5.3	2,555	10.6	39	5.4	198	6.5	149	5.0	322	5.4
2,500+	122,855	91.9	98,153	93.3	20,758	85.9	671	92.9	2,806	91.9	2,787	93.6	5,537	93.3
Total	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0
Mean weight	3,332		3,390		3,095		3,403		3,229		3,322		3,335	
Median weight	3,374		3,430		3,175		3,459		3,260		3,345		3,364	

Note: Records of other races or with race not stated are included only in the "All Races" column. Records with birthweight not stated are included only in the "Total" row. In order to conform to national standards, the definition of low birthweight was changed in 1984 to less than 2,500 grams. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

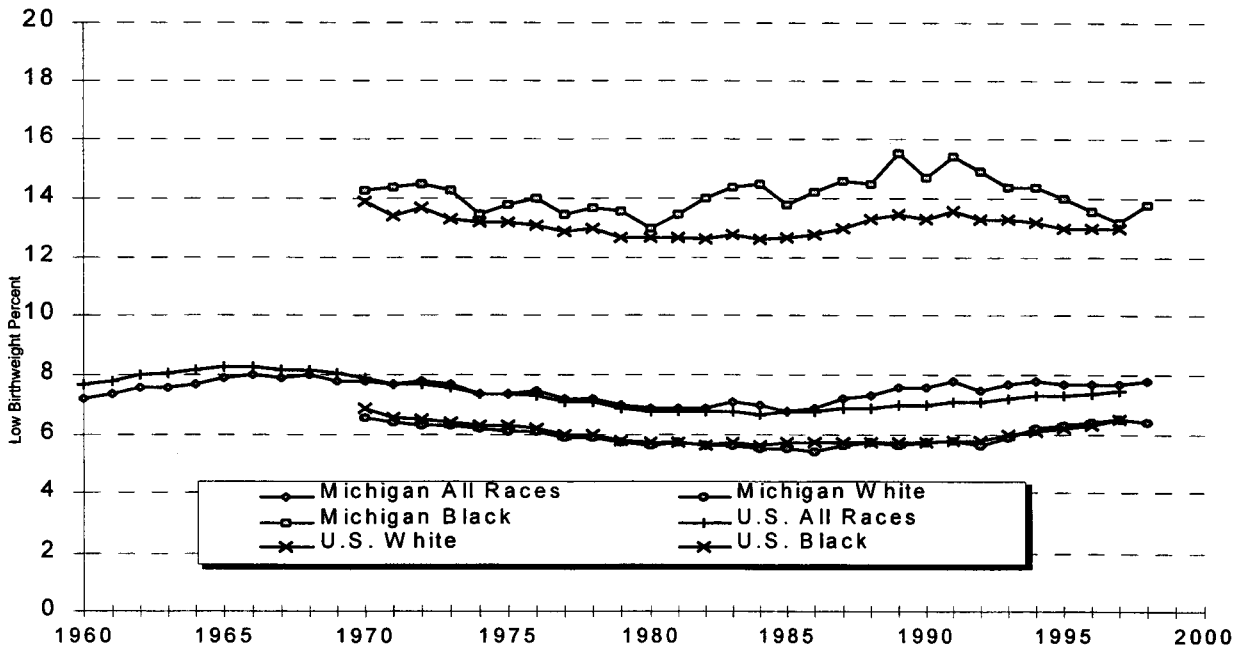
Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Low Birthweight A subgroup of major importance when analyzing historical birthweight trends is the category of infants weighing less than 2,500 grams (approximately 5 pounds 8 ounces or less) at birth. Such infants have historically experienced higher mortality in their first year of life than heavier infants.

Figure 1.11 displays the percent of low birthweight infants born to Michigan and the United States

residents over the last thirty-eight years. In 1960 7.2 percent of the live births in Michigan had low birthweight. Between 1960 and 1968, the percentage increased, reaching a high for the 38-year period in both 1966 and 1968 (8.0). The percentage generally declined until 1985 when the percent was 6.8, the lowest rate since 1982. It rose to 7.8 in 1998. The pattern for the United States was similar. By 1997 the low birthweight percentage for the nation had increased to 7.5 percent.

Figure 1.11
Percent of Low Birthweight Live Births by Race
 Michigan Residents, 1960-1998
 and United States Residents, 1960-1997



Note: Low birthweight data are not available by race prior to 1970. Low birthweight for 1960-1969 is 2500 grams or less and for 1970-current low birthweight is less than 2500 grams.

Source: 1960-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH
 Monthly Vital Statistics Report, National Center for Health Statistics

The low birthweight percentage for infants of black mothers was 13.8 percent compared with 6.0 to 7.7 percent for infants born to mothers of other races and ancestry groups (Table 1.10).

The low birthweight percent varied by adequacy of prenatal care as indicated by the *Kessner Index*. For the race and ancestry groups, the low birthweight percentages were higher for infants born to mothers with inadequate care than to mothers with adequate prenatal care.

At birth, 13.8 percent of the infants born to black women weighed less than 2,500 grams. Of infants born to black women with adequate care, a lower percentage (12.1) weighed less than 2,500 grams. The low birthweight percentage for infants born to black women with adequate care was higher than the percentage for infants born to women of other race and ancestry groups at all levels of prenatal care. The low birthweight percentage was 1.6 to 2.3 times higher for infants born to black women with adequate care than for corresponding women of almost all other race and ancestry groups.

Table 1.10
Numbers and Percents of Low Birthweight Live Births
by Level of Prenatal Care, Race and Ancestry of Mother
Michigan Residents, 1998

Level of Prenatal Care (Kessner Index)	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Adequate	6,677	6.7	4,787	5.8	1,671	12.1	33	6.8	171	7.5	124	5.3	208	5.8
Intermediate	1,883	9.4	1,136	7.8	691	14.0	13	7.7	38	8.8	26	8.4	97	6.3
Inadequate	1,808	14.0	811	11.5	948	18.1	4	*	25	7.8	29	9.3	78	9.8
Total	10,468	7.8	6,800	6.5	3,343	13.8	50	6.9	234	7.7	180	6.0	389	6.6

Note: Records with unknown level of care are included only in the "Total" row. Percents are calculated by using the numbers in Table 1.8 as the denominator. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy in which prenatal care began, the number of prenatal visits and the length of pregnancy (i.e., for shorter pregnancies, fewer prenatal visits constitute adequate care). Records of other races or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

CONGENITAL ANOMALIES

One or more congenital anomalies were reported on the birth certificate for 1,569 of the 133,649 resident live births in 1998 (Table 1.11). This translates to a rate of 117.4 per 10,000 live births.

The method of reporting congenital anomalies on the birth record was altered with the 1989 birth certificate. The 1989 and later rates, based on check-box format reporting, are not comparable to rates obtained in previous years by literal entries.

While the check-box reporting format may help reduce the level of under reporting of congenital anomalies, the frequency of reporting of specific anomalies is affected by the reporting schedule.

Many conditions may not be apparent at the time the birth certificate is completed and filed. A more complete reporting of congenital anomalies is provided by the Birth Defects Registry in the Division for Vital Records and Health Statistics.

The congenital anomaly rate of 161.7 per 10,000 live births to black mothers was 50 percent higher than the rate of 107.5 for live births to white mothers and 51 percent higher than the rate of 107.0 for live births to mothers of races other than black or white.

The rates for all races varied with the age of the mother. Rates generally were higher for mothers over 35 years of age.

Table 1.11
Live Births with Congenital Anomalies Reported and Congenital Anomaly Rates
by Age and Race of Mother
Michigan Residents, 1998

Age of Mother in Years	Race							
	All Races		White		Black		All Other Races	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
<15	2	*	2	*	-	-	-	-
15-19	194	127.1	128	128.0	62	125.6	4	*
20-24	352	113.3	234	102.2	113	152.7	4	*
25-29	418	105.0	306	94.8	97	159.1	13	99.1
30-34	366	116.6	284	106.7	67	186.6	15	141.6
35-39	201	151.3	148	132.4	46	282.0	4	*
40+	36	140.7	29	139.1	6	156.3	1	*
Total	1,569	117.4	1,131	107.5	391	161.7	41	107.0
Median age at last birthday	27		28		25		29	

Note: Records with race not stated are included in the "All Races" column only. Records with age not stated are included only in the "Total" row. Rates are number of live births with congenital anomalies reported per 10,000 live births in race and age group (Table 1.2). Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

MEDICAL FACTORS ASSOCIATED WITH DELIVERY AND/OR LABOR

Complications of Pregnancy There were 39,321 deliveries (29.4 percent) reported with one or more complications of labor and/or delivery in 1998 (Table 1.12). Among the most commonly reported complications were moderate/heavy meconium (6,953 cases), breech/malpresentation of fetus (5,797 cases), fetal distress (5,307 cases), and premature rupture of membranes >12 hours (4,531 cases).

The proportions of live births for which there was at least one complication were relatively similar for

women of different races and ancestry groups (Table 1.12). The types of complications which were most common were also very similar among mothers of different race and ancestry groups, although the exact ordering by frequency of occurrence varied. The proportions for complications which are related to the mechanics of labor, *i.e.*, breech/malpresentation, dysfunctional labor, precipitate labor and cephalopelvic disproportion were less frequent for births to black women than to white women.

**Table 1.12
Numbers and Percents of Live Births by
Complications of Labor/Delivery, Race and Ancestry of Mother
Michigan Residents, 1998**

Complications of Labor/Delivery	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Meconium, moderate/heavy	6,953	5.2	4,814	4.6	1,929	8.0	30	4.2	164	5.4	134	4.5	368	6.2
Breech/malpresentation	5,797	4.3	4,796	4.6	822	3.4	42	5.8	109	3.6	116	3.9	206	3.5
Fetal distress	5,307	4.0	4,186	4.0	941	3.9	30	4.2	127	4.2	93	3.1	243	4.1
Premature rupture of membranes (>12 hours)	4,531	3.4	3,486	3.3	889	3.7	30	4.2	107	3.5	70	2.4	202	3.4
Dysfunctional labor	4,338	3.2	3,569	3.4	611	2.5	29	4.0	116	3.8	59	2.0	187	3.2
Precipitate labor (<3 hours)	3,788	2.8	3,058	2.9	583	2.4	27	3.7	108	3.5	137	4.6	140	2.4
Cephalopelvic disproportion	2,225	1.7	1,945	1.8	190	0.8	16	2.2	65	2.1	31	1.0	126	2.1
Prolonged labor	938	0.7	799	0.8	108	0.4	4	*	26	0.9	20	0.7	52	0.9
At least one complication	39,321	29.4	30,744	29.2	7,274	30.1	231	32.0	948	31.1	746	25.1	1,777	29.9
Total live births	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0

Note: Records of other race or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Maternal Risk Factors Women who smoked while pregnant accounted for 16.7 percent (22,380) of the live births in 1998 (Table 1.13). These data are consistent with statewide sample survey data. The reported percentage of live births to mothers who smoked while pregnant was highest for American Indian mothers (36.1 percent), was lower for white and black mothers (17.5 and 14.8 percent, respectively). Fewer mothers of Hispanic ancestry reported smoking during pregnancy (9.2 percent) than white or black mothers. Asian and Pacific Islander mothers and mothers of Arab ancestry had the lowest percentages of reported smoking during their pregnancy (2.8 and 4.2 percent respectively).

Only 1,679 (1.3 percent) of the 1998 birth certificates indicated the mother drank alcohol while pregnant. Based on other studies it is generally believed that reported numbers of mothers who drank while pregnant as obtained from birth certificates, underreport the frequency of this risk factor.

A weight gain during pregnancy of less than 16 pounds was reported for mothers of 10.8 percent (14,435) of the live births. The percentage for Hispanic mothers (14.7) was higher than any other race/ancestry category.

Table 1.13
Numbers and Percents of Live Births by Maternal Risk Factors, Race and Ancestry of Mother
Michigan Residents, 1998

Maternal Risk Factors	RACE										ANCESTRY			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Smoked tobacco while pregnant	22,380	16.7	18,418	17.5	3,584	14.8	261	36.1	84	2.8	124	4.2	548	9.2
Weight gain less than 16 pounds while pregnant	14,435	10.8	10,626	10.1	3,320	13.7	87	12.0	301	9.9	296	9.9	872	14.7
Drank alcohol while pregnant	1,679	1.3	1,339	1.3	316	1.3	16	2.2	8	0.3	9	0.3	55	0.9
Total live births	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0

Note: Records of other race or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Medical Risk Factors For 26.4 percent (35,253) of the 133,649 resident live births occurring in 1998, the mother had at least one medically relevant risk factor (Table 1.14). The most commonly specified medical risk factor was pregnancy-associated hypertension which occurred in mothers of 3.6 percent (4,787) of the live births. The next most common maternal medical risk factors were diabetes and hydramnios/ogligohydramnios which occurred in mothers of 2.6 percent (3,433) and 1.7 percent (2,256) of the live births. Drug use was reported on 0.9 percent of all live birth records.

The most common maternal medical risk factors varied among race and ancestry groups. Pregnancy-

associated hypertension and diabetes were the most common risk factors for white, American Indian and Hispanic mothers; pregnancy-associated hypertension and hydramnios/ogligohydramnios were the most common for black mothers; diabetes was most common for Asian and Pacific Islander mothers and for mothers of Arab ancestry.

The percent of births born to women with pregnancy-associated hypertension, diabetes, previous large or small infants and uterine bleeding were lower for births to black mothers than white mothers. The percent of births to women using drugs was highest for births to black mothers.

Table 1.14
Numbers and Percents of Live Births by Medical Risk Factors, Race and Ancestry of Mother
Michigan Residents, 1998

Risk Factors	Race										Ancestry			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Hypertension, pregnancy-associated	4,787	3.6	3,885	3.7	793	3.3	37	5.1	64	2.1	46	1.5	188	3.2
Diabetes	3,433	2.6	2,791	2.7	481	2.0	32	4.4	118	3.9	51	1.7	204	3.4
Hydramnios/ogligohydramnios	2,256	1.7	1,459	1.4	731	3.0	5	*	54	1.8	43	1.4	112	1.9
Anemia (Hct.30/Hgb.10)	2,047	1.5	1,428	1.4	531	2.2	14	1.9	64	2.1	42	1.4	121	2.0
Previous infant 4000+ grams	1,817	1.4	1,725	1.6	58	0.2	16	2.2	17	0.6	42	1.4	69	1.2
Lung disease	1,770	1.3	1,111	1.1	617	2.6	21	2.9	15	0.5	19	0.6	61	1.0
Previous preterm or small-for-gestational age infant	1,632	1.2	1,412	1.3	179	0.7	13	1.8	25	0.8	30	1.0	64	1.1
Uterine bleeding	1,509	1.1	1,286	1.2	157	0.6	12	1.7	44	1.4	59	2.0	50	0.8
Herpes	1,440	1.1	1,068	1.0	352	1.5	6	0.8	8	0.3	10	0.3	48	0.8
RH Sensitive	1,278	1.0	1,132	1.1	116	0.5	4	*	19	0.6	16	0.5	28	0.5
Drug use	1,179	0.9	553	0.5	610	2.5	11	1.5	4	*	1	*	34	0.6
Hypertension, chronic	940	0.7	695	0.7	232	1.0	5	*	7	0.2	12	0.4	26	0.4
At least one medical risk	35,253	26.4	26,341	25.0	7,997	33.1	219	30.3	604	19.8	490	16.5	1,480	24.9
Total live births	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0

Note: Records of other race or with race not stated are included only in the "All Races" column. Births with at least one medical risk does not equal the sum of all the risk factors specified because mothers may have multiple risk factors. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Method of Delivery Vaginal delivery was the most common method of delivery in 1998, accounting for 79.0 percent of the live births (Table 1.15). A national goal is to have a vaginal delivery for at least 35 percent of the mothers with a previous C-section by the year 2000. In 1998 about 26 percent of Michigan mothers with a previous C-section had a vaginal delivery.

Lowering C-section rates to no more than 15 per 100 deliveries including no more than 12 primary C-sections is a national goal for the year 2000. In 1989 the first year comparable data were available in Michigan, 13.6 percent of the deliveries were by

primary C-section and 9.1 percent were repeat C-section. By 1998, primary C-sections were performed in 13.0 percent of the live births and repeat C-sections were performed in 7.4 percent of the live births for a total of 20.4 percent of all deliveries performed by C-section.

Mothers of Arab ancestry had lower proportions of live births delivered by primary C-section. These groups have achieved the national goal for primary C-sections. White, black, Hispanic, American Indian and Asian and Pacific Islander mothers had somewhat higher proportions of live births delivered by primary C-section.

Table 1.15
Numbers and Percents of Live Births by Method of Delivery, Race and Ancestry of Mother Michigan Residents, 1998

Procedures During and Method of Delivery	Race										Ancestry			
	All Races		White		Black		Amer. Indian		Asian & P. I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Procedures														
Vacuum	5,780	4.3	4,945	4.7	542	2.2	31	4.3	238	7.8	90	3.0	266	4.5
Forceps	2,562	1.9	2,010	1.9	438	1.8	9	1.2	98	3.2	57	1.9	119	2.0
Method														
Vaginal birth	105,573	79.0	82,978	78.9	19,139	79.2	555	76.9	2,487	81.5	2,524	84.8	4,778	80.5
Vaginal birth after previous C-section	3,447	2.6	2,750	2.6	608	2.5	12	1.7	70	2.3	41	1.4	172	2.9
Primary C-section	17,414	13.0	13,508	12.8	3,335	13.8	103	14.3	392	12.8	294	9.9	671	11.3
Repeat C-section	9,902	7.4	8,024	7.6	1,643	6.8	59	8.2	153	5.0	127	4.3	470	7.9
Unknown method	760	0.6	651	0.6	62	0.3	5	*	20	0.7	32	1.1	17	0.3
Total live births	133,649	100.0	105,161	100.0	24,179	100.0	722	100.0	3,052	100.0	2,977	100.0	5,936	100.0

Note: Records of other race or with race not stated are included only in the "All Races" column. Vaginal birth method includes "Vaginal birth after previous C-section". Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Abnormal Conditions at Birth In 1998, 10,105 babies were born with at least one recorded abnormal condition at birth (Table 1.16). The highest percentage for a specified abnormal condition was associated with live born infants who received assisted ventilation for less than 30 minutes (2.0 percent). The next

two most frequent abnormal conditions were a five minute Apgar score under 7 and hyaline membrane disease/RDS (Respiratory Distress Syndrome), respectively. These three conditions, were generally also the most frequently seen for each race and ancestry group.

Table 1.16
Numbers and Percents of Live Births with Abnormal Condition
by Race and Ancestry of Mother
Michigan Residents, 1998

Abnormal Conditions	Race										Ancestry			
	All Races		White		Black		Amer. Indian		Asian & P.I.		Arab		Hispanic	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Assisted ventilation <30 minutes	2,621	2.0	1,968	1.9	575	2.4	18	2.5	53	1.7	26	0.9	72	1.2
5 minute Apgar score <7	1,666	1.2	1,101	1.0	510	2.1	9	1.2	32	1.0	21	0.7	72	1.2
Hyaline membrane disease /RDS	1,298	1.0	924	0.9	341	1.4	9	1.2	22	0.7	22	0.7	73	1.2
Assisted ventilation >30 minutes	1,048	0.8	781	0.7	237	1.0	4	*	23	0.8	15	0.5	42	0.7
Birth injury	674	0.5	572	0.5	80	0.3	6	0.8	14	0.5	13	0.4	28	0.5
At least one condition	10,105	7.6	7,778	7.4	2,000	8.3	47	6.5	247	8.1	214	7.2	428	7.2
Total live births	133,649		105,161		24,179		722		3,052		2,977		5,936	

Note: Records of other race or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Multiple Births Of the 133,649 Michigan resident births in 1998, there were 1,985 sets of twins, 87 sets of triplets and eight sets of multiple births of four or more born. This compares to 1,495 sets of twins, 23 sets of triplets and one set of multiple births of four or more born in 1980 from a total of 145,162 births (Table 1.17).

Table 1.17
Live Births by Plurality
Michigan Residents, 1980 - 1998

Year	Live Births	Sets of Twins	Sets of Triplets	Sets of 4 or More
1980	145,162	1,495	23	1
1981	140,579	1,426	25	1
1982	137,950	1,377	16	-
1983	133,026	1,415	14	-
1984	135,782	1,413	19	-
1985	138,052	1,506	21	1
1986	137,626	1,555	27	1
1987	140,466	1,549	27	2
1988	139,635	1,584	30	2
1989	148,164	1,858	42	8
1990	153,080	1,897	41	1
1991	149,478	1,933	38	1
1992	143,827	1,842	43	2
1993	139,560	1,748	60	2
1994	137,844	1,901	69	6
1995	134,169	1,795	62	1
1996	133,231	1,809	77	12
1997	133,549	1,921	72	9
1998	133,649	1,985	87	8

Source: 1980-1998 Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

PLACE OF OCCURRENCE

Of some confusion to persons not familiar with vital records data is the difference between occurrence and residence figures. Information on events to residents of Michigan that occur throughout the country and, in some instances, outside United States boundaries, is collected in order to obtain the full scope of activity for the state population.

Resident Births In 1998 1,627 Michigan resident live births occurred outside the state. Information on these events was forwarded to the state of Michigan for statistical purposes only. While only 1.2 percent of the total for the state was involved, statistics for the counties on Michigan's southern and northwestern borders would be strongly affected were this information not available.

Table 1.18 shows that births in the four border states comprise 89.6 percent of all resident live births that occurred out of state. Live births to Michigan residents occurred in 40 of the 50 states in 1998.

Non-resident Births The number of nonresident live births that occurred in Michigan in 1998 was 425. Information about those events was shared with the appropriate states by the State of Michigan under specific confidentiality guidelines so they might have a complete statistical file on their residents. Infants born in Michigan to mothers from the four border states and Canada comprised 76.9 percent of these events, as shown in Table 1.18. There were live births in Michigan to residents of 33 other states, and at least seven foreign countries.

Table 1.18
Michigan Live Births
Occurring Outside Michigan to Michigan Residents by Place of Occurrence
and Occurring in Michigan to Non-Michigan Residents by Place of Residence, 1998

Geographic Area	Live Births to Residents Occurring Outside Michigan		Live Births to Non-Residents Occurring in Michigan	
	Number	Percent	Number	Percent
Total	1,627	100.0	425	100.0
Ohio	663	40.7	67	15.8
Indiana	520	32.0	47	11.1
Wisconsin	238	14.6	153	36.0
Georgia	84	5.2	4	*
Illinois	36	2.2	14	3.3
Florida	10	0.6	12	2.8
Minnesota	7	0.4	3	*
Texas	6	0.4	10	2.4
New York	5	*	6	1.4
Oklahoma	5	*	1	*
Maryland	4	*	3	*
Colorado	4	*	2	*
California	3	*	3	*
New Mexico	3	*	3	*
Virginia	3	*	2	*
Alabama	3	*	1	*
New Jersey	3	*	1	*
South Carolina	3	*	1	*
North Carolina	2	*	4	*
Tennessee	2	*	3	*
Pennsylvania	2	*	2	*
Arizona	2	*	1	*
Other States	19	1.2	18	4.2
Canada	-	-	46	10.8
Other Countries	-	-	7	1.6
Unknown	-	-	11	2.6

Note: Asterisk (*) indicates that data do not meet standards of reliability or precision.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

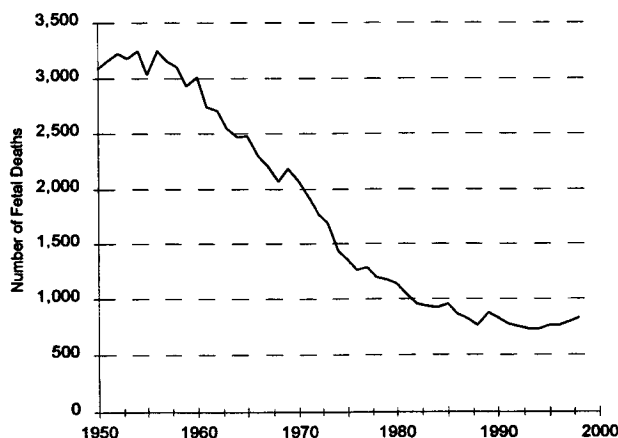
FETAL DEATHS

The requirements for reporting of fetal death information has varied over time in Michigan. Reports of fetal deaths prior to 1927 were received in conjunction with the reporting of live births. The statute required reporting of all births with no distinctions made as to whether the child was live born or stillborn. There were also no specific definitions when a child should be considered stillborn nor when a stillborn should be reported. In 1927, legislation was enacted to require reporting of all stillborns defined as follows: "A stillbirth shall mean a child in which there is no movement of voluntary muscles or effort to breathe after birth. Both a birth and death certificate and a burial or removal permit shall be required for each stillborn child which has advanced to the fifth month of uterogestation." This definition and reporting procedure remained in effect until 1952 when a separate certificate of stillbirth was initiated by Act 66 of 1952. The definition for when to report, while similar, was changed to read as follows: "Death prior to the complete extraction from its mother of a

product of conception, having passed through at least the 20th week of gestation; the fetus shows no signs of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles." This procedure currently remains in effect, though the definition of a fetal death was changed again in 1989 to the following: "Fetal death means the death of a fetus which has completed at least 20 weeks of gestation or weighs at least 400 grams."

The number of fetal deaths in Michigan has declined from 3,095 in 1950 to 830 in 1998 (Figure 1.12). The fetal death ratio has also declined, from 19.3 per 1,000 live births in 1950 to 6.2 in 1998. The fetal death ratio for Michigan has been lower than the national fetal death ratio since 1950 (Figure 1.13). In 1996, the Michigan ratio of 5.7 was 17 percent lower than the national rate of 6.9 (Table 1.19). It should be noted that the definition of a fetal death used in Michigan differs slightly from that used in most states.

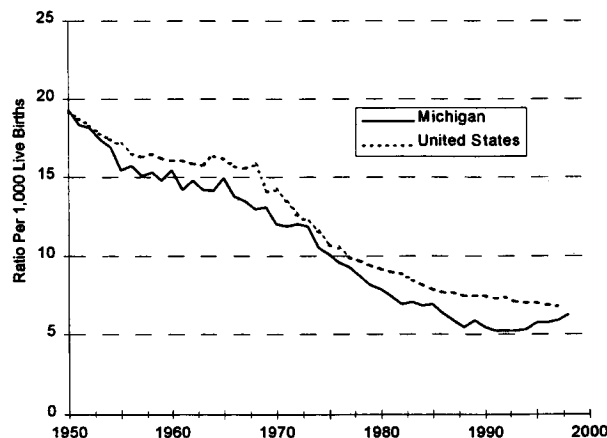
Figure 1.12
Fetal Deaths
Michigan Residents, 1950-1998



Note: A fetal death is death prior to the complete expulsion or extraction from its mother, having passed through at least the 20th week of gestation or weighing 400 grams. Fetal death does not include induced terminations.

Source: 1950-1998 Michigan Resident Fetal Death Files, Division for Vital Records and Health Statistics, MDCH

Figure 1.13
Fetal Death Ratios
Michigan Residents, 1950-1998 and
United States Residents, 1950-1997



Note: A fetal death is death prior to the complete expulsion or extraction from its mother, having passed through at least the 20th week of gestation or weighing 400 grams. Fetal death does not include induced terminations. Ratios are per 1,000 live births. United States ratios prior to 1933 are for registration areas only. United States ratios are based on three different definitions of fetal death:

1. Prior to 1942; all reported fetal death regardless of period of gestation.
2. 1942 to 1968; fetal deaths with gestational age 20 weeks or more or not stated.
3. 1969 to current; fetal deaths of stated or presumed period of gestation of 20 or more weeks.

Source: 1950-1998 Michigan Resident Fetal Death Files, Division for Vital Records and Health Statistics, MDCH

Table 1.19
Fetal Deaths and Fetal Death Ratios
 Michigan and United States Residents
 Selected Years, 1900-1998

United States		Year	Michigan	
Fetal Deaths	Fetal Death Ratio		Fetal Deaths	Fetal Death Ratio
---	---	1900	1,325	30.3
---	---	1910	2,559	39.9
70,010	39.4	1920	3,770	40.9
86,466	39.2	1930	3,714	37.6
73,802	31.3	1940	2,602	26.3
68,262	19.2	1950	3,095	19.3
68,480	16.1	1960	3,008	15.4
52,961	14.2	1970	2,060	12.0
33,796	10.7	1975	1,356	10.1
33,353	9.2	1980	1,135	7.8
31,386	7.5	1990	830	5.4
30,160	7.3	1991	775	5.2
30,256	7.4	1992	755	5.2
28,766	7.1	1993	726	5.2
27,937	7.0	1994	731	5.3
27,294	7.0	1995	767	5.7
27,069	6.9	1996	759	5.7
26,486	6.8	1997	798	5.9
---	---	1998	830	6.2

Note: A fetal death is death prior to the complete expulsion or extraction from its mother, having passed through at least the 20th week of gestation or weighing 400 grams. Fetal death does not include induced terminations. Ratios are per 1,000 live births. United States data for 1922 is used for 1920.

Source: 1900-1998 Michigan Resident Fetal Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

CAUSES OF FETAL DEATH

A classification of fetal deaths by underlying cause of death is contained in Table 1.20. In 1998, 333 of the total 830 deaths were assigned to the category of "other and ill-defined conditions originating in the perinatal period". More than a third (36 percent) of the remaining fetal deaths for which a specific cause was stated were attributed to complications of placenta, cord, and membranes (ICD 762). This is a group of maternal conditions which includes placenta previa, premature separation of the placenta, placental hemorrhage, and compression of the umbilical cord.

Third in frequency was the category maternal complications of pregnancy (ICD 761), which was listed as the cause of 101 fetal deaths. This includes such complications as premature rupture of membranes, multiple pregnancy, and incompetent cervix.

Table 1.20
Fetal Deaths and Fetal Death Ratios by Underlying Cause of Death
 Michigan Residents, 1998

Cause of Death (ICD-9 codes)	Frequency	Ratio
Other and ill-defined conditions originating in the perinatal period (779)	333	249.2
Fetus or newborn affected by complications of placenta, cord and membranes (762)	179	133.9
Fetus or newborn affected by maternal complications of pregnancy (761)	101	75.6
Fetus or newborn affected by maternal conditions which may be unrelated to present pregnancy (760)	46	34.4
All congenital anomalies combined (740-759)	82	61.4
All other causes	89	66.6
Total	830	621.0

Note: A fetal death is death prior to the complete expulsion or extraction from its mother, having passed through at least the 20th week of gestation or weighing 400 grams. Fetal death does not include induced terminations. ICD refers to codes defined in Ninth Revision of the International Classification of Diseases, WHO. Ratios are the number of resident fetal deaths per 100,000 resident live births.

Source: 1998 Michigan Resident Fetal Death File, Division for Vital Records and Health Statistics, MDCH

MORTALITY

SECTION II



MORTALITY

OVERVIEW

In 1998 there were 84,906 deaths recorded for Michigan residents, 1,912 more than in the previous year. The crude death rate per 1,000 population was 8.7, up from 8.5. This is the first increase since 1993 (Table 2.1). The age-adjusted death rate increased in 1998, being 1.3 percent higher than the age-adjusted rate for 1997. The age-adjusted rate serves as a better measure for comparing mortality over time than a crude death rate as age-adjusted death rates control for most of the differences or variations in the age composition of the populations.

There were 1,091 infant deaths in 1998, six more than in 1997. The 1998 infant death rate of 8.2 was slightly higher than the 1997 rate of 8.1, while the neonatal death rate decreased from 5.6 to 5.3 in 1998 (5 percent decrease). The infant mortality rate has decreased more in the eight years since 1990 than in the 1950s, 1960s and 1980s. Only the decade between 1970 and 1980 had a larger decrease (37 percent) than has been observed during the last eight years (23 percent).

The median age at death for Michigan residents in 1998 was 76 years. Females dying in 1998 had a median age at death of 79 years, six years higher than the median age at death of 73 years for males.

The leading cause of death in 1998 was diseases of the heart, accounting for 27,851 deaths or an average of 76 deaths per day. There were 19,442 deaths due to cancer, the second leading cause of death in 1998, or an average of 53 deaths per day. The other leading causes of death were cerebrovascular diseases (stroke), chronic obstructive pulmonary diseases (C.O.P.D.), unintentional injuries, pneumonia and influenza, diabetes mellitus, kidney disease, chronic liver disease and cirrhosis and suicide.

An Overview, 1998

Resident Deaths	84,906
Crude Death Rate (deaths per 1,000 population)	8.7
Infant Deaths	1,091
Infant Death Rate (infant deaths per 1,000 live births)	8.2
Neonatal Deaths	709
Neonatal Death Rate (neonatal deaths per 1,000 live births)	5.3
Perinatal Deaths	1,405
Perinatal Death Rate (perinatal deaths per 1,000 total births)	10.4
Maternal Deaths	8
Maternal Death Rate (maternal deaths per 100,000 live births)	6.0
Median Age at Death	76
Median Age at Death for Males	73
Median Age at Death for Females	79
Deaths from Heart Disease per Day	76
Deaths from Cancer per Day	53
Deaths from Stroke per Day	16
Deaths from C.O.P.D. per Day	10

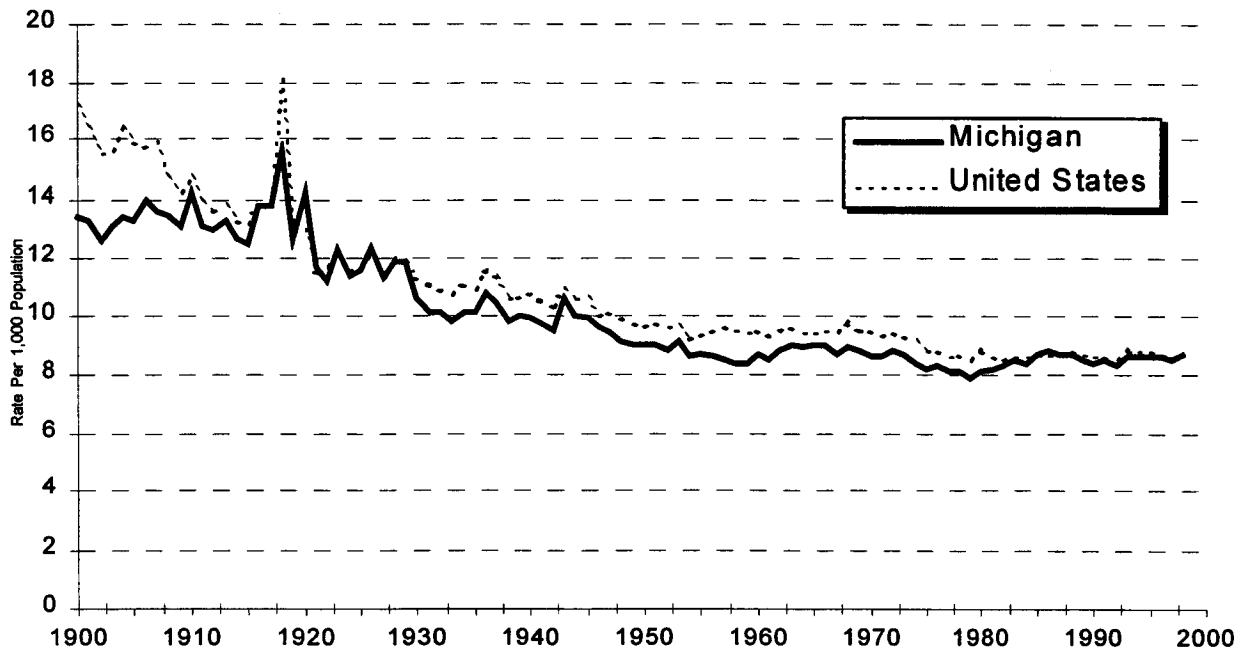
Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

TRENDS IN MICHIGAN

Between 1900 and 1998 the number of deaths occurring to Michigan residents increased from 32,453 to 84,906. The 31,472 deaths recorded in 1902 was the lowest number of resident deaths in this century, while the number of resident deaths recorded in 1998 (84,906) was the greatest number of resident deaths ever recorded in Michigan (Table 4.1).

Although the total number of deaths increased between 1900 and 1998, the increase is due to an aging and increasing population. The crude death rate decreased from 13.4 (per 1,000 population) in 1900 to 8.7 in 1998. The 1979 death rate of 7.9 was the lowest crude death rate ever recorded for Michigan. The highest death rate (15.6) was observed in 1918 (Figure 2.1).

Figure 2.1
Crude Death Rates
Michigan and United States Residents, 1900 - 1998



Note: United States rates for 1971-1979 have been revised using population estimates based on the 1980 Census enumeration. 1998 U.S. data are provisional.

Source: 1900-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Reports, National Center for Health Statistics

**MICHIGAN AND UNITED STATES
MORTALITY**

A comparison of the number of deaths and crude death rates for Michigan and the United States for the period 1970-1998 is presented in Table 2.1 and Figure 2.1. Between 1970 and 1984, the Michigan rates were below the United States rates. Since 1985 Michigan and United States rates have been equal or close. The Michigan rates increased slightly between 1970 and 1998 (from 8.6 per 1,000 population to 8.7), while national rates decreased 9 percent (from 9.5 per 1,000 population to 8.6) in the same time period.

Table 2.1
Number of Deaths and Crude Death Rates
Michigan and United States Residents, 1970 - 1998

United States		Year	Michigan	
Number	Rate		Number	Rate
1,921,031	9.5	1970	76,321	8.6
1,989,841	8.8	1980	74,991	8.1
2,148,463	8.6	1990	78,501	8.4
2,169,518	8.6	1991	79,738	8.5
2,175,613	8.5	1992	78,916	8.3
2,268,553	8.8	1993	82,286	8.6
2,278,994	8.8	1994	82,644	8.6
2,312,132	8.8	1995	83,405	8.6
2,314,690	8.7	1996	83,496	8.6
2,314,245	8.6	1997	82,994	8.5
2,331,000	8.6	1998	84,906	8.7

Note: Crude death rates are deaths per 1,000 population. 1998 U.S. data are provisional.

Source: 1970-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Reports, National Center for Health Statistics

MORTALITY DIFFERENCES BY SEX AND RACE

During the period 1970-1998 the age-adjusted death rates for Michigan males and females were usually slightly higher than the national rates (Figure 2.2).

In 1970, the age-adjusted death rate for males was about 75 percent higher than for females in both Michigan and the United States. The difference decreased to about 60 percent in 1997.

The national and Michigan age-adjusted death rates displayed in Figure 2.3 were similar for white males until 1988. Since 1989 the rates for Michigan white males have been slightly lower than the national white male rates. In contrast, the Michigan white female rates were slightly higher than the national white female rates during this 27 year period.

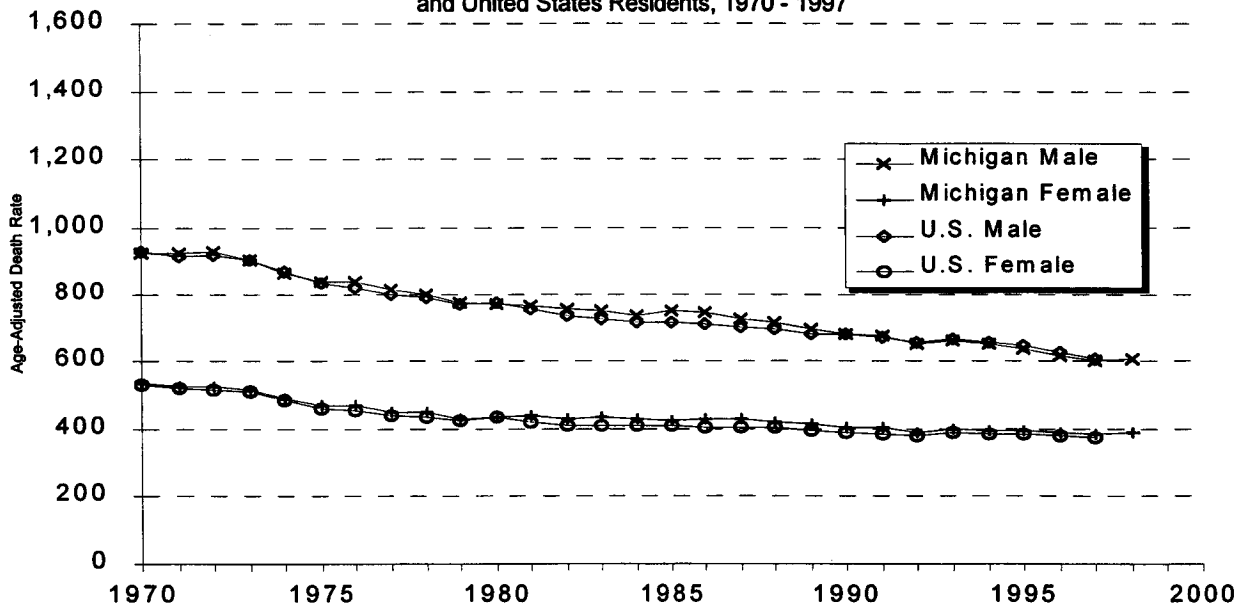
During the period 1970-1997, Michigan age-adjusted death rates for black males were usually higher than their national counterparts (Figure 2.4). The rates for Michigan black females were slightly lower

than the national rates prior to 1981, were higher from 1981 to 1993, and were again slightly lower from 1994 to 1997.

Mortality rate disparities between the black male and white male population increased during the last twenty-eight years. Michigan age-adjusted rates for black males were 43 percent higher than their white counterparts in 1970. By 1998 black male rates were 63 percent higher than rates for their white counterparts.

Steady declines have generally occurred since 1970 both in Michigan and the United States in age-adjusted death rates in each race-sex group. For Michigan black persons, male and female age-adjusted rates declined 28 and 33 percent, respectively. The United States rates for these groups declined by 31 and 34 percent, respectively, during this period. The Michigan rates for white males and females declined 36 and 28 percent, while national rates dropped 36 and 29 percent, respectively.

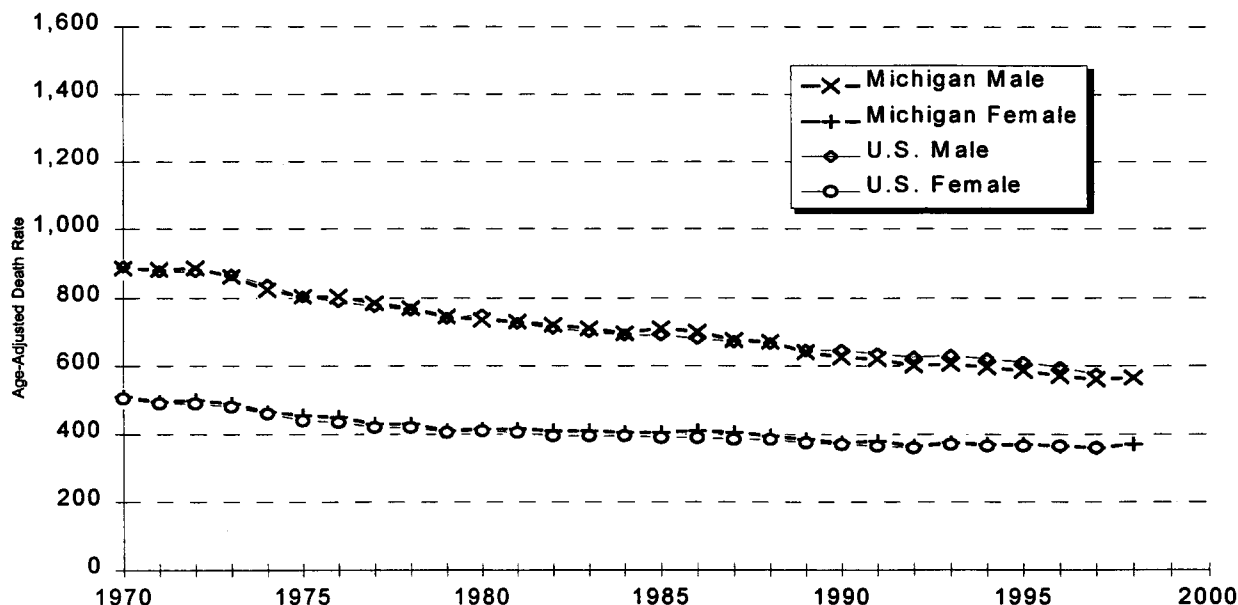
Figure 2.2
Total Age-Adjusted Death Rates by Sex
Michigan Residents, 1970-1998
and United States Residents, 1970 - 1997



Note: Age-adjusted death rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes).

Source: 1970-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Reports, National Center for Health Statistics

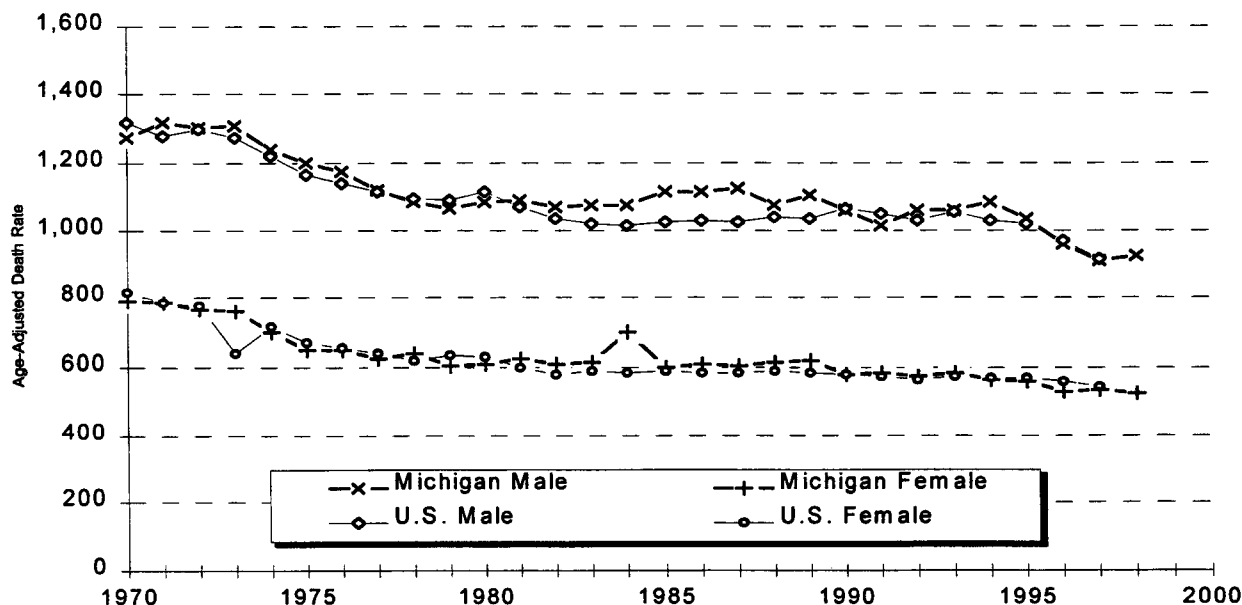
Figure 2.3
White Age-Adjusted Death Rates by Sex
 Michigan Residents, 1970-1998 and United States Residents, 1970 - 1997



Note: Age-adjusted death rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes).

Source: 1970-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
 Monthly Vital Statistics Reports, National Center for Health Statistics

Figure 2.4
Black Age-Adjusted Death Rates by Sex
 Michigan Residents, 1970-1998 and United States Residents, 1970 - 1997



Note: Age-adjusted death rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes).

Source: 1970-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
 Monthly Vital Statistics Reports, National Center for Health Statistics

MORTALITY BY RACE AND ANCESTRY

Table 2.2 presents data on the number of deaths by race for the period 1980-1998 and ancestry since 1989. In 1998 deaths of white persons (72,081) accounted for 84.9 percent of all deaths, while deaths of black persons (12,104) constituted 14.3 percent of the state total. For less than one percent of the deaths, the race was reported as American Indian or Asian and Pacific Islander. For 0.8 percent and 0.9 percent of the deaths, the ancestry was listed as Arab or Hispanic, respectively.

It should be noted that data on race and ancestry are derived from the death certificates filed by funeral directors. Data from sources where race is self-enun-

merated, when matched with death data, indicate that there are larger numbers of American Indians and persons of races other than white and black dying than are reported as members of those groups on the death certificate.

However, the major increase in 1989 in the number of American Indian deaths listed as the decedent's race may be due to the inclusion of ancestry on the death certificate that year. By requesting information about ancestry, certifiers may be identifying American Indian decedents who might otherwise be identified as white. The increase in Asian and Pacific Islanders between 1988 and 1990 may also be due to the change in the death certificate.

Table 2.2
Number of Deaths by Race and Ancestry
Michigan Residents, Selected Years, 1980 - 1998

Year	Race						Ancestry	
	All Races	White	Black	American Indian	Asian/Pacific Islander	All Other Races	Arab	Hispanic
1980	74,991	64,897	9,704	137	92	1	--	--
1985	78,635	67,426	10,903	130	115	1	--	--
1986	80,177	68,602	11,283	139	132	2	--	--
1987	79,795	67,831	11,614	137	144	2	--	--
1988	80,075	68,191	11,569	132	149	3	--	--
1989	78,566	66,031	11,939	335	183	2	486	612
1990	78,501	66,156	11,739	352	215	5	471	603
1991	79,738	67,182	11,980	324	208	2	547	627
1992	78,916	66,377	11,868	389	233	2	508	635
1993	82,286	69,044	12,515	433	240	5	605	694
1994	82,644	69,409	12,572	385	240	6	604	710
1995	83,405	70,091	12,618	392	265	7	600	698
1996	83,496	70,665	12,069	428	304	1	576	764
1997	82,994	70,193	12,037	422	292	6	653	750
1998	84,906	72,081	12,104	374	306	4	682	803

Note: Death records with race not stated are included only in the "All Races" column.

Source: 1980,1985-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

**NUMBER OF DEATHS BY
AGE, RACE AND SEX**

Except for infancy and early childhood years, the numbers of deaths generally increased with age until about age 85. In Michigan, half of all deaths in 1998 occurred below or at age 76. For males half the deaths occurred below or at 73, while for females half occurred below or at age 79. Males represented

slightly less than half the deaths (49.4 percent) in 1998. Among black persons a higher percentage of deaths (52.9 percent) were to males.

Until age 79 more males than females died in each age group. After age 79 more females died.

Table 2.3
Number of Deaths by Age, Race and Sex
Michigan Residents, 1998

Age in Years	All Races			White			Black			All Other Races		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
<1	1,091	590	499	660	364	295	405	213	191	23	11	12
1-4	201	131	70	128	83	45	66	47	19	7	1	6
5-9	147	87	60	88	53	35	58	34	24	1	-	1
10-14	168	115	53	114	79	35	46	31	15	8	5	3
15-19	462	333	129	333	238	95	121	89	32	8	6	2
20-24	564	444	119	358	280	78	199	161	37	7	3	4
25-29	671	481	190	417	303	114	246	173	73	7	4	3
30-34	814	532	282	554	361	193	248	161	87	11	9	2
35-39	1,294	797	497	915	568	347	351	211	140	27	17	10
40-44	1,897	1,198	699	1,334	851	483	535	330	205	27	16	11
45-49	2,554	1,578	976	1,768	1,125	643	754	435	319	29	16	13
50-54	3,046	1,832	1,214	2,277	1,380	897	730	436	294	37	15	22
55-59	3,590	2,199	1,391	2,853	1,752	1,101	698	424	274	36	21	15
60-64	4,828	2,782	2,046	3,923	2,247	1,676	836	489	347	63	42	21
65-69	7,044	4,066	2,978	5,912	3,452	2,460	1,068	582	486	62	31	31
70-74	10,309	5,744	4,565	8,826	4,954	3,872	1,380	740	640	97	47	50
75-79	12,039	6,268	5,771	10,540	5,502	5,038	1,412	717	695	84	49	35
80-84	12,964	5,916	7,048	11,612	5,305	6,307	1,282	576	706	66	32	34
85-89	11,023	4,095	6,928	10,078	3,748	6,330	899	329	570	46	18	28
90+	10,198	2,725	7,473	9,390	2,483	6,907	769	226	543	38	16	22
Not Stated	2	2	0	1	1	-	1	1	-	-	-	-
All Ages	84,906	41,915	42,988	72,081	35,129	36,951	12,104	6,405	5,697	684	359	325

Notes: Death records with race and/or sex not stated are included only in the "Total" column.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

AGE-SPECIFIC MORTALITY BY RACE

The race and age-specific mortality rates were lowest in Asian and Pacific Islanders and generally next lowest for the white population below age 85 years (Table 2.4). Age-specific rates were highest for the black population below age 65 years and highest for American Indians at 65-84 years of age.

Similarly, for both males and females the age-specific mortality rates are generally lowest for the white and Asian and Pacific Islander populations (Tables 2.5 and 2.6). Below 65 years of age, these rates are highest for black males and females. The age-ad-

justed rates indicate the same pattern of differences between the race and ancestry groups.

Caution must be exercised when interpreting the low age-adjusted rates for Asian and Pacific Islanders. They may be low due to inaccurate identification of the race. Also since this population increased by 68 percent between 1980 and 1990, predominately through in-migration, the low mortality rates for people over 45 years of age may be due in part to selective migration. Healthier older people may be more likely to migrate to another state or country than the less healthy people.

Table 2.4
Death Rates by Age and Race
Michigan Residents, 1998

Age in Years	Race				
	Total	White	Black	Amer. Indian	Asian/ P.I.
Crude Rate	868.7	888.7	832.2	541.3	220.3
<1	816.3	627.6	1,675.0	831.0	557.0
1-14	26.6	21.6	46.9	59.8	*
15-24	75.5	64.2	130.0	56.6	32.9
25-34	103.5	82.2	230.1	99.0	21.7
35-44	194.5	162.5	397.7	270.2	100.6
45-54	444.2	375.0	943.7	489.9	160.7
55-64	1,056.4	974.9	1,719.4	1,251.1	518.4
65-74	2,612.5	2,531.4	3,241.1	3,361.3	1,764.2
75-84	5,991.4	5,947.2	6,382.7	6,623.1	4,911.0
85+	16,019.8	16,526.9	11,778.8	16,000.0	16,923.1
Age-Adjusted Rate	487.9	456.7	696.5	570.4	319.9

Note: Death records with sex and/or race not stated were randomly allocated prior to computation of age-specific death rates. Records with age not stated were included in the "85 +" row. Death records with all other races stated are included only in the "Total" column. Rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.5
Death Rates by Age and Race
Michigan Male Residents, 1998

Age in Years	Race				
	Total	White	Black	Amer. Indian	Asian/P.I.
Crude Rate	879.7	881.7	945.5	554.4	246.1
< 1	859.6	672.1	1,735.9	847.5	507.6
1-14	33.6	27.4	61.3	58.1	6.1
15-24	112.8	94.7	202.2	62.7	41.1
25-34	143.5	112.7	342.6	165.1	28.5
35-44	245.8	203.8	551.6	360.4	111.4
45-54	551.3	466.3	1,245.3	372.0	222.2
55-64	1,301.5	1,185.4	2,344.5	1,657.7	624.8
65-74	3,294.9	3,187.8	4,226.1	3,244.6	2,506.4
75-84	7,480.0	7,400.7	8,157.2	9,777.8	6,595.4
85+	18,069.6	18,623.9	13,592.9	16,666.7	16,806.7
Age-Adjusted Rate	607.3	565.4	922.6	663.2	401.1

Note: Death records with sex and/or race not stated were randomly allocated prior to computation of age-specific death rates. Records with age not stated were included in the "85+" row. Death records with all other races stated are included only in the "Total" column. Rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.6
Death Rates by Age and Race
Michigan Female Residents, 1998

Age in Years	Race				
	Total	White	Black	Amer. Indian	Asian/P.I.
Crude Rate	858.2	895.3	733.1	528.6	194.7
<1	767.5	578.4	1,603.8	815.2	609.8
1-14	19.3	15.5	32.3	61.7	19.0
15-24	37.0	32.7	56.3	50.0	24.6
25-34	64.8	51.9	136.5	35.3	14.7
35-44	144.2	120.7	276.7	185.8	89.3
45-54	341.0	284.4	702.2	595.7	109.2
55-64	829.8	776.5	1,235.1	861.7	406.2
65-74	2,058.1	1,987.9	2,544.7	3,455.0	1,235.1
75-84	5,038.4	5,009.9	5,315.3	4,774.2	3,800.5
85+	15,203.1	15,695.0	11,043.9	15,662.7	17,142.9
Age-Adjusted Rate	389.3	366.5	525.3	501.4	260.1

Note: Death records with sex and/or race not stated were randomly allocated prior to computation of age-specific death rates. Records with age not stated were included in the "85+" row. Death records with all other races stated are included only in the "Total" column. Rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

LIFE EXPECTANCY

In 1998, the life expectancy at birth was 73.3 years for males and 78.8 years for females. Females demonstrated a significantly greater longevity than males, due to the higher mortality rates of males at all ages.

TRENDS IN LIFE EXPECTANCY

Life expectancies by sex in selected years for Michigan and United States residents are presented in Table 2.7. It can be seen that longevity has increased greatly in Michigan since 1901, by 19.9 years for males and by 23.7 years for females. Females born in Michigan in 1901 could expect to live 1.7 years longer than their male counterparts. By 1950 the differential in life expectancy between the sexes was 5.5 years. This disparity increased to 7.4 years by 1970. Since 1970 male life expectancy has risen faster than female life expectancy and the disparity has decreased to 5.5 years.

The life expectancy of Michigan residents was well above that for the nation in 1901, but this differential had virtually disappeared by 1950. Between 1980 and 1997 both males and females in Michigan had lower life expectancy than corresponding sex groups in the nation. By 1997, the life expectancies of males and females in Michigan were 0.4 and 0.5 years, respectively, below the national provisional life expectancy.

LIFE EXPECTANCY BY RACE

White persons have had a greater life expectancy than black persons of the same sex since 1950 (Table 2.8). The life expectancy of white males was 7.6 years greater than black males in 1998 compared to a differential of 5.8 years in 1950. The life expectancy for white males increased slowly after 1950, while the life expectancy of black males fluctuated over the period from 1950 to 1998. The black male life expectancy rose from 63.6 to 66.8 years from 1980 to 1998, while life expectancy for white males rose from 71.0 in 1980 to 74.4 years in 1998.

Table 2.7
Life Expectancy at Birth by Sex
Michigan and United States Residents
Selected Years, 1901 - 1998

United States		Year	Michigan	
Male	Female		Male	Female
47.6	50.6	1901	53.4	55.1
48.4	51.8	1910	53.9	56.2
53.6	54.6	1920	55.1	56.0
58.1	61.6	1930	59.8	62.8
60.8	65.2	1940	63.4	64.4
65.6	71.1	1950	65.7	71.2
66.6	73.1	1960	67.1	73.3
67.1	74.7	1970	67.2	74.6
68.8	76.6	1975	68.5	75.7
70.0	77.4	1980	70.0	76.9
71.8	78.8	1990	71.8	78.1
72.0	78.9	1991	71.8	78.1
72.3	79.1	1992	72.2	78.4
72.2	78.8	1993	71.3	78.3
72.4	79.0	1994	72.4	78.4
72.5	78.9	1995	72.7	78.5
73.1	79.1	1996	73.1	78.7
73.6	79.4	1997	73.2	78.7
—	—	1998	73.3	78.8

Note: Michigan data for years 1920, 1930 and 1940 are for white persons only.

Source: 1901-1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

In 1950, Michigan resident white females had an average longevity 8.5 years greater than black females. This disparity declined to 5.3 years by 1980 and decreased to 4.7 years by 1998. Life expectancy generally increased for white and black females between 1950 and 1998. For white and black females, life expectancy generally rose from 1950 through 1990, then fluctuated until 1998 when white females could be expected to live 79.5 years compared to 74.8 for black females.

Table 2.8
Life Expectancy at Birth by Sex and Race
Michigan Residents, Selected Years, 1950 - 1998

Population Subgroup	Year of Death												
	1950	1960	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998
White													
Male	66.2	67.5	68.2	71.0	73.1	73.2	73.6	73.6	73.8	74.1	74.3	74.4	74.4
Female	71.9	74.0	75.3	77.6	79.0	78.9	79.4	79.2	79.3	79.3	79.4	79.5	79.5
Black													
Male	60.4	63.6	59.9	63.6	63.9	63.7	64.6	64.1	64.2	64.8	66.0	66.2	66.8
Female	63.4	67.7	68.3	72.3	73.3	73.1	73.3	73.3	73.8	74.0	74.6	74.8	74.8

Note: Data for 1950 and 1960 are for persons of white and other than white race.

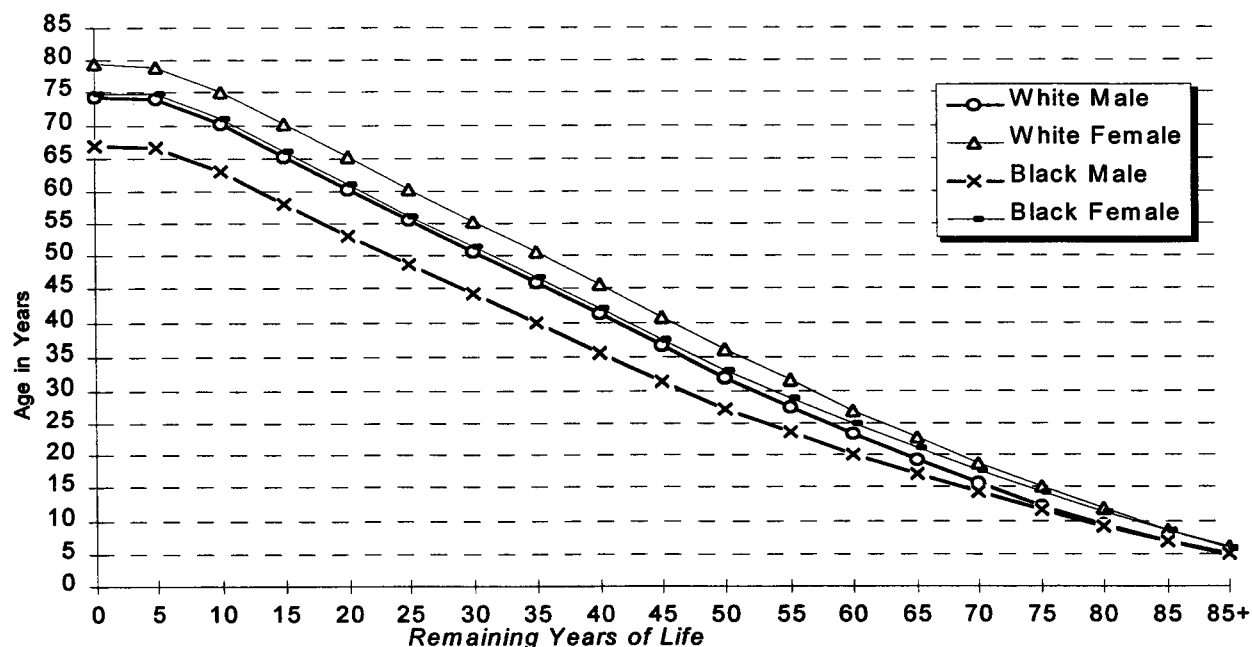
Source: 1950-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

YEARS OF LIFE REMAINING

The expected number of years of life remaining are presented graphically by age, race, and sex in Figure 2.5. The number of years of life remaining for females was greater than that for males throughout life. The average number of years remaining for white males and females surpassed or equaled that

of their black counterparts for all age groups. However, with advancing age the race disparity in years of life remaining diminished, so that black persons displayed similar expected years of life remaining with their white counterparts in age intervals over 69 years. (See Tables 4.19-4.27 for the values used in Figure 2.5)

Figure 2.5
Remaining Years of Life by Age, Sex and Race
Michigan Residents, 1998



Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

MARITAL STATUS

The numbers of deaths by marital status for men and women are displayed in Table 2.9. The majority of men were married at the time of death while the majority of women were widows. Men were more than twice as likely as women to be married at the time of death (55 percent compared to 25 percent). Conversely, women were three times as likely to be widows at the time of death as men were to be widowers (56 percent compared to 19 percent).

Table 2.9
Deaths by Sex and Marital Status
Michigan Residents, 1998

Marital Status	Males		Females	
	Number	Percent	Number	Percent
Total	41,915	100.0	42,991	100.0
Never Married	5,837	13.9	3,821	8.9
Divorced	4,769	11.4	4,186	9.7
Widowed	8,004	19.1	24,123	56.1
Married	23,131	55.2	10,758	25.0
Unknown	174	0.4	100	0.2

Note: Divorced includes legally separated.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

PLACE OF OCCURRENCE

There were 1,935 Michigan resident deaths in 1998 that occurred outside the state (Table 2.10). This represents 2.3 percent of all resident deaths. The states with the highest number of Michigan resident deaths were Florida and Ohio. The surrounding areas of Illinois, Indiana, Ohio and Wisconsin accounted for almost half of all resident deaths occurring outside Michigan.

Of the 1,157 non-residents who died in Michigan in 1998, 38 percent were from the surrounding areas while 24 percent were Floridians.

Table 2.10
Michigan Deaths
Occurring Outside Michigan to Michigan
Residents by Place of Occurrence and
Occurring in Michigan to Non-Michigan
Residents by Place of Residence, 1998

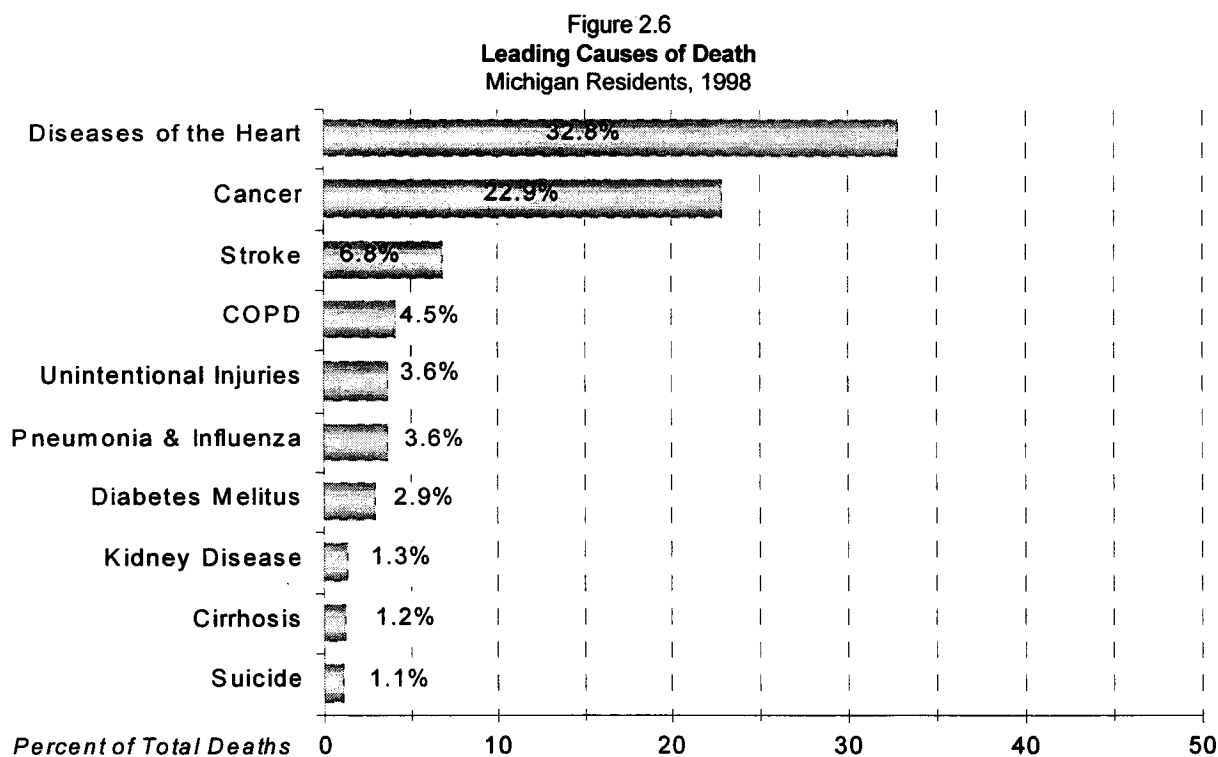
Geographic Area	Residents Dying Outside Michigan		Non-Residents Dying in Michigan	
	Number	Percent	Number	Percent
Total	1,935	100.0	1,157	100.0
Florida	473	24.4	281	24.3
Ohio	331	17.1	158	13.7
Indiana	262	13.5	73	6.3
Wisconsin	257	13.3	126	10.9
Arizona	91	4.7	21	1.8
Illinois	77	4.0	84	7.3
Texas	46	2.4	31	2.7
Minnesota	44	2.3	13	1.1
Tennessee	38	2.0	24	2.1
Kentucky	30	1.6	19	1.6
Nevada	29	1.5	5	0.4
Georgia	25	1.3	16	1.4
California	22	1.1	34	2.9
Alabama	19	1.0	17	1.5
Colorado	15	0.8	7	0.6
All Other States	160	8.3	187	16.2
Canada	-	-	29	2.5
All Other Areas	16	0.8	24	2.1
Unknown	-	-	8	0.7

Source: 1998 Resident and Occurrence Death Files, Division for Vital Records and Health Statistics, MDCH

LEADING CAUSES OF DEATH

Ten Leading Causes of Death Deaths due to the 10 leading causes accounted for more than 80 percent of all Michigan resident deaths in 1998. Diseases of the heart was the leading cause of death with 33 percent of all deaths. Another 23 percent of the deaths were due to cancer. Together these two causes of death were responsible for 56 percent of all Michigan resident deaths. The third leading cause of death was stroke with 7 percent of all deaths. The percentage of total deaths resulting from each of the 10 leading causes of death in 1998 is illustrated in Figure 2.6.

The ranking of leading causes changed in 1998 with suicide moving from the ninth to the tenth leading cause of death. Chronic liver disease and cirrhosis moved from tenth to ninth place. Nephritis, nephrotic syndrome and nephrosis (kidney disease) was one of the 10 leading causes of death, for the first time in 1996. Homicide was not one of the leading causes of death in Michigan in 1996 for the first time since 1988. The numbers of deaths and the death rates for the 10 leading causes in 1998 are shown in Table 2.11.



Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Cause-Specific Crude Death Rates Rates in Michigan were lower in 1998 than in 1997 for four of the 10 leading causes: cancer, unintentional injuries, kidney disease and suicide. The rates were higher in 1998 for diseases of the heart, stroke, chronic obstructive pulmonary diseases and allied conditions, pneumonia and influenza, diabetes mellitus and chronic liver disease and cirrhosis.

The order of the leading causes of death for Michigan and the United States was very similar in 1998 (Table 2.11). Suicide, the tenth leading cause of death in Michigan was the eighth in the United

States, while kidney disease ranked ninth in the United States and eighth in Michigan. Chronic liver disease ranked ninth in Michigan and tenth in the United States.

Michigan's mortality rates for heart disease, diabetes mellitus, kidney disease and chronic liver disease and cirrhosis were higher than the comparable national rates. The Michigan death rates for cancer, stroke, chronic obstructive pulmonary disease, unintentional injuries, pneumonia and influenza, and suicide were lower than the national rates.

Table 2.11
Leading Causes of Death and Cause-Specific Rates
Michigan and United States Residents, 1998

Michigan Rank	Cause of Death	Number of Deaths		Rate	
		Michigan	U.S.	Michigan	U.S.
1	Diseases of the Heart	27,851	726,974	285.0	271.6
2	Cancer	19,442	539,577	198.9	201.6
3	Stroke	5,760	159,791	58.9	59.7
4	Chronic Obstructive Pulmonary Diseases and Allied Conditions	3,804	109,029	38.9	40.7
5	Unintentional Injuries	3,098	95,644	31.7	35.7
6	Pneumonia and Influenza	3,096	86,449	31.7	32.3
7	Diabetes Mellitus	2,449	62,636	25.1	23.4
8	Kidney Disease	1,087	25,331	11.1	9.5
9	Chronic Liver Disease and Cirrhosis	981	25,175	10.0	9.4
10	Suicide	965	30,535	9.9	11.4
Sub Total		68,535	1,861,141	701.2	695.4
All Other Causes		16,374	453,104	167.5	169.3
Total		84,906	2,314,245	868.7	864.7

Note: Rates are per 100,000 population. 1998 U.S. data are provisional.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Leading Causes of Death by Race and Sex The numbers of deaths and crude death rates are presented by race and sex for the 10 leading causes of death in Tables 2.12 and 2.13. The order of the leading causes for each group was similar with some notable exceptions. Suicide, the overall tenth leading cause of death, was the eighth leading cause for white males. Pneumonia and influenza, the sixth leading

cause of death overall, was the fifth leading cause for white females. Homicide was the third and ninth leading cause of death for black males and females, respectively, but not one of the 10 leading causes of death overall. Finally, diabetes, the seventh leading cause overall, was the fourth leading cause for black females.

Table 2.12
Leading Causes of Death by Race and Sex
Michigan Residents, 1998

Cause of Death	All Races			White			Black			All Other Races		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Diseases of the Heart	27,851	13,519	14,332	24,095	11,659	12,436	3,557	1,757	1,800	190	99	91
Cancer	19,442	10,094	9,348	16,662	8,588	8,074	2,619	1,421	1,198	158	83	75
Stroke	5,760	2,218	3,542	4,991	1,882	3,109	721	315	406	48	21	27
Chronic Obstructive Pulmonary Diseases and Allied Conditions	3,804	1,925	1,879	3,468	1,738	1,730	302	170	132	32	16	16
Unintentional Injuries	3,098	1,975	1,125	2,551	1,603	948	496	342	154	47	27	20
Pneumonia/Influenza	3,096	1,442	1,654	2,670	1,208	1,462	414	226	188	11	8	3
Diabetes Mellitus	2,449	1,093	1,356	2,020	902	1,118	398	175	223	30	15	15
Kidney Disease	1,087	492	595	882	396	486	197	91	106	8	5	3
Chronic Liver Disease and Cirrhosis	981	648	333	797	532	265	169	111	58	14	4	10
Suicide	965	803	162	867	728	139	81	64	17	16	10	6
Total	84,906	41,915	42,991	72,084	35,129	36,954	12,104	6,405	5,697	680	359	321

Note: Death records with race/sex not stated are included only in the "Total" column.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.13
Leading Causes of Death and Crude Death Rates by Race and Sex
Michigan Residents, 1998

Cause of Death	All Races			White			Black		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Diseases of the Heart	285.0	283.7	286.1	297.1	292.6	301.3	244.5	259.4	231.6
Cancer	198.9	211.8	186.6	205.4	215.5	195.6	180.1	209.8	154.2
Stroke	58.9	46.5	70.7	61.5	47.2	75.3	49.6	46.5	52.2
Chronic Obstructive Pulmonary Diseases and Allied Conditions	38.9	40.4	37.5	42.8	43.6	41.9	20.8	25.1	17.0
Unintentional Injuries	31.7	41.4	22.5	31.4	40.2	23.0	34.1	50.5	19.8
Pneumonia/Influenza	31.7	30.3	33.0	32.9	30.3	35.4	28.5	33.4	24.2
Diabetes Mellitus	25.1	22.9	27.1	24.9	22.6	27.1	27.4	25.8	28.7
Kidney Disease	11.1	10.3	11.9	10.9	9.9	11.8	13.5	13.4	13.6
Chronic Liver Disease and Cirrhosis	10.0	13.6	6.6	9.8	13.4	6.4	11.6	16.4	7.5
Suicide	9.9	16.9	3.2	10.7	18.3	3.4	5.6	9.4	2.2
Total	868.7	879.7	858.3	888.7	881.7	895.4	832.2	945.5	733.1

Note: Rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Age-Adjusted Rates by Race and Sex These rates are presented for the 10 leading causes of death in Table 2.14. These rates adjust for the differences in age distributions among the race/sex groups. When comparing the crude rates of heart disease between white males and females, the rate for females is higher, but when adjusted for age the male rate is nearly double that of females. Crude rates for white females are higher for heart disease, stroke, pneumonia and influenza, kidney disease and diabetes mellitus, but after age-adjusting, the rates are higher in males.

The age-adjusted death rates for white females were lower than the rates for the other three race/sex groups for nine of the 10 leading causes of death. For deaths due to heart disease, the rates for white males, black males and black females were 80, 159

and 57 percent higher, respectively than for white females. For cancer deaths these differentials were 34, 97 and 17 percent. The greatest differentials between black and white female rates occurred for diabetes, chronic liver disease and cirrhosis, and kidney disease where the black female rates were 75 percent, 71 percent and 123 percent higher, respectively, than rates for white females.

Rates for black males and females were lower for suicides and chronic obstructive pulmonary diseases and allied conditions than their white counterparts. Black male and female rates were higher than white male and female rates for the remaining eight leading causes of death. The greatest differentials between black and white male rates occurred for pneumonia and influenza and kidney disease, where black male rates were 101 percent and 144 percent higher.

Table 2.14
Leading Causes of Death and Age-Adjusted Death Rates by Race and Sex
Michigan Residents, 1998

Cause of Death	All Races			White			Black		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Diseases of the Heart	139.6	182.7	104.2	132.4	174.8	97.1	194.2	251.3	152.4
Cancer	126.1	150.1	108.7	122.1	143.3	106.7	159.2	209.7	124.4
Stroke	26.3	28.0	24.6	24.6	26.1	23.1	37.4	43.4	32.9
Chronic Obstructive Pulmonary Diseases and Allied Conditions	20.9	25.4	17.9	21.2	25.5	18.4	17.4	23.9	12.8
Unintentional Injuries	26.8	37.8	16.5	25.9	36.0	16.1	32.6	50.6	17.6
Pneumonia/Influenza	13.3	17.2	10.5	12.3	15.5	10.1	20.6	31.1	12.8
Diabetes Mellitus	14.5	15.6	13.6	13.3	14.4	12.4	22.9	24.7	21.7
Kidney Disease	5.1	6.0	4.5	4.4	5.2	3.9	10.3	12.7	8.7
Chronic Liver Disease and Cirrhosis	8.0	11.6	4.7	7.4	10.8	4.2	12.3	18.8	7.2
Suicide	9.0	15.5	3.0	9.6	16.5	3.0	5.6	9.7	*
Total	487.9	607.3	389.3	456.7	565.4	366.5	696.5	922.6	525.3

Note: Age-adjusted death rates are based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates are computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Asterisk (*) indicates that data do not meet standards of reliability or precision.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Five Leading Causes by Age, Race and Sex
Age-specific mortality rates for the leading causes of death among residents of different ages, sexes and races are more varied than age-adjusted rates for the race-sex groups (Tables 2.15-2.19).

Leading causes of death for infants under one year are generally different than the causes observed for other age groups. The leading cause for all four race-sex groups of infants is certain conditions originating in the perinatal period. Congenital anomalies and sudden infant death syndrome were the second or third leading cause for infants in each group.

Unintentional injuries were the leading cause of death for white males and females from ages 1-34 years. Unintentional injuries were among the top leading causes of death for black males and females ages 1-34 years and were the leading cause for black males and females ages 1-14 years.

Homicide was the second leading cause of death for ages 1-4 and 15-34 years, and the third leading cause for ages 5-14 years. However, it was the leading cause of death for black males and black females ages 15-34 years. Nearly 50 percent of the homicides among Michigan residents occurred among black males 15-49 years of age. Compared to homicide rates in 1988 (184.0), the rate for black males ages 15-24 has decreased by 35 percent in 1998.

Suicide was the third leading cause of death overall for ages 15-34 and second among white males 15-34. Suicide was the third leading cause among white females and black males 15-24 and the fourth leading cause for white females ages 25-34 years.

Among persons 35 years and over, chronic conditions are responsible for the majority of deaths. Heart disease and cancer were the top two causes of death in all sex and race groups 35 years and older.

Table 2.15
Leading Causes of Death and Cause-Specific Rates by Age
 Michigan Residents, 1998

Age	Rank and Cause of Death	Number	Rate
All Ages	1. Diseases of the Heart	27,851	285.0
	2. Cancer	19,442	198.9
	3. Stroke	5,760	58.9
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	3,804	38.9
	5. Unintentional Injuries	3,100	31.7
	All Causes	84,906	868.7
Under 1 Year	1. Certain Conditions Originating in the Perinatal Period	528	36.8
	2. Congenital Anomalies	209	14.6
	3. Sudden Infant Death Syndrome	148	10.3
	4. Unintentional Injuries	35	2.4
	5. Homicide	17	1.2
All Causes	1,091	76.1	
1-4 Years	1. Unintentional Injuries	82	15.7
	2. Homicide	22	4.2
	3. Congenital Anomalies	20	3.8
	4. Cancer	13	2.5
	5. Diseases of the Heart	6	1.1
All Causes	201	38.4	
5-14 Years	1. Unintentional Injuries	137	9.7
	2. Cancer	35	2.5
	3. Homicide	27	1.9
	4. Congenital Anomalies	16	1.1
	5. Suicide	13	0.9
All Causes	315	22.3	
15-24 Years	1. Unintentional Injuries	392	28.9
	2. Homicide	214	15.8
	3. Suicide	132	9.7
	4. Cancer	48	3.5
	5. Diseases of the Heart	41	3.0
All Causes	1,026	75.5	
25-34 Years	1. Unintentional Injuries	381	26.6
	2. Homicide	205	14.3
	3. Suicide	177	12.3
	4. Cancer	158	11.0
	5. Diseases of the Heart	132	9.2
All Causes	1,485	103.5	
35-49 Years	1. Cancer	1,319	56.5
	2. Diseases of the Heart	1,134	48.5
	3. Unintentional Injuries	653	28.0
	4. Suicide	319	13.7
	5. Chronic Liver Disease & Cirrhosis	268	11.5
All Causes	5,745	245.9	
50-64 Years	1. Cancer	4,164	305.6
	2. Diseases of the Heart	3,306	242.7
	3. Stroke	432	31.7
	4. Unintentional Injuries	420	30.8
	5. Chronic Obstructive Pulmonary Diseases & Allied Conditions	415	30.5
All Causes	11,464	841.5	
65 and Over	1. Diseases of the Heart	23,209	1,911.8
	2. Cancer	13,703	1,128.7
	3. Stroke	5,062	417.0
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	3,271	269.4
	5. Pneumonia and Influenza	2,756	227.0
All Causes	63,580	5,237.2	

Note: Subtotals by sex and race do not add to the grand total as the race was not stated on records for 22 males and 15 females and sex was not stated for 1 white and 2 blacks. Age groups do not add to respective totals because records with age not stated are included only in the "All Ages" row. Rates may not agree with those shown elsewhere in this section since records with sex and race not stated were randomly allocated prior to rate calculation for the other tables, and were not included in calculations for this table. Cause-specific rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

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Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.16
**Leading Causes of Death and Cause-Specific Rates by Age,
 Michigan Resident White Males, 1998**

Age	Rank and Cause of Death	Number	Rate
All Ages	1. Diseases of the Heart	11,659	292.6
	2. Cancer	8,588	215.5
	3. Stroke	1,882	47.2
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	1,738	43.6
	5. Unintentional Injuries	1,603	40.2
	All Causes	35,129	881.7
Under 1 Year	1. Certain Conditions Originating in the Perinatal Period	162	326.6
	2. Congenital Anomalies	92	185.5
	3. Sudden Infant Death Syndrome	46	92.7
	4. Unintentional Injuries	13	26.2
	5. Stroke	8	16.1
	All Causes	364	733.8
1-4 Years	1. Unintentional Injuries	37	17.7
	2. Cancer	8	3.8
	3. Congenital Anomalies	4	*
	4-6. Homicide-Diseases of the Heart-Meningococcal Infection	3	*
	All Causes	83	39.8
	5-14 Years	1. Unintentional Injuries	59
2. Cancer		12	2.1
3. Congenital Anomalies		10	1.7
4-5. Homicide-Suicide		7	1.2
All Causes		132	22.9
15-24 Years		1. Unintentional Injuries	242
	2. Suicide	103	18.8
	3. Homicide	35	6.4
	4. Cancer	27	4.9
	5. Diseases of the Heart	17	3.1
	All Causes	518	94.7
25-34 Years	1. Unintentional Injuries	218	37.0
	2. Suicide	128	21.7
	3. Diseases of the Heart	63	10.7
	4. Cancer	56	9.5
	5. Homicide	20	3.4
	All Causes	664	112.7
35-49 Years	1. Diseases of the Heart	604	60.9
	2. Cancer	479	48.3
	3. Unintentional Injuries	356	35.9
	4. Suicide	238	24.0
	5. Chronic Liver Disease & Cirrhosis	140	14.1
	All Causes	2,544	256.3
50-64 Years	1. Diseases of the Heart	1,799	311.1
	2. Cancer	1,768	305.7
	3. Unintentional Injuries	241	41.7
	4. Chronic Liver Disease & Cirrhosis	198	34.2
	5. Chronic Obstructive Pulmonary Diseases & Allied Conditions	178	30.8
	All Causes	5,379	930.1
65 and Over	1. Diseases of the Heart	9,165	2,068.0
	2. Cancer	6,237	1,407.4
	3. Stroke	1,619	365.3
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	1,530	345.2
	5. Pneumonia and Influenza	1,081	243.9
	All Causes	25,443	5,741.1

Note: Subtotals by sex and race do not add to the grand total as the race was not stated on records for 22 males and sex was not stated for 1 white. Age groups do not add to respective totals because records with age not stated are included only in the "All Ages" row. Rates may not agree with those shown elsewhere in this section since records with sex and race not stated were randomly allocated prior to rate calculation for the other tables, and were not included in calculations for this table. Cause-specific rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.17
Leading Causes of Death and Cause-Specific Rates by Age
Michigan Resident Black Males, 1998

Age	Rank and Cause of Death	Number	Rate
All Ages	1. Diseases of the Heart	1,757	259.4
	2. Cancer	1,421	209.8
	3. Homicide	421	62.1
	4. Unintentional Injuries	342	50.5
	5. Stroke	315	46.5
	All Causes	6,405	945.5
Under 1 Year	1. Certain Conditions Originating in the Perinatal Period	123	800.1
	2. Sudden Infant Death Syndrome	35	227.7
	3. Congenital Anomalies	17	110.6
	4. Unintentional Injuries	8	52.0
	5. Homicide	6	39.0
	All Causes	213	1,385.5
1-4 Years	1. Unintentional Injuries	18	33.5
	2. Homicide	12	22.3
	3. Congenital Anomalies	6	11.2
	4. Cancer	2	*
	5-6. Pneumonia & Influenza-Chronic Obstructive Pulmonary Diseases & Allied Conditions	1	*
	All Causes	47	87.4
5-14 Years	1. Unintentional Injuries	31	24.0
	2. Cancer	8	6.2
	3. Homicide	6	4.7
	4-6. Chronic Obstructive Pulmonary Diseases & Allied Conditions-AIDS-Suicide	2	*
	All Causes	65	50.4
15-24 Years	1. Homicide	147	118.9
	2. Unintentional Injuries	45	36.4
	3. Suicide	14	11.3
	4. Diseases of the Heart	12	9.7
	5. Chronic Obstructive Pulmonary Diseases & Allied Conditions	7	5.7
	All Causes	250	202.2
25-34 Years	1. Homicide	134	137.5
	2. Unintentional Injuries	64	65.7
	3. Diseases of the Heart	24	24.6
	4-5. Suicide-AIDS	17	17.4
	All Causes	334	342.6
35-49 Years	1. Diseases of the Heart	196	142.0
	2. Cancer	134	97.1
	3. Homicide	89	64.5
	4. AIDS	87	63.0
	5. Unintentional Injuries	82	59.4
	All Causes	976	707.3
50-64 Years	1. Diseases of the Heart	436	632.2
	2. Cancer	376	545.2
	3. Stroke	55	79.7
	4. Pneumonia and Influenza	43	62.3
	5. Chronic Liver Disease & Cirrhosis	41	59.4
	All Causes	1,349	1,956.0
65 and Over	1. Diseases of the Heart	1,084	2,116.5
	2. Cancer	883	1,724.1
	3. Stroke	211	412.0
	4. Pneumonia and Influenza	140	273.4
	5. Chronic Obstructive Pulmonary Diseases & Allied Conditions	114	222.6
	All Causes	3,170	6,189.5

Note: Subtotals by sex and race do not add to the grand total as the race was not stated on records for 22 males and sex was not stated for 2 blacks. Age groups do not add to respective totals because records with age not stated are included only in the "All Ages" row. Rates may not agree with those shown elsewhere in this section since records with sex and race not stated were randomly allocated prior to rate calculation for the other tables, and were not included in calculations for this table. Cause-specific rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

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Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.18
Leading Causes of Death and Cause-Specific Rates by Age
Michigan Resident White Females, 1998

Age	Rank and Cause of Death	Number	Rate
All Ages	1. Diseases of the Heart	12,436	301.3
	2. Cancer	8,074	195.6
	3. Stroke	3,109	75.3
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	1,730	41.9
	5. Pneumonia & Influenza	1,462	35.4
	All Causes	36,954	895.4
Under 1 Year	1. Certain Conditions Originating in the Perinatal Period	122	258.4
	2. Congenital Anomalies	72	152.5
	3. Sudden Infant Death Syndrome	36	76.2
	4. Unintentional Injuries	11	23.3
	5-6. Homicide-Septicemia	3	*
All Causes	295	624.8	
1-4 Years	1. Unintentional Injuries	15	7.6
	2. Congenital Anomalies	6	3.0
	3. Homicide	4	*
	4-5. Diseases of the Heart-Cancer	3	*
	All Causes	45	22.8
5-14 Years	1. Unintentional Injuries	27	4.9
	2. Cancer	11	2.0
	3. Homicide	6	1.1
	4. Congenital Anomalies	4	*
	5. Diseases of the Heart	2	*
All Causes	70	12.8	
15-24 Years	1. Unintentional Injuries	88	16.6
	2. Homicide	12	2.3
	3. Suicide	8	1.5
	4-5. Diseases of the Heart-Cancer	7	1.3
	All Causes	173	32.7
25-34 Years	1-2. Unintentional Injuries-Cancer	74	12.5
	3. Diseases of the Heart	27	4.6
	4. Suicide	21	3.5
	5. Homicide	19	3.2
	All Causes	307	51.9
35-49 Years	1. Cancer	522	53.2
	2. Diseases of the Heart	197	20.1
	3. Unintentional Injuries	156	15.9
	4. Stroke	59	6.0
	5. Suicide	58	5.9
	All Causes	1,473	150.0
50-64 Years	1. Cancer	1,673	276.6
	2. Diseases of the Heart	749	123.8
	3. Chronic Obstructive Pulmonary Diseases & Allied Conditions	177	29.3
	4. Diabetes Mellitus	157	26.0
	5. Stroke	145	24.0
All Causes	3,674	607.4	
65 and Over	1. Diseases of the Heart	11,450	1,819.4
	2. Cancer	5,783	918.9
	3. Stroke	2,895	460.0
	4. Chronic Obstructive Pulmonary Diseases & Allied Conditions	1,515	240.7
	5. Pneumonia & Influenza	1,371	217.9
All Causes	30,917	4,912.8	

Note: Subtotals by sex and race do not add to the grand total as the race was not stated on records for 15 females and sex was not stated for 1 white. Age groups do not add to respective totals because records with age not stated are included only in the "All Ages" row. Rates may not agree with those shown elsewhere in this section since records with sex and race not stated were randomly allocated prior to rate calculation for the other tables, and were not included in calculations for this table. Cause-specific rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

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Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.19
Leading Causes of Death and Cause-Specific Rates by Age
Michigan Resident Black Females, 1998

Age	Rank and Cause of Death	Number	Rate
All Ages	1. Diseases of the Heart	1,800	231.6
	2. Cancer	1,198	154.2
	3. Stroke	406	52.2
	4. Diabetes Mellitus	223	28.7
	5. Pneumonia & Influenza	188	24.2
	All Causes	5,697	733.1
Under 1 Year	1. Certain Conditions Originating in the Perinatal Period	108	718.5
	2. Sudden Infant Death Syndrome	29	192.9
	3. Congenital Anomalies	22	146.4
	4. Homicide	5	*
	5-7. Diseases of the Heart-Pneumonia & Influenza-Unintentional Injuries	3	*
	All Causes	191	1,270.7
1-4 Years	1. Unintentional Injuries	7	13.1
	2-3. Congenital Anomalies-Homicide	3	*
	4. Nutritional Deficiencies	2	*
	5-6. Certain Conditions Originating in the Perinatal Period-Septicemia	1	*
	All Causes	19	35.7
	5-14 Years	1. Unintentional Injuries	15
2. Homicide		7	5.5
3. Cancer		3	*
4-7. Congenital Anomalies-Diseases of the Heart-Chronic Obstructive Pulmonary Disease & Allied Conditions-Suicide		2	*
All Causes		39	30.9
15-24 Years		1. Homicide	19
	2. Unintentional Injuries	11	9.0
	3. Cancer	8	6.5
	4. Diseases of the Heart	4	*
	5-6. Suicide-Complications of Pregnancy	3	*
	All Causes	69	56.3
25-34 Years	1. Homicide	32	27.3
	2. Unintentional Injuries	19	16.2
	3. Diseases of the Heart	18	15.4
	4. Cancer	13	11.1
	5-6. Chronic Obstructive Pulmonary Diseases & Allied Conditions-AIDS	8	6.8
	All Causes	160	136.5
35-49 Years	1. Cancer	164	93.5
	2. Diseases of the Heart	122	69.5
	3. Stroke	45	25.7
	4. Unintentional Injuries	42	23.9
	5. Chronic Liver Disease & Cirrhosis	27	15.4
	All Causes	664	378.5
50-64 Years	1. Cancer	300	345.5
	2. Diseases of the Heart	293	337.4
	3-4. Stroke-Diabetes Mellitus	47	54.1
	5. Chronic Obstructive Pulmonary Diseases & Allied Conditions	21	24.2
	All Causes	915	1,053.7
	65 and Over	1. Diseases of the Heart	1,358
2. Cancer		710	880.0
3. Stroke		307	380.5
4-5. Diabetes Mellitus-Pneumonia & Influenza		155	192.1
All Causes		3,640	4,511.4

Note: Subtotals by sex and race do not add to the grand total as the race was not stated on records for 15 females and sex was not stated for 2 blacks. Age groups do not add to respective totals because records with age not stated are included only in the "All Ages" row. Rates may not agree with those shown elsewhere in this section since records with sex and race not stated were randomly allocated prior to rate calculation for the other tables, and were not included in calculations for this table. Cause-specific rates are per 100,000 population. Asterisk (*) indicates that data do not meet standards of reliability or precision.

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Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

YEARS OF POTENTIAL LIFE LOST BELOW AGE 75

The years of potential life lost below age 75 is a measure of mortality designed to emphasize mortality that is prevalent among people under age 75. The number of years of potential life lost is calculated as the number of years between the age at death and 75 years of age for persons dying before their 75th year.

Table 2.20 displays the rates of years of potential life lost to the Michigan population in 1998 for selected causes of death, as well as the rankings of these causes based on years of potential life lost for the United States.

The ranking of the leading causes of years of potential life lost was different from the ranking of numbers of deaths presented in Table 2.11. Diseases of the heart was the leading cause of death but was the second leading cause of years of potential life lost below age 75. Cancer was the leading cause of years of potential life lost below age 75 in Michigan but was the second leading cause of death. Unintentional injuries, which was the fifth leading cause of death, was the third leading cause of years of potential life lost. Suicide, which was the tenth leading cause of death in 1998, was the fifth leading cause of potential years of life lost below age 75 in Michigan. Homicide, which was the eleventh leading cause of death in 1998, was the fourth leading cause of potential life lost below age 75 in Michigan.

Table 2.20
Rates of Years of Potential Life Lost Below Age 75
Due to the 10 Leading Causes of Death and Selected Other Causes
Michigan Residents, 1998

Michigan Rank	Cause of Death	Total	Male	Female
1	Cancer	1,665.0	1,726.3	1,604.9
2	Diseases of the Heart	1,396.9	1,910.1	894.3
3	Unintentional injuries	934.9	1,335.6	542.5
4	Homicide	353.3	542.4	166.9
5	Suicide	320.9	540.2	106.1
6	Stroke	232.3	251.1	213.8
7	Chronic Obstructive Pulmonary Diseases and Allied Conditions	183.0	188.4	177.6
8	Chronic Liver Disease and Cirrhosis	177.8	256.1	101.2
9	Diabetes Mellitus	175.4	182.0	169.0
10	Pneumonia and Influenza	118.1	148.7	88.2
11	HTLV-III/LAV Infection (AIDS)	96.8	159.1	35.8
12	Kidney Disease	46.1	51.0	41.3

Note: Rates are per 100,000 population. Records with sex unspecified are included only in the total column.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

INFANT DEATHS

Trends Of the 84,906 deaths occurring to Michigan residents in 1998, 1,091 occurred to individuals less than one year of age. The rate of death for infants under the age of one year has dropped considerably since 1900. In that year there were 157 infant deaths for every 1,000 live births (Figure 2.7). This rate fell below 100 by 1914 (96.8), to less than 70 by 1927 (67.7), then to less than 50 by 1935 (47.7).

During the 1940s the Michigan infant death rate declined from 40.6 in 1940 to 28.9 in 1949. Relative declines in the infant death rate slowed considerably in the 1950s and 1960s (Table 2.21). It was not until 1971 that the rate dropped below 20 (to 19.5). The rate of decline since 1970 compares favorably with the rate of decline observed before 1950. By 1993 the rate had fallen below 10 (to 9.5) and continued to decline to 8.0 in 1996. The rate increased slightly in 1997 (to 8.1) and 1998 (to 8.2). In the eight years since 1990, the infant death rate has fallen 23 percent.

Michigan and United States Comparison During the period 1915-1928, the infant mortality rate for Michigan was above that for the United States for nine of these 14 years. From 1929 through 1969, Michigan's infant death rate was consistently below the national rate. From 1970 through 1975, the infant mortality rate in Michigan was slightly higher than the rate for the nation. From 1976 through 1980

Table 2.21
Infant Deaths and Infant Death Rates
Michigan and United States Residents
Selected Years, 1950 - 1998

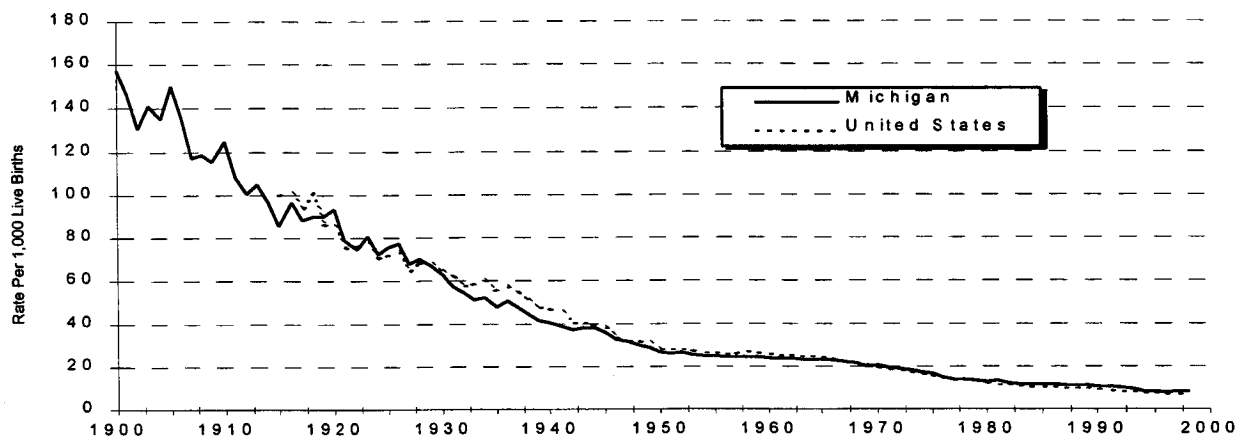
United States		Year	Michigan	
Number	Rate		Number	Rate
103,825	28.6	1950	4,214	26.3
110,873	26.0	1960	4,704	24.1
74,667	20.0	1970	3,492	20.3
45,526	12.6	1980	1,851	12.8
38,351	9.2	1990	1,638	10.7
36,766	8.9	1991	1,554	10.4
34,628	8.5	1992	1,460	10.2
33,466	8.4	1993	1,319	9.5
31,710	8.0	1994	1,184	8.6
29,203	7.6	1995	1,110	8.3
28,487	7.3	1996	1,072	8.0
28,045	7.2	1997	1,085	8.1
27,600	7.0	1998	1,091	8.2

Note: Rates are per 1,000 live births. 1998 U.S. data are provisional.

Source: 1950-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

the rates for the state and nation were similar. Since 1980 the rate for Michigan has been 5 to 20 percent above the national rate. The provisional rate for the United States in 1998 was 7.0 infant deaths per 1,000 live births. The Michigan rate of 8.2 was 17 percent higher than the national provisional rate in 1998 (Table 2.21).

Figure 2.7
Infant Mortality Rates
Michigan Residents, 1900 - 1998 and United States Residents, 1915 - 1998



Note: Rates are per 1,000 live births. 1998 U.S. data are provisional.

Source: 1900-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Early Infant Deaths Table 2.22 shows the numbers of infant deaths and infant death rates by age at death for Michigan for the period 1970-1998. The number of infants who died during the first week of life in 1998 (575) is greater than the number of deaths of infants aged 7-364 days (516). In 1998, 65 percent of all Michigan infant deaths occurred

within the first four weeks of life and 41 percent occurred to infants less than one day old.

A review of Table 2.22 reveals that the 60 percent decline in the infant mortality rate since 1970 stems largely from reductions in the rate of death for those under one week of age.

Table 2.22
Infant Deaths and Infant Death Rates by Age at Death
 Michigan Residents, Selected Years, 1970 - 1998

Year	Age at Death									
	Total Infant Deaths		< 1 Day		1 - 6 Days		7 - 27 Days		28 - 364 Days	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1970	3,492	20.3	1,367	8.0	1,095	6.4	221	1.3	809	4.7
1980	1,851	12.8	790	5.4	310	2.1	184	1.3	567	3.9
1990	1,638	10.7	673	4.4	219	1.4	181	1.2	565	3.7
1991	1,554	10.4	663	4.4	182	1.2	158	1.1	551	3.7
1992	1,460	10.2	648	4.5	173	1.2	141	1.0	498	3.5
1993	1,319	9.5	551	3.9	157	1.1	148	1.1	463	3.3
1994	1,184	8.6	521	3.8	136	1.0	118	0.9	409	3.0
1995	1,110	8.3	470	3.5	126	0.9	129	1.0	385	2.9
1996	1,072	8.0	444	3.3	126	0.9	133	1.0	369	2.8
1997	1,085	8.1	444	3.3	143	1.1	161	1.2	337	2.5
1998	1,091	8.2	452	3.4	123	0.9	134	1.0	382	2.9

Note: Infant death rates are per 1,000 live births.

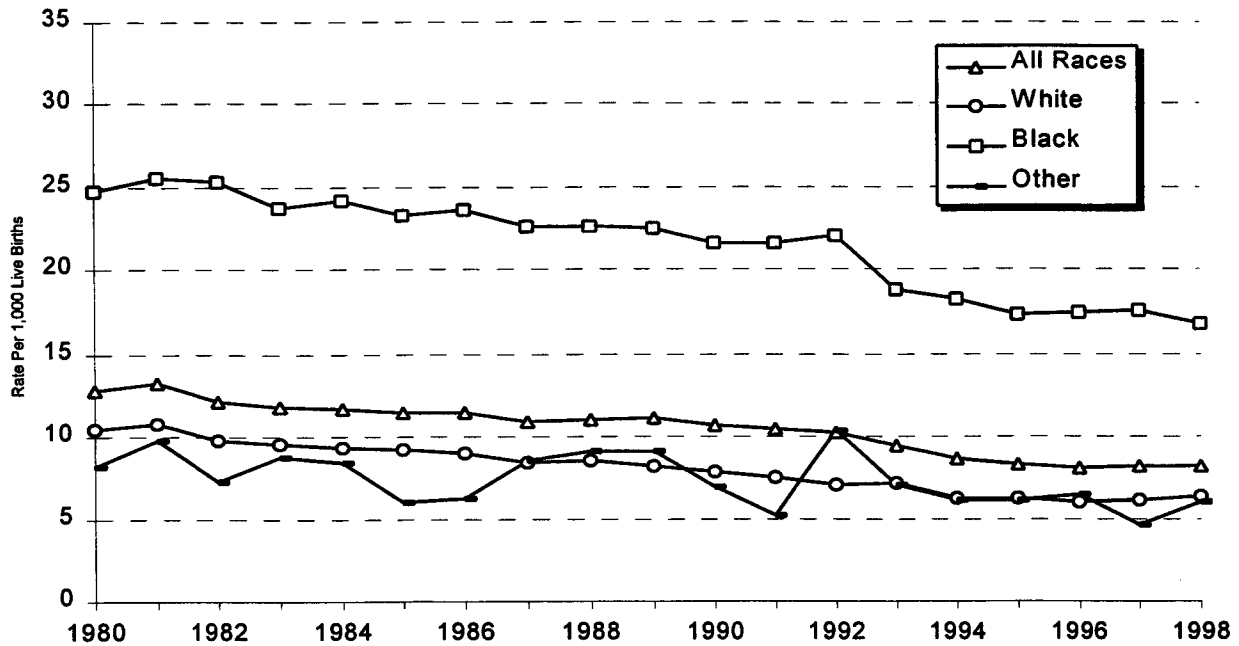
Source: 1970-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Trends in Infant Deaths by Race Infant death rates by race for the years 1980 through 1998 are displayed in Figure 2.8. The rates were calculated using the race of the infant on the death certificate as the numerator and the race of the mother as indicated on the infant's birth record as the denominator.

Black infant death rates were higher than rates for other racial groups throughout the period. The white infant mortality rate dropped 39 percent between

1980 and 1998, while for black infants the decline was 32 percent. The decline in black infant death rates was 24 percent from 1992 to 1998. The white infant death rate fell 10 percent from 1992 to 1998. The rate for black infants of 24.8 in 1980 was 2.4 times higher than that for white infants (10.4). By 1998 the mortality rate for black infants (16.8) was 2.7 times higher than the rate for white infants (6.3) due to the slower decline in the mortality rates experienced by black infants than white infants during the 18-year period.

Figure 2.8
Infant Death Rates by Race
 Michigan Residents, 1980 - 1998



Note: Rates are per 1,000 live births.

Source: 1980-1998 Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Infant Death Rates In Table 2.23 infant, hebdomadal, fetal and perinatal deaths are presented by race and ancestry. Rates for black and American Indian infants and infants of Hispanic ancestry were higher than the white rate.

Hebdomadal Death Rates The death rate during the first week of life was 2.9 times higher for black infants than white infants. It was somewhat higher for Hispanics.

Fetal Death Rates The fetal death rates were highest for births to black mothers. Fetal death rates were also higher for births to Arab and races other than white or black mothers.

Perinatal Death Rates Perinatal deaths are fetal deaths plus hebdomadal deaths. Perinatal death rates were 2.5 times higher for fetuses and infants born to black mothers than white mothers. American Indian perinatal death rates were 1.6 times that of their white counterparts.

Table 2.23
Infant, Hebdomadal, Fetal and Perinatal Death Rates by Specified Race and Ancestry
Michigan Residents, 1998

Race/Ancestry	Live Births	Infant Deaths		Hebdomadal Deaths		Fetal Deaths		Perinatal Deaths	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
All Races	133,649	1,091	8.2	575	4.3	830	6.2	1,405	10.4
White	105,161	660	6.3	336	3.2	506	4.8	842	8.0
Black	24,179	405	16.8	225	9.3	269	11.0	494	20.2
American Indian	722	6	8.3	4	*	5	*	9	12.4
All Other Races	3,111	17	5.5	7	2.3	19	6.1	26	8.3
Arab	2,977	16	5.4	8	2.7	22	7.3	30	10.0
Hispanic	5,936	49	8.3	24	4.0	26	4.4	50	8.4

Note: Infant death and hebdomadal rates are per 1,000 live births. Fetal death and perinatal death rates are per 1,000 live births plus fetal deaths. Rates are calculated using live births by race/ancestry of mother as denominator. Live births are by the race/ancestry of the mother on the birth certificate. Hebdomadal deaths are deaths to infants ages zero to six days. Infant and hebdomadal deaths are by the race on the death certificate. Fetal deaths are by the race of the mother on the fetal death certificate. Perinatal deaths are hebdomadal plus fetal deaths. Perinatal deaths are by mother's race/ancestry on the fetal death certificate or the infant's race/ancestry on the death certificate. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Fetal Death File and Birth File, Division for Vital Records and Health Statistics, MDCH

Causes of Infant Deaths Michigan resident infant deaths in 1998 are listed by cause of death classification and age at death in Table 2.24. Congenital anomalies was the leading cause of death to infants, accounting for 209 deaths. Disorders relating to short gestation and unspecified low birthweight was listed as the cause of 179 deaths. Sudden infant death syndrome was responsible for 148 infant deaths in 1998. Nearly half of all infant deaths were attributed to these three conditions in 1998.

Causes of Neonatal Deaths For those infant deaths which occurred during the first day of life, 66 percent were attributed to disorders relating to short gestation and unspecified low birthweight, congenital anomalies or respiratory distress syndrome and other respiratory conditions of newborn.

The leading causes of death between one to 27 days of life were congenital anomalies and respiratory distress syndrome.

Causes of Postneonatal Deaths Sudden infant death syndrome was reported as the cause of 40

percent of the deaths to infants from 1-5 months of age. Sudden infant death syndrome, congenital anomalies and unintentional injuries accounted for 50 percent of the deaths to infants 6-11 months of age.

Causes of Death by Race The cause specific infant death rates were higher for blacks in all cause categories than for whites. Disorders relating to short gestation, congenital anomalies and sudden infant death syndrome were the causes of about 50 percent of the black and white infant deaths (Table 2.25). The rate of infant deaths due to disorders relating to short gestation and unspecified low birthweight for black infants was six times higher than the rate for white infants.

Causes of Death for Male and Female Infants The death rate for male infants was 14 percent greater than that for female infants (Table 2.26). Death rates for males were similar or higher in all cause categories. Male rates for disorders relating to short gestation and unspecified low birthweight and for unintentional injuries were 38 and 44 percent higher than female rates, respectively.

Table 2.24
Infant Deaths by Age at Death and Underlying Cause
Michigan Residents, 1998

Cause of Death (ICD-9 Codes)	Age at Death					
	Total <1 Year	<1 Day	1 - 6 Days	7 - 27 Days	1 - 5 Months	6 - 11 Months
Congenital anomalies (740-759)	209	86	34	31	48	10
Disorders relating to short gestation and unspecified low birthweight (765)	179	167	7	4	1	-
Sudden infant death syndrome (798.0)	148	-	1	7	121	19
Respiratory distress syndrome (769)	78	26	28	21	3	-
Other respiratory conditions of newborn (770)	57	21	9	13	9	5
Unintentional injuries (E800-949)	35	1	1	2	20	11
Homicide (E960-969)	17	-	-	-	9	8
All other causes	368	151	43	56	91	27
Total	1,091	452	123	134	302	80

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.25
Infant Deaths and Infant Death Rates by Race and Underlying Cause
 Michigan Residents, 1998

Cause of Death (ICD-9 Code)	Race							
	All Races		White		Black		All Other Races	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Congenital anomalies (740-759)	209	156.4	165	156.9	39	161.3	5	*
Disorders relating to short gestation and unspecified low birthweight (765)	179	133.9	75	71.3	99	409.4	3	*
Sudden infant death syndrome (798.0)	148	110.7	82	78.0	64	264.7	2	*
Respiratory distress syndrome (769)	78	58.4	48	45.6	29	119.9	1	*
Other respiratory conditions of newborn (770)	57	42.6	30	28.5	26	107.5	1	*
Unintentional injuries (E800-949)	35	26.2	24	22.8	11	45.5	-	-
Homicide (E960-969)	17	12.7	6	5.7	11	45.5	-	-
All other causes	368	275.3	230	218.7	126	521.1	11	287.0
Total	1,091	816.3	660	627.6	405	1,675.0	23	600.1

Note: Rates are per 100,000 live births. Numbers of infant deaths are by race of infant; rates are calculated using live births by race of mother as the denominator. Records with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 2.26
Infant Deaths and Infant Death Rates by Sex of Infant and Underlying Cause
 Michigan Residents, 1998

Cause of Death (ICD-9 Code)	Sex of Infant					
	Total		Male		Female	
	Number	Rate	Number	Rate	Number	Rate
Congenital anomalies (740-759)	209	156.5	111	163.1	97	148.1
Disorders relating to short gestation and unspecified low birthweight (765)	179	134.0	105	154.3	73	111.5
Sudden infant death syndrome (798.0)	148	110.8	83	121.9	65	99.3
Respiratory distress syndrome (769)	78	58.4	43	63.2	35	53.4
Other respiratory conditions of newborn (770)	57	42.7	29	42.6	28	42.8
Unintentional injuries (E800-949)	35	26.2	21	30.9	14	21.4
Homicide (E960-969)	17	12.7	9	13.2	8	12.2
All other causes	368	275.6	189	277.7	179	273.4
Total	1,091	816.9	590	866.8	499	762.0

Note: Rates are per 100,000 live births. Numbers of infant deaths are by sex of infant; rates are calculated using live births by sex as the denominator. Records with sex not stated are included only in the "Total" column. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Infant Deaths by Birth Characteristics Infants that died in 1998 were born in 1997 or 1998. These infants can be characterized by the information on their birth certificates. Death rates are calculated using birth characteristics of 1998 live births and 1998 infant deaths.

Infant Deaths by Mother's Age In 1998, the mortality rates were lower for infants born to white women over 19 years of age, than for infants born to white women under 20 years of age. The mortality rates for infants born to black women between 20 and 24 years of age were somewhat lower than the rates for infants born to black women less than 20 and over 24 years of age. Rates for black infants were significantly above those for the white group in all age groups.

Table 2.27
Infant Deaths, Live Births and Infant Death Rates by Age and Race of Mother
Michigan Residents, 1998

Age of Mother in Years	All Races			White			Black			All Other Races		
	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate
All Ages	133,649	1,091	8.2	105,161	660	6.3	24,179	405	16.8	3,833	23	6.0
<15	254	10	39.4	99	5	*	141	5	*	13	-	-
15-19	15,263	191	12.5	10,002	100	10.0	4,936	90	18.2	282	1	*
20-24	31,063	283	9.1	22,888	169	7.4	7,398	109	14.7	686	5	*
25-29	39,826	277	7.0	32,286	163	5.0	6,098	103	16.9	1,312	9	6.9
30-39	44,666	297	6.6	37,785	200	5.3	5,221	88	16.9	1,465	8	5.5
40 +	2,559	20	7.8	2,085	13	6.2	384	7	18.2	75	-	-

Note: Rates are per 1,000 live births. Records with age of mother not stated are included only in "All Ages" row. Records with race not stated are included only in the "All Races" column. Numbers of infant deaths are by race of infant; rates are calculated using live births by race of mother as the denominator. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth and Infant Death Matched Files, Division for Vital Records and Health Statistics, MDCH

Infant Deaths by Adequacy of Prenatal Care
 Infant death rates increased when the pregnant women received less than adequate prenatal care as measured by the Kessner Index (Table 2.28). The infant death rate was three times greater for pregnant women with inadequate care (19.1 deaths per 1,000 live births) than for pregnant women with adequate care (6.4 deaths per 1,000 live births) in 1998.

The pattern was similar for both white and black infants. When the pregnant women received adequate care based on the number of visits, the month prenatal care began and the length of gestation, the infant death rate for black infants (14.6) was still 2.9 times greater than for infants born to white pregnant women (5.0 deaths per 1,000 live births).

Table 2.28
Infant Deaths, Live Births and Infant Death Rates by Level of Prenatal Care and Race
 Michigan Residents, 1998

Level of Care (Kessner Index)	All Races			White			Black			All Other Races		
	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate	Live Births	Infant Deaths	Infant Death Rate
Total	133,649	1,091	8.2	105,161	660	6.3	24,179	405	16.8	3,833	23	6.0
Adequate	99,907	635	6.4	83,052	417	5.0	13,836	202	14.6	2,808	13	4.6
Intermediate	20,132	188	9.3	14,518	112	7.7	4,942	71	14.4	615	5	*
Inadequate	12,875	246	19.1	7,057	118	16.7	5,243	123	23.5	391	5	*

Note: Rates are per 1,000 live births. Records with race not stated are included only in the "All Races" column. Records with unknown level of care are included only in the "Total" row. Numbers of infant deaths are by race of infant; rates are calculated using live births by race of mother as the denominator. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy in which prenatal care began, the number of prenatal visits and the length of pregnancy (i.e., for shorter pregnancies, fewer prenatal visits constitute adequate care). See Technical Notes. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth and Infant Death Matched Files, Division for Vital Records and Health Statistics, MDCH

Infant Deaths by Birthweight Infant death rates by race, birthweight and age at death are displayed in Table 2.29. While the overall infant death rate for black infants was 2.7 times that of white infants, the rate for black infants born weighing less than 750 grams was only slightly higher than that of white infants. The rates for black infants weighing 750 to 1,499 grams were slightly lower than the rate for their white counterparts. For infants weighing 2,500 grams or more the rate for black infants was 2.2 times the rate for white infants. A large part of the difference between infant death rates for white and black infants was due to the fact that a greater proportion of the infants born to black women were born at weights below 2,500 grams (13.8 percent for infants born to black women compared to 6.5 percent for infants born to white women).

Overall, neonatal death rates were nearly three times higher for black infants than white infants. However, the neonatal death rate for white infants with a birthweight below 750 grams was similar to the corresponding black infant death rates. The rates for black infants born between 750 to 2,499 grams were lower than the rates for white infants. After 28 days of life, the death rates were generally higher for black infants than white infants.

The postneonatal death rates are progressively higher as birthweight is lower but are less progressive than the neonatal rates.

Table 2.29
Live Births, Infant Deaths and Infant Death Rates by Birthweight, Age at Death and Race
Michigan Residents, 1998

Birthweight	Race of Infant	Live Births	Age at Death					
			Under 1 Year		Under 28 Days		28 - 364 Days	
			Number	Rate	Number	Rate	Number	Rate
Total	All Races	133,649	1,091	8.2	709	5.3	382	2.9
	White	105,161	660	6.3	424	4.0	236	2.2
	Black	24,179	405	16.8	267	11.0	138	5.7
	All Other	3,833	23	6.0	15	3.9	8	2.1
Less Than 750 Grams	All Races	679	409	602.4	382	562.6	27	39.8
	White	363	217	597.8	202	556.5	15	41.3
	Black	297	184	619.5	174	585.9	10	33.7
	All Other	11	6	545.5	4	*	2	*
750-1,499 Grams	All Races	1,427	139	97.4	113	79.2	26	18.2
	White	897	92	102.6	76	84.7	16	17.8
	Black	491	44	89.6	34	69.2	10	20.4
	All Other	36	2	*	2	*	-	-
1,500-2,499 Grams	All Races	8,362	131	15.7	77	9.2	54	6.5
	White	5,540	81	14.6	52	9.4	29	5.2
	Black	2,555	45	17.6	20	7.8	25	9.8
	All Other	239	5	*	5	*	-	-
2,500 + Grams	All Races	122,855	382	3.1	114	0.9	268	2.2
	White	98,153	251	2.6	82	0.8	169	1.7
	Black	20,758	121	5.8	28	1.3	93	4.5
	All Other	3,534	10	2.8	4	*	6	1.7

Note: Infant death rates are per 1,000 live births. Records with birthweight not stated are included only in the "Total" row. Records with race not stated are included only in the "All races" rows. Numbers of infant deaths are by race of infant; rates are calculated using live births by race of mother as the denominator. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth and Infant Death Matched Files, Division for Vital Records and Health Statistics, MDCH

Causes of Infant Death by Maternal Smoking Status and Race The infant mortality rate for infants born to white women who reportedly smoked or used tobacco products during their pregnancy was 66 percent higher than the rate for infants born to white women who reportedly did not smoke during their pregnancy. Similarly, the rate for infants born to black women who reportedly smoked was 78 percent higher (Table 2.30).

Death rates were higher for most causes if the woman smoked during her pregnancy. The rate of death due to disorders relating to short gestation and low birthweight and SIDS rates were 1.7 and 3.3 times higher, respectively, for black women who smoked. SIDS rates for white infants were 3.6 times greater to women who smoked while pregnant than for women who did not smoke.

Table 2.30
**Infant Deaths and Infant Death Rates by Race of Mother,
 Smoking Status During Pregnancy and Underlying Cause of Death**
 Michigan Residents, 1998

Cause of Death (ICD-9 Code)	All Races				White				Black			
	Smokers		Non-smokers		Smokers		Non-smokers		Smokers		Non-smokers	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Sudden infant death syndrome (798.0)	60	2.6	83	0.8	35	1.8	44	0.5	24	6.2	38	1.9
Congenital anomalies (740-759)	44	1.9	152	1.4	32	1.7	122	1.4	11	2.9	27	1.3
Disorders relating to short gestation and unspecified low birthweight (765)	43	1.9	119	1.1	20	1.1	49	0.6	23	6.0	65	3.2
Respiratory distress syndrome (769)	14	0.6	61	0.6	9	0.5	37	0.4	5	*	23	1.1
Other respiratory conditions of newborn (770)	9	0.4	43	0.4	5	*	23	0.3	4	*	19	0.9
Other Perinatal Conditions (760-764;766-768;771-779)	43	1.9	151	1.4	31	1.6	94	1.1	12	3.1	52	2.6
Accidents and adverse effects (E800-949)	13	0.6	19	0.2	8	0.4	13	0.2	5	*	6	0.3
All other causes	38	1.6	129	1.2	27	1.4	74	0.9	10	2.6	49	2.4
Total	264	11.4	757	6.9	167	8.8	456	5.3	94	24.4	279	13.7

Note: Infant death rates per 1,000 live births. Numbers of infant deaths are by race of infant; rates are calculated using live births by race of mother as denominator. Records with cause of death pending are included only in the "Total" row. Records for other races or with race not stated are included only in the "All Races" column. Asterisk (*) indicates that data do not meet the standards of precision or reliability. Records with mother's smoking status not stated are not included on this table.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Birth File and Infant Death Matched File. Division for Vital Records and Health Statistics, MDCH

Perinatal Deaths by Maternal Age and Race
Perinatal deaths are fetal deaths plus deaths to individuals less than seven days of age. For total births in 1998, Michigan resident perinatal deaths numbered 1,405 and the perinatal death rate was 10.4 per 1,000 total births (Table 2.31). As with infant death rates, perinatal death rates vary considerably with race and age of woman. The overall perinatal mortality rate for black fetuses and infants was 2.5 times the rate for white fetuses and infants.

There was an increased risk of a perinatal death for women under 20 years of age and over 40 years. These rates are lowest for white women ages 20-29

and for black women 20-24 years. Rates for black women were higher than white women in all age categories.

Perinatal Deaths by Adequacy of Prenatal Care
The perinatal death rates increased for women with less than adequate prenatal care (Table 2.32). The death rate was 3.4 times higher for women with inadequate care than for women with adequate care (24.8 vs. 7.4 deaths per 1,000 total births). The perinatal death rate for fetuses and infants born to black women with adequate care was more than double the comparable rate for fetuses and infants born to white women.

Table 2.31
Perinatal Deaths, Total Births and Perinatal Death Rates by Age and Race of Mother
Michigan Residents, 1998

Age of Mother in Years	All Races			White			Black			All Other Races		
	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate
All Ages	134,479	1,405	10.4	105,667	842	8.0	24,448	494	20.2	3,857	35	9.1
<15	259	8	30.9	100	3	*	145	5	*	13	-	-
15-19	15,369	202	13.1	10,061	107	10.6	4,978	90	18.1	285	3	*
20-24	31,242	300	9.6	22,981	163	7.1	7,471	122	16.3	690	6	8.7
25-29	40,029	348	8.7	32,413	204	6.3	6,160	124	20.1	1,322	14	10.6
30-39	44,936	461	10.3	37,974	316	8.3	5,289	126	23.8	1,472	12	8.2
40 +	2,591	43	16.6	2,112	34	16.1	388	8	20.6	75	-	-

Note: Records with age of mother not stated are included only in "All Ages" row. Records with race not stated are included only in the "All Races" column. Numbers of infant deaths are by race of infant; rates are calculated using the sum of live births and fetal deaths by race of mother as the denominator. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Infant Death Matched File, Fetal Death File and Birth File, Division for Vital Records and Health Statistics, MDCH

Table 2.32
Perinatal Deaths, Total Births and Perinatal Death Rates by Level of Prenatal Care and Race of Mother
Michigan Residents, 1998

Level of Care (Kessner Index)	All Races			White			Black			All Other Races		
	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate	Total Births	Perinatal Deaths	Perinatal Death Rate
Total	134,479	1,405	10.4	105,667	842	8.0	24,448	494	20.2	3,857	35	9.1
Adequate	100,314	739	7.4	83,353	516	6.2	13,921	193	13.9	2,824	22	7.8
Intermediate	20,269	207	10.2	14,601	125	8.6	4,985	68	13.6	618	6	9.7
Inadequate	13,037	323	24.8	7,115	131	18.4	5,336	179	33.5	393	4	*

Note: Records with race not stated are included only in the "All Races" column. Records with unknown level of care are included only in the "Total" row. Numbers of infant deaths are by race of infant; rates are calculated using the sum of live births and fetal deaths by race of mother as the denominator. The Kessner Index is a classification of prenatal care based on the month of pregnancy in which prenatal care began, the number of prenatal visits and the length of pregnancy (i.e., for shorter pregnancies, fewer prenatal visits constitute adequate care). Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Care should be taken in drawing inferences from rates based on small numbers of events or a small population base. These rates tend to exhibit considerable variation which may negate their usefulness for comparative purposes.

Source: 1998 Michigan Resident Infant Death Matched File, Fetal Death File and Birth File, Division for Vital Records and Health Statistics, MDCH

MARRIAGE & DIVORCE

SECTION III



MARRIAGE AND DIVORCE

An Overview, 1998

Total Marriages	65,642
Total Divorces and Annulments	38,523
Marriage Rate (persons involved per 1,000 population)	13.4
Divorce Rate (persons involved per 1,000 population)	7.9
Median Age of the Bride	26
Median Age of the Groom	28
Median Age of Wife at Divorce Decree	35
Median Age of Husband at Divorce Decree	37
Median Duration of Marriage at Divorce Decree	6 Years
Estimated Number of Children Involved in Divorce	37,210

Source: 1998 Michigan Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

RESIDENCE OF COUPLES MARRYING IN MICHIGAN

When presenting birth and death statistics, it is possible to provide total resident figures due to an interstate agreement for exchange of nonresident event information. No such agreement exists for marriages. This is an important consideration when analyzing marriage statistics. The marriage data presented are drawn from all marriages performed in the state regardless of the couple's residence.

In general, most of the couples marrying in Michigan are residents of the state. For marriages occurring in Michigan in 1998, 95 percent of the brides were residents of Michigan, while 93 percent of the grooms were residents of the state. These data indicate that the general characteristics of marriages occurring in Michigan should be representative of marriage patterns for Michigan residents.

KEY TRENDS

The number of marriages and divorces occurring in Michigan has increased considerably since 1900. The frequency of marriage has generally followed the growth of Michigan's population. The rate of persons dissolving their marriages has increased fourfold since 1900.

The smallest number of marriages in this century was 23,295 in 1900, while the largest number was 94,486 in 1973. In 1998 there were 65,642 marriages, the lowest number since 1962. The marriage rate in 1998 was 13.4 per 1,000 population, a two percent decline from the 1997 rate of 13.7.

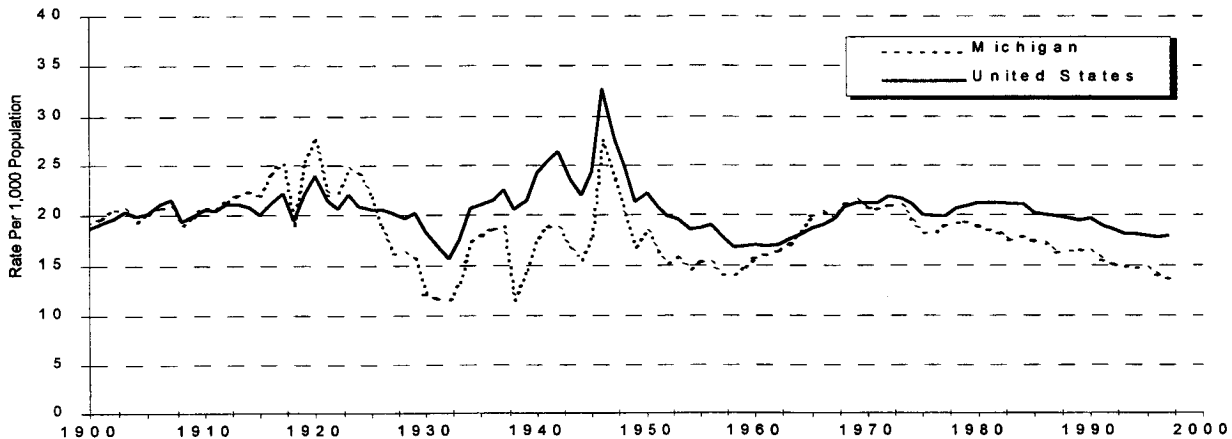
The number of divorces and annulments increased from a low of 2,435 in 1900 to a high of 45,047 in 1980. In 1998 the number of divorces and annulments was 38,523. The divorce rate was 7.9 per 1,000 population, a 19 percent decrease since 1980. An estimated 37,210 children less than 18 years of age were involved in a divorce in 1998.

MARRIAGES

Since 1900 there have been noticeable changes in the marriage rates both nationally and in Michigan (Table 3.1 and Figure 3.1). Both nationally and in Michigan, strong historic shifts in rates have been related most notably to the factors of war and the economy. The highest rates observed during this century were for the years immediately following the end of the two World Wars (27.7 in 1920 and 27.6 in 1946). The lowest rates occurred during the Great Depression of the 1930s.

The number of persons married each year per 1,000 population was higher in Michigan than in the country for 19 of the 26 years from 1900 through 1925. Since 1926, Michigan's marriage rate has been lower than the national rate, except during 1964 through 1969.

Figure 3.1
Marriage Rates
Michigan and United States Occurrences, 1900-1998



Note: Rates are the number of persons married per 1,000 population. 1991-1998 U.S. data are provisional.

Source: 1900-1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

MONTH OF MARRIAGE

The number of marriages occurring in Michigan varies with the seasons (Figure 3.2). The most popular months for marriages in 1998 were August, June and September, with 9,675, 8,116 and 7,235 marriage ceremonies being performed during these months, respectively. About two out of every three marriages occurred in the six months between May and October. Fewer marriages occurred during the winter months. The lowest figure was for January, with 24 percent of the number which occurred in August.

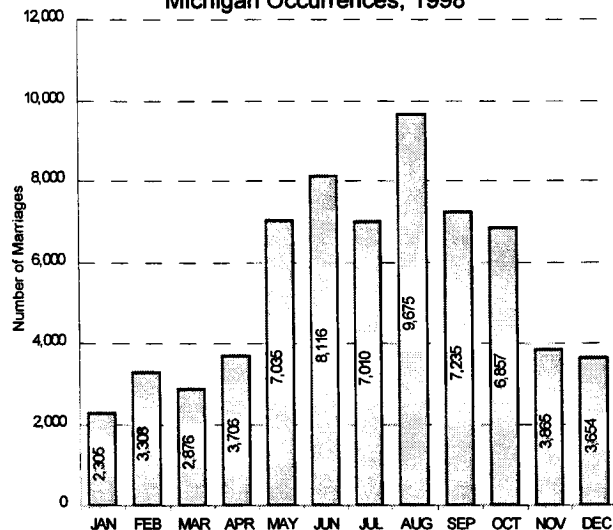
Table 3.1
Marriages and Marriage Rates
Michigan and United States Occurrences
Selected Years, 1900 - 1998

United States		Year	Michigan	
Number	Rate		Number	Rate
709,000	18.6	1900	23,295	19.2
948,000	20.5	1910	29,039	20.7
1,274,476	23.9	1920	50,805	27.7
1,126,856	18.3	1930	29,482	12.2
1,595,879	24.2	1940	46,342	17.6
1,667,231	22.1	1950	58,180	18.3
1,523,000	17.0	1960	61,090	15.6
2,158,802	21.2	1970	91,933	20.7
2,390,252	21.2	1980	86,898	18.8
2,443,489	19.6	1990	76,099	16.3
2,371,000Pr	18.8	1991	72,747	15.5
2,362,000Pr	18.5	1992	71,322	15.1
2,334,000Pr	18.1	1993	70,771	14.9
2,362,000Pr	18.1	1994	70,966	14.8
2,336,000Pr	17.8	1995	71,042	14.7
2,344,000Pr	17.7	1996	68,598	14.1
2,384,000Pr	17.8	1997	66,974	13.7
2,244,000Pr	16.6	1998	65,642	13.4

Note: Rates are the number of persons married per 1,000 population. Beginning with 1978, marriage data for the U.S. include nonlicensed marriages registered in California. If nonlicensed marriages were included in the 1977 total, the marriage rate would increase from 19.8 to 20.1. 1991-1998 U.S. data are provisional.

Source: 1900-1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Figure 3.2
Marriages by Month
Michigan Occurrences, 1998



Source: 1998 Michigan Occurrence Marriage File, Division for Vital Records and Health Statistics, MDCH

AGE AT MARRIAGE

Females generally marry at a younger age than do males (Table 3.2). The number of females who marry before the age of 20 was 2.8 times the corresponding number of males in 1998. Between ages 20 and 24, 34 percent more females than males married. Among persons 25 and over, the number of males marrying was greater than females marrying. The median age of brides (26 years) marrying in Michigan was two years lower than the median age for grooms (28 years).

Since 1978, there have been significant declines in the marriage rates for persons of both sexes under the age of 25 years. The largest decline observed was for males under the age of 20 years for whom the marriage rate has dipped nearly 80 percent. The rates for persons 35 and over were about the same for males and females during these 20 years.

Table 3.2
Number of Marriages and Marriage Rates by Age and Sex
Michigan Occurrences, 1978, 1988 and 1998

Age in Years	Males				Females			
	1978 Rate	1988 Rate	1998		1978 Rate	1988 Rate	1998	
			Number	Rate			Number	Rate
<20	17.6	7.9	1,355	3.7	44.8	21.9	3,846	11.0
20-24	93.3	54.6	13,263	41.2	88.2	67.7	17,770	55.7
25-34	48.9	42.9	29,462	41.7	31.7	35.7	26,394	36.2
35-44	16.3	17.2	12,615	15.5	13.8	13.6	11,121	13.4
45 +	5.9	6.0	8,946	6.0	3.4	2.2	6,511	3.7
Total	19.5	16.8	65,642	13.8	18.9	15.9	65,642	13.1
Median age at last birthday	25	27	28		23	25	26	

Note: Rates are the number of persons married per 1,000 population. The 15-19 population age group is used to calculate the rates for the marriages to persons under 20 years of age.

Source: 1978, 1988 and 1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH

FIRST MARRIAGES

First marriages are an interesting component of all marriages in that they constitute an event that can never be duplicated. The frequency of first marriages reflects the propensity of the population as a whole to enter into marital agreements.

There has been a decline in the number of first marriages between 1988 and 1998. The number of first marriages dropped 15 percent for women and 14 percent for men (Tables 3.3 and 3.4).

Changes in the frequency of first marriages have varied in different age groups. The greatest decline in the number of first marriages occurred in the 20-24 year age group for both brides and grooms, between 1988 and 1998. The number of first marriages also declined substantially for brides and grooms in the under 20 age group. There were significant increases in the number of first marriages of both brides and grooms between ages 25 and 44. Between 1988 and 1998 the number of marriages which were first marriages increased for each age group, except for males 25-29.

Table 3.3
Number of Marriages of Brides by Age and Order of Marriage
Michigan Occurrences, 1988 and 1998

Age in Years	1988					1998				
	All Marriages	First Marriages	Percent First Marriages	Second Marriages	Third or More Marriages	All Marriages	First Marriages	Percent First Marriage	Second Marriage	Third or More Marriages
All Ages	75,386	50,324	66.8	19,099	5,960	65,642	42,732	65.1	16,802	6,090
<20	7,785	7,722	99.2	61	1	3,846	3,812	99.1	31	2
20-24	25,625	23,919	93.3	1,651	55	17,770	16,907	95.1	827	31
25-29	18,360	13,299	72.4	4,588	472	17,066	13,788	80.8	2,995	278
30-34	9,727	3,891	40.0	4,662	1,174	9,328	4,945	53.0	3,616	765
35-39	5,605	1,016	18.1	3,182	1,406	6,488	2,002	30.9	3,291	1,192
40-44	3,409	285	8.4	2,024	1,100	4,633	800	17.3	2,469	1,363
45+	4,868	191	3.9	2,926	1,751	6,511	478	7.3	3,573	2,459
Median age at last birthday	25	23	000	33	39	26	25	000	36	42

Note: Marriages with the age of bride not stated are included only in the "All Ages" row.

Source: 1988 and 1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH

Table 3.4
Number of Marriages of Grooms by Age and Order of Marriage
Michigan Occurrences, 1988 and 1998

Age in Years	1988					1998				
	All Marriages	First Marriages	Percent First Marriages	Second Marriages	Third or More Marriages	All Marriages	First Marriages	Percent First Marriage	Second Marriage	Third or More Marriages
All Ages	75,386	49,780	66.0	19,249	6,352	65,642	43,012	65.5	16,782	5,830
<20	2,909	2,906	99.9	3	-	1,355	1,353	99.9	11	14
20-24	20,800	20,140	96.8	645	14	13,263	12,947	97.6	297	14
25-29	21,494	17,968	83.6	3,296	227	18,380	16,295	88.7	1,974	105
30-34	11,502	6,218	54.1	4,500	784	11,082	7,419	66.9	3,268	395
35-39	6,630	1,741	26.3	3,639	1,250	7,372	3,067	41.6	3,512	790
40-44	4,358	455	10.4	2,588	1,314	5,243	1,236	23.6	2,835	1,171
45+	7,689	350	4.6	4,577	2,762	8,946	695	7.8	4,894	3,354
Median age at last birthday	27	25	000	36	43	28	27	000	39	45

Note: Marriages with the age of groom not stated are included only in the "All Ages" row.

Source: 1988 and 1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH

MEDIAN AGE AT FIRST MARRIAGE

The median age at first marriage declined for both brides and grooms between 1953 and the mid-1960s (Figure 3.3). The initial decline was greater for grooms than for brides.

Grooms were 34 months older than brides at the median in 1953, 23 months older in 1963 and 20 months older in 1968. During the past 15 years, the median age at first marriage has increased by about the same amount for both grooms and brides. Grooms were four months older than brides at the median in 1998.

The median age at first marriage in 1998 was 25 for brides and 27 for grooms.

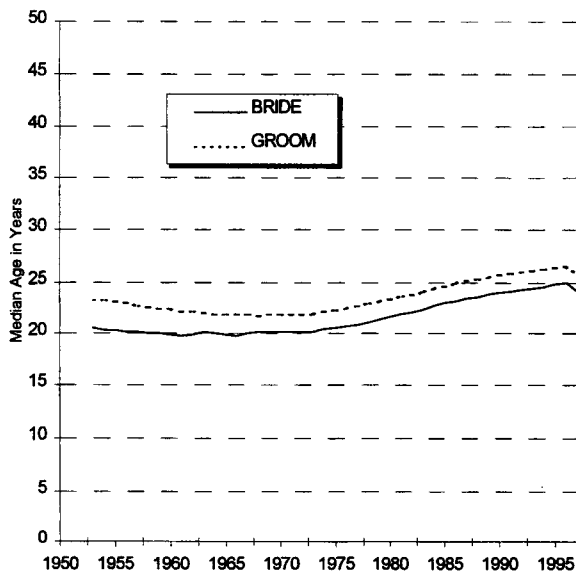
REMARRIAGES

The proportion of all marriages which were remarriages is displayed graphically in Figure 3.4 for the period 1960-1998. Between 1960 and 1965, the proportion of remarriages dropped. Since 1965, this proportion has increased.

The number of remarriages among brides decreased by 8 percent between 1988 and 1998, while the number of brides who had been married at least three times previously increased by 2 percent. Total remarriages for grooms decreased by 12 percent, while the number of third or higher order marriages also decreased.

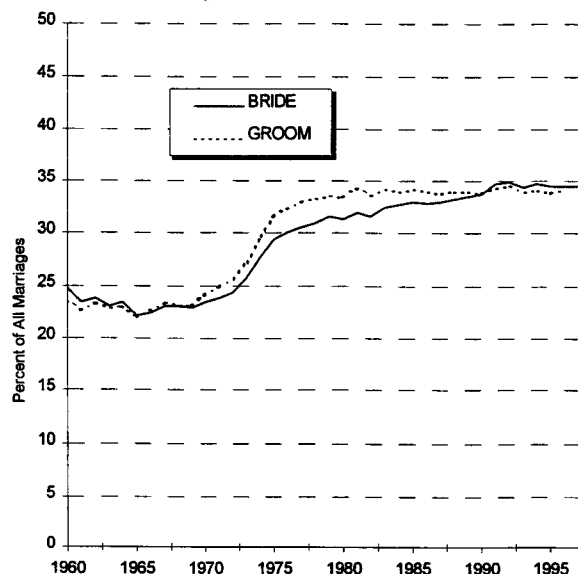
The median age at second and later marriages increased between 1988 and 1998 (Tables 3.3 and 3.4).

Figure 3.3
Median Age at First Marriage by Sex
Michigan Occurrences, 1953 -1998



Source: 1953-1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH

Figure 3.4
Percent of All Marriages That Are Remarriages
Michigan Occurrences, 1960 -1998



Source: 1960-1998 Michigan Occurrence Marriage Files, Division for Vital Records and Health Statistics, MDCH

DIVORCES AND ANNULMENTS

The number of reported divorces and annulments reached a record high in 1981 in the nation and in 1980 in Michigan. Between 1980 and 1985, the Michigan frequency declined. The number then increased to 40,568 in 1990 and decreased to 38,523 in 1998. The 1998 frequency was 15 percent below the 1980 frequency. Nationally, the provisional number of divorces in 1998 was 1,135,000.

The number of persons divorced in Michigan per 1,000 population generally increased from 2.0 in 1900 to the then century high of 5.1 in 1929, then declined between 1930 and 1933 to 3.1 (Figure 3.5). Between 1934 and 1946 the rate generally increased, peaking at 10.2 in 1946. The rate of divorces and annulments decreased to 3.6 in 1958 and increased to a high of 9.8 in 1978. It fluctuated between 8.3 and 8.7 from 1982 until 1995. The 1996 and 1997 rate of 7.8 were the lowest since 1972. The rate for 1998 rose slightly to 7.9.

The national rates generally followed the same pattern, reaching a provisional rate of 8.4 in 1998. Michigan's divorce rate was higher than that for the United States each year from 1900 through 1947. In the following 49 years the Michigan divorce rate has been at or below the national rate 44 times, including each of the past 28 years. The lowest national rate was 1.5 in 1900. The highest national divorce rates during this century were recorded in 1979 and 1981 (10.6).

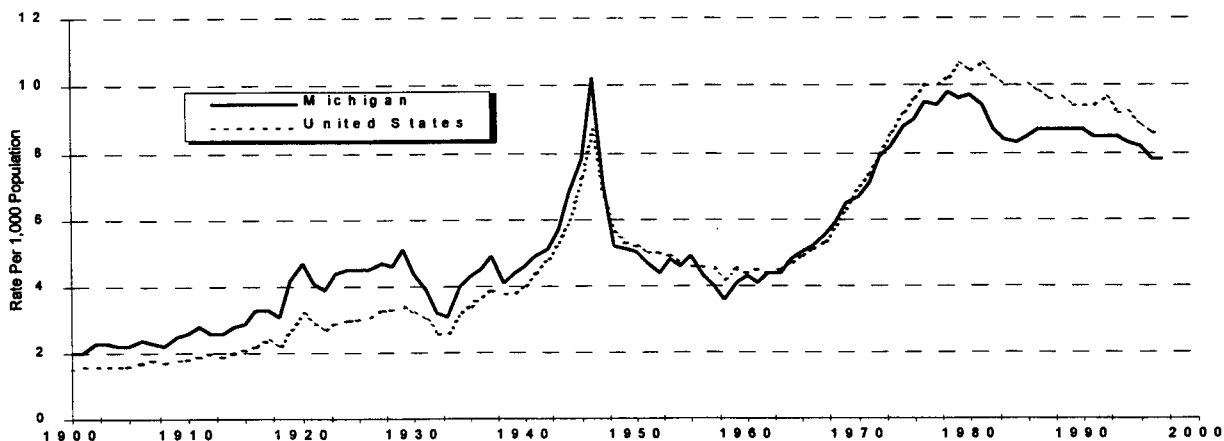
Table 3.5
Number of Divorces and Annulments
Divorce and Annulment Rates
Michigan and United States Occurrences
Selected Years, 1900 - 1998

United States		Year	Michigan	
Number	Rate		Number	Rate
56,000	1.5	1900	2,435	2.0
83,000	1.8	1910	3,716	2.6
170,505	3.2	1920	8,679	4.7
195,961	3.2	1930	10,639	4.4
264,000	4.0	1940	12,054	4.6
385,000	5.2	1950	15,979	5.0
393,000	4.4	1960	16,656	4.3
708,000	7.0	1970	29,934	6.7
1,189,000	10.4	1980	45,047	9.7
1,182,000	9.4	1990	40,568	8.7
1,187,000	9.4	1991	40,103	8.5
1,215,000	9.6	1992	40,425	8.5
1,187,000	9.2	1993	40,470	8.5
1,191,000	9.2	1994	39,795	8.3
1,169,000	8.8	1995	39,449	8.2
1,150,000	8.6	1996	38,169	7.8
1,163,000	8.6	1997	38,202	7.8
1,135,000	8.4	1998	38,523	7.9

Note: Rates are the number of persons whose marriage ended in divorce or annulment per 1,000 population. 1991-1997 U.S. data are provisional.

Source: 1900-1998 Michigan Occurrence Divorce Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

Figure 3.5
Divorce Rates
Michigan and United States Occurrences, 1900-1998



Note: 1991-1998 U.S. data are provisional.

Source: 1900-1998 Michigan Occurrence Divorce Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

The number of children less than 18 years old born to couples dissolving marriages in 1998 was at least 37,210 (Table 3.6). This is 25 percent below the peak number of 49,555 in 1976. The number of children affected by divorce as a proportion of all children peaked at 16.9 in 1980 and 1981 (Table 3.6). It fluctuated between 15.0 and 16.3 per 1,000

children until 1998 when it was to 14.9. The average number of children per divorce has dropped from a high of 1.37 children in 1971 to 0.97 in 1998.

Data for the United States indicate a similar pattern.

Table 3.6
Estimated Number of Children Involved in Divorces and Annulments, Average Number of Children Per Decree, and Rate Per 1,000 Children Under 18 Years of Age
Michigan and United States, Selected Years 1960 - 1998

Michigan			Year	United States		
Estimated Number of Children Involved	Average Number of Children Per Decree	Rate Per 1,000 Under 18 Years of Age		Estimated Number of Children Involved	Average Number of Children Per Decree	Rate Per 1,000 Under 18 Years of Age
19,209	1.15	6.5	1960	463,000	1.18	7.2
40,596	1.36	12.5	1970	870,000	1.22	12.5
46,603	1.04	16.9	1980	1,174,000	0.98	17.3
45,461	1.05	16.9	1981	1,180,000	0.97	18.7
41,156	1.04	15.7	1982	1,108,000	0.94	17.6
38,712	1.02	15.2	1983	1,091,000	0.94	17.4
37,629	1.00	15.0	1984	1,081,000	0.92	17.2
38,673	1.00	15.5	1985	1,091,000	0.92	17.3
39,378	1.00	15.9	1986	1,064,000	0.90	16.8
39,321	1.00	15.9	1987	1,038,000	0.89	16.3
39,635	0.99	16.1	1988	1,044,000	0.89	16.4
39,897	0.99	16.3	1989	1,063,000	0.91	16.8
39,792	0.98	16.2	1990	1,075,000	0.90	16.8
39,000	0.97	15.7	1991	---	---	---
39,579	0.98	15.9	1992	---	---	---
39,372	0.97	15.7	1993	---	---	---
38,794	0.97	15.4	1994	---	---	---
38,611	0.98	15.3	1995	---	---	---
37,102	0.97	14.7	1996	---	---	---
36,460	0.95	14.6	1997	---	---	---
37,210	0.97	14.9	1998	---	---	---

Note: 1991-1998 U.S. data are not available

Source: 1960-1998 Michigan Occurrence Divorce Files, Division for Vital Records and Health Statistics, MDCH
Monthly Vital Statistics Report, National Center for Health Statistics

REFERENCE APPENDIX

SECTION IV



Table 4.1
Population, Live Births, Deaths, Marriages and Divorces
Michigan, 1900 - 1998

Year	Population	Live Births	Deaths							Marriages	Divorces	
			All Ages	<1 Year	<28 Days	28-364 Days	Perinatal	Fetal	Maternal			
1900	2,420,982	43,699	32,453	6,866					1,325	452	23,295	2,435
1901	2,459,901	43,221	32,834	6,319					1,501	531	24,079	2,448
1902	2,498,820	45,546	31,472	5,949					1,793	468	25,653	2,828
1903	2,537,739	46,020	33,176	6,488					1,814	427	26,029	2,945
1904	2,576,658	47,508	34,494	6,419					1,911	436	24,918	2,808
1905	2,615,578	46,976	34,679	8,054					2,044	416	26,307	2,825
1906	2,654,497	58,599	37,033	7,952					2,358	400	27,519	3,192
1907	2,693,416	59,029	36,701	6,906					2,358	391	27,940	3,107
1908	2,732,335	64,772	36,761	7,697					2,694	440	25,765	3,020
1909	2,771,254	64,323	36,313	7,443					2,540	405	27,353	3,516
1910	2,810,173	64,109	39,913	7,998					2,559	431	29,039	3,716
1911	2,895,997	65,756	38,007	7,131					2,716	451	29,859	4,125
1912	2,981,821	69,537	38,804	6,985					2,906	396	31,694	3,838
1913	3,067,645	73,058	40,827	7,659					2,953	528	33,529	3,978
1914	3,153,469	76,761	39,906	7,431					3,113	507	35,316	4,395
1915	3,239,293	81,100	40,441	6,943					3,357	488	35,527	4,757
1916	3,325,116	87,062	46,047	8,415					3,689	503	40,143	5,540
1917	3,410,940	89,419	47,236	7,916					3,550	586	42,791	5,627
1918	3,496,764	91,261	54,617	8,197					3,686	709	33,260	5,493
1919	3,582,588	84,062	45,636	7,560					3,361	578	45,579	7,469
1920	3,668,412	92,245	51,982	8,587					3,770	795	50,805	8,679
1921	3,785,799	96,035	44,186	7,584					3,669	605	41,508	7,676
1922	3,903,186	90,042	43,817	6,730					3,779	551	43,561	7,591
1923	4,020,573	92,956	49,333	7,477					3,657	583	49,569	8,745
1924	4,137,960	98,187	47,304	7,088	4,119	2,969	6,791	3,703	636	636	49,788	9,400
1925	4,255,347	98,983	49,417	7,498	4,022	3,476	6,667	3,670	629	629	46,276	9,650
1926	4,372,734	98,289	54,080	7,620	4,054	3,566	6,773	3,816	631	631	39,788	9,795
1927	4,490,121	99,940	50,600	6,766	3,915	2,851	6,794	3,834	667	667	36,276	10,617
1928	4,607,508	97,462	54,755	6,806	3,739	3,067	6,594	3,701	603	603	37,300	10,615
1929	4,724,895	98,695	56,117	6,605	3,777	2,828	6,613	3,710	617	617	36,816	12,094
1930	4,842,325	98,882	51,561	6,213	3,624	2,589	6,518	3,714	597	597	29,482	10,639
1931	4,883,703	90,547	49,068	5,187	3,084	2,103	5,643	3,220	539	539	28,856	9,507
1932	4,925,081	85,254	49,569	4,630	2,798	1,832	5,210	2,980	493	493	28,552	7,889
1933	4,966,459	80,482	48,507	4,094	2,591	1,503	4,906	2,776	447	447	33,132	7,671
1934	5,007,837	83,944	50,440	4,377	2,717	1,660	4,781	2,607	450	450	43,241	10,124
1935	5,049,216	87,403	51,051	4,170	2,550	1,620	4,832	2,717	438	438	45,313	10,844
1936	5,090,594	88,457	54,777	4,479	2,647	1,832	4,726	2,625	425	425	47,023	11,419
1937	5,131,972	91,566	53,468	4,374	2,700	1,674	4,919	2,707	326	326	47,954	12,472
1938	5,173,350	96,962	50,678	4,319	2,734	1,585	4,984	2,732	345	345	30,105	10,646
1939	5,214,728	94,432	52,017	3,952	2,594	1,358	4,706	2,572	280	280	37,725	11,589
1940	5,256,106	99,106	52,092	4,022	2,629	1,393	4,749	2,602	292	292	46,342	12,054
1941	5,437,546	107,498	52,671	4,166	2,687	1,479	4,991	2,769	298	298	50,989	13,317
1942	5,538,856	124,068	52,738	4,606	3,091	1,515	5,581	3,067	260	260	51,582	14,085
1943	5,377,329	125,441	56,774	4,804	2,979	1,825	5,563	3,213	237	237	44,385	15,259
1944	5,377,329	113,586	54,016	4,326	2,784	1,542	5,140	2,874	198	198	41,678	18,356
1945	5,435,092	111,557	53,641	4,008	2,670	1,338	4,906	2,703	166	166	48,329	21,133
1946	5,708,415	138,572	54,856	4,541	3,323	1,218	5,978	3,168	163	163	78,808	29,158
1947	6,069,000	160,275	56,807	5,055	3,677	1,378	6,583	3,422	173	173	71,319	21,386
1948	6,195,000	153,726	56,520	4,617	3,352	1,265	5,968	3,132	120	120	61,986	16,017
1949	6,352,000	156,469	57,107	4,520	3,232	1,288	5,746	2,994	105	105	53,109	16,274

Note: Deaths are exclusive of fetal deaths. Perinatal deaths include deaths under 1 week and fetal deaths. Divorces include annulments. 1971-1979 population estimates have been revised by the U.S. Census Bureau. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1998 population is not available. For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days. 1974 divorce data is estimated.

Source: Michigan Resident Birth, Death and Fetal Death Files and Michigan Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.1 (continued)
Population, Live Births, Deaths, Marriages and Divorces
Michigan, 1900 - 1998

Year	Population	Live Births	Deaths							Marriages	Divorces
			All Ages	<1 Year	<28 Days	28-364 Days	Perinatal	Fetal	Maternal		
1950	6,371,766	160,055	57,567	4,214	3,043	1,171	5,781	3,095	91	58,180	15,979
1951	6,545,000	172,451	59,181	4,505	3,296	1,209	6,088	3,158	94	53,411	15,446
1952	6,708,000	177,835	59,138	4,689	3,414	1,275	6,266	3,224	82	50,487	14,925
1953	6,852,000	182,968	62,087	4,728	3,369	1,339	6,188	3,180	79	53,308	16,537
1954	7,024,000	192,104	60,706	4,795	3,560	1,235	6,415	3,249	94	51,243	16,281
1955	7,236,000	196,294	63,087	4,873	3,707	1,166	6,381	3,029	61	55,698	17,676
1956	7,516,000	206,068	64,352	5,047	3,796	1,251	6,655	3,245	84	57,068	16,228
1957	7,803,000	208,488	66,435	5,093	3,884	1,209	6,668	3,154	79	55,121	15,442
1958	7,866,000	202,690	65,899	4,980	3,789	1,191	6,516	3,101	69	55,159	14,040
1959	7,960,000	198,301	66,812	4,846	3,674	1,172	6,250	2,928	72	58,826	16,168
1960	7,823,194	195,056	67,912	4,702	3,580	1,122	6,247	3,008	75	61,090	16,656
1961	7,903,000	192,825	67,375	4,604	3,475	1,129	5,875	2,735	78	63,320	16,219
1962	7,939,000	182,790	70,049	4,367	3,251	1,116	5,669	2,703	56	65,002	17,500
1963	8,030,000	178,871	72,438	4,150	3,109	1,041	5,407	2,540	71	68,160	17,479
1964	8,100,000	175,103	72,129	4,043	3,071	972	5,293	2,466	62	73,911	19,400
1965	8,199,283	166,464	73,665	3,936	2,909	1,027	5,139	2,475	54	81,247	20,305
1966	8,314,070	165,794	74,596	3,751	2,830	921	4,909	2,295	54	83,903	21,727
1967	8,615,000	162,756	75,360	3,595	2,714	881	4,693	2,195	52	84,363	23,620
1968	8,675,000	159,058	76,855	3,438	2,617	821	4,476	2,064	44	90,984	25,400
1969	8,734,000	165,760	76,693	3,356	2,550	806	4,488	2,175	27	93,392	28,347
1970	8,875,083	171,667	76,321	3,492	2,671	821	4,522	2,060	29	91,933	29,934
1971	8,972,000	162,244	77,395	3,157	2,412	745	4,139	1,923	32	92,134	31,790
1972	9,025,000	146,854	79,210	2,801	2,115	686	3,700	1,765	35	94,447	35,505
1973	9,072,000	141,550	78,522	2,561	1,902	659	3,392	1,682	26	94,486	37,128
1974	9,109,000	137,414	76,143	2,387	1,734	653	2,947	1,438	19	88,023	39,940
1975	9,108,000	133,931	74,522	2,205	1,563	642	2,673	1,356	16	82,856	40,782
1976	9,117,000	131,378	75,801	1,978	1,424	554	2,495	1,264	14	82,753	43,101
1977	9,157,000	138,416	74,144	1,945	1,367	578	2,452	1,284	11	86,088	43,036
1978	9,202,000	138,802	74,773	1,931	1,281	650	2,302	1,201	15	88,333	45,029
1979	9,249,000	144,452	73,480	1,921	1,295	626	2,285	1,175	11	89,450	44,242
1980	9,256,110	145,162	74,991	1,851	1,284	567	2,235	1,135	16	86,898	45,047
1981	9,209,287	140,579	75,818	1,851	1,281	570	2,151	1,040	7	85,252	43,167
1982	9,115,196	137,950	75,536	1,672	1,202	470	1,989	954	11	82,633	39,739
1983	9,047,764	133,026	76,639	1,573	1,067	506	1,843	933	6	78,910	37,991
1984	9,049,454	135,782	76,401	1,595	1,100	495	1,884	929	4	80,810	37,563
1985	9,076,287	138,052	78,635	1,575	1,071	504	1,867	953	9	79,022	38,775
1986	9,127,774	137,626	80,177	1,565	1,079	486	1,782	865	11	77,815	39,553
1987	9,187,484	140,466	79,795	1,538	1,029	509	1,701	824	8	74,418	39,857
1988	9,218,002	139,635	80,075	1,542	1,068	474	1,659	761	11	75,386	40,103
1989	9,253,298	148,164	78,566	1,645	1,070	575	1,792	881	13	76,210	40,276
1990	9,310,321	153,080	78,501	1,638	1,073	565	1,722	830	10	76,099	40,568
1991	9,390,166	149,478	79,738	1,554	1,003	551	1,620	775	16	72,747	40,103
1992	9,466,017	143,827	78,916	1,460	962	498	1,576	755	15	71,322	40,425
1993	9,524,255	139,560	82,286	1,319	856	463	1,434	726	8	70,771	40,470
1994	9,579,853	137,844	82,644	1,184	775	409	1,388	731	8	70,966	39,795
1995	9,655,305	134,169	83,405	1,110	725	385	1,363	767	11	71,042	39,449
1996	9,730,925	133,231	83,496	1,072	703	369	1,329	759	5	68,598	38,169
1997	9,773,892	133,549	82,994	1,085	748	337	1,385	798	12	66,974	38,202
1998	9,773,892	133,649	84,906	1,091	709	382	1,405	830	8	65,642	38,523

Note: Deaths are exclusive of fetal deaths. Perinatal deaths include deaths under 1 week and fetal deaths. Divorces include annulments. 1971-1979 population estimates have been revised by the U.S. Census Bureau. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1998 population is not available. For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days. 1974 divorce data is estimated.

Source: Michigan Resident Birth, Death and Fetal Death Files and Michigan Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.2
Live Birth Rates, Death Rates, Fetal Death Ratios, Marriage and Divorce Rates
Michigan, 1900 - 1998

Year	Live Births	Deaths						Marriages	Divorces	
		All Ages	<1 Year	<28 Days	28-364 Days	Perinatal	Fetal			Maternal
1900	18.1	13.4	157.1				30.3	1,034.3	19.2	2.0
1901	17.6	13.3	146.2				34.7	1,228.6	19.6	2.0
1902	18.2	12.6	130.6				39.4	1,027.5	20.5	2.3
1903	18.1	13.1	141.0				39.4	927.9	20.5	2.3
1904	18.4	13.4	135.1				40.2	917.7	19.3	2.2
1905	18.0	13.3	150.2				43.5	885.6	20.1	2.2
1906	22.1	14.0	135.7				40.2	682.6	20.7	2.4
1907	21.9	13.6	117.0				39.9	662.4	20.7	2.3
1908	23.7	13.5	118.8				41.6	679.3	18.9	2.2
1909	23.2	13.1	115.7				39.5	629.6	19.7	2.5
1910	22.8	14.2	124.8				39.9	672.3	20.7	2.6
1911	22.7	13.1	108.4				41.3	685.9	20.6	2.8
1912	23.3	13.0	100.4				41.8	569.5	21.3	2.6
1913	23.8	13.3	104.8				40.4	722.7	21.9	2.6
1914	24.3	12.7	96.8				40.6	660.5	22.4	2.8
1915	25.0	12.5	85.6				41.4	601.7	21.9	2.9
1916	26.2	13.8	96.7				42.4	577.7	24.1	3.3
1917	26.2	13.8	88.5				39.7	655.3	25.1	3.3
1918	26.1	15.6	89.8				40.4	776.9	19.0	3.1
1919	23.5	12.7	89.9				40.0	687.6	25.4	4.2
1920	25.1	14.2	93.1				40.9	861.8	27.7	4.7
1921	25.4	11.7	79.0				38.2	630.0	21.9	4.1
1922	23.1	11.2	74.7				42.0	611.9	22.3	3.9
1923	23.1	12.3	80.4				39.3	627.2	24.7	4.4
1924	23.7	11.4	72.2	41.9	30.2	66.7	37.7	647.7	24.1	4.5
1925	23.3	11.6	75.7	40.6	35.1	64.9	37.1	635.5	21.7	4.5
1926	22.5	12.4	77.5	41.2	36.3	66.3	38.8	642.0	18.7	4.5
1927	22.3	11.3	67.7	39.2	28.5	65.5	38.4	667.4	16.2	4.7
1928	21.2	11.9	69.8	38.4	31.5	65.2	38.0	618.7	16.2	4.6
1929	20.9	11.9	66.9	38.3	28.7	64.6	37.6	625.2	15.6	5.1
1930	20.4	10.6	62.8	36.6	26.2	63.5	37.6	603.7	12.2	4.4
1931	18.5	10.1	57.3	34.1	23.2	60.2	35.6	595.3	11.8	3.9
1932	17.3	10.1	54.3	32.8	21.5	59.0	35.0	578.3	11.6	3.2
1933	16.2	9.8	50.9	32.2	18.7	58.9	34.5	555.4	13.3	3.1
1934	16.8	10.1	52.1	32.4	19.8	55.2	31.1	536.1	17.3	4.0
1935	17.3	10.1	47.7	29.2	18.5	53.6	31.1	501.1	17.9	4.3
1936	17.4	10.8	50.6	29.9	20.7	51.9	29.7	480.5	18.5	4.5
1937	17.8	10.4	47.8	29.5	18.3	52.2	29.6	356.0	18.7	4.9
1938	18.7	9.8	44.5	28.2	16.3	50.0	28.2	355.8	11.6	4.1
1939	18.1	10.0	41.8	27.5	14.4	48.5	27.2	296.5	14.5	4.4
1940	18.9	9.9	40.6	26.5	14.1	46.7	26.3	294.6	17.6	4.6
1941	19.8	9.7	38.8	25.0	13.8	45.3	25.8	277.2	18.8	4.9
1942	22.4	9.5	37.1	24.9	12.2	43.9	24.7	209.6	18.6	5.1
1943	23.3	10.6	38.3	23.7	14.5	43.2	25.6	188.9	16.5	5.7
1944	21.1	10.0	38.1	24.5	13.6	44.1	25.3	174.3	15.5	6.8
1945	20.5	9.9	35.9	23.9	12.0	42.9	24.2	148.8	17.8	7.8
1946	24.3	9.6	32.8	24.0	8.8	42.2	22.9	117.6	27.6	10.2
1947	26.4	9.4	31.5	22.9	8.6	40.2	21.4	107.9	23.5	7.1
1948	24.8	9.1	30.0	21.8	8.2	38.0	20.4	78.1	20.0	5.2
1949	24.6	9.0	28.9	20.7	8.2	36.0	19.1	67.1	16.7	5.1

Note: Birth rate, death rate for all ages, rate of persons married and rate of persons divorced per 1,000 population. Fetal death ratio, mortality rates for deaths under 1 year, under 28 days, and from 28-364 days per 1,000 live births. Maternal mortality rate per 100,000 live births. Perinatal mortality rate per 1,000 live births and fetal deaths. 1971-1998 birth, death, marriage and divorce rates have been recalculated using revised population estimates. 1971-1979 population estimates have been revised by the U.S. Census Bureau. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days. 1974 divorce data is estimated. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Michigan Resident Birth, Death and Fetal Death Files and Michigan Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.2 (continued)
 Live Birth Rates, Death Rates, Fetal Death Ratios, Marriage and Divorce Rates
 Michigan, 1900 - 1998

Year	Live Births	Deaths							Marriages	Divorces
		All Ages	<1 Year	<28 Days	28-364 Days	Perinatal	Fetal	Maternal		
1950	25.1	9.0	26.4	19.0	7.3	35.4	19.3	56.9	18.3	5.0
1951	26.3	9.0	26.1	19.1	7.0	34.7	18.3	54.5	16.3	4.7
1952	26.5	8.8	26.4	19.2	7.2	34.6	18.1	46.1	15.1	4.4
1953	26.7	9.1	25.8	18.5	7.3	33.2	17.4	43.2	15.6	4.8
1954	27.3	8.6	25.0	18.5	6.4	32.8	16.9	48.9	14.6	4.6
1955	27.1	8.7	24.8	18.9	5.9	32.0	15.4	31.1	15.4	4.9
1956	27.4	8.6	24.5	18.4	6.1	31.8	15.7	40.8	15.2	4.3
1957	26.7	8.5	24.4	18.6	5.8	31.5	15.1	37.9	14.1	4.0
1958	25.8	8.4	24.6	18.7	5.9	31.7	15.3	34.0	14.0	3.6
1959	24.9	8.4	24.4	18.5	5.9	31.1	14.8	36.3	14.8	4.1
1960	24.9	8.7	24.1	18.4	5.8	31.5	15.4	38.5	15.6	4.3
1961	24.4	8.5	23.9	18.0	5.9	30.0	14.2	40.5	16.0	4.1
1962	23.0	8.8	23.9	17.8	6.1	30.6	14.8	30.6	16.4	4.4
1963	22.3	9.0	23.2	17.4	5.8	29.8	14.2	39.7	17.0	4.4
1964	21.6	8.9	23.1	17.5	5.6	29.8	14.1	35.4	18.2	4.8
1965	20.3	9.0	23.6	17.5	6.2	30.4	14.9	32.4	19.8	5.0
1966	19.9	9.0	22.6	17.1	5.6	29.2	13.8	32.6	20.2	5.2
1967	18.9	8.7	22.1	16.7	5.4	28.4	13.5	31.9	19.6	5.5
1968	18.3	8.9	21.6	16.5	5.2	27.8	13.0	27.7	21.0	5.9
1969	19.0	8.8	20.2	15.4	4.9	26.7	13.1	16.3	21.4	6.5
1970	19.3	8.6	20.3	15.6	4.8	26.0	12.0	16.9	20.7	6.7
1971	18.1	8.6	19.5	14.9	4.6	25.2	11.9	19.7	20.5	7.1
1972	16.3	8.8	19.1	14.4	4.7	24.9	12.0	23.8	20.9	7.9
1973	15.6	8.7	18.1	13.4	4.7	23.7	11.9	18.4	20.8	8.2
1974	15.1	8.4	17.4	12.6	4.8	21.2	10.5	13.8	19.3	8.8
1975	14.7	8.2	16.5	11.7	4.8	19.8	10.1	11.9	18.2	9.0
1976	14.4	8.3	15.1	10.8	4.2	18.8	9.6	10.7	18.2	9.5
1977	15.1	8.1	14.1	9.9	4.2	17.6	9.3	7.9	18.8	9.4
1978	15.1	8.1	13.9	9.2	4.7	16.4	8.7	10.8	19.2	9.8
1979	15.6	7.9	13.3	9.0	4.3	15.7	8.1	7.6	19.3	9.6
1980	15.7	8.1	12.8	8.8	3.9	15.3	7.8	11.0	18.8	9.7
1981	15.3	8.2	13.2	9.1	4.1	15.2	7.4	5.0	18.5	9.4
1982	15.1	8.3	12.1	8.7	3.4	14.3	6.9	8.0	18.1	8.7
1983	14.7	8.5	11.8	8.0	3.8	13.8	7.0	4.5	17.4	8.4
1984	15.0	8.4	11.7	8.1	3.6	13.8	6.8	*	17.9	8.3
1985	15.2	8.7	11.4	7.8	3.7	13.4	6.9	6.5	17.4	8.5
1986	15.1	8.8	11.4	7.8	3.5	12.9	6.3	8.0	17.1	8.7
1987	15.3	8.7	10.9	7.3	3.6	12.0	5.9	5.7	16.2	8.7
1988	15.1	8.7	11.0	7.6	3.4	11.8	5.4	7.9	16.4	8.7
1989	16.0	8.5	11.1	7.2	3.9	12.0	5.9	8.8	16.5	8.7
1990	16.4	8.4	10.7	7.0	3.7	11.2	5.4	6.5	16.3	8.7
1991	15.9	8.5	10.4	6.7	3.7	10.8	5.2	10.7	15.5	8.5
1992	15.2	8.3	10.2	6.7	3.5	10.9	5.2	10.4	15.1	8.5
1993	14.7	8.6	9.5	6.1	3.3	10.2	5.2	5.7	14.9	8.5
1994	14.4	8.6	8.6	5.6	3.0	10.0	5.3	5.8	14.8	8.3
1995	13.9	8.6	8.3	5.4	2.9	10.1	5.7	8.2	14.7	8.2
1996	13.7	8.6	8.0	5.3	2.8	9.9	5.7	*	14.1	7.8
1997	13.7	8.5	8.1	5.6	2.5	10.3	5.9	9.0	13.7	7.8
1998	13.7	8.7	8.2	5.3	2.9	10.4	6.2	6.0	13.4	7.9

Note: Birth rate, death rate for all ages, rate of persons married and rate of persons divorced per 1,000 population. Fetal death ratio, mortality rates for deaths under 1 year, under 28 days, and from 28-364 days per 1,000 live births. Maternal mortality rate per 100,000 live births. Perinatal mortality rate per 1,000 live births and fetal deaths. 1971-1998 birth, death, marriage and divorce rates have been recalculated using revised population estimates. 1971-1979 population estimates have been revised by the U.S. Census Bureau. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days. 1974 divorce data is estimated. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Michigan Resident Birth, Death and Fetal Death Files and Michigan Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.3
Number of Live Births by Age of Mother
Michigan Residents, 1920 - 1998

Year	All Ages	Age of Mother								Not Stated
		10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45+	
1920	92,740	34	8,129	26,344	26,251	17,521	10,427	3,523	336	175
1921	96,322	39	8,747	26,583	27,292	18,433	11,150	3,572	337	169
1922	90,209	28	8,125	24,575	25,154	17,690	10,584	3,485	343	225
1923	93,066	37	8,725	25,887	25,459	18,072	10,770	3,476	382	258
1924	98,025	38	9,877	28,000	25,781	18,707	11,395	3,682	321	224
1925	99,220	62	10,248	28,116	26,204	18,869	11,406	3,695	379	241
1926	98,781	76	10,496	28,479	25,876	18,444	11,219	3,568	354	269
1927	100,178	59	10,685	29,302	25,707	18,790	11,287	3,722	332	294
1928	97,797	54	10,788	28,895	25,003	17,953	10,913	3,558	315	318
1929	99,134	56	11,312	30,582	25,557	16,957	10,555	3,523	293	299
1930	99,325	60	11,476	29,956	25,861	17,125	10,684	3,582	291	290
1931	90,929	61	10,109	27,255	23,806	15,937	9,905	3,317	302	237
1932	85,736	62	9,297	25,686	22,608	14,988	9,314	3,250	291	240
1933	80,923	52	8,642	23,874	21,618	14,298	8,795	3,173	261	210
1934	83,925	48	9,039	25,458	22,507	14,968	8,391	3,050	259	205
1935	87,446	47	9,808	27,631	22,938	15,026	8,473	3,029	284	210
1936	88,427	53	9,764	28,681	23,584	14,814	8,194	2,866	274	197
1937	91,539	54	10,524	30,532	24,366	15,022	7,949	2,653	242	197
1938	96,963	64	11,024	32,581	26,116	15,690	8,397	2,698	253	140
1939	94,302	51	10,368	31,036	26,095	15,976	8,021	2,416	209	130
1940	99,021	51	10,671	32,960	27,860	16,549	8,146	2,390	202	192
1941	107,458	50	11,309	36,833	31,067	17,132	8,351	2,361	200	155
1942	123,886	66	12,721	43,947	36,034	19,367	8,985	2,445	202	119
1943	125,778	67	11,934	41,627	37,773	21,449	9,980	2,615	184	149
1944	114,700	76	10,113	36,096	33,654	21,094	10,636	2,714	182	135
1945	112,655	73	9,294	32,790	33,143	22,831	11,185	2,970	229	140
1946	139,277	72	10,899	45,999	41,985	25,184	11,811	3,002	223	102
1947	161,085	91	15,594	55,954	47,793	26,296	12,009	3,073	182	93
1948	154,730	95	16,245	53,520	45,059	25,268	11,391	2,888	173	91
1949	157,178	117	16,404	53,608	46,363	25,971	11,565	2,906	181	63
1950	160,955	111	16,310	53,442	48,186	27,422	12,392	2,831	169	92
1951	173,506	104	17,974	57,340	52,044	29,674	13,086	3,040	160	84
1952	178,634	134	17,206	58,012	54,198	31,756	13,880	3,176	220	52
1953	182,810	166	18,510	58,070	54,734	32,948	14,798	3,350	190	44
1954	192,332	208	20,522	60,776	55,962	35,152	15,862	3,598	220	32
1955	196,623	195	21,417	61,952	56,462	35,968	16,554	3,862	198	15
1956	206,226	192	22,808	66,332	58,392	36,870	17,282	4,172	164	14
1957	208,808	190	23,798	67,086	58,424	36,980	17,956	4,160	200	14
1958	202,900	222	23,034	65,834	55,130	36,278	17,892	4,296	196	18
1959	198,576	200	21,922	65,426	53,434	34,934	18,030	4,424	198	8

Note: Total live births for the years 1920 through 1959 differ from figures in Table 4.1 as they are derived from outside sources. Live births by age of mother were not tabulated in Michigan prior to 1960. These data were obtained from the following sources:

1920-1923: Unpublished tables from the National Center for Health Statistics.

1924-1932: Bureau of the Census publication, *Birth, Stillbirth, and Infant Mortality Statistics for Birth, Registration Areas of the United States*.

1933-1936: Unpublished tables from the National Center for Health Statistics.

1937-1949: Bureau of the Census publication, *Vital Statistics of the United States* series.

1950-1959: Department of Health Education and Welfare publication, *Vital Statistics of the United States* series.

Source: Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Table 4.3 (continued)
 Number of Live Births by Age of Mother
 Michigan Residents, 1920 - 1998

Year	All Ages	Age of Mother								
		10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45+	Not Stated
1960	195,056	186	22,786	65,108	51,842	33,228	17,410	4,288	202	6
1961	192,825	212	23,891	64,336	50,277	32,456	17,067	4,363	203	20
1962	182,790	268	22,702	62,243	47,109	29,817	16,160	4,250	224	17
1963	178,871	210	21,686	62,834	46,063	28,364	15,117	4,359	229	9
1964	175,103	264	22,526	62,196	44,671	26,542	14,509	4,162	220	13
1965	166,464	267	24,653	59,439	40,693	23,767	13,528	3,886	211	20
1966	165,794	310	28,690	60,711	39,225	21,205	11,846	3,547	223	37
1967	162,756	316	27,267	61,541	40,052	19,840	10,479	3,059	178	24
1968	159,058	400	26,390	60,072	41,561	18,613	9,095	2,739	163	25
1969	165,760	421	28,061	63,376	44,615	18,535	8,157	2,433	134	28
1970	171,667	489	29,764	65,892	46,262	19,003	7,904	2,223	118	12
1971	162,244	472	28,480	62,367	43,639	18,259	6,975	1,926	112	14
1972	146,854	503	28,108	54,199	40,442	16,133	5,805	1,555	95	14
1973	141,550	569	27,808	51,284	39,845	15,520	5,163	1,277	62	22
1974	137,414	501	25,977	49,975	40,215	15,317	4,291	1,063	50	25
1975	133,931	463	24,509	48,675	40,061	14,891	4,273	982	54	23
1976	131,378	404	22,593	47,161	41,412	14,893	4,053	799	47	16
1977	138,416	426	22,585	49,740	43,346	17,293	4,178	771	51	26
1978	138,802	345	21,487	49,498	43,744	18,367	4,562	729	50	20
1979	144,452	355	21,239	51,319	46,084	19,962	4,720	715	41	17
1980	145,162	331	20,000	51,218	47,113	21,024	4,692	740	22	22
1981	140,579	300	18,397	47,737	46,527	22,178	4,701	695	34	10
1982	137,950	319	17,344	45,586	45,995	22,564	5,395	711	29	7
1983	133,026	328	16,589	42,034	45,065	22,505	5,669	791	38	7
1984	135,782	341	16,442	41,664	45,908	24,320	6,295	780	30	2
1985	138,052	352	16,279	41,125	47,049	25,491	6,864	851	36	5
1986	137,626	335	16,536	39,611	46,421	26,331	7,503	842	35	12
1987	140,466	329	16,911	39,314	47,052	27,795	8,038	969	46	12
1988	139,635	371	17,003	37,529	45,924	28,469	8,553	1,094	54	638
1989	148,164	396	19,149	39,352	47,853	30,462	9,571	1,207	58	116
1990	153,080	426	20,224	39,992	48,466	32,058	10,421	1,382	40	71
1991	149,478	414	19,325	39,546	45,995	32,025	10,627	1,464	36	46
1992	143,827	373	18,341	37,446	43,246	31,496	11,199	1,604	60	62
1993	139,560	371	17,198	35,732	40,975	31,833	11,682	1,636	71	62
1994	137,844	397	17,051	34,448	39,789	32,148	12,066	1,846	66	33
1995	134,169	377	16,444	32,365	38,669	31,721	12,458	2,030	80	25
1996	133,231	330	15,899	31,231	39,286	31,472	12,730	2,168	88	27
1997	133,549	278	15,358	31,164	39,403	31,664	13,327	2,238	95	22
1998	133,649	254	15,263	31,063	39,826	31,379	13,287	2,437	122	18

Note: Total live births for the years 1920 through 1959 differ from figures in Table 4.1 as they are derived from outside sources. Live births by age of mother were not tabulated in Michigan prior to 1960. These data were obtained from the following sources:

1920-1923: Unpublished tables from the National Center for Health Statistics.

1924-1932: Bureau of the Census publication, *Birth, Stillbirth and Infant Mortality Statistics for Birth, Registration Areas of the United States*.

1933-1936: Unpublished tables from the National Center for Health Statistics.

1937-1949: Bureau of the Census publication, *Vital Statistics of the United States* series.

1950-1959: Department of Health Education and Welfare publication, *Vital Statistics of the United States* series.

Source: Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH

Table 4.4
Live Birth Rates by Age of Mother
 Michigan Residents, 1920 - 1998

Year	Age of Mother								Total Fertility Rate
	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45+	
1920	0.2	55.7	173.1	164.0	124.2	83.8	34.3	3.8	3,195.5
1921	0.2	56.9	167.3	165.5	125.8	84.8	32.8	3.6	3,184.5
1922	0.2	50.8	149.6	149.1	117.3	77.1	30.7	3.5	2,891.5
1923	0.2	52.6	152.6	147.5	116.5	75.4	29.3	3.8	2,889.5
1924	0.2	57.4	160.0	146.1	117.3	76.7	29.9	3.1	2,953.5
1925	0.3	57.4	155.9	145.4	115.2	73.9	28.8	3.5	2,902.0
1926	0.4	56.9	153.3	140.5	109.7	70.1	26.8	3.2	2,804.5
1927	0.3	56.0	153.3	136.8	108.9	68.1	27.0	2.9	2,766.5
1928	0.2	54.8	147.1	130.3	101.5	63.7	25.0	2.6	2,626.0
1929	0.2	55.7	151.5	130.6	93.6	59.6	23.9	2.4	2,587.5
1930	0.3	55.2	145.5	130.2	92.8	58.9	23.7	2.3	2,544.5
1931	0.3	47.8	130.4	118.3	85.3	54.3	21.5	2.3	2,301.0
1932	0.3	43.4	121.5	111.0	79.4	50.8	20.8	2.2	2,148.0
1933	0.2	39.7	111.6	105.2	75.0	47.7	20.0	1.9	2,006.5
1934	0.2	41.0	117.6	108.4	77.8	45.3	18.9	1.8	2,055.0
1935	0.2	43.9	126.2	109.4	77.4	45.5	18.5	2.0	2,115.5
1936	0.2	43.1	129.5	111.4	75.5	43.8	17.3	1.8	2,113.0
1937	0.2	45.9	136.4	113.9	75.9	42.3	15.8	1.6	2,160.0
1938	0.3	47.4	143.9	120.9	78.5	44.4	15.8	1.6	2,264.0
1939	0.2	44.1	135.6	119.6	79.2	42.3	14.0	1.3	2,181.5
1940	0.2	44.9	142.8	126.8	81.5	42.8	13.7	1.2	2,269.5
1941	0.2	48.1	157.8	137.1	81.6	42.5	13.2	1.2	2,408.5
1942	0.3	54.5	186.6	155.3	89.9	44.7	13.4	1.2	2,729.5
1943	0.3	51.6	175.1	159.0	97.1	48.6	14.1	1.1	2,734.5
1944	0.3	44.1	150.5	138.5	93.2	50.6	14.3	1.0	2,462.5
1945	0.3	40.8	135.5	133.4	98.5	52.1	15.4	1.3	2,386.5
1946	0.3	48.3	188.5	165.3	106.2	53.8	15.3	1.2	2,894.5
1947	0.4	69.7	227.3	184.2	108.4	53.6	15.4	1.0	3,300.0
1948	0.4	73.2	215.5	170.0	101.9	49.8	14.2	1.0	3,130.0
1949	0.5	74.6	214.0	171.4	102.5	49.6	14.1	1.0	3,138.5
1950	0.5	74.6	212.0	175.5	106.5	52.3	13.6	0.9	3,179.5
1951	0.4	79.1	229.0	192.2	114.4	53.9	14.1	0.8	3,419.5
1952	0.5	73.5	233.0	202.5	121.7	56.1	14.4	1.1	3,514.0
1953	0.6	76.8	234.5	207.0	125.5	58.7	14.9	0.9	3,594.5
1954	0.7	82.8	246.8	214.1	133.1	61.8	15.6	1.1	3,780.0
1955	0.6	84.1	253.0	218.6	135.4	63.4	16.4	0.9	3,862.0
1956	0.6	87.2	272.4	228.9	138.0	65.0	17.4	0.8	4,051.5
1957	0.6	88.6	277.1	231.8	137.6	66.4	17.0	0.9	4,100.0
1958	0.6	83.6	273.4	221.5	134.3	65.0	17.2	0.9	3,982.5
1959	0.6	77.6	273.3	217.4	128.6	64.4	17.3	0.9	3,900.5

Note: Live birth rates are per 1,000 women per year. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Total fertility rate is total children to 1,000 women in their lifetime assuming constant live birth rates. Rates of live births to women aged 45 and over are per 1,000 women 45-49 years of age. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH. Population figures used for 1920-1970 rates are from *General Population Characteristics, Michigan*, USBC, 1971, with arithmetic extrapolation between census years.

Table 4.4 (continued)
Live Birth Rates by Age of Mother
Michigan Residents, 1920 - 1998

Year	Age of Mother								Total Fertility Rate
	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45+	
1960	0.5	79.3	273.1	213.0	121.8	61.4	16.6	0.9	3,833.0
1961	0.6	78.1	252.0	200.7	120.2	61.3	16.8	0.9	3,653.0
1962	0.7	70.7	231.5	183.9	111.4	58.9	16.3	0.9	3,371.5
1963	0.5	64.6	222.5	175.9	107.0	55.9	16.6	0.9	3,219.5
1964	0.6	64.2	210.1	167.0	101.0	54.4	15.8	0.9	3,070.0
1965	0.6	67.4	192.0	149.0	91.2	51.5	14.7	0.8	2,836.0
1966	0.7	75.4	187.9	140.7	82.1	45.8	13.4	0.9	2,734.5
1967	0.7	69.0	182.8	140.8	77.6	41.2	11.5	0.7	2,621.5
1968	0.9	64.3	171.5	143.2	73.4	36.3	10.2	0.6	2,502.0
1969	0.9	66.0	174.2	150.8	73.8	33.1	9.1	0.5	2,542.0
1970	1.0	68.2	176.0	154.0	76.1	32.4	8.3	0.4	2,582.0
1971	1.0	63.6	157.3	142.4	71.2	29.0	7.4	0.4	2,361.5
1972	1.1	61.6	137.4	122.7	60.8	24.2	6.1	0.4	2,071.5
1973	1.2	59.9	128.0	117.3	55.2	21.5	5.1	0.2	1,942.0
1974	1.1	55.3	122.3	113.7	52.4	17.7	4.4	0.2	1,835.5
1975	1.0	52.0	116.8	109.3	49.6	17.5	4.2	0.2	1,753.0
1976	0.9	48.0	111.0	107.5	49.1	16.3	3.4	0.2	1,682.0
1977	1.0	48.4	114.3	112.7	52.9	16.3	3.3	0.2	1,745.5
1978	0.8	46.5	111.5	111.6	54.5	16.8	3.1	0.2	1,725.0
1979	0.9	46.7	114.0	114.9	57.0	16.8	3.0	0.2	1,767.5
1980	0.8	45.1	113.4	115.3	58.0	16.3	3.1	0.1	1,760.5
1981	0.8	43.0	107.1	113.9	58.9	16.4	2.9	0.2	1,716.0
1982	0.8	42.4	105.0	112.4	61.1	17.8	2.9	0.1	1,712.5
1983	0.9	42.3	99.5	109.8	60.9	18.4	3.1	0.2	1,675.5
1984	1.0	43.2	100.4	111.3	64.9	19.6	2.9	0.1	1,717.0
1985	1.0	43.4	101.0	113.9	66.5	20.5	3.1	0.2	1,748.0
1986	1.0	43.9	99.9	111.9	67.3	21.0	3.0	0.2	1,741.0
1987	1.0	45.5	101.8	114.5	69.2	22.4	3.2	0.2	1,789.0
1988	1.2	46.7	100.6	113.9	69.7	23.4	3.5	0.2	1,796.0
1989	1.2	54.3	108.9	121.2	73.9	25.7	3.7	0.2	1,945.5
1990	1.3	59.3	112.0	125.6	77.3	27.3	4.1	0.2	2,035.5
1991	1.2	58.6	109.9	122.8	77.2	27.1	4.1	0.1	2,005.0
1992	1.1	56.3	104.6	118.9	76.3	27.8	4.5	0.2	1,948.5
1993	1.1	52.8	101.4	115.9	78.1	28.5	4.5	0.2	1,912.5
1994	1.2	51.6	100.0	115.0	79.7	29.0	4.9	0.2	1,908.0
1995	1.1	48.7	96.7	112.3	79.9	29.7	5.3	0.2	1,869.5
1996	1.0	46.0	96.3	112.6	80.6	30.0	5.5	0.3	1,861.5
1997	0.8	43.8	97.7	113.6	83.0	31.6	5.5	0.3	1,881.5
1998	0.7	43.5	97.3	114.8	82.2	31.5	6.0	0.3	1,881.5

Note: Live birth rates are per 1,000 women per year. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Total fertility rate is total children to 1,000 women in their lifetime assuming constant live birth rates. Rates of live births to women aged 45 and over are per 1,000 women 45-49 years of age. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Michigan Resident Birth Files, Division for Vital Records and Health Statistics, MDCH. Population figures used for 1920-1970 rates are from *General Population Characteristics, Michigan*, USBC, 1971, with arithmetic extrapolation between census years.

Table 4.5
Cases of Certain Reported Communicable Diseases
Michigan Residents, 1900 - 1998

Year	Diphtheria	Smallpox	Typhoid Fever	Whooping Cough	Measles	Hepatitis (all types)	TB (all forms)	Meningococcal Infections	Polio	Syphilis	Gonorrhea	Acquired Immune Deficiency Syndrome
1900	2,706	694	5,122	3,375	20,356		2,721	654				
1901	2,498	5,088	3,002	2,955	4,629		2,915	506				
1902	2,993	7,086	2,456	3,534	11,978		2,658	528				
1903	3,670	6,341	2,840	4,172	8,941		2,745	525				
1904	3,510	5,753	3,028	1,779	10,386		2,928	448				
1905	2,159	2,985	2,774	1,196	6,061		2,590	577				
1906	3,648	1,240	3,163	1,364	7,403		2,653	533				
1907	2,935	1,712	1,953	872	12,139		2,699	575				
1908	2,658	2,306	2,656	1,248	4,775		2,705	487				
1909	3,109	1,533	2,694	1,054	9,047		3,423	457				
1910	3,433	3,319	3,361	1,136	13,934		4,415	522	104			
1911	3,762	888	2,660	1,897	9,639		5,254	478	68			
1912	3,294	1,127	2,847	1,255	2,834		1,958	88	78			
1913	5,505	1,995	2,253	929	9,185		1,920	165	56			
1914	5,149	1,527	2,167	1,822	11,356		2,566	205	49			
1915	4,386	1,094	1,956	2,258	4,438		3,648	107	95			
1916	5,625	1,581	2,513	1,837	12,143		7,076	163	598			
1917	8,499	3,674	1,723	3,211	14,472		4,856	75	91			
1918	6,128	5,241	1,339	2,563	6,726		3,655	95	121			
1919	7,896	2,381	1,254	1,829	8,885		4,231	75	155	5,077	7,910	
1920	10,360	4,818	1,421	7,171	22,364		4,994	203	67	8,117	11,463	
1921	12,075	4,512	1,837	6,696	3,043		5,708	173	483	7,421	9,774	
1922	8,513	1,230	1,108	5,642	12,107		5,573	159	43	7,900	9,717	
1923	7,725	2,311	982	7,617	30,041		5,471	186	39	10,480	9,597	
1924	6,011	4,527	782	4,364	18,290		5,570	157	647	13,000	10,490	
1925	3,925	784	962	7,576	10,332		5,785	128	99	14,668	10,660	
1926	5,377	549	583	8,776	39,946		5,387	96	107	14,872	10,707	
1927	4,575	1,467	581	6,818	8,303		5,406	138	282	15,713	9,318	
1928	3,724	1,335	390	9,700	27,039		5,885	276	77	15,323	8,592	
1929	4,618	2,410	310	9,340	18,040		6,248	1,864	180	16,606	9,661	
1930	3,206	2,375	504	7,937	28,129		5,128	901	208	16,538	8,554	
1931	1,831	915	424	11,448	6,212		6,132	293	1,137	14,662	7,843	
1932	1,188	222	513	13,091	42,129		7,103	129	112	11,969	6,963	
1933	1,152	46	453	11,720	21,654		6,624	86	93	7,691	6,447	
1934	614	49	486	11,255	6,528		5,264	53	230	6,483	6,188	
1935	645	16	355	13,427	79,061		4,642	113	614	6,416	6,372	
1936	661	32	287	14,287	2,453		5,157	120	152	6,401	6,460	
1937	842	152	241	11,426	6,154		6,469	87	421	8,708	7,072	
1938	619	274	285	14,563	79,400		6,335	69	59	14,684	7,046	
1939	452	371	177	8,997	12,948		6,119	46	904	13,144	6,364	
1940	264	76	120	11,757	20,206		6,063	49	1,228	9,999	7,650	
1941	242	114	147	16,512	70,748		5,371	49	270	11,370	8,767	
1942	243	17	74	11,602	8,569		5,720	66	162	12,461	8,753	
1943	281	18	115	12,091	51,764		6,546	757	255	15,933	9,526	
1944	419	10	78	4,049	26,711		6,419	857	884	17,288	11,987	
1945	630	16	59	5,339	6,328	134	5,471	270	215	16,046	12,565	
1946	385	3	85	8,116	42,261	34	5,548	185	1,091	18,051	12,635	
1947	238	1	77	10,472	9,574	14	6,470	113	646	15,276	10,989	
1948	126	-	49	2,668	42,952	9	6,109	107	775	12,100	9,448	
1949	119	-	48	4,157	20,279	28	5,953	120	2,909	8,740	9,427	

Note: Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Meningococcal infections prior to 1952 data were for meningococcal meningitis. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992, syphilis counts included early latent cases.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.5 (continued)
Cases of Certain Reported Communicable Diseases
Michigan Residents, 1900 - 1998

Year	Diphtheria	Smallpox	Typhoid Fever	Whooping Cough	Measles	Hepatitis (all types)	TB (all forms)	Meningo- coccal Infections	Polio	Syphilis	Gonorrhea	Acquired Immune Deficiency Syndrome
1950	84	-	43	9,184	38,245	48	5,538	133	2,029	8,830	8,678	
1951	48	-	33	3,156	15,227	325	6,144	138	1,463	6,532	8,494	
1952	45	-	53	1,992	32,941	283	6,152	169	3,912	7,377	7,691	
1953	12	-	31	2,932	23,334	868	5,643	151	2,346	5,619	8,790	
1954	57	-	30	5,620	40,725	1,419	5,764	150	2,168	4,686	9,940	
1955	59	-	24	4,249	23,882	1,244	5,488	170	1,177	4,865	10,306	
1956	220	-	56	1,907	41,966	814	5,515	182	656	4,785	9,598	
1957	130	-	12	1,363	19,070	657	5,011	175	498	4,571	8,428	
1958	6	-	18	1,233	41,448	688	5,587	228	1,228	4,267	8,621	
1959	3	-	8	3,001	12,234	1,136	4,743	141	448	3,421	8,033	
1960	9	-	14	1,129	36,161	2,113	4,127	169	88	3,647	8,372	
1961	3	-	7	639	29,391	4,607	3,838	253	40	3,309	9,505	
1962	4	-	12	1,756	25,303	3,280	3,474	139	21	4,331	11,654	
1963	5	-	14	1,410	48,752	2,661	3,298	104	18	5,512	11,043	
1964	1	-	13	957	30,897	2,472	3,047	80	3	5,220	12,028	
1965	-	-	7	612	28,132	2,625	3,069	107	1	5,638	14,319	
1966	1	-	7	653	15,251	2,589	3,259	135	1	5,842	15,424	
1967	1	-	8	1,058	1,048	1,915	2,951	76	3	5,581	17,088	
1968	-	-	1	429	353	2,356	2,618	94	3	5,351	18,153	
1969	-	-	6	192	401	3,359	2,133	114	1	3,809	18,534	
1970	-	-	14	195	1,834	4,594	1,992	69	2	3,920	20,359	
1971	1	-	10	140	2,659	4,828	1,789	64	-	4,800	22,260	
1972	1	-	7	116	2,353	4,322	1,632	55	1	4,891	24,750	
1973	-	-	14	86	4,552	3,872	1,473	54	-	4,375	31,086	
1974	-	-	11	104	2,365	3,599	1,431	54	2	2,722	32,067	
1975	1	-	10	98	3,253	2,877	1,271	76	-	1,638	32,583	
1976	-	-	10	70	6,139	2,645	1,349	65	1	1,089	34,836	
1977	-	-	13	73	1,392	2,686	1,290	51	-	1,185	36,794	
1978	-	-	15	47	8,006	2,174	1,260	87	1	1,133	36,647	
1979	-	-	14	102	869	2,036	1,052	79	-	1,275	36,906	
1980	1	-	12	38	250	1,799	1,185	77	1	1,110	35,125	
1981	-	-	26	30	34	1,700	966	93	-	926	32,316	2
1982	-	-	14	34	64	1,745	932	81	-	917	32,286	2
1983	-	-	10	43	8	1,788	842	91	-	695	34,052	16
1984	-	-	9	31	465	1,728	630	90	-	763	34,758	31
1985	-	-	8	54	113	1,490	535	107	-	673	33,516	64
1986	-	-	5	35	185	1,266	619	81	1	584	37,920	149
1987	-	-	5	54	42	1,610	540	111	-	621	37,348	260
1988	-	-	5	38	54	1,202	526	92	-	1,105	37,412	439
1989	-	-	6	48	359	1,044	464	70	-	1,613	33,627	510
1990	-	-	8	88	545	1,111	504	69	-	2,625	30,779	576
1991	-	-	12	38	66	1,120	451	75	-	3,520	27,015	470
1992	-	-	4	16	15	1,238	496	87	-	1,022	21,470	763
1993	-	-	8	116	6	1,015	463	65	-	635	17,870	1,806
1994	-	-	-	96	26	997	447	59	-	321	18,100	1,119
1995	-	-	4	103	5	1,008	390	75	-	333	18,117	1,086
1996	-	-	10	59	3	1,282	443	51	-	203	15,267	969
1997	-	-	7	71	2	2,224	374	56	-	178	15,647	856
1998	-	-	6	71	10	3,087	385	42	-	219	16,257	722

Note: Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Meningococcal infections prior to 1952 data were for meningococcal meningitis. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992, syphilis counts included early latent cases.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.6
Case Rates of Certain Reported Communicable Diseases
Michigan Residents, 1900 - 1998

Year	Diphtheria	Smallpox	Typhoid Fever	Whooping Cough	Measles	Hepatitis (all types)	TB (all forms)	Meningococcal Infections	Polio	Syphilis	Gonorrhea	Acquired Immune Deficiency Syndrome
1900	111.8	28.7	211.6	139.4	840.8		112.4	27.0				
1901	101.5	206.8	122.0	120.1	188.2		118.5	20.6				
1902	119.8	283.6	98.3	141.4	479.3		106.4	21.1				
1903	144.6	249.9	111.9	164.4	352.3		108.2	20.7				
1904	136.2	223.3	117.5	69.0	403.1		113.6	17.4				
1905	82.5	114.1	106.1	45.7	231.7		99.0	22.1				
1906	137.4	46.7	119.2	51.4	278.9		99.9	20.1				
1907	109.0	63.6	72.5	32.4	450.7		100.2	21.3				
1908	97.3	84.4	97.2	45.7	174.8		99.0	17.8				
1909	112.2	55.3	97.2	38.0	326.5		123.5	16.5				
1910	122.2	118.1	119.6	40.4	495.8		157.1	18.6	3.7			
1911	129.9	31.0	91.8	65.5	332.8		181.4	16.5	2.3			
1912	110.5	37.8	95.5	42.1	95.0		65.7	3.0	2.6			
1913	179.5	65.0	73.4	30.3	299.4		62.6	5.4	1.8			
1914	163.3	48.4	68.7	57.8	360.1		81.4	6.5	1.6			
1915	135.4	33.8	60.4	69.7	137.0		112.6	3.3	2.9			
1916	169.2	47.5	75.6	55.2	365.2		212.8	4.9	18.0			
1917	249.2	107.7	50.5	94.1	424.3		142.4	2.2	2.7			
1918	175.2	149.9	38.3	73.3	192.4		104.5	2.7	3.5			
1919	220.4	66.5	35.0	51.1	248.0		118.1	2.1	4.3	141.7	220.8	
1920	282.4	131.3	38.7	195.5	609.6		136.1	5.5	1.8	221.3	312.8	
1921	318.9	119.2	48.5	176.9	80.4		150.8	4.6	12.8	196.0	258.2	
1922	218.1	31.5	28.4	144.5	310.2		142.8	4.1	1.1	202.4	248.9	
1923	192.1	57.5	24.4	189.5	747.2		136.1	4.6	1.0	260.7	238.7	
1924	145.3	109.4	18.9	105.5	442.0		134.6	3.8	15.6	314.2	253.5	
1925	92.2	18.4	22.6	178.0	242.8		135.9	3.0	2.3	344.7	250.5	
1926	123.0	12.6	13.3	200.7	913.5		123.2	2.2	2.4	340.1	244.9	
1927	101.9	32.7	12.9	151.8	184.9		120.4	3.1	6.3	349.9	207.5	
1928	80.8	29.0	8.5	210.5	586.9		127.7	6.0	1.7	332.6	186.5	
1929	97.7	51.0	6.6	197.7	381.8		132.2	39.4	3.8	351.4	204.5	
1930	66.2	49.0	10.4	163.9	580.9		105.9	18.6	4.3	341.5	176.6	
1931	37.5	18.7	8.7	234.4	127.2		125.6	6.0	23.3	300.2	160.6	
1932	24.1	4.5	10.4	265.8	855.4		144.2	2.6	2.3	243.0	141.4	
1933	23.2	0.9	9.1	236.0	436.0		133.4	1.7	1.9	154.9	129.8	
1934	12.3	1.0	9.7	224.8	130.4		105.1	1.1	4.6	129.5	123.6	
1935	12.8	0.3	7.0	265.9	1,565.8		91.9	2.2	12.2	127.1	126.2	
1936	13.0	0.6	5.6	280.7	48.2		101.3	2.4	3.0	125.7	126.9	
1937	16.4	3.0	4.7	222.6	119.9		126.1	1.7	8.2	169.7	137.8	
1938	12.0	5.3	5.5	281.5	1,534.8		122.5	1.3	1.1	283.8	136.2	
1939	8.7	7.1	3.4	172.5	248.3		117.3	0.9	17.3	252.0	122.0	
1940	5.0	1.4	2.3	223.7	384.4		115.3	0.9	23.4	190.2	145.5	
1941	4.5	2.1	2.7	303.7	1,301.1		98.8	0.9	5.0	209.1	161.2	
1942	4.4	0.3	1.3	209.5	154.7		103.3	1.2	2.9	225.0	158.0	
1943	5.2	0.3	2.1	224.8	962.6		121.7	14.1	4.7	296.3	177.1	
1944	7.8	0.2	1.5	75.3	496.7		119.4	15.9	16.4	321.5	222.9	
1945	11.6	0.3	1.1	98.2	116.4	2.5	100.7	5.0	4.0	295.2	231.2	
1946	6.7	*	1.5	142.2	740.3	0.6	97.2	3.2	19.1	316.2	221.3	
1947	3.9	*	1.3	172.5	157.8	0.2	106.6	1.9	10.6	251.7	181.1	
1948	2.0	-	0.8	43.1	693.3	0.1	98.6	1.7	12.5	195.3	152.5	
1949	1.9	-	0.8	65.4	319.3	0.4	93.7	1.9	45.8	137.6	148.4	

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January, 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Meningococcal infections prior to 1952 data were for meningococcal meningitis. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH.

Table 4.6 (continued)
Case Rates of Certain Reported Communicable Diseases
Michigan Residents, 1900 - 1998

Year	Diphtheria	Smallpox	Typhoid Fever	Whooping Cough	Measles	Hepatitis (all types)	TB (all forms)	Meningo- coccal Infections	Polio	Syphilis	Gonorrhea	Acquired Immune Deficiency Syndrome
1950	1.3	-	0.7	144.1	600.2	0.8	86.9	2.1	31.8	138.6	136.2	
1951	0.7	-	0.5	48.2	232.7	5.0	93.9	2.1	22.4	99.8	129.8	
1952	0.7	-	0.8	29.7	491.1	4.2	91.7	2.5	58.3	110.0	114.7	
1953	0.2	-	0.5	42.8	340.5	12.7	82.4	2.2	34.2	82.0	128.3	
1954	0.8	-	0.4	80.0	579.8	20.2	82.1	2.1	30.9	66.7	141.5	
1955	0.8	-	0.3	58.7	330.0	17.2	75.8	2.3	16.3	67.2	142.4	
1956	2.9	-	0.7	25.4	558.4	10.8	73.4	2.4	8.7	63.7	127.7	
1957	1.7	-	0.2	17.5	244.4	8.4	64.2	2.2	6.4	58.6	108.0	
1958	0.1	-	0.2	15.7	526.9	8.7	71.0	2.9	15.6	54.2	109.6	
1959	*	-	0.1	37.7	153.7	14.3	59.6	1.8	5.6	43.0	100.9	
1960	0.1	-	0.2	14.4	462.2	27.0	52.8	2.2	1.1	46.6	107.0	
1961	*	-	0.1	8.1	371.9	58.3	48.6	3.2	0.5	41.9	120.3	
1962	*	-	0.2	22.1	318.7	41.3	43.8	1.8	0.3	54.6	146.8	
1963	*	-	0.2	17.6	607.1	33.1	41.1	1.3	0.2	68.6	137.5	
1964	*	-	0.2	11.8	381.4	30.5	37.6	1.0	*	64.4	148.5	
1965	-	-	0.1	7.5	343.1	32.0	37.4	1.3	*	68.8	174.6	
1966	*	-	0.1	7.9	183.4	31.1	39.2	1.6	*	70.3	185.5	
1967	*	-	0.1	12.3	12.2	22.2	34.2	0.9	*	64.8	198.4	
1968	-	-	*	4.9	4.1	27.2	30.2	1.1	*	61.7	209.3	
1969	-	-	0.1	2.2	4.6	38.5	24.4	1.3	*	43.6	212.2	
1970	-	-	0.2	2.2	20.7	51.8	22.4	0.8	*	44.2	229.4	
1971	*	-	0.1	1.6	29.6	53.8	19.9	0.7	-	53.5	248.1	
1972	*	-	0.1	1.3	26.1	47.9	18.1	0.6	*	54.2	274.2	
1973	-	-	0.2	0.9	50.2	42.7	16.2	0.6	-	48.2	342.7	
1974	-	-	0.1	1.1	26.0	39.5	15.7	0.6	*	29.9	352.0	
1975	*	-	0.1	1.1	35.7	31.6	14.0	0.8	-	18.0	357.7	
1976	-	-	0.1	0.8	67.3	29.0	14.8	0.7	*	11.9	382.1	
1977	-	-	0.1	0.8	15.2	29.3	14.1	0.6	-	12.9	401.8	
1978	-	-	0.2	0.5	87.0	23.6	13.7	0.9	*	12.3	398.3	
1979	-	-	0.2	1.1	9.4	22.0	11.4	0.9	-	13.6	396.0	
1980	*	-	0.1	0.4	2.7	19.4	12.8	0.8	*	12.0	379.5	
1981	-	-	0.3	0.3	0.4	18.5	10.5	1.0	-	10.1	350.9	*
1982	-	-	0.2	0.4	0.7	19.1	10.2	0.9	-	10.1	354.2	*
1983	-	-	0.1	0.5	0.1	19.8	9.3	1.0	-	7.7	376.4	0.2
1984	-	-	0.1	0.3	5.1	19.1	7.0	1.0	-	8.4	384.1	0.3
1985	-	-	0.1	0.6	1.2	16.4	5.9	1.2	-	7.4	369.3	0.7
1986	-	-	*	0.4	2.0	13.9	6.8	0.9	*	6.4	415.4	1.6
1987	-	-	*	0.6	0.5	17.5	5.9	1.2	-	6.8	406.5	2.8
1988	-	-	*	0.4	0.6	13.0	5.7	1.0	-	12.0	405.9	4.8
1989	-	-	0.1	0.5	3.9	11.3	5.0	0.8	-	17.4	363.4	5.5
1990	-	-	0.1	0.9	5.9	11.9	5.4	0.7	-	28.2	330.6	6.2
1991	-	-	0.1	0.4	0.7	11.9	4.8	0.8	-	37.5	287.7	5.0
1992	-	-	*	0.2	0.2	13.1	5.2	0.9	-	10.8	226.8	8.1
1993	-	-	0.1	1.2	0.1	10.7	4.9	0.7	-	6.7	187.6	19.0
1994	-	-	-	1.0	0.3	10.4	4.7	0.6	-	3.4	188.9	11.7
1995	-	-	*	1.1	*	10.4	4.0	0.8	-	3.4	187.6	11.2
1996	-	-	0.1	0.6	*	13.2	4.6	0.5	-	2.1	156.9	10.0
1997	-	-	0.1	0.7	*	22.8	3.8	0.6	-	1.8	160.1	8.8
1998	-	-	0.1	0.7	0.1	31.6	3.9	0.4	-	2.2	166.3	7.4

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January, 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Meningococcal infections prior to 1952 data were for meningococcal meningitis. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH.

Table 4.7
Number of Deaths and Death Rates for Certain Communicable Diseases
Michigan Residents, 1900 - 1998

Year	Diphtheria		Strep. Sore Throat Including Scarlet Fever		Typhoid Fever		Whooping Cough		Measles	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1900	529	21.9	272	11.2	869	35.9	208	8.6	342	14.1
1901	502	20.4	312	12.7	645	26.2	163	6.6	79	3.2
1902	504	20.2	277	11.1	608	24.3	289	11.6	238	9.5
1903	686	27.0	200	7.9	606	23.9	383	15.1	176	6.9
1904	515	20.0	210	8.1	641	24.9	148	5.7	194	7.5
1905	478	18.3	123	4.7	636	24.3	131	5.0	123	4.7
1906	472	17.8	227	8.6	721	27.2	469	17.7	251	9.5
1907	421	15.6	159	5.9	594	22.1	223	8.3	256	9.5
1908	343	12.6	194	7.1	687	25.1	305	11.2	121	4.4
1909	395	14.3	275	9.9	653	23.6	217	7.8	270	9.7
1910	495	17.6	297	10.6	654	23.3	318	11.3	251	8.9
1911	473	16.3	208	7.2	551	19.0	254	8.8	200	6.9
1912	465	15.6	186	6.2	534	17.9	252	8.5	118	4.0
1913	676	22.0	283	9.2	538	17.5	292	9.5	258	8.4
1914	507	16.1	177	5.6	400	12.7	304	9.6	180	5.7
1915	354	10.9	107	3.3	353	10.9	236	7.3	101	3.1
1916	507	15.2	177	5.3	424	12.8	228	6.9	363	10.9
1917	851	24.9	340	10.0	386	11.3	360	10.6	259	7.6
1918	686	19.6	181	5.2	337	9.6	496	14.2	270	7.7
1919	764	21.3	179	5.0	272	7.6	172	4.8	183	5.1
1920	888	24.2	305	8.3	297	8.1	511	13.9	436	11.9
1921	954	25.2	334	8.8	285	7.5	316	8.3	58	1.5
1922	620	15.9	217	5.6	192	4.9	232	5.9	232	5.9
1923	675	16.8	304	7.6	202	5.0	323	8.0	258	6.4
1924	470	11.4	265	6.4	149	3.6	169	4.1	221	5.3
1925	358	8.4	208	4.9	157	3.7	260	6.1	69	1.6
1926	677	15.5	235	5.4	119	2.7	355	8.1	577	13.2
1927	516	11.5	168	3.7	94	2.1	201	4.5	67	1.5
1928	384	8.3	178	3.9	83	1.8	219	4.8	303	6.6
1929	498	10.5	145	3.1	81	1.7	255	5.4	146	3.1
1930	299	6.2	130	2.7	87	1.8	176	3.6	231	4.8
1931	172	3.5	122	2.5	73	1.5	190	3.9	28	0.6
1932	106	2.2	112	2.3	56	1.1	199	4.0	183	3.7
1933	112	2.3	157	3.2	50	1.0	153	3.1	111	2.2
1934	38	0.8	171	3.4	65	1.3	141	2.8	36	0.7
1935	58	1.1	98	1.9	34	0.7	132	2.6	184	3.6
1936	52	1.0	114	2.2	37	0.7	107	2.1	12	0.2
1937	72	1.4	148	2.9	29	0.6	132	2.6	11	0.2
1938	44	0.9	87	1.7	23	0.4	116	2.2	100	1.9
1939	25	0.5	69	1.3	25	0.5	76	1.5	29	0.6
1940	20	0.4	41	0.8	11	0.2	59	1.1	19	0.4
1941	18	0.3	32	0.6	14	0.3	91	1.7	65	1.2
1942	24	0.4	23	0.4	5	*	72	1.3	8	0.1
1943	21	0.4	11	0.2	9	0.2	101	1.9	89	1.7
1944	32	0.6	7	0.1	7	0.1	33	0.6	49	0.9
1945	46	0.8	9	0.2	3	*	36	0.7	10	0.2
1946	27	0.5	3	*	6	0.1	44	0.8	47	0.8
1947	23	0.4	6	0.1	5	*	63	1.0	5	*
1948	8	0.1	1	*	4	*	9	0.1	43	0.7
1949	11	0.2	4	*	1	*	22	0.3	33	0.5

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, tuberculosis deaths and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.7 (continued)
 Number of Deaths and Death Rates for Certain Communicable Diseases
 Michigan Residents, 1900 - 1998

Year	TB of the Respiratory System		Tuberculosis (all forms)		Poliomyelitis		Syphilis		Gonorrhea		AIDS	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1900	2,018	83.4	2,500	103.3								
1901	2,152	87.5	2,548	103.6			88	3.6				
1902	2,088	83.6	2,462	98.5			114	4.6				
1903	2,155	84.9	2,562	101.0			130	5.2				
1904	2,306	89.5	2,761	107.2			101	4.0				
1905	2,288	87.5	2,732	104.5			89	3.5				
1906	2,303	86.8	2,737	103.1			89	3.4				
1907	2,338	86.8	2,728	101.3			94	3.6				
1908	2,249	82.3	2,706	99.0			118	4.5				
1909	2,237	80.7	2,629	94.9			127	4.8				
1910	2,273	80.9	2,756	98.1	52	1.9	65	2.3				
1911	2,284	78.9	2,766	95.5	55	1.9	104	3.6				
1912	2,289	76.8	2,744	92.0	48	1.7	90	3.1				
1913	2,243	73.1	2,703	88.1	43	1.5	136	4.6				
1914	2,325	73.7	2,799	88.8	41	1.4	160	5.3				
1915	2,527	78.0	2,986	92.2	36	1.2	163	5.3				
1916	2,573	77.4	3,070	92.3	141	4.6	206	6.7				
1917	2,779	81.5	3,310	97.0	44	1.4	224	7.1				
1918	3,059	87.5	3,612	103.3	58	1.8	290	9.1				
1919	2,620	73.1	3,127	87.3	80	2.2	299	8.2				
1920	2,645	72.1	3,149	85.8	30	0.8	314	8.4				
1921	2,285	60.4	2,736	72.3	100	2.6	226	5.9	14	0.4		
1922	2,232	57.2	2,654	68.0	21	0.5	186	4.7	6	0.2		
1923	2,410	59.9	2,837	70.6	18	0.5	262	6.8	5	*		
1924	2,474	59.8	2,952	71.3	116	3.0	271	7.0	13	0.3		
1925	2,410	56.6	2,830	66.5	31	0.7	282	6.6	27	0.6		
1926	2,601	59.5	3,041	69.5	34	0.8	327	7.5	12	0.3		
1927	2,514	56.0	2,952	65.7	69	1.5	305	6.8	16	0.4		
1928	2,647	57.4	3,108	67.5	27	0.6	384	8.4	19	0.4		
1929	2,685	56.8	3,140	66.5	50	1.1	397	8.4	19	0.4		
1930	2,443	50.5	2,912	60.1	39	0.8	395	8.2	12	0.2		
1931	2,263	46.3	2,660	54.5	108	2.2	361	7.4	3	*		
1932	2,101	42.7	2,463	50.0	23	0.5	377	7.7	2	*		
1933	1,996	40.2	2,348	47.3	5	*	327	6.6	7	0.1		
1934	1,909	38.1	2,199	43.9	25	0.5	402	8.0	10	0.2		
1935	1,741	34.5	2,044	40.5	32	0.6	393	7.8	3	*		
1936	1,816	35.7	2,100	41.3	21	0.4	394	7.7	6	0.1		
1937	1,860	36.2	2,119	41.3	51	1.0	401	7.8	8	0.2		
1938	1,633	31.6	1,866	36.1	10	0.2	401	7.8	8	0.2		
1939	1,651	31.7	1,881	36.1	40	0.8	389	7.5	4	*		
1940	1,547	29.4	1,752	33.3	72	1.4	591	11.2	3	*		
1941	1,532	28.2	1,723	31.7	18	0.3	537	9.9	1	0.1		
1942	1,630	29.4	1,827	33.0	10	0.2	559	10.1	7	0.1		
1943	1,588	29.5	1,802	33.5	27	0.5	579	10.8	3	*		
1944	1,544	28.7	1,748	32.5	45	0.8	543	10.1	2	*		
1945	1,591	29.3	1,758	32.3	20	0.4	527	9.7	2	*		
1946	1,645	28.8	1,843	32.3	89	1.6	547	9.6	-	-		
1947	1,483	24.4	1,643	27.1	29	0.5	502	8.3	3	*		
1948	1,395	22.5	1,561	25.2	54	0.9	512	8.3	-	-		
1949	1,254	19.7	1,400	22.0	216	3.4	455	7.2	-	-		

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, tuberculosis deaths and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.7 (continued)
 Number of Deaths and Death Rates for Certain Communicable Diseases
 Michigan Residents, 1900 - 1998

Year	Diphtheria		Strep. Sore Throat Including Scarlet Fever		Typhoid Fever		Whooping Cough		Measles	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1950	2	*	1	*	5	*	28	0.4	28	0.4
1951	6	0.1	-	-	1	*	21	0.3	11	0.2
1952	2	*	-	-	-	-	8	0.1	17	0.3
1953	2	*	1	*	-	-	11	0.2	16	0.2
1954	3	*	3	*	-	-	17	0.2	17	0.2
1955	1	*	1	*	1	*	8	0.1	10	0.1
1956	6	0.1	3	*	-	-	6	0.1	26	0.3
1957	1	*	-	-	-	-	6	0.1	23	0.3
1958	-	-	-	-	-	-	1	*	18	0.2
1959	1	*	2	*	1	*	5	*	11	0.1
1960	2	*	1	*	-	-	1	*	17	0.2
1961	1	*	1	*	-	-	2	*	13	0.2
1962	2	*	1	*	-	-	2	*	8	0.1
1963	-	-	-	-	-	-	-	-	27	0.3
1964	-	-	-	-	-	-	2	*	11	0.1
1965	-	-	-	-	-	-	-	-	5	*
1966	1	*	-	-	-	-	-	-	7	0.1
1967	-	-	-	-	-	-	-	-	3	*
1968	-	-	1	*	-	-	-	-	-	-
1969	-	-	-	-	-	-	-	-	-	-
1970	-	-	2	*	-	-	-	-	1	*
1971	-	-	4	*	-	-	-	-	-	-
1972	-	-	1	*	1	*	-	-	-	-
1973	-	-	-	-	-	-	1	*	2	*
1974	-	-	1	*	-	-	2	*	-	*
1975	-	-	-	-	-	-	1	*	1	*
1976	-	-	-	-	-	-	-	-	-	-
1977	-	-	1	*	-	-	-	-	-	-
1978	-	-	-	-	-	-	1	*	1	*
1979	-	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-	-
1981	-	-	-	-	1	*	-	-	-	*
1982	-	-	-	-	-	-	-	-	1	*
1983	-	-	1	*	-	-	-	-	1	*
1984	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-
1988	-	-	1	*	-	-	1	*	-	-
1989	-	-	-	-	-	-	-	-	-	-
1990	-	-	1	*	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, tuberculosis deaths and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.7 (continued)
 Number of Deaths and Death Rates for Certain Communicable Diseases
 Michigan Residents, 1900 - 1998

Year	TB of the Respiratory System		Tuberculosis ² (all forms)		Poliomyelitis		Syphilis ³		Gonorrhea		AIDS	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1950	1,134	17.8	1,270	19.9	128	2.0	325	5.1	1	*		
1951	1,049	16.0	1,154	17.6	67	1.0	299	4.6	1	*		
1952	689	10.3	775	11.6	213	3.2	174	2.6	2	*		
1953	536	7.8	607	8.9	108	1.6	182	2.7	1	*		
1954	471	6.7	530	7.5	89	1.3	139	2.0	2	*		
1955	435	6.0	477	6.6	32	0.4	115	1.6	1	*		
1956	426	5.7	466	6.2	22	0.3	114	1.5	4	*		
1957	403	5.2	442	5.7	15	0.2	105	1.3	4	*		
1958	357	4.5	395	5.0	37	0.5	84	1.1	8	0.1		
1959	335	4.2	370	4.6	17	0.2	84	1.1	4	*		
1960	364	4.7	390	5.0	4	*	79	1.0	7	0.1		
1961	307	3.9	332	4.2	-	-	71	0.9	7	0.1		
1962	307	3.9	331	4.2	2	*	94	1.2	3	*		
1963	276	3.4	299	3.7	1	*	72	0.9	1	*		
1964	288	3.6	315	3.9	1	*	66	0.8	3	*		
1965	261	3.2	285	3.5	-	-	65	0.8	2	*		
1966	284	3.4	301	3.6	-	-	63	0.8	-	-		
1967	206	2.4	226	2.6	-	-	44	0.5	1	*		
1968	203	2.3	262	3.0	2	*	29	0.3	-	-		
1969	147	1.7	201	2.3	-	-	26	0.3	1	*		
1970	134	1.5	180	2.0	-	-	17	0.2	2	*		
1971	122	1.4	173	1.9	-	-	18	0.2	-	-		
1972	111	1.2	157	1.7	1	*	12	0.1	-	-		
1973	101	1.1	138	1.5	3	*	12	0.1	-	-		
1974	109	1.2	142	1.6	3	*	11	0.1	-	-		
1975	81	0.9	110	1.2	5	*	10	0.1	1	*		
1976	80	0.9	102	1.1	6	0.1	11	0.1	-	-		
1977	67	0.7	97	1.1	6	0.1	3	*	-	-		
1978	60	0.7	80	0.9	2	*	5	*	-	-		
1979	47	0.5	62	0.7	2	*	9	0.1	-	-		
1980	51	0.6	61	0.7	-	-	1	*	1	*		
1981	41	0.4	53	0.6	-	-	4	*	1	*		
1982	30	0.3	41	0.4	-	-	-	-	-	-		
1983	28	0.3	39	0.4	-	-	3	*	-	-		
1984	47	0.5	59	0.7	-	-	2	*	-	-		
1985	37	0.4	46	0.5	-	-	3	*	-	-		
1986	36	0.4	44	0.5	-	-	2	*	-	-		
1987	39	0.4	46	0.5	-	-	2	*	-	-	160	1.7
1988	36	0.4	42	0.5	-	-	2	*	-	-	216	2.3
1989	31	0.3	32	0.3	-	-	3	*	-	-	329	3.6
1990	28	0.3	43	0.5	-	-	-	-	-	-	373	4.0
1991	24	0.3	41	0.4	-	-	-	-	-	-	465	5.0
1992	38	0.4	49	0.5	-	-	1	*	-	-	573	6.2
1993	26	0.3	38	0.4	-	-	5	*	1	*	691	7.4
1994	33	0.3	44	0.5	-	-	1	*	-	-	757	8.0
1995	31	0.3	43	0.5	-	-	2	*	1	*	795	8.3
1996	26	0.3	29	0.3	-	-	2	*	-	-	510	5.4
1997	22	0.2	33	0.3	-	-	-	-	1	*	317	3.3
1998	24	0.2	33	0.3	-	-	1	*	-	-	270	2.8

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, tuberculosis deaths and rates prior to 1975 are not directly comparable to the figures in 1975 and later years. Starting with 1992 data, syphilis counts represent only primary and secondary cases. Prior to 1992 syphilis counts included early latent cases. Asterisk (*) indicates that data do not meet the standards of precision or reliability.

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.8
Number of Deaths and Death Rates by Specified Causes
Michigan Residents, 1900 - 1998

Year	Heart Disease		Cancer (all forms)		Stroke		Accidents (all forms)		Motor Vehicle Accidents	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1900	2,836	117.1	1,460	60.3	2,136	88.2	1,740	71.9		
1901	3,040	123.6	1,484	60.3	2,147	87.3	1,901	77.3		
1902	3,302	132.1	1,483	59.3	2,097	83.9	1,796	71.9		
1903	3,702	145.9	1,694	66.8	2,321	91.5	2,017	79.5		
1904	3,981	154.5	1,728	67.1	2,431	94.3	2,035	79.0		
1905	3,715	142.0	1,693	64.7	2,405	91.9	2,034	77.8		
1906	3,933	148.2	1,736	65.4	2,554	96.2	2,126	80.1		
1907	4,269	158.5	1,747	64.9	2,690	99.9	2,209	82.0		
1908	4,202	153.8	1,921	70.3	2,630	96.3	2,036	74.5		
1909	4,354	157.1	1,948	70.3	2,739	98.8	1,903	68.7		
1910	4,581	163.0	2,105	74.9	3,091	110.0	2,158	76.8	49	1.7
1911	4,639	160.2	2,142	74.0	2,916	100.7	2,121	73.2	44	1.5
1912	5,324	178.5	2,291	76.8	2,707	90.8	2,005	67.2	75	2.5
1913	4,908	160.0	2,388	77.8	2,834	92.4	2,333	76.1	132	4.3
1914	5,124	162.5	2,414	76.6	2,993	94.9	2,108	66.8	120	3.8
1915	5,538	171.0	2,567	79.2	3,384	104.5	2,219	68.5	190	5.9
1916	5,819	175.0	2,710	81.5	3,559	107.0	2,853	85.8	257	7.7
1917	6,103	178.9	2,765	81.1	3,703	108.6	2,925	85.8	335	9.8
1918	6,091	174.2	2,931	83.8	3,493	99.9	2,599	74.3	279	8.0
1919	5,651	157.7	2,990	83.5	3,483	97.2	2,612	72.9	328	9.2
1920	6,732	183.5	3,158	86.1	3,876	105.7	2,646	72.1	397	10.8
1921	6,176	163.1	3,373	89.1	3,931	103.8	2,476	65.4	403	10.6
1922	6,897	176.7	3,481	89.2	4,041	103.5	2,475	63.4	529	13.6
1923	7,266	180.7	3,545	88.2	4,420	109.9	2,826	70.3	677	16.8
1924	6,985	168.8	3,824	92.4	4,241	102.5	3,090	74.7	1,001	24.2
1925	7,540	177.2	3,858	90.7	4,623	108.6	3,278	77.0	1,103	25.9
1926	8,281	189.4	4,087	93.5	4,663	106.6	3,557	81.3	1,221	27.9
1927	8,780	195.5	4,264	95.0	4,378	97.5	3,634	80.9	1,389	30.9
1928	9,786	212.4	4,381	95.1	4,718	102.4	3,704	80.4	1,429	31.0
1929	10,185	215.6	4,571	96.7	4,694	99.3	3,913	82.8	1,552	32.8
1930	9,947	205.4	4,572	94.4	4,533	93.6	3,805	78.6	1,572	32.5
1931	10,206	209.0	4,763	97.5	4,388	89.8	3,630	74.3	1,516	31.0
1932	11,162	226.6	4,935	100.2	4,518	91.7	3,179	64.5	1,229	25.0
1933	11,509	231.7	5,055	101.8	4,318	86.9	3,304	66.5	1,278	25.7
1934	11,824	236.1	5,370	107.2	4,485	89.6	3,774	75.4	1,511	30.2
1935	12,456	246.7	5,399	106.9	4,420	87.5	3,771	74.7	1,676	33.2
1936	13,374	262.7	5,752	113.0	4,705	92.4	5,246	103.1	1,924	37.8
1937	13,233	257.8	5,732	111.7	4,378	85.3	4,580	89.2	2,187	42.6
1938	13,887	268.4	6,059	117.1	4,543	87.8	3,608	69.7	1,490	28.8
1939	14,898	285.7	6,296	120.7	4,415	84.7	3,761	72.1	1,553	29.8
1940	15,480	294.5	6,513	123.9	4,690	89.2	3,961	75.4	1,743	33.2
1941	15,761	289.8	6,551	120.5	4,698	86.4	4,450	81.8	2,156	39.6
1942	16,016	289.2	6,646	120.0	4,841	87.4	3,685	66.5	1,368	24.7
1943	17,816	331.3	7,127	132.5	5,311	98.8	3,480	64.7	1,025	19.1
1944	17,004	316.2	7,277	135.3	4,954	92.1	3,350	62.3	1,103	20.5
1945	17,421	320.5	7,486	137.7	5,295	97.4	3,432	63.1	1,199	22.1
1946	17,691	309.9	7,845	137.4	5,224	91.5	3,776	66.1	1,506	26.4
1947	18,412	303.4	8,188	134.9	5,426	89.4	3,848	63.4	1,499	24.7
1948	18,726	302.3	8,336	134.6	5,272	85.1	4,017	64.8	1,545	24.9
1949	19,137	301.3	8,697	136.9	5,438	85.6	3,838	60.4	1,493	23.5

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Cancer includes leukemias, aleukemias, and Hodgkin's disease beginning with 1921. Stroke was called Cerebrovascular disease between 1969-1995 and Vascular Lesions Affecting-Central Nervous System prior to 1968. Accidents includes Motor Vehicle accidents. Accidents exclude injuries undetermined whether accidentally or purposely inflicted since 1968. Motor vehicle accidents do not include collision with heavier vehicles from 1910 through 1922. Motorcycle accidents are included beginning 1923. Chronic liver disease and cirrhosis was called Cirrhosis of the Liver prior to 1979. Atherosclerosis was called General Arteriosclerosis prior to 1968 and was called Arteriosclerosis from 1968-1978.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.8 (continued)
 Number of Deaths and Death Rates by Specified Causes
 Michigan Residents, 1900 - 1998

Year	Diabetes		Pneumonia & Influenza		Chronic Liver Disease & Cirrhosis		Atherosclerosis	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1900	224	9.3	2,388	98.6				
1901	264	10.7	2,901	117.9				
1902	289	11.6	2,637	105.5				
1903	265	10.4	2,607	102.7				
1904	298	11.6	2,646	102.7				
1905	267	10.2	2,417	92.4				
1906	311	11.7	2,621	98.7				
1907	352	13.1	3,018	112.0				
1908	359	13.1	2,313	84.7				
1909	374	13.5	2,265	81.7				
1910	398	14.2	2,785	99.1				
1911	373	12.9	2,763	95.4				
1912	448	15.0	2,796	93.8				
1913	483	15.7	3,082	100.5				
1914	503	16.0	2,909	92.2				
1915	498	15.4	3,229	99.7				
1916	500	15.0	3,698	111.2				
1917	569	16.7	4,455	130.6				
1918	591	16.9	7,238	207.0				
1919	559	15.6	4,081	113.9				
1920	577	15.7	5,794	157.9				
1921	586	15.5	2,849	75.3	261	6.9		
1922	650	16.7	3,728	95.5	267	6.8		
1923	635	15.8	4,719	117.4	251	6.2		
1924	661	16.0	3,332	80.5	256	6.2		
1925	746	17.5	3,294	77.4	319	7.5		
1926	743	17.0	4,440	101.5	326	7.5		
1927	819	18.2	3,543	78.9	340	7.6		
1928	905	19.6	4,518	98.1	373	8.1		
1929	935	19.8	4,216	89.2	361	7.6		
1930	880	18.2	3,321	68.6	329	6.8	1,047	21.6
1931	950	19.5	2,883	59.0	365	7.5	1,005	20.6
1932	1,121	22.8	3,238	65.7	386	7.8	948	19.2
1933	1,103	22.2	2,756	55.5	354	7.1	966	19.5
1934	1,100	22.0	3,466	69.2	378	7.5	914	18.3
1935	1,228	24.3	3,801	75.3	368	7.3	897	17.8
1936	1,266	24.9	4,096	80.5	446	8.8	997	19.6
1937	1,255	24.5	4,098	79.8	430	8.4	1,168	22.8
1938	1,283	24.8	2,869	55.5	424	8.2	869	16.8
1939	1,360	26.1	2,803	53.8	387	7.4	918	17.6
1940	1,408	26.8	2,478	47.1	468	8.9	941	17.9
1941	1,382	25.4	2,235	41.1	450	8.3	906	16.7
1942	1,448	26.1	2,349	42.4	535	9.7	1,015	18.3
1943	1,535	28.5	2,931	54.5	518	9.6	1,092	20.3
1944	1,554	28.9	2,369	44.1	471	8.8	980	18.2
1945	1,561	28.7	1,932	35.5	535	9.8	970	17.8
1946	1,530	26.8	1,891	33.1	554	9.7	933	16.3
1947	1,618	26.7	2,089	34.4	697	11.5	1,031	17.0
1948	1,771	28.6	1,853	29.9	771	12.4	1,085	17.5
1949	1,884	29.7	1,885	29.7	730	11.5	1,135	17.9

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Cancer includes leukemias, aleukemias, and Hodgkin's disease beginning with 1921. Stroke was called Cerebrovascular disease between 1969-1995 and Vascular Lesions Affecting-Central Nervous System prior to 1968. Accidents includes Motor Vehicle accidents. Accidents exclude injuries undetermined whether accidentally or purposely inflicted since 1968. Motor vehicle accidents do not include collision with heavier vehicles from 1910 through 1922. Motorcycle accidents are included beginning 1923. Chronic liver disease and cirrhosis was called Cirrhosis of the Liver prior to 1979. Atherosclerosis was called General Arteriosclerosis prior to 1968 and was called Arteriosclerosis from 1968-1978.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.8 (continued)
 Number of Deaths and Death Rates by Specified Causes
 Michigan Residents, 1900 - 1998

Year	Heart Disease		Cancer (all forms)		Stroke		Accidents (all forms)		Motor Vehicle Accidents	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1950	20,521	322.1	8,685	136.3	6,376	100.1	3,783	59.4	1,680	26.4
1951	21,118	322.6	9,187	140.4	6,579	100.5	3,916	59.8	1,806	27.6
1952	21,247	316.8	9,256	138.0	6,521	97.2	3,901	58.2	1,815	27.1
1953	22,425	327.3	9,904	144.5	7,045	102.8	4,375	63.8	2,051	29.9
1954	22,362	318.4	10,105	143.9	6,964	99.1	3,948	56.2	1,916	27.3
1955	23,440	323.9	10,297	142.3	7,362	101.7	4,213	58.2	2,129	29.4
1956	24,661	328.1	10,489	139.6	7,114	94.7	3,925	52.2	1,826	24.3
1957	25,369	325.1	10,810	138.5	7,632	97.8	3,643	46.7	1,680	21.5
1958	25,215	320.6	10,946	139.2	7,547	95.9	3,306	42.0	1,466	18.6
1959	25,323	318.1	11,113	139.6	7,700	96.7	3,666	46.1	1,587	19.9
1960	25,728	328.9	11,331	144.8	7,682	98.2	3,688	47.1	1,710	21.9
1961	25,519	322.9	11,476	145.2	7,745	98.0	3,692	46.7	1,656	21.0
1962	27,226	342.9	11,752	148.0	7,783	98.0	3,758	47.3	1,668	21.0
1963	27,483	342.3	12,078	150.4	8,168	101.7	4,033	50.2	2,005	25.0
1964	27,496	339.5	12,087	149.2	7,940	98.0	4,416	54.5	2,286	28.2
1965	28,134	343.1	12,419	151.5	7,769	94.8	4,494	54.8	2,271	27.7
1966	28,277	340.1	12,506	150.4	7,732	93.0	4,737	57.0	2,407	29.0
1967	28,757	333.8	13,030	151.2	7,846	91.1	4,519	52.4	2,265	26.3
1968	29,680	342.1	13,292	153.2	7,913	91.2	4,603	53.1	2,466	28.4
1969	29,396	336.6	13,328	152.6	7,706	88.2	4,766	54.6	2,579	29.5
1970	29,204	329.1	13,551	152.7	7,691	86.7	4,428	49.9	2,309	26.0
1971	30,095	335.4	13,594	151.5	7,826	87.2	4,426	49.3	2,274	25.3
1972	30,865	342.0	14,045	155.6	7,999	88.6	4,566	50.6	2,450	27.1
1973	29,944	330.1	14,220	156.7	7,987	88.0	4,630	51.0	2,389	26.3
1974	29,220	320.8	14,241	156.3	7,645	83.9	4,211	46.2	1,929	21.2
1975	28,298	310.7	14,445	158.6	7,262	79.7	4,002	43.9	1,841	20.2
1976	29,233	320.6	14,880	163.2	7,354	80.7	3,912	42.9	1,993	21.9
1977	28,895	315.6	15,125	165.2	6,818	74.5	3,945	43.1	1,993	21.8
1978	29,406	319.6	15,249	165.7	6,520	70.9	3,970	43.1	2,138	23.2
1979	29,296	316.7	15,409	166.6	6,067	65.6	3,839	41.5	1,967	21.3
1980	29,790	321.8	15,828	171.0	6,164	66.6	3,627	39.2	1,880	20.3
1981	30,172	327.6	16,142	175.3	6,121	66.5	3,390	36.8	1,727	18.8
1982	30,099	330.2	16,566	181.7	5,839	64.1	3,113	34.2	1,555	17.1
1983	30,412	336.1	16,785	185.5	5,721	63.2	2,947	32.6	1,419	15.7
1984	30,100	332.6	16,907	186.8	5,631	62.2	3,049	33.7	1,630	18.0
1985	30,618	337.3	17,281	190.4	5,528	60.9	3,228	35.6	1,676	18.5
1986	31,270	342.6	17,321	189.8	5,421	59.4	3,202	35.1	1,736	19.0
1987	30,521	332.2	17,669	192.3	5,481	59.7	3,143	34.2	1,725	18.8
1988	30,218	327.8	17,890	194.1	5,237	56.8	3,237	35.1	1,806	19.6
1989	28,031	302.9	18,264	197.4	5,173	55.9	3,228	34.9	1,750	18.9
1990	27,527	295.7	18,413	197.8	5,090	54.7	3,137	33.7	1,669	17.9
1991	27,517	293.0	19,204	204.5	5,165	55.0	3,011	32.1	1,494	15.9
1992	26,863	283.8	19,217	203.0	5,087	53.7	2,844	30.0	1,426	15.1
1993	28,512	299.4	19,187	201.5	5,299	55.6	2,830	29.7	1,438	15.1
1994	28,195	294.3	19,410	202.6	5,680	59.3	2,928	30.6	1,445	15.1
1995	28,007	290.1	19,442	201.4	5,857	60.7	3,137	32.5	1,601	16.6
1996	27,980	287.5	19,563	201.0	5,748	59.1	3,062	31.5	1,577	16.2
1997	27,150	277.8	19,504	199.6	5,725	58.6	3,118	31.9	1,507	15.4
1998	27,851	285.0	19,442	198.9	5,760	58.9	3,098	31.7	1,450	14.8

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Cancer includes leukemias, aleukemias, and Hodgkin's disease beginning with 1921. Stroke was called Cerebrovascular disease between 1969-1995 and Vascular Lesions Affecting-Central Nervous System prior to 1968. Accidents includes Motor Vehicle accidents. Accidents exclude injuries undetermined whether accidentally or purposely inflicted since 1968. Motor vehicle accidents do not include collision with heavier vehicles from 1910 through 1922. Motorcycle accidents are included beginning 1923. Chronic liver disease and cirrhosis was called Cirrhosis of the Liver prior to 1979. Atherosclerosis was called General Arteriosclerosis prior to 1968 and was called Arteriosclerosis from 1968-1978.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.8 (continued)
 Number of Deaths and Death Rates by Specified Causes
 Michigan Residents, 1900 - 1998

Year	Diabetes		Pneumonia & Influenza		Chronic Liver Disease & Cirrhosis		Atherosclerosis	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1950	1,438	22.6	1,358	21.3	616	9.7	1,296	20.3
1951	1,374	21.0	1,619	24.7	569	8.7	1,312	20.0
1952	1,339	20.0	1,571	23.4	599	8.9	1,294	19.3
1953	1,419	20.7	1,538	22.4	715	10.4	1,270	18.5
1954	1,469	20.9	1,380	19.6	677	9.6	1,170	16.7
1955	1,415	19.6	1,538	21.3	805	11.1	1,237	17.1
1956	1,443	19.2	1,723	22.9	788	10.5	1,251	16.6
1957	1,510	19.4	2,045	26.2	861	11.0	1,248	16.0
1958	1,595	20.3	2,076	26.4	818	10.4	1,300	16.5
1959	1,715	21.5	1,810	22.7	815	10.2	1,403	17.6
1960	1,784	22.8	2,002	25.6	840	10.7	1,352	17.3
1961	1,778	22.5	1,692	21.4	858	10.9	1,448	18.3
1962	1,908	24.0	1,824	23.0	859	10.8	1,477	18.6
1963	2,049	25.5	1,995	24.8	958	11.9	1,652	20.6
1964	2,055	25.4	1,714	21.2	995	12.3	1,559	19.2
1965	2,153	26.3	1,987	24.2	1,068	13.0	1,726	21.1
1966	2,243	27.0	2,026	24.4	1,152	13.9	1,745	21.0
1967	2,182	25.3	1,973	22.9	1,240	14.4	1,730	20.1
1968	2,298	26.5	2,341	27.0	1,259	14.5	1,262	14.5
1969	2,188	25.1	2,229	25.5	1,430	16.4	1,289	14.8
1970	2,180	24.6	2,004	22.6	1,558	17.6	1,174	13.2
1971	2,103	23.4	1,981	22.1	1,657	18.5	1,187	13.2
1972	2,222	24.6	2,009	22.3	1,778	19.7	1,153	12.8
1973	2,074	22.9	1,958	21.6	1,711	18.9	1,142	12.6
1974	1,940	21.3	1,637	18.0	1,650	18.1	1,187	13.0
1975	1,819	20.0	1,690	18.6	1,574	17.3	1,119	12.3
1976	1,719	18.9	1,812	19.9	1,486	16.3	1,207	13.2
1977	1,615	17.6	1,639	17.9	1,356	14.8	1,164	12.7
1978	1,551	16.9	1,828	19.9	1,351	14.7	1,146	12.5
1979	1,449	15.7	1,454	15.7	1,367	14.8	1,173	12.7
1980	1,467	15.8	1,712	18.5	1,362	14.7	1,254	13.5
1981	1,487	16.1	1,644	17.9	1,253	13.6	1,270	13.8
1982	1,347	14.8	1,665	18.3	1,244	13.6	1,284	14.1
1983	1,470	16.2	2,007	22.2	1,250	13.8	1,269	14.0
1984	1,476	16.3	2,018	22.3	1,194	13.2	1,142	12.6
1985	1,387	15.3	2,193	24.2	1,256	13.8	1,173	12.9
1986	1,494	16.4	2,513	27.5	1,120	12.3	1,214	13.3
1987	1,479	16.1	2,377	25.9	1,099	12.0	1,168	12.7
1988	1,522	16.5	2,626	28.5	1,080	11.7	1,187	12.9
1989	2,052	22.2	2,633	28.5	1,170	12.6	832	9.0
1990	2,009	21.6	2,863	30.8	1,123	12.1	807	8.7
1991	2,095	22.3	2,773	29.5	1,060	11.3	823	8.8
1992	2,114	22.3	2,697	28.5	947	10.0	774	8.2
1993	2,105	22.1	2,981	31.3	1,006	10.6	753	7.9
1994	2,224	23.2	2,877	30.0	1,035	10.8	805	8.4
1995	2,247	23.3	3,002	31.1	1,002	10.4	754	7.8
1996	2,348	24.1	3,010	30.9	968	9.9	760	7.8
1997	2,435	24.9	2,813	28.8	966	9.9	697	7.1
1998	2,449	25.1	3,096	31.7	981	10.0	653	6.7

Note: Rates are per 100,000 population. 1980-1997 population estimates have been revised by the Department of Management & Budget. 1997 population is used to calculate 1998 rates. Cancer includes leukemias, aleukemias, and Hodgkin's disease beginning with 1921. Stroke was called Cerebrovascular disease between 1969-1995 and Vascular Lesions Affecting-Central Nervous System prior to 1968. Accidents includes Motor Vehicle accidents. Accidents exclude injuries undetermined whether accidentally or purposely inflicted since 1968. Motor vehicle accidents do not include collision with heavier vehicles from 1910 through 1922. Motorcycle accidents are included beginning 1923. Chronic liver disease and cirrhosis was called Cirrhosis of the Liver prior to 1979. Atherosclerosis was called General Arteriosclerosis prior to 1968 and was called Arteriosclerosis from 1968-1978.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

**Table 4.9
Selected Vital Statistics by County
Michigan Residents, 1998**

Area	Population Estimate	Deaths	Live Births	Low Weight Live Births	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths	Marriages	Divorces
Michigan	9,773,892	84,906	133,649	10,468	1,091	709	1,405	830	65,642	38,523
Alcona	10,980	179	88	8	-	-	1	1	73	47
Alger	9,958	102	84	9	2	2	2	-	97	44
Allegan	100,585	837	1,397	89	15	9	15	6	739	403
Alpena	30,638	316	340	16	4	3	6	4	217	136
Antrim	20,975	266	233	11	-	-	3	3	172	88
Arenac	16,411	206	182	12	2	1	2	1	126	58
Baraga	8,448	109	100	7	1	1	-	-	49	25
Barry	53,533	441	678	52	6	3	8	6	424	251
Bay	110,423	1,063	1,338	95	8	5	14	9	750	473
Benzie	14,290	160	183	11	-	-	1	1	103	59
Berrien	160,713	1,578	2,215	202	17	10	21	13	1,313	634
Branch	43,628	396	554	40	3	2	4	4	315	192
Calhoun	141,821	1,386	1,860	143	11	9	16	7	1,157	645
Cass	49,967	467	577	49	2	1	3	3	279	225
Charlevoix	23,630	231	324	21	2	1	2	1	193	120
Cheboygan	23,535	269	298	25	2	1	6	5	196	124
Chippewa	37,900	322	394	12	2	1	3	2	279	132
Clare	29,011	353	334	28	2	1	4	3	252	143
Clinton	63,087	421	804	55	3	2	5	3	404	241
Crawford	13,880	153	141	11	1	-	1	1	108	52
Delta	38,801	394	437	20	1	-	2	2	295	172
Dickinson	27,062	333	292	13	4	3	4	1	261	123
Eaton	100,173	755	1,185	71	8	4	14	10	718	481
Emmet	28,339	255	372	24	1	1	6	5	264	154
Genesee	435,393	3,786	6,399	574	75	43	63	28	3,096	1,898
Gladwin	24,879	288	265	26	3	2	2	1	161	125
Gogebic	17,439	245	154	11	3	-	-	-	118	60
Grand Traverse	73,161	579	926	53	5	1	3	2	636	357
Gratiot	40,024	467	507	33	4	3	6	6	300	145
Hillsdale	46,240	421	582	45	4	2	6	5	383	241
Houghton	35,810	410	366	11	3	2	4	2	198	108
Huron	35,270	452	386	29	2	1	3	2	216	111
Ingham	284,089	1,891	3,777	291	26	19	40	24	2,130	1,177
Ionia	61,112	414	821	44	2	1	3	3	437	277
Iosco	25,129	341	288	29	2	2	4	2	204	133
Iron	13,067	235	113	6	-	-	1	1	74	50
Isabella	57,623	384	651	51	5	3	6	4	435	211
Jackson	155,346	1,380	2,052	143	26	18	28	14	1,153	812
Kalamazoo	229,192	1,786	3,183	231	31	24	44	23	1,696	950
Kalkaska	15,451	136	177	13	2	2	2	-	117	72

Note: Population estimates are for 1997.

Source: 1998 Michigan Resident Death, Birth and Fetal Death Files and Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH
Population, Michigan Information Center, Michigan Department of Management and Budget

Table 4.9 (continued)
Selected Vital Statistics by County
Michigan Residents, 1998

Area	Population Estimate	Deaths	Live Births	Low Weight Live Births	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths	Marriages	Divorces
Kent	539,425	3,928	9,155	661	63	36	87	63	4,586	2,063
Keweenaw	2,078	27	30	2	-	-	-	-	20	17
Lake	10,153	142	134	11	-	-	-	1	70	28
Lapeer	86,893	574	1,091	84	11	7	8	2	571	393
Leelanau	18,755	153	189	10	-	-	2	2	147	90
Lenawee	97,998	849	1,197	98	7	5	11	7	465	410
Livingston	141,914	883	1,954	113	8	8	10	4	920	507
Luce	6,584	65	49	4	-	-	-	-	52	22
Mackinac	11,113	126	105	3	-	-	1	1	252	40
Macomb	783,451	6,843	9,897	657	64	44	92	54	5,494	2,893
Manistee	23,179	289	239	21	1	1	2	1	176	94
Marquette	61,792	660	589	27	7	4	2	-	414	244
Mason	27,854	290	309	28	3	1	2	2	261	128
Mecosta	39,178	332	490	32	9	5	6	3	258	127
Menominee	24,443	295	326	28	1	1	1	-	201	114
Midland	81,248	580	1,027	75	6	4	6	2	546	350
Missaukee	13,682	127	148	4	1	-	-	-	99	51
Monroe	142,301	1,102	1,789	113	8	2	2	-	826	617
Montcalm	59,647	537	831	62	10	6	14	9	469	267
Montmorency	9,980	159	108	5	-	-	-	-	73	26
Muskegon	165,882	1,591	2,369	171	15	5	18	15	1,314	852
Newaygo	45,059	439	635	34	4	4	6	2	569	264
Oakland	1,166,512	8,920	15,732	1,093	107	75	160	100	7,870	4,651
Oceana	24,599	223	359	20	7	6	6	2	220	116
Ogemaw	20,955	265	250	16	3	3	3	-	153	71
Ontonagon	8,117	107	52	3	-	-	-	-	36	19
Osceola	22,028	219	274	19	4	3	4	1	169	79
Oscoda	8,844	119	91	3	-	-	1	1	61	51
Otsego	21,800	165	300	12	1	-	3	3	175	119
Ottawa	220,403	1,429	3,541	229	24	15	23	11	1,622	767
Presque Isle	14,392	175	135	7	2	1	1	-	88	40
Roscommon	23,174	342	202	18	4	2	3	1	173	98
Saginaw	211,278	1,961	2,878	257	25	18	39	24	1,410	716
St Clair	157,704	1,462	2,075	117	6	3	13	10	1,153	700
St Joseph	61,234	629	884	64	4	2	3	1	455	331
Sanilac	42,736	459	528	32	2	2	5	4	283	196
Schoolcraft	8,748	127	89	11	3	1	-	-	57	42
Shiawassee	72,236	613	958	61	8	5	8	3	542	271
Tuscola	58,087	551	668	35	6	4	6	3	390	222
Van Buren	75,686	668	1,047	85	16	10	13	3	513	410
Washtenaw	299,503	1,713	3,979	274	17	14	32	20	1,983	1,127
Wayne	2,127,087	20,248	31,477	3,228	340	227	450	266	10,146	6,996
Wexford	29,147	302	406	26	3	1	2	1	222	155
Unknown	-	11	6	1	1	1	1	-	-	-

Note: Population estimates are for 1997.

Source: 1998 Michigan Resident Death, Birth and Fetal Death Files and Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH
Population, Michigan Information Center, Michigan Department of Management and Budget

Table 4.10
Selected Vital Statistics Rates by County
Michigan Residents, 1998

Area	Deaths	Live Births	Low Weight Live Births	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths	Marriages	Divorces
Michigan	8.7	13.7	78.3	8.2	5.3	10.4	6.2	13.4	7.9
Alcona	16.3	8.0	90.9	-	-	*	*	13.3	8.6
Alger	10.2	8.4	107.1	*	*	*	-	19.5	8.8
Allegan	8.3	13.9	63.7	10.7	6.4	10.7	4.3	14.7	8.0
Alpena	10.3	11.1	47.1	*	*	17.4	*	14.2	8.9
Antrim	12.7	11.1	47.2	-	-	*	*	16.4	8.4
Arenac	12.6	11.1	65.9	*	*	*	*	15.4	7.1
Baraga	12.9	11.8	70.0	*	*	-	-	11.6	5.9
Barry	8.2	12.7	76.7	8.8	*	11.7	8.8	15.8	9.4
Bay	9.6	12.1	71.0	6.0	*	10.4	6.7	13.6	8.6
Benzie	11.2	12.8	60.1	-	-	*	*	14.4	8.3
Berrien	9.8	13.8	91.2	7.7	4.5	9.4	5.8	16.3	7.9
Branch	9.1	12.7	72.2	*	*	*	*	14.4	8.8
Calhoun	9.8	13.1	76.9	5.9	4.8	8.6	3.7	16.3	9.1
Cass	9.3	11.5	84.9	*	*	*	*	11.2	9.0
Charlevoix	9.8	13.7	64.8	*	*	*	*	16.3	10.2
Cheboygan	11.4	12.7	83.9	*	*	19.8	*	16.7	10.5
Chippewa	8.5	10.4	30.5	*	*	*	*	14.7	7.0
Clare	12.2	11.5	83.8	*	*	*	*	17.4	9.9
Clinton	6.7	12.7	68.4	*	*	*	*	12.8	7.6
Crawford	11.0	10.2	78.0	*	-	*	*	15.6	7.5
Delta	10.2	11.3	45.8	*	-	*	*	15.2	8.9
Dickinson	12.3	10.8	44.5	*	*	*	*	19.3	9.1
Eaton	7.5	11.8	59.9	6.8	*	11.7	8.4	14.3	9.6
Emmet	9.0	13.1	64.5	*	*	15.9	*	18.6	10.9
Genesee	8.7	14.7	89.7	11.7	6.7	9.8	4.4	14.2	8.7
Gladwin	11.6	10.7	98.1	*	*	*	*	12.9	10.0
Gogebic	14.0	8.8	71.4	*	-	-	-	13.5	6.9
Grand Traverse	7.9	12.7	57.2	*	*	*	*	17.4	9.8
Gratiot	11.7	12.7	65.1	*	*	11.7	11.7	15.0	7.2
Hillsdale	9.1	12.6	77.3	*	*	10.2	*	16.6	10.4
Houghton	11.4	10.2	30.1	*	*	*	*	11.1	6.0
Huron	12.8	10.9	75.1	*	*	*	*	12.2	6.3
Ingham	6.7	13.3	77.0	6.9	5.0	10.5	6.3	15.0	8.3
Ionia	6.8	13.4	53.6	*	*	*	*	14.3	9.1
Iosco	13.6	11.5	100.7	*	*	*	*	16.2	10.6
Iron	18.0	8.6	53.1	-	-	*	*	11.3	7.7
Isabella	6.7	11.3	78.3	*	*	9.2	*	15.1	7.3
Jackson	8.9	13.2	69.7	12.7	8.8	13.6	6.8	14.8	10.5
Kalamazoo	7.8	13.9	72.6	9.7	7.5	13.7	7.2	14.8	8.3
Kalkaska	8.8	11.5	73.4	*	*	*	-	15.1	9.3

Note: Birth and death rates are per 1,000 population. Rates are calculated using 1997 population. Infant and fetal death rates are per 1,000 live births. Marriage and divorce rates are persons per 1,000 population rather than events per population. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Death, Birth and Fetal Death Files and Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.10 (continued)
Selected Vital Statistics Rates by County
Michigan Residents, 1998

Area	Deaths	Live Births	Low Weight Live Births	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths	Marriages	Divorces
Kent	7.3	17.0	72.2	6.9	3.9	9.4	6.8	17.0	7.6
Keweenaw	13.0	14.4	*	-	-	-	-	19.2	16.4
Lake	14.0	13.2	82.1	-	-	*	*	13.8	5.5
Lapeer	6.6	12.6	77.0	10.1	6.4	7.3	*	13.1	9.0
Leelanau	8.2	10.1	52.9	-	-	*	*	15.7	9.6
Lenawee	8.7	12.2	81.9	5.8	*	9.1	5.8	9.5	8.4
Livingston	6.2	13.8	57.8	4.1	4.1	5.1	*	13.0	7.1
Luce	9.9	7.4	*	-	-	-	-	15.8	6.7
Mackinac	11.3	9.4	*	-	-	*	*	45.4	7.2
Macomb	8.7	12.6	66.4	6.5	4.4	9.3	5.5	14.0	7.4
Manistee	12.5	10.3	87.9	*	*	*	*	15.2	8.1
Marquette	10.7	9.5	45.8	11.9	*	*	-	13.4	7.9
Mason	10.4	11.1	90.6	*	*	*	*	18.7	9.2
Mecosta	8.5	12.5	65.3	18.4	*	12.2	*	13.2	6.5
Menominee	12.1	13.3	85.9	*	*	*	-	16.4	9.3
Midland	7.1	12.6	73.0	5.8	*	5.8	*	13.4	8.6
Missaukee	9.3	10.8	*	*	-	-	-	14.5	7.5
Monroe	7.7	12.6	63.2	4.5	*	*	-	11.6	8.7
Montcalm	9.0	13.9	74.6	12.0	7.2	16.7	10.7	15.7	9.0
Montmorency	15.9	10.8	*	-	-	-	-	14.6	5.2
Muskegon	9.6	14.3	72.2	6.3	*	7.6	6.3	15.8	10.3
Newaygo	9.7	14.1	53.5	*	*	9.4	*	25.3	11.7
Oakland	7.6	13.5	69.5	6.8	4.8	10.1	6.3	13.5	8.0
Oceana	9.1	14.6	55.7	19.5	16.7	16.6	*	17.9	9.4
Ogemaw	12.6	11.9	64.0	*	*	*	-	14.6	6.8
Ontonagon	13.2	6.4	*	-	-	-	-	8.9	4.7
Osceola	9.9	12.4	69.3	*	*	*	*	15.3	7.2
Oscoda	13.5	10.3	*	-	-	*	*	13.8	11.5
Otsego	7.6	13.8	40.0	*	-	*	*	16.1	10.9
Ottawa	6.5	16.1	64.7	6.8	4.2	6.5	3.1	14.7	7.0
Presque Isle	12.2	9.4	51.9	*	*	*	-	12.2	5.6
Roscommon	14.8	8.7	89.1	*	*	*	*	14.9	8.5
Saginaw	9.3	13.6	89.3	8.7	6.3	13.4	8.3	13.3	6.8
St Clair	9.3	13.2	56.4	2.9	*	6.2	4.8	14.6	8.9
St Joseph	10.3	14.4	72.4	*	*	*	*	14.9	10.8
Sanilac	10.7	12.4	60.6	*	*	*	*	13.2	9.2
Schoolcraft	14.5	10.2	123.6	*	*	-	-	13.0	9.6
Shiawassee	8.5	13.3	63.7	8.4	*	8.3	*	15.0	7.5
Tuscola	9.5	11.5	52.4	9.0	*	8.9	*	13.4	7.6
Van Buren	8.8	13.8	81.2	15.3	9.6	12.4	*	13.6	10.8
Washtenaw	5.7	13.3	68.9	4.3	3.5	8.0	5.0	13.2	7.5
Wayne	9.5	14.8	102.6	10.8	7.2	14.2	8.4	9.5	6.6
Wexford	10.4	13.9	64.0	*	*	*	*	15.2	10.6

Note: Birth and death rates are per 1,000 population. Rates are calculated using 1997 population. Infant and fetal death rates are per 1,000 live births. Marriage and divorce rates are persons per 1,000 population rather than events per population. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Death, Birth and Fetal Death Files and Occurrence Marriage and Divorce Files, Division for Vital Records and Health Statistics, MDCH

Table 4.11
Live Births with Selected Risk Factors by County
Michigan Residents, 1998

Area	Medical Risk Factor Present		Complications of Labor/Delivery		Abnormal Conditions of Newborn		Mother Smoked While Pregnant		Mother Drank Alcohol While Pregnant	
	Number	%	Number	%	Number	%	Number	%	Number	%
Michigan	35,253	26.4	39,321	29.4	10,105	7.6	22,380	16.7	1,679	1.3
Alcona	51	58.0	48	54.5	6	6.8	35	39.8	-	*
Alger	23	27.4	29	34.5	4	*	18	21.4	1	*
Allegan	343	24.6	412	29.5	76	5.4	241	17.3	16	1.1
Alpena	169	49.7	169	49.7	35	10.3	100	29.4	6	1.8
Antrim	52	22.3	67	28.8	5	*	63	27.0	19	8.2
Arenac	51	28.0	64	35.2	4	*	49	26.9	2	*
Baraga	33	33.0	29	29.0	4	*	36	36.0	4	*
Barry	216	31.9	274	40.4	69	10.2	123	18.1	5	*
Bay	534	39.9	386	28.8	77	5.8	317	23.7	15	1.1
Benzie	46	25.1	45	24.6	5	*	54	29.5	20	10.9
Berrien	597	27.0	585	26.4	96	4.3	431	19.5	32	1.4
Branch	144	26.0	217	39.2	16	2.9	136	24.5	6	1.1
Calhoun	375	20.2	582	31.3	63	3.4	455	24.5	35	1.9
Cass	233	40.4	183	31.7	44	7.6	151	26.2	2	*
Charlevoix	59	18.2	110	34.0	17	5.2	62	19.1	1	*
Cheboygan	100	33.6	123	41.3	35	11.7	81	27.2	4	*
Chippewa	65	16.5	107	27.2	15	3.8	107	27.2	4	*
Clare	80	24.0	78	23.4	10	3.0	65	19.5	1	*
Clinton	173	21.5	247	30.7	22	2.7	62	7.7	8	1.0
Crawford	46	32.6	52	36.9	12	8.5	51	36.2	3	*
Delta	87	19.9	115	26.3	29	6.6	111	25.4	4	*
Dickinson	41	14.0	55	18.8	3	*	70	24.0	13	4.5
Eaton	280	23.6	374	31.6	54	4.6	160	13.5	19	1.6
Emmet	101	27.2	139	37.4	17	4.6	77	20.7	5	*
Genesee	847	13.2	882	13.8	106	1.7	1,213	19.0	34	0.5
Gladwin	89	33.6	76	28.7	15	5.7	55	20.8	4	*
Gogebic	46	29.9	63	40.9	14	9.1	43	27.9	1	*
Grand Traverse	220	23.8	266	28.7	28	3.0	222	24.0	135	14.6
Gratiot	62	12.2	94	18.5	29	5.7	105	20.7	3	*
Hillsdale	139	23.9	181	31.1	79	13.6	147	25.3	5	*
Houghton	136	37.2	122	33.3	13	3.6	79	21.6	6	1.6
Huron	108	28.0	120	31.1	22	5.7	70	18.1	5	*
Ingham	997	26.4	1,275	33.8	149	3.9	400	10.6	91	2.4
Ionia	179	21.8	235	28.6	29	3.5	189	23.0	11	1.3
Iosco	131	45.5	133	46.2	20	6.9	94	32.6	5	*
Iron	15	13.3	35	31.0	6	5.3	37	32.7	5	*
Isabella	179	27.5	252	38.7	42	6.5	128	19.7	-	-
Jackson	376	18.3	635	30.9	41	2.0	342	16.7	6	0.3
Kalamazoo	2,106	66.2	1,885	59.2	341	10.7	628	19.7	31	1.0
Kalkaska	52	29.4	61	34.5	6	3.4	60	33.9	21	11.9

Note: Examples of medical risk factors include: anemia, diabetes, hypertension, eclampsia, renal disease, maternal drug use. Examples of complications of labor and/or delivery include: abruptio placenta, seizures during labor, dysfunctional labor, fetal distress, breech/malpresentation, cord prolapse. Examples of abnormal conditions of the newborn include: anemia, birth injury, fetal alcohol syndrome, hyaline membrane disease, seizures. Congenital anomalies reported have increased due to a change in reporting procedure. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy prenatal care began, the number of prenatal visits and the length of pregnancy. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.11 (continued)
Live Births with Selected Risk Factors by County
Michigan Residents, 1998

Area	Medical Risk Factor Present		Complications of Labor/Delivery		Abnormal Conditions of Newborn		Mother Smoked While Pregnant		Mother Drank Alcohol While Pregnant	
	Number	%	Number	%	Number	%	Number	%	Number	%
Kent	1,786	19.5	2,851	31.1	330	3.6	1,296	14.2	78	0.9
Keweenaw	12	40.0	7	23.3	2	*	6	20.0	3	*
Lake	51	38.1	35	26.1	3	*	58	43.3	4	*
Lapeer	214	19.6	233	21.4	79	7.2	216	19.8	7	0.6
Leelanau	47	24.9	54	28.6	6	3.2	42	22.2	33	17.5
Lenawee	293	24.5	315	26.3	73	6.1	245	20.5	9	0.8
Livingston	365	18.7	472	24.2	96	4.9	218	11.2	71	3.6
Luce	9	18.4	13	26.5	1	*	14	28.6	-	-
Mackinac	13	12.4	31	29.5	1	*	25	23.8	-	-
Macomb	2,661	26.9	3,161	31.9	1,731	17.5	1,833	18.5	82	0.8
Manistee	69	28.9	68	28.5	12	5.0	63	26.4	11	4.6
Marquette	124	21.1	154	26.1	20	3.4	117	19.9	4	*
Mason	86	27.8	100	32.4	16	5.2	58	18.8	-	-
Mecosta	164	33.5	141	28.8	30	6.1	136	27.8	5	*
Menominee	125	38.3	130	39.9	12	3.7	86	26.4	5	*
Midland	460	44.8	316	30.8	88	8.6	175	17.0	3	*
Missaukee	86	58.1	23	15.5	2	*	31	20.9	3	*
Monroe	477	26.7	500	27.9	113	6.3	357	20.0	13	0.7
Montcalm	164	19.7	222	26.7	43	5.2	217	26.1	4	*
Montmorency	44	40.7	42	38.9	11	10.2	37	34.3	-	-
Muskegon	244	10.3	476	20.1	86	3.6	526	22.2	24	1.0
Newaygo	142	22.4	162	25.5	26	4.1	144	22.7	4	*
Oakland	4,542	28.9	5,836	37.1	2,485	15.8	1,630	10.4	172	1.1
Oceana	74	20.6	118	32.9	17	4.7	62	17.3	2	*
Ogemaw	60	24.0	92	36.8	7	2.8	76	30.4	3	*
Ontonagon	14	26.9	15	28.8	2	*	15	28.8	3	*
Osceola	119	43.4	62	22.6	12	4.4	66	24.1	1	*
Oscoda	23	25.3	30	33.0	4	*	28	30.8	1	*
Otsego	51	17.0	68	22.7	21	7.0	65	21.7	2	*
Ottawa	489	13.8	862	24.3	147	4.2	346	9.8	22	0.6
Presque Isle	55	40.7	54	40.0	7	5.2	25	18.5	-	-
Roscommon	72	35.6	85	42.1	16	7.9	66	32.7	3	*
Saginaw	1,030	35.8	717	24.9	46	1.6	569	19.8	56	1.9
St Clair	411	19.8	430	20.7	123	5.9	519	25.0	30	1.4
St Joseph	349	39.5	290	32.8	63	7.1	223	25.2	8	0.9
Sanilac	116	22.0	135	25.6	18	3.4	125	23.7	2	*
Schoolcraft	20	22.5	24	27.0	2	*	34	38.2	1	*
Shiawassee	217	22.7	234	24.4	38	4.0	250	26.1	15	1.6
Tuscola	205	30.7	150	22.5	11	1.6	165	24.7	9	1.3
Van Buren	427	40.8	403	38.5	68	6.5	218	20.8	10	1.0
Washtenaw	589	14.8	757	19.0	149	3.7	145	3.6	10	0.3
Wayne	8,983	28.5	8,564	27.2	2,421	7.7	4,859	15.4	357	1.1
Wexford	189	46.6	83	20.4	9	2.2	126	31.0	21	5.2
Unknown	1	*	1	*	-	-	1	*	-	-

Note: Examples of medical risk factors include: anemia, diabetes, hypertension, eclampsia, renal disease, maternal drug use. Examples of complications of labor and/or delivery include: abruptio placenta, seizures during labor, dysfunctional labor, fetal distress, breech/malpresentation, cord prolapse. Examples of abnormal conditions of the newborn include: anemia, birth injury, fetal alcohol syndrome, hyaline membrane disease, seizures. Congenital anomalies reported have increased due to a change in reporting procedure. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy prenatal care began, the number of prenatal visits and the length of pregnancy. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.11 (continued)
Live Births with Selected Risk Factors by County
Michigan Residents, 1998

Area	Congenital Anomalies Reported		Inadequate Prenatal Care		Mother's Education <12 Grade		Mother <18 Years of Age	
	Number	%	Number	%	Number	%	Number	%
Michigan	1,569	1.2	12,875	9.6	23,083	17.3	5,419	4.1
Alcona	2	*	1	*	15	17.0	3	*
Alger	-	-	2	*	11	13.1	-	-
Allegan	10	0.7	105	7.5	221	15.8	44	3.1
Alpena	3	*	17	5.0	39	11.5	7	2.1
Antrim	-	-	9	3.9	36	15.5	9	3.9
Arenac	5	*	10	5.5	45	24.7	9	4.9
Baraga	-	-	7	7.0	11	11.0	4	*
Barry	12	1.8	27	4.0	78	11.5	23	3.4
Bay	42	3.1	53	4.0	227	17.0	66	4.9
Benzie	2	*	6	3.3	25	13.7	10	5.5
Berrien	24	1.1	157	7.1	552	24.9	153	6.9
Branch	8	1.4	41	7.4	138	24.9	32	5.8
Calhoun	19	1.0	65	3.5	430	23.1	101	5.4
Cass	9	1.6	33	5.7	129	22.4	23	4.0
Charlevoix	3	*	9	2.8	53	16.4	11	3.4
Cheboygan	5	*	5	*	54	18.1	9	3.0
Chippewa	10	2.5	11	2.8	86	21.8	26	6.6
Clare	4	*	27	8.1	84	25.1	23	6.9
Clinton	8	1.0	18	2.2	60	7.5	15	1.9
Crawford	3	*	3	*	34	24.1	8	5.7
Delta	11	2.5	20	4.6	40	9.2	11	2.5
Dickinson	4	*	8	2.7	39	13.4	9	3.1
Eaton	12	1.0	56	4.7	140	11.8	47	4.0
Emmet	2	*	8	2.2	48	12.9	16	4.3
Genesee	14	0.2	228	3.6	1,261	19.7	346	5.4
Gladwin	1	*	22	8.3	67	25.3	19	7.2
Gogebic	5	*	6	3.9	22	14.3	3	*
Grand Traverse	6	0.6	27	2.9	94	10.2	24	2.6
Gratiot	6	1.2	12	2.4	78	15.4	17	3.4
Hillsdale	6	1.0	47	8.1	122	21.0	31	5.3
Houghton	10	2.7	10	2.7	25	6.8	10	2.7
Huron	8	2.1	21	5.4	47	12.2	5	*
Ingham	20	0.5	195	5.2	639	16.9	158	4.2
Ionia	6	0.7	48	5.8	140	17.1	34	4.1
Iosco	8	2.8	14	4.9	45	15.6	7	2.4
Iron	2	*	5	*	11	9.7	4	*
Isabella	11	1.7	26	4.0	87	13.4	24	3.7
Jackson	13	0.6	382	18.6	321	15.6	110	5.4
Kalamazoo	43	1.4	150	4.7	506	15.9	138	4.3
Kalkaska	3	*	5	*	34	19.2	8	4.5

Note: Examples of medical risk factors include: anemia, diabetes, hypertension, eclampsia, renal disease, maternal drug use. Examples of complications of labor and/or delivery include: abruptio placenta, seizures during labor, dysfunctional labor, fetal distress, breech/malpresentation, cord prolapse. Examples of abnormal conditions of the newborn include: anemia, birth injury, fetal alcohol syndrome, hyaline membrane disease, seizures. Congenital anomalies reported have increased due to a change in reporting procedure. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy prenatal care began, the number of prenatal visits and the length of pregnancy. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.11 (continued)
Live Births with Selected Risk Factors by County
Michigan Residents, 1998

Area	Congenital Anomalies Reported		Inadequate Prenatal Care		Mother's Education <12 Grade		Mother <18 Years of Age	
	Number	%	Number	%	Number	%	Number	%
Kent	38	0.4	648	7.1	1,887	20.6	395	4.3
Keweenaw	-	-	-	-	1	*	1	*
Lake	2	*	12	9.0	41	30.6	9	6.7
Lapeer	8	0.7	42	3.8	135	12.4	36	3.3
Leelanau	3	*	6	3.2	27	14.3	6	3.2
Lenawee	14	1.2	58	4.8	219	18.3	46	3.8
Livingston	17	0.9	131	6.7	78	4.0	22	1.1
Luce	1	*	-	-	6	12.2	1	*
Mackinac	-	-	2	*	17	16.2	6	5.7
Macomb	154	1.6	1,128	11.4	1,018	10.3	159	1.6
Manistee	3	*	17	7.1	36	15.1	4	*
Marquette	5	*	12	2.0	34	5.8	15	2.5
Mason	5	*	25	8.1	54	17.5	17	5.5
Mecosta	10	2.0	51	10.4	117	23.9	23	4.7
Menominee	4	*	22	6.7	47	14.4	15	4.6
Midland	19	1.9	31	3.0	104	10.1	32	3.1
Missaukee	-	-	2	*	23	15.5	11	7.4
Monroe	22	1.2	71	4.0	278	15.5	63	3.5
Montcalm	11	1.3	59	7.1	178	21.4	36	4.3
Montmorency	-	-	3	*	24	22.2	8	7.4
Muskegon	8	0.3	199	8.4	510	21.5	149	6.3
Newaygo	7	1.1	30	4.7	147	23.1	35	5.5
Oakland	260	1.7	1,031	6.6	1,298	8.3	292	1.9
Oceana	4	*	33	9.2	104	29.0	20	5.6
Ogemaw	6	2.4	10	4.0	45	18.0	9	3.6
Ontonagon	-	-	1	*	5	9.6	3	*
Osceola	2	*	14	5.1	57	20.8	14	5.1
Oscoda	2	*	10	11.0	36	39.6	5	*
Otsego	-	-	2	*	46	15.3	10	3.3
Ottawa	18	0.5	312	8.8	513	14.5	102	2.9
Presque Isle	1	*	2	*	15	11.1	7	5.2
Roscommon	5	*	7	3.5	40	19.8	7	3.5
Saginaw	39	1.4	196	6.8	611	21.2	168	5.8
St Clair	20	1.0	164	7.9	335	16.1	80	3.9
St Joseph	5	*	51	5.8	215	24.3	38	4.3
Sanilac	4	*	41	7.8	110	20.8	24	4.5
Schoolcraft	1	*	3	*	16	18.0	5	*
Shiawassee	3	*	24	2.5	166	17.3	42	4.4
Tuscola	9	1.3	33	4.9	115	17.2	25	3.7
Van Buren	10	1.0	66	6.3	260	24.8	55	5.3
Washtenaw	11	0.3	481	12.1	249	6.3	89	2.2
Wayne	478	1.5	5,928	18.8	7,693	24.4	1,710	5.4
Wexford	-	-	20	4.9	78	19.2	28	6.9
Unknown	-	-	1	*	1	*	-	-

Note: Examples of medical risk factors include: anemia, diabetes, hypertension, eclampsia, renal disease, maternal drug use. Examples of complications of labor and/or delivery include: abruptio placenta, seizures during labor, dysfunctional labor, fetal distress, breech/malpresentation, cord prolapse. Examples of abnormal conditions of the newborn include: anemia, birth injury, fetal alcohol syndrome, hyaline membrane disease, seizures. Congenital anomalies reported have increased due to a change in reporting procedure. The *Kessner Index* is a classification of prenatal care based on the month of pregnancy prenatal care began, the number of prenatal visits and the length of pregnancy. Asterisk (*) indicates that data do not meet the standards of reliability or precision.

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.12
Live Births by Age of Mother and County
Michigan Residents, 1998

Area	Age of Mother													Not Stated
	Total	<15	15	16	17	18	19	15-19	20-24	25-29	30-34	35-39	40+	
Michigan	133,649	254	679	1,644	2,842	4,386	5,712	15,263	31,063	39,826	31,379	13,287	2,559	18
Alcona	88	-	-	-	3	4	5	12	25	29	13	9	-	-
Alger	84	-	-	-	-	4	3	7	28	27	12	10	-	-
Allegan	1,397	-	6	13	25	43	58	145	350	443	301	128	29	1
Alpena	340	-	1	3	3	16	17	40	104	88	71	31	6	-
Antrim	233	-	2	1	6	9	13	31	82	57	43	14	6	-
Arenac	182	-	-	5	4	14	7	30	52	46	37	15	2	-
Baraga	100	-	-	1	3	4	4	12	23	32	21	8	4	-
Barry	678	1	3	7	12	21	16	59	178	234	149	43	14	-
Bay	1,338	4	7	23	32	52	65	179	319	402	265	147	22	-
Benzie	183	1	-	3	6	4	11	24	41	51	41	20	5	-
Berrien	2,215	8	15	61	69	112	127	384	608	577	427	170	41	-
Branch	554	3	1	8	20	23	29	81	171	161	94	36	7	1
Calhoun	1,860	7	12	30	52	76	130	300	516	573	313	124	27	-
Cass	577	1	1	7	14	16	35	73	185	176	97	39	6	-
Charlevoix	324	-	-	5	6	5	13	29	87	104	61	34	9	-
Cheboygan	298	-	2	1	6	9	15	33	91	95	52	22	5	-
Chippewa	394	-	4	9	13	11	20	57	121	113	60	37	5	1
Clare	334	-	3	6	14	13	16	52	114	87	62	18	1	-
Clinton	804	-	3	6	6	11	25	51	135	272	237	87	22	-
Crawford	141	-	-	3	5	10	6	24	41	39	24	11	2	-
Delta	437	-	-	3	8	14	20	45	108	140	95	43	6	-
Dickinson	292	-	-	5	4	12	15	36	77	92	63	21	3	-
Eaton	1,185	-	9	13	25	37	50	134	281	400	256	96	18	-
Emmet	372	2	1	1	12	9	19	42	75	129	68	44	12	-
Genesee	6,399	23	36	107	180	263	307	893	1,822	1,848	1,217	503	93	-
Gladwin	265	1	2	3	13	7	11	36	74	85	46	19	4	-
Gogebic	154	1	1	-	1	5	9	16	44	47	29	13	4	-
Grd Traverse	926	-	3	7	14	25	40	89	190	269	236	109	33	-
Gratiot	507	-	2	6	9	22	36	75	138	160	96	35	3	-
Hillsdale	582	-	3	5	23	19	36	86	212	147	87	37	13	-
Houghton	366	-	-	2	8	5	21	36	91	108	74	38	19	-
Huron	386	-	-	2	3	17	15	37	99	129	86	26	9	-
Ingham	3,777	9	24	47	78	112	170	431	893	1,136	851	383	74	-
Ionia	821	1	2	11	20	39	47	119	238	246	165	44	8	-
Iosco	288	1	-	2	4	11	11	28	85	84	57	27	6	-
Iron	113	-	-	2	2	3	5	12	31	26	29	10	5	-
Isabella	651	1	3	4	16	22	20	65	184	217	131	49	4	-
Jackson	2,052	5	13	33	59	90	117	312	578	628	365	140	24	-
Kalamazoo	3,183	6	16	42	74	118	151	401	736	958	730	296	56	-
Kalkaska	177	1	1	2	4	9	14	30	61	42	34	9	-	-

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.12 (continued)
Live Births by Age of Mother and County
Michigan Residents, 1998

Area	Age of Mother													Not Stated
	Total	<15	15	16	17	18	19	15-19	20-24	25-29	30-34	35-39	40+	
Kent	9,155	17	44	154	180	311	391	1,080	2,081	2,731	2,171	904	169	2
Keweenaw	30	-	1	-	-	-	-	1	5	11	9	3	1	-
Lake	134	-	2	3	4	12	9	30	43	39	15	5	2	-
Lapeer	1,091	-	1	11	24	30	41	107	220	382	259	100	23	-
Leelanau	189	-	1	1	4	6	4	16	34	53	51	29	6	-
Lenawee	1,197	3	7	14	22	45	60	148	335	380	220	91	20	-
Livingston	1,954	-	2	8	12	23	34	79	232	588	672	327	55	1
Luce	49	-	-	1	-	1	-	2	13	19	9	6	-	-
Mackinac	105	-	-	1	5	6	8	20	25	30	23	5	2	-
Macomb	9,897	1	16	50	92	200	264	622	1,698	3,218	2,993	1,163	201	1
Manistee	239	-	-	1	3	12	13	29	67	73	39	26	4	1
Marquette	589	-	-	6	9	15	27	57	140	175	140	62	15	-
Mason	309	1	1	6	9	14	19	49	89	82	56	30	2	-
Mecosta	490	-	2	11	10	20	30	73	173	141	64	28	11	-
Menominee	326	-	2	5	8	14	20	49	88	94	67	22	6	-
Midland	1,027	-	3	10	19	23	36	91	225	309	264	118	20	-
Missaukee	148	-	-	3	8	8	10	29	48	35	29	6	1	-
Monroe	1,789	-	8	17	38	65	78	206	431	548	413	161	28	2
Montcalm	831	1	3	10	22	32	44	111	261	245	138	65	10	-
Montmorency	108	-	1	2	5	1	4	13	38	31	18	7	1	-
Muskegon	2,369	7	22	42	78	131	123	396	737	674	379	150	26	-
Newaygo	635	-	5	10	20	43	37	115	166	183	107	54	10	-
Oakland	15,732	12	39	79	162	267	306	853	2,168	4,539	5,206	2,496	457	1
Oceana	359	1	5	5	9	15	25	59	113	104	54	22	6	-
Ogemaw	250	-	-	5	4	12	18	39	79	68	48	12	4	-
Ontonagon	52	-	-	1	2	-	1	4	18	17	4	7	2	-
Osceola	274	-	-	6	8	10	13	37	87	82	47	19	2	-
Oscoda	91	-	1	-	4	1	4	10	25	27	14	12	3	-
Otsego	300	-	-	4	6	12	20	42	82	92	60	17	7	-
Ottawa	3,541	3	11	31	57	98	122	319	749	1,167	944	310	49	-
Presque Isle	135	-	1	2	4	9	6	22	33	40	22	18	-	-
Roscommon	202	-	-	-	7	8	14	29	63	59	27	21	3	-
Saginaw	2,878	8	25	54	81	100	171	431	727	859	598	211	44	-
St Clair	2,075	4	5	23	48	69	95	240	515	645	475	168	27	1
St Joseph	884	2	5	15	16	27	49	112	275	277	141	67	10	-
Sanilac	528	2	-	5	17	23	25	70	133	182	93	41	7	-
Schoolcraft	89	-	1	1	3	5	4	14	25	30	11	7	2	-
Shiawassee	958	-	6	14	22	23	63	128	256	293	196	70	15	-
Tuscola	668	1	4	7	13	28	41	93	184	200	140	44	6	-
Van Buren	1,047	2	6	15	32	50	62	165	304	277	195	89	15	-
Washtenaw	3,979	2	12	21	54	81	122	290	615	1,138	1,228	565	141	-
Wayne	31,477	110	258	496	846	1,222	1,544	4,366	8,055	9,100	6,564	2,746	531	5
Wexford	406	1	3	5	19	18	25	70	120	92	78	38	7	-
Unknown	6	-	-	-	-	-	1	1	-	-	3	-	1	1

Source: 1998 Michigan Resident Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.13
Vital Statistics for Residents of Selected Michigan Cities and Townships
Michigan Residents, 1998

City/Township	Live Births	Deaths	Infant Deaths		Fetal Deaths	
			Number	Rate	Number	Rate
Allen Park	296	396	2	*	3	*
Ann Arbor	1,377	565	5	*	11	7.9
Battle Creek	1,024	586	7	6.8	3	*
Bay City	605	408	3	*	6	9.8
Bloomfield Twp.	226	243	-	-	-	-
Burton City	415	260	3	*	1	*
Canton Twp.	1,139	293	3	*	4	3.5
Chesterfield Twp	448	143	4	*	-	-
Clinton Twp	1,235	833	10	8.1	6	4.8
Commerce Twp	364	121	-	-	4	*
Dearborn	1,737	908	12	6.9	10	5.7
Dearborn Heights	698	643	2	*	2	*
Delta Twp	326	229	2	*	1	*
Detroit	16,429	10,107	241	14.7	176	10.6
East Detroit	424	400	3	*	3	*
East Lansing	294	203	4	*	-	-
Farmington Hills	853	639	4	*	3	*
Ferndale	341	234	5	*	5	*
Flint	2,819	1,273	41	14.5	17	6.0
Flint Twp	345	319	3	*	2	-
Garden City	394	253	2	*	1	-
Georgetown Twp	503	217	7	13.9	-	-
Grand Blanc Twp	257	212	3	*	-	-
Grand Rapids	3,925	1,849	32	8.2	40	10.1
Highland Park	286	255	5	*	4	*
Holland	708	289	6	8.5	6	8.4
Inkster	490	304	7	14.3	3	*
Jackson	955	409	17	17.8	11	11.4
Kalamazoo	1,452	692	14	9.6	17	11.6
Kentwood	734	165	1	*	6	8.1
Lansing	2,284	952	18	7.9	15	6.5
Lincoln Park	584	417	4	*	4	*
Livonia	1,115	1,017	2	*	5	*
Madison Heights	425	269	3	*	3	*
Meridian Twp	361	223	-	-	4	*
Midland	501	351	3	*	3	*
Mount Morris Twp	194	208	4	*	-	-
Muskegon	814	509	8	9.8	8	9.7
Novi City	612	250	5	*	1	*
Oak Park	406	290	4	*	8	19.3
Pontiac	1,307	604	22	16.8	11	8.3
Portage	540	281	5	*	1	*
Port Huron	522	392	1	*	1	*
Redford Twp	682	532	3	*	2	*
Rochester Hills City	783	451	3	*	1	*
Roseville	644	562	2	*	3	*
Royal Oak	799	588	12	15.0	7	8.7
Saginaw	1,288	721	17	13.2	16	12.3
Saginaw Twp	384	402	1	*	-	-
St. Clair Shores	646	815	7	10.8	4	*
Shelby Twp	608	343	2	*	2	*
Southfield	908	793	14	15.4	10	10.9
Southgate	329	301	2	*	2	*
Sterling Heights	1,532	912	13	8.5	7	4.5
Taylor	983	581	10	10.2	7	7.1
Troy	922	426	3	*	6	6.5
Warren	1,767	1,505	10	5.7	18	10.1
Waterford Twp	1,079	544	4	*	3	*
West Bloomfield Twp	711	426	-	-	3	*
Westland	1,225	783	11	9.0	4	*
Wyandotte	353	318	1	*	3	*
Wyoming	1,166	345	8	6.9	3	*
Ypsilanti Twp	570	223	2	*	-	-

Note: Cities and townships are selected with 25,000 population or over according to the 1980 or 1990 Census.

Source: 1998 Michigan Resident Birth, Death and Fetal Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.14
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	All Causes	T.B. (all forms)	All Other Infectious & Parasitic Diseases	Cancer							
				Total	Digestive Organs & Peritoneum	Respiratory & Intrathoracic Organs	Breast	Genital Organs	Urinary Organs	Leukemia	Other
Michigan	84,906	33	1,398	19,442	4,610	5,710	1,472	2,099	901	757	3,893
Alcona	179	-	2	40	12	16	2	1	2	1	6
Alger	102	-	-	20	5	11	-	4	-	-	-
Allegan	837	-	7	195	44	53	23	20	8	13	34
Alpena	316	-	5	77	17	23	2	10	2	5	18
Antrim	266	1	3	72	15	27	4	6	2	4	14
Arenac	206	-	3	50	9	18	3	7	2	-	11
Baraga	109	-	-	21	8	7	1	-	2	-	3
Barry	441	-	7	80	15	23	7	8	2	2	23
Bay	1,063	-	9	241	55	72	10	32	14	10	48
Benzie	160	-	1	35	8	12	5	6	-	1	3
Berrien	1,578	-	27	297	65	81	22	28	17	13	71
Branch	396	-	5	92	21	27	7	9	7	1	20
Calhoun	1,386	2	21	315	61	111	28	28	16	13	58
Cass	467	-	6	120	24	46	4	9	4	6	27
Charlevoix	231	1	3	46	7	16	2	4	2	1	14
Cheboygan	269	-	5	64	8	23	5	9	6	2	11
Chippewa	322	-	4	74	23	21	5	2	3	5	15
Clare	353	-	3	78	18	27	2	11	5	1	14
Clinton	421	-	8	111	25	29	8	10	7	4	28
Crawford	153	-	-	34	4	16	6	2	2	1	3
Delta	394	-	4	98	20	32	7	15	5	4	15
Dickinson	333	-	2	67	19	17	2	8	4	5	12
Eaton	755	-	11	171	41	37	15	28	11	3	36
Emmet	255	-	3	54	15	13	3	3	-	3	17
Genesee	3,786	1	51	837	185	242	71	100	37	29	173
Gladwin	288	-	3	84	19	22	8	9	5	7	14
Gogebic	245	-	5	60	16	13	3	10	4	4	10
Grd Traverse	579	-	6	113	20	41	3	21	7	3	18
Gratiot	467	-	2	95	21	20	8	16	6	2	22
Hillsdale	421	1	3	107	25	26	10	9	5	6	26
Houghton	410	-	8	76	18	19	7	10	3	3	16
Huron	452	-	3	100	24	30	4	14	2	4	22
Ingham	1,891	1	35	419	93	111	30	51	18	14	102
Ionia	414	-	4	102	23	24	7	18	6	5	19
Iosco	341	-	6	90	28	33	3	9	2	2	13
Iron	235	-	-	46	8	17	4	4	2	1	10
Isabella	384	-	6	97	24	24	8	11	5	4	21
Jackson	1,380	2	22	301	75	101	21	30	11	7	56
Kalamazoo	1,787	-	23	435	98	129	38	46	19	18	87
Kalkaska	136	-	2	36	6	11	3	5	1	3	7

Note: Genital organs cancer includes prostate cancer.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.14 (continued)
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	All Causes	T.B. (all forms)	All Other Infectious & Parasitic Diseases	Cancer							
				Total	Digestive Organs & Peritoneum	Respiratory & Intrathoracic Organs	Breast	Genital Organs	Urinary Organs	Leukemia	Other
Kent	3,928	-	53	884	223	221	84	98	41	27	190
Keweenaw	27	-	1	8	-	3	1	1	-	1	2
Lake	142	-	-	28	4	10	2	4	2	1	5
Lapeer	574	-	8	136	25	42	11	13	9	9	27
Leelanau	153	-	4	30	9	12	2	1	1	1	4
Lenawee	849	-	9	197	37	62	15	14	13	11	45
Livingston	883	-	11	217	44	61	19	32	14	11	36
Luce	65	-	-	21	6	8	-	2	1	1	3
Mackinac	126	-	1	34	5	15	4	3	-	3	4
Macomb	6,843	3	88	1,677	419	490	118	148	87	76	339
Manistee	289	-	1	65	12	24	3	9	2	2	13
Marquette	660	-	7	126	32	36	10	17	4	4	23
Mason	290	-	1	73	19	19	10	6	5	2	12
Mecosta	332	-	4	81	23	22	7	9	8	3	9
Menominee	295	-	1	59	18	17	1	8	3	3	9
Midland	580	-	6	136	29	47	8	9	4	5	34
Missaukee	127	-	1	31	3	11	-	4	2	-	11
Monroe	1,102	-	10	276	68	83	21	26	18	7	53
Montcalm	537	-	4	119	23	44	8	12	8	5	19
Montmorency	159	-	3	33	5	12	3	2	2	2	7
Muskegon	1,591	-	25	366	86	96	35	36	21	18	74
Newaygo	439	-	3	88	18	31	6	11	4	3	15
Oakland	8,920	4	116	2,134	495	612	166	223	96	99	443
Oceana	223	-	2	52	11	18	4	2	2	3	12
Ogemaw	265	-	1	69	25	15	3	8	3	1	14
Ontonagon	107	-	1	24	12	4	-	1	-	1	6
Osceola	219	-	4	43	6	19	1	8	3	2	4
Oscoda	119	-	-	23	1	12	2	3	-	-	5
Otsego	165	-	1	46	12	11	3	7	4	-	9
Ottawa	1,429	1	9	319	83	66	22	34	20	15	79
Presque Isle	175	-	-	44	12	5	5	4	4	3	11
Roscommon	342	-	8	83	20	30	2	8	4	3	16
Saginaw	1,961	-	20	461	107	147	33	44	21	14	95
St. Clair	1,462	-	13	377	71	119	30	36	23	17	81
St. Joseph	629	-	5	146	32	48	10	17	9	8	22
Sanilac	459	-	4	116	24	30	7	25	4	4	22
Schoolcraft	127	-	2	28	9	8	1	4	2	-	4
Shiawassee	613	-	9	143	45	38	7	13	9	8	23
Tuscola	551	-	4	118	34	27	9	10	3	4	31
Van Buren	670	1	12	163	43	43	10	17	9	8	33
Washtenaw	1,713	2	29	398	102	102	36	37	14	14	93
Wayne	20,248	13	597	4,455	1,122	1,342	348	506	166	147	824
Wexford	302	-	2	62	12	26	4	4	-	1	15
Unknown	11	-	-	3	2	1	-	-	-	-	-

Note: Genital organs cancer includes prostate cancer.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.14 (continued)
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	Diabetes Mellitus	Nutritional Deficiencies	Major Cardiovascular Diseases						Pneumonia & Influenza	C.O.P.D. and Allied Diseases	Ulcer of Stomach and Duodenum	Chronic Liver Disease & Cirrhosis
			Total	Diseases of the Heart	Hypertension with or without Renal Disease	Stroke	Atherosclerosis	Other Diseases of Arteries, Arterioles, Capillaries				
Michigan	2,449	210	35,770	27,851	427	5,760	653	1,079	3,096	3,804	165	981
Alcona	2	-	77	52	1	15	5	4	8	9	2	5
Alger	1	-	55	42	-	11	1	1	4	2	1	1
Allegan	22	2	324	249	6	57	5	7	44	34	-	7
Alpena	3	-	141	108	2	24	1	6	20	7	-	2
Antrim	5	-	125	100	1	21	1	2	12	5	2	1
Arenac	3	-	87	68	-	13	3	3	8	6	-	8
Baraga	1	-	57	45	-	12	-	-	9	3	-	-
Barry	9	-	188	139	4	37	2	6	13	35	1	3
Bay	43	3	478	378	3	54	18	25	29	64	1	14
Benzie	5	-	76	62	1	9	1	3	4	12	-	1
Berrien	59	2	683	503	3	129	29	19	65	93	2	20
Branch	16	-	175	139	1	26	2	7	14	19	-	4
Calhoun	56	2	562	411	8	118	9	16	78	62	3	20
Cass	19	1	187	139	2	39	4	3	15	22	1	5
Charlevoix	9	1	86	60	3	19	2	2	4	12	1	4
Cheboygan	2	-	116	90	1	21	2	2	13	16	-	1
Chippewa	13	1	153	124	1	24	-	4	9	13	-	4
Clare	9	-	168	139	2	24	-	3	6	20	1	3
Clinton	9	1	191	126	2	50	5	8	13	15	-	1
Crawford	7	4	64	47	1	12	2	2	3	7	1	-
Delta	18	1	154	110	2	30	4	8	23	16	1	5
Dickinson	8	-	165	121	3	32	3	6	17	16	2	3
Eaton	24	5	324	238	2	62	6	16	24	35	-	7
Emmet	8	-	107	81	1	21	1	3	11	15	-	1
Genesee	140	7	1,601	1,248	31	258	22	42	98	187	9	42
Gladwin	12	-	115	88	1	20	-	6	7	18	-	5
Gogebic	3	-	107	84	1	18	-	4	8	8	-	1
Grd Traverse	12	1	258	188	5	50	5	10	26	30	1	7
Gratiot	10	-	234	177	3	44	5	5	22	24	4	2
Hillsdale	13	-	171	128	3	31	-	9	15	20	1	4
Houghton	11	-	194	145	1	33	9	6	22	13	1	7
Huron	14	-	222	172	-	41	3	6	7	11	2	4
Ingham	73	7	715	529	11	130	12	33	78	78	7	20
Ionia	15	1	158	121	1	25	2	9	16	25	-	3
Iosco	7	-	133	96	-	24	9	4	16	17	2	6
Iron	8	-	117	90	-	23	-	4	12	8	-	1
Isabella	12	-	153	111	2	36	1	3	17	15	1	2
Jackson	34	3	558	439	3	96	8	12	86	68	2	15
Kalamazoo	39	10	677	538	12	100	6	21	98	81	3	14
Kalkaska	5	-	66	47	3	7	8	1	3	2	-	-

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.14 (continued)
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	Diabetes Mellitus	Nutritional Deficiencies	Major Cardiovascular Diseases						Pneumonia & Influenza	C.O.P.D. and Allied Diseases	Ulcer of Stomach and Duodenum	Chronic Liver Disease & Cirrhosis
			Total	Diseases of the Heart	Hypertension with or without Renal Disease	Stroke	Atherosclerosis	Other Diseases of Arteries Arterioles Capillaries				
Kent	71	12	1,592	1,227	19	270	17	59	187	156	6	39
Keweenaw	2	-	12	11	-	1	-	-	1	-	-	-
Lake	7	-	59	44	1	10	-	4	5	12	-	2
Lapeer	23	1	251	189	3	45	5	9	13	27	1	7
Leelanau	1	-	64	50	-	13	-	1	7	8	-	1
Lenawee	33	-	370	274	1	82	7	6	25	52	1	4
Livingston	27	2	365	285	4	57	8	11	21	36	-	11
Luce	-	-	26	22	-	3	-	1	4	4	-	2
Mackinac	4	-	52	45	-	5	-	2	2	12	1	-
Macomb	188	14	3,036	2,370	32	475	71	88	220	331	17	85
Manistee	11	-	133	92	2	21	13	5	9	8	-	2
Marquette	15	1	286	205	4	64	5	8	18	31	-	9
Mason	5	-	135	109	1	19	-	6	4	14	1	2
Mecosta	13	1	137	107	2	26	-	2	8	17	1	2
Menominee	17	3	131	100	2	17	12	-	7	14	2	5
Midland	18	-	243	179	2	43	10	9	21	27	2	7
Missaukee	6	1	45	36	-	7	2	-	2	5	-	2
Monroe	54	1	479	381	5	69	10	14	25	58	4	11
Montcalm	13	2	199	163	2	26	2	6	29	32	1	5
Montmorency	3	-	74	66	-	7	-	1	5	8	-	4
Muskegon	55	3	668	506	5	121	8	28	58	84	5	21
Newaygo	10	-	208	169	3	27	4	5	12	18	1	1
Oakland	246	30	3,695	2,881	39	574	86	115	284	416	16	107
Oceana	7	-	78	61	1	9	4	3	10	11	1	-
Ogemaw	4	1	117	88	-	13	13	3	11	19	1	3
Ontonagon	2	-	52	42	-	6	4	-	5	3	-	1
Osceola	6	1	94	69	-	20	3	2	7	10	1	-
Oscoda	2	-	58	47	-	9	-	2	2	16	-	2
Otsego	-	-	61	52	1	8	-	-	5	11	-	1
Ottawa	22	3	579	430	7	114	9	19	81	62	1	13
Presque Isle	1	1	80	65	-	12	-	3	6	6	-	2
Roscommon	10	-	158	126	1	17	10	4	10	16	-	5
Saginaw	66	9	815	653	11	122	9	20	67	92	2	31
St. Clair	57	4	645	500	17	109	4	15	39	74	2	18
St. Joseph	24	-	261	201	3	38	4	15	19	44	2	3
Sanilac	22	1	186	149	3	26	2	6	15	21	1	2
Schoolcraft	5	-	36	27	-	6	-	3	17	5	-	-
Shiawassee	18	-	265	192	2	41	24	6	20	19	-	7
Tuscola	23	3	253	201	4	38	1	9	15	23	-	7
Van Buren	25	1	270	211	6	37	1	15	25	26	4	3
Washtenaw	48	4	643	476	13	119	10	25	84	71	2	24
Wayne	516	58	8,514	6,889	103	1,215	94	213	695	747	37	274
Wexford	10	-	122	88	1	23	5	5	18	14	-	3
Unknown	-	-	1	1	-	-	-	-	1	1	-	-

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.14 (continued)
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	Nephritis, Nephrotic Syndrome & Nephrosis	Complica- tions of Pregnancy Childbirth & the Puer- perium	Congenital Anomalies	Certain Conditions Originating in the Perinatal Period	Symptoms, Signs, & Ill-defined Conditions	All Other Disease	Accidents			Suicide	Homicide and Legal Inter- vention	All Other External Causes
							Total	Motor Vehicle	All Other			
Michigan	1,087	8	436	533	445	10,070	3,098	1,450	1,648	965	769	147
Alcona	1	-	-	-	1	21	6	2	4	5	-	-
Alger	1	-	-	2	-	7	6	3	3	1	-	-
Allegan	18	-	4	8	8	112	39	24	15	10	1	2
Alpena	3	-	5	1	2	35	10	5	5	4	1	-
Antrim	2	-	-	-	-	28	7	1	6	2	1	-
Arenac	2	-	-	1	1	24	10	4	6	3	-	-
Baraga	-	-	2	-	-	12	4	2	2	-	-	-
Barry	4	-	2	2	4	52	34	19	15	7	-	-
Bay	11	-	4	4	1	114	34	17	17	13	-	-
Benzie	3	-	-	-	-	19	4	3	1	-	-	-
Berrien	13	-	6	6	9	216	58	33	25	7	13	2
Branch	3	-	-	3	-	39	21	13	8	5	-	-
Calhoun	14	-	6	6	7	161	49	20	29	17	5	-
Cass	4	-	-	-	3	53	23	11	12	7	-	1
Charlevoix	2	-	1	1	1	40	16	5	11	3	-	-
Cheboygan	3	-	1	1	1	28	17	8	9	1	-	-
Chippewa	5	-	-	1	3	28	10	7	3	3	1	-
Clare	4	-	2	1	1	37	14	8	6	5	1	-
Clinton	6	-	5	-	-	38	19	5	14	4	-	-
Crawford	2	-	2	-	-	23	5	-	5	1	-	-
Delta	4	-	2	-	3	36	25	16	9	4	-	-
Dickinson	4	-	2	3	2	27	12	2	10	3	-	-
Eaton	9	-	2	1	6	104	23	8	15	8	1	-
Emmet	4	-	-	1	-	32	13	7	6	6	-	-
Genesee	67	-	23	34	22	430	138	64	74	44	40	15
Gladwin	2	-	1	2	2	25	7	6	1	5	-	-
Gogebic	3	-	1	-	2	41	3	-	3	3	-	-
Grd Traverse	4	-	2	1	3	85	22	8	14	6	2	-
Gratiot	5	-	-	2	3	40	19	10	9	4	1	-
Hillsdale	5	-	1	1	1	45	26	8	18	4	1	2
Houghton	2	-	1	1	1	55	15	6	9	3	-	-
Huron	5	-	2	1	1	52	23	9	14	5	-	-
Ingham	32	-	12	12	15	276	79	37	42	20	12	-
Ionia	10	-	-	1	2	47	22	13	9	7	1	-
Iosco	-	-	1	1	1	42	13	7	6	5	1	-
Iron	3	-	1	-	2	25	8	3	5	4	-	-
Isabella	6	-	3	1	2	45	20	14	6	4	-	-
Jackson	15	-	11	14	4	153	53	35	18	23	14	2
Kalamazoo	16	-	13	19	6	237	75	21	54	28	10	2
Kalkaska	-	-	1	-	-	12	6	2	4	3	-	-

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.14 (continued)
 Number of Deaths by Underlying Cause and County
 Michigan Residents, 1998

Area	Nephritis, Nephrotic Syndrome & Nephrosis	Complica- tions of Pregnancy Childbirth & the Puer- perium	Congenital Anomalies	Certain Conditions Originating in the Perinatal Period	Symptoms, Signs, & Ill-defined Conditions	All Other Disease	Accidents			Suicide	Homicide and Legal Inter- vention	All Other External Causes
							Total	Motor Vehicle	All Other			
Kent	54	-	31	22	20	568	153	65	88	48	30	2
Keweenaw	-	-	-	-	-	3	-	-	-	-	-	-
Lake	2	-	-	-	-	18	7	2	5	-	2	-
Lapeer	4	-	3	6	2	57	28	19	9	5	1	1
Leelanau	1	-	1	-	-	25	7	3	4	2	2	-
Lenawee	9	1	7	2	3	93	37	22	15	6	-	-
Livingston	8	-	3	6	1	106	45	26	19	17	4	3
Luce	2	-	-	-	-	6	-	-	-	-	-	-
Mackinac	1	-	-	-	-	13	4	2	2	2	-	-
Macomb	91	-	30	32	27	735	165	68	97	72	17	15
Manistee	3	-	2	1	-	36	11	2	9	6	1	-
Marquette	13	-	5	3	2	105	32	9	23	6	1	-
Mason	-	-	1	1	-	39	11	3	8	3	-	-
Mecosta	4	-	3	4	4	37	10	6	4	5	1	-
Menominee	4	-	-	-	6	34	8	6	2	4	-	-
Midland	5	-	2	4	1	80	15	9	6	13	-	-
Missaukee	1	-	-	-	-	23	8	6	2	1	1	-
Monroe	13	-	6	3	9	105	41	21	20	5	-	2
Montcalm	15	-	4	4	4	70	26	18	8	8	1	1
Montmorency	4	-	-	-	-	16	2	1	1	6	1	-
Muskegon	13	-	9	2	3	177	77	45	32	14	10	1
Newaygo	6	-	5	1	1	42	29	16	13	11	3	-
Oakland	120	1	40	69	45	1,145	267	118	149	101	44	40
Oceana	7	-	3	2	1	28	17	6	11	4	-	-
Ogemaw	4	-	1	2	-	18	11	4	7	3	-	-
Ontonagon	1	-	-	-	-	12	3	-	3	2	1	-
Osceola	2	-	-	2	2	27	16	8	8	3	1	-
Oscoda	1	-	1	-	1	10	3	1	2	-	-	-
Otsego	3	-	-	-	1	25	9	4	5	2	-	-
Ottawa	15	1	11	9	2	218	68	29	39	13	2	-
Presque Isle	3	-	1	1	-	18	9	5	4	3	-	-
Roscommon	3	-	1	3	-	29	10	5	5	3	3	-
Saginaw	27	-	14	14	3	225	65	26	39	23	23	4
St. Clair	20	-	8	2	6	132	50	24	26	12	-	3
St. Joseph	6	-	2	2	3	79	23	13	10	10	-	-
Sanilac	4	-	1	2	3	59	13	8	5	5	4	-
Schoolcraft	1	-	3	-	1	25	4	2	2	-	-	-
Shiawassee	12	-	4	5	2	72	22	14	8	11	2	2
Tuscola	6	-	3	2	3	47	34	20	14	7	2	1
Van Buren	5	-	5	7	1	79	27	16	11	6	6	2
Washtenaw	17	-	8	8	11	265	56	29	27	27	13	3
Wayne	276	5	97	179	154	2,228	673	298	375	204	485	41
Wexford	4	-	1	1	2	43	13	5	8	5	2	-
Unknown	-	-	1	-	1	2	1	-	1	-	-	-

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.15
Cases of Certain Reported Communicable Diseases by County
Michigan Residents, 1998

Area	Total	Gonorrhea	Chicken Pox	Hepatitis (all types)	Salmonella Infections	Tuberculosis	Syphilis	Mumps	Dysentery Bacillary	Measles	Rubella	Meningococcal Infections	Whooping Cough
Michigan	44,964	16,257	23,647	3,087	1,169	385	219	33	43	10	1	42	71
Alcona	-	-	-	-	-	-	-	-	-	-	-	-	-
Alger	-	-	-	-	-	-	-	-	-	-	-	-	-
Allegan	316	14	283	5	12	1	-	-	-	-	-	-	1
Alpena	46	-	40	1	4	1	-	-	-	-	-	-	-
Antrim	22	-	15	2	4	1	-	-	-	-	-	-	-
Arenac	95	2	87	5	1	-	-	-	-	-	-	-	-
Baraga	-	-	-	-	-	-	-	-	-	-	-	-	-
Barry	131	4	111	5	11	-	-	-	-	-	-	-	-
Bay	480	25	424	26	4	1	-	-	-	-	-	-	-
Benzie	16	1	13	-	2	-	-	-	-	-	-	-	-
Berrien	1,115	435	641	9	20	7	-	-	1	-	1	-	1
Branch	148	7	109	27	3	1	-	-	1	-	-	-	-
Calhoun	414	282	85	25	15	3	1	1	1	-	-	1	-
Cass	123	9	102	7	4	1	-	-	-	-	-	-	-
Charlevoix	56	-	43	3	9	-	-	-	-	-	-	-	1
Cheboygan	26	-	21	-	4	1	-	-	-	-	-	-	-
Chippewa	181	-	177	1	1	1	-	-	1	-	-	-	-
Clare	18	-	11	5	1	-	-	-	-	-	-	-	1
Clinton	103	3	81	6	9	2	-	-	1	-	-	-	1
Crawford	40	1	33	1	4	1	-	-	-	-	-	-	-
Delta	239	2	225	4	7	1	-	-	-	-	-	-	-
Dickinson	86	-	81	-	3	2	-	-	-	-	-	-	-
Eaton	98	11	75	4	7	-	-	-	1	-	-	-	-
Emmet	50	-	44	2	3	-	-	-	1	-	-	-	-
Genesee	2,882	1,714	946	177	26	15	3	1	-	-	-	-	-
Gladwin	35	-	24	10	1	-	-	-	-	-	-	-	-
Gogebic	8	-	5	-	-	-	-	-	-	-	-	-	3
Grd Traverse	151	7	121	2	18	1	-	-	-	-	-	-	2
Gratiot	7	1	-	3	2	1	-	-	-	-	-	-	-
Hillsdale	173	11	134	21	2	1	-	-	-	-	-	-	4
Houghton	110	1	106	-	-	1	-	-	-	-	-	1	1
Huron	46	2	39	-	3	-	-	1	-	-	-	1	-
Ingham	539	426	18	21	31	15	2	2	17	-	-	-	7
Ionia	131	4	119	1	6	-	-	-	-	-	-	1	-
Iosco	8	4	1	2	1	-	-	-	-	-	-	-	-
Iron	19	1	18	-	-	-	-	-	-	-	-	-	-
Isabella	57	14	30	4	8	1	-	-	-	-	-	-	-
Jackson	245	184	38	7	10	3	1	2	-	-	-	-	-
Kalamazoo	881	310	444	40	80	5	-	1	1	-	-	-	-
Kalkaska	7	-	4	-	1	2	-	-	-	-	-	-	-

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.15 (continued)
Cases of Certain Reported Communicable Diseases by County
Michigan Residents, 1998

Area	Total	Gonorrhea	Chicken Pox	Hepatitis (all types)	Salmonella Infections	Tuberculosis	Syphilis	Mumps	Dysentery Bacillary	Measles	Rubella	Meningococcal Infections	Whooping Cough
Kent	2,080	1,288	616	37	85	20	8	1	5	-	-	6	14
Keweenaw	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-
Lapeer	495	11	446	24	11	1	-	2	-	-	-	-	-
Leelanau	6	-	4	-	2	-	-	-	-	-	-	-	-
Lenawee	305	31	253	4	17	-	-	-	-	-	-	-	-
Livingston	572	4	517	11	35	-	-	1	-	1	-	-	3
Luce	-	-	-	-	-	-	-	-	-	-	-	-	-
Mackinac	1	1	-	-	-	-	-	-	-	-	-	-	-
Macomb	3,061	165	2,583	204	73	24	6	1	1	-	-	3	1
Manistee	10	1	9	-	-	-	-	-	-	-	-	-	-
Marquette	64	5	46	-	11	-	-	1	-	-	-	1	-
Mason	111	6	97	-	6	1	-	-	-	-	-	-	1
Mecosta	182	12	168	-	2	-	-	-	-	-	-	-	-
Menominee	24	1	20	-	3	-	-	-	-	-	-	-	-
Midland	161	-	156	2	3	-	-	-	-	-	-	-	-
Missaukee	91	-	90	-	1	-	-	-	-	-	-	-	-
Monroe	435	25	378	6	23	2	-	1	-	-	-	-	-
Montcalm	118	7	100	10	1	-	-	-	-	-	-	-	-
Montmorency	1	-	-	-	-	-	-	-	1	-	-	-	-
Muskegon	1,367	351	973	7	20	3	8	-	1	-	-	-	4
Newaygo	117	3	109	5	-	-	-	-	-	-	-	-	-
Oakland	5,260	925	3,753	364	130	47	11	12	2	4	-	8	4
Oceana	5	-	-	3	1	1	-	-	-	-	-	-	-
Ogemaw	2	-	-	-	1	1	-	-	-	-	-	-	-
Ontonagon	1	-	1	-	-	-	-	-	-	-	-	-	-
Osceola	93	1	83	8	1	-	-	-	-	-	-	-	-
Oscoda	10	-	5	-	5	-	-	-	-	-	-	-	-
Otsego	11	-	1	2	7	1	-	-	-	-	-	-	-
Ottawa	1,364	39	1,246	15	55	8	-	-	-	-	-	-	1
Presque Isle	4	-	1	3	-	-	-	-	-	-	-	-	-
Roscommon	109	3	97	5	3	-	-	-	-	-	-	-	1
Saginaw	991	511	432	21	15	10	-	-	2	-	-	-	-
St. Clair	490	25	373	65	17	2	2	-	-	-	-	1	5
St. Joseph	125	27	52	36	8	-	-	-	-	-	-	1	1
Sanilac	32	-	15	9	4	1	-	1	-	-	-	1	1
Schoolcraft	-	-	-	-	-	-	-	-	-	-	-	-	-
Shiawassee	304	5	287	2	9	1	-	-	-	-	-	-	-
Tuscola	107	4	92	6	3	1	-	-	1	-	-	-	-
Van Buren	238	30	177	5	23	1	-	-	2	-	-	-	-
Washtenaw	389	288	12	36	41	4	3	1	1	-	-	1	2
Wayne	17,051	9,012	5,638	1,770	234	185	174	4	2	5	-	16	11
Wexford	75	1	69	1	2	2	-	-	-	-	-	-	-

Source: Bureau of Infectious Disease Control, Disease Control Division, MDCH

Table 4.16
Number of Deaths by Cause
Michigan Residents, 1998

ICD List Number	Cause of Death	Number
I. INFECTIOUS AND PARASITIC DISEASES (001-139)		
3	Other salmonella infections	2
8	Intestinal infections due to other organisms	19
9	Ill-defined intestinal infections	13
11	Pulmonary tuberculosis	22
12	Other respiratory tuberculosis	2
15	Tuberculosis of bones and joints	2
17	Tuberculosis of other organs	5
18	Miliary tuberculosis	2
31	Diseases due to other mycobacteria	4
36	Meningococcal infection	12
37	Tetanus	1
38	Septicemia	721
39	Actinomycotic infections	3
40	Other bacterial diseases	8
41	Bacterial infection in conditions classified elsewhere and of unspecified site	19
42	Human immunodeficiency virus infection [AIDS] with specified conditions	243
43	Human immunodeficiency virus infection [AIDS] causing other specified conditions	4
44	Other human immunodeficiency virus infection [AIDS]	23
46	Slow virus infection of central nervous system	6
47	Menigitis due to enterovirus	1
49	Other non-arthropod-borne viral diseases of central nervous system	9
52	Chickenpox	1
53	Herpes zoster	3
54	Herpes simplex	7
57	Other viral exanthemata	1
70	Viral hepatitis	135
78	Other diseases due to viruses and Chlamydiae	9
79	Viral infection in conditions classified elsewhere and of unspecified site	5
84	Malaria	1
90	Congenital syphilis	1
112	Candidiasis	28
115	Histoplasmosis	1
116	Blastomycotic infection	3
117	Other mycoses	45
127	Other intestinal helminthiases	1
135	Sarcoidosis	37
136	Other and unspecified infections and parasitic diseases	15
137	Late effects of tuberculosis	3
138	Late effects of acute poliomyelitis	10
139	Late effects of other infectious and parasitic diseases	4
II. CANCER (140-239)		
140	Cancer of lip	2
141	Cancer of tongue	57
142	Cancer of major salivary glands	29
143	Cancer of gum	4

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
144	Cancer of floor of mouth	10
145	Cancer of other and unspecified parts of mouth	41
146	Cancer of oropharynx	43
147	Cancer of nasopharynx	16
148	Cancer of hypopharynx	7
149	Cancer of other and ill-defined sites within the lip, oral cavity and pharynx	42
150	Cancer of esophagus	449
151	Cancer of stomach	408
152	Cancer of small intestine, including duodenum	30
153	Cancer of colon	1,727
154	Cancer of rectum, rectosigmoid junction and anus	288
155	Cancer of liver and intrahepatic bile ducts	441
156	Cancer of gallbladder and extrahepatic bile ducts	152
157	Cancer of pancreas	1,040
158	Cancer of retroperitoneum and peritoneum	36
159	Cancer of other and ill-defined sites within the digestive organs and peritoneum	39
160	Cancer of nasal cavities, middle ear and accessory sinuses	18
161	Cancer of larynx	121
162	Cancer of trachea, bronchus and lung	5,549
163	Cancer of pleura	16
164	Cancer of thymus, heart and mediastinum	6
170	Cancer of bone and articular cartilage	38
171	Cancer of connective and other soft tissue	144
172	Cancer of skin	236
173	Other cancer of skin	49
174	Cancer of female breast	1,459
175	Cancer of male breast	13
179	Cancer of uterus, part unspecified	126
180	Cancer of cervix uteri	155
182	Cancer of body of uterus	134
183	Cancer of ovary and other uterine adnexa	492
184	Cancer of other and unspecified female genital organs	39
185	Cancer of prostate	1,131
186	Cancer of testis	17
187	Cancer of penis and other male genital organs	5
188	Cancer of bladder	434
189	Cancer of kidney and other and unspecified urinary organs	467
190	Cancer of eye	11
191	Cancer of brain	459
192	Cancer of other and unspecified parts of nervous system	11
193	Cancer of thyroid gland	48
194	Cancer of other endocrine glands and related structures	32
195	Cancer of other and ill-defined sites	148
199	Cancer without specification of site	1,090
200	Lymphosarcoma and reticulosarcoma	28
201	Hodgkin's disease	54
202	Other cancer of lymphoid and histiocytic tissue	879
203	Multiple myeloma and immunoproliferative neoplasms	415
204	Lymphoid leukemia	230
205	Myeloid leukemia	305

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
Number of Deaths by Cause
Michigan Residents, 1998

ICD List Number	Cause of Death	Number
206	Monocytic leukemia	8
207	Other specified leukemia	7
208	Leukemia of unspecified cell type	207
211	Benign neoplasm of other parts of digestive system	4
212	Benign neoplasm of respiratory and intrathoracic organs	6
215	Other benign neoplasm of connective and other soft tissue	3
216	Benign neoplasm of skin	1
218	Uterine leiomyoma	1
223	Benign neoplasm of kidney & other urinary organs	1
225	Benign neoplasm of brain and other parts of nervous system	38
227	Benign neoplasm of other endocrine glands and related structures	8
229	Benign neoplasm of other and unspecified sites	2
235	Neoplasm of uncertain behavior of digestive and respiratory systems	7
236	Neoplasm of uncertain behavior of genitourinary organs	1
237	Neoplasm of uncertain behavior of endocrine glands and nervous system	11
238	Neoplasm of uncertain behavior of other and unspecified sites and tissues	57
239	Neoplasm of unspecified nature	131
III. ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS (240-279)		
240	Simple and unspecified goitre	1
242	Thyrotoxicosis with or without goiter	4
244	Acquired hypothyroidism	61
250	Diabetes mellitus	2,449
251	Other disorders of pancreatic internal secretion	9
252	Disorders of parathyroid gland	4
253	Disorders of the pituitary gland and its hypothalamic control	12
255	Disorders of adrenal glands	14
259	Other endocrine disorders	2
260	Kwashiorkor	7
261	Nutritional marasmus	13
262	Other severe protien-calorie malnutrition	1
263	Other and unspecified protein-calorie malnutrition	186
265	Thiamine and niacin deficiency states	2
269	Other nutritional deficiencies	1
270	Disorders of amino-acid transport and metabolism	3
271	Disorders of carbohydrate transport and metabolism	2
272	Disorders of lipoid metabolism	127
273	Disorders of plasma protein metabolism	13
274	Gout	3
275	Disorders of mineral metabolism	13
276	Disorders of fluid, electrolyte and acid-base balance	332
277	Other and unspecified disorders of metabolism	77
278	Obesity and other hyperalimentation	80
279	Disorders involving the immune mechanism	34

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
IV. DISEASES OF BLOOD AND BLOOD-FORMING ORGANS (280-289)		
280	Iron deficiency anemias	7
281	Other deficiency anemias	6
282	Hereditary hemolytic anemias	24
283	Acquired hemolytic anemias	10
284	Aplastic anemias	54
285	Other and unspecified anemia	88
286	Coagulation defects	61
287	Purpura and other hemorrhagic conditions	37
288	Diseases of white blood cells	15
289	Other diseases of blood and blood-forming organs	152
V. MENTAL DISORDERS (290-319)		
290	Senile and presenile organic psychotic conditions	790
291	Alcoholic psychoses	13
294	Other organic psychotic conditions (chronic)	4
295	Schizophrenic disorders	12
296	Affective psychoses	3
298	Other nonorganic psychoses	416
299	Psychoses with origin specific to childhood	1
300	Neurotic disorders	5
303	Alcohol dependence syndrome	160
304	Drug dependence	4
305	Nondependent abuse of drugs	278
307	Special symptoms or syndromes, not elsewhere classified	11
308	Acute reaction to stress	2
310	Specific nonpsychotic mental disorders following organic brain damage	47
311	Depressive disorder, not elsewhere classified	27
315	Specific delays in development	1
318	Other specified mental retardation	5
319	Unspecified mental retardation	11
VI. DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS (320-389)		
320	Bacterial meningitis	21
322	Meningitis of unspecified cause	16
323	Encephalitis, myelitis and encephalomyelitis	6
324	Intracranial and intraspinal abscess	6
326	Late effects of intracranial abscess or pyogenic infection	2
330	Cerebral degenerations usually manifest in childhood	8
331	Other cerebral degenerations	710
332	Parkinson's disease	507
333	Other extrapyramidal disease and abnormal movement disorders	41
334	Spinocerebellar disease	13
335	Anterior horn cell disease	202
336	Other diseases of spinal cord	7
340	Multiple sclerosis	141
341	Other demyelinating diseases of central nervous system	4
342	Hemiplegia	1

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
Number of Deaths by Cause
Michigan Residents, 1998

ICD List Number	Cause of Death	Number
343	Infantile cerebral palsy	46
344	Other paralytic syndromes	29
345	Epilepsy	119
348	Other conditions of brain	177
349	Other and unspecified disorders of the nervous system	18
355	Mononeuritis of lower limb	6
356	Hereditary and idiopathic peripheral neuropathy	32
357	Inflammatory and toxic neuropathy	9
358	Myoneural disorders	26
359	Muscular dystrophies and other myopathies	450
362	Other retinal disorders	1
365	Glaucoma	1
369	Blindness and low vision	1
376	Disorders of the orbit	1
VII. DISEASES OF THE CIRCULATORY SYSTEM (390-459)		
391	Rheumatic fever with heart involvement	3
394	Diseases of mitral valve	94
395	Diseases of aortic valve	3
396	Diseases of mitral and aortic valves	25
397	Diseases of other endocardial structures	13
398	Other rheumatic heart disease	26
401	Essential hypertension	211
402	Hypertensive heart disease	1,091
403	Hypertensive renal disease	216
404	Hypertensive heart and renal disease	91
410	Acute myocardial infarction	7,916
411	Other acute and subacute forms of ischemic heart disease	21
412	Old myocardial infarction	19
413	Angina pectoris	21
414	Other forms of chronic ischemic heart disease	9,268
415	Acute pulmonary heart disease	234
416	Chronic pulmonary heart disease	143
417	Other diseases of pulmonary circulation	5
420	Acute pericarditis	2
421	Acute and subacute endocarditis	39
422	Acute myocarditis	21
423	Other diseases of pericardium	19
424	Other diseases of endocardium	585
425	Cardiomyopathy	1,206
426	Conduction disorders	27
427	Cardiac dysrhythmias	1,068
428	Heart failure	2,227
429	Ill-defined descriptions and complications of heart disease	3,684
430	Subarachnoid hemorrhage	247
431	Intracerebral hemorrhage	646
432	Other and unspecified intracranial hemorrhage	225
433	Occlusion and stenosis of precerebral arteries	50
434	Occlusion of cerebral arteries	617

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
435	Transient cerebral ischemia	8
436	Acute but ill-defined cerebrovascular disease	2,983
437	Other and ill-defined cerebrovascular disease	469
438	Late effects of cerebrovascular disease	515
440	Atherosclerosis	653
441	Aortic aneurysm	658
442	Other aneurysm	33
443	Other peripheral vascular disease	247
444	Arterial embolism and thrombosis	51
446	Polyarteritis nodosa and allied conditions	34
447	Other disorders of arteries and arterioles	55
448	Diseases of capillaries	1
451	Phlebitis and thrombophlebitis	78
452	Portal vein thrombosis	3
453	Other venous embolism and thrombosis	22
454	Varicose veins of lower extremities	6
456	Varicose veins of other sites	14
457	Noninfective disorders of lymphatic channels	6
458	Hypotension	49
459	Other disorders of circulatory system	55
VIII. DISEASES OF THE RESPIRATORY SYSTEM (460-519)		
464	Acute laryngitis and tracheitis	1
465	Acute upper respiratory infections of multiple or unspecified sites	5
466	Acute bronchitis and bronchiolitis	26
473	Chronic sinusitis	3
478	Other diseases of upper respiratory tract	6
480	Viral pneumonia	14
481	Pneumococcal pneumonia	65
482	Other bacterial pneumonia	83
483	Pneumonia due to other specified organism	4
485	Bronchopneumonia, organism unspecified	87
486	Pneumonia, organism unspecified	2,734
487	Influenza	109
490	Bronchitis, not specified as acute or chronic	25
491	Chronic bronchitis	73
492	Emphysema	768
493	Asthma	217
494	Bronchiectasis	24
495	Extrinsic allergic alveolitis	1
496	Chronic airways obstruction, not elsewhere classified	2,696
500	Coal workers' pneumoconiosis	2
501	Asbestosis	9
502	Pneumoconiosis due to other silica or silicates	2
505	Pneumoconiosis, unspecified	5
507	Pneumonitis due to solids and liquids	413
508	Respiratory conditions due to other and unspecified external agents	2
510	Empyema	10
511	Pleurisy	38

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
512	Pneumothorax	8
513	Abscess of lung and mediastinum	15
514	Pulmonary congestion and hypostasis	35
515	Postinflammatory pulmonary fibrosis	373
516	Other alveolar and parietoalveolar pneumopathy	24
518	Other diseases of lung	189
519	Other diseases of respiratory system	36
IX. DISEASES OF THE DIGESTIVE SYSTEM (520-579)		
522	Disease of pulp and periapical tissues	1
523	Gingival and periodontal diseases	1
527	Disease of salivary glands	1
528	Diseases of the oral soft tissues, excluding lesions specific for gingiva and tongue	2
530	Diseases of esophagus	92
531	Gastric ulcer	50
532	Duodenal ulcer	49
533	Peptic ulcer, site unspecified	66
534	Gastrojejunal ulcer	4
535	Gastritis and duodenitis	26
536	Disorders of function of stomach	3
537	Other disorders of stomach and duodenum	14
540	Acute appendicitis	8
541	Appendicitis, unqualified	4
550	Inguinal hernia	5
551	Other hernia of abdominal cavity, with gangrene	3
552	Other hernia of abdominal cavity with obstruction, without mention of gangrene	11
553	Other hernia of abdominal cavity without mention of obstruction or gangrene	20
555	Regional enteritis	13
556	Idiopathic proctocolitis	18
557	Vascular insufficiency of intestine	318
558	Other noninfective gastroenteritis and colitis	48
560	Intestinal obstruction without mention of hernia	197
562	Diverticula of intestine	121
564	Functional digestive disorders, not elsewhere classified	8
566	Abscess of anal and rectal regions	2
567	Peritonitis	72
568	Other disorders of peritoneum	10
569	Other disorders of intestine	85
570	Acute and subacute necrosis of liver	16
571	Chronic liver disease and cirrhosis	981
572	Liver abscess and sequelae of chronic liver disease	116
573	Other disorders of liver	81
574	Cholelithiasis	31
575	Other disorders of gallbladder	63
576	Other disorders of biliary tract	32
577	Diseases of pancreas	140
578	Gastrointestinal hemorrhage	291
579	Intestinal malabsorption	5

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
X. DISEASES OF THE GENITOURINARY SYSTEM (580-629)		
580	Acute glomerulonephritis	6
581	Nephrotic syndrome	3
582	Chronic glomerulonephritis	43
583	Nephritis and nephropathy, not specified as acute or chronic	12
584	Acute renal failure	209
585	Chronic renal failure	262
586	Renal failure, unspecified	550
587	Renal sclerosis, unspecified	1
588	Disorders resulting from impaired renal function	1
590	Infections of kidney	30
591	Hydronephrosis	2
592	Calculus of kidney and ureter	1
593	Other disorders of kidney and ureter	203
595	Cystitis	2
596	Other disorders of bladder	5
599	Other disorders of urethra and urinary tract	509
600	Hyperplasia of prostate	11
601	Inflammatory diseases of prostate	2
602	Other disorders of prostate	3
608	Other disorders of male genital organs	2
611	Other disorders of breast	2
614	Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue and peritoneum	6
618	Genital prolapse	1
619	Fistulae involving female genital tract	2
620	Noninflammatory disorders of ovary, fallopian tube and broad ligament	1
622	Noninflammatory disorders of cervix	2
623	Noninflammatory disorders of vagina	2
XI. COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM (630-676)		
633	Ectopic pregnancy	1
641	Antepartum haemorrhage, abruptio placentae, and placenta praevia	1
642	Hypertension complicating pregnancy, childbirth and the puerperium	3
669	Other complications of labor and delivery, not elsewhere classified	1
674	Other and unspecified complications of the puerperium, not elsewhere classified	2
XII. DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE (680-709)		
682	Other cellulitis and abscess	41
685	Pilonidal cyst	1
686	Other local infections of skin and subcutaneous tissue	13
692	Contact dermatitis and other eczema	1
694	Bullous dermatoses	2
695	Erythematous conditions	10
707	Chronic ulcer of skin	67
709	Other disorders of skin and subcutaneous tissue	2

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
XIII. DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE (710-739)		
710	Diffuse diseases of connective tissue	97
711	Arthropathy associated with infections	7
714	Rheumatoid arthritis and other inflammatory polyarthropathies	77
715	Osteoarthritis and allied disorders	20
716	Other and unspecified arthropathies	8
719	Other unspecified disorder of joint	2
720	Ankylosing spondylitis and other inflammatory spondylopathies	5
721	Spondylosis and allied disorders	3
722	Intervertebral disc disorders	3
724	Other and unspecified disorders of back	2
727	Other disorders of synovium, tendon and bursa	1
728	Disorders of muscle, ligament and fascia	12
729	Other disorders of soft tissues	21
730	Osteomyelitis, periostitis and other infections involving bone	50
731	Osteitis deformans and osteopathies associated with other disorders classified elsewhere	2
733	Other disorders of bone and cartilage	28
737	Curvature of spine	10
XIV. CONGENITAL ANOMALIES (740-759)		
740	Anencephalus and similar anomalies	12
741	Spina bifida	5
742	Other congenital anomalies of nervous system	104
744	Congenital anomalies of ear, face and neck	1
745	Bulbus cordis anomalies and anomalies of cardiac septal closure	31
746	Other congenital anomalies of heart	74
747	Other congenital anomalies of circulatory system	33
748	Congenital anomalies of respiratory system	53
750	Other congenital anomalies of upper alimentary tract	3
751	Other congenital anomalies of digestive system	8
753	Congenital anomalies of urinary system	24
756	Other congenital musculoskeletal anomalies	15
757	Congenital anomalies of the integument	1
758	Chromosomal anomalies	53
759	Other and unspecified congenital anomalies	19
XV. CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD (760-779)		
760	Fetus or newborn affected by maternal conditions which may be unrelated to present pregnancy	7
761	Fetus or newborn affected by maternal complications of pregnancy	54
762	Fetus or newborn affected by complications of placenta, cord and membranes	42
763	Fetus or newborn affected by other complications of labor and delivery	4
764	Slow fetal growth and fetal malnutrition	2
765	Disorders relating to short gestation and unspecified low birthweight	180
767	Birth trauma	9

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
768	Intrauterine hypoxia and birth asphyxia	17
769	Respiratory distress syndrome	78
770	Other respiratory conditions of fetus and newborn	58
771	Infections specific to the perinatal period	22
772	Fetal and neonatal hemorrhage	9
773	Hemolytic disease of fetus and newborn due to isoimmunization	1
776	Hematological disorders of fetus and newborn	4
777	Perinatal disorders of digestive system	17
778	Conditions involving the integument and temperature regulation of fetus and newborn	8
779	Other and ill-defined conditions originating in the perinatal period	21
XVI. SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS (780-799)		
780	General symptoms	18
781	Symptoms involving nervous and musculoskeletal systems	1
782	Symptoms involving skin and other integumentary tissue	1
783	Symptoms concerning nutrition, metabolism and development	5
785	Symptoms involving cardiovascular system	44
786	Symptoms involving respiratory system and other chest symptoms	6
787	Symptoms involving digestive system	1
794	Nonspecific abnormal results of function studies	1
797	Senility without mention of psychosis	10
798	Sudden death, cause unknown	155
799	Other ill-defined and unknown causes of morbidity and mortality	203
XVII. EXTERNAL CAUSES OF INJURY AND POISONING (E800-E999)		
E805	Hit by rolling stock [railway]	9
E810	Motor vehicle traffic accident involving collision with train	10
E811	Motor vehicle traffic accident involving re-entrant collision with another motor vehicle	1
E812	Other motor vehicle traffic accident involving collision with another motor vehicle	557
E813	Motor vehicle traffic accident involving collision with other vehicle	31
E814	Motor vehicle traffic accident involving collision with pedestrian	163
E815	Other motor vehicle traffic accident involving collision on the highway	140
E816	Motor vehicle traffic accident due to loss of control, without collision on the highway	149
E818	Other noncollision motor vehicle traffic accident	42
E819	Motor vehicle traffic accident of unspecified nature	296
E820	Nontraffic accident involving motor-driven snow vehicle	18
E821	Nontraffic accident involving other off-road motor vehicle	6
E822	Other motor vehicle nontraffic accident involving collision with moving object	17
E823	Other motor vehicle nontraffic accident involving collision with stationary object	3
E825	Other motor vehicle nontraffic accident of other and unspecified nature	17
E826	Pedal cycle accident	2
E828	Accident involving animal being ridden	4
E830	Accident to watercraft causing submersion	3
E831	Accident to watercraft causing other injury	2
E832	Other accidental submersion or drowning in water transport accident	3
E834	Other fall from one level to another in water transport	4
E838	Other and unspecified water transport accident	5
E841	Accident to powered aircraft, other and unspecified	19

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
E848	Accidents involving other vehicles not elsewhere classified	8
E850	Accidental poisoning by analgesics, antipyretics, antirheumatics	41
E851	Accidental poisoning by barbituates	1
E853	Accidental poisoning by tranquilizers	6
E854	Accidental poisoning by other psychotropic agents	6
E855	Accidental poisoning by other drugs acting on central and autonomic nervous systems	27
E856	Accidental poisoning by antibiotics	1
E858	Accidental poisoning by other drugs	117
E860	Accidental poisoning by alcohol, not elsewhere classified	6
E861	Accidental poisoning by cleansing and polishing agents, disinfectants, paints and varnishes	1
E862	Accidental poisoning by petroleum products, other solvents and their vapours, not elsewhere classified	1
E866	Accidental poisoning by other and unspecified solid and liquid substances	3
E868	Accidental poisoning by other utility gas and other carbon monoxide	14
E869	Accidental poisoning by other gases and vapors	2
E870	Accidental cut, puncture, perforation or hemorrhage during medical care	7
E876	Other and unspecified misadventures during medical care	2
E878	Surgical operation and other surgical procedures as the cause of abnormal reaction of patient, or of later complication, without mention of misadventure at the time of procedure	61
E879	Other procedures, without mention of misadventure at the time of procedure, as the cause of abnormal reaction of patient, or of later complication	17
E880	Fall on or from stairs or steps	60
E881	Fall on or from ladders or scaffolding	11
E882	Fall from or out of building or other structure	13
E883	Fall into hole or other opening in surface	3
E884	Other fall from one level to another	31
E885	Fall on same level from slipping, tripping or stumbling	18
E887	Fracture, cause unspecified	149
E888	Other and unspecified fall	192
E890	Conflagration in private dwelling	118
E891	Conflagration in other and unspecified building or structure	4
E892	Conflagration not in building or structure	1
E893	Accidents caused by ignition of clothing	4
E895	Accident caused by controlled fire in private dwelling	1
E897	Accident caused by controlled fire not in building or structure	2
E898	Accident caused by other specified fire and flames	1
E899	Accident caused by unspecified fire	10
E901	Excessive cold	12
E902	High and low air pressure & changes in air pressure	1
E904	Hunger, thirst, exposure, neglect	10
E906	Other injury caused by animals	1
E907	Lightning	1
E908	Cataclysmic storms, and floods resulting from storms	5
E910	Accidental drowning and submersion	122
E911	Inhalation and ingestion of food causing obstruction of respiratory tract or suffocation	37
E912	Inhalation and ingestion of other object causing obstruction of respiratory tract or suffocation	59
E913	Accidental mechanical suffocation	50

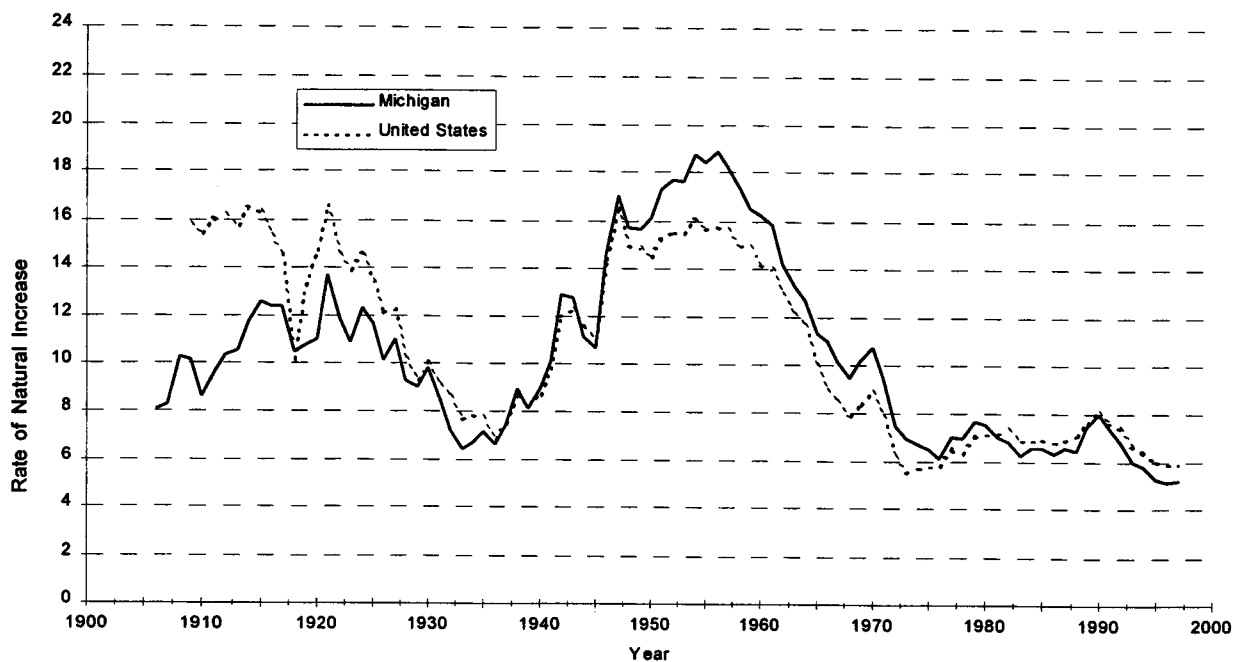
Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.16 (continued)
 Number of Deaths by Cause
 Michigan Residents, 1998

ICD List Number	Cause of Death	Number
E916	Struck accidentally by falling object	30
E917	Striking against or struck accidentally by objects or persons	21
E918	Caught accidentally in or between objects	9
E919	Accidents caused by machinery	35
E920	Accidents caused by cutting and piercing instruments or objects	5
E921	Accidents caused by explosion of pressure vessel	1
E922	Accident caused by firearm missile	22
E923	Accident caused by explosive material	10
E924	Accident caused by hot substance or object, caustic or corrosive material and steam	2
E925	Accident caused by electric current	25
E928	Other and unspecified environmental and accidental causes	153
E929	Late effects of accidental injury	35
E938	Other central nervous system	1
E942	Agents primarily affecting the cardiovascular system	2
E947	Adverse effects in therapeutic use of other and unspecified drugs and medicaments [medicinal substances]	9
E950	Suicide and self-inflicted poisoning by solid or liquid substance	103
E952	Suicide and self-inflicted poisoning by other gases and vapors	73
E953	Suicide and self-inflicted injury by hanging, strangulation and suffocation	173
E954	Suicide and self-inflicted injury by submersion [drowning]	9
E955	Suicide and self-inflicted injury by firearms and explosives	551
E956	Suicide and self-inflicted injury by cutting and piercing instruments	16
E957	Suicide and self-inflicted injuries by jumping from high place	10
E958	Suicide and self-inflicted injury by other and unspecified means	30
E960	Homicide by fight, brawl, rape	12
E962	Homicide by poisoning	8
E963	Homicide by hanging and strangulation	36
E964	Homicide by submersion [drowning]	2
E965	Homicide by firearms and explosives	506
E966	Homicide by cutting and piercing instrument	62
E967	Homicide by child battering and other maltreatment	18
E968	Homicide by other and unspecified means	117
E969	Homicide by late effects of injury purposely inflicted by other persons	2
E970	Injury due to legal intervention by firearms	6
E980	Poisoning by solid or liquid substances, undetermined whether accidentally or purposely inflicted	104
E982	Poisoning by other gases, undetermined whether accidentally or purposely inflicted	5
E983	Hanging, strangulation or suffocation, undetermined whether accidentally or purposely inflicted	4
E984	Submersion [drowning], undetermined whether accidentally or purposely inflicted	8
E985	Injury by firearms and explosives, undetermined whether accidentally or purposely inflicted	10
E987	Falling from high place, undetermined whether accidentally or purposely inflicted	2
E988	Injury by other and unspecified means, undetermined whether accidentally or purposely inflicted	14

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Figure 4.1
Rate of Natural Increase
 Michigan, 1906 - 1997 and the United States, 1909 - 1997



Note: The rate of natural increase is the excess of live births over deaths per 1,000 population. Rates for the United States for 1909-1932 are based on death rates from the Death Registration States and estimated birth rates for the United States, adjusted for under-registration. For 1933-1959 rates are based on registered deaths in the United States and births adjusted for under-registration. After 1959 rates are based on registered births and deaths. 1995-1996 United States data are provisional.

Source: Michigan Resident Birth and Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.17
Population Changes by County
Michigan, 1987 and 1997

Area	Population Estimate July 1, 1987	Population Estimate July 1, 1997	Net Change	Percent Change	Natural Increase	Estimated Net Migration
Michigan	9,187,484	9,773,892	586,408	6.4	605,386	-18,978
Alcona	9,981	10,980	999	10.0	-581	1,580
Alger	8,760	9,958	1,198	13.7	-180	1,378
Allegan	86,970	100,585	13,615	15.7	6,757	6,858
Alpena	30,793	30,638	-155	-0.5	363	-208
Antrim	17,232	20,975	3,743	21.7	396	3,347
Arenac	14,705	16,411	1,706	11.6	215	1,491
Baraga	8,087	8,448	361	4.5	-67	428
Barry	49,242	53,533	4,291	8.7	3,055	1,236
Bay	113,959	110,423	-3,536	-3.1	5,102	-1,566
Benzie	11,692	14,290	2,598	22.2	251	2,347
Berrien	162,973	160,713	-2,260	-1.4	8,509	-6,249
Branch	40,376	43,628	3,252	8.1	1,755	1,497
Calhoun	134,849	141,821	6,972	5.2	6,350	622
Cass	48,729	49,967	1,238	2.5	1,178	60
Charlevoix	20,453	23,630	3,177	15.5	1,070	2,107
Cheboygan	20,579	23,535	2,956	14.4	273	2,683
Chippewa	30,436	37,900	7,464	24.5	1,250	6,214
Clare	24,245	29,011	4,766	19.7	447	4,319
Clinton	56,547	63,087	6,540	11.6	4,363	2,177
Crawford	11,153	13,880	2,727	24.5	438	2,289
Delta	37,776	38,801	1,025	2.7	703	322
Dickinson	26,380	27,062	682	2.6	220	462
Eaton	90,306	100,173	9,867	10.9	5,340	4,527
Emmet	23,855	28,339	4,484	18.8	1,212	3,272
Genesee	433,335	435,393	2,058	0.5	33,122	-31,064
Gladwin	21,051	24,879	3,828	18.2	270	3,558
Gogebic	18,761	17,439	-1,322	-7.0	-896	2,218
Grand Traverse	61,166	73,161	11,995	19.6	3,858	8,137
Gratiot	38,844	40,024	1,180	3.0	1,323	-143
Hillsdale	42,585	46,240	3,655	8.6	2,025	1,630
Houghton	36,035	35,810	-225	-0.6	74	151
Huron	35,703	35,270	-433	-1.2	305	128
Ingham	279,799	284,089	4,290	1.5	24,369	-20,079
Ionia	54,833	61,112	6,279	11.5	4,019	2,260
Iosco	30,017	25,129	-4,888	-16.3	956	3,932
Iron	13,476	13,067	-409	-3.0	-887	1,296
Isabella	53,652	57,623	3,971	7.4	3,327	644
Jackson	147,758	155,346	7,588	5.1	7,948	-360
Kalamazoo	218,687	229,192	10,505	4.8	15,934	-5,429
Kalkaska	12,954	15,451	2,497	19.3	815	1,682

Source: Michigan Resident Birth and Death Files, Division for Vital Records and Health Statistics, MDCH
Michigan Information Center, Michigan Department of Management and Budget

Table 4.17 (continued)
Population Changes by County
Michigan, 1987 and 1997

Area	Population Estimate July 1, 1987	Population Estimate July 1, 1997	Net Change	Percent Change	Natural Increase	Estimated Net Migration
Kent	479,365	539,425	60,060	12.5	53,807	6,253
Keweenaw	1,895	2,078	183	9.7	-149	332
Lake	8,178	10,153	1,975	24.2	-277	2,252
Lapeer	71,503	86,893	15,390	21.5	5,778	9,612
Leelanau	15,668	18,755	3,087	19.7	599	2,488
Lenawee	88,737	97,998	9,261	10.4	4,502	4,759
Livingston	107,353	141,914	34,561	32.2	9,456	25,105
Luce	5,768	6,584	816	14.1	12	804
Mackinac	10,435	11,113	678	6.5	115	563
Macomb	708,068	783,451	75,383	10.6	38,684	36,699
Manistee	21,564	23,179	1,615	7.5	-373	1,988
Marquette	70,952	61,792	-9,160	-12.9	3,393	5,767
Mason	25,143	27,854	2,711	10.8	395	2,316
Mecosta	36,737	39,178	2,441	6.6	1,502	939
Menominee	25,902	24,443	-1,459	-5.6	69	1,390
Midland	73,054	81,248	8,194	11.2	6,016	2,178
Missaukee	11,453	13,682	2,229	19.5	515	1,714
Monroe	131,852	142,301	10,449	7.9	7,474	2,975
Montcalm	50,815	59,647	8,832	17.4	3,396	5,436
Montmorency	8,212	9,980	1,768	21.5	-447	2,215
Muskegon	156,345	165,882	9,537	6.1	10,362	-825
Newaygo	36,904	45,059	8,155	22.1	2,693	5,462
Oakland	1,052,222	1,166,512	114,290	10.9	80,816	33,474
Oceana	21,786	24,599	2,813	12.9	1,231	1,582
Ogemaw	17,502	20,955	3,453	19.7	73	3,380
Ontonagon	9,060	8,117	-943	-10.4	-303	1,246
Osceola	19,728	22,028	2,300	11.7	926	1,374
Oscoda	7,367	8,844	1,477	20.0	-35	1,512
Otsego	16,626	21,800	5,174	31.1	982	4,192
Ottawa	174,492	220,403	45,911	26.3	19,954	25,957
Presque Isle	13,754	14,392	638	4.6	-296	934
Roscommon	18,473	23,174	4,701	25.4	-718	5,419
Saginaw	214,098	211,278	-2,820	-1.3	14,320	-11,500
St Clair	141,245	157,704	16,459	11.7	7,745	8,714
St Joseph	58,697	61,234	2,537	4.3	3,095	-558
Sanilac	40,025	42,736	2,711	6.8	966	1,745
Schoolcraft	8,176	8,748	572	7.0	-52	624
Shiawassee	69,927	72,236	2,309	3.3	4,195	-1,886
Tuscola	55,360	58,087	2,727	4.9	2,679	48
Van Buren	67,637	75,686	8,049	11.9	4,491	3,558
Washtenaw	269,717	299,503	29,786	11.0	24,524	5,262
Wayne	2,161,103	2,127,087	-34,016	-1.6	146,733	-112,717
Wexford	25,852	29,147	3,295	12.7	1,444	1,851

Source: Michigan Resident Birth and Death Files, Division for Vital Records and Health Statistics, MDCH
Michigan Information Center, Michigan Department of Management and Budget

Table 4.18
Population by Age, Race and Sex
Michigan Residents, 1997

Age in Years	All Races			White			Black			All Other Races		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
<1	129,533	66,206	63,327	96,823	49,605	47,218	30,404	15,373	15,031	2,306	1,228	1,078
1-4	523,213	267,470	255,743	406,398	208,614	197,783	107,077	53,797	53,282	9,736	5,061	4,678
5-9	711,781	364,500	347,281	550,993	282,955	268,036	140,307	71,179	69,128	20,481	10,366	10,115
10-14	703,924	360,342	343,582	570,541	293,083	277,459	114,778	57,775	57,002	18,606	9,485	9,120
15-19	717,912	367,441	350,471	580,308	297,359	282,950	119,184	60,802	58,382	18,419	9,281	9,139
20-24	640,665	321,572	319,093	495,430	249,485	245,945	126,929	62,817	64,113	18,303	9,270	9,033
25-29	685,348	338,449	346,899	554,320	276,714	277,605	112,221	52,147	60,075	18,805	9,587	9,219
30-34	749,139	367,621	381,518	626,656	312,392	314,264	102,503	45,336	57,166	19,980	9,892	10,088
35-39	834,969	413,155	421,814	703,388	353,350	350,037	112,870	50,172	62,699	18,712	9,632	9,079
40-44	805,819	398,452	407,367	680,309	342,968	337,342	109,883	47,898	61,984	15,625	7,586	8,039
45-49	695,221	342,457	352,764	590,504	296,198	294,305	90,663	39,921	50,740	14,055	6,338	7,717
50-54	565,474	276,072	289,402	488,180	240,973	247,207	66,583	30,023	36,560	10,711	5,076	5,636
55-59	434,819	209,189	225,630	379,546	184,314	195,231	47,639	20,929	26,709	7,637	3,945	3,688
60-64	362,065	173,512	188,553	315,465	153,050	162,413	41,580	18,014	23,569	5,021	2,448	2,572
65-69	350,596	160,403	190,193	307,111	142,552	164,558	39,719	16,284	23,434	3,764	1,566	2,200
70-74	313,632	137,328	176,304	275,107	121,138	153,969	35,811	14,998	20,814	2,714	1,192	1,520
75-79	251,106	101,923	149,183	224,254	91,366	132,887	25,168	9,900	15,270	1,684	656	1,026
80-84	166,209	60,965	105,244	148,225	54,660	93,564	17,040	5,951	11,088	944	355	591
85+	132,467	37,743	94,724	117,796	33,457	84,339	14,161	4,083	10,078	510	203	306
All Ages	9,773,892	4,764,800	5,009,092	8,111,355	3,984,236	4,127,120	1,454,521	677,396	777,126	208,015	103,168	104,847

Source: Michigan Information Center, Michigan Department of Management and Budget

Table 4.19
Abridged Life Table
Michigan Residents, 1998

Age	nx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00842	100,000	842	99,261	7,611,392	76.1
01-05	0.00154	99,158	152	396,276	7,512,131	75.8
05-10	0.00104	99,005	102	494,746	7,115,854	71.9
10-15	0.00120	98,903	118	494,266	6,621,108	66.9
15-20	0.00322	98,785	317	493,199	6,126,841	62.0
20-25	0.00440	98,468	433	491,292	5,633,643	57.2
25-30	0.00489	98,035	479	489,000	5,142,351	52.5
30-35	0.00542	97,557	529	486,518	4,653,350	47.7
35-40	0.00773	97,028	749	483,392	4,166,832	42.9
40-45	0.01171	96,279	1,127	478,781	3,683,441	38.3
45-50	0.01822	95,152	1,733	471,709	3,204,659	33.7
50-55	0.02660	93,419	2,485	461,288	2,732,950	29.3
55-60	0.04051	90,934	3,683	446,119	2,271,662	25.0
60-65	0.06466	87,251	5,641	423,014	1,825,543	20.9
65-70	0.09593	81,610	7,829	389,643	1,402,529	17.2
70-75	0.15236	73,781	11,241	341,970	1,012,886	13.7
75-80	0.21476	62,540	13,431	280,124	670,916	10.7
80-85	0.32655	49,110	16,037	205,584	390,792	8.0
85+	1.00000	33,073	33,073	185,208	185,208	5.6

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.20
Abridged Life Table for Males
Michigan Residents, 1998

Age	nx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00891	100,000	891	99,207	7,333,207	73.3
01-05	0.00196	99,109	194	395,971	7,234,000	73.0
05-10	0.00120	98,915	118	494,250	6,838,029	69.1
10-15	0.00160	98,797	158	493,659	6,343,779	64.2
15-20	0.00453	98,639	446	492,189	5,850,120	59.3
20-25	0.00689	98,193	676	489,328	5,357,931	54.6
25-30	0.00709	97,518	691	485,866	4,868,603	49.9
30-35	0.00722	96,827	698	482,438	4,382,736	45.3
35-40	0.00961	96,129	923	478,487	3,900,298	40.6
40-45	0.01493	95,206	1,421	472,729	3,421,811	35.9
45-50	0.02280	93,784	2,138	463,905	2,949,082	31.4
50-55	0.03268	91,647	2,995	451,249	2,485,177	27.1
55-60	0.05131	88,652	4,548	432,620	2,033,928	22.9
60-65	0.07727	84,104	6,498	405,262	1,601,308	19.0
65-70	0.11962	77,606	9,282	366,175	1,196,046	15.4
70-75	0.18998	68,324	12,980	310,313	829,871	12.1
75-80	0.26709	55,344	14,782	240,351	519,558	9.4
80-85	0.38959	40,562	15,802	162,836	279,206	6.9
85+	1.00000	24,760	24,760	116,370	116,370	4.7

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.21
Abridged Life Table for Females
Michigan Residents, 1998

Age	nx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00788	100,000	788	99,320	7,875,270	78.8
01-05	0.00110	99,212	109	396,608	7,775,949	78.4
05-10	0.00087	99,103	86	495,282	7,379,341	74.5
10-15	0.00078	99,018	76	494,919	6,884,059	69.5
15-20	0.00184	98,942	182	494,275	6,389,140	64.6
20-25	0.00187	98,760	184	493,356	5,894,865	59.7
25-30	0.00274	98,576	270	492,241	5,401,509	54.8
30-35	0.00369	98,306	363	490,687	4,909,267	49.9
35-40	0.00588	97,943	575	488,376	4,418,580	45.1
40-45	0.00855	97,368	832	484,916	3,930,204	40.4
45-50	0.01375	96,536	1,327	479,601	3,445,288	35.7
50-55	0.02078	95,209	1,978	471,415	2,965,688	31.1
55-60	0.03040	93,231	2,834	459,657	2,494,273	26.8
60-65	0.05292	90,398	4,783	440,787	2,034,616	22.5
65-70	0.07552	85,615	6,465	412,924	1,593,829	18.6
70-75	0.12197	79,149	9,654	372,829	1,180,904	14.9
75-80	0.17709	69,496	12,306	318,126	808,076	11.6
80-85	0.28747	57,189	16,440	245,455	489,950	8.6
85+	1.00000	40,749	40,749	244,495	244,495	6.0

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.22
Abridged Life Table for Whites
Michigan Residents, 1998

Age	nqx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00682	100,000	682	99,402	7,701,867	77.0
01-05	0.00126	99,318	125	396,977	7,602,466	76.5
05-10	0.00080	99,193	79	495,749	7,205,488	72.6
10-15	0.00100	99,114	99	495,366	6,709,740	67.7
15-20	0.00287	99,015	284	494,420	6,214,374	62.8
20-25	0.00361	98,731	356	492,785	5,719,954	57.9
25-30	0.00376	98,375	369	490,969	5,227,169	53.1
30-35	0.00442	98,006	432	489,004	4,736,200	48.3
35-40	0.00649	97,574	633	486,394	4,247,196	43.5
40-45	0.00977	96,941	946	482,505	3,760,802	38.8
45-50	0.01487	95,995	1,427	476,663	3,278,298	34.2
50-55	0.02308	94,568	2,182	467,797	2,801,634	29.6
55-60	0.03695	92,386	3,413	454,061	2,333,837	25.3
60-65	0.06043	88,972	5,376	432,315	1,879,776	21.1
65-70	0.09211	83,596	7,700	399,968	1,447,461	17.3
70-75	0.14899	75,897	11,307	352,450	1,047,493	13.8
75-80	0.21103	64,589	13,630	289,996	695,043	10.8
80-85	0.32784	50,959	16,706	213,232	405,047	7.9
85+	1.00000	34,253	34,253	191,816	191,816	5.6

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.23
Abridged Life Table for White Males
Michigan Residents, 1998

Age	nqx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00734	100,000	734	99,345	7,440,771	74.4
01-05	0.00159	99,266	158	396,684	7,341,426	74.0
05-10	0.00094	99,108	93	495,287	6,944,742	70.1
10-15	0.00135	99,016	133	494,807	6,449,455	65.1
15-20	0.00400	98,882	395	493,511	5,954,647	60.2
20-25	0.00560	98,487	551	491,087	5,461,137	55.5
25-30	0.00547	97,936	535	488,345	4,970,050	50.7
30-35	0.00577	97,401	561	485,653	4,481,704	46.0
35-40	0.00801	96,840	775	482,392	3,996,051	41.3
40-45	0.01234	96,065	1,185	477,571	3,513,660	36.6
45-50	0.01883	94,880	1,786	470,234	3,036,089	32.0
50-55	0.02827	93,093	2,631	459,394	2,565,855	27.6
55-60	0.04651	90,463	4,207	442,524	2,106,460	23.3
60-65	0.07099	86,256	6,123	417,011	1,663,936	19.3
65-70	0.11460	80,134	9,183	379,188	1,246,926	15.6
70-75	0.18617	70,951	13,209	322,976	867,738	12.2
75-80	0.26235	57,742	15,148	251,547	544,762	9.4
80-85	0.38978	42,594	16,602	171,052	293,215	6.9
85+	1.00000	25,992	25,992	122,162	122,162	4.7

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.24
Abridged Life Table for White Females
Michigan Residents, 1998

Age	nqx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.00625	100,000	625	99,463	7,948,952	79.5
01-05	0.00091	99,375	90	397,295	7,849,488	79.0
05-10	0.00066	99,285	65	496,246	7,452,194	75.1
10-15	0.00064	99,220	63	495,965	6,955,948	70.1
15-20	0.00168	99,157	166	495,391	6,459,983	65.1
20-25	0.00159	98,991	157	494,571	5,964,592	60.3
25-30	0.00206	98,834	203	493,695	5,470,020	55.3
30-35	0.00307	98,632	302	492,461	4,976,325	50.5
35-40	0.00495	98,329	486	490,512	4,483,865	45.6
40-45	0.00714	97,843	698	487,588	3,993,352	40.8
45-50	0.01087	97,145	1,056	483,299	3,505,764	36.1
50-55	0.01800	96,089	1,729	476,449	3,022,466	31.5
55-60	0.02785	94,360	2,627	465,835	2,546,016	27.0
60-65	0.05039	91,733	4,622	447,874	2,080,181	22.7
65-70	0.07223	87,111	6,292	420,862	1,632,307	18.7
70-75	0.11868	80,820	9,591	381,390	1,211,445	15.0
75-80	0.17391	71,228	12,387	326,722	830,055	11.7
80-85	0.28916	58,842	17,014	252,368	503,332	8.6
85+	1.00000	41,827	41,827	250,964	250,964	6.0

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.25
Abridged Life Table for Blacks
Michigan Residents, 1998

Age	nqx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.01332	100,000	1,332	98,834	7,091,578	70.9
01-05	0.00247	98,668	243	394,146	6,992,744	70.9
05-10	0.00207	98,425	203	491,565	6,598,599	67.0
10-15	0.00201	98,222	197	490,678	6,107,033	62.2
15-20	0.00507	98,025	496	489,001	5,616,355	57.3
20-25	0.00782	97,528	762	485,854	5,127,354	52.6
25-30	0.01091	96,767	1,055	481,277	4,641,500	48.0
30-35	0.01203	95,712	1,151	475,764	4,160,223	43.5
35-40	0.01544	94,560	1,460	469,380	3,684,459	39.0
40-45	0.02408	93,101	2,242	460,367	3,215,079	34.5
45-50	0.04079	90,859	3,706	445,534	2,754,712	30.3
50-55	0.05342	87,153	4,655	424,573	2,309,178	26.5
55-60	0.07078	82,498	5,839	398,455	1,884,605	22.8
60-65	0.09588	76,660	7,350	365,529	1,486,149	19.4
65-70	0.12624	69,310	8,749	325,366	1,120,620	16.2
70-75	0.17619	60,560	10,670	276,863	795,254	13.1
75-80	0.24628	49,890	12,287	218,987	518,391	10.4
80-85	0.31604	37,603	11,884	157,948	299,404	8.0
85+	1.00000	25,719	25,719	141,456	141,456	5.5

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.26
Abridged Life Table for Black Males
Michigan Residents, 1997

Age	nx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.01386	100,000	1,386	98,777	6,677,413	66.8
01-05	0.00349	98,614	344	393,659	6,578,636	66.7
05-10	0.00239	98,270	234	490,707	6,184,977	62.9
10-15	0.00269	98,036	263	489,622	5,694,270	58.1
15-20	0.0073	97,773	713	487,285	5,204,648	53.2
20-25	0.01275	97,060	1,237	482,387	4,717,363	48.6
25-30	0.01646	95,823	1,577	475,261	4,234,976	44.2
30-35	0.01761	94,246	1,659	467,156	3,759,715	39.9
35-40	0.02083	92,587	1,928	458,409	3,292,559	35.6
40-45	0.03392	90,659	3,074	446,175	2,834,150	31.3
45-50	0.05312	87,584	4,652	426,863	2,387,974	27.3
50-55	0.07018	82,932	5,820	400,694	1,961,111	23.6
55-60	0.09659	77,112	7,448	367,578	1,560,417	20.2
60-65	0.12732	69,664	8,869	326,679	1,192,839	17.1
65-70	0.16433	60,795	9,990	279,481	866,160	14.2
70-75	0.22003	50,805	11,179	226,527	586,679	11.5
75-80	0.30648	39,626	12,145	167,660	360,152	9.1
80-85	0.38755	27,482	10,650	110,019	192,492	7.0
85+	1.00000	16,831	16,831	82,473	82,473	4.9

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.27
Abridged Life Table for Black Females
Michigan Residents, 1998

Age	nx(1)	lx(2)	ndx(3)	nLx(4)	Tx(5)	ex(6)
00-01	0.01271	100,000	1,271	98,898	7,480,243	74.8
01-05	0.00143	98,729	141	394,666	7,381,345	74.8
05-10	0.00174	98,589	171	492,473	6,986,679	70.9
10-15	0.00132	98,418	129	491,785	6,494,206	66.0
15-20	0.00274	98,288	269	490,800	6,002,421	61.1
20-25	0.00289	98,019	282	489,457	5,511,621	56.2
25-30	0.00606	97,737	592	487,298	5,022,164	51.4
30-35	0.00759	97,145	737	483,981	4,534,867	46.7
35-40	0.01111	96,408	1,071	479,536	4,050,886	42.0
40-45	0.01642	95,337	1,565	473,156	3,571,350	37.5
45-50	0.03098	93,772	2,905	462,021	3,098,194	33.0
50-55	0.03945	90,868	3,584	445,684	2,636,173	29.0
55-60	0.05007	87,284	4,370	425,975	2,190,490	25.1
60-65	0.07112	82,914	5,896	400,502	1,764,515	21.3
65-70	0.09880	77,017	7,609	366,905	1,364,012	17.7
70-75	0.14316	69,408	9,936	323,150	997,108	14.4
75-80	0.20476	59,472	12,177	267,551	673,957	11.3
80-85	0.27467	47,294	12,990	204,011	406,407	8.6
85+	1.00000	34,304	34,304	202,396	202,396	5.9

Note: Definitions of life table values are contained in the Technical Notes.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH

Table 4.28
Age-Adjusted Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	586.2	771.9	437.1	555.9	734.2	413.8	824.0	1,084.9	610.8
	1981	584.6	767.5	438.3	553.7	729.7	414.0	831.7	1,086.5	624.6
	1982	574.3	755.5	430.1	543.4	717.3	406.3	814.4	1,066.2	610.2
	1983	573.9	749.9	433.7	541.9	709.8	409.5	818.3	1,071.0	614.8
	1984	563.0	733.2	428.4	531.0	691.6	405.1	808.5	1,071.8	598.5
	1985	570.5	751.0	427.0	536.8	706.4	403.4	829.7	1,113.4	602.5
	1986	569.6	742.9	431.9	534.2	696.3	406.8	835.1	1,114.3	613.5
	1987	560.6	725.1	430.1	523.6	674.5	405.2	835.6	1,124.0	608.1
	1988	551.2	713.4	421.9	515.2	668.1	394.4	818.1	1,073.7	615.5
	1989	538.5	692.8	415.0	496.1	637.6	384.1	832.4	1,102.1	619.2
	1990	525.6	677.9	403.7	486.0	625.2	375.6	792.9	1,062.3	581.5
	1991	524.6	672.9	405.6	484.7	619.3	378.2	793.7	1,056.8	585.2
	1992	508.1	651.7	392.1	468.5	600.5	362.5	766.8	1,013.5	575.2
	1993	517.1	659.1	401.8	475.2	603.1	372.2	792.6	1,057.6	585.6
	1994	510.2	647.9	397.1	468.9	591.2	368.9	781.5	1,057.6	567.5
	1995	504.1	635.6	396.2	464.4	581.5	368.7	766.6	1,032.9	561.1
	1996	492.2	617.2	389.5	457.7	569.9	365.6	716.0	960.5	529.6
	1997	481.8	600.0	384.7	449.0	557.5	359.4	695.6	908.4	534.9
	1998	487.9	607.3	389.3	456.7	565.4	366.5	696.5	922.6	525.3
United States	1980	585.8	777.2	432.6	559.4	745.3	411.1	842.5	1,112.8	631.1
	1981	568.2	753.3	420.4	544.6	724.4	401.4	803.9	1,067.7	599.1
	1982	553.8	733.1	411.2	531.8	706.0	393.3	778.7	1,035.0	581.4
	1983	550.5	725.3	411.5	528.0	698.4	392.7	777.9	1,019.6	590.4
	1984	545.9	716.7	409.6	523.6	689.9	391.3	771.9	1,011.7	585.3
	1985	546.1	716.8	409.4	523.1	688.7	390.6	779.9	1,024.0	589.1
	1986	541.7	709.1	406.6	518.0	679.8	387.7	781.0	1,026.9	588.2
	1987	535.5	698.6	403.3	511.1	668.2	384.1	778.6	1,023.2	586.2
	1988	535.5	696.7	404.4	509.8	664.3	384.4	788.8	1,037.8	593.1
	1989	523.0	678.7	395.3	496.1	644.2	374.9	783.1	1,032.1	585.6
	1990	520.2	680.2	390.6	492.8	644.3	369.9	789.2	1,061.3	581.6
	1991	513.7	669.9	386.5	486.8	634.4	366.3	780.7	1,048.8	575.1
	1992	504.5	656.0	380.3	477.5	620.9	359.9	767.5	1,026.9	568.4
	1993	513.3	664.9	388.3	485.1	627.5	367.7	785.2	1,052.2	578.8
	1994	507.4	654.6	385.2	479.8	617.9	364.9	772.1	1,029.9	572.0
	1995	503.9	646.3	385.2	476.9	610.5	364.9	765.7	1,016.7	571.0
	1996	491.6	623.7	381.0	466.8	591.4	361.9	738.3	967.0	561.0
	1997	479.1	602.8	375.7	456.5	573.8	358.0	705.3	911.9	545.5
	1998	---	---	---	---	---	---	---	---	---

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report*, Table 10

Table 4.29
Age-Adjusted Diseases of the Heart Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	214.0	294.5	149.8	209.3	291.5	143.8	256.1	324.6	201.4
	1981	213.3	297.1	146.3	207.9	294.1	139.2	261.5	328.5	207.0
	1982	208.6	288.1	145.7	203.1	284.8	138.5	256.3	320.4	205.5
	1983	207.2	281.2	148.3	201.5	277.5	140.9	258.0	316.5	211.6
	1984	199.9	270.3	144.3	193.2	264.2	137.4	257.8	327.7	202.0
	1985	200.1	273.9	141.6	193.8	267.6	135.4	255.6	334.4	193.8
	1986	198.2	266.2	144.5	191.0	259.1	137.2	261.4	332.6	206.0
	1987	191.0	257.6	138.6	183.7	249.7	131.7	253.9	331.7	193.4
	1988	184.6	247.4	135.1	176.4	240.2	125.9	254.9	315.7	207.9
	1989	170.7	230.0	123.6	161.5	220.4	114.5	243.4	310.4	192.0
	1990	162.8	217.9	119.1	154.0	208.3	110.9	231.6	299.6	179.8
	1991	158.9	211.8	116.7	150.7	202.9	108.8	224.0	287.5	175.7
	1992	151.5	201.9	111.5	143.6	193.2	103.9	210.7	270.6	165.9
	1993	157.3	208.5	116.3	148.0	198.8	107.0	227.9	291.0	180.4
	1994	152.9	202.4	112.7	143.6	191.5	104.1	222.9	292.2	171.8
	1995	147.6	195.0	108.9	138.2	184.1	100.5	218.6	286.6	167.8
	1996	143.9	189.7	106.5	135.7	180.2	99.0	204.7	269.7	156.6
	1997	137.7	178.8	103.8	130.3	170.3	97.0	193.2	250.2	151.7
1998	139.6	182.7	104.2	132.4	174.8	97.1	194.2	251.3	152.4	
United States	1980	202.0	280.4	140.3	197.6	277.5	134.6	255.7	327.3	201.1
	1981	195.0	271.2	135.1	191.1	268.8	129.8	245.4	316.7	191.2
	1982	190.5	264.4	132.5	186.8	262.1	127.4	239.0	309.4	186.3
	1983	188.8	260.4	132.3	184.6	257.8	126.7	242.0	308.2	191.5
	1984	183.6	252.2	129.3	179.5	249.5	124.0	235.8	300.1	186.6
	1985	180.5	247.7	127.3	176.1	244.5	121.7	236.2	301.0	186.8
	1986	175.0	238.2	124.6	170.4	234.8	119.0	232.6	294.3	185.1
	1987	169.6	229.6	121.7	165.0	225.9	116.3	226.9	287.1	180.8
	1988	166.3	224.5	119.8	161.5	220.5	114.2	226.6	286.2	181.1
	1989	155.9	210.2	112.3	151.0	205.9	106.6	216.4	272.6	172.9
	1990	152.0	206.7	108.9	146.9	202.0	103.1	213.5	275.9	168.1
	1991	148.2	201.0	106.3	143.1	196.1	100.7	210.9	272.7	165.5
	1992	144.3	195.1	103.8	139.2	190.3	98.1	205.4	264.1	162.4
	1993	145.3	195.5	105.0	139.9	190.3	99.2	208.9	267.9	165.3
	1994	140.4	188.5	101.6	135.4	183.8	96.1	198.8	254.0	158.0
	1995	138.3	184.9	100.4	133.1	179.7	94.9	198.8	255.9	156.3
	1996	134.5	178.8	98.2	129.8	174.5	92.9	191.5	242.6	153.4
	1997	130.5	173.1	95.4	125.9	168.7	90.4	185.7	236.2	147.6
1998	---	---	---	---	---	---	---	---	---	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report, Table 10*

Table 4.30
Age-Adjusted Cancer Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	134.1	167.4	109.5	130.5	161.5	107.9	169.0	224.3	125.2
	1981	135.5	164.1	114.9	130.9	156.7	112.7	181.1	235.8	138.6
	1982	137.8	169.5	114.9	134.0	163.4	113.3	175.6	230.1	133.8
	1983	137.5	170.3	114.0	133.2	163.4	112.1	176.9	233.3	133.7
	1984	136.9	168.5	114.4	132.4	160.7	112.5	179.0	241.6	132.1
	1985	137.4	168.4	115.6	133.4	162.0	113.5	176.9	231.9	136.3
	1986	136.6	169.6	113.0	131.7	162.5	110.1	180.2	237.9	137.4
	1987	137.2	167.3	116.2	133.5	161.5	114.0	174.7	226.9	137.3
	1988	136.8	166.9	115.2	132.0	160.5	111.8	179.3	227.6	143.8
	1989	137.3	166.3	116.7	132.5	158.9	114.2	175.8	229.5	136.2
	1990	136.3	167.5	114.2	131.2	160.0	110.9	176.9	231.0	138.2
	1991	139.2	168.0	119.1	134.5	161.0	116.2	177.3	228.1	141.3
	1992	136.0	167.0	113.7	130.5	158.9	110.1	179.5	236.3	139.3
	1993	133.3	160.5	114.0	128.2	152.3	111.4	172.8	228.2	133.7
	1994	132.7	160.4	112.5	127.5	151.9	110.0	173.0	231.4	131.1
	1995	130.2	155.7	111.9	125.9	148.9	109.4	163.8	215.9	127.4
	1996	129.0	154.3	110.4	124.4	147.5	107.5	165.2	213.8	131.2
	1997	126.4	150.2	109.2	122.5	144.8	106.4	156.3	198.2	128.1
	1998	126.1	150.1	108.7	122.1	143.3	106.7	159.2	209.7	124.4
United States	1980	132.8	165.5	109.2	129.6	160.5	107.7	172.1	229.9	129.7
	1981	131.6	163.7	108.6	128.5	158.3	107.2	171.3	232.0	127.1
	1982	132.5	164.8	109.5	129.4	159.4	108.2	173.2	235.2	128.7
	1983	132.6	164.3	109.9	129.4	158.9	108.5	172.9	232.2	129.8
	1984	133.5	164.6	111.1	130.2	159.0	109.9	174.8	234.9	131.0
	1985	133.6	164.5	111.4	130.7	159.2	110.3	173.0	231.6	130.4
	1986	133.2	163.6	111.4	130.4	158.8	110.1	172.8	229.0	132.1
	1987	132.9	163.2	111.0	130.1	158.4	109.7	172.2	227.9	132.0
	1988	132.7	162.4	111.2	130.0	157.6	110.1	171.3	227.0	131.2
	1989	133.0	162.4	111.7	130.2	157.2	110.7	172.7	230.6	130.9
	1990	135.0	166.3	112.7	131.5	160.3	111.2	182.0	248.1	137.2
	1991	134.5	165.0	112.6	131.3	159.5	111.2	179.3	242.4	136.3
	1992	133.1	162.6	111.8	129.9	157.3	110.3	177.5	238.1	136.6
	1993	132.6	161.9	111.4	129.4	156.4	110.1	177.2	238.9	135.3
	1994	131.5	159.6	111.1	128.6	154.4	109.9	173.8	232.6	133.7
	1995	129.9	156.8	110.4	127.0	151.8	108.9	171.6	226.8	134.1
	1996	127.9	153.8	108.8	125.2	149.2	107.6	167.8	221.9	130.7
	1997	126.4	150.2	109.2	122.5	144.8	106.4	156.3	198.2	128.1
	1998	126.1	150.1	108.7	122.1	143.3	106.7	159.2	209.7	124.4

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report*, Table 10

Table 4.31
Age-Adjusted Stroke Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	40.4	44.7	37.2	37.9	42.2	34.8	60.6	65.4	56.6
	1981	39.8	42.9	37.5	37.3	40.4	35.0	61.3	64.9	58.2
	1982	36.9	41.5	33.4	34.8	39.2	31.4	54.8	61.4	49.6
	1983	36.0	39.0	33.6	33.4	36.5	31.1	56.3	59.7	53.2
	1984	34.4	37.7	31.9	32.8	36.0	30.4	46.3	52.3	41.8
	1985	33.3	36.8	30.6	31.1	34.7	28.4	50.7	54.2	47.2
	1986	32.0	34.8	29.6	29.9	32.8	27.6	48.3	52.3	44.9
	1987	31.9	34.5	29.9	29.4	31.4	27.8	52.4	60.3	46.2
	1988	29.5	32.7	26.8	27.7	30.6	25.3	43.8	51.0	38.1
	1989	28.9	30.6	27.4	26.6	28.6	25.0	46.1	46.7	45.0
	1990	27.6	29.7	25.9	26.1	28.0	24.5	38.7	42.6	35.4
	1991	27.4	29.2	25.9	25.4	26.9	24.3	41.7	47.3	36.8
	1992	26.2	28.0	24.7	24.6	26.2	23.4	36.6	41.7	32.6
	1993	26.5	29.8	23.8	24.5	27.3	22.2	41.4	50.7	34.2
	1994	27.9	29.5	26.3	25.4	26.9	24.1	45.2	50.1	41.4
	1995	27.9	29.6	26.7	25.7	27.1	24.8	44.2	49.9	40.0
	1996	26.7	29.4	24.6	24.6	26.6	23.1	40.3	51.1	32.5
1997	26.0	28.2	24.1	24.3	26.3	22.5	38.0	43.8	33.8	
1998	26.3	28.0	24.6	24.6	26.1	23.1	37.4	43.4	32.9	
United States	1980	40.8	44.9	37.6	38.0	41.9	35.2	68.5	77.5	61.7
	1981	38.1	41.7	35.4	35.6	38.9	33.1	64.4	72.7	58.1
	1982	35.8	39.2	33.2	33.4	36.6	31.0	60.8	68.9	54.7
	1983	34.4	37.7	31.8	32.0	35.2	29.6	58.3	64.2	53.8
	1984	33.4	36.4	31.1	31.1	33.9	28.9	56.7	62.8	51.8
	1985	32.3	35.2	30.0	30.1	32.8	27.9	55.0	60.8	50.3
	1986	31.0	33.5	29.0	28.8	31.1	27.1	52.6	58.9	47.6
	1987	30.3	32.7	28.3	28.1	30.3	26.3	51.2	57.1	46.7
	1988	29.7	32.4	27.6	27.5	30.0	25.5	51.5	57.8	46.6
	1989	28.0	30.4	26.2	25.9	28.0	24.1	49.0	54.1	44.9
	1990	27.7	30.2	25.7	25.5	27.7	23.8	48.4	56.1	42.7
	1991	26.8	29.4	24.7	24.7	26.9	22.8	46.8	54.9	41.0
	1992	26.2	28.6	24.2	24.2	26.3	22.5	45.0	52.0	39.9
	1993	26.5	29.0	24.5	24.5	26.8	22.7	45.0	51.9	39.9
	1994	26.5	29.0	24.5	24.5	26.6	22.8	45.4	52.4	40.1
	1995	26.7	28.9	24.8	24.7	26.5	23.1	45.0	52.2	39.6
	1996	26.4	28.5	24.6	24.5	26.3	22.9	44.2	50.9	39.2
1997	25.9	27.9	24.2	24.0	25.7	22.5	42.5	48.6	37.9	
1998	--	--	--	--	--	--	--	--	--	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS Monthly Vital Statistics Report, Table 10

Table 4.32
Age-Adjusted Chronic Obstructive Pulmonary Disease Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	15.7	25.4	8.9	15.8	25.6	9.1	13.7	23.1	6.3
	1981	16.3	26.5	9.3	16.5	26.9	9.4	14.3	23.1	7.8
	1982	16.2	25.4	9.8	16.2	25.5	9.9	15.1	24.1	8.4
	1983	17.8	26.8	11.8	17.8	26.8	12.1	16.9	26.8	9.7
	1984	17.5	27.2	10.8	17.7	27.6	11.0	14.8	24.0	8.1
	1985	19.3	29.3	12.5	19.3	29.4	12.6	18.7	28.9	11.5
	1986	19.5	29.2	13.1	19.8	29.4	13.4	16.7	26.6	9.6
	1987	19.0	27.1	13.8	19.2	27.2	14.1	16.8	25.8	10.9
	1988	19.3	27.9	13.5	19.7	28.3	14.0	16.0	25.3	9.4
	1989	18.7	25.6	14.2	18.8	25.8	14.3	16.7	24.3	11.7
	1990	19.3	26.2	14.7	19.6	26.5	15.1	16.1	24.0	10.6
	1991	19.4	25.8	15.3	19.7	26.0	15.7	16.8	24.3	11.5
	1992	18.8	25.4	14.4	18.9	25.6	14.5	16.8	23.6	12.3
	1993	20.5	26.8	16.3	20.5	26.4	16.6	19.1	27.8	13.1
	1994	19.9	25.0	16.7	20.1	25.0	17.0	17.9	24.9	13.3
	1995	20.5	25.7	17.2	20.7	25.9	17.5	17.5	22.9	13.9
	1996	20.6	25.3	17.6	20.9	25.4	18.0	17.2	23.5	12.9
	1997	19.9	25.2	16.3	20.7	26.1	17.1	12.7	17.6	9.6
1998	20.9	25.4	17.9	21.2	25.5	18.4	17.4	23.9	12.8	
United States	1980	15.9	26.1	8.9	16.3	26.7	9.2	12.5	20.9	6.3
	1981	16.3	26.2	9.5	16.7	26.8	9.8	12.6	21.4	6.3
	1982	16.2	25.5	9.8	16.6	26.2	10.0	12.8	20.6	7.3
	1983	17.4	27.0	10.9	17.9	27.6	11.3	13.7	22.2	7.6
	1984	17.7	27.0	11.4	18.2	27.6	11.8	14.2	22.8	8.1
	1985	18.7	27.9	12.5	19.2	28.5	12.9	15.0	23.9	8.7
	1986	18.8	27.6	12.8	19.2	28.1	13.3	15.4	24.6	8.9
	1987	18.7	26.9	13.2	19.2	27.4	13.7	15.5	24.0	9.5
	1988	19.4	27.5	14.0	19.8	27.8	14.5	16.6	26.0	10.0
	1989	19.4	26.4	14.7	19.8	26.8	15.2	16.6	24.9	10.9
	1990	19.7	27.2	14.7	20.1	27.4	15.2	16.9	26.5	10.7
	1991	20.1	27.0	15.5	20.6	27.4	16.1	17.1	25.9	11.3
	1992	19.9	26.4	15.5	20.4	26.8	16.1	16.6	24.8	11.2
	1993	21.4	27.8	17.1	21.9	28.2	17.8	17.8	26.6	12.2
	1994	21.0	26.9	17.1	21.6	27.3	17.8	17.7	25.7	12.4
	1995	20.8	26.3	17.1	21.3	26.6	17.8	17.6	25.4	12.5
	1996	21.0	25.9	17.6	21.5	26.3	18.3	17.8	24.8	13.1
	1997	21.1	26.1	17.7	21.7	26.5	18.5	17.4	24.5	12.7
1998	—	—	—	—	—	—	—	—	—	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report, Table 10*

Table 4.33
Age-Adjusted Unintentional Injury Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	36.4	53.4	20.6	36.4	52.4	21.3	38.1	64.5	15.6
	1981	33.9	51.0	17.8	34.0	51.0	17.9	34.8	55.1	17.4
	1982	31.3	46.1	17.4	30.9	45.4	17.1	34.0	52.3	18.3
	1983	29.2	44.2	15.2	29.2	44.1	14.9	30.8	46.3	17.8
	1984	30.2	44.7	16.5	30.0	44.0	16.6	33.1	52.7	16.5
	1985	32.1	47.3	17.8	31.7	46.3	17.9	35.9	58.3	17.1
	1986	31.4	45.9	17.9	31.5	45.5	18.3	32.7	53.0	15.8
	1987	31.0	44.8	18.0	30.9	44.6	17.8	34.1	50.7	20.2
	1988	31.7	45.3	18.9	31.7	45.6	18.5	33.5	48.4	21.1
	1989	30.8	42.9	19.4	30.4	42.4	18.9	34.2	48.6	22.4
	1990	29.3	42.7	16.9	29.1	42.2	16.8	30.6	48.1	16.2
	1991	27.6	38.8	17.2	26.9	37.3	17.2	32.4	49.0	18.2
	1992	25.8	37.2	15.2	25.1	36.1	14.7	30.5	45.8	17.7
	1993	25.8	36.1	16.0	24.8	34.2	15.8	31.5	48.1	17.4
	1994	26.1	36.3	16.5	25.5	35.5	15.8	28.2	40.9	17.7
	1995	27.6	38.0	17.9	26.8	36.7	17.3	32.2	47.8	19.6
	1996	26.4	36.6	17.0	25.8	35.1	16.9	29.8	46.6	16.1
	1997	26.7	36.7	17.2	25.2	34.6	16.0	36.2	51.9	23.1
1998	26.8	37.8	16.5	25.9	36.0	16.1	32.6	50.6	17.6	
United States	1980	42.3	64.0	21.8	41.5	62.3	21.4	51.2	82.0	25.1
	1981	39.8	60.2	20.4	39.3	59.1	20.2	45.8	74.7	21.6
	1982	36.6	55.2	18.9	36.1	54.1	18.7	42.5	68.3	20.8
	1983	35.3	52.9	18.7	34.7	51.8	18.3	42.1	66.2	21.9
	1984	35.0	52.3	18.7	34.6	51.3	18.5	40.6	64.7	20.1
	1985	34.7	51.8	18.6	34.1	50.4	18.4	41.8	66.7	20.7
	1986	35.2	52.5	18.7	34.5	51.1	18.4	42.1	66.9	21.0
	1987	34.6	51.2	18.8	33.9	49.7	18.6	42.2	66.8	21.0
	1988	35.0	51.5	19.1	34.1	49.9	18.8	43.7	69.0	22.2
	1989	33.8	49.5	18.9	32.9	47.8	18.5	42.7	67.3	21.6
	1990	32.5	47.7	17.9	31.8	46.4	17.6	39.7	62.4	20.4
	1991	31.0	45.3	17.2	30.3	43.9	17.0	38.9	61.0	19.9
	1992	29.4	43.1	16.4	28.8	41.9	16.1	36.5	56.7	19.3
	1993	30.3	44.2	17.0	29.6	42.9	16.6	38.4	59.8	20.1
	1994	30.3	44.0	17.2	29.5	42.7	16.8	38.1	58.5	20.7
	1995	30.5	44.1	17.5	29.9	43.0	17.2	37.4	57.6	20.2
	1996	30.4	43.3	17.9	29.9	42.4	17.6	36.7	55.7	20.5
	1997	30.1	42.9	17.8	29.6	42.0	17.5	36.1	54.2	20.4
1998	---	---	---	---	---	---	---	---	---	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS Monthly Vital Statistics Report, Table 10

Table 4.34
Age-Adjusted Pneumonia and Influenza Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	11.7	16.0	8.5	10.7	14.5	8.1	19.5	29.5	11.6
	1981	10.8	15.0	7.9	9.7	13.4	7.4	19.0	27.8	12.1
	1982	10.7	14.9	7.8	9.9	14.0	7.3	15.9	22.6	10.8
	1983	12.7	17.5	9.3	11.8	16.1	8.9	19.9	29.5	12.5
	1984	12.0	16.7	8.8	11.2	15.8	8.3	18.0	24.8	12.9
	1985	12.4	17.0	9.4	11.9	16.4	8.9	16.4	21.8	12.4
	1986	13.9	18.5	10.8	13.2	17.8	10.2	18.9	24.4	14.9
	1987	13.0	17.0	10.5	12.3	15.9	10.0	18.7	24.9	14.1
	1988	14.0	18.9	10.9	13.4	18.1	10.5	17.8	24.5	12.9
	1989	13.6	18.2	10.5	12.7	16.7	10.2	19.7	29.3	12.4
	1990	14.1	19.2	10.7	13.2	18.2	10.0	19.6	27.4	14.3
	1991	13.9	18.6	10.6	13.0	17.5	10.0	19.4	26.0	14.4
	1992	13.0	17.4	10.2	12.1	16.0	9.6	19.1	27.8	12.7
	1993	13.9	18.6	10.6	12.8	17.1	9.9	20.8	30.0	14.1
	1994	13.3	17.7	10.3	12.2	16.3	9.5	20.7	29.6	14.7
	1995	13.6	17.4	11.0	12.6	15.7	10.6	20.2	30.7	12.9
	1996	13.5	17.2	11.0	12.4	15.6	10.3	20.8	29.6	14.8
	1997	12.3	16.3	9.5	11.5	15.3	8.9	17.9	23.9	13.7
	1998	13.3	17.2	10.5	12.3	15.5	10.1	20.6	31.1	12.8
United States	1980	12.9	17.4	9.8	12.2	16.2	9.4	19.2	28.0	12.7
	1981	12.3	16.6	9.2	11.6	15.6	9.0	17.7	26.4	11.3
	1982	10.9	15.2	8.0	10.3	14.3	7.6	15.6	23.2	10.1
	1983	11.8	16.2	8.8	11.3	15.3	8.6	16.2	24.3	10.2
	1984	12.2	16.7	9.1	11.6	15.8	8.8	17.2	25.2	11.3
	1985	13.4	18.2	10.1	12.8	17.4	9.8	18.5	26.8	12.4
	1986	13.5	18.4	10.3	12.9	17.5	9.9	19.0	27.2	13.1
	1987	13.1	17.7	10.0	12.5	16.8	9.7	18.2	26.4	12.2
	1988	14.2	18.9	11.0	13.6	18.0	10.7	19.6	28.0	13.4
	1989	13.7	17.9	10.7	13.0	16.9	10.3	19.8	27.9	13.8
	1990	14.0	18.5	11.0	13.4	17.5	10.6	19.8	28.7	13.7
	1991	13.4	17.5	10.6	12.8	16.6	10.2	18.7	26.2	13.5
	1992	12.7	16.7	9.9	12.1	15.8	9.7	17.4	25.0	12.2
	1993	13.5	17.5	10.7	12.9	16.6	10.4	18.6	25.9	13.5
	1994	13.0	16.7	10.4	12.5	15.9	10.1	17.5	24.2	12.8
	1995	12.9	16.5	10.4	12.4	15.7	10.1	17.8	24.5	13.2
	1996	12.8	16.2	10.4	12.2	15.2	10.1	17.8	24.8	12.9
	1997	12.9	16.2	10.5	12.4	15.5	10.2	17.2	23.0	13.1
	1998	---	---	---	---	---	---	---	---	---

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report*, Table 10

Table 4.35
Age-Adjusted Diabetes Mellitus Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	11.2	11.0	11.3	10.5	10.5	10.4	17.1	14.9	18.7
	1981	11.2	11.9	10.7	10.4	11.3	9.8	17.2	16.7	17.5
	1982	10.0	10.3	9.7	9.4	9.9	8.8	15.3	13.7	16.7
	1983	11.1	10.9	11.3	10.4	10.3	10.5	16.8	16.0	17.1
	1984	10.7	11.2	10.4	9.8	10.7	9.2	18.3	15.4	20.4
	1985	9.9	10.6	9.4	9.1	9.9	8.3	17.4	16.6	18.0
	1986	10.8	11.3	10.4	10.0	10.6	9.5	17.5	17.3	17.7
	1987	10.3	10.8	9.8	9.4	9.9	8.8	17.7	18.3	17.0
	1988	10.6	11.3	10.0	9.6	10.5	8.8	18.7	18.2	19.1
	1989	14.2	14.9	13.6	12.5	13.1	11.9	27.3	29.3	25.6
	1990	13.4	14.5	12.6	11.9	12.9	11.1	25.5	27.0	24.3
	1991	13.8	15.4	12.4	12.2	13.9	10.8	26.2	28.3	24.4
	1992	13.9	14.5	13.2	12.2	13.0	11.5	26.3	26.3	26.0
	1993	13.4	14.4	12.7	12.2	13.3	11.4	21.9	22.4	21.5
	1994	13.7	14.7	12.8	12.4	13.4	11.6	23.0	25.6	20.8
	1995	14.0	15.7	12.5	12.5	14.3	10.9	24.8	27.4	22.6
	1996	14.0	14.7	13.5	12.9	14.0	12.1	21.9	20.2	23.2
	1997	14.5	16.1	13.2	13.0	14.5	11.9	25.0	28.0	22.6
1998	14.5	15.6	13.6	13.3	14.4	12.4	22.9	24.7	21.7	
United States	1980	10.1	10.2	10.0	9.1	9.5	8.7	20.3	17.7	22.1
	1981	9.8	10.0	9.6	8.8	9.3	8.4	19.5	16.8	21.3
	1982	9.6	9.8	9.3	8.7	9.2	8.3	18.3	16.1	19.8
	1983	9.9	9.9	9.8	8.9	9.2	8.6	19.7	17.7	21.1
	1984	9.5	9.8	9.2	8.5	9.0	8.0	19.3	17.6	20.5
	1985	9.6	9.9	9.4	8.6	9.2	8.1	19.7	17.7	21.1
	1986	9.6	9.9	9.3	8.5	9.1	8.1	20.0	17.9	21.4
	1987	9.8	10.3	9.3	8.7	9.5	8.1	20.2	18.3	21.3
	1988	10.1	10.5	9.8	9.0	9.6	8.4	21.2	19.8	22.1
	1989	11.5	12.0	11.0	10.3	11.0	9.6	23.7	22.6	24.2
	1990	11.7	12.3	11.1	10.4	11.3	9.5	24.8	23.6	25.4
	1991	11.8	12.6	11.1	10.5	11.5	9.6	25.4	24.6	25.7
	1992	11.9	12.7	11.1	10.5	11.6	9.6	25.3	24.2	25.8
	1993	12.4	13.4	11.7	11.0	12.2	10.0	26.8	26.3	26.9
	1994	12.9	13.9	12.1	11.5	12.7	10.4	27.4	27.1	27.4
	1995	13.3	14.4	12.4	11.7	13.1	10.6	28.5	28.4	28.3
	1996	13.6	14.9	12.5	12.0	13.7	10.7	28.8	27.8	29.4
	1997	13.5	14.8	12.4	11.9	13.4	10.6	28.9	29.2	28.5
1998	---	---	---	---	---	---	---	---	---	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS Monthly Vital Statistics Report, Table 10

Table 4.36
Age-Adjusted Chronic Liver Disease and Cirrhosis Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	14.1	19.7	9.1	11.6	16.5	7.3	32.3	45.4	21.2
	1981	12.8	17.9	8.2	10.8	15.6	6.7	27.8	37.9	19.3
	1982	12.6	17.7	8.1	10.6	15.3	6.5	27.4	38.0	18.6
	1983	12.6	18.7	7.2	10.6	15.7	6.1	27.4	43.0	14.5
	1984	11.9	16.6	7.7	9.9	14.0	6.3	26.1	37.1	17.1
	1985	12.3	17.6	7.6	9.9	14.1	6.3	29.8	45.6	16.8
	1986	10.7	15.9	6.2	8.9	13.0	5.4	23.8	38.8	11.5
	1987	10.4	15.1	6.3	8.3	12.2	4.9	24.9	37.0	15.2
	1988	10.2	14.8	6.1	8.2	12.0	4.9	24.3	36.2	14.5
	1989	10.8	15.8	6.3	8.6	12.4	5.2	26.2	41.8	13.3
	1990	10.3	14.3	6.7	8.4	11.7	5.5	22.9	34.6	13.5
	1991	9.4	13.7	5.7	8.1	11.9	4.9	18.5	28.3	10.6
	1992	8.3	11.9	5.1	6.9	10.1	4.1	17.5	25.2	11.4
	1993	8.7	12.1	5.6	7.4	10.2	4.9	17.5	27.5	9.5
	1994	8.8	12.5	5.4	7.5	11.0	4.3	17.8	25.5	11.7
	1995	8.3	12.6	4.5	7.2	10.7	3.9	16.2	27.2	7.6
	1996	7.9	11.2	4.8	7.0	9.7	4.4	14.0	23.2	6.9
	1997	7.8	11.0	4.9	6.9	9.6	4.4	14.0	22.3	7.6
	1998	8.0	11.6	4.7	7.4	10.8	4.2	12.3	18.8	7.2
United States	1980	12.2	17.1	7.9	11.0	15.7	7.0	21.6	30.6	14.4
	1981	11.4	16.0	7.4	10.5	14.8	6.7	19.2	27.3	12.7
	1982	10.5	14.9	6.7	9.8	14.1	6.1	16.5	23.5	10.9
	1983	10.2	14.3	6.6	9.5	13.4	6.0	16.2	22.8	10.8
	1984	10.0	14.1	6.4	9.3	13.2	5.9	15.8	22.5	10.3
	1985	9.6	13.6	6.1	8.9	12.6	5.6	16.1	23.4	10.1
	1986	9.2	13.0	5.9	8.6	12.2	5.4	14.5	20.8	9.3
	1987	9.1	13.0	5.6	8.4	12.1	5.1	14.9	22.0	9.1
	1988	9.0	12.9	5.6	8.4	12.1	5.0	14.5	20.7	9.3
	1989	8.9	12.8	5.5	8.3	11.9	5.0	13.9	20.5	8.5
	1990	8.6	12.2	5.3	8.0	11.5	4.8	13.7	20.0	8.7
	1991	8.3	11.7	5.2	7.8	11.2	4.8	12.3	17.4	8.2
	1992	8.0	11.6	4.8	7.7	11.1	4.6	11.4	17.2	6.9
	1993	7.9	11.3	4.9	7.6	10.8	4.6	10.9	16.1	6.6
	1994	7.9	11.3	4.8	7.5	10.9	4.5	10.7	15.9	6.6
	1995	7.6	11.0	4.6	7.4	10.7	4.3	9.9	14.7	6.0
	1996	7.5	10.7	4.5	7.3	10.5	4.4	9.2	13.8	5.7
	1997	7.4	10.5	4.5	7.3	10.3	4.4	8.7	12.9	5.3
	1998	---	---	---	---	---	---	---	---	---

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report, Table 10*

Table 4.37
Age-Adjusted Suicide Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	11.2	17.7	5.2	11.7	18.2	5.6	8.2	14.6	*
	1981	11.5	17.6	5.8	12.0	18.2	6.3	7.6	13.8	*
	1982	11.8	18.6	5.5	12.4	19.4	5.9	7.7	13.8	*
	1983	11.7	18.7	5.2	12.1	19.0	5.6	9.0	16.8	*
	1984	12.1	19.0	5.9	12.8	19.9	6.1	8.1	12.7	4.2
	1985	11.5	19.5	4.1	11.9	19.9	4.4	9.2	17.8	*
	1986	11.5	18.3	5.3	12.0	19.0	5.5	9.2	15.2	4.1
	1987	11.2	18.2	4.7	11.6	18.5	5.0	9.2	16.5	3.1
	1988	11.0	18.1	4.5	11.5	18.7	4.8	8.4	15.0	*
	1989	10.6	18.1	3.8	11.1	18.6	4.0	8.0	14.0	3.0
	1990	10.7	18.0	3.9	11.0	18.4	4.1	8.3	15.3	*
	1991	11.2	18.9	4.2	11.7	19.4	4.4	9.0	16.5	*
	1992	10.6	17.8	3.8	11.0	18.2	4.1	7.9	14.6	*
	1993	10.6	18.4	3.3	10.9	18.6	3.6	8.6	16.5	*
	1994	10.1	17.3	3.4	10.5	17.8	3.5	8.2	14.6	*
	1995	9.4	16.1	3.2	9.6	16.4	3.1	8.0	14.2	2.8
	1996	10.5	17.8	3.7	10.9	18.2	3.9	8.0	14.6	2.4
	1997	9.5	16.1	3.1	10.0	16.8	3.5	6.2	11.8	*
1998	9.0	15.5	3.0	9.6	16.5	3.0	5.6	9.7	*	
United States	1980	11.4	18.0	5.4	12.1	18.9	5.7	6.4	11.1	2.4
	1981	11.5	18.0	5.7	12.2	18.9	6.0	6.4	11.0	2.5
	1982	11.6	18.3	5.4	12.4	19.4	5.8	6.2	10.8	2.2
	1983	11.4	18.2	5.2	12.2	19.3	5.6	6.0	10.5	2.1
	1984	11.6	18.7	5.2	12.4	19.7	5.6	6.4	11.2	2.3
	1985	11.5	18.8	4.9	12.3	19.9	5.3	6.4	11.3	2.1
	1986	11.9	19.3	5.1	12.7	20.5	5.4	6.6	11.5	2.4
	1987	11.7	19.1	4.9	12.5	20.1	5.3	6.7	12.0	2.1
	1988	11.4	18.7	4.7	12.2	19.8	5.1	6.8	11.8	2.4
	1989	11.3	18.6	4.5	12.0	19.6	4.8	7.1	12.5	2.4
	1990	11.5	19.0	4.5	12.2	20.1	4.8	7.0	12.4	2.4
	1991	11.4	18.8	4.3	12.1	19.9	4.8	6.9	12.5	1.9
	1992	11.1	18.4	4.3	11.8	19.5	4.6	6.9	12.4	2.1
	1993	11.3	18.7	4.3	12.0	19.7	4.6	7.2	12.9	2.1
	1994	11.2	18.7	4.2	11.9	19.7	4.5	7.1	12.7	2.1
	1995	11.2	18.6	4.1	11.9	19.7	4.4	6.9	12.4	2.0
	1996	10.8	18.0	4.0	11.6	19.1	4.4	6.6	11.8	2.0
	1997	10.6	17.4	4.1	11.3	18.4	4.4	6.3	11.2	1.9
1998	---	---	---	---	---	---	---	---	---	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS Monthly Vital Statistics Report, Table 10

Table 4.38
Age-Adjusted Homicide Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	11.0	16.9	5.4	4.6	6.4	2.8	55.8	95.9	21.5
	1981	10.3	15.9	5.0	4.1	5.7	2.5	53.4	91.8	20.6
	1982	10.2	15.8	4.9	4.1	5.5	2.9	51.5	92.1	16.8
	1983	10.7	17.1	4.5	4.1	5.9	2.3	55.1	98.2	18.2
	1984	10.4	16.4	4.6	4.0	5.5	2.7	52.0	94.0	16.1
	1985	11.8	18.5	5.3	4.5	6.3	2.8	58.8	103.3	20.4
	1986	12.2	19.6	5.0	4.0	5.7	2.3	64.5	114.8	21.1
	1987	12.6	19.7	5.8	4.2	5.7	2.8	64.5	111.7	23.6
	1988	11.5	18.5	4.8	3.7	5.2	2.2	59.2	105.8	19.0
	1989	11.7	18.8	4.8	3.4	5.1	1.8	61.2	107.6	21.4
	1990	12.0	19.0	5.1	3.9	5.3	2.6	58.8	104.4	19.2
	1991	12.7	20.4	5.2	4.3	5.7	2.9	60.7	110.4	17.1
	1992	11.7	18.6	4.9	4.1	6.1	2.2	54.2	93.8	19.6
	1993	11.6	18.1	5.1	3.4	4.4	2.5	56.4	99.1	18.6
	1994	11.4	18.5	4.5	3.6	5.0	2.3	54.3	97.3	16.0
	1995	10.4	16.4	4.5	3.4	4.7	2.2	47.9	83.7	16.0
	1996	8.8	13.9	3.8	2.7	3.6	1.8	41.8	72.8	14.3
	1997	8.6	13.3	3.8	2.8	3.8	1.8	39.1	67.1	14.4
	1998	8.4	12.9	3.9	2.9	3.7	2.0	37.5	64.9	13.2
United States	1980	10.8	17.4	4.5	6.9	10.9	3.2	40.6	71.9	13.7
	1981	10.4	16.7	4.3	6.6	10.3	3.1	38.9	69.2	12.9
	1982	9.7	15.3	4.2	6.3	9.5	3.1	35.3	62.3	12.0
	1983	8.6	13.6	3.8	5.6	8.4	2.8	30.9	53.8	11.2
	1984	8.4	13.0	3.9	5.5	8.2	2.9	29.5	50.8	11.0
	1985	8.3	12.8	3.9	5.4	8.1	2.9	29.0	49.9	10.8
	1986	9.0	13.9	4.1	5.6	8.4	2.9	32.4	55.9	11.8
	1987	8.6	13.2	4.1	5.3	7.7	2.9	31.8	53.8	12.3
	1988	9.0	13.9	4.2	5.3	7.7	2.8	34.1	58.2	12.7
	1989	9.4	14.7	4.1	5.4	8.1	2.8	35.7	61.5	12.5
	1990	10.2	16.3	4.2	5.9	8.9	2.8	39.5	68.7	13.0
	1991	10.9	17.3	4.5	6.2	9.4	3.0	41.9	72.5	13.9
	1992	10.5	16.7	4.2	6.1	9.3	2.8	39.4	68.1	13.0
	1993	10.7	17.0	4.5	6.0	8.9	3.0	40.9	70.7	13.4
	1994	10.3	16.4	4.0	5.8	8.8	2.7	38.2	66.2	12.3
	1995	9.4	14.7	4.0	5.5	8.2	2.8	33.4	57.6	11.0
	1996	8.5	13.3	3.6	4.9	7.3	2.5	30.6	52.6	10.2
	1997	8.0	12.5	3.3	4.7	7.0	2.3	28.1	48.3	9.3
	1998	---	---	---	---	---	---	---	---	---

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report*, Table 10

Table 4.39
Age-Adjusted AIDS Death Rates by Race and Sex
 Michigan and United States Residents, 1987 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1987	1.7	3.2	*	1.2	2.3	*	5.2	10.3	*
	1988	2.3	4.3	0.4	1.5	3.0	*	8.3	14.5	3.1
	1989	3.5	6.5	0.6	2.2	4.2	*	12.3	23.4	3.2
	1990	3.9	6.9	0.9	2.4	4.6	*	13.7	24.7	4.7
	1991	4.8	8.6	1.1	3.1	5.9	*	16.5	29.5	5.8
	1992	5.8	10.5	1.3	3.6	6.8	*	20.9	38.3	6.6
	1993	7.0	12.3	1.8	4.1	7.7	0.6	25.4	45.6	8.9
	1994	7.5	13.5	1.7	4.2	7.9	*	29.7	54.3	9.7
	1995	7.9	13.9	2.1	4.2	7.5	0.8	32.4	60.6	9.5
	1996	4.9	8.5	1.4	2.8	5.0	0.6	18.5	34.0	6.1
	1997	3.0	5.1	1.0	1.4	2.4	*	13.5	24.7	4.5
1998	2.5	4.1	0.9	1.1	2.0	*	11.5	19.7	4.9	
United States	1987	5.5	10.0	1.1	4.4	8.3	0.6	14.2	25.4	4.7
	1988	6.6	12.0	1.4	5.3	9.9	0.7	17.9	31.6	6.2
	1989	8.7	15.8	1.8	7.1	13.2	0.9	23.0	40.3	8.1
	1990	9.8	17.7	2.1	8.0	15.0	1.1	25.7	44.2	9.9
	1991	11.3	20.1	2.7	9.0	16.7	1.3	30.8	52.9	12.0
	1992	12.6	22.3	3.2	9.8	18.1	1.6	36.2	61.8	14.3
	1993	13.8	24.1	3.8	10.5	19.0	1.9	41.6	70.0	17.3
	1994	15.4	26.4	4.8	11.2	20.1	2.3	49.4	81.7	21.8
	1995	15.6	26.2	5.2	11.1	19.6	2.5	51.8	84.3	24.0
	1996	11.1	18.1	4.2	7.2	12.5	1.8	41.4	66.4	20.2
	1997	5.8	9.1	2.6	3.3	5.6	1.0	24.9	38.5	13.3
1998	---	---	---	---	---	---	---	---	---	

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
 United States data: NCHS *Monthly Vital Statistics Report*, Table 10

Table 4.40
Age-Adjusted Kidney Disease Death Rates by Race and Sex
Michigan and United States Residents, 1980 - 1998

Place	Year	All Races			White			Black		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1980	4.5	5.5	3.9	3.8	4.9	3.2	10.6	11.6	10.1
	1981	4.7	5.5	4.1	3.9	4.8	3.3	11.1	11.8	10.8
	1982	4.8	6.3	3.8	4.1	5.6	3.2	9.8	11.8	8.3
	1983	4.8	5.8	4.3	4.3	5.3	3.8	8.5	9.9	7.5
	1984	4.6	6.1	3.5	3.9	5.3	3.0	9.8	12.9	7.6
	1985	4.8	6.1	3.9	4.0	5.4	3.2	11.1	12.9	9.9
	1986	5.3	6.6	4.4	4.3	5.6	3.6	12.4	14.5	11.1
	1987	5.0	6.1	4.4	4.1	5.1	3.6	12.0	14.1	10.4
	1988	5.2	6.3	4.4	4.3	5.3	3.7	11.9	14.4	9.9
	1989	4.6	6.3	3.4	3.8	5.1	2.9	10.8	16.1	7.0
	1990	4.5	5.6	3.9	3.9	5.0	3.2	9.1	9.8	8.9
	1991	4.5	5.8	3.6	3.9	5.1	3.2	8.6	11.5	6.4
	1992	4.8	5.8	4.1	4.0	5.0	3.3	10.1	11.2	9.3
	1993	5.2	6.0	4.6	4.5	5.5	3.8	10.6	10.8	10.4
	1994	4.7	5.6	4.2	4.1	4.9	3.6	10.0	11.5	9.0
	1995	4.7	5.5	4.1	4.2	4.9	3.6	8.3	10.6	6.8
	1996	4.8	6.0	3.9	4.1	5.3	3.3	9.3	11.0	7.9
	1997	5.3	6.6	4.5	4.6	5.7	3.9	11.0	13.7	9.1
	1998	5.1	6.0	4.5	4.4	5.2	3.9	10.3	12.7	8.7
United States	1980	4.5	5.7	3.6	3.7	4.9	2.9	11.9	14.2	10.3
	1981	4.5	5.6	3.6	3.8	4.9	3.1	11.1	13.2	9.6
	1982	4.5	5.8	3.7	3.9	5.1	3.0	11.2	13.2	9.8
	1983	4.6	5.7	3.9	4.0	5.0	3.3	10.8	12.6	9.6
	1984	4.7	6.0	3.9	4.1	5.3	3.3	11.2	13.0	10.0
	1985	4.9	6.1	4.0	4.2	5.4	3.4	12.0	14.1	10.5
	1986	4.9	6.2	4.0	4.2	5.4	3.3	11.7	14.2	9.9
	1987	4.8	6.0	3.9	4.1	5.3	3.3	11.3	13.4	9.8
	1988	4.8	6.0	4.0	4.1	5.2	3.3	11.6	13.3	10.3
	1989	4.4	5.6	3.6	3.7	4.7	3.0	11.4	13.9	9.6
	1990	4.3	5.4	3.6	3.6	4.6	3.0	10.8	12.9	9.4
	1991	4.3	5.4	3.5	3.7	4.7	3.0	10.3	12.8	8.6
	1992	4.3	5.5	3.6	3.7	4.8	3.0	10.2	12.5	8.7
	1993	4.5	5.5	3.8	3.8	4.9	3.2	10.5	12.4	9.2
	1994	4.3	5.2	3.6	3.7	4.6	3.1	10.1	11.7	8.8
	1995	4.3	5.4	3.6	3.7	4.7	3.1	10.2	12.0	8.8
	1996	4.3	5.3	3.6	3.8	4.7	3.1	9.8	11.5	8.5
	1997	4.4	5.4	3.7	3.8	4.8	3.2	9.8	11.7	8.5
	1998	---	---	---	---	---	---	---	---	---

Note: Rates are based on age-specific death rates per 100,000 population in specified group. 1997 population is used to calculate 1998 rates. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 (see Technical Notes). Michigan rates for 1980-1997 have been revised based upon revisions to population estimates; see Qualifications & Limitations of Data & Calculations.

Source: Michigan Resident Death Files, Division for Vital Records and Health Statistics, MDCH
United States data: NCHS *Monthly Vital Statistics Report, Table 10*

Table 4.41
Population by Age and County of Residence
Michigan Residents, 1997

County	All Ages	Age									
		Under 1	1 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85+
Michigan	9,773,892	129,533	1,938,918	1,358,577	1,434,487	1,640,788	1,260,695	796,884	664,228	417,315	132,467
Alcona	10,980	95	1,571	1,086	891	1,542	1,317	1,681	1,639	945	215
Alger	9,958	97	1,559	1,527	1,115	1,727	1,161	938	877	733	221
Allegan	100,585	1,198	22,623	13,590	13,858	17,798	12,563	7,778	5,917	4,144	1,118
Alpena	30,638	326	5,462	4,368	3,209	5,095	3,764	3,257	2,829	1,740	590
Antrim	20,975	211	3,729	2,448	2,221	3,222	2,427	2,446	2,523	1,328	420
Arenac	16,411	185	2,904	2,319	1,918	2,457	1,954	1,968	1,543	841	317
Baraga	8,448	86	1,528	1,192	959	1,248	1,090	728	696	737	186
Barry	53,533	575	10,744	7,179	6,424	9,481	7,378	5,198	3,624	2,174	754
Bay	110,423	1,286	20,427	14,857	14,359	18,324	15,280	9,841	8,390	5,842	1,818
Benzie	14,290	147	2,461	1,494	1,519	2,267	1,828	1,747	1,726	818	280
Berrien	160,713	2,329	32,381	21,967	21,410	24,935	20,817	13,829	12,582	8,118	2,346
Branch	43,628	558	9,097	5,981	5,738	7,251	5,255	4,083	3,146	1,977	542
Calhoun	141,821	1,953	27,916	20,169	18,835	22,703	18,460	12,620	10,615	6,393	2,152
Cass	49,967	557	9,806	6,737	6,214	8,048	6,879	4,772	3,997	2,287	671
Charlevoix	23,630	302	4,544	2,887	2,890	4,090	2,869	2,403	1,956	1,296	392
Cheboygan	23,535	239	4,155	2,959	2,288	3,494	2,992	2,855	2,690	1,390	474
Chippewa	37,900	403	6,807	6,047	6,279	6,588	3,989	3,128	2,549	1,630	479
Clare	29,011	391	5,702	3,523	3,372	4,131	3,045	3,517	3,310	1,563	454
Clinton	63,087	686	12,616	8,759	8,789	11,027	9,304	5,583	3,531	2,046	742
Crawford	13,880	166	2,620	1,632	1,625	2,309	1,617	1,617	1,359	686	246
Delta	38,801	370	6,980	5,570	4,303	6,405	5,013	3,703	3,478	2,230	743
Dickinson	27,062	274	5,093	3,289	2,950	4,783	3,419	2,312	2,399	1,841	697
Eaton	100,173	1,044	19,987	14,488	13,097	16,961	15,203	8,604	5,752	3,620	1,409
Emmet	28,339	311	5,675	3,475	3,318	5,228	3,659	2,316	2,348	1,490	517
Genesee	435,393	6,520	90,240	61,183	60,990	72,273	58,060	37,705	27,856	15,344	5,220
Gladwin	24,879	246	4,562	3,110	2,701	3,406	2,910	3,178	2,993	1,410	364
Gogebic	17,439	152	2,945	2,198	1,672	2,564	2,083	1,672	1,896	1,749	509
Grd Traverse	73,161	699	14,267	9,516	9,401	14,046	9,588	5,854	5,191	3,343	1,256
Gratiot	40,024	479	7,408	6,826	5,380	6,179	4,998	3,337	2,708	1,934	775
Hillsdale	46,240	542	9,661	7,235	5,796	7,268	5,602	4,007	3,322	2,018	790
Houghton	35,810	349	5,617	8,177	4,905	4,402	3,750	2,926	2,363	2,518	811
Huron	35,270	445	6,899	4,346	3,917	5,649	3,996	3,297	3,483	2,467	771
Ingham	284,089	3,583	52,271	57,011	50,990	44,784	33,886	17,330	12,853	8,491	2,890
Ionia	61,112	645	12,015	10,906	9,420	10,244	7,218	4,426	3,282	2,155	802
Iosco	25,129	244	4,481	2,535	2,817	3,744	3,358	3,034	2,603	1,780	535
Iron	13,067	111	1,993	1,475	1,025	1,971	1,630	1,342	1,687	1,483	354
Isabella	57,623	648	9,758	19,078	6,657	7,502	5,568	3,580	2,779	1,670	383
Jackson	155,346	1,890	29,711	21,059	22,544	27,026	19,995	12,722	10,886	7,122	2,390
Kalamazoo	229,192	2,755	42,922	38,389	36,918	37,199	28,888	17,382	13,175	8,770	2,793
Kalkaska	15,451	183	2,998	2,065	1,925	2,641	1,788	1,661	1,326	661	204
Kent	539,425	8,024	118,682	70,079	93,290	94,634	63,014	36,854	29,906	19,479	5,464
Keweenaw	2,078	15	260	214	145	284	261	300	223	289	88

Source: Michigan Information Center, Michigan Department of Management and Budget.

Table 4.41
Population by Age and County of Residence
Michigan Residents, 1997 (continued)

County	All Ages	Age									
		Under 1	1 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85+
Lake	10,153	82	1,839	1,108	941	1,344	1,180	1,396	1,419	610	232
Lapeer	86,893	959	17,625	13,372	11,926	15,441	12,235	7,145	4,551	2,575	1,062
Leelanau	18,755	177	3,688	2,014	1,783	3,619	2,547	1,829	1,880	941	282
Lenawee	97,998	1,254	19,415	15,704	13,311	15,536	13,132	7,924	6,496	4,010	1,218
Livingston	141,914	1,437	29,510	18,765	19,088	28,746	21,038	11,465	6,685	3,742	1,434
Luce	6,584	68	1,035	1,105	799	1,084	761	672	605	317	141
Mackinac	11,113	110	2,062	1,407	1,094	1,737	1,347	1,294	1,197	632	232
Macomb	783,451	8,873	137,392	87,815	123,575	133,253	103,290	70,160	61,910	43,591	13,588
Manistee	23,179	202	3,724	3,139	2,526	3,768	3,060	2,536	2,305	1,478	440
Marquette	61,792	560	11,516	9,529	8,346	11,544	7,608	4,563	4,052	3,168	904
Mason	27,854	310	5,235	3,952	3,031	4,418	3,652	2,704	2,420	1,672	459
Mecosta	39,178	435	6,555	11,316	4,441	4,371	4,197	3,261	2,695	1,526	383
Menominee	24,443	184	4,248	3,061	2,560	4,348	3,272	2,318	2,247	1,685	519
Midland	81,248	1,015	15,819	11,093	11,936	13,576	11,082	7,172	5,230	3,240	1,081
Missaukee	13,682	138	2,895	1,719	1,589	2,219	1,506	1,507	1,237	680	192
Monroe	142,301	1,709	29,158	20,928	19,382	23,915	19,249	12,042	9,129	5,115	1,674
Montcalm	59,647	754	12,294	8,730	8,409	10,124	7,162	4,898	3,986	2,468	819
Montmorency	9,980	88	1,499	1,133	704	1,506	1,049	1,346	1,622	780	250
Muskegon	165,882	2,251	35,328	23,125	22,202	27,741	20,084	13,031	11,634	8,084	2,402
Newaygo	45,059	547	10,037	6,015	5,631	7,435	5,339	4,398	3,288	1,873	498
Oakland	1,166,512	13,832	214,466	134,000	184,333	217,262	171,698	96,774	75,309	43,139	15,702
Oceana	24,599	295	5,135	3,510	2,901	3,777	3,147	2,306	2,107	1,117	306
Ogemaw	20,955	269	3,836	2,668	2,078	3,096	2,326	2,791	2,504	1,146	238
Ontonagon	8,117	73	1,285	976	774	1,188	1,107	1,113	783	652	164
Osceola	22,028	259	4,685	3,053	2,527	3,213	2,734	2,378	1,919	970	290
Oscoda	8,844	87	1,451	843	862	1,268	897	1,308	1,313	612	197
Otsego	21,800	223	4,341	2,653	2,662	3,731	2,520	1,991	2,158	1,062	455
Ottawa	220,403	2,716	49,770	33,436	33,361	38,289	26,313	15,342	11,359	7,474	2,345
Presque Isle	14,392	160	2,499	1,850	1,290	2,069	1,581	1,590	2,031	1,002	319
Roscommon	23,174	221	3,362	2,196	1,837	2,995	2,430	3,344	4,047	2,098	642
Saginaw	211,278	3,109	43,102	30,520	27,955	33,034	28,409	18,393	14,244	9,312	3,200
St Clair	157,704	1,846	32,512	21,833	22,035	26,664	20,866	12,790	10,446	6,564	2,150
St Joseph	61,234	733	12,822	8,288	8,040	9,978	8,036	5,157	4,419	2,729	1,028
Sanilac	42,736	467	8,394	6,328	5,137	6,666	5,082	3,924	3,643	2,382	714
Schoolcraft	8,748	67	1,385	1,191	883	1,430	1,051	976	961	572	226
Shiawassee	72,236	871	14,021	11,095	9,421	11,793	10,151	6,466	4,503	3,040	874
Tuscola	58,087	632	11,355	8,934	7,252	9,464	8,008	5,288	3,674	2,730	749
Van Buren	75,686	991	16,168	10,782	9,173	12,944	9,540	6,342	5,409	3,251	1,086
Washtenaw	299,503	3,644	49,178	59,744	59,502	46,199	38,675	19,387	13,091	7,808	2,278
Wayne	2,127,087	36,210	458,907	282,995	317,321	348,193	262,035	157,379	145,478	91,494	27,073
Wexford	29,147	357	6,265	3,707	3,797	4,878	3,429	2,645	2,228	1,403	441

Source: Michigan Information Center, Michigan Department of Management and Budget.

Table 4.42
Deaths by Age and County of Residence
Michigan Residents, 1998

County	All Ages	Age at Death									
		Under 1	1 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85+
Michigan	84,906	1,091	516	1,026	1,485	3,191	5,600	8,418	17,353	25,003	21,221
Alcona	179	-	-	-	1	2	9	18	36	51	62
Alger	102	2	-	2	1	-	2	14	20	30	31
Allegan	837	15	8	6	10	28	45	73	159	271	222
Alpena	316	4	-	6	3	7	11	27	67	90	101
Antrim	266	-	-	1	1	6	9	27	55	82	85
Arenac	206	2	3	1	6	4	12	18	44	75	41
Baraga	109	1	-	-	2	2	5	7	21	42	29
Barry	441	6	7	7	5	21	21	46	92	124	112
Bay	1,063	8	5	7	10	26	60	101	231	342	273
Benzie	160	-	-	-	1	2	11	12	39	43	52
Berrien	1,578	17	7	17	28	45	86	133	331	497	417
Branch	396	3	1	6	8	18	17	39	85	113	106
Calhoun	1,386	11	9	10	26	46	80	148	292	411	353
Cass	467	2	3	9	5	19	31	42	105	131	120
Charlevoix	231	2	2	3	2	10	12	20	42	67	71
Cheboygan	269	2	2	4	2	4	11	23	71	88	62
Chippewa	322	2	2	2	4	6	20	33	56	97	100
Clare	353	2	2	4	5	9	19	55	85	99	73
Clinton	421	3	3	4	5	13	29	47	96	105	116
Crawford	153	1	-	-	-	7	8	17	34	43	43
Delta	394	1	1	6	4	9	18	56	75	125	99
Dickinson	333	4	1	2	-	6	18	21	55	104	122
Eaton	755	8	2	8	12	26	39	72	146	227	215
Emmet	255	1	-	4	2	5	18	18	53	75	79
Genesee	3,786	75	29	61	86	144	290	410	864	1,010	817
Gladwin	288	3	1	3	6	7	15	24	71	93	65
Gogebic	245	3	-	-	3	4	6	18	32	85	94
Grd Traverse	579	5	4	8	5	14	30	37	94	183	199
Gratiot	467	4	1	8	5	9	16	29	75	154	166
Hillsdale	421	4	3	7	8	16	29	52	91	92	119
Houghton	410	3	1	3	3	10	13	37	59	142	139
Huron	452	2	5	2	4	9	20	33	100	137	140
Ingham	1,891	26	12	23	38	77	140	156	354	520	545
Ionia	414	2	-	6	11	15	20	40	86	126	108
Iosco	341	2	-	2	5	14	23	33	74	100	88
Iron	235	-	3	1	2	4	2	21	37	83	82
Isabella	384	5	5	5	7	8	22	29	78	121	104
Jackson	1,380	26	10	18	27	48	99	124	295	392	341
Kalamazoo	1,786	31	17	23	22	71	95	155	290	541	541
Kalkaska	136	2	-	2	1	6	9	12	28	34	42
Kent	3,928	63	28	52	63	132	226	322	692	1,131	1,218
Keweenaw	27	-	-	-	1	-	1	2	8	9	6

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.42
Deaths by Age and County of Residence
Michigan Residents, 1998 (continued)

County	All Ages	Age at Death									
		Under 1	1 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85+
Lake	142	-	2	1	1	4	9	19	32	45	29
Lapeer	574	11	5	11	5	19	44	68	127	155	129
Leelanau	153	-	-	1	2	2	6	11	27	59	45
Lenawee	849	7	8	8	8	23	33	84	201	238	239
Livingston	883	8	9	20	11	35	64	112	171	235	218
Luce	65	-	-	-	1	-	1	8	11	26	18
Mackinac	126	-	-	3	1	2	6	12	37	31	34
Macomb	6,843	64	19	51	84	233	400	641	1,498	2,180	1,673
Manistee	289	1	2	5	1	6	17	30	55	97	75
Marquette	660	7	-	3	9	16	27	61	116	218	203
Mason	290	3	1	2	6	5	18	19	70	85	81
Mecosta	332	9	2	6	5	10	21	35	73	93	78
Menominee	295	1	-	3	4	5	14	22	57	90	99
Midland	580	6	6	8	5	17	31	70	120	176	141
Missaukee	127	1	-	3	3	2	5	12	26	32	43
Monroe	1,102	8	4	10	10	45	64	128	226	356	251
Montcalm	537	10	3	8	8	19	26	62	113	172	116
Montmorency	159	-	-	3	1	4	8	23	33	57	30
Muskegon	1,591	15	14	18	21	68	105	150	344	477	379
Newaygo	439	4	2	6	10	17	29	51	92	121	107
Oakland	8,920	107	36	72	150	292	594	833	1,783	2,678	2,375
Oceana	223	7	-	2	7	6	13	28	43	67	50
Ogemaw	265	3	4	3	3	2	10	27	72	77	64
Ontonagon	107	-	1	-	-	1	8	11	21	30	35
Osceola	219	4	3	4	4	5	10	22	46	72	49
Oscoda	119	-	3	1	-	1	10	12	21	47	24
Otsego	165	1	1	4	2	7	10	18	29	46	47
Ottawa	1,429	24	13	16	23	33	76	94	271	439	440
Presque Isle	175	2	-	3	-	6	9	24	35	51	45
Roscommon	342	4	1	1	7	9	17	33	89	107	74
Saginaw	1,961	25	12	24	30	67	129	188	374	589	523
St Clair	1,462	6	5	20	17	53	79	155	316	428	383
St Joseph	629	4	8	3	5	13	38	56	149	175	178
Sanilac	459	2	3	6	3	14	24	53	91	137	126
Schoolcraft	127	3	-	2	1	1	6	13	31	36	34
Shiawassee	613	8	3	4	15	27	31	64	126	184	151
Tuscola	551	6	6	6	10	15	25	62	103	170	148
Van Buren	668	16	4	6	11	30	46	69	136	182	168
Washtenaw	1,713	17	9	27	27	76	134	183	298	454	488
Wayne	20,248	340	149	315	530	1,080	1,742	2,216	4,198	5,723	3,954
Wexford	302	3	1	4	3	11	14	36	72	82	76
Unknown	11	1	-	-	1	1	-	2	2	1	3

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.43
Live Births by Race, Ancestry and County of Residence
Michigan Residents, 1998

County	Race						Ancestry	
	All Races	White	Black	American Indian	Asian & Pacific Islander	All Other Races	Arab	Hispanic
Michigan	133,649	105,161	24,179	722	3,052	59	2,977	5,936
Alcona	88	88	-	-	-	-	-	-
Alger	84	78	-	6	-	-	1	1
Allegan	1,397	1,353	25	7	9	1	-	130
Alpena	340	335	-	4	1	-	2	5
Antrim	233	227	-	4	2	-	1	6
Arenac	182	176	-	4	2	-	-	5
Baraga	100	77	-	23	-	-	1	1
Barry	678	668	3	3	3	1	1	13
Bay	1,338	1,300	18	4	13	1	1	79
Benzie	183	179	-	4	-	-	-	4
Berrien	2,215	1,619	555	11	23	1	2	104
Branch	554	539	7	1	6	-	6	18
Calhoun	1,860	1,579	240	8	31	-	1	91
Cass	577	506	56	10	5	-	2	27
Charlevoix	324	311	2	7	4	-	-	12
Cheboygan	298	286	1	9	1	-	-	3
Chippewa	394	287	3	101	3	-	1	4
Clare	334	327	2	2	3	-	-	4
Clinton	804	789	5	-	10	-	3	27
Crawford	141	138	1	-	2	-	-	2
Delta	437	426	-	8	2	1	1	5
Dickinson	292	286	1	2	2	-	2	6
Eaton	1,185	1,117	52	4	12	-	8	46
Emmet	372	344	-	24	4	-	-	5
Genesee	6,399	4,597	1,734	8	49	-	41	84
Gladwin	265	259	2	1	3	-	-	1
Gogebic	154	144	-	9	-	-	-	1
Grd Traverse	926	895	3	20	8	-	3	24
Gratiot	507	501	-	3	3	-	-	31
Hillsdale	582	574	1	5	1	-	-	8
Houghton	366	355	4	2	5	-	-	1
Huron	386	377	-	3	6	-	-	10
Ingham	3,777	3,000	586	15	172	1	47	295
Ionia	821	812	3	3	3	-	2	33
Iosco	288	281	1	2	3	-	-	9
Iron	113	112	-	1	-	-	-	1
Isabella	651	589	9	42	11	-	2	10
Jackson	2,052	1,837	186	6	15	2	7	70
Kalamazoo	3,183	2,584	531	16	48	1	27	129
Kalkaska	177	173	-	2	2	-	-	1

Note: Unknown race is included in the "all races" column only.

Source: 1998 Michigan Resident Live Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.43
Live Births by Race, Ancestry and County of Residence
 Michigan Residents, 1998 (continued)

County	Race						Ancestry	
	All Races	White	Black	American Indian	Asian & Pacific Islander	All Other Races	Arab	Hispanic
Kent	9,155	7,753	1,082	28	264	23	44	917
Keweenaw	30	30	-	-	-	-	-	-
Lake	134	114	18	1	1	-	1	2
Lapeer	1,091	1,076	3	4	6	-	5	48
Leelanau	189	172	1	14	2	-	-	12
Lenawee	1,197	1,165	18	2	7	-	2	116
Livingston	1,954	1,897	2	12	20	-	6	25
Luce	49	46	-	3	-	-	-	-
Mackinac	105	92	-	13	-	-	-	3
Macomb	9,897	9,233	267	33	308	1	326	203
Manistee	239	234	1	3	1	-	-	12
Marquette	589	565	1	15	6	-	-	9
Mason	309	302	2	3	-	-	-	15
Mecosta	490	459	24	5	2	-	-	8
Menominee	326	306	1	17	2	-	-	1
Midland	1,027	995	6	1	23	1	1	19
Missaukee	148	147	-	-	1	-	-	2
Monroe	1,789	1,732	42	1	9	1	6	46
Montcalm	831	822	1	4	3	1	-	31
Montmorency	108	106	-	2	-	-	1	-
Muskegon	2,369	1,895	450	7	13	1	1	106
Newaygo	635	621	7	6	1	-	-	36
Oakland	15,732	13,180	1,668	28	770	6	623	427
Oceana	359	356	-	2	-	-	-	103
Ogemaw	250	247	-	1	-	-	-	5
Ontonagon	52	49	1	1	1	-	-	-
Osceola	274	268	1	1	3	1	1	4
Oscoda	91	88	-	3	-	-	-	2
Otsego	300	295	1	1	3	-	-	1
Ottawa	3,541	3,371	35	20	106	-	7	425
Presque Isle	135	131	-	3	1	-	-	1
Roscommon	202	197	-	1	4	-	-	2
Saginaw	2,878	2,116	727	6	26	-	17	302
St Clair	2,075	2,010	34	9	15	-	18	59
St Joseph	884	835	32	3	10	3	-	48
Sanilac	528	525	1	-	2	-	-	23
Schoolcraft	89	84	-	5	-	-	-	3
Shiawassee	958	950	3	2	2	-	3	15
Tuscola	668	658	2	1	5	1	2	26
Van Buren	1,047	956	68	13	5	1	2	122
Washtenaw	3,979	2,960	583	18	309	-	99	95
Wayne	31,477	15,593	15,065	43	651	10	1,650	1,353
Wexford	406	400	-	3	3	-	-	2
Unknown	6	5	1	-	-	-	-	1

Note: Unknown race is included in the "all races" column only.

Source: 1998 Michigan Resident Live Birth File, Division for Vital Records and Health Statistics, MDCH

Table 4.44
Deaths by Race, Ancestry and County of Residence
Michigan Residents, 1998

County	Race						Ancestry	
	All Races	White	Black	American Indian	Asian & Pacific Islander	All Other Races	Arab	Hispanic
Michigan	84,906	72,081	12,104	374	306	4	682	803
Alcona	179	178	-	1	-	-	1	-
Alger	102	101	-	1	-	-	-	-
Allegan	837	819	12	5	1	-	-	9
Alpena	316	313	1	2	-	-	1	-
Antrim	266	262	1	2	-	-	-	-
Arenac	206	204	1	1	-	-	-	2
Baraga	109	101	-	8	-	-	-	-
Barry	441	434	-	6	1	-	-	2
Bay	1,063	1,048	10	3	1	-	1	18
Benzie	160	159	1	-	-	-	-	-
Berrien	1,578	1,348	214	12	4	-	4	8
Branch	396	392	-	3	1	-	2	1
Calhoun	1,386	1,229	150	2	5	-	1	10
Cass	467	416	47	3	1	-	-	3
Charlevoix	231	229	-	2	-	-	-	1
Cheboygan	269	266	-	3	-	-	-	-
Chippewa	322	295	-	27	-	-	1	1
Clare	353	348	1	2	2	-	-	-
Clinton	421	419	1	1	-	-	1	4
Crawford	153	152	-	1	-	-	1	-
Delta	394	388	-	6	-	-	3	1
Dickinson	333	332	-	1	-	-	1	-
Eaton	755	729	20	2	1	-	5	6
Emmet	255	249	1	5	-	-	-	-
Genesee	3,786	3,064	705	14	3	-	30	39
Gladwin	288	284	2	2	-	-	1	-
Gogebic	245	242	-	3	-	-	-	-
Grd Traverse	579	572	4	2	1	-	-	3
Gratiot	467	463	2	2	-	-	1	8
Hillsdale	421	420	-	1	-	-	1	-
Houghton	410	406	-	1	3	-	-	1
Huron	452	452	-	-	-	-	1	2
Ingham	1,891	1,719	152	5	15	-	10	51
Ionia	414	412	2	-	-	-	-	4
Iosco	341	334	1	6	-	-	1	1
Iron	235	235	-	-	-	-	-	1
Isabella	384	368	4	10	2	-	1	1
Jackson	1,380	1,290	84	3	2	-	-	5
Kalamazoo	1,786	1,645	129	4	8	-	6	16
Kalkaska	136	134	-	2	-	-	-	-

Note: Unknown race is included in the "all races" column only.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

Table 4.44
Deaths by Race, Ancestry and County of Residence
Michigan Residents, 1998 (continued)

County	Race						Ancestry	
	All Races	White	Black	American Indian	Asian & Pacific Islander	All Other Races	Arab	Hispanic
Kent	3,928	3,596	299	16	12	-	17	57
Keweenaw	27	27	-	-	-	-	-	-
Lake	142	119	23	-	-	-	-	-
Lapeer	574	567	2	2	1	-	-	2
Leelanau	153	147	-	5	1	-	-	1
Lenawee	849	843	6	-	-	-	1	20
Livingston	883	878	2	3	-	-	2	6
Luce	65	61	1	3	-	-	-	-
Mackinac	126	105	-	21	-	-	-	-
Macomb	6,843	6,684	107	19	31	1	107	37
Manistee	289	287	-	1	1	-	1	3
Marquette	660	648	3	7	2	-	1	-
Mason	290	288	-	2	-	-	1	1
Mecosta	332	325	4	2	1	-	1	3
Menominee	295	292	-	3	-	-	-	-
Midland	580	574	2	3	1	-	-	3
Missaukee	127	126	-	1	-	-	-	-
Monroe	1,102	1,067	30	2	2	-	2	11
Montcalm	537	535	2	-	-	-	-	6
Montmorency	159	159	-	-	-	-	-	-
Muskegon	1,591	1,369	208	10	3	-	1	7
Newaygo	439	421	15	2	1	-	2	9
Oakland	8,920	8,131	690	16	82	-	195	67
Oceana	223	219	-	4	-	-	-	7
Ogemaw	265	262	-	2	1	-	-	-
Ontonagon	107	107	-	-	-	-	-	-
Osceola	219	216	2	1	-	-	1	1
Oscoda	119	118	-	1	-	-	-	1
Otsego	165	163	-	1	1	-	-	-
Ottawa	1,429	1,418	5	4	2	-	-	25
Presque Isle	175	173	2	-	-	-	-	-
Roscommon	342	340	1	1	-	-	-	2
Saginaw	1,961	1,654	303	1	2	-	2	53
St Clair	1,462	1,412	41	4	2	-	8	11
St Joseph	629	602	22	4	1	-	-	2
Sanilac	459	458	1	-	-	-	1	5
Schoolcraft	127	122	-	5	-	-	-	-
Shiawassee	613	608	1	2	1	-	-	4
Tuscola	551	549	-	2	-	-	1	5
Van Buren	668	596	64	6	1	1	-	9
Washtenaw	1,713	1,480	205	3	23	-	8	15
Wayne	20,248	11,578	8,516	58	83	2	256	232
Wexford	302	299	-	3	-	-	-	-
Unknown	11	7	2	-	-	-	-	-

Note: Unknown race is included in the "all races" column only.

Source: 1998 Michigan Resident Death File, Division for Vital Records and Health Statistics, MDCH

TECHNICAL NOTES

SECTION V



TECHNICAL NOTES, DEFINITIONS, RATES AND RATIOS

DEFINITIONS

ANCESTRY - National origin for mother, father or decedent is as stated on certificate. First collected in 1989. If more than one ancestry is reported, the first listed is used. If "American" is given with any other ancestry, the other ancestry is used.

BIRTHWEIGHT - Weight of fetus or infant at time of delivery.

EXTREMELY LOW BIRTHWEIGHT - Births in 1984 or later wherein the birthweight is less than 750 grams (approximately 1 lbs., 10.5 oz.) or births before 1984 wherein the birthweight is 750 grams or less.

FETAL DEATH - Death prior to the complete expulsion or extraction from its mother of a product of conception, having passed through at least the 20th week of gestation or weighing at least 400 grams; the fetus shows no signs of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. (Note: This does not include induced terminations.)

FIRST BIRTH - A live birth where the maternal medical history indicates there were no prior live births to the mother.

GESTATIONAL PERIOD - Number of completed weeks elapsed between the first day of the last menstrual period and the date of delivery.

HEBDOMADAL DEATH - Deaths occurring to individuals less than 7 days of age.

INFANT DEATH - Deaths occurring to individuals less than 1 year of age.

INTERPREGNANCY TIME PERIOD - Birth date minus date of last termination, whether a live birth or fetal death, in months. Time periods of zero length are dropped to exclude 2nd or higher births of multiple deliveries.

KESSNER INDEX -

Adequate prenatal care is defined as care which began within the first trimester and which included

an average of at least one or two additional prenatal visits per month of gestation, depending on the length of gestation.

Intermediate prenatal care is defined as care which began during the second trimester of the pregnancy with correspondingly fewer visits, or which began during the first trimester but with fewer visits than would be appropriate for the length of gestation.

Inadequate prenatal care is when no care was received or if care began during the third trimester. It is also inadequate if care began during the first or second trimester but less than five visits occurred, when the length of gestation was 34 weeks or more. When the length of gestation was less than 34 weeks, care is defined as inadequate when care began during the first or second trimester but a number of visits less than four occurred, that number depending on the actual weeks of gestation.

LEADING CAUSES OF DEATH - Deaths are grouped into 72 categories dependent upon the underlying cause of death. Ranks are assigned by organizing these categories according to the number of deaths in each category from most frequent to least.

LIFE EXPECTANCY - A hypothetical calculation of the average age at death for a cohort of persons subject to the age-specific mortality rates observed over a given time period.

LIFE TABLE VALUES -

nq_x = The proportion of persons in the cohort alive at the beginning of an age interval (x) who will die before reaching the end of that age interval ($x+n$).

l_x = The number of persons living at the beginning of an age interval (x) out of an original cohort of 100,000.

ndx = The number of persons who would die during an age interval (x to $x+n$) out of an original cohort of 100,000.

nL_x = The number of person-years that would be lived within an indicated age interval (x to $x+n$) out of an original cohort of 100,000 alive for all or part of the interval.

T_x = The number of person-years that would be lived after the beginning of an age interval (x) by an

original cohort of 100,000 until all are assumed to have died.

ex = The average remaining lifetime (in years) for an individual person who survives to the beginning of an indicated age interval (x).

LIVE BIRTH - A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Effective on November 9, 1981, the definition of a live birth is established in administrative rule number 325.3201 as follows:

“Live birth” means the complete expulsion or extraction from a pregnant woman of a product of human conception which, after such expulsion or extraction, shows any evidence of life, whether or not the umbilical cord has been cut or the placenta is attached.

LIVE BIRTH ORDER - Order number is equal to number of previous live births plus current birth.

LOW BIRTHWEIGHT - Births in 1984 or later wherein the birthweight is less than 2,500 grams (approximately 5 lbs., 8 oz.) or births before 1984 wherein the birthweight is 2,500 grams or less.

MATERNAL DEATHS - Those deaths wherein the physician has designated a maternal condition as the underlying cause of death (9th Revision ICD codes 630-676)

MEAN - The average of a set of values, equal to the sum of the values divided by the number of values.

MEDIAN - The central value of a distribution of values wherein the same percentage of observations are above this point as are below.

MINOR CIVIL DIVISION - City, village, or township.

NEONATAL DEATH - Deaths occurring to individuals less than 28 days of age.

OCCURRENCE - Place where the event actually occurred.

PERINATAL DEATH - Fetal deaths plus deaths to individuals less than 7 days of age.

POSTNEONATAL DEATH - Deaths occurring to individuals 28-364 days of age.

RACE - Race for mother, father, or decedent is as stated on certificate. Race of child is determined from the race of the parents.

REMAINING YEARS OF LIFE - A hypothetical calculation of the average number of years a cohort of persons will live given that they have reached a specific age and assuming they are subject to the age-specific mortality rates observed over a given time period.

RESIDENCE - Usual place of residence for the person to whom the event occurred. For births and fetal deaths, residence is defined as the mother's usual place of residence.

TOTAL BIRTHS - Live births plus fetal deaths.

UNDERLYING CAUSE OF DEATH - That condition giving rise to the chain of events leading to death.

VERY LOW BIRTHWEIGHT - Births in 1984 or later wherein the birthweight is less than 1,500 grams (approximately 3 lbs., 4 oz.) or births before 1984 wherein the birthweight is 1,500 grams or less.

YEARS OF POTENTIAL LIFE LOST - The number of years between the age at death and 75 years of age for individuals dying before age 75.

RATES AND RATIOS

AGE-ADJUSTED DEATH RATE - A summary rate of death that is developed using a standard population distribution to improve the comparability of rates for areas or population subgroups with differing age distributions. When calculated by the direct method, as in this report, age-specific death rates for a geographic area or population subgroup are multiplied by the standard population by specific age and the products summed and divided by the total standard population. Age-adjusted death rates represent the mortality experience that would have occurred in a standard population had the age-specific rates of the area or population subgroup been experienced by the standard population. These rates are presented as per 100,000 population.

AGE-SPECIFIC BIRTH RATE - Number of resident live births to women of a specific age divided by total resident female population of specific age x 1,000.

AGE-SPECIFIC DEATH RATE - Number of resident deaths in specific age group divided by total resident population in specific age group x 100,000.

AGE-SPECIFIC DEATH RATE BY CAUSE OF DEATH - Number of resident deaths in specific age group and from a specific cause divided by total resident population in specific age group x 100,000.

AGE-SPECIFIC MARRIAGE RATE - Number of occurrent marriages in specific age group by sex divided by total resident population in specific age and sex group x 1,000.

CAUSE-SPECIFIC RATE - Number of resident deaths due to a specific cause divided by total resident population x 100,000.

CONGENITAL ANOMALY RATE - Number of resident live births with a congenital malformation reported divided by the total number of resident live births x 10,000.

COMMUNICABLE DISEASE CASE RATE - Number of reported cases (specific communicable diseases) divided by total resident population x 100,000.

CRUDE BIRTH RATE - Number of resident live births divided by total resident population x 1,000.

CRUDE DEATH RATE - Number of resident deaths divided by total resident population x 1,000.

DIVORCE RATE - Number of persons with occurrent divorces and annulments divided by total resident population x 1,000.

FERTILITY RATE - Number of resident live births divided by total resident female population ages 15-44 x 1,000.

FETAL DEATH RATE - Number of resident fetal deaths divided by total resident live births plus resident fetal deaths x 1,000.

FETAL DEATH RATIO - Number of resident fetal deaths divided by total resident live births x 1,000.

FIRST MARRIAGE RATE - Number of occurrent marriages to persons not previously married by sex divided by total resident population by sex x 1,000.

INFANT MORTALITY RATE - Number of resident infant deaths divided by total resident live births x 1,000.

LOW BIRTHWEIGHT RATIO - Number of resident low birthweight live births divided by total resident live births x 1,000.

MARRIAGE RATE - Number of persons with occurrent marriages divided by total resident population x 1,000.

MATERNAL DEATH RATE - Number of resident maternal deaths divided by total resident live births x 100,000.

NEONATAL DEATH RATE - Number of resident neonatal deaths divided by total resident live births x 1,000.

NO PRENATAL CARE RATIO - Number of resident live births to mothers with no prenatal care divided by total resident live births x 1,000.

PERINATAL DEATH RATE - Number of perinatal deaths divided by total resident live births plus resident fetal deaths x 1,000.

POSTNEONATAL DEATH RATE - Number of resident postneonatal deaths divided by total resident live births x 1,000.

RATE OF NATURAL INCREASE - (Total resident live births minus total resident deaths) divided by total resident population x 1,000.

TOTAL FERTILITY RATE - Sum of (age-specific birth rates) x (number of years in age group) for each age group from ages 10-14 through 45-49 years.

RELIABILITY OF RATES

Care should be taken in drawing specific inferences from comparisons of rates for different areas or different periods of time. Rates based on a small number of events or for a small area tend to exhibit considerable variation from time period to time period or place to place. Excessive variation in rates not only negates their utility as estimators of the probability of an event occurring but also their usefulness for comparative purposes.

Also, one should recognize the limitations of using unadjusted rates in attempting to attribute rate differences to particular factors. For example, one should not attempt to state that there was a significant difference in rates for two geographic areas for atherosclerosis without first adjusting the rates to negate the effects of differing age distributions in the two areas.

Many times there are simply not sufficient data available to adequately adjust rates for all possible confounding factors. For this reason the reader should exercise diligence and caution while attempting to draw substantive conclusions when comparing vital statistics rates.

QUALIFICATIONS AND LIMITATIONS OF DATA AND CALCULATIONS

UNDER-REGISTRATION OF EVENTS

The under-registration of vital events in Michigan is considered to be a minimal problem, particularly for births and deaths. Tests of registration completeness conducted in conjunction with the 1950 Census indicate that the registration of births was 98.5 percent complete, and that death registration was even more complete. The number of certificates received too late for inclusion in annual statistical files is insignificant when examining statewide patterns.

GEOGRAPHIC ALLOCATION

The allocation of events on a residence or occurrence basis is for the most part accurate and complete. However, allocations to minor civil divisions are subject to question in some instances. In those cases where the respondent completes the residence item with a mailing address, geographic allocation is sometimes indeterminate and the record receives an unknown minor civil division code.

FETAL DEATHS

Fetal deaths in Michigan include only those conceptions that have passed through 20 weeks gestation or that weigh 400 grams or more. Prior to the introduction of a new reporting form for fetal deaths on September 30, 1978, Michigan law required only the reporting of deaths of fetuses which had passed through 20 weeks gestation. Inadequacies in determining the gestational age of the fetus may have resulted in some underreporting of fetal deaths. The change in definition has had little impact on the number of fetal deaths reported.

COMPARABILITY IN CAUSE OF DEATH STATISTICS

The reader should bear in mind two major limitations in interpreting changes in cause-of-death statistics. Changes in nomenclature and the classification scheme (International Classification of Diseases) and changes in diagnostic practices may seriously affect the comparability of such statistics over time. The classification

scheme (ICD) is modified approximately once every ten years to reflect changing medical opinion and practice. The reader is most accurate when comparing cause-of-death certificates which are coded via one revision of the International Classification of Diseases and utilizing the coding practices and procedures in effect at that time.

In order to compare cause-of-death statistics from one revision to the next it is necessary to apply a comparability ratio. Such ratios are developed by comparing the number of deaths assigned to a certain condition or group of conditions under one revision to the number assigned under another revision of the ICD.

In 1979 the 9th Revision of the International Classification of Diseases, WHO, was introduced for coding causes of death and was employed in categorizing the data for 1979 to date. Certain ICD-9 codes are grouped in order to classify selected causes of death. The codes for selected causes used in this report are:

<u>ICD codes</u>	<u>Selected Causes</u>
42-44	AIDS
36	Meningococcal Infections
140-208	Cancer
250	Diabetes Mellitus
260-269	Nutritional Deficiencies
390-398, 402,	Heart Disease
404-429	
430-438	Cerebrovascular Diseases
480-487	Pneumonia and Influenza
490-496	Chronic Obstructive Pulmonary Diseases
571	Chronic Liver Disease and Cirrhosis
500-589	Kidney Disease
740-759	Congenital Anomalies
760-779	Certain Conditions Originating in the Perinatal Period
798.0	Sudden Infant Death Syndrome
E800-E949	Accidents and Adverse Effects
E950-E959	Suicide
E960-E978	Homicide

LIFE EXPECTANCY

The procedure used to obtain the Michigan life table values is called the iterative method. This is a method which has been developed by Felix Moore, formerly of

the Department of Biostatistics, School of Public Health, University of Michigan.

For the age group 0-1 the method utilizes the algorithm developed by Greville with no iteration. For all subsequent age groups the method of Greville (Keyfitz) is used with three iterations to improve the estimate of ndx and nqx . An iteration procedure is also used for nLx for age groups 75-80 and 80-85 where the accuracy of mortality information is a factor and for obtaining the separation factor for the age group 1-4.

AGE-ADJUSTMENT PROCEDURE AND POPULATION ESTIMATION

Population data for 1970 were obtained from the April 1, 1970 census counts. The population totals used for 1971-1979 are intercensal estimates prepared by the Census Bureau utilizing the revised 1980 census figures. The breakdowns of these totals by age, race, and sex were prepared by the Division for Vital Records and Health Statistics. For 1970 and 1980 the proportion of the total population in each age, race, and sex group was computed. Estimates of the proportion of the total population in each age, race, and sex group for the years 1971-1979 were then derived by interpolating between the proportions for 1970 and 1980. These subgroup proportions were then applied to the state totals to obtain population estimates by age, race, and sex for years 1971-1979.

Population estimates for 1980 through 1997 by age, race and sex were developed by the Office of the State Demographer, Michigan Department of Management and Budget, using a mathematical model which reflects current Census Bureau statewide estimates by single year of age and its county estimates of total population. They also reflect deviations observed from 1980 to 1990 in the growth of each county/age/race/sex category relative to the growth of county total population and statewide population by age.

The age-adjusted rates for Michigan presented in this report for years 1970-1997 were calculated using

Michigan resident mortality data and the series of population data described above. Death records with the race not stated were first randomly allocated to the white and other than white groups based on the proportion of Michigan resident deaths in each of the racial categories for that year. Records with sex not stated were randomly assigned to male and female (50 percent each). Records with age not stated were allocated to the age group 85 and over.

In the age-adjustment procedure ten age groups were employed including under 1 year, 1-14 years, ten year age groups from 15-24 years to age 75-84, and 85 years and over. Age-specific rates for the total population and for each subgroup were applied to the same standard population distributed by age. The resulting expected deaths were then summed over the ten age groups and divided by the total of the standard population to obtain the age-adjusted rate. The standard population selected was the 1940 United States enumerated population. Comparisons can be made between subgroup rates, between rates in different years, and between rates for Michigan and similarly computed rates for the United States.

UNITED STATES DEATH RATES

Death rates for the United States were taken from publications by the National Center for Health Statistics, U.S. Dept. of Health and Human Services. Rates for the United States shown in the series of tables of death rates for Michigan and the United States have been revised for 1971-1980 based on the 1980 census enumeration, as a result of the large difference between the 1980 census enumeration and the previously estimated population for 1980. The 1980 census enumeration was about 5.5 million higher than the estimated population for April 1, 1980.

The estimated populations used for 1997 provisional data are based on the 1990 census enumeration and therefore are comparable to those used for the 1996 final data. Rates for 1981-1989 have been recomputed based on populations for those years that are consistent with the 1990 census levels.

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SAMPLE
VITAL RECORD
FORMS

SECTION VII

Figure 4.2
Michigan Live Birth Certificate

LF 1111
FORM Alignment

NOTAR MULTIFORM INC. • GRAND RAPIDS MI • 616.464.2174

PLEASE TYPEWRITE OR PRINT - EXCEPT SIGNATURES
ALL COPIES MUST BE LEGIBLE - USE ONLY BLACK INK

LF 1111 MF 1111
FORM Alignment



STATE OF MICHIGAN
DEPARTMENT OF PUBLIC HEALTH 49

CERTIFICATE OF
LIVE BIRTH

121 - STATE FILE NUMBER
0416973

LF _____		CF _____	
1 CHILD - NAME (FIRST)		(MIDDLE)	
2 SEX		3a PLURALITY - SINGLE, TWIN, TRIPLET, ETC (SPECIFY)	3b IF NOT SINGLE - BORN 1ST, 2ND, 3RD, ETC (SPECIFY)
4a DATE OF BIRTH (Month, Day, Year)		4b TIME OF BIRTH	
5a HOSPITAL NAME - (IF NOT HOSPITAL GIVE STREET AND NUMBER)		5b CITY, VILLAGE, OR TOWNSHIP OF BIRTH	5c COUNTY OF BIRTH
6a I CERTIFY THAT THE ABOVE NAMED CHILD WAS BORN ALIVE AT THE PLACE AND TIME AND ON THE DATE STATED ABOVE			
SIGNATURE _____			
7a REGISTRAR'S SIGNATURE		RECEIVED BY LOCAL REGISTRAR - (Month, Day, Year)	
8a MOTHER'S NAME (FIRST, MIDDLE, LAST)		8b SOCIAL SECURITY NUMBER	8c STATE OF BIRTH - NAME COUNTRY IF NOT USA
8d DATE OF BIRTH (Month, Day, Year)		8e COUNTY	
8f STATE		8g DATE OF BIRTH (Month, Day, Year)	
9a FATHER'S NAME (FIRST, MIDDLE, LAST)		9b SOCIAL SECURITY NUMBER	9c STATE OF BIRTH - NAME COUNTRY IF NOT USA
9d DATE OF BIRTH (Month, Day, Year)		9e COUNTY	
9f STATE		9g DATE OF BIRTH (Month, Day, Year)	
10a I CERTIFY THAT THE PERSONAL INFORMATION PROVIDED ON THIS CERTIFICATE IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF		10b THE PARENT(S) REQUEST THAT INFORMATION ON THIS BIRTH BE RELEASED TO THE SOCIAL SECURITY ADMIN. FOR ISSUANCE OF A SOCIAL SECURITY NUMBER AND CARD.	
SIGNATURE (PARENT OR OTHER INFORMANT)		<input type="checkbox"/> YES <input type="checkbox"/> NO	

CONFIDENTIAL INFORMATION FOR PUBLIC HEALTH USE ONLY

11 ANCESTRY - Mexican, Puerto Rican, Cuban, Central or South American, Canadian, other Hispanic, Afro-American, Arab, English, French, Finnish, etc. (Specify below)		12 RACE - American Indian, Black, White, etc. If Asian, give nationality (e.g., Chinese, Filipino, Korean Indian, etc. (Specify below)		13 EDUCATION (Specify only highest grade completed) (Elementary/Secondary (0-12) College (13-16 or 17))	
11a	11b	12a	12b	13a	13b
14 EXPECTED SOURCE OF PAYMENT FOR MEDICAL SERVICES (Private Insurance, Medicaid, etc.)		15 MOTHER'S MAILING ADDRESS (STREET NUMBER, CITY OR VILLAGE, STATE, ZIP)			
16a MEDICAL RECORD NUMBER OF MOTHER	16b MEDICAL RECORD NUMBER OF CHILD	17 DATE LAST NORMAL MENSTRUATION BEGAN (Month, Day, Year)	18 MONTH OF PREGNANCY PRENATAL CARE BEGAN	19 TOTAL PRENATAL VISITS	
20 LIVE BIRTHS (Do not include the Child)		20a OTHER TERMINATIONS (Spontaneous and induced of any time after conception)		21a MOTHER TRANSFERRED FROM 20 DELIVERY (If yes enter name of facility transferred to)	
20b HOW MANY NOW ALIVE	20c HOW MANY NOW DEAD	20d DATE OF LAST LIVE BIRTH (Mo., Year)		20e DATE OF LAST OTHER TERMINATION (Mo., Year)	
Number	Number	Home <input type="checkbox"/> Home <input type="checkbox"/>		Home <input type="checkbox"/> Home <input type="checkbox"/>	
22 ATTENDANT AT BIRTH		23 INFANT ADMITTED TO NICU		24 BIRTHWEIGHT (Specify unit)	
MD	DO	<input type="checkbox"/> YES <input type="checkbox"/> NO		25 GESTATIONAL AGE AT BIRTH (Specify)	
NURSE	CRIBED NURSE	<input type="checkbox"/> YES <input type="checkbox"/> NO		26 APGAR SCORE	
MDWFE	OTHER	<input type="checkbox"/> YES <input type="checkbox"/> NO		27 PLACE OF BIRTH	
28 MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)		29 OTHER RISK FACTORS FOR THIS PREGNANCY		30 OBSTETRIC PROCEDURES (Check all that apply)	
31 COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)		32 METHOD OF DELIVERY (Check all that apply)		33 ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)	
34 APPARENT CONGENITAL ANOMALIES OF NEWBORN (Check all that apply)		35 MEDICAL RISK FACTORS FOR THIS PREGNANCY		36 OBSTETRIC PROCEDURES (Check all that apply)	

<p>28 MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)</p> <p>Anemia (Hct < 30; Hgb < 10) <input type="checkbox"/></p> <p>Cardiac disease <input type="checkbox"/></p> <p>Asplen or chronic lung disease <input type="checkbox"/></p> <p>Diabetes <input type="checkbox"/></p> <p>Genital herpes <input type="checkbox"/></p> <p>Hypertension/Dyslipidemia <input type="checkbox"/></p> <p>Hemoglobinopathy <input type="checkbox"/></p> <p>Hypertension chronic <input type="checkbox"/></p> <p>Hypertension pregnancy associated <input type="checkbox"/></p> <p>Chlamydia <input type="checkbox"/></p> <p>Infectious disease <input type="checkbox"/></p> <p>Previous infant 4000+ grams <input type="checkbox"/></p> <p>Previous abortion or small for gestational age infant <input type="checkbox"/></p> <p>Renal disease <input type="checkbox"/></p> <p>Rh sensitization <input type="checkbox"/></p> <p>Smoking during pregnancy <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> <p>Other (Specify) _____</p>	<p>29 OTHER RISK FACTORS FOR THIS PREGNANCY</p> <p>Increase wt during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number cigarettes per day _____</p> <p>Alcohol use during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number drinks per week _____</p> <p>Weight gained during pregnancy _____ lbs</p>	<p>30 OBSTETRIC PROCEDURES (Check all that apply)</p> <p>Anesthetics <input type="checkbox"/></p> <p>Electronic fetal monitoring <input type="checkbox"/></p> <p>Induction of labor <input type="checkbox"/></p> <p>Stimulation of labor <input type="checkbox"/></p> <p>Tamoxifen <input type="checkbox"/></p> <p>Uterine vacuum <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> <p>Other (Specify) _____</p>	<p>31 COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)</p> <p>Fetal (> 100°F or < 36°C) <input type="checkbox"/></p> <p>Mechanism, moderate/severe <input type="checkbox"/></p> <p>Premature rupture of membrane (> 12 hours) <input type="checkbox"/></p> <p>Abnormal placenta <input type="checkbox"/></p> <p>Placenta previa <input type="checkbox"/></p> <p>Other excessive bleeding <input type="checkbox"/></p> <p>Severe dizziness <input type="checkbox"/></p> <p>Protracted labor (> 3 hours) <input type="checkbox"/></p> <p>Protracted labor (> 20 hours) <input type="checkbox"/></p> <p>Dysfunctional labor <input type="checkbox"/></p> <p>Breech/Abnormal presentation <input type="checkbox"/></p> <p>Cephalopelvic disproportion <input type="checkbox"/></p> <p>Cord prolapse <input type="checkbox"/></p> <p>Amniotic complications <input type="checkbox"/></p> <p>Fetal distress <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> <p>Other (Specify) _____</p>	<p>32 METHOD OF DELIVERY (Check all that apply)</p> <p>Vaginal <input type="checkbox"/></p> <p>Vaginal birth after previous C-section <input type="checkbox"/></p> <p>Primary C-section <input type="checkbox"/></p> <p>Repeat C-section <input type="checkbox"/></p> <p>Forceps <input type="checkbox"/></p> <p>Vacuum <input type="checkbox"/></p>	<p>33 ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)</p> <p>Anemia (Hct < 30; Hgb < 13) <input type="checkbox"/></p> <p>Birth injury <input type="checkbox"/></p> <p>Fetal alcohol syndrome <input type="checkbox"/></p> <p>Hyaline membrane disease/RDS <input type="checkbox"/></p> <p>Microcan separation syndrome <input type="checkbox"/></p> <p>Respiratory distress < 30 min <input type="checkbox"/></p> <p>Respiratory distress > 30 min <input type="checkbox"/></p> <p>Seizures <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> <p>Other (Specify) _____</p>	<p>34 APPARENT CONGENITAL ANOMALIES OF NEWBORN (Check all that apply)</p> <p>Anencephalus <input type="checkbox"/></p> <p>Spina Bifida/Meningocele <input type="checkbox"/></p> <p>Hydrocephalus <input type="checkbox"/></p> <p>Microcephalus <input type="checkbox"/></p> <p>Other central nervous system anomalies (Specify) _____ <input type="checkbox"/></p> <p>Heart malformations <input type="checkbox"/></p> <p>Other circulatory/respiratory anomalies (Specify) _____ <input type="checkbox"/></p> <p>Rectal atresia/stenosis <input type="checkbox"/></p> <p>Tracheo-esophageal fistula, Esophageal atresia <input type="checkbox"/></p> <p>Omphalocele/Gastroschisis <input type="checkbox"/></p> <p>Other gastrointestinal anomalies (Specify) _____ <input type="checkbox"/></p> <p>Multifid genitalia <input type="checkbox"/></p> <p>Renal agenesis <input type="checkbox"/></p> <p>Other urogenital anomalies (Specify) _____ <input type="checkbox"/></p> <p>Club foot/polydactyly/Syndactyly/Adactyly <input type="checkbox"/></p> <p>Club foot <input type="checkbox"/></p> <p>Diaphragmatic hernia <input type="checkbox"/></p> <p>Other musculoskeletal/integumental anomalies (Specify) _____ <input type="checkbox"/></p> <p>Down's syndrome <input type="checkbox"/></p> <p>Other chromosomal anomalies (Specify) _____ <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> <p>Other (Specify) _____ <input type="checkbox"/></p>
--	--	--	--	--	--	--

FAILURE TO PROVIDE THE REQUIRED INFORMATION IS A MISDEMEANOR PUNISHABLE BY IMPRISONMENT OF NOT MORE THAN 1 YEAR OR A FINE OF NOT MORE THAN \$1,000.00 OR BOTH

Figure 4.3 Michigan Fetal Death Certificate

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
REPORT OF FETAL DEATH
(TYPE OR PRINT IN INK)

FETUS	1a DATE OF DELIVERY (Month, Day, Year)	1b TIME	1c SEX OF FETUS 1 <input type="checkbox"/> MALE 2 <input type="checkbox"/> FEMALE <input type="checkbox"/> UNDETERMINABLE	1d WEIGHT OF FETUS	1e ESTIMATED WEEKS GESTATION WEEKS	1f ATTENDANT AT DELIVERY 1 <input type="checkbox"/> M.D. 3 <input type="checkbox"/> NURSE 5 <input type="checkbox"/> NURSE-MIDWIFE 2 <input type="checkbox"/> D.O. 4 <input type="checkbox"/> MIDWIFE <input type="checkbox"/> OTHER (SPECIFY)			
	2a RESIDENCE - STATE, IF OUTSIDE USA ENTER COUNTRY		2b RESIDENCE - COUNTY		2c RESIDENCE - LOCAL (Check one box and specify) <input type="checkbox"/> INSIDE CITY OR VILLAGE OF _____ <input type="checkbox"/> TWP OF _____		2d ZIP CODE		
MOTHER	3 ANCESTRY - Mexican Puerto Rican Cuban, Central or South American, Chinese, other Japanese, Hawaiian, Arab, English, French, Finnish, etc. (Specify below)		4 RACE - American Indian, Black, White, etc. If from another nationality so Classify, Filipino, Asian Indian, etc. (Specify below)		5 EDUCATION (Specify only highest grade completed) (Elementary/Secondary (9-12) College (14 or 15+))		6 OCCUPATION AND BUSINESS/INDUSTRY (Worked during last year) Occupation Business/Industry		7 AGE (At Time of Delivery)
	3a		4a		5a		6a		7a
FATHER	3b		4b		5b		6b		7b
MEDICAL AND PREGNANCY HISTORY INFORMATION	8 EXPECTED SOURCE OF PAYMENT FOR MEDICAL SERVICES (Private Insurance, Medicaid, etc.)			9 MOTHER TRANSFERRED PRIOR TO DELIVERY (Specify name of facility transferred from) <input type="checkbox"/> YES <input type="checkbox"/> NO			10 PREGNANCY HISTORIES (Complete each section)		
	10a LIVE BIRTHS			10b TERMINATIONS (Specify type of termination)			12 PLURALITY - Single, Twin, Triplet, etc. (Specify)		
	10c NOW LIVING			10d NOW DEAD			13 IF NOT SINGLE BIRTH - Born First, Second, Third, etc. (Specify)		
	10e DATE OF LAST LIVE BIRTH (Mo, Year)			10f DATE OF LAST OTHER TERMINATION (Mo, Year)			14a MONTH OF PREGNANCY PRENATAL CARE BEGAN - First, Second, Third, etc. (Specify)		
	10g			10h			14b PRENATAL VISITS - Total Number (If none, so state)		
	10i			10j			14c		
15a MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)			16 OBSTETRIC PROCEDURES (Check all that apply)			17 APPARENT CONGENITAL ANOMALIES OF FETUS (Check all that apply)			
15b OTHER RISK FACTORS FOR THIS PREGNANCY (Complete all items)			17 COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)			18			
18			19			20			
20 PART I			20 PART II			21			
22a			22b			22c			
23			24			25			

FAILURE TO PROVIDE THE REQUIRED INFORMATION IS A MISDEMEANOR PUNISHABLE BY IMPRISONMENT OF NOT MORE THAN 1 YEAR OR A FINE OF NOT MORE THAN \$1,000.00 OR BOTH.

Figure 4.4
Michigan Death Certificate

STATE OF MICHIGAN
DEPARTMENT OF PUBLIC HEALTH
CERTIFICATE OF DEATH

STATE FILE NUMBER
No 0187597

LF _____
CF _____

TYPE/PRINT IN PERMANENT BLACK INK

NAME OF DECEDENT FOR USE BY PHYSICIAN OR INSTITUTION

1 DECEDENT'S NAME (First, Middle, Last)		2 SEX	3 DATE OF DEATH (Month, Day, Year)
4a AGE - Last Birthday (Years)	4b UNDER 1 YEAR MONTHS DAYS	4c UNDER 1 DAY HOURS MINUTES	5 DATE OF BIRTH (Month, Day, Year)
7a LOCATION OF DEATH (Enter place officially pronounced dead in 7a, 7b, 7c) HOSPITAL OR OTHER INSTITUTION - Name (If not in either, give street and number)		7b IF HOSP OR INST. Inpatient, Op./Enter Room, DDA (Specify)	7c CITY, VILLAGE, OR TOWNSHIP OF DEATH
8 SOCIAL SECURITY NUMBER	9a USUAL OCCUPATION (Give kind of work done during most of working life. Do not use retired)	9b KIND OF BUSINESS OR INDUSTRY	
10a CURRENT RESIDENCE - STATE	10b COUNTY	10c LOCALITY (Check one box and specify) <input type="checkbox"/> INSIDE CITY OR VILLAGE OF <input type="checkbox"/> TWP. OF	10d STREET AND NUMBER
10e ZIP CODE	11 BIRTHPLACE (City and State or Foreign Country)	12 MARITAL STATUS - Married, Never Married, Widowed, Divorced (Specify)	13 SURVIVING SPOUSE (If present, give name, date of birth, and first married)
15 ANCESTRY - Mexican, Puerto Rican, Cuban, Central or South American, Chinese, other Hispanic, Afro-American, Arab, English, French, Finnish, etc. (Specify below)	16 RACE - American Indian, Alaska Native, Hawaiian, Japanese, Korean, Samoan, etc. (Specify below)	14 DECEDENT'S EDUCATION (Specify only highest grade completed) Elementary/Secondary (0-12) College (14 or 5+)	
18 FATHER'S NAME (First, Middle, Last)		19 MOTHER'S NAME (First, Middle, Surname before first married)	
20a INFORMANT'S NAME (Type/Print)		20b HOME ADDRESS (Street and Number or Rural Route Number, City or Village, State, ZIP Code)	
21 METHOD OF DEPOSITION - Burial, Cremation, Removal, Donation, Other (Specify)		22a PLACE OF DEPOSITION (Name of Cemetery, Crematory, or other place)	22b LOCATION - City or Village, State
23 SIGNATURE OF FUNERAL SERVICE LICENSEE	24 LICENSE NUMBER (of Licensee)	25 NAME AND ADDRESS OF FACILITY	
26 PART I (Enter the diseases, injuries, or complications that caused the death. Do NOT enter the mode of dying, such as cardiac or respiratory arrest, shock, or heart failure. List only one cause on each line.)			Approximate Interval Between Onset and Death
IMMEDIATE CAUSE (Final disease or condition resulting in death)			a _____ DUE TO (OR AS A CONSEQUENCE OF)
Sequitely list conditions, if any, leading to immediate cause. Enter UNDERLYING CAUSE (Disease or injury that initiated process resulting in death) LAST			b _____ DUE TO (OR AS A CONSEQUENCE OF)
c _____ DUE TO (OR AS A CONSEQUENCE OF)			d _____ DUE TO (OR AS A CONSEQUENCE OF)
PART II Other significant conditions contributing to death but not resulting in the underlying cause given in Part I			27a WAS AN AUTOPSY PERFORMED? (Yes or No)
			27b WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETION OF CAUSE OF DEATH? (Yes or No)
28 ACTUAL PLACE OF DEATH (Home, Nursing Home, Hospital, Ambulance) (Specify)		29 WAS CASE REFERRED TO MEDICAL EXAMINER? (Specify Yes or No)	
30a To the best of my knowledge, death occurred at the time, date and place and due to the cause(s) stated (Signature and Title)		31a <input type="checkbox"/> The case reviewed and determined not to be a medical examiner's case. <input type="checkbox"/> On the basis of consultation and of investigation, in my opinion death occurred at the time, date and place and due to the cause(s) and manner stated.	
30b DATE SIGNED (Mo., Day, Yr.)	30c TIME OF DEATH	31b DATE SIGNED (Mo., Day, Yr.)	31c CASE NUMBER
30d NAME OF ATTENDING PHYSICIAN IF OTHER THAN CERTIFIER (Type or Print)		31d PRONOUNCED DEAD (Mo., Day, Yr.) ON	31e TIME OF DEATH
32a NAME AND ADDRESS OF PERSON WHO COMPLETED CAUSE OF DEATH (ITEM 28) (Type or Print)		32b LICENSE NUMBER	
33a ACC. SUICIDE, HOMICIDE, NATURAL OR PENDING INVEST (Specify)	33b DATE OF INJURY (Mo., Day, Yr.)	33c TIME OF INJURY	33d DESCRIBE HOW INJURY OCCURRED
33e INJURY AT WORK (Specify Yes or No)	33f PLACE OF INJURY - At home, farm, street, factory, office building, etc. (Specify)	33g LOCATION - Street or R.F.D. No. City, Village or Twp. State	
34a REGISTRAR'S SIGNATURE		34b DATE FILED (Month, Day, Year)	

MEDICAL EXAMINER

Section 2843 of Act 368 Public Acts of 1978 requires that the attending physician shall fill out and sign the medical certificate of death within 48 hours after death.

In the absence of the attending physician and in the absence of a physician representing the attendant, medical certification must be provided as follows:

For deaths pronounced within a hospital, by the chief medical officer of the hospital based on the available records or by a pathologist.

For deaths pronounced outside a hospital, by the county medical examiner.

The funeral director is responsible for completing all other portions of the certificate and obtaining a burial or removal permit prior to disposing of the body or removing from the registration district where the death occurred.

This document must be typewritten (except signatures) or printed in black indelible ink. Alterations to the document must be accomplished using a lift off process. Damaged or folded documents are not acceptable.

Failure to provide the required information is a misdemeanor punishable by imprisonment of not more than 1 year or a fine of not more than \$1,000.00 or both.

NOTE: If the decedent is suspected of having had an infectious condition notification of the funeral director to whom the body is released may be required by Act 185 of 1986.

Figure 4.5
Michigan Marriage License

ROTARY MULTIFORMS, INC. • GRAND RAPIDS, MI • 616-942-2574



Marriage License

State of Michigan

STATE FILE NO.

LOCAL FILE NO.

0166087

To any person legally authorized to solemnize marriage in the State of Michigan,
Marriage must be solemnized *In the State of Michigan* on or before _____ DATE

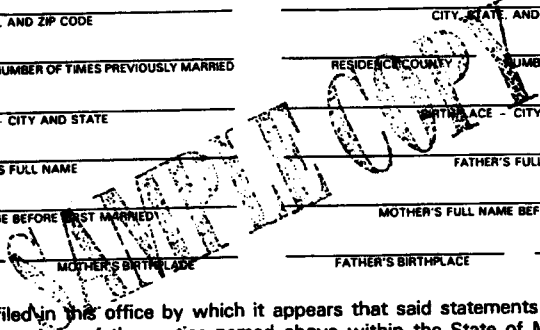
between

and

_____ FULL NAME OF MALE (FIRST, MIDDLE, LAST)		_____ FULL NAME OF FEMALE (FIRST, MIDDLE, LAST)	
_____ LAST NAME BEFORE FIRST MARRIED, IF DIFFERENT		_____ LAST NAME BEFORE FIRST MARRIED, IF DIFFERENT	
_____ PRESENT AGE	_____ DATE OF BIRTH	_____ PRESENT AGE	_____ DATE OF BIRTH
_____ RESIDENCE NO.	_____ STREET	_____ RESIDENCE NO.	_____ STREET
_____ CITY, STATE, AND ZIP CODE		_____ CITY, STATE, AND ZIP CODE	
_____ RESIDENCE COUNTY	_____ NUMBER OF TIMES PREVIOUSLY MARRIED	_____ RESIDENCE COUNTY	_____ NUMBER OF TIMES PREVIOUSLY MARRIED
_____ BIRTHPLACE - CITY AND STATE		_____ BIRTHPLACE - CITY AND STATE	
_____ FATHER'S FULL NAME		_____ FATHER'S FULL NAME	
_____ MOTHER'S FULL NAME BEFORE FIRST MARRIED		_____ MOTHER'S FULL NAME BEFORE FIRST MARRIED	
_____ FATHER'S BIRTHPLACE	_____ MOTHER'S BIRTHPLACE	_____ FATHER'S BIRTHPLACE	_____ MOTHER'S BIRTHPLACE

Except for signature, spaces left blank must be completed by typewriter or printed legibly.

By Authority of MCL 333.2813



An affidavit has been filed in this office by which it appears that said statements are true. This marriage license authorizes the marriage of the parties named above within the State of Michigan by any person authorized to perform a marriage ceremony under the laws of the State of Michigan.

In witness whereof,
I have signed and sealed these presents, this _____ day of _____ 19 _____;

COUNTY CLERK COUNTY

DEPUTY CLERK

Certificate of Marriage

Between Mr. _____ and M _____

I hereby certify that, in accordance with the above license, the persons herein mentioned were joined in marriage by me, in _____, county of _____, MICHIGAN, on the _____ day of _____ A.D. 19 _____, in the presence of

_____ SIGNATURE OF WITNESS	_____ SIGNATURE OF WITNESS
_____ NAME OF WITNESS (TYPE OR PRINT)	_____ NAME OF WITNESS (TYPE OR PRINT)
_____ SIGNATURE OF MAGISTRATE OR CLERGY	_____ NAME AND TITLE OF MAGISTRATE OR CLERGY (TYPE OR PRINT)

POST OFFICE ADDRESS OF MAGISTRATE OR CLERGY

THIS ORIGINAL must be returned WITHIN TEN DAYS AFTER THE MARRIAGE to the COUNTY CLERK, who issued the same under severe penalty. This provision must be complied with to insure a PROPER LEGAL RECORD of the marriage.

This Space Reserved for Binding

Figure 4.6
Michigan Divorce Record

**RECORD OF
DIVORCE OR ANNULMENT**

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
By authority of MCL 333.2813.

Court Case Number _____

County Circuit Court _____

State File Number _____

1. Husband's Name _____
First, Middle, Last

2. Husband's Birthdate _____
Month, Day, Year

3. Husband's Residence _____
City, Village or Township County State

4. Husband's Birthplace _____
State or Foreign Country

5. Number of this Marriage _____
First, Second, etc. (Specify)

6. Wife's Name _____
First, Middle, Last

7. Wife's Birthdate _____
Month, Day, Year

8. Wife's Last Name Before First Married _____

9. Wife's Residence _____
City, Village or Township County State

10. Wife's Birthplace _____
State or Foreign Country

11. Number of this Marriage _____
First, Second, etc. (Specify)

12. Place of this Marriage _____
City, Village or Township County State or Foreign Country

13. Date of this Marriage _____
Month, Day, Year

14. Date Couple Last Resided in Same Household Check if Not Separated _____
Month, Day, Year

15. Number of Minor Children in Household at Separation Date (Filing Date if Not Separated) Check if None _____
Number

16. Plaintiff Husband Wife Other

17. Plaintiff's Attorney _____
Name (Type or Print) Bar Number

18. Attorney's Address _____
Number and Street City State ZIP Code

19. Judgement of _____
Divorce/Annulment (Specify)

20. Number of Minor Children whose Physical Custody was Awarded to: Husband _____ Wife _____ Joint _____ Other _____
Number Number Number Number

No Children

21. Judgement Recorded on _____
Month, Day, Year

22. I certify that this Divorce was granted on _____
Month, Day, Year

23. Certifying Official _____
Signature Title Date Signed

SAMPLE COPY

Failure to provide the required information is a misdemeanor punishable by imprisonment of not more than 1 year or a fine of not more than \$1,000.00 or both.

0010950

Four hundred copies of this report have been printed at a total cost of \$2,473.66 and a per copy cost of \$6.18.
MDCH is an EQUAL OPPORTUNITY EMPLOYER, SERVICE AND PROGRAMS PROVIDER.

