

MICHIGAN INFANT DEATH STATISTICS
January 1 through December 31, 2018

LANSING, MICHIGAN
JANUARY 2020



Gretchen Whitmer, Governor
Robert Gordon, Director

Acknowledgments

DIVISION FOR VITAL RECORDS AND HEALTH STATISTICS

Jeff Duncan, Ph.D. State Registrar

VITAL RECORDS & HEALTH DATA DEVELOPMENT SECTION

Tami Weaver, B.A., Manager

AUTHORS

Glenn Radford, M.A., Statistician, Lindsey Myers, B.B.A., Data Analyst

The Division for Vital Records and Health Statistics gratefully acknowledges the contributions of: Kyle Johnson, Antonea Embry and Thu Le.



Table Of Contents

Summary	1
---------------	---

Selected Infant Death Statistics, Numbers, Averages & Rates

Table 1	Number of Infant Deaths, Live Births & Infant Death Rates for Michigan Residents, 1970-2018	4
Figure 1	Infant Mortality Rates & Forecasts, 1970-2030	6
Table 2	Number of Infant Deaths, Live Births & Infant Death Rates By Race, 1970-2018	7
Figure 2	Comparison of White & Black Infant Death Rates for Michigan Residents, 1970-2018	9
Table 3	Infant Death Rates by County of Residence, 2018 & 2014 - 2018 Average	10
Table 4	Infant Death Rates by Selected Cities of Residence, 2018 & 2014 - 2018 Average	13
Table 5	Infant Deaths by Race for Michigan, Detroit City & Wayne County, 1990- 2018	14
Table 6	Number & Rate of Infant Deaths by Race, Michigan & United States Residents, 1989 - 2018	18
Table 7-A	Number of Hispanic Deaths by Selected County & Michigan, 2008 - 2018	19
Table 7-B	Number of Middle Easterner Infant Deaths by Selected County & Michigan, 2008 - 2018	20
Table 8	Three-year Average Infant Death Rates by Race & Ancestry, 1999-2018	21
Figure 3	Three-year Average Infant Mortality Rates by Race & Ancestry 1998-2018	22

Perinatal

Table 9	Infant, Hebdomadal, Fetal & Perinatal Death Rates by Specified Race & Ancestry, 2018	23
Table 10	Trends of Infant, Hebdomadal, Fetal & Perinatal Death Rates, 2007-2018	24

Characteristics of Birth and Causes of Death

Table 11	Infant Death Rates by Selected Characteristics of Newborn & of Mother, 2018	25
Table 12	Number of Infant Deaths by Cause of Death, 1980-2018	27
Table 13	Three-year Moving Average Infant Deaths Rates by Cause of Death, 1980-2018	28
Figure 4	Three-year Average Infant Death Rates by Cause, 1980-2018	29
Table 14-A	Dollfus Categories, 2014 - 2018	30
Table 14-B	Dollfus Subcategories, 2014 - 2018	31
Table 15-A	Sudden Unexpected Infant Deaths, 1989 - 2018	32
Table 15-B	Accidental Suffocation & Strangulation, 1989 - 2018	33
Table 16	Sudden Unexpected Infant Deaths by Race, 1989 - 2018	34

Table Of Contents

Three-year Moving Averages by Region

Table 17-A Three-Year Moving Average Infant Death Rates by County, 2007-2018	35
Table 17-B White Three-Year Moving Average Infant Death Rates by County, 2007-2018	38
Table 17-C Black Three-Year Moving Average Infant Death Rates by County, 2007-2018	41
Table 18-A Three-Year Moving Average Infant Death Rates by District, 2007-2018	42
Table 18-B White Three-Year Moving Average Infant Death Rates by District, 2007-2018	44
Table 18-C Black Three-Year Moving Average Infant Death Rates by District, 2007-2018	46
Table 19-A Three-Year Moving Average Infant Death Rates by City, 2007-2018	47
Table 19-B White Three-Year Moving Average Infant Death Rates by City, 2007-2018	48
Table 19-C Black Three-Year Moving Average Infant Death Rates by City, 2007-2018	49

Neonatal & Postneonatal Deaths by Region

Table 20-A Neonatal Deaths by Michigan County & Detroit City , 2008-2018	50
Table 20-B Postneonatal Deaths by Michigan County & Detroit City, 2008-2018	54
Table 21-A Neonatal Deaths by Michigan Health Departments, 2008-2018	58
Table 21-B Postneonatal Deaths by Michigan Health Departments, 2008-2018	60

SUMMARY OF 2018 INFANT DEATH STATISTICS

January 2020 Release

INFANT MORTALITY: For every 1,000 Michigan live births, almost seven infants die before reaching their first birthday. In 2018, 723 infants under the age of one year died, resulting in an infant mortality rate of 6.6 per 1,000 live births. Michigan experienced a significant decline in infant mortality during the early 1990s; but during the 2000s the infant mortality rates remained around 7.9 deaths per 1,000 births. The 2018 rate indicates a drop of the mortality rates to an average of 6.8 since 2010, from the 7.9 average in the previous decade. The total number of Michigan infants who died between 2010-2018 was 6,924. (See Table 1.)

The perinatal death rate has not significantly changed in years; the rate has been approximately 9 fetal or hebdomadal deaths per 1,000 live births since around 2011. The perinatal death rate was 9.3 in 2017 and 9.5 in 2018. (See Table 10.)

Historically, the infant death rate has declined over time. In 1970, the infant death rate was 20.3 deaths per 1,000 live births; and this rate declined to 10.7 in 1990 and then again to 7.1 deaths per 1,000 live births in 2010. Since 1970, these declines were primarily due to advances in neonatal medicine, artificial lung surfactants, folic acid supplementation, and numerous public health interventions. The gradual decline suggests that the infant mortality rate will drop to about 5.6 by 2025 and perhaps as low as 5.0 by 2030. (See Figure 1.)

Both the white and black infant mortality rates remained about the same in recent years, with a persistent racial disparity in which African American mothers experienced 3 times the risk of an infant death compared to white mothers. In 2005, the white infant death rate was 5.5, and was comparable to the previous ten-year 1996-2005 average of 6.0 deaths per 1,000 white births. The black infant death rate was 17.9 in 2005, and was also comparable to the previous decade average of 17.6 deaths per 1,000 black births. In 2018 the white infant mortality rate was 4.5 per 1,000 live births while the black rate was 15.1 per 1,000 live births. Between 2006-2018 the white infant mortality rate has declined slightly, while the black rate has declined by 25% due to a reduction of infant deaths since 2005. The decline in the Michigan infant mortality rate is largely due to a reduction in black infant deaths. (See Table 2.)

Between 2000-2013, the Native American infant death rate remained on average 11 deaths per 1,000 live births. Between 2016-2018, the rate increased to 12.2 deaths per 1,000 births. The Native American infant death rate is comparable to the African American rate; the racial disparity between Native Americans and whites is about the same as African Americans (2.6 Native American deaths for every white infant death). (See Table 8.)

The Michigan infant mortality rate continues to be higher than the last reported national rate. The 2018 infant death rate for the United States is 5.8. (See Table 6.)

LIVE BIRTHS: In 2018, the number of live births decreased to 110,093, from the 2017 live birth count of 111,507. The 2012-2017 numbers represent historic lows, and Michigan's birth count has gradually decreased since at least 1990. Nationally, there were 3,791,712 births in the U.S. in 2018, a decline of 12.2% from the record number reported for 2007 and a 1.7% decrease from last year.

CAUSES OF DEATH: In 2018, 34.3% of infants died due to conditions related to prematurity and 16.9% died due to birth defects. In addition, 11.5% of infants deaths died due to accidents; 7.1% of all infant deaths were due to accidental suffocation in bed. (See Table 14-A.)

Respiratory Distress Syndrome (RDS) declined from about 15 per 1,000 live births in the early eighties to about 5 per 1,000 by the late nineties. Due to surfactant and other therapies, the number of RDS deaths has continued to decline to about 2 per 1,000 live births in 2016-2018. In the past few years, the SIDS death rate has remained about 3 per 1,000 live births.

CHARACTERISTICS OF NEWBORN: Certain newborns are at higher risk of dying. In 2018 infants born with very low birth weight (less than 1,500 grams) experienced an infant death rate of 249.5 per 1,000 live births compared to a rate of 2.3 for those infants weighing 2,500 grams or more. Multiple birth infants had an infant mortality rate of 27.6 per 1,000 live births compared to the rate of 5.7 for single birth infants. The excess male infant mortality normally reported in other years was present in 2018, with the infant mortality for male infants at 7.5 per 1,000 male live births and females at 5.6 per 1,000 female live births. (See Table 11.)

CHARACTERISTICS OF MOTHER: Infant death rates were the lowest for mothers aged 30-39 years old and highest for mothers aged under 20 years old. Unmarried mothers had infant mortality rates over twice those of married mothers. Women receiving inadequate prenatal care experienced infant mortality rates three times as high as those women receiving adequate prenatal care. Mothers exposed to secondhand smoking while pregnant had an infant death rate of 8.3 per 1,000 live births compared to a rate of 5.9 for mothers who were not exposed to secondhand smoking during pregnancy. (See Table 11.)

ADMINISTRATIVE INFANT DEATH RECORDS: In the 2018, two Detroit area funeral homes' licenses were revoked; this action delayed some reports of infant deaths. To adjust for delays, the Michigan Division for Vital Records and Health Statistics (DVRHS) substituted administrative death records for infants who could not be located in Michigan or out-of-state death files (1) and were flagged as deceased in the Michigan Inpatient database and (2) who were verified as deceased by contacting the hospital of the live birth. Administrative death records are infant death records created from hospital, birth and partial death data reported before the revocation. The Michigan death file contains 21 administrative records.

COMMUNITY LEVEL DATA: Infant mortality data are available for most communities in Michigan. On the Internet, go to Michigan's community health information site at www.michigan.gov/healthstatistics. Data for local health department districts, counties and major cities and townships can be reached by choosing "Vital Statistics" and then "Infant Mortality" button. Those who do not have access to the Internet may request that community level data be mailed to them from the address below.

Questions regarding Infant Death Statistics should be addressed to:

Lindsey Myers
Division for Vital Records and Health Statistics
Michigan Department of Health & Human Services
333 S. Grand Ave.
Lansing, MI 48933

Voice: (517) 335-8715 ♦ FAX: (517) 335-8711 ♦ E-mail:
MyersL@Michigan.gov

Residence Determined by Reported Residence and Geocoded Residence in the Michigan Death Certificate Registry

Using a process called geocoding, the Division for Vital Records & Health Statistics (DVRHS) has assigned geographic coordinates to most death certificates reported between 2000 and 2018. While the primary purpose of geocoding mortality data is to map patterns of death and to conduct spatial epidemiology, such records can also be used to improve the accuracy of location-related data recorded on the certificate. In mortality datasets, the division has found that the MCD residence is miscoded in certain areas about 10-20% of the time. Often, the person reporting the residence confuses the township with an adjacent city or village. Such errors then alter the calculation of local area statistics; small errors in coding lead to large errors in rates calculated for MCDs with populations below 70,000.

Therefore, all mortality and natality statistics between 2000 and 2018 in division reports of infant deaths were updated and recalculated using the geocoded data. **Birth and death counts and rates are different from data reported prior to 2011.** Statistics for years before 2000 use the residence reported during the course of registering a vital event. When rates calculated from these data differ substantially from Michigan or county rates, one should study the events as part of a trend of geocoded statistics, and consider whether the data reflects jumps indicative of a longterm trend of residence-miscoding.

Table 1
Number of Infant Deaths
Live Births and Infant Death Rates
Michigan Residents, 1970 - 2018

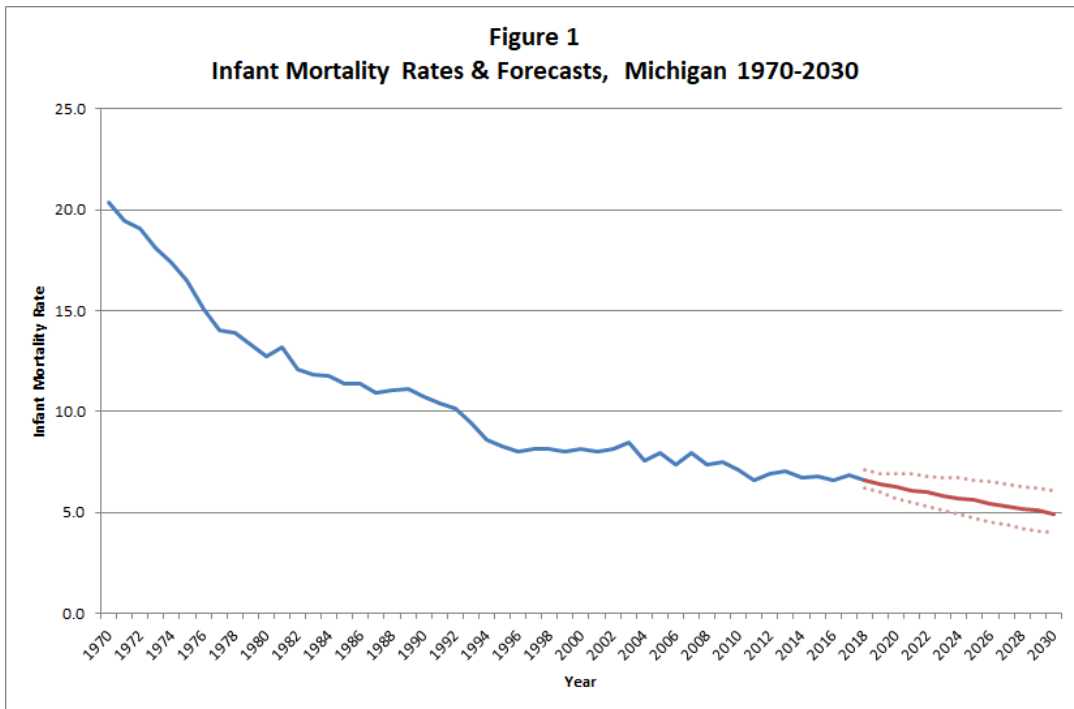
Year	Infant Deaths	Live Births	Infant Death Rate
1970	3,492	171,667	20.3 ±0.7
1971	3,157	162,244	19.5 ±0.7
1972	2,801	146,854	19.1 ±0.7
1973	2,561	141,550	18.1 ±0.7
1974	2,387	137,414	17.4 ±0.7
1975	2,205	133,931	16.5 ±0.7
1976	1,978	131,378	15.1 ±0.7
1977	1,945	138,416	14.1 ±0.6
1978	1,931	138,802	13.9 ±0.6
1979	1,921	144,452	13.3 ±0.6
1980	1,851	145,162	12.8 ±0.6
1981	1,851	140,579	13.2 ±0.6
1982	1,672	137,950	12.1 ±0.6
1983	1,573	133,026	11.8 ±0.6
1984	1,595	135,782	11.7 ±0.6
1985	1,575	138,052	11.4 ±0.6
1986	1,565	137,626	11.4 ±0.6
1987	1,538	140,466	10.9 ±0.5
1988	1,542	139,635	11.0 ±0.5
1989	1,645	148,164	11.1 ±0.5
1990	1,638	153,080	10.7 ±0.5
1991	1,554	149,478	10.4 ±0.5
1992	1,460	143,827	10.2 ±0.5
1993	1,319	139,560	9.5 ±0.5
1994	1,184	137,844	8.6 ±0.5
1995	1,110	134,169	8.3 ±0.5

Table 1
Number of Infant Deaths
Live Births and Infant Death Rates
Michigan Residents, 1970 - 2018
(Continued)

Year	Infant Deaths	Live Births	Infant Death Rate
1996	1,072	133,231	8.0 ±0.5
1997	1,085	133,549	8.1 ±0.5
1998	1,091	133,649	8.2 ±0.5
1999	1,071	133,429	8.0 ±0.5
2000	1,112	136,048	8.2 ±0.5
2001	1,066	133,247	8.0 ±0.5
2002	1,054	129,518	8.1 ±0.5
2003	1,112	130,850	8.5 ±0.5
2004	984	129,710	7.6 ±0.5
2005	1,013	127,518	7.9 ±0.5
2006	940	127,537	7.4 ±0.5
2007	997	125,172	8.0 ±0.5
2008	894	121,231	7.4 ±0.5
2009	881	117,309	7.5 ±0.5
2010	817	114,717	7.1 ±0.5
2011	749	114,159	6.6 ±0.5
2012	783	112,708	6.9 ±0.5
2013	799	113,732	7.0 ±0.5
2014	773	114,460	6.8 ±0.5
2015	770	113,211	6.8 ±0.5
2016	747	113,374	6.6 ±0.5
2017	763	111,507	6.8 ±0.5
2018	723	110,093	6.6 ±0.5

Note: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

Source: 1970 - 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services



Note: Rates are per 1,000 live births. Rates after 2018 are forecasted within an 80% prediction interval indicated by the dotted lines; this means that the future rates fall between the lower and upper bounds of the interval with 80% probability.

Source: 1970- 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 2
Number of Infant Deaths, Live Births and Infant Death Rates By Race
Michigan Residents, 1970 - 2018

Year	White			Black			Other ¹		
	Infant Deaths	Live Births	Infant Death Rate	Infant Deaths	Live Births	Infant Death Rate	Infant Deaths	Live Births	Infant Death Rate
1970	2,661	144,159	18.5 ±0.7	811	26,513	30.6 ±2.1	14	871	16.1 ±8.4
1971	2,293	134,486	17.1 ±0.7	843	26,755	31.5 ±2.1	17	890	19.1 ±9.0
1972	1,957	120,042	16.3 ±0.7	835	25,760	32.4 ±2.2	8	936	8.5 ±5.9
1973	1,749	115,150	15.2 ±0.7	796	25,252	31.5 ±2.2	11	926	11.9 ±7.0
1974	1,673	112,768	14.8 ±0.7	705	22,836	30.9 ±2.2	7	950	7.4 ±5.4
1975	1,574	110,058	14.3 ±0.7	616	22,692	27.1 ±2.1	8	951	8.4 ±5.8
1976	1,383	108,295	12.8 ±0.7	575	21,778	26.4 ±2.1	16	1,100	14.5 ±7.1
1977	1,373	114,511	12.0 ±0.6	559	22,620	24.7 ±2.0	8	1,059	7.6 ±5.2
1978	1,344	114,652	11.7 ±0.6	566	22,423	25.2 ±2.1	13	1,507	8.6 ±4.7
1979	1,352	119,218	11.3 ±0.6	550	23,346	23.6 ±1.9	12	1,622	7.4 ±4.2
1980	1,246	119,698	10.4 ±0.6	582	23,422	24.8 ±2.0	15	1,825	8.2 ±4.1
1981	1,261	116,596	10.8 ±0.6	564	22,002	25.6 ±2.1	18	1,847	9.7 ±4.5
1982	1,110	114,465	9.7 ±0.6	548	21,574	25.4 ±2.1	13	1,797	7.2 ±3.9
1983	1,048	109,892	9.5 ±0.6	506	21,295	23.8 ±2.0	15	1,721	8.7 ±4.4
1984	1,034	111,574	9.3 ±0.6	541	22,322	24.2 ±2.0	15	1,792	8.4 ±4.2
1985	1,053	114,150	9.2 ±0.6	510	21,935	23.3 ±2.0	11	1,820	6.0 ±3.6
1986	999	112,255	8.9 ±0.5	553	23,366	23.7 ±1.9	12	1,927	6.2 ±3.5
1987	953	113,386	8.4 ±0.5	567	24,975	22.7 ±1.8	17	1,992	8.5 ±4.0
1988	952	112,232	8.5 ±0.5	570	25,217	22.6 ±1.8	19	2,093	9.1 ±4.1
1989	946	115,186	8.2 ±0.5	672	29,839	22.5 ±1.7	23	2,525	9.1 ±3.7
1990	930	118,180	7.9 ±0.5	689	31,842	21.6 ±1.6	18	2,623	6.9 ±3.2
1991	857	114,983	7.5 ±0.5	683	31,543	21.7 ±1.6	13	2,522	5.2 ±2.8
1992	781	111,458	7.0 ±0.5	656	29,656	22.1 ±1.7	23	2,223	10.3 ±4.2
1993	770	108,329	7.1 ±0.5	530	28,249	18.8 ±1.6	17	2,418	7.0 ±3.3
1994	670	106,828	6.3 ±0.5	495	27,129	18.2 ±1.6	19	3,137	6.1 ±2.7
1995	655	105,274	6.2 ±0.5	432	24,914	17.3 ±1.6	19	3,124	6.1 ±2.7
1996	627	104,922	6.0 ±0.5	421	24,073	17.5 ±1.7	21	3,307	6.4 ±2.7
1997	640	104,980	6.1 ±0.5	425	24,201	17.6 ±1.7	17	3,628	4.7 ±2.2
1998	660	105,161	6.3 ±0.5	405	24,179	16.8 ±1.6	23	3,833	6.0 ±2.4
1999	616	104,493	5.9 ±0.5	428	23,850	17.9 ±1.7	19	4,210	4.5 ±2.0

Table 2
Number of Infant Deaths, Live Births and Infant Death Rates By Race
Michigan Residents, 1970 - 2018

Year	White			Black			Other ¹		
	Infant Deaths	Live Births	Infant Death Rate	Infant Deaths	Live Births	Infant Death Rate	Infant Deaths	Live Births	Infant Death Rate
2000	637	106,322	6.0 ±0.5	437	24,069	18.2 ±1.7	30	4,525	6.6 ±2.4
2001	635	104,489	6.1 ±0.5	398	23,494	16.9 ±1.7	25	4,752	5.3 ±2.1
2002	611	101,611	6.0 ±0.5	410	22,248	18.4 ±1.8	21	5,056	4.2 ±1.8
2003	680	102,146	6.7 ±0.5	391	22,380	17.5 ±1.7	37	5,508	6.7 ±2.2
2004	527	100,795	5.2 ±0.4	388	22,484	17.3 ±1.7	61	5,719	10.7 ±2.7
2005	549	99,117	5.5 ±0.5	400	22,365	17.9 ±1.7	62	5,461	11.4 ±2.8
2006	534	98,551	5.4 ±0.5	339	22,873	14.8 ±1.6	60	5,636	10.6 ±2.7
2007	549	93,868	5.8 ±0.5	368	22,314	16.5 ±1.7	74	6,932	10.7 ±2.4
2008	496	91,509	5.4 ±0.5	332	22,695	14.6 ±1.6	61	6,691	9.1 ±2.3
2009	470	87,471	5.4 ±0.5	346	22,292	15.5 ±1.6	46	6,980	6.6 ±1.9
2010	462	84,597	5.5 ±0.5	312	22,046	14.2 ±1.6	38	7,425	5.1 ±1.6
2011	411	84,172	4.9 ±0.5	300	21,950	13.7 ±1.5	34	7,529	4.5 ±1.5
2012	455	82,949	5.5 ±0.5	291	21,623	13.5 ±1.5	35	7,696	4.5 ±1.5
2013	473	83,339	5.7 ±0.5	290	22,055	13.1 ±1.5	35	8,081	4.3 ±1.4
2014	452	84,492	5.3 ±0.5	284	21,282	13.3 ±1.5	36	8,574	4.2 ±1.4
2015	423	82,938	5.1 ±0.5	311	21,457	14.5 ±1.6	22	8,583	2.6 ±1.1
2016	401	83,388	4.8 ±0.5	294	21,523	13.7 ±1.6	33	8,182	4.0 ±1.4
2017	393	80,967	4.9 ±0.5	320	21,897	14.6 ±1.6	35	8,222	4.3 ±1.4
2018	363	80,003	4.5 ±0.5	326	21,643	15.1 ±1.6	23	8,099	2.8 ±1.2

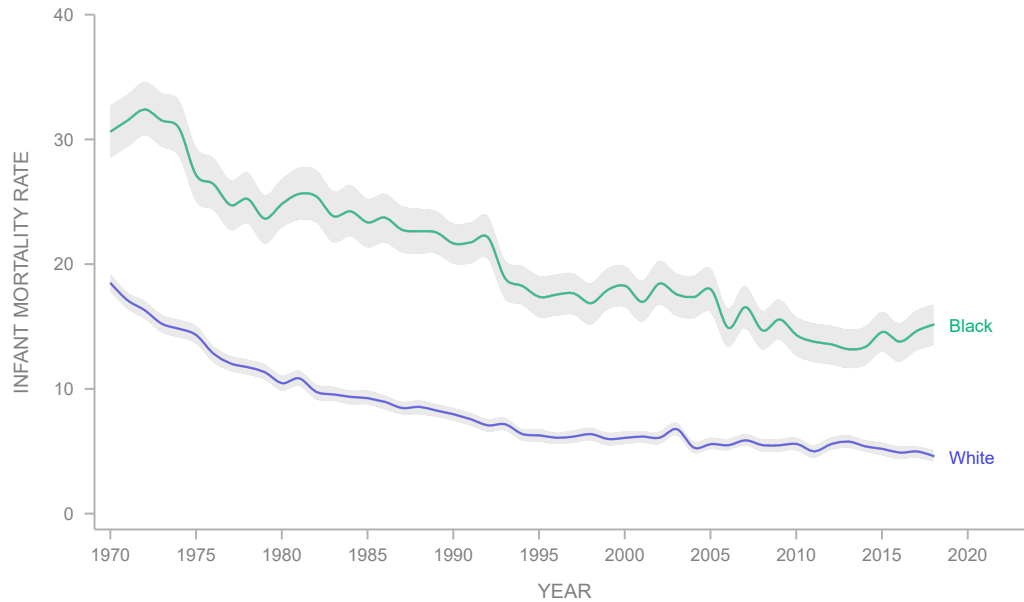
Note: Infant deaths by race of infant; live births used in calculating infant death rates are by race of mother. Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

Infant deaths of unknown race are not included in this table.

¹Between 2004-2008, multi-racial infants were reported as "other."

Source: 1970 - 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Figure 2
Comparison of White and Black Infant Death Rates for Michigan Residents, 1970-2018



Note: Rates are per 1,000 live births. The range indicated by the grey band represents a 95% confidence interval; this means that the true rate lies between the lower and upper bounds of the interval with 95% statistical confidence.

Source: 1970-2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 3
Number of Infant Deaths, Live Births and Infant Death Rates by
Michigan and Michigan County of Residence,
2018 and 2014 - 2018 Average

County of Residence	2018			2014 - 2018		
	Infant Deaths	Live Births	Infant Death Rate	Average Infant Deaths	Average Live Births	Average Infant Death Rate
MICHIGAN	723	110,093	6.6 ±0.5	755.2	112,529.0	6.7 ±0.2
Alcona	-	78	-	0.4	62.8	*
Alger	-	54	-	-	58.6	-
Allegan	6	1,432	4.2 ±3.3	6.8	1,400.6	4.9 ±1.6
Alpena	1	238	*	1.2	266.4	4.5 ±3.6
Antrim	1	196	*	0.2	192.4	*
Arenac	-	139	-	0.6	129.6	*
Baraga	-	68	-	0.8	70.4	*
Barry	2	689	*	2.2	655.6	3.4 ±2.0
Bay	4	946	*	5.6	1,016.2	5.5 ±2.0
Benzie	-	146	-	0.8	154.4	*
Berrien	16	1,669	9.6 ±4.7	11.6	1,736.6	6.7 ±1.7
Branch	6	603	10.0 ±7.9	4.8	546.8	8.8 ±3.5
Calhoun	11	1,533	7.2 ±4.2	11.0	1,608.8	6.8 ±1.8
Cass	8	470	17.0 ±11.7	4.4	495.4	8.9 ±3.7
Charlevoix	1	247	*	1.4	230.6	6.1 ±4.5
Cheboygan	3	192	*	1.4	211.8	6.6 ±4.9
Chippewa	2	333	*	1.2	343.6	3.5 ±2.8
Clare	5	307	*	2.4	327.8	7.3 ±4.1
Clinton	1	844	*	3.8	823.0	4.6 ±2.1
Crawford	1	110	*	1.4	122.4	11.4 ±8.4
Delta	3	334	*	2.0	357.0	5.6 ±3.5
Dickinson	3	264	*	1.2	254.2	4.7 ±3.8
Eaton	3	1,154	*	6.0	1,177.2	5.1 ±1.8
Emmet	2	276	*	1.0	292.6	*
Genesee	27	4,526	6.0 ±2.2	39.2	4,752.6	8.2 ±1.1
Gladwin	1	263	*	1.8	265.8	6.8 ±4.4
Gogebic	-	141	-	1.2	128.4	9.3 ±7.4
Gd. Traverse	5	878	*	5.8	923.4	6.3 ±2.3
Gratiot	1	393	*	1.8	392.2	4.6 ±3.0
Hillsdale	-	526	-	3.4	539.8	6.3 ±3.0

Table 3
Number of Infant Deaths, Live Births and Infant Death Rates by
Michigan and Michigan County of Residence,
2018 and 2014 - 2018 Average

County of Residence	2018			2014 - 2018		
	Infant Deaths	Live Births	Infant Death Rate	Average Infant Deaths	Average Live Births	Average Infant Death Rate
Houghton	1	379	*	1.8	369.8	4.9 ±3.2
Huron	2	259	*	1.2	295.4	4.1 ±3.2
Ingham	19	2,974	6.4 ±2.9	19.6	3,204.8	6.1 ±1.2
Ionia	6	691	8.7 ±6.9	3.6	718.6	5.0 ±2.3
Iosco	3	268	*	2.2	237.6	9.3 ±5.4
Iron	2	81	*	0.8	91.0	*
Isabella	5	618	*	4.2	664.4	6.3 ±2.7
Jackson	7	1,740	4.0 ±3.0	11.4	1,777.4	6.4 ±1.7
Kalamazoo	15	3,086	4.9 ±2.5	18.8	3,133.6	6.0 ±1.2
Kalkaska	1	186	*	1.2	176.8	6.8 ±5.4
Kent	41	8,613	4.8 ±1.5	50.2	8,760.2	5.7 ±0.7
Keweenaw	-	11	-	-	16.4	-
Lake	1	91	*	0.8	102.8	*
Lapeer	2	835	*	3.6	814.2	4.4 ±2.0
Leelanau	-	144	-	1.0	165.4	*
Lenawee	2	1,011	*	6.0	1,027.6	5.8 ±2.1
Livingston	6	1,746	3.4 ±2.7	7.6	1,806.4	4.2 ±1.3
Luce	-	55	-	0.8	52.8	*
Mackinac	-	92	-	1.0	86.6	*
Macomb	50	9,189	5.4 ±1.5	55.8	9,326.0	6.0 ±0.7
Manistee	1	193	*	1.4	204.4	6.8 ±5.1
Marquette	2	578	*	2.2	617.8	3.6 ±2.1
Mason	2	252	*	1.2	292.2	4.1 ±3.3
Mecosta	3	435	*	2.2	423.0	5.2 ±3.1
Menominee	1	183	*	0.8	198.0	*
Midland	2	862	*	2.6	862.2	3.0 ±1.6
Missaukee	-	185	-	0.6	186.0	*
Monroe	4	1,483	*	6.8	1,497.2	4.5 ±1.5
Montcalm	3	716	*	3.0	710.6	4.2 ±2.1
Montmorency	-	77	-	-	69.8	-

Table 3
Number of Infant Deaths, Live Births and Infant Death Rates by
Michigan and Michigan County of Residence,
2018 and 2014 - 2018 Average

County of Residence	2018			2014 - 2018		
	Infant Deaths	Live Births	Infant Death Rate	Average Infant Deaths	Average Live Births	Average Infant Death Rate
Muskegon	12	2,051	5.9 ±3.3	16.0	2,094.8	7.6 ±1.7
Newaygo	1	529	*	3.6	544.6	6.6 ±3.0
Oakland	79	13,152	6.0 ±1.3	75.2	13,392.8	5.6 ±0.6
Oceana	1	279	*	2.6	290.8	8.9 ±4.8
Ogemaw	1	179	*	0.8	191.2	*
Ontonagon	-	24	-	0.2	29.0	*
Osceola	2	292	*	1.6	261.8	6.1 ±4.2
Oscoda	2	100	*	0.6	94.2	*
Otsego	1	235	*	1.4	250.8	5.6 ±4.1
Ottawa	13	3,148	4.1 ±2.2	14.6	3,292.6	4.4 ±1.0
Presque Isle	2	98	*	1.6	98.6	16.2 ±11.2
Roscommon	3	145	*	1.2	158.8	7.6 ±6.0
Saginaw	19	2,192	8.7 ±3.9	19.2	2,229.0	8.6 ±1.7
St. Clair	7	1,540	4.5 ±3.4	8.6	1,541.6	5.6 ±1.7
St. Joseph	5	777	*	4.2	780.0	5.4 ±2.3
Sanilac	1	392	*	3.0	428.4	7.0 ±3.5
Schoolcraft	-	69	-	-	65.6	-
Shiawasee	3	685	*	4.2	696.8	6.0 ±2.6
Tuscola	4	555	*	2.6	558.0	4.7 ±2.5
Van Buren	5	777	*	4.8	849.6	5.6 ±2.3
Washtenaw	19	3,529	5.4 ±2.4	19.8	3,638.0	5.4 ±1.1
Wayne	245	22,892	10.7 ±1.3	227.6	23,222.6	9.8 ±0.6
Wexford	3	370	*	2.6	391.0	6.6 ±3.6
Unknown	-	1	-	-	2.4	-

Note: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

Source: 2014 - 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

**Table 4
Number of Infant Deaths, Live Births and Infant Death Rates for
Selected Cities of Residence, 2018 and 2014 - 2018 Average**

City of Residence	2018			2014 - 2018		
	Infant Deaths	Live Births	Infant Death Rate	Average Infant Deaths	Average Live Births	Average Infant Death Rate
Ann Arbor	6	1,019	5.9 ±4.7	4.6	1,043.6	4.4 ±1.8
Battle Creek	4	696	*	5.8	732.8	7.9 ±2.9
Dearborn	8	1,663	4.8 ±3.3	8.4	1,695.4	5.0 ±1.5
Dearborn Heights	4	840	*	4.6	839.2	5.5 ±2.2
Detroit	158	9,476	16.7 ±2.6	138.4	9,650.4	14.3 ±1.1
East Lansing	-	-	-	-	-	-
Farmington Hills	3	936	*	5.0	902.6	5.5 ±2.2
Flint	14	1,239	11.3 ±5.9	17.6	1,397.8	12.6 ±2.6
Grand Rapids	14	2,996	4.7 ±2.4	19.4	3,054.8	6.4 ±1.3
Kalamazoo	6	1,030	5.8 ±4.6	7.4	1,003.6	7.4 ±2.4
Kentwood	5	817	*	6.2	818.0	7.6 ±2.7
Lansing	7	1,632	4.3 ±3.2	14.0	1,754.8	8.0 ±1.9
Livonia	3	911	*	3.8	900.4	4.2 ±1.9
Midland	2	467	*	1.8	466.8	3.9 ±2.5
Muskegon	3	526	*	6.0	530.8	11.3 ±4.0
Novi	9	656	13.7 ±8.9	4.0	653.0	6.1 ±2.7
Pontiac	9	1,014	8.9 ±5.8	12.4	1,083.4	11.4 ±2.8
Portage	1	537	*	2.8	555.2	5.0 ±2.6
Rochester Hills	3	756	*	2.4	746.0	3.2 ±1.8
Roseville	5	561	*	5.2	581.0	9.0 ±3.4
Royal Oak	2	739	*	2.2	751.4	2.9 ±1.7
Saginaw	11	771	14.3 ±8.4	11.0	792.8	13.9 ±3.6
Southfield	8	739	10.8 ±7.5	7.2	772.2	9.3 ±3.0
St Clair Shores	2	650	*	3.0	595.0	5.0 ±2.5
Sterling Heights	12	1,381	8.7 ±4.9	10.2	1,430.8	7.1 ±1.9
Taylor	5	837	*	6.2	850.8	7.3 ±2.6
Troy	6	768	7.8 ±6.2	4.0	809.8	4.9 ±2.2
Warren	11	1,736	6.3 ±3.7	10.4	1,706.2	6.1 ±1.7
Westland	9	1,006	8.9 ±5.8	8.2	1,067.4	7.7 ±2.3
Wyoming	5	1,129	*	6.8	1,182.8	5.7 ±1.9

Note: This table shows cities with (1) populations greater than 40,000 according to 2007 estimates and (2) three-year average births of greater than 200. City birth and mortality statistics have changed from pre-2011 reports due to geocoding. See Data Quality Considerations for further details. Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

Source: 2014-2018 Geocoded Michigan Death Certificate Registries 2014-2018 Geocoded Michigan Birth Certificate Registries Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 5
Number and Rate of Infant Deaths by Race for
Residents of Michigan, Detroit City, Wayne County (Excluding Detroit City)
and Michigan (Excluding Wayne County), 1990- 2018

Year	Race	Michigan		Detroit City		Wayne County (excluding Detroit)		Michigan (excluding Wayne County)	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
1990	Total	1,638	10.7 ±0.5	491	20.3 ±1.8	170	10.3 ±1.5	977	8.7 ±0.5
	White	930	7.9 ±0.5	36	8.7 ±2.8	130	8.8 ±1.5	764	7.7 ±0.5
	Black	689	21.6 ±1.6	451	23.0 ±2.1	38	24.8 ±7.8	200	18.7 ±2.6
1991	Total	1,554	10.4 ±0.5	456	19.4 ±1.8	139	8.4 ±1.4	959	8.8 ±0.6
	White	857	7.5 ±0.5	39	10.0 ±3.1	103	7.1 ±1.4	715	7.4 ±0.5
	Black	683	21.7 ±1.6	417	21.6 ±2.1	34	20.3 ±6.7	232	21.9 ±2.8
1992	Total	1,460	10.2 ±0.5	462	21.4 ±1.9	128	8.1 ±1.4	870	8.2 ±0.5
	White	781	7.0 ±0.5	43	12.3 ±3.7	92	6.6 ±1.4	646	6.9 ±0.5
	Black	656	22.1 ±1.7	415	23.3 ±2.2	34	21.8 ±7.2	207	20.1 ±2.7
1993	Total	1,319	9.5 ±0.5	348	17.2 ±1.8	111	7.1 ±1.3	860	8.3 ±0.6
	White	770	7.1 ±0.5	28	9.1 ±3.3	88	6.4 ±1.3	654	7.2 ±0.5
	Black	530	18.8 ±1.6	317	18.7 ±2.0	21	14.4 ±6.1	192	19.4 ±2.7
1994	Total	1,184	8.6 ±0.5	322	16.6 ±1.8	105	6.8 ±1.3	757	7.3 ±0.5
	White	670	6.3 ±0.5	28	9.4 ±3.5	69	5.1 ±1.2	573	6.3 ±0.5
	Black	495	18.2 ±1.6	293	18.2 ±2.1	35	23.7 ±7.7	167	17.5 ±2.6
1995	Total	1,110	8.3 ±0.5	274	15.6 ±1.8	89	5.8 ±1.2	747	7.4 ±0.5
	White	655	6.2 ±0.5	17	6.0 ±2.8	64	4.8 ±1.2	574	6.4 ±0.5
	Black	432	17.3 ±1.6	254	17.6 ±2.1	25	18.2 ±7.1	153	16.8 ±2.6
1996	Total	1,072	8.0 ±0.5	248	15.0 ±1.8	101	6.7 ±1.3	723	7.1 ±0.5
	White	627	6.0 ±0.5	9	3.4 ±2.2	74	5.6 ±1.3	544	6.1 ±0.5
	Black	421	17.5 ±1.7	238	17.5 ±2.2	23	16.2 ±6.6	160	17.7 ±2.7
1997	Total	1,085	8.1 ±0.5	253	15.1 ±1.8	100	6.6 ±1.3	732	7.2 ±0.5
	White	640	6.1 ±0.5	23	8.6 ±3.5	76	5.8 ±1.3	541	6.1 ±0.5
	Black	425	17.6 ±1.7	229	16.7 ±2.1	23	16.5 ±6.7	173	19.1 ±2.8

Table 5
Number and Rate of Infant Deaths by Race for
Residents of Michigan, Detroit City, Wayne County (Excluding Detroit City)
and Michigan (Excluding Wayne County), 1990- 2018

Year	Race	Michigan		Detroit City		Wayne County (excluding Detroit)		Michigan (excluding Wayne County)	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
1998	Total	1,091	8.2 ±0.5	241	14.7 ±1.8	99	6.6 ±1.3	751	7.4 ±0.5
	White	660	6.3 ±0.5	15	5.8 ±2.9	74	5.7 ±1.3	571	6.4 ±0.5
	Black	405	16.8 ±1.6	219	16.1 ±2.1	22	14.9 ±6.2	164	18.0 ±2.7
1999	Total	1,071	8.0 ±0.5	245	15.5 ±1.9	97	6.4 ±1.3	729	7.1 ±0.5
	White	616	5.9 ±0.5	15	5.6 ±2.8	72	5.6 ±1.3	529	5.9 ±0.5
	Black	428	17.9 ±1.7	228	17.8 ±2.3	23	15.1 ±6.1	177	18.6 ±2.7
2000	Total	1,112	8.2 ±0.5	232	14.7 ±1.9	98	6.4 ±1.3	782	7.4 ±0.5
	White	637	6.0 ±0.5	20	7.5 ±3.3	64	5.0 ±1.2	553	6.1 ±0.5
	Black	437	18.2 ±1.7	206	16.1 ±2.2	33	20.2 ±6.8	198	20.5 ±2.8
2001	Total	1,066	8.0 ±0.5	210	13.9 ±1.9	81	5.3 ±1.2	775	7.5 ±0.5
	White	635	6.1 ±0.5	14	5.3 ±2.8	58	4.5 ±1.2	563	6.3 ±0.5
	Black	398	16.9 ±1.7	195	15.9 ±2.2	21	12.9 ±5.5	182	18.9 ±2.7
2002	Total	1,054	8.1 ±0.5	239	16.8 ±2.1	103	6.9 ±1.3	712	7.1 ±0.5
	White	611	6.0 ±0.5	20	8.0 ±3.5	70	5.7 ±1.3	521	6.0 ±0.5
	Black	410	18.4 ±1.8	217	19.1 ±2.5	28	16.9 ±6.2	165	17.9 ±2.7
2003	Total	1,112	8.5 ±0.5	227	16.2 ±2.1	120	8.1 ±1.4	765	7.5 ±0.5
	White	680	6.7 ±0.5	28	11.7 ±4.3	85	7.1 ±1.5	567	6.5 ±0.5
	Black	391	17.5 ±1.7	199	17.9 ±2.5	29	16.9 ±6.1	163	17.1 ±2.6
2004	Total	984	7.6 ±0.5	211	15.6 ±2.1	89	6.1 ±1.3	684	6.7 ±0.5
	White	527	5.2 ±0.4	12	5.0 ±2.8	54	4.6 ±1.2	461	5.3 ±0.5
	Black	388	17.3 ±1.7	193	17.9 ±2.5	30	16.1 ±5.7	165	16.8 ±2.5
2005	Total	1,013	7.9 ±0.5	210	16.0 ±2.1	93	6.5 ±1.3	710	7.1 ±0.5
	White	549	5.5 ±0.5	13	5.7 ±3.1	58	5.1 ±1.3	478	5.6 ±0.5
	Black	400	17.9 ±1.7	188	17.9 ±2.5	34	17.7 ±5.9	178	17.9 ±2.6

Table 5
Number and Rate of Infant Deaths by Race for
Residents of Michigan, Detroit City, Wayne County (Excluding Detroit City)
and Michigan (Excluding Wayne County), 1990- 2018

Year	Race	Michigan		Detroit City		Wayne County (excluding Detroit)		Michigan (excluding Wayne County)	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
2006	Total	940	7.4 ±0.5	175	13.5 ±2.0	98	6.8 ±1.4	667	6.7 ±0.5
	White	534	5.4 ±0.5	9	4.0 ±2.6	61	5.5 ±1.4	464	5.4 ±0.5
	Black	339	14.8 ±1.6	153	14.7 ±2.3	31	14.4 ±5.0	155	15.0 ±2.3
2007	Total	997	8.0 ±0.5	179	14.8 ±2.1	95	6.7 ±1.3	723	7.3 ±0.5
	White	549	5.8 ±0.5	13	7.1 ±3.8	59	5.5 ±1.4	477	5.9 ±0.5
	Black	368	16.5 ±1.7	155	16.1 ±2.5	25	11.4 ±4.5	188	17.9 ±2.5
2008	Total	894	7.4 ±0.5	175	14.8 ±2.2	100	7.2 ±1.4	619	6.5 ±0.5
	White	496	5.4 ±0.5	8	4.7 ±3.3	63	5.9 ±1.5	425	5.4 ±0.5
	Black	332	14.6 ±1.6	159	16.7 ±2.6	27	12.3 ±4.6	146	13.3 ±2.1
2009	Total	881	7.5 ±0.5	166	14.8 ±2.2	82	6.1 ±1.3	633	6.8 ±0.5
	White	470	5.4 ±0.5	6	4.3 ±3.5	54	5.4 ±1.4	410	5.4 ±0.5
	Black	346	15.5 ±1.6	152	16.7 ±2.6	19	7.9 ±3.5	175	16.2 ±2.4
2010	Total	817	7.1 ±0.5	146	13.3 ±2.2	87	6.6 ±1.4	584	6.4 ±0.5
	White	462	5.5 ±0.5	10	9.6 ±5.9	44	4.6 ±1.4	408	5.5 ±0.5
	Black	312	14.2 ±1.6	128	14.3 ±2.5	37	15.0 ±4.8	147	13.8 ±2.2
2011	Total	749	6.6 ±0.5	130	12.6 ±2.1	100	7.5 ±1.5	519	5.7 ±0.5
	White	411	4.9 ±0.5	5	*	58	6.0 ±1.5	348	4.7 ±0.5
	Black	300	13.7 ±1.5	119	14.0 ±2.5	37	14.6 ±4.7	144	13.2 ±2.1
2012	Total	783	6.9 ±0.5	151	15.0 ±2.4	87	6.7 ±1.4	545	6.1 ±0.5
	White	455	5.5 ±0.5	12	15.7 ±8.8	56	5.9 ±1.6	387	5.3 ±0.5
	Black	291	13.5 ±1.5	133	16.0 ±2.7	27	11.2 ±4.2	131	12.0 ±2.0
2013	Total	799	7.0 ±0.5	132	13.1 ±2.2	84	6.2 ±1.3	583	6.5 ±0.5
	White	473	5.7 ±0.5	7	8.8 ±6.5	57	6.0 ±1.6	409	5.6 ±0.5
	Black	290	13.1 ±1.5	119	14.4 ±2.6	22	8.2 ±3.4	149	13.5 ±2.1

Table 5
Number and Rate of Infant Deaths by Race for
Residents of Michigan, Detroit City, Wayne County (Excluding Detroit City)
and Michigan (Excluding Wayne County), 1990- 2018

Year	Race	Michigan		Detroit City		Wayne County (excluding Detroit)		Michigan (excluding Wayne County)	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
2014	Total	773	6.8 ±0.5	130	13.2 ±2.3	88	6.5 ±1.4	555	6.1 ±0.5
	White	452	5.3 ±0.5	8	9.6 ±6.6	55	5.9 ±1.6	389	5.2 ±0.5
	Black	284	13.3 ±1.5	120	14.7 ±2.6	25	9.7 ±3.8	139	13.2 ±2.2
2015	Total	770	6.8 ±0.5	142	14.4 ±2.3	83	6.1 ±1.3	545	6.1 ±0.5
	White	423	5.1 ±0.5	9	10.1 ±6.6	60	6.4 ±1.6	354	4.9 ±0.5
	Black	311	14.5 ±1.6	125	15.4 ±2.7	17	6.4 ±3.1	169	15.8 ±2.4
2016	Total	747	6.6 ±0.5	125	13.3 ±2.3	80	5.8 ±1.3	542	6.0 ±0.5
	White	401	4.8 ±0.5	7	8.0 ±5.9	49	5.1 ±1.4	345	4.7 ±0.5
	Black	294	13.7 ±1.6	105	13.6 ±2.6	30	10.8 ±3.8	159	14.4 ±2.2
2017	Total	763	6.8 ±0.5	137	14.2 ±2.4	108	7.9 ±1.5	518	5.9 ±0.5
	White	393	4.9 ±0.5	7	7.2 ±5.3	45	4.7 ±1.4	341	4.8 ±0.5
	Black	320	14.6 ±1.6	122	15.5 ±2.7	52	18.8 ±5.1	146	13.0 ±2.1
2018	Total	723	6.6 ±0.5	158	16.7 ±2.6	87	6.5 ±1.4	478	5.5 ±0.5
	White	363	4.5 ±0.5	7	6.4 ±4.7	43	4.6 ±1.4	313	4.5 ±0.5
	Black	326	15.1 ±1.6	146	18.9 ±3.0	43	15.3 ±4.5	137	12.3 ±2.0

Note: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

Source: 1990- 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 6
Number and Rate of Infant Deaths by Race,
Michigan and United States Residents, 1989 - 2018

Year	United States						Michigan					
	All Races		White		Black		All Races		White		Black	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1989	39,655	9.8	25,794	8.0	12,527	18.6	1,645	11.1	946	8.2	672	22.5
1990	38,351	9.2	24,883	7.6	12,290	18.0	1,638	10.7	930	7.9	689	21.6
1991	36,766	8.9	23,657	7.3	11,994	17.6	1,554	10.4	857	7.5	683	21.7
1992	34,628	8.5	22,164	6.9	11,348	16.8	1,460	10.2	781	7.0	656	22.1
1993	33,466	8.4	21,497	6.8	10,887	16.5	1,319	9.5	770	7.1	530	18.8
1994	31,710	8.0	20,504	6.6	10,072	15.8	1,184	8.6	670	6.3	495	18.2
1995	29,583	7.6	19,490	6.3	9,118	15.1	1,110	8.3	655	6.2	432	17.3
1996	28,487	7.3	18,761	6.1	8,730	14.7	1,072	8.0	627	6.0	421	17.5
1997	28,045	7.2	18,539	6.0	8,496	14.2	1,085	8.1	640	6.1	425	17.6
1998	28,371	7.2	18,561	6.0	8,726	14.3	1,091	8.2	660	6.3	405	16.8
1999	27,953	7.1	18,069	5.8	8,832	14.6	1,071	8.0	616	5.9	428	17.9
2000	28,035	6.9	18,144	5.7	8,771	14.0	1,112	8.2	637	6.0	437	18.2
2001	27,568	6.8	17,955	5.7	8,498	14.0	1,066	8.0	635	6.1	398	16.9
2002	28,034	7.0	18,369	5.8	8,524	14.4	1,054	8.1	611	6.0	410	18.4
2003	28,025	6.9	18,440	5.7	8,402	14.0	1,112	8.5	680	6.7	391	17.5
2004	27,936	6.8	18,231	5.7	8,494	13.3	984	7.6	527	5.2	388	17.3
2005	28,440	6.9	18,514	5.7	8,695	13.7	1,013	7.9	549	5.5	400	17.9
2006	28,527	6.7	18,403	5.6	8,858	13.3	940	7.4	534	5.4	339	14.8
2007	29,138	6.8	18,807	5.6	8,944	13.2	997	8.0	549	5.8	368	16.5
2008	28,059	6.6	18,164	5.6	8,543	12.7	894	7.4	496	5.4	332	14.6
2009	26,412	6.4	16,817	5.3	8,312	12.6	881	7.5	470	5.4	346	15.5
2010	24,548	6.1	15,933	5.2	7,388	11.6	817	7.1	462	5.5	312	14.2
2011	23,910	6.1	15,453	5.1	7,058	11.2	749	6.6	411	4.9	300	13.7
2012	23,654	6.0	15,264	5.1	6,896	10.9	783	6.9	455	5.5	291	13.5
2013	23,440	6.0	15,125	5.0	7,123	11.2	799	7.0	473	5.7	290	13.1
2014	23,215	5.8	14,883	5.1	7,076	10.4	773	6.8	452	5.3	284	13.3
2015	23,455	5.9	14,834	5.0	7,289	10.6	770	6.8	423	5.1	311	14.5
2016	23,161	5.9	14,568	4.9	7,229	10.6	747	6.6	401	4.8	294	13.7
2017	22,341	5.8	13,593	4.8	6,598	10.0	763	6.8	393	4.9	320	14.6
2018	---	---	---	---	---	---	723	6.6	363	4.5	326	15.1

Note: Rates are per 1,000 live births.

Source: 1989 - 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

2007-2012 NCHS, Linked Birth / Infant Death Records; 2007-2017 on CDC WONDER On-line Database. Accessed at <http://wonder.cdc.gov/lbd-current.html> on Jan 14, 2019. Infant Mortality in the United States, 2017, NVSR Vol 68, No. 10. "Deaths: Final Data for 2006", Vol 57, No. 14, April 2009; and [National Center for Health Statistics, historical data](#).

Table 7-A
Number of Hispanic and Middle Easterner Infant Deaths by Selected County and Michigan
Michigan Residents, 2008 - 2018

Hispanic Infant Deaths

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	74	74	57	44	74	80	61	77	68	58	48
Hispanic Infant Death Rates	8.5	9.0	7.0	5.6	9.7	10.3	8.0	9.9	8.8	7.6	6.5
Allegan	2	1	-	1	-	3	-	-	1	2	-
Genesee	1	1	1	2	-	-	1	2	4	3	3
Ingham	2	8	1	1	2	4	2	1	2	2	2
Kalamazoo	3	-	4	-	2	2	1	4	1	1	-
Kent	16	6	8	12	10	6	7	13	10	4	9
Lenawee	-	2	1	1	2	5	2	-	1	1	1
Macomb	2	4	-	-	1	3	-	5	2	3	3
Muskegon	2	3	-	1	1	5	-	2	2	1	3
Oakland	9	9	6	7	8	8	4	9	1	5	7
Ottawa	3	4	1	2	4	8	2	4	4	3	2
Saginaw	4	5	2	2	5	4	4	2	8	-	4
Van Buren	2	-	1	-	2	1	2	3	1	-	2
Washtenaw	3	4	2	-	2	1	-	-	1	-	1
Wayne	15	13	15	8	16	17	13	21	13	18	6
All Other Counties	10	14	15	7	19	13	23	11	17	15	5

Table 7-B
Number of Hispanic and Middle Easterner Infant Deaths by Selected County and Michigan
Michigan Residents, 2008 - 2018 (Continued)

Middle Easterner Infant Deaths

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	34	22	24	24	26	36	21	26	30	22	31
Arabic Infant Death Rates	8.5	5.8	5.7	5.9	6.2	7.8	4.4	5.3	6.0	4.1	6.0
Macomb	7	6	5	2	5	6	3	2	6	4	6
Oakland	8	2	6	3	5	7	3	4	5	2	3
Wayne	16	10	10	15	14	17	9	16	13	14	17
All Other Counties	3	4	3	4	2	6	6	4	6	2	5

Note: The increase in hispanic mortality incidence reflects a change in death certificate reporting. Michigan's death certificate was revised in 2003 to comply with a change in the National Standard death certificate and a separate indicator of hispanic ancestry was introduced. In 2005, the hispanic ancestry indicator was used in tabulations for the first time, resulting in the identification of hispanic deaths that might otherwise have been missed. The increase in hispanic death cases between 2004 and 2005 should not be considered as a change in trend.

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

Source: 2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

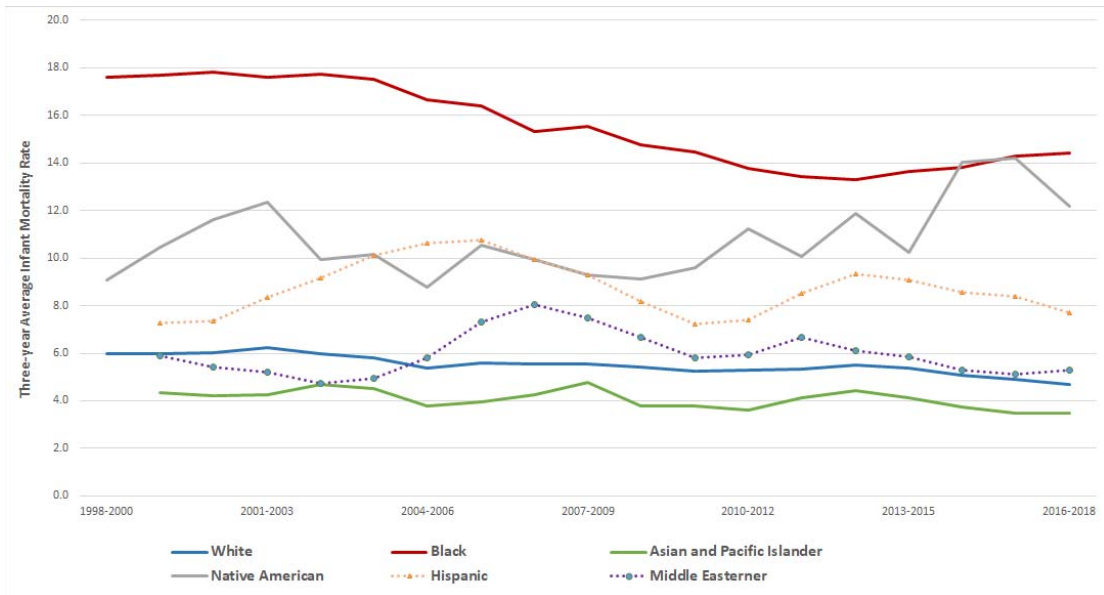
Table 8
Three-year Average Infant Death Rates by Race and Ancestry,
Michigan Residents, 1999 - 2018

Trends	Race				Ancestry	
	White	Black	Native American	Asian and Pacific Islander	Hispanic	Middle Easterner
1999-2001	6.0	17.7	10.5	4.3	7.3	5.9
2000-2002	6.0	17.8	11.6	4.2	7.4	5.4
2001-2003	6.2	17.6	12.4	4.2	8.3	5.2
2002-2004	6.0	17.7	10.0	4.7	9.2	4.7
2003-2005	5.8	17.5	10.1	4.5	10.1	4.9
2004-2006	5.4	16.6	8.8	3.8	10.6	5.8
2005-2007	5.6	16.4	10.6	4.0	10.8	7.3
2006-2008	5.6	15.3	9.9	4.2	9.9	8.1
2007-2009	5.6	15.5	9.3	4.8	9.3	7.5
2008-2010	5.4	14.8	9.1	3.8	8.2	6.7
2009-2011	5.2	14.5	9.6	3.8	7.2	5.8
2010-2012	5.3	13.8	11.2	3.6	7.4	5.9
2011-2013	5.3	13.4	10.1	4.1	8.5	6.7
2012-2014	5.5	13.3	11.9	4.4	9.4	6.1
2013-2015	5.4	13.6	10.2	4.1	9.1	5.8
2014-2016	5.1	13.8	14.0	3.7	8.6	5.2
2015-2017	4.9	14.3	14.2	3.5	8.4	5.1
2016-2018	4.7	14.4	12.2	3.5	7.7	5.3

Note: Rates are per 1,000 live births.

Source: 1970 - 2018 Michigan Resident Birth and Death Files, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Figure 3
Three-year Average Infant Mortality Rates by Race and Ancestry,
Michigan Residents, 1998-2018



Note: Rates are infant deaths per 1,000 live births.

Source: 1980-2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 9
Infant, Hebdomadal, Fetal and Perinatal Death Rates
by Specified Race and Ancestry
Michigan Residents, 2018

Race/Ancstry	Live Births	Infant Deaths		Hebdomadal Deaths		Fetal Deaths		Perinatal Deaths	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
All Races	110,093	723	6.6 ±0.5	396	3.6 ±0.4	657	5.9 ±0.5	1,053	9.5 ±0.6
White	80,003	363	4.5 ±0.5	199	2.5 ±0.3	397	4.9 ±0.5	596	7.4 ±0.6
Black	21,643	326	15.1 ±1.6	181	8.4 ±1.2	213	9.7 ±1.3	394	18.0 ±1.8
American Indian	627	2	*	1	*	3	*	4	*
Asian and Pacific Islander	4,545	15	3.3 ±1.7	7	1.5 ±1.1	20	4.4 ±1.9	27	5.9 ±2.2
Middle Easterner	5,210	31	6.0 ±2.1	21	4.0 ±1.7	25	4.8 ±1.9	46	8.8 ±2.5
Hispanic	7,421	48	6.5 ±1.8	23	3.1 ±1.3	44	5.9 ±1.7	67	9.0 ±2.1

Note: Hebdomadal deaths are deaths to infants ages zero to six days. Perinatal deaths are hebdomadal plus fetal deaths.

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. 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 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 standards of precision or reliability.

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

Source: 2018 Michigan Resident Infant Death File, 2018 Michigan Fetal Death Registry
 Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 10
Infant, Hebdomadal, Fetal and Perinatal Death Rates
Michigan Residents, 2007-2018

Year	Live Births	Infant Deaths		Hebdomadal Deaths		Fetal Deaths		Perinatal Deaths	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
2007	125,172	997	8.0	553	4.4	727	5.8	1,280	10.2
2008	121,231	894	7.4	501	4.1	775	6.4	1,276	10.5
2009	117,309	881	7.5	478	4.1	688	5.8	1,166	9.9
2010	114,717	817	7.1	475	4.1	640	5.5	1,115	9.7
2011	114,159	749	6.6	414	3.6	627	5.5	1,041	9.1
2012	112,708	783	6.9	459	4.1	587	5.2	1,046	9.2
2013	113,732	799	7.0	431	3.8	622	5.4	1,053	9.2
2014	114,460	773	6.8	417	3.6	616	5.4	1,033	9.0
2015	113,211	770	6.8	400	3.5	542	4.8	942	8.3
2016	113,374	747	6.6	393	3.5	618	5.4	1,011	8.9
2017	111,507	763	6.8	442	4.0	605	5.4	1,047	9.3
2018	110,093	723	6.6	396	3.6	657	5.9	1,053	9.5

Note: Hebdomadal deaths are deaths to infants ages zero to six days.
Perinatal deaths are hebdomadal plus fetal deaths.

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.

In 2017, hospital audits found additional fetal deaths. The number of fetal deaths between 2007-2015 will not match what was reported in the past.

Source: 2018 Michigan Resident Infant Death File, 2018 Michigan Fetal Death Registry
Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 11
Number of Infant Deaths, Live Births and Infant Death Rates
by Selected Characteristics of Newborn and of Mother
for Michigan Residents, 2018

Characteristics of Newborn	Infant Deaths	Live Births	Infant Death Rate
Sex of Infant	723	110,093	6.6 ±0.5
Male	423	56,351	7.5 ±0.7
Female	299	53,739	5.6 ±0.6
Birthweight	723	110,093	6.6 ±0.5
1,499 Grams or Less	382	1,531	249.5 ±22.1
1,500 - 2,499 Grams	104	7,819	13.3 ±2.5
2,500 Grams or More	233	100,707	2.3 ±0.3
Plurality	723	110,093	6.6 ±0.5
Single Birth	606	106,027	5.7 ±0.5
Multiple Birth	112	4,064	27.6 ±5.0
Characteristics of Mother	Infant Deaths	Live Births	Infant Death Rate
Age of Mother	723	110,093	6.6 ±0.5
< 20	52	5,087	10.2 ±2.8
20 - 29	398	56,853	7.0 ±0.7
30 - 39	246	45,289	5.4 ±0.7
40 +	22	2,844	7.7 ±3.2
Marital Status	723	110,093	6.6 ±0.5
Married	284	64,763	4.4 ±0.5
Unmarried	434	45,330	9.6 ±0.9
Level of Prenatal Care	723	110,093	6.6 ±0.5
Adequate	353	74,381	4.7 ±0.5
Intermediate	219	25,552	8.6 ±1.1
Inadequate	145	10,144	14.3 ±2.3

Table 11
Number of Infant Deaths, Live Births and Infant Death Rates
by Selected Characteristics of Newborn and of Mother
for Michigan Residents, 2018

Exposure to Tobacco	Infant Deaths	Live Births	Infant Death Rate
Smoked During Pregnancy	723	110,093	6.6 ±0.5
No	581	95,356	6.1 ±0.5
Yes	142	14,737	9.6 ±1.6
Secondhand Smoke During Pregnancy	723	110,093	6.6 ±0.5
No	550	93,011	5.9 ±0.5
Yes	103	12,337	8.3 ±1.6
Smoked or Secondhand Smoke During Pregnancy	723	110,093	6.6 ±0.5
No	485	86,155	5.6 ±0.5
Yes	180	19,830	9.1 ±1.3
History of smoking	723	110,093	6.6 ±0.5
No	539	91,006	5.9 ±0.5
Yes	152	18,331	8.3 ±1.3

Note: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence. Records with selected characteristics unknown are included in total only. Level of prenatal care is according to the Kessner Index which 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.)

Source: 2018 Michigan Resident Birth-Death Matched File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 12
Number of Infant Deaths by Cause of Death,
1980-2018, Michigan Residents

Causes of Death	1980	1985	1990	1995	2000	2005	2010	2013	2014	2015	2016	2017	2018
All Causes	2,280	1,575	1,638	1,110	1,112	1,013	817	799	773	770	747	763	723
Certain gastrointestinal diseases	7	6	6	6	10	12	9	5	6	7	3	5	4
Septicemia	8	6	17	2	5	10	4	2	8	3	4	4	4
Remainder of infectious and parasitic diseases	5	11	18	12	7	6	3	3	5	4	4	3	4
Meningitis	13	7	11	2	3	3	5	1	1	-	3	1	1
Pneumonia and Influenza	27	11	26	20	20	6	8	7	7	5	2	9	9
Congenital anomalies	321	330	300	204	192	197	184	160	139	152	149	141	122
Newborn affected by maternal complications of pregnancy	72	52	108	47	45	67	40	52	42	45	36	32	27
Newborn affected by complications of placenta, cord and membranes	50	34	24	33	36	28	26	30	28	31	28	30	19
Disorders relating to short gestation and unspecified low birthweight	145	150	251	219	262	219	198	176	174	149	161	196	188
Birth trauma	45	14	16	8	2	1	-	-	-	-	1	-	-
Intrauterine hypoxia and birth asphyxia	69	43	25	11	24	19	20	8	7	11	5	15	6
Respiratory distress syndrome	206	176	164	82	65	57	23	20	19	14	18	22	13
Other respiratory conditions	199	132	120	63	65	52	27	20	22	17	21	13	19
Infections specific to the perinatal period	35	32	33	23	35	42	27	22	24	21	23	28	16
Neonatal hemorrhage	38	10	8	13	28	23	12	9	18	16	9	9	12
All other and ill-define conditions originating in the perinatal period	169	168	73	47	39	46	27	47	28	39	31	24	24
Sudden infant death syndrome	260	228	257	148	99	47	44	31	35	33	45	32	34
Accidents and adverse effects	39	35	38	40	55	68	66	90	89	97	82	82	83
Homicides	7	8	17	12	13	15	13	5	13	6	9	14	10
All other causes	136	122	126	118	107	95	81	111	108	120	113	103	128

Note: Causes of death are coded using the 9th and 10th revisions to the International Classification of Diseases. The ICD-9 and ICD-10 codes are grouped into broader categories for the causes listed in this table in order to classify these selected causes of death. See [Selected Causes of Groups for Infant Mortality](#) for details of grouping and comparability.

Source: 1980-2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 13
Three-year Moving Average Infant Deaths Rates per 10,000 Live Births, by Cause of Death,
1980-2018, Michigan Residents

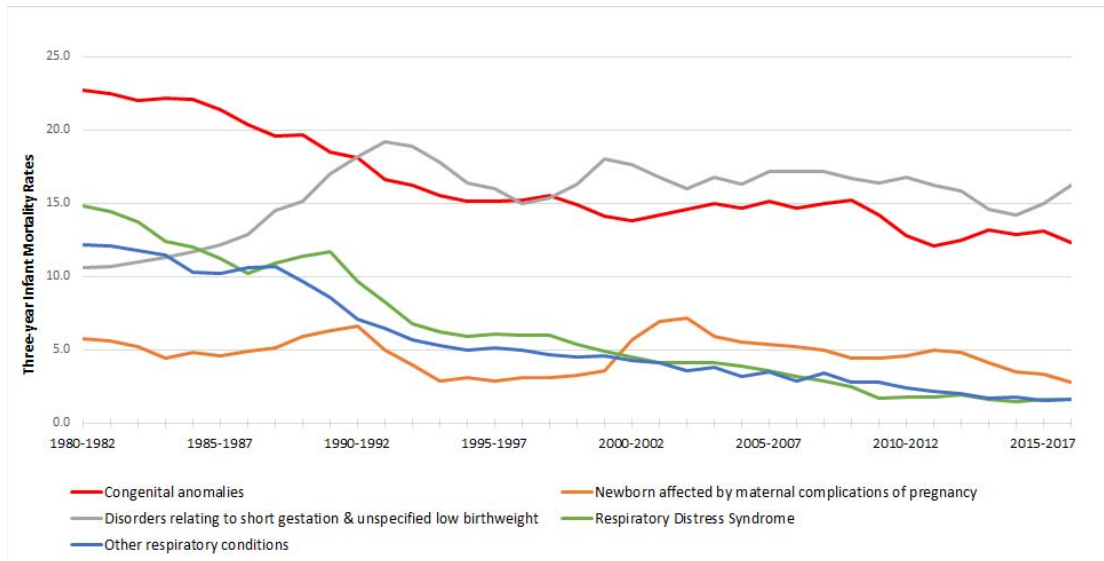
Causes of Death	1980 to 1982	1985 to 1987	1990 to 1992	1995 to 1997	2000 to 2002	2005 to 2007	2010 to 2012	2011 to 2013	2012 to 2014	2013 to 2015	2014 to 2016	2015 to 2017	2016 to 2018
Total Infant Deaths	126.8	112.4	104.2	81.5	81.0	77.6	68.8	68.4	69.1	68.6	67.1	67.4	66.7
Certain gastrointestinal diseases	.6	.6	.6	.6	.6	.9	.8	.7	.5	.5	.5	.4	.4
Septicemia	.4	.5	.9	.4	.5	.6	.4	.3	.5	.4	.4	.3	.4
Remainder of infectious and parasitic diseases	.4	.8	1.1	.6	.5	.5	.2	.2	.3	.4	.4	.3	.3
Meningitis	.9	.4	.4	*	*	.3	.2	*	*	*	*	*	*
Pneumonia and Influenza	1.4	1.1	1.8	1.1	1.1	.5	.6	.5	.6	.6	.4	.5	.6
Congenital anomalies	22.7	21.4	18.1	15.1	13.8	15.1	12.8	12.1	12.5	13.2	12.9	13.1	12.3
Newborn affected by maternal complications of pregnancy	5.8	4.6	6.6	2.9	5.7	5.4	4.6	5.0	4.8	4.1	3.6	3.3	2.8
Newborn affected by complications of placenta, cord and membranes	3.2	2.6	2.1	2.9	2.4	2.1	2.1	2.2	2.5	2.6	2.6	2.6	2.3
Disorders relating to short gestation and unspecified low birthweight	10.6	12.2	18.2	16.0	17.6	17.2	16.8	16.2	15.8	14.6	14.2	15.0	16.3
Birth trauma	2.5	.7	.7	.4	.2	*	*	*	-	-	*	*	*
Intrauterine hypoxia and birth asphyxia	4.5	2.4	1.6	1.2	1.6	.9	1.2	.9	.9	.8	.7	.9	.8
Respiratory distress syndrome	14.8	11.2	9.7	6.1	4.5	3.6	1.8	1.8	1.9	1.6	1.5	1.6	1.6
Other respiratory conditions	12.2	10.2	7.1	5.1	4.3	3.5	2.4	2.2	2.0	1.7	1.8	1.5	1.6
Infections specific to the perinatal period	2.2	2.3	2.2	2.1	3.0	2.9	2.0	1.9	2.0	2.0	2.0	2.1	2.0
Neonatal hemorrhage	2.0	.7	.6	.8	1.3	1.3	1.0	.9	1.1	1.3	1.3	1.0	.9
All other and ill-define conditions originating in the perinatal period	13.3	12.1	5.1	3.7	3.1	4.3	2.9	3.5	3.2	3.3	2.9	2.8	2.4
Sudden infant death syndrome	16.6	17.1	16.6	10.8	4.3	3.8	2.7	2.3	2.4	2.9	3.3	3.3	3.3
Accidents and adverse effects	2.8	2.1	2.4	2.7	4.6	5.7	7.1	7.8	8.0	8.1	7.9	7.7	7.4
Homicides	.4	.9	.9	.9	.8	.8	1.1	.9	.9	.7	.8	.9	1.0
All other causes	9.7	8.6	7.6	7.9	8.3	8.3	7.9	8.8	9.1	9.9	10.0	9.9	10.3

Note: For purposes of comparing small values, these rates are calculated at deaths per **10,000** live births; in most Michigan Community Health infant death reports, infant deaths are per **1,000**. **Causes of death** are coded using the 9th and 10th revisions to the International Classification of Diseases. The ICD-9 and ICD-10 codes are grouped into broader categories for the causes listed in this table in order to classify these selected causes of death. See [Selected Causes of Groups for Infant Mortality](#) for details of grouping and comparability.

An asterisk (*) indicates the rate does not meet standards of reliability or precision. A dash (-) indicates quantity zero.

Source: 1980-2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Figure 4
Infant Mortality Rates by Leading Causes of Infant Deaths,
Michigan Residents, 1980-2018



Note: For purposes of comparing small values, these rates are calculated at deaths per **10,000** live births; in most Michigan Community Health infant death reports, infant deaths are per **1,000**.

Causes of death are coded using the 9th and 10th revisions to the International Classification of Diseases. The ICD-9 and ICD-10 codes are grouped into broader categories for the causes listed in this table in order to classify these selected causes of death. See [Selected Causes of Groups for Infant Mortality](#) for details of grouping and comparability.

An asterisk (*) indicates the rate does not meet standards of reliability or precision. A dash (-) indicates quantity zero.

Source: 1980-2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 14-A
Number of Infant Deaths by Cause of Death,
2014-2018, Michigan Residents

Dollfus Primary Cause of Death Group

Cause of Death Group	Number of Deaths					Percent of Deaths				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total	773	770	747	763	723	100.0	100.0	100.0	100.0	100.0
Prematurity & related conditions	247	223	228	255	248	32.0	29.0	30.5	33.5	34.3
Congenital anomalies	139	152	151	141	122	18.0	19.7	20.2	18.5	16.9
Sudden Infant Death Syndrome (SIDS)	35	33	45	32	34	4.5	4.3	6.0	4.2	4.7
Obstetric conditions	47	52	39	38	29	6.1	6.8	5.2	5.0	4.0
Birth asphyxia	7	11	5	15	6	0.9	1.4	0.7	2.0	0.8
Perinatal infections	40	36	37	46	28	5.2	4.7	5.0	6.0	3.9
Other infections	29	25	17	22	21	3.8	3.2	2.3	2.9	2.9
External causes	105	104	98	103	98	13.6	13.5	13.1	13.5	13.6
Other causes	124	134	127	110	137	16.0	17.4	17.0	14.4	18.9

Table 14-B Dollfus Subcategory Cause of Death Group

Dollfus Subcategory	Number of Deaths					Percent of Deaths				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total	773	770	747	763	723	100.0	100.0	100.0	100.0	100.0
Short gestation & low birthweight	174	149	161	196	188	22.5	19.4	21.6	25.7	26.0
Birth trauma, neonatal hemorrhage, & hematological disorders	18	15	10	8	11	2.3	1.9	1.3	1.0	1.5
RDS, interstitial emphysema, pulmonary hemorrhage, & atelectasis	35	26	29	29	26	4.5	3.4	3.9	3.8	3.6
Chronic respiratory distress syndrome, & respiratory diseases originating in the perinatal period	1	3	5	4	5	0.1	0.4	0.7	0.5	0.7
Necrotizing enterocolitis	11	17	14	11	8	1.4	2.2	1.9	1.4	1.1
Neonatal cardiac failure & other cardiovascular disorders originating in the perinatal period	8	13	9	7	10	1.0	1.7	1.2	0.9	0.7
Congenital malformations, deformations, & chromosomal anomalies, congenital disorders	139	152	151	141	122	18.0	19.7	20.2	18.5	16.9
Sudden Infant Death Syndrome	35	33	45	32	34	4.5	4.3	6.0	4.2	4.7
Incompetent cervix, premature rupture of membranes	20	26	28	26	23	2.6	3.4	3.7	3.4	3.2
Multiple pregnancy	13	12	3	–	–	1.7	1.6	0.4	–	–
Placental previa, separation and placental abnormalities	14	14	8	12	6	1.8	1.8	1.1	1.6	0.8
Intrauterine hypoxia, birth asphyxia	7	11	5	15	6	0.9	1.4	0.7	2.0	0.8
Streptococcal meningitis	1	–	1	1	1	0.1	–	0.1	0.1	0.1
Maternal renal and urinary tract diseases, maternal infections, and parasitic diseases	1	–	–	1	–	0.1	–	–	0.1	–
Chorioamnionitis	12	13	10	15	10	1.6	1.7	1.3	2.0	1.4
Bacterial Sepsis, congenital pneumonia, and other infections specific to the perinatal period	26	23	26	29	17	3.4	3.0	3.5	3.8	2.3
Other infectious and parasitic diseases	18	13	11	12	12	2.3	1.7	1.5	1.6	1.7
Bacterial haemophilus and pneumococcal meningitis	1	–	2	–	–	0.1	–	0.3	–	–
Influenza and pneumonia and other respiratory infections	10	12	4	10	9	1.3	1.6	0.5	1.3	1.2
Accidents involving transportation	2	2	3	5	1	0.3	0.3	0.4	0.7	0.1
Accidents involving falls	–	–	–	–	–	–	–	–	–	–
Accidental drowning or ingestion causing obstruction to the airways	1	1	3	4	4	0.1	0.1	0.4	0.5	0.6
Accidents involving suffocation or strangulation in bed	75	73	60	54	70	9.7	9.5	8.0	7.1	9.7
Assault and other intentional injuries	13	6	9	13	10	1.7	0.8	1.2	1.7	1.4
Injuries with undetermined intent or unspecified cause	3	1	7	8	5	0.4	0.1	0.9	1.0	1.4
Other unintentional injuries	11	21	16	19	8	1.4	2.7	2.1	2.5	1.1
Neoplasms, anemias, and other conditions not otherwise specified	124	134	127	110	137	16.0	17.4	17.0	14.4	18.9

Note: The categories listed in this table conform to "[Infant Mortality: Development of a Proposed Update to the Dollfus Classification of Infant Deaths](#)" (Nakamura, et. al.), with the exception of certain external causes. Due to the high number of accidental suffocations of infants in bed, the DVRHS lists "Accidents involving suffocation or strangulation in bed" as a separate category.

Source: 2014-2018 Michigan Resident Infant Death File, Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services.

Table 15-A
Sudden Infant Death Syndrome (SIDS), Accidental Suffocation & Strangulation in Bed (ASSB)
and
Sudden Unexpected Infant Deaths (SUID),
Michigan Residents 1989-2018

Year	Number				Rate Per 10,000 Live Births		
	SIDS	ASSB	Unknown & unspecified cause	SUID	SIDS	ASSB	SUID
1989	254	10	1	265	17.1	0.7	17.9
1990	256	11	2	269	16.7	0.7	17.6
1991	240	13	3	256	16.1	0.9	17.1
1992	243	7	4	254	16.9	0.5	17.7
1993	210	10	10	230	15.0	0.7	16.5
1994	167	10	8	185	12.1	0.7	13.4
1995	148	15	5	168	11.0	1.1	12.5
1996	149	8	5	162	11.2	0.6	12.2
1997	138	9	13	160	10.3	0.7	12.0
1998	148	11	13	172	11.1	0.8	12.9
1999	114	12	9	135	8.5	0.9	10.1
2000	99	28	6	133	7.3	2.1	9.8
2001	96	39	1	136	7.2	2.9	10.2
2002	85	32	10	127	6.6	2.5	9.8
2003	49	33	14	96	3.7	2.5	7.3
2004	51	49	10	110	3.9	3.8	8.5
2005	47	52	10	109	3.7	4.1	8.5
2006	51	52	9	112	4.0	4.1	8.8
2007	46	56	8	110	3.7	4.5	8.8
2008	48	52	2	102	4.0	4.3	8.4
2009	45	63	4	112	3.8	5.4	9.5
2010	44	52	7	103	3.8	4.5	9.0
2011	33	69	13	115	2.9	6.0	10.1
2012	15	75	16	106	1.3	6.7	9.4
2013	31	72	14	117	2.7	6.3	10.3
2014	35	76	14	125	3.1	6.6	10.9
2015	33	73	24	125	2.9	6.5	11.0
2016	45	60	13	118	4.0	5.3	10.4
2017	32	54	13	99	2.9	4.8	8.9
2018	34	70	32	136	3.1	6.4	12.4

Table 15-B
Accidental Suffocation & Strangulation in Bed and Total Accidents,
Michigan Residents, 1989-2018

Year	ASSB	Other Accidents & adverse effects	Total Accidents	ASSB Percent of Accidents
1989	10	37	47	21.3%
1990	11	27	38	28.9%
1991	13	25	38	34.2%
1992	7	22	29	24.1%
1993	10	35	45	22.2%
1994	10	27	37	27.0%
1995	15	25	40	37.5%
1996	8	28	36	22.2%
1997	9	24	33	27.3%
1998	11	24	35	31.4%
1999	12	24	36	33.3%
2000	28	27	55	50.9%
2001	39	18	57	68.4%
2002	32	40	72	44.4%
2003	33	31	64	51.6%
2004	49	21	70	70.0%
2005	52	16	68	76.5%
2006	52	19	71	73.2%
2007	56	21	77	72.7%
2008	52	10	62	83.9%
2009	63	11	74	85.1%
2010	52	13	65	80.0%
2011	69	14	83	83.1%
2012	75	17	92	81.5%
2013	72	18	90	80.0%
2014	76	14	90	84.4%
2015	73	24	97	75.3%
2016	60	22	82	73.2%
2017	54	28	82	65.9%
2018	70	13	83	84.4%

Notes: Causes of death are coded using the 9th and 10th revisions to the International Classification of Diseases. The ICD-9 and ICD-10 codes are grouped into broader categories for the causes listed in this table in order to classify these selected causes of death. Before 1999, causes of death were classified according to the following ICD-9 codes: SIDS: 798.0, ASSB: E913.0, Unknown: 799.9. On or after 1999, deaths were classified according to the following ICD-10 codes: SIDS: R95, ASSB: W75 and Unknown: R99.

After 1996, SUID death-scene guidelines and subsequent reporting instructions have shifted how SIDS and ASSB deaths were coded. As a result, some deaths that may have been attributed to SIDS before 1999 were classified as ASSB after 1999.

For further information on sudden unexplained infant deaths, see the Sudden Unexpected Infant Death Case Registry. (www.cdc.gov/sids/index.htm)

Table 16
Three-year Average Mortality Rates by Race
Sudden Infant Death Syndrome (SIDS), Accidental Suffocation & Strangulation in Bed (ASSB)
and Sudden Unexpected Infant Deaths (SUID),
Michigan Residents 1989-2018

Trend	All			White			Black		
	SIDS	ASSB	SUIDS	SIDS	ASSB	SUIDS	SIDS	ASSB	SUIDS
1989-1991	16.6	0.8	17.5	13.4	0.5	14.1	27.1	1.7	29.0
1990-1992	16.6	0.7	17.5	13.3	0.6	14.1	28.1	1.1	29.3
1991-1993	16.0	0.7	17.1	12.8	0.7	13.8	28.2	0.8	29.5
1992-1994	14.7	0.6	15.9	11.6	0.6	12.7	27.3	0.8	28.7
1993-1995	12.8	0.9	14.2	9.7	0.6	10.9	25.9	1.7	28.3
1994-1996	11.4	0.8	12.7	8.2	0.6	9.3	26.1	1.6	28.1
1995-1997	10.8	0.8	12.2	7.7	0.7	9.0	24.9	1.2	26.6
1996-1998	10.9	0.7	12.3	7.7	0.6	9.0	24.3	1.1	26.4
1997-1999	10.0	0.8	11.7	7.3	0.6	8.5	21.7	1.7	24.9
1998-2000	9.0	1.3	10.9	6.4	0.9	7.7	19.7	3.1	24.1
1999-2001	7.7	2.0	10.0	5.3	1.6	7.2	18.3	3.8	22.8
2000-2002	7.0	2.5	9.9	5.0	1.9	7.3	16.3	5.6	22.5
2001-2003	5.8	2.6	9.1	4.5	2.2	7.2	12.8	5.3	19.4
2002-2004	4.7	2.9	8.5	3.9	2.2	6.9	9.2	7.0	17.9
2003-2005	3.8	3.5	8.1	3.1	2.9	6.7	7.3	6.7	15.6
2004-2006	3.9	4.0	8.6	3.0	3.0	6.7	7.7	8.9	18.0
2005-2007	3.8	4.2	8.7	3.2	3.1	6.7	6.4	10.1	18.2
2006-2008	3.9	4.3	8.7	3.5	2.9	6.7	5.3	10.8	17.4
2007-2009	3.8	4.7	8.9	3.6	3.0	6.8	4.9	11.9	18.1
2008-2010	3.9	4.7	9.0	3.6	3.1	7.0	4.9	11.0	17.0
2009-2011	3.5	5.3	9.5	3.2	3.5	7.1	5.1	12.8	19.5
2010-2012	2.7	5.7	9.5	2.5	3.9	7.3	3.7	13.7	18.6
2011-2013	2.3	6.3	9.9	2.2	4.3	7.6	2.9	15.7	20.6
2012-2014	2.4	5.8	9.4	2.4	3.7	6.9	2.5	15.1	19.2
2013-2015	2.9	5.7	10.1	2.9	4.0	8.0	3.4	13.3	20.2
2014-2016	3.3	6.1	10.9	3.0	4.5	8.5	4.7	13.8	22.6
2015-2017	3.3	5.5	10.3	2.7	3.7	7.4	5.9	13.3	22.7
2016-2018	3.3	5.5	10.5	2.7	3.7	7.4	6.5	13.2	24.1

Notes: Rates are per 10,000 live births. Causes of death are coded using the 9th and 10th revisions to the International Classification of Diseases. The ICD-9 and ICD-10 codes are grouped into broader categories for the causes listed in this table in order to classify these selected causes of death. Before 1999, causes of death were classified according to the following ICD-9 codes: SIDS: 798.0, ASSB: E913.0, Unknown: 799.9. On or after 1999, deaths were classified according to the following ICD-10 codes: SIDS: R95, ASSB: W75 and Unknown: R99. After 1996, SUID death-scene guidelines and subsequent reporting instructions shifted how SIDS and ASSB deaths were coded. As a result, some deaths that may have been attributed to SIDS before 1999 were classified as ASSB after 1999.

Table 17-A
Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	7.6±0.3	7.3±0.3	7.1±0.3	6.9±0.3	6.8±0.3	6.9±0.3	6.9±0.3	6.7±0.3	6.7±0.3	6.7±0.3
Alcona	*	*	*	*	*	*	*	*	*	*
Alger	*	*	*	-	-	-	-	-	-	-
Allegan	6.7±2.4	4.2±1.9	4.5±2.0	4.2±2.0	5.0±2.2	5.4±2.3	6.8±2.5	5.7±2.3	4.6±2.1	3.6±1.8
Alpena	*	*	7.3±5.8	*	*	*	*	*	*	*
Antrim	*	11.1±8.2	10.9±8.0	10.0±8.0	*	*	*	-	-	*
Arenac	*	*	*	*	16.2±12.9	16.5±13.1	*	*	*	*
Baraga	*	*	-	-	*	*	*	*	*	*
Barry	7.4±3.7	8.9±4.1	7.9±4.0	6.8±3.7	4.9±3.2	4.8±3.1	3.2±2.5	*	3.6±2.7	4.6±3.0
Bay	6.6±2.6	7.9±2.9	8.3±3.0	7.7±3.0	5.3±2.5	5.7±2.6	6.1±2.7	5.4±2.6	4.5±2.4	4.0±2.2
Benzie	*	*	*	*	*	*	*	*	*	*
Berrien	8.9±2.4	7.8±2.2	8.3±2.3	8.1±2.3	8.3±2.4	7.8±2.3	6.9±2.2	6.4±2.2	5.2±2.0	6.7±2.2
Branch	3.5±2.8	4.9±3.4	6.3±3.9	7.8±4.4	7.0±4.1	6.9±4.1	6.8±4.0	8.1±4.4	8.7±4.6	9.6±4.7
Calhoun	11.5±2.9	10.2±2.8	10.7±2.9	8.7±2.6	7.2±2.3	6.0±2.1	6.8±2.3	5.8±2.1	7.2±2.4	6.8±2.3
Cass	7.8±4.2	7.8±4.4	7.3±4.3	6.6±4.3	7.4±4.6	8.5±4.8	7.3±4.3	7.3±4.3	6.2±4.0	9.8±5.1
Charlevoix	*	*	*	*	*	*	*	*	*	*
Cheboygan	*	*	*	-	-	-	*	*	*	9.7±7.7
Chippewa	*	*	5.3±4.2	7.5±5.2	7.5±5.2	5.6±4.5	*	*	*	*
Clare	5.8±4.7	*	*	*	*	*	*	*	6.1±4.9	10.3±6.3
Clinton	4.7±2.8	4.4±2.7	4.0±2.6	3.8±2.5	2.5±2.0	3.8±2.5	6.3±3.2	6.5±3.2	5.2±2.8	2.4±1.9
Crawford	17.5±12.9	*	*	*	*	*	*	*	15.7±12.5	*
Delta	6.1±4.5	*	5.3±4.2	6.4±4.7	5.4±4.3	7.1±4.9	*	5.4±4.3	*	5.9±4.7
Dickinson	*	8.3±6.6	*	*	*	*	*	*	*	*
Eaton	5.3±2.4	5.9±2.5	5.6±2.5	5.4±2.4	6.1±2.6	6.0±2.6	7.0±2.8	6.7±2.7	6.0±2.5	4.3±2.2
Emmet	*	6.3±5.0	*	*	*	*	*	*	*	*
Genesee	9.0±1.4	7.8±1.4	7.8±1.4	7.1±1.3	8.0±1.4	8.0±1.4	8.5±1.5	9.1±1.5	9.0±1.5	8.0±1.5
Gladwin	*	*	*	*	*	*	11.2±7.3	9.7±6.7	*	*
Gogebic	*	*	*	*	-	*	*	16.1±12.8	*	*
Grand Traverse	6.9±3.0	5.6±2.8	3.3±2.1	2.9±2.0	*	3.5±2.2	5.3±2.7	7.5±3.2	6.5±3.0	5.1±2.7
Gratiot	7.1±4.4	8.1±4.7	8.1±4.8	6.3±4.3	4.8±3.8	5.8±4.2	6.6±4.6	5.1±4.0	*	*
Hillsdale	5.9±3.6	4.2±3.1	*	3.7±3.0	4.3±3.2	*	4.8±3.3	6.7±4.0	10.5±5.0	7.4±4.2

Table 17-A
Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Houghton	6.6±4.5	6.5±4.5	*	5.1±4.0	5.3±4.3	5.4±4.3	*	*	6.3±4.7	7.2±5.0
Huron	*	*	6.3±5.1	6.5±5.2	*	*	-	*	*	6.7±5.3
Ingham	7.0±1.6	5.9±1.5	5.6±1.5	5.8±1.5	7.2±1.7	7.1±1.7	7.1±1.7	6.4±1.6	6.0±1.5	5.9±1.5
Ionia	3.3±2.3	3.0±2.2	4.0±2.6	4.0±2.6	4.1±2.6	4.1±2.7	5.0±2.9	4.6±2.8	4.1±2.7	5.6±3.2
Iosco	*	11.7±8.6	12.6±8.6	9.2±7.4	*	*	*	*	8.8±7.0	11.2±7.7
Iron	*	*	*	*	*	*	*	*	*	*
Isabella	5.4±3.1	4.2±2.7	6.8±3.5	7.1±3.7	6.2±3.5	4.0±2.8	4.4±2.9	4.0±2.7	7.0±3.7	7.2±3.8
Jackson	7.1±2.2	6.5±2.1	6.1±2.1	5.3±1.9	6.2±2.1	5.6±2.0	6.2±2.1	6.7±2.2	8.0±2.4	7.4±2.3
Kalamazoo	8.4±1.8	8.6±1.9	7.6±1.8	6.4±1.6	6.0±1.6	6.4±1.6	6.5±1.6	4.6±1.4	6.7±1.6	6.2±1.6
Kalkaska	*	*	*	11.3±9.0	11.6±9.2	17.0±11.0	*	*	*	*
Kent	6.9±1.0	6.8±1.0	6.4±1.0	6.2±0.9	5.6±0.9	5.3±0.9	5.5±0.9	6.2±0.9	6.0±0.9	5.5±0.9
Keweenaw	-	-	-	-	*	*	*	-	-	-
Lake	*	*	*	*	*	*	*	*	*	*
Lapeer	7.4±3.2	8.6±3.6	7.1±3.3	3.6±2.4	2.4±1.9	4.4±2.6	5.3±2.9	5.3±2.9	4.6±2.7	3.7±2.4
Leelanau	*	*	*	*	*	*	*	*	*	*
Lenawee	8.5±3.1	10.8±3.5	9.4±3.3	9.2±3.3	7.2±2.9	8.2±3.1	7.6±3.0	7.3±3.0	6.2±2.8	4.9±2.5
Livingston	6.7±2.2	6.3±2.1	6.7±2.2	5.9±2.1	5.2±2.0	5.4±2.0	5.1±1.9	4.4±1.7	3.5±1.6	3.3±1.5
Luce	*	*	-	-	-	*	*	*	*	*
Mackinac	*	*	*	-	-	-	*	*	*	*
Macomb	7.3±1.0	6.7±1.0	6.5±1.0	5.6±0.9	6.3±0.9	6.0±0.9	6.3±0.9	5.7±0.9	6.4±0.9	6.1±0.9
Manistee	*	*	*	*	*	*	*	*	*	*
Marquette	3.9±2.7	4.1±2.8	5.1±3.1	4.1±2.8	4.1±2.9	*	4.3±3.0	4.2±2.9	4.3±3.0	*
Mason	*	6.4±5.1	*	*	*	*	*	*	*	*
Mecosta	8.2±4.8	9.0±5.1	7.0±4.5	10.2±5.5	11.8±6.0	9.3±5.2	8.6±5.1	5.5±4.1	*	*
Menominee	*	*	*	*	*	*	*	*	*	*
Midland	4.2±2.5	3.9±2.4	4.2±2.5	4.6±2.6	6.6±3.1	7.1±3.3	5.8±2.9	3.5±2.3	2.3±1.9	*
Missaukee	*	*	*	*	*	*	*	*	*	*
Monroe	5.7±2.0	5.7±2.1	4.3±1.8	4.4±1.9	5.8±2.2	5.9±2.2	6.0±2.3	4.2±1.9	6.1±2.3	4.9±2.0
Montcalm	3.9±2.6	5.8±3.1	6.4±3.3	6.8±3.4	6.4±3.3	5.5±3.1	4.6±2.9	4.3±2.8	4.7±2.9	4.6±2.9
Montmorency	-	*	*	*	*	*	-	-	-	-

**Table 17-A
Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018**

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Muskegon	7.1±2.0	7.9±2.1	8.0±2.1	8.7±2.3	8.0±2.2	8.1±2.2	8.1±2.2	8.4±2.3	8.4±2.2	7.5±2.1
Newaygo	8.2±4.1	5.3±3.5	7.8±4.2	7.3±4.1	7.3±4.1	7.2±4.1	7.9±4.3	7.9±4.3	6.2±3.8	4.9±3.4
Oakland	6.2±0.8	6.2±0.8	5.8±0.7	6.2±0.8	6.3±0.8	6.6±0.8	6.0±0.8	5.6±0.7	5.3±0.7	5.6±0.7
Oceana	6.3±4.6	8.3±5.4	5.9±4.7	9.0±5.9	*	12.3±7.2	9.1±6.2	12.1±7.1	6.8±5.5	*
Ogemaw	*	*	*	*	*	*	*	*	*	*
Ontonagon	*	-	-	-	-	*	*	*	-	-
Osceola	*	*	*	*	*	*	*	*	8.0±6.4	7.5±6.0
Oscoda	*	*	*	*	*	*	*	*	-	*
Otsego	8.6±6.3	*	9.0±6.6	11.9±7.7	13.9±8.6	12.6±8.2	9.3±6.9	*	*	*
Ottawa	5.4±1.4	5.7±1.5	5.6±1.5	5.9±1.5	6.6±1.6	5.7±1.5	6.0±1.5	4.9±1.4	4.8±1.4	4.1±1.3
Presque Isle	*	*	*	21.7±17.1	*	*	*	*	*	*
Roscommon	10.9±8.7	*	*	*	*	*	*	*	*	*
Saginaw	10.5±2.3	8.8±2.2	7.9±2.1	6.1±1.8	7.1±2.0	7.7±2.1	8.7±2.2	10.0±2.4	8.4±2.2	8.4±2.2
St. Clair	6.4±2.1	5.6±2.0	6.3±2.2	6.2±2.2	6.3±2.2	6.0±2.2	5.1±2.1	6.2±2.2	5.9±2.2	5.4±2.1
St. Joseph	11.2±4.0	10.6±4.0	8.3±3.5	7.4±3.4	7.3±3.4	7.9±3.5	5.3±2.8	5.1±2.9	4.8±2.8	6.6±3.3
Sanilac	6.8±4.2	*	*	*	4.6±3.6	6.8±4.4	6.8±4.4	8.4±4.9	8.4±4.9	6.4±4.4
Schoolcraft	*	-	-	-	-	-	-	-	-	-
Shiawassee	5.7±3.1	3.2±2.4	3.3±2.4	3.8±2.6	3.2±2.4	4.2±2.7	4.7±2.9	6.1±3.3	7.2±3.6	6.7±3.5
Tuscola	3.9±2.9	6.0±3.7	6.8±4.0	6.8±4.0	4.9±3.4	4.7±3.3	4.7±3.3	4.2±3.1	4.2±3.1	4.2±3.1
Van Buren	6.9±2.9	6.5±2.9	4.5±2.4	5.6±2.8	6.5±3.0	6.2±3.0	5.6±2.8	6.1±3.0	6.2±3.0	6.0±3.0
Washtenaw	5.3±1.3	5.1±1.3	4.9±1.3	4.7±1.3	4.6±1.3	5.9±1.4	5.5±1.4	5.9±1.4	4.7±1.3	5.2±1.4
Wayne	10.4±0.7	10.2±0.7	9.8±0.7	9.9±0.7	9.7±0.7	9.6±0.7	9.4±0.7	9.3±0.7	9.7±0.7	10.0±0.7
Wexford	7.7±4.8	6.3±4.3	6.4±4.4	9.8±5.5	9.8±5.5	10.8±5.8	6.3±4.4	5.0±4.0	5.1±4.1	7.1±4.9

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 17-B
White Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	5.6±0.3	5.4±0.3	5.2±0.3	5.3±0.3	5.3±0.3	5.5±0.3	5.4±0.3	5.1±0.3	4.9±0.3	4.7±0.3
Alcona	*	*	*	*	*	*	*	*	-	-
Alger	*	*	*	-	-	-	-	-	-	-
Allegan	5.6±2.2	3.4±1.8	4.0±2.0	4.1±2.0	5.0±2.2	5.4±2.3	6.8±2.6	5.4±2.3	4.5±2.1	3.3±1.8
Alpena	*	*	*	*	*	*	*	*	*	*
Antrim	*	11.7±8.6	11.7±8.6	10.7±8.5	*	*	*	-	-	*
Arenac	*	*	*	*	16.6±13.2	16.8±13.3	*	*	*	*
Baraga	-	-	-	-	-	*	*	*	*	-
Barry	7.5±3.8	9.1±4.2	8.0±4.0	6.9±3.7	5.0±3.3	4.9±3.2	3.2±2.6	*	3.7±2.7	4.7±3.1
Bay	6.1±2.6	7.4±2.9	7.9±3.0	7.6±3.0	5.3±2.6	5.5±2.7	5.9±2.8	5.1±2.6	4.8±2.5	3.9±2.3
Benzie	*	*	*	*	*	*	*	*	*	*
Berrien	4.8±2.1	4.0±1.9	3.6±1.8	4.6±2.1	4.9±2.2	4.9±2.2	4.7±2.1	5.1±2.3	4.4±2.2	4.9±2.3
Branch	3.6±2.9	5.0±3.5	6.5±4.0	6.7±4.1	5.2±3.6	5.2±3.6	6.5±4.0	8.6±4.6	7.8±4.4	8.1±4.4
Calhoun	9.3±2.9	7.4±2.6	7.9±2.8	6.4±2.5	5.9±2.4	5.1±2.2	5.2±2.3	4.4±2.1	6.2±2.5	5.8±2.5
Cass	5.6±3.9	5.9±4.1	5.3±3.9	6.8±4.7	7.6±5.0	9.6±5.4	8.1±4.8	8.1±4.8	6.1±4.2	9.4±5.3
Charlevoix	*	*	*	*	*	*	*	*	*	*
Cheboygan	*	*	*	-	-	-	*	*	*	10.3±8.2
Chippewa	*	*	*	*	*	*	*	*	*	*
Clare	6.0±4.8	*	*	*	*	*	*	*	6.3±5.0	10.6±6.5
Clinton	4.5±2.8	4.6±2.8	4.2±2.7	4.1±2.7	2.7±2.2	4.1±2.7	5.9±3.2	6.3±3.3	4.4±2.7	*
Crawford	15.7±12.5	*	*	*	*	-	*	*	16.4±13.0	*
Delta	*	*	*	5.8±4.7	*	6.5±4.8	*	*	*	6.3±5.0
Dickinson	*	*	*	*	*	*	*	*	*	*
Eaton	3.8±2.1	4.2±2.3	3.9±2.2	4.8±2.5	4.8±2.5	4.8±2.5	5.1±2.6	5.1±2.6	4.5±2.5	3.5±2.2
Emmet	*	6.8±5.4	*	*	*	*	*	*	*	*
Genesee	5.4±1.3	5.1±1.3	5.1±1.4	4.8±1.3	5.2±1.4	5.3±1.4	5.7±1.5	6.3±1.6	6.4±1.6	5.4±1.5
Gladwin	*	*	*	*	*	*	11.4±7.4	9.9±6.8	*	*
Gogebic	*	*	*	*	-	-	-	*	*	*
Grand Traverse	7.3±3.2	6.0±3.0	3.5±2.3	3.1±2.2	*	3.7±2.3	5.6±2.8	7.8±3.3	6.8±3.1	5.0±2.7
Gratiot	6.0±4.2	7.0±4.5	7.8±4.8	5.8±4.3	*	5.2±4.2	6.2±4.6	5.4±4.3	*	*
Hillsdale	6.2±3.8	4.3±3.2	*	3.8±3.1	4.4±3.2	*	4.9±3.4	6.9±4.0	10.8±5.1	7.6±4.3

Table 17-B
White Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Houghton	6.1±4.5	6.0±4.4	*	5.4±4.3	5.7±4.6	5.7±4.6	*	*	5.8±4.6	6.7±5.0
Huron	*	*	6.5±5.2	6.7±5.3	*	*	-	*	*	6.8±5.4
Ingham	4.7±1.5	3.6±1.4	4.6±1.6	5.3±1.7	7.5±2.1	7.1±2.0	6.4±1.9	4.6±1.6	4.3±1.6	4.7±1.7
Ionia	3.4±2.4	3.1±2.3	3.6±2.5	3.7±2.6	3.7±2.6	4.2±2.8	5.1±3.0	4.8±2.9	4.3±2.8	5.9±3.3
Iosco	*	12.2±9.0	13.1±9.0	9.6±7.6	*	*	*	*	*	8.7±6.9
Iron	*	*	*	*	*	*	*	*	*	*
Isabella	3.1±2.5	*	5.6±3.4	6.5±3.8	5.9±3.7	3.5±2.8	4.0±3.0	4.0±3.0	7.1±4.0	7.7±4.2
Jackson	6.2±2.2	5.7±2.1	5.5±2.1	4.1±1.8	4.6±2.0	3.9±1.8	5.1±2.1	5.0±2.0	5.8±2.2	4.7±2.0
Kalamazoo	5.5±1.7	5.7±1.7	4.8±1.6	3.9±1.4	3.9±1.4	4.7±1.6	4.7±1.6	3.2±1.3	4.7±1.6	4.6±1.6
Kalkaska	*	*	*	11.7±9.3	11.9±9.5	17.4±11.3	*	*	*	*
Kent	5.0±0.9	5.0±0.9	4.4±0.9	4.4±0.9	4.1±0.9	4.5±0.9	4.9±0.9	5.1±1.0	4.8±0.9	4.4±0.9
Keweenaw	-	-	-	-	*	*	*	-	-	-
Lake	*	*	*	*	*	*	*	*	*	*
Lapeer	7.3±3.3	7.8±3.5	6.3±3.2	3.0±2.2	2.6±2.1	4.7±2.8	5.6±3.0	5.6±3.0	4.8±2.9	3.9±2.5
Leelanau	*	*	*	*	*	*	*	*	*	*
Lenawee	8.4±3.3	10.6±3.7	8.7±3.4	9.6±3.6	7.6±3.2	8.4±3.3	7.6±3.2	7.0±3.1	6.5±3.0	5.1±2.6
Livingston	6.6±2.2	6.1±2.2	6.6±2.2	5.8±2.1	5.0±2.0	5.1±2.0	4.7±1.9	4.2±1.7	3.0±1.5	3.1±1.5
Luce	*	*	-	-	-	*	*	*	*	*
Mackinac	*	*	*	-	-	-	*	*	*	*
Macomb	6.2±1.0	5.9±1.0	5.6±1.0	4.8±0.9	5.5±1.0	5.3±1.0	5.4±1.0	4.6±0.9	5.2±1.0	4.7±0.9
Manistee	*	*	*	*	*	*	*	*	*	*
Marquette	3.6±2.7	3.7±2.8	4.8±3.1	4.2±2.9	4.3±3.0	*	4.5±3.1	4.4±3.0	4.5±3.1	*
Mason	*	6.6±5.3	*	*	*	*	*	*	*	*
Mecosta	7.9±4.9	8.8±5.2	6.6±4.5	10.0±5.6	11.7±6.1	9.9±5.6	9.1±5.4	5.8±4.3	*	*
Menominee	*	*	*	*	*	*	*	*	-	*
Midland	4.0±2.5	3.7±2.4	4.0±2.5	4.9±2.8	5.8±3.0	6.3±3.2	4.9±2.8	3.7±2.4	2.5±2.0	*
Missaukee	*	*	*	*	*	*	*	*	*	*
Monroe	4.8±2.0	4.7±1.9	3.5±1.7	3.6±1.8	5.1±2.1	5.3±2.2	6.0±2.3	4.1±1.9	6.1±2.4	5.0±2.1
Montcalm	4.0±2.6	5.9±3.2	6.1±3.3	6.5±3.4	6.0±3.3	5.6±3.2	4.7±2.9	4.4±2.8	4.8±3.0	4.8±3.0
Montmorency	-	*	*	*	*	*	-	-	-	-

**Table 17-B
White Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018**

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Muskegon	6.4±2.2	6.5±2.2	6.3±2.2	7.1±2.4	6.6±2.3	5.8±2.2	4.6±1.9	4.1±1.8	4.2±1.8	3.8±1.8
Newaygo	8.4±4.2	5.4±3.5	7.4±4.2	6.9±4.1	7.0±4.1	7.6±4.3	8.4±4.6	8.4±4.5	6.6±4.1	5.2±3.6
Oakland	4.8±0.8	5.3±0.8	5.1±0.8	5.7±0.9	5.6±0.9	5.4±0.8	4.5±0.8	4.0±0.7	3.8±0.7	4.3±0.8
Oceana	*	5.9±4.7	*	9.6±6.3	*	13.5±7.9	8.7±6.4	10.7±7.0	*	*
Ogemaw	*	*	*	*	*	*	*	*	*	*
Ontonagon	*	-	-	-	-	*	*	*	-	-
Osceola	*	*	*	*	*	*	*	*	*	7.7±6.2
Oscoda	*	*	*	*	*	*	*	*	-	*
Otsego	8.6±6.4	*	9.2±6.8	12.2±7.9	14.4±8.9	11.5±8.0	8.3±6.6	*	*	*
Ottawa	4.6±1.4	4.9±1.4	5.3±1.5	5.6±1.5	6.3±1.6	5.3±1.5	5.6±1.5	4.7±1.4	4.6±1.4	4.2±1.3
Presque Isle	*	*	*	22.1±17.5	*	*	*	*	*	*
Roscommon	11.2±8.9	*	*	*	*	*	*	*	*	*
Saginaw	6.4±2.2	4.7±1.9	2.9±1.5	2.9±1.5	4.2±1.8	6.2±2.2	6.3±2.2	7.5±2.5	5.5±2.1	6.3±2.3
St. Clair	6.2±2.1	5.4±2.1	6.3±2.3	6.2±2.3	6.3±2.3	5.9±2.3	4.3±1.9	5.0±2.1	4.7±2.1	5.1±2.1
St. Joseph	10.2±3.9	9.9±3.9	7.9±3.6	6.9±3.4	6.4±3.2	6.6±3.3	4.3±2.7	4.5±2.8	4.7±2.9	6.1±3.3
Sanilac	6.3±4.1	*	*	*	4.6±3.7	6.9±4.5	6.1±4.2	7.7±4.8	7.8±4.8	6.5±4.5
Schoolcraft	*	-	-	-	-	-	-	-	-	-
Shiawassee	5.9±3.2	3.3±2.4	3.4±2.5	3.9±2.7	3.3±2.5	4.3±2.8	4.3±2.8	5.8±3.3	6.9±3.6	6.9±3.6
Tuscola	4.0±3.0	6.1±3.8	6.9±4.1	7.0±4.1	5.0±3.5	4.9±3.4	4.8±3.3	4.3±3.2	4.4±3.2	4.4±3.3
Van Buren	6.1±3.0	6.0±3.0	4.1±2.5	5.4±2.9	6.2±3.1	5.8±3.0	5.3±2.9	6.2±3.1	6.3±3.2	5.8±3.2
Washtenaw	4.3±1.4	4.4±1.5	4.5±1.5	3.9±1.4	4.2±1.5	5.4±1.7	5.0±1.6	4.3±1.5	3.2±1.3	3.0±1.3
Wayne	5.6±0.8	5.4±0.8	5.5±0.8	5.9±0.9	6.3±0.9	6.4±0.9	6.4±0.9	6.1±0.9	5.6±0.8	5.0±0.8
Wexford	8.0±5.0	6.5±4.5	6.6±4.5	10.1±5.7	9.3±5.4	10.3±5.8	5.7±4.2	5.1±4.1	5.3±4.2	7.3±5.1

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

**Table 17-C
Black Three-Year Moving Average Infant Death Rates by County
Michigan Residents, 2007-2018**

County	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	15.5±0.9	14.8±0.9	14.5±0.9	13.8±0.9	13.4±0.9	13.3±0.9	13.7±0.9	13.8±0.9	14.3±0.9	14.4±0.9
Berrien	16.7±6.4	16.0±6.2	19.5±6.9	18.6±6.9	17.3±6.7	16.5±6.7	13.3±6.1	10.4±5.6	7.4±4.8	13.3±6.5
Calhoun	20.5±9.6	22.1±10.4	25.4±11.3	20.2±10.1	13.8±8.1	9.9±6.8	14.6±8.2	11.3±7.3	12.6±7.8	11.7±7.6
Cass	*	*	*	*	*	-	-	-	-	*
Genesee	17.9±3.7	14.6±3.4	14.2±3.4	12.4±3.3	14.2±3.5	14.6±3.6	15.6±3.7	16.5±3.9	15.2±3.7	13.6±3.5
Ingham	16.5±6.0	16.7±5.9	13.1±5.3	11.4±5.0	10.1±4.7	10.1±4.7	12.9±5.2	14.2±5.5	14.5±5.6	12.1±5.0
Jackson	15.6±10.1	13.2±9.1	11.6±8.6	13.0±9.0	18.5±10.8	16.2±10.0	15.0±9.7	20.2±11.3	26.5±12.8	28.7±13.1
Kalamazoo	19.2±6.5	19.5±6.5	18.3±6.4	17.6±6.3	15.5±5.9	14.2±5.7	15.3±5.9	11.0±4.9	15.3±5.6	12.8±5.0
Kent	13.4±3.7	13.9±3.8	16.6±4.2	14.6±3.9	12.9±3.6	9.9±3.2	10.7±3.3	13.0±3.7	12.8±3.6	9.7±3.1
Macomb	15.1±4.0	13.8±3.8	13.1±3.6	11.4±3.2	11.1±3.1	9.9±2.9	10.7±2.9	10.6±2.9	12.8±3.1	12.7±3.0
Muskegon	8.2±4.6	13.2±5.9	14.9±6.3	16.4±6.8	12.8±6.0	14.9±6.7	19.7±7.7	23.1±8.3	23.2±8.1	18.7±7.1
Oakland	14.7±3.0	11.9±2.7	10.8±2.5	10.6±2.4	11.1±2.5	13.7±2.8	14.7±2.9	14.3±2.9	13.5±2.8	12.2±2.7
Saginaw	19.2±5.8	17.4±5.6	19.2±6.1	13.4±5.1	14.3±5.2	12.2±5.0	15.9±5.7	17.3±5.9	16.2±5.6	14.1±5.2
St. Clair	*	*	*	*	*	*	*	34.3±25.0	33.7±24.5	*
Van Buren	*	*	*	*	*	*	*	*	*	*
Washtenaw	11.6±4.6	10.5±4.4	8.7±4.0	8.9±4.1	8.3±4.1	10.9±4.7	12.1±5.2	16.4±5.9	14.4±5.5	16.7±5.9
Wayne	15.3±1.3	15.1±1.3	14.5±1.3	14.5±1.3	14.0±1.3	13.7±1.3	13.2±1.2	13.2±1.3	14.1±1.3	15.7±1.4

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 18-A
Three-Year Moving Average Infant Death Rates by District
Michigan Residents, 2007-2018

Health Department	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	7.6±0.3	7.3±0.3	7.1±0.3	6.9±0.3	6.8±0.3	6.9±0.3	6.9±0.3	6.7±0.3	6.7±0.3	6.7±0.3
Allegan County	6.7±2.4	4.2±1.9	4.5±2.0	4.2±2.0	5.0±2.2	5.4±2.3	6.8±2.5	5.7±2.3	4.6±2.1	3.6±1.8
Barry-Eaton District	6.0±2.0	7.0±2.2	6.4±2.1	5.9±2.0	5.7±2.0	5.6±2.0	5.7±2.0	5.0±1.9	5.1±1.9	4.4±1.8
Bay County	6.6±2.6	7.9±2.9	8.3±3.0	7.7±3.0	5.3±2.5	5.7±2.6	6.1±2.7	5.4±2.6	4.5±2.4	4.0±2.2
Benzie-Leelanau District	*	*	*	*	*	6.2±5.0	8.2±5.7	8.2±5.7	6.0±4.8	*
Berrien County	8.9±2.4	7.8±2.2	8.3±2.3	8.1±2.3	8.3±2.4	7.8±2.3	6.9±2.2	6.4±2.2	5.2±2.0	6.7±2.2
Branch-Hillsdale-St. Joseph	7.5±2.2	7.2±2.2	6.3±2.0	6.4±2.1	6.3±2.1	6.2±2.0	5.6±1.9	6.4±2.1	7.6±2.3	7.7±2.3
Calhoun County	11.5±2.9	10.2±2.8	10.7±2.9	8.7±2.6	7.2±2.3	6.0±2.1	6.8±2.3	5.8±2.1	7.2±2.4	6.8±2.3
Central Michigan District	5.7±1.9	4.6±1.8	6.3±2.1	5.6±2.0	5.4±2.0	4.6±1.8	5.7±2.0	5.5±2.0	6.3±2.1	6.9±2.2
Chippewa County	*	*	5.3±4.2	7.5±5.2	7.5±5.2	5.6±4.5	*	*	*	*
City Of Detroit	14.8±1.3	14.4±1.3	13.6±1.3	13.6±1.3	13.6±1.3	13.8±1.3	13.6±1.3	13.6±1.3	14.0±1.4	14.7±1.4
Dickinson-Iron District	5.6±4.5	8.7±5.7	8.0±5.5	*	*	5.8±4.6	5.9±4.7	*	*	7.4±5.1
District #10	6.7±1.7	6.7±1.7	6.6±1.7	7.6±1.9	7.0±1.8	8.2±1.9	7.1±1.8	7.0±1.8	5.4±1.6	5.6±1.6
District #2	8.4±4.4	9.8±4.8	9.1±4.6	8.9±4.5	6.5±3.8	7.0±3.9	4.1±3.1	4.6±3.2	5.3±3.4	7.9±4.1
District #4	6.1±3.3	6.1±3.4	6.8±3.7	6.5±3.7	4.9±3.2	4.8±3.1	4.1±2.9	4.6±3.0	6.1±3.4	7.3±3.8
Genesee County	9.0±1.4	7.8±1.4	7.8±1.4	7.1±1.3	8.0±1.4	8.0±1.4	8.5±1.5	9.1±1.5	9.0±1.5	8.0±1.5
Grand Traverse County	6.9±3.0	5.6±2.8	3.3±2.1	2.9±2.0	*	3.5±2.2	5.3±2.7	7.5±3.2	6.5±3.0	5.1±2.7
Huron County	*	*	6.3±5.1	6.5±5.2	*	*	-	*	*	6.7±5.3
Ingham County	7.0±1.6	5.9±1.5	5.6±1.5	5.8±1.5	7.2±1.7	7.1±1.7	7.1±1.7	6.4±1.6	6.0±1.5	5.9±1.5
Ionia County	3.3±2.3	3.0±2.2	4.0±2.6	4.0±2.6	4.1±2.6	4.1±2.7	5.0±2.9	4.6±2.8	4.1±2.7	5.6±3.2
Jackson County	7.1±2.2	6.5±2.1	6.1±2.1	5.3±1.9	6.2±2.1	5.6±2.0	6.2±2.1	6.7±2.2	8.0±2.4	7.4±2.3
Kalamazoo County	8.4±1.8	8.6±1.9	7.6±1.8	6.4±1.6	6.0±1.6	6.4±1.6	6.5±1.6	4.6±1.4	6.7±1.6	6.2±1.6
Kent County	6.9±1.0	6.8±1.0	6.4±1.0	6.2±0.9	5.6±0.9	5.3±0.9	5.5±0.9	6.2±0.9	6.0±0.9	5.5±0.9
Lapeer County	7.4±3.2	8.6±3.6	7.1±3.3	3.6±2.4	2.4±1.9	4.4±2.6	5.3±2.9	5.3±2.9	4.6±2.7	3.7±2.4
Lenawee County	8.5±3.1	10.8±3.5	9.4±3.3	9.2±3.3	7.2±2.9	8.2±3.1	7.6±3.0	7.3±3.0	6.2±2.8	4.9±2.5
Livingston County	6.7±2.2	6.3±2.1	6.7±2.2	5.9±2.1	5.2±2.0	5.4±2.0	5.1±1.9	4.4±1.7	3.5±1.6	3.3±1.5
Luce-Mackinac-Alger-Schoolcraft	11.2±6.9	10.4±6.8	*	-	-	*	*	11.6±7.6	9.0±6.6	*
Macomb County	7.3±1.0	6.7±1.0	6.5±1.0	5.6±0.9	6.3±0.9	6.0±0.9	6.3±0.9	5.7±0.9	6.4±0.9	6.1±0.9
Marquette County	3.9±2.7	4.1±2.8	5.1±3.1	4.1±2.8	4.1±2.9	*	4.3±3.0	4.2±2.9	4.3±3.0	*
Midland County	4.2±2.5	3.9±2.4	4.2±2.5	4.6±2.6	6.6±3.1	7.1±3.3	5.8±2.9	3.5±2.3	2.3±1.9	*

Table 18-A
Three-Year Moving Average Infant Death Rates by District
Michigan Residents, 2007-2018

Health Department	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Mid-Michigan District	5.0±1.8	5.8±1.9	5.9±2.0	5.5±1.9	4.4±1.7	4.8±1.8	5.7±1.9	5.4±1.9	4.6±1.7	3.4±1.5
Monroe County	5.7±2.0	5.7±2.1	4.3±1.8	4.4±1.9	5.8±2.2	5.9±2.2	6.0±2.3	4.2±1.9	6.1±2.3	4.9±2.0
Muskegon County	7.1±2.0	7.9±2.1	8.0±2.1	8.7±2.3	8.0±2.2	8.1±2.2	8.1±2.2	8.4±2.3	8.4±2.2	7.5±2.1
Northwest Michigan Community Health	6.5±2.8	6.4±2.8	6.8±2.9	6.9±2.9	6.7±2.9	6.2±2.8	5.8±2.7	3.7±2.2	3.5±2.1	3.9±2.3
Oakland County	6.2±0.8	6.2±0.8	5.8±0.7	6.2±0.8	6.3±0.8	6.6±0.8	6.0±0.8	5.6±0.7	5.3±0.7	5.6±0.7
Ottawa County	5.4±1.4	5.7±1.5	5.6±1.5	5.9±1.5	6.6±1.6	5.7±1.5	6.0±1.5	4.9±1.4	4.8±1.4	4.1±1.3
Delta & Menominee	6.0±3.5	4.6±3.2	4.6±3.2	5.4±3.5	4.7±3.2	5.7±3.5	4.0±2.9	5.2±3.4	3.7±2.9	5.1±3.5
Saginaw County	10.5±2.3	8.8±2.2	7.9±2.1	6.1±1.8	7.1±2.0	7.7±2.1	8.7±2.2	10.0±2.4	8.4±2.2	8.4±2.2
Sanilac County	6.8±4.2	*	*	*	4.6±3.6	6.8±4.4	6.8±4.4	8.4±4.9	8.4±4.9	6.4±4.4
Shiawassee County	5.7±3.1	3.2±2.4	3.3±2.4	3.8±2.6	3.2±2.4	4.2±2.7	4.7±2.9	6.1±3.3	7.2±3.6	6.7±3.5
St Clair County	6.4±2.1	5.6±2.0	6.3±2.2	6.2±2.2	6.3±2.2	6.0±2.2	5.1±2.1	6.2±2.2	5.9±2.2	5.4±2.1
Tuscola County	3.9±2.9	6.0±3.7	6.8±4.0	6.8±4.0	4.9±3.4	4.7±3.3	4.7±3.3	4.2±3.1	4.2±3.1	4.2±3.1
Van Buren-Cass County	7.2±2.4	6.9±2.4	5.5±2.2	6.0±2.3	6.8±2.5	7.0±2.5	6.2±2.4	6.6±2.5	6.2±2.4	7.4±2.7
Washtenaw County	5.3±1.3	5.1±1.3	4.9±1.3	4.7±1.3	4.6±1.3	5.9±1.4	5.5±1.4	5.9±1.4	4.7±1.3	5.2±1.4
Wayne County	6.7±0.8	6.6±0.8	6.7±0.8	6.9±0.8	6.8±0.8	6.5±0.8	6.3±0.8	6.1±0.8	6.6±0.8	6.8±0.8
Western Upper Peninsula District	5.2±3.1	5.3±3.1	3.5±2.6	4.1±2.8	4.3±2.9	6.0±3.5	5.4±3.4	7.1±3.8	8.1±4.1	8.1±4.1

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 18-B
White Three-Year Moving Average Infant Death Rates by District
Michigan Residents, 2007-2018

Health Department	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	5.6±0.3	5.4±0.3	5.2±0.3	5.3±0.3	5.3±0.3	5.5±0.3	5.4±0.3	5.1±0.3	4.9±0.3	4.7±0.3
Allegan County	5.6±2.2	3.4±1.8	4.0±2.0	4.1±2.0	5.0±2.2	5.4±2.3	6.8±2.6	5.4±2.3	4.5±2.1	3.3±1.8
Barry-Eaton District	5.2±2.0	6.1±2.1	5.5±2.1	5.6±2.1	4.9±2.0	4.9±2.0	4.4±1.9	3.9±1.8	4.2±1.8	4.0±1.8
Bay County	6.1±2.6	7.4±2.9	7.9±3.0	7.6±3.0	5.3±2.6	5.5±2.7	5.9±2.8	5.1±2.6	4.8±2.5	3.9±2.3
Benzie-Leelanau District	*	*	*	*	*	*	6.8±5.4	6.7±5.3	*	*
Berrien County	4.8±2.1	4.0±1.9	3.6±1.8	4.6±2.1	4.9±2.2	4.9±2.2	4.7±2.1	5.1±2.3	4.4±2.2	4.9±2.3
Branch-Hillsdale-St. Joseph	7.2±2.2	6.9±2.2	6.2±2.1	6.0±2.1	5.5±2.0	5.2±1.9	5.1±1.9	6.4±2.1	7.4±2.3	7.1±2.3
Calhoun County	9.3±2.9	7.4±2.6	7.9±2.8	6.4±2.5	5.9±2.4	5.1±2.2	5.2±2.3	4.4±2.1	6.2±2.5	5.8±2.5
Central Michigan District	4.8±1.8	4.0±1.7	5.8±2.1	5.3±2.0	5.4±2.0	4.5±1.9	5.5±2.0	5.3±2.0	6.0±2.1	7.0±2.3
Chippewa County	*	*	*	*	*	*	*	*	*	*
City Of Detroit	5.5±2.1	5.8±2.3	6.5±2.8	10.3±3.9	10.1±4.0	11.3±4.2	9.5±3.8	9.2±3.7	8.4±3.4	7.1±3.0
Dickinson-Iron District	*	8.2±5.6	7.2±5.3	*	*	5.9±4.7	6.1±4.9	*	*	6.8±5.0
District #10	6.3±1.7	6.4±1.7	6.3±1.7	7.7±1.9	6.8±1.8	8.2±2.0	7.0±1.8	6.9±1.8	5.1±1.6	5.1±1.6
District #2	8.0±4.3	10.1±4.9	9.3±4.7	9.2±4.6	6.7±3.9	7.2±4.0	4.2±3.1	4.7±3.2	3.6±2.9	6.4±3.7
District #4	6.4±3.4	6.3±3.6	6.5±3.7	6.2±3.7	4.5±3.1	4.4±3.1	3.8±2.8	4.3±3.0	6.3±3.6	7.6±4.0
Genesee County	5.4±1.3	5.1±1.3	5.1±1.4	4.8±1.3	5.2±1.4	5.3±1.4	5.7±1.5	6.3±1.6	6.4±1.6	5.4±1.5
Grand Traverse County	7.3±3.2	6.0±3.0	3.5±2.3	3.1±2.2	*	3.7±2.3	5.6±2.8	7.8±3.3	6.8±3.1	5.0±2.7
Huron County	*	*	6.5±5.2	6.7±5.3	*	*	-	*	*	6.8±5.4
Ingham County	4.7±1.5	3.6±1.4	4.6±1.6	5.3±1.7	7.5±2.1	7.1±2.0	6.4±1.9	4.6±1.6	4.3±1.6	4.7±1.7
Ionia County	3.4±2.4	3.1±2.3	3.6±2.5	3.7±2.6	3.7±2.6	4.2±2.8	5.1±3.0	4.8±2.9	4.3±2.8	5.9±3.3
Jackson County	6.2±2.2	5.7±2.1	5.5±2.1	4.1±1.8	4.6±2.0	3.9±1.8	5.1±2.1	5.0±2.0	5.8±2.2	4.7±2.0
Kalamazoo County	5.5±1.7	5.7±1.7	4.8±1.6	3.9±1.4	3.9±1.4	4.7±1.6	4.7±1.6	3.2±1.3	4.7±1.6	4.6±1.6
Kent County	5.0±0.9	5.0±0.9	4.4±0.9	4.4±0.9	4.1±0.9	4.5±0.9	4.9±0.9	5.1±1.0	4.8±0.9	4.4±0.9
Lapeer County	7.3±3.3	7.8±3.5	6.3±3.2	3.0±2.2	2.6±2.1	4.7±2.8	5.6±3.0	5.6±3.0	4.8±2.9	3.9±2.5
Lenawee County	8.4±3.3	10.6±3.7	8.7±3.4	9.6±3.6	7.6±3.2	8.4±3.3	7.6±3.2	7.0±3.1	6.5±3.0	5.1±2.6
Livingston County	6.6±2.2	6.1±2.2	6.6±2.2	5.8±2.1	5.0±2.0	5.1±2.0	4.7±1.9	4.2±1.7	3.0±1.5	3.1±1.5
Luce-Mackinac-Alger-Schoolcraft	10.5±7.2	9.5±7.0	*	-	-	*	*	11.0±8.1	*	*
Macomb County	6.2±1.0	5.9±1.0	5.6±1.0	4.8±0.9	5.5±1.0	5.3±1.0	5.4±1.0	4.6±0.9	5.2±1.0	4.7±0.9
Marquette County	3.6±2.7	3.7±2.8	4.8±3.1	4.2±2.9	4.3±3.0	*	4.5±3.1	4.4±3.0	4.5±3.1	*
Midland County	4.0±2.5	3.7±2.4	4.0±2.5	4.9±2.8	5.8±3.0	6.3±3.2	4.9±2.8	3.7±2.4	2.5±2.0	*

Table 18-B
White Three-Year Moving Average Infant Death Rates by District
Michigan Residents, 2007-2018

Health Department	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Mid-Michigan District	4.7±1.8	5.6±1.9	5.8±2.0	5.4±1.9	4.3±1.7	4.9±1.8	5.5±2.0	5.4±1.9	4.4±1.8	3.5±1.6
Monroe County	4.8±2.0	4.7±1.9	3.5±1.7	3.6±1.8	5.1±2.1	5.3±2.2	6.0±2.3	4.1±1.9	6.1±2.4	5.0±2.1
Muskegon County	6.4±2.2	6.5±2.2	6.3±2.2	7.1±2.4	6.6±2.3	5.8±2.2	4.6±1.9	4.1±1.8	4.2±1.8	3.8±1.8
Northwest Michigan Community Health	6.5±2.8	6.4±2.9	6.8±3.0	6.9±3.0	6.8±3.0	5.8±2.8	5.7±2.8	3.5±2.2	2.6±1.9	3.0±2.1
Oakland County	4.8±0.8	5.3±0.8	5.1±0.8	5.7±0.9	5.6±0.9	5.4±0.8	4.5±0.8	4.0±0.7	3.8±0.7	4.3±0.8
Ottawa County	4.6±1.4	4.9±1.4	5.3±1.5	5.6±1.5	6.3±1.6	5.3±1.5	5.6±1.5	4.7±1.4	4.6±1.4	4.2±1.3
Delta & Menominee	4.3±3.4	*	*	4.5±3.3	3.8±3.0	4.9±3.4	*	*	*	4.8±3.5
Saginaw County	6.4±2.2	4.7±1.9	2.9±1.5	2.9±1.5	4.2±1.8	6.2±2.2	6.3±2.2	7.5±2.5	5.5±2.1	6.3±2.3
Sanilac County	6.3±4.1	*	*	*	4.6±3.7	6.9±4.5	6.1±4.2	7.7±4.8	7.8±4.8	6.5±4.5
Shiawassee County	5.9±3.2	3.3±2.4	3.4±2.5	3.9±2.7	3.3±2.5	4.3±2.8	4.3±2.8	5.8±3.3	6.9±3.6	6.9±3.6
St Clair County	6.2±2.1	5.4±2.1	6.3±2.3	6.2±2.3	6.3±2.3	5.9±2.3	4.3±1.9	5.0±2.1	4.7±2.1	5.1±2.1
Tuscola County	4.0±3.0	6.1±3.8	6.9±4.1	7.0±4.1	5.0±3.5	4.9±3.4	4.8±3.3	4.3±3.2	4.4±3.2	4.4±3.3
Van Buren-Cass County	5.9±2.4	6.0±2.4	4.5±2.1	5.8±2.5	6.7±2.7	7.1±2.7	6.3±2.5	6.9±2.6	6.2±2.5	7.1±2.8
Washtenaw County	4.3±1.4	4.4±1.5	4.5±1.5	3.9±1.4	4.2±1.5	5.4±1.7	5.0±1.6	4.3±1.5	3.2±1.3	3.0±1.3
Wayne County	5.6±0.8	5.4±0.8	5.4±0.8	5.5±0.9	6.0±0.9	6.0±0.9	6.1±0.9	5.8±0.9	5.4±0.8	4.8±0.8
Western Upper Peninsula District	4.8±3.1	4.7±3.1	3.8±2.8	4.4±3.1	4.1±3.0	5.3±3.5	4.8±3.3	5.9±3.7	6.6±3.9	6.6±3.9

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 18-C
Black Three-Year Moving Average Infant Death Rates by District
Michigan Residents, 2007-2018

Health Department	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	15.5±0.9	14.8±0.9	14.5±0.9	13.8±0.9	13.4±0.9	13.3±0.9	13.7±0.9	13.8±0.9	14.3±0.9	14.4±0.9
Barry-Eaton District	25.2±18.4	28.0±19.1	26.9±18.4	*	22.7±16.6	22.4±16.4	29.0±17.7	24.0±15.5	22.0±15.1	*
Berrien County	16.7±6.4	16.0±6.2	19.5±6.9	18.6±6.9	17.3±6.7	16.5±6.7	13.3±6.1	10.4±5.6	7.4±4.8	13.3±6.5
Calhoun County	20.5±9.6	22.1±10.4	25.4±11.3	20.2±10.1	13.8±8.1	9.9±6.8	14.6±8.2	11.3±7.3	12.6±7.8	11.7±7.6
City Of Detroit	16.5±1.5	16.0±1.5	15.0±1.5	14.7±1.5	14.8±1.5	15.0±1.5	14.8±1.5	14.6±1.5	14.8±1.5	16.0±1.6
District #10	*	*	*	*	*	*	*	-	*	*
Genesee County	17.9±3.7	14.6±3.4	14.2±3.4	12.4±3.3	14.2±3.5	14.6±3.6	15.6±3.7	16.5±3.9	15.2±3.7	13.6±3.5
Ingham County	16.5±6.0	16.7±5.9	13.1±5.3	11.4±5.0	10.1±4.7	10.1±4.7	12.9±5.2	14.2±5.5	14.5±5.6	12.1±5.0
Jackson County	15.6±10.1	13.2±9.1	11.6±8.6	13.0±9.0	18.5±10.8	16.2±10.0	15.0±9.7	20.2±11.3	26.5±12.8	28.7±13.1
Kalamazoo County	19.2±6.5	19.5±6.5	18.3±6.4	17.6±6.3	15.5±5.9	14.2±5.7	15.3±5.9	11.0±4.9	15.3±5.6	12.8±5.0
Kent County	13.4±3.7	13.9±3.8	16.6±4.2	14.6±3.9	12.9±3.6	9.9±3.2	10.7±3.3	13.0±3.7	12.8±3.6	9.7±3.1
Macomb County	15.1±4.0	13.8±3.8	13.1±3.6	11.4±3.2	11.1±3.1	9.9±2.9	10.7±2.9	10.6±2.9	12.8±3.1	12.7±3.0
Mid-Michigan District	-	-	*	*	*	-	*	*	*	-
Muskegon County	8.2±4.6	13.2±5.9	14.9±6.3	16.4±6.8	12.8±6.0	14.9±6.7	19.7±7.7	23.1±8.3	23.2±8.1	18.7±7.1
Oakland County	14.7±3.0	11.9±2.7	10.8±2.5	10.6±2.4	11.1±2.5	13.7±2.8	14.7±2.9	14.3±2.9	13.5±2.8	12.2±2.7
Ottawa County	*	*	*	*	*	*	*	*	*	-
Saginaw County	19.2±5.8	17.4±5.6	19.2±6.1	13.4±5.1	14.3±5.2	12.2±5.0	15.9±5.7	17.3±5.9	16.2±5.6	14.1±5.2
St Clair County	*	*	*	*	*	*	*	34.3±25.0	33.7±24.5	*
Van Buren-Cass County	*	*	*	*	*	*	*	*	*	*
Washtenaw County	11.6±4.6	10.5±4.4	8.7±4.0	8.9±4.1	8.3±4.1	10.9±4.7	12.1±5.2	16.4±5.9	14.4±5.5	16.7±5.9
Wayne County	10.4±2.4	11.7±2.5	12.6±2.5	13.6±2.6	11.3±2.4	9.6±2.2	8.1±2.0	9.0±2.1	12.1±2.4	15.0±2.6

Notes: Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

-: A dash indicates that there were either no births or no infant deaths from this category.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 19-A
Three-Year Moving Average Infant Death Rates by City
Michigan Residents, 2007-2018

City	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	7.6±0.3	7.3±0.3	7.1±0.3	6.9±0.3	6.8±0.3	6.9±0.3	6.9±0.3	6.7±0.3	6.7±0.3	6.7±0.3
Ann Arbor	4.3±2.2	3.7±2.1	3.1±1.9	2.7±1.8	3.6±2.0	5.1±2.4	4.3±2.2	3.7±2.1	3.2±2.0	4.5±2.4
Battle Creek	11.0±4.1	10.6±4.1	11.3±4.3	11.0±4.3	9.9±3.8	7.9±3.4	8.4±3.5	7.0±3.4	9.6±4.1	8.0±3.8
Dearborn	6.9±2.3	7.0±2.3	6.3±2.2	7.4±2.4	7.5±2.4	6.4±2.2	6.0±2.1	4.9±1.9	5.5±2.0	4.9±1.9
Dearborn Heights	5.8±3.0	3.8±2.5	5.2±2.9	5.7±3.1	6.9±3.4	5.5±3.0	5.2±2.8	6.7±3.2	5.5±2.9	5.2±2.8
Detroit	14.8±1.3	14.4±1.3	13.6±1.3	13.6±1.3	13.6±1.3	13.9±1.3	13.6±1.3	13.6±1.3	14.0±1.4	14.7±1.4
Farmington Hills	7.0±3.2	6.4±3.1	6.4±3.1	6.9±3.3	6.7±3.2	6.7±3.2	6.1±3.0	4.5±2.5	6.2±2.9	5.8±2.8
Flint	12.6±2.9	12.6±3.0	12.1±3.0	11.6±3.0	11.0±2.8	10.9±2.8	10.7±2.9	13.1±3.4	13.9±3.5	13.2±3.5
Grand Rapids	8.3±1.8	8.6±1.8	8.5±1.8	9.4±1.9	8.0±1.7	6.6±1.6	5.9±1.5	6.8±1.7	7.3±1.7	6.4±1.6
Kalamazoo	10.5±3.5	11.0±3.6	10.3±3.6	9.7±3.5	6.0±2.5	6.0±2.5	7.6±2.8	7.3±3.0	8.4±3.3	5.9±2.7
Kentwood	3.9±2.6	3.4±2.4	3.4±2.4	4.5±2.7	5.2±2.9	5.1±2.9	6.0±3.1	8.1±3.5	8.9±3.7	7.7±3.5
Lansing	8.9±2.4	8.7±2.4	7.1±2.2	6.5±2.1	7.4±2.2	8.5±2.4	8.8±2.4	9.2±2.5	8.7±2.5	7.6±2.4
Livonia	5.2±2.8	4.8±2.7	2.4±1.9	2.8±2.1	5.5±2.9	5.4±2.8	4.8±2.6	4.0±2.4	5.2±2.7	5.6±2.8
Midland	5.1±3.8	*	*	*	6.3±4.1	7.7±4.5	7.7±4.5	4.2±3.4	*	*
Muskegon	7.5±3.9	7.2±3.9	7.8±4.1	10.5±4.8	12.6±5.0	12.6±5.0	13.4±5.2	14.9±5.9	13.9±5.8	10.7±5.1
Novi	5.3±3.3	6.6±3.7	3.3±2.7	3.8±2.8	4.3±3.0	6.1±3.5	5.0±3.1	4.5±2.9	3.7±2.7	7.9±4.0
Pontiac	14.4±4.1	13.8±4.0	11.9±3.8	8.5±3.2	9.4±3.3	11.4±3.6	14.0±4.0	12.6±3.8	11.8±3.7	9.4±3.4
Portage	9.2±4.5	8.6±4.3	7.5±4.1	4.1±3.0	5.8±3.6	5.8±3.6	5.2±3.4	*	7.7±4.2	6.7±4.0
Rochester Hills	5.0±2.8	4.8±2.8	3.5±2.5	4.0±2.6	5.2±3.0	4.4±2.7	4.0±2.6	2.7±2.1	2.7±2.1	3.1±2.3
Roseville	10.0±4.6	5.5±3.4	5.7±3.5	7.4±4.0	7.8±4.1	7.8±4.0	7.7±4.0	10.1±4.7	10.2±4.7	8.7±4.4
Royal Oak	4.4±2.7	5.6±3.0	6.4±3.2	8.2±3.7	7.1±3.5	7.6±3.6	4.0±2.6	2.6±2.1	*	2.7±2.2
Saginaw	14.6±4.3	13.2±4.2	13.7±4.4	9.6±3.7	12.1±4.2	12.7±4.3	15.1±4.8	15.8±5.0	13.4±4.6	13.1±4.6
Southfield	13.1±4.6	11.2±4.4	10.0±4.1	10.9±4.3	8.5±3.7	11.7±4.4	9.0±3.8	9.8±4.0	7.6±3.5	9.0±3.8
St Clair Shores	5.4±3.4	4.0±3.0	4.7±3.3	*	4.7±3.2	4.6±3.2	5.6±3.5	6.3±3.7	5.8±3.6	4.5±3.1
Sterling Heights	7.5±2.5	7.0±2.5	6.2±2.4	6.6±2.4	5.7±2.3	6.7±2.4	6.4±2.4	6.9±2.5	6.7±2.4	7.6±2.6
Taylor	6.3±3.1	6.8±3.2	9.9±3.9	11.8±4.2	10.8±4.0	7.4±3.3	6.2±3.0	6.5±3.1	7.8±3.4	7.5±3.4
Troy	5.5±3.0	6.2±3.2	4.4±2.7	3.8±2.5	3.3±2.3	3.8±2.4	4.1±2.5	4.1±2.5	4.5±2.6	5.8±3.1
Warren	8.1±2.5	7.9±2.5	9.1±2.7	7.6±2.4	8.7±2.6	6.6±2.2	5.4±2.0	5.3±2.0	6.5±2.2	7.4±2.3
Westland	7.4±2.9	8.2±3.1	9.6±3.4	10.4±3.5	9.3±3.3	8.3±3.1	7.4±2.9	7.3±2.9	6.5±2.8	7.6±3.0
Wyoming	11.0±3.3	8.4±3.0	6.7±2.6	4.6±2.2	4.1±2.1	4.4±2.1	6.0±2.5	6.6±2.6	5.9±2.5	5.2±2.4

Notes: This table shows cities with (1) populations greater than 40,000 according to 2007 estimates and (2) three-year average births of greater than 200. City birth and mortality statistics have changed from pre-2011 reports due to geocoding. See Data Quality Considerations for further details. Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 19-B
White Three-Year Moving Average Infant Death Rates by City
Michigan Residents, 2007-2018

City	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	5.6±0.3	5.4±0.3	5.2±0.3	5.3±0.3	5.3±0.3	5.5±0.3	5.4±0.3	5.1±0.3	4.9±0.3	4.7±0.3
Ann Arbor	3.7±2.5	3.2±2.4	3.7±2.6	*	3.2±2.3	4.5±2.8	4.0±2.6	2.8±2.2	*	3.0±2.4
Battle Creek	7.2±3.9	4.8±3.3	5.5±3.6	8.1±4.4	8.1±4.1	7.0±3.8	5.5±3.4	4.6±3.4	9.0±4.9	8.6±4.8
Dearborn	6.4±2.3	6.2±2.3	6.0±2.3	6.5±2.4	7.0±2.5	5.9±2.4	7.0±2.6	5.6±2.3	5.4±2.1	4.0±1.8
Dearborn Heights	4.3±2.8	3.0±2.4	3.1±2.5	3.7±2.7	5.3±3.2	6.0±3.5	6.9±3.8	8.7±4.1	6.3±3.4	5.8±3.3
Detroit	5.5±2.1	5.8±2.3	6.5±2.8	9.9±3.8	10.1±4.0	11.3±4.2	9.9±3.9	9.2±3.7	8.4±3.4	7.1±3.0
Farmington Hills	6.1±4.0	5.6±3.9	6.5±4.2	8.0±4.7	6.5±4.2	5.0±3.7	4.9±3.6	4.1±3.3	4.1±3.3	*
Flint	6.7±3.5	9.6±4.3	7.1±3.8	7.6±4.1	5.5±3.4	5.9±3.5	4.5±3.1	7.1±4.2	7.7±4.5	8.7±4.9
Grand Rapids	4.7±1.6	5.1±1.7	4.4±1.6	5.7±1.8	5.3±1.7	4.6±1.6	4.4±1.6	4.5±1.7	5.0±1.8	4.3±1.7
Kalamazoo	*	3.6±2.7	4.8±3.1	6.1±3.6	3.5±2.4	2.6±2.0	3.0±2.2	*	3.4±2.7	3.5±2.8
Kentwood	*	*	*	*	4.5±3.3	5.2±3.6	5.4±3.7	7.0±4.1	7.9±4.4	8.2±4.6
Lansing	5.2±2.3	4.6±2.2	5.2±2.4	5.3±2.5	7.4±2.9	7.9±3.1	7.6±3.1	6.3±2.9	5.2±2.7	3.8±2.4
Livonia	5.4±3.0	5.0±2.9	*	*	4.9±2.9	5.3±3.0	5.1±2.9	3.8±2.5	4.2±2.6	4.7±2.8
Midland	5.5±4.1	*	*	*	4.7±3.7	6.1±4.2	6.1±4.2	4.6±3.6	*	*
Muskegon	6.7±4.9	*	*	7.1±5.2	8.6±5.3	6.0±4.4	5.3±4.2	*	*	-
Novi	*	5.1±4.1	*	*	*	5.1±4.1	*	*	*	8.8±5.7
Pontiac	8.5±4.6	7.7±4.6	6.3±4.4	*	4.9±3.9	4.8±3.8	6.2±4.3	6.4±4.4	6.8±4.7	6.2±4.6
Portage	6.8±4.2	7.4±4.4	6.1±4.0	4.1±3.3	5.4±3.7	5.4±3.7	4.7±3.5	*	6.2±4.0	5.7±3.9
Rochester Hills	5.5±3.4	5.6±3.5	3.4±2.7	3.4±2.7	3.9±2.9	*	3.5±2.8	*	*	*
Roseville	10.3±5.2	6.3±4.1	5.3±3.9	5.6±4.1	4.7±3.8	6.3±4.3	5.5±4.1	9.0±5.3	8.5±5.2	7.9±5.1
Royal Oak	3.4±2.5	5.8±3.3	6.8±3.5	8.3±3.9	6.5±3.5	6.9±3.6	3.9±2.7	2.9±2.3	*	*
Saginaw	6.3±4.1	4.3±3.5	*	*	5.7±4.2	9.7±5.4	11.4±5.9	13.0±6.5	8.2±5.4	9.6±5.9
Southfield	*	11.6±9.2	11.9±9.5	12.0±9.5	*	*	-	*	*	*
St Clair Shores	6.0±3.7	4.5±3.4	5.3±3.6	*	*	*	4.9±3.4	6.3±3.9	5.2±3.6	*
Sterling Heights	6.9±2.7	7.7±2.9	6.9±2.8	7.6±3.0	6.0±2.6	6.5±2.7	5.4±2.4	5.7±2.5	5.7±2.5	6.2±2.6
Taylor	5.6±3.5	5.3±3.5	6.7±4.0	8.2±4.4	8.0±4.3	6.8±4.0	6.1±3.8	6.2±3.8	5.2±3.6	4.0±3.2
Troy	5.3±3.6	6.1±4.0	5.4±3.7	5.9±3.9	4.6±3.4	4.7±3.4	3.9±3.1	*	4.1±3.3	5.8±4.0
Warren	6.8±2.7	6.3±2.7	6.9±2.9	5.9±2.7	8.0±3.2	6.7±2.9	5.7±2.7	4.7±2.5	5.5±2.7	6.6±3.0
Westland	5.9±3.1	5.7±3.1	7.8±3.7	8.6±3.9	8.5±3.9	9.0±4.0	8.0±3.8	7.2±3.6	4.5±2.9	4.2±2.9
Wyoming	8.6±3.2	6.7±2.8	5.3±2.5	3.8±2.1	3.2±2.0	4.2±2.3	5.7±2.7	5.5±2.7	4.3±2.4	3.0±2.1

Notes: This table shows cities with (1) populations greater than 40,000 according to 2007 estimates and (2) three-year average births of greater than 200. City birth and mortality statistics have changed from pre-2011 reports due to geocoding. See Data Quality Considerations for further details. Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 19-C
Black Three-Year Moving Average Infant Death Rates by City
Michigan Residents, 2007-2018

City	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18
Michigan	15.5±0.9	14.8±0.9	14.5±0.9	13.8±0.9	13.4±0.9	13.3±0.9	13.7±0.9	13.8±0.9	14.3±0.9	14.4±0.9
Battle Creek	21.0±11.7	23.0±12.9	21.5±12.6	11.9±9.5	12.1±8.9	11.6±8.5	16.0±9.9	10.2±8.1	*	*
Detroit	16.5±1.5	15.9±1.5	15.0±1.5	14.7±1.5	14.8±1.5	15.0±1.5	14.8±1.5	14.5±1.5	14.7±1.5	15.9±1.6
Flint	16.6±4.2	14.7±4.1	15.3±4.3	14.1±4.2	14.7±4.2	14.4±4.2	14.8±4.3	16.4±4.8	16.8±4.9	15.0±4.7
Grand Rapids	16.8±5.0	16.0±5.0	18.8±5.4	16.7±5.1	14.9±4.8	11.5±4.2	12.0±4.4	13.9±4.9	13.1±4.6	10.3±4.1
Kalamazoo	22.4±8.7	21.6±8.5	17.7±7.9	12.7±6.9	9.7±5.7	11.5±6.2	17.0±7.6	14.6±7.3	14.6±7.1	9.3±5.4
Lansing	17.9±6.4	18.3±6.5	13.5±5.7	11.0±5.2	8.9±4.7	10.7±5.1	13.6±5.6	16.2±6.2	16.0±6.1	13.4±5.5
Muskegon	*	12.0±8.3	13.1±8.5	17.4±10.2	18.1±10.1	20.1±10.8	21.6±11.2	29.1±13.3	26.5±12.4	20.9±10.8
Pontiac	19.9±6.8	19.1±6.7	16.5±6.2	12.5±5.3	12.6±5.2	16.4±5.9	19.4±6.5	17.9±6.2	16.1±5.9	11.7±5.1
Saginaw	20.1±7.0	18.4±6.9	20.5±7.5	14.1±6.3	15.8±6.5	14.2±6.3	17.5±7.2	18.1±7.5	17.5±7.2	14.8±6.6
Southfield	15.0±5.8	11.6±5.2	10.0±4.7	11.2±5.0	10.3±4.7	14.9±5.8	12.4±5.3	13.2±5.5	10.2±4.8	12.4±5.4
Taylor	9.3±7.4	11.9±8.2	18.8±9.8	21.6±10.2	18.7±9.4	10.2±7.0	7.6±6.0	7.2±5.7	9.6±6.6	10.6±6.9
Warren	14.8±7.7	14.6±7.3	14.1±6.9	11.9±6.0	9.4±5.1	7.8±4.6	5.6±3.9	6.8±4.2	9.4±4.9	10.5±5.1
Westland	11.0±7.6	14.0±8.2	12.1±7.5	14.7±8.3	11.7±7.2	9.1±6.3	6.6±5.3	8.6±5.9	9.4±6.1	14.5±7.5

Notes: This table shows cities with (1) populations greater than 40,000 according to 2007 estimates and (2) three-year average births of greater than 200. City birth and mortality statistics have changed from pre-2011 reports due to geocoding. See Data Quality Considerations for further details. Rates are per 1,000 live births. Adding and subtracting the number shown after the ± symbol from the rate creates a confidence interval indicating that the true rate lies between the lower and upper bounds of this interval with 95 % statistical confidence.

*: A rate is not calculated when there are fewer than 6 events, because the width of the confidence interval would negate any usefulness for comparative purposes.

Source: 2007-2018 Geocoded Michigan Death Certificate Registries 2007-2018 Geocoded Michigan Birth Certificate Registries. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 20-A
Number of Neonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	608	600	549	501	540	544	513	498	491	507	482
Alcona	1	1	-	-	1	-	1	-	-	1	-
Alger	3	-	-	-	-	-	-	-	-	-	-
Allegan	4	4	6	5	3	3	4	9	3	3	5
Alpena	1	-	-	1	-	1	1	1	-	1	1
Antrim	2	-	4	2	-	3	-	-	-	-	1
Arenac	-	2	-	1	1	4	2	-	-	-	-
Baraga	1	-	-	-	-	1	1	1	-	1	-
Barry	2	3	4	2	2	3	1	-	2	4	1
Bay	3	7	9	6	4	-	5	4	1	5	2
Benzie	-	-	-	-	-	2	-	1	2	1	-
Berrien	10	10	8	8	11	8	9	6	2	2	9
Branch	1	2	2	3	3	2	3	2	4	4	4
Calhoun	13	13	10	9	7	8	5	8	4	12	7
Cass	2	5	1	2	2	-	5	-	3	3	5
Charlevoix	1	2	-	-	-	-	-	2	-	1	-
Cheboygan	-	-	-	-	-	-	-	-	-	2	1
Chippewa	1	-	-	3	2	1	1	-	1	1	2
Clare	-	1	-	1	2	1	1	-	1	1	3
Clinton	1	1	3	2	2	1	3	5	1	2	1
Crawford	1	1	-	-	-	1	-	-	3	-	-
Delta	-	2	2	-	4	1	3	-	-	1	3
Dickinson	2	2	1	-	-	4	1	-	-	-	1
Eaton	3	3	7	5	2	6	3	7	7	2	1
Emmet	2	-	3	-	1	2	1	-	1	-	1
Genesee	27	34	19	22	19	25	23	29	31	15	19

Table 20-A
Number of Neonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gladwin	1	1	1	1	-	1	1	2	1	-	1
Gogebic	-	-	2	-	-	-	1	-	3	-	-
Grand Traverse	7	3	3	-	3	-	1	7	4	3	2
Gratiot	2	3	3	3	-	3	2	-	-	2	-
Hillsdale	3	1	1	2	1	3	-	3	4	5	-
Houghton	3	1	3	1	2	2	-	-	2	3	1
Huron	-	3	1	1	-	-	-	-	1	1	2
Ingham	22	14	12	16	16	20	15	11	5	8	14
Ionia	-	1	2	1	-	2	2	2	2	1	3
Iosco	-	1	1	1	-	-	2	1	-	2	2
Iron	-	-	1	-	-	-	-	-	-	1	2
Isabella	1	1	-	6	2	-	2	4	-	6	5
Jackson	11	7	9	8	3	10	5	7	12	7	4
Kalamazoo	13	20	17	8	17	11	11	11	5	25	11
Kalkaska	-	1	1	-	3	1	3	-	2	-	1
Kent	48	42	32	40	38	28	37	38	45	31	29
Keweenaw	-	-	-	-	-	-	-	-	-	-	-
Lake	-	1	-	-	1	-	-	1	-	1	1
Lapeer	3	6	4	-	1	4	3	1	4	3	2
Leelanau	-	-	3	-	-	-	1	-	1	-	-
Lenawee	9	8	11	3	6	4	5	4	5	3	1
Livingston	6	9	6	9	7	3	9	5	3	7	3
Luce	1	-	-	-	-	-	1	-	-	-	-
Mackinac	1	1	-	-	-	-	-	2	3	-	-
Macomb	40	52	39	43	40	52	34	43	38	52	33

Table 20-A
Number of Neonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Manistee	1	1	1	-	-	-	1	-	-	1	-
Marquette	2	2	1	3	-	2	-	1	1	-	1
Mason	1	1	2	1	-	-	1	2	-	-	1
Mecosta	4	-	1	4	4	4	2	3	-	1	2
Menominee	1	1	-	1	-	-	1	1	-	-	1
Midland	1	3	2	2	3	4	3	-	1	2	1
Missaukee	-	1	-	-	1	-	2	-	-	-	-
Monroe	5	3	4	2	6	10	2	8	3	10	3
Montcalm	1	2	5	3	3	4	1	2	3	-	-
Montmorency	-	-	1	-	-	-	-	-	-	-	-
Muskegon	9	9	16	11	11	14	9	7	15	11	9
Newaygo	3	1	2	6	2	2	3	-	3	3	1
Oakland	62	60	63	45	61	69	66	53	55	55	64
Oceana	2	2	3	-	2	1	3	1	3	1	-
Ogemaw	-	-	1	1	1	-	-	-	-	-	-
Ontonagon	-	-	-	-	-	1	1	-	-	-	-
Osceola	-	1	1	-	-	1	-	2	2	1	1
Oscoda	1	1	-	-	1	-	1	-	-	-	1
Otsego	1	-	2	3	1	-	1	1	1	-	-
Ottawa	19	10	17	17	14	20	10	12	9	9	10
Presque Isle	-	-	1	1	3	-	1	2	1	2	2
Roscommon	1	1	-	1	-	-	1	1	-	-	-
Saginaw	10	15	10	8	8	13	11	12	16	4	12
St. Clair	4	6	4	6	10	2	3	6	7	4	5
St. Joseph	8	9	2	3	1	5	3	1	5	4	2

Table 20-A
Number of Neonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sanilac	1	2	-	-	1	1	3	3	4	3	1
Schoolcraft	-	-	-	-	-	-	-	-	-	-	-
Shiawassee	-	2	2	1	2	2	1	1	2	4	2
Tuscola	-	2	4	1	4	1	-	3	-	1	2
Van Buren	6	4	2	3	4	4	3	3	5	1	2
Washtenaw	14	18	11	10	14	12	23	10	15	10	14
Wayne	197	172	158	151	172	147	147	144	129	155	159
Detroit City	123	114	98	80	104	87	80	81	76	86	99
Wayne County Excluding Detroit City	74	58	60	71	68	60	67	63	53	69	60
Wexford	2	2	2	2	5	3	2	1	1	2	1
Unknown	-	-	-	-	-	1	-	1	4	-	1

Notes: **Neonatal Death:** Deaths occurring to individuals less than 28 days of age.
 -: A dash indicates quantity zero.

Source: 2008-2018 Michigan Resident Death Files,
 Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

**Table 20-B
Number of Postneonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018**

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	286	281	268	248	243	255	260	267	256	256	241
Alcona	-	-	-	1	-	-	-	-	-	-	-
Alger	-	1	-	-	-	-	-	-	-	-	-
Allegan	2	2	-	2	1	6	5	1	2	1	1
Alpena	-	3	1	1	-	-	1	-	-	1	-
Antrim	-	1	-	-	-	-	-	-	-	-	-
Arenac	-	-	1	1	-	-	-	-	1	-	-
Baraga	-	-	-	-	-	-	-	-	1	-	-
Barry	3	2	4	-	1	1	1	-	-	1	1
Bay	5	1	3	3	1	2	5	2	-	2	2
Benzie	-	-	1	-	-	-	-	-	-	-	-
Berrien	6	7	6	10	3	6	6	3	8	6	7
Branch	1	-	2	1	1	1	1	1	1	1	2
Calhoun	1	7	8	6	3	3	4	6	2	3	4
Cass	2	1	1	1	2	3	-	3	-	-	3
Charlevoix	-	-	-	1	-	-	1	1	-	1	1
Cheboygan	1	2	-	-	-	-	-	1	1	-	2
Chippewa	-	-	2	1	-	1	1	-	-	-	-
Clare	1	1	1	-	-	-	-	1	1	2	2
Clinton	2	1	2	-	-	1	2	3	2	-	-
Crawford	-	-	-	1	-	-	-	2	-	1	1
Delta	-	1	-	1	-	-	-	1	2	-	-
Dickinson	-	-	1	-	-	-	-	-	2	-	2
Eaton	4	3	1	1	3	4	3	2	2	1	2
Emmet	-	1	-	-	1	-	-	-	-	1	1
Genesee	19	17	11	18	19	15	18	14	17	22	8

Table 20-B
Number of Postneonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gladwin	-	1	1	-	-	1	2	2	-	-	-
Gogebic	-	-	-	-	-	-	-	-	2	-	-
Grand Traverse	1	2	-	1	1	-	5	2	2	-	3
Gratiot	1	-	2	-	-	-	2	1	1	-	1
Hillsdale	1	-	1	-	1	-	-	2	3	1	-
Houghton	1	-	-	-	-	1	1	-	-	2	-
Huron	-	-	-	1	3	-	-	-	-	2	-
Ingham	3	6	2	5	6	8	6	10	16	8	5
Ionia	1	-	3	2	1	3	1	1	2	1	3
Iosco	1	2	2	1	1	1	-	-	1	2	1
Iron	-	1	1	1	-	-	1	-	-	-	-
Isabella	-	3	4	-	2	2	-	1	1	2	-
Jackson	3	5	2	3	4	5	3	3	5	7	3
Kalamazoo	9	9	13	3	2	15	5	9	3	10	4
Kalkaska	-	-	1	-	1	1	-	-	-	-	-
Kent	21	14	22	19	12	11	15	18	11	15	12
Keweenaw	-	-	-	-	-	-	-	-	-	-	-
Lake	-	1	1	-	-	-	-	-	-	1	-
Lapeer	1	5	3	-	1	-	2	3	-	-	-
Leelanau	-	-	-	1	-	1	2	1	-	-	-
Lenawee	2	1	4	3	2	5	4	2	3	2	1
Livingston	4	3	5	3	1	4	4	2	1	1	3
Luce	1	-	-	-	-	-	1	1	1	-	-
Mackinac	1	-	-	-	-	-	-	-	-	-	-
Macomb	22	26	9	10	12	15	14	17	15	16	17

Table 20-B
Number of Postneonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Manistee	-	1	1	1	-	-	1	-	1	2	1
Marquette	-	2	1	1	2	-	1	4	1	1	1
Mason	1	-	1	-	-	-	1	-	-	-	1
Mecosta	5	-	2	2	-	1	1	-	1	-	1
Menominee	1	-	-	-	1	-	-	-	1	-	-
Midland	2	2	-	2	3	3	2	3	-	-	1
Missaukee	-	-	-	-	-	-	-	-	1	-	-
Monroe	6	6	5	1	3	5	1	1	4	1	1
Montcalm	2	2	1	1	2	1	1	1	1	3	3
Montmorency	-	-	-	-	2	-	-	-	-	-	-
Muskegon	7	6	7	4	7	5	6	11	5	4	3
Newaygo	-	2	1	1	-	1	4	3	-	1	-
Oakland	26	17	21	25	32	21	17	18	17	16	15
Oceana	1	-	1	-	3	-	3	1	-	-	1
Ogemaw	1	1	1	-	1	-	1	-	1	1	1
Ontonagon	-	-	-	-	-	-	-	-	-	-	-
Osceola	-	-	1	2	-	-	-	-	-	1	1
Oscoda	1	-	-	-	1	-	-	-	-	-	1
Otsego	-	1	-	1	2	3	2	-	-	1	1
Ottawa	4	5	3	4	4	6	2	9	7	2	3
Presque Isle	-	1	1	-	-	-	-	-	-	-	-
Roscommon	-	-	-	-	-	-	-	-	1	-	3
Saginaw	15	11	2	9	5	6	10	7	11	6	7
St. Clair	4	9	2	5	3	4	6	3	4	3	2
St. Joseph	2	1	5	1	6	2	2	-	1	-	3

Table 20-B
Number of Postneonatal Deaths by County of Residence,
State of Michigan, Michigan Counties and Detroit City
Michigan Residents, 2008-2018

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sanilac	-	1	1	-	3	1	-	1	-	-	-
Schoolcraft	-	-	-	-	-	-	-	-	-	-	-
Shiawassee	1	-	2	-	1	1	2	3	4	1	1
Tuscola	1	2	1	1	-	1	2	1	1	1	2
Van Buren	4	1	2	1	4	2	-	3	2	2	3
Washtenaw	3	4	9	4	6	6	5	4	7	5	5
Wayne	78	76	75	79	66	70	71	78	76	90	86
Detroit City	52	52	48	50	47	47	50	58	49	51	59
Wayne County Excluding Detroit City	26	24	27	29	19	23	21	20	27	39	27
Wexford	1	-	1	1	1	-	2	-	-	2	2
Unknown	-	-	-	-	-	-	1	-	-	-	-

Notes: **Postneonatal Death:** Deaths occurring to individuals 28–364 days of age.
 -: A dash indicates quantity zero.

Source: 2008-2018 Michigan Resident Death Files,
 Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

Table 21-A
Number of Neonatal Deaths by Local Health Department and
State of Michigan,
Michigan Residents, 2008-2018

Health Department	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	608	600	549	501	540	544	513	498	491	507	482
Allegan County	4	4	6	5	3	3	4	9	3	3	5
Barry-Eaton District	5	6	11	7	4	9	4	7	9	6	2
Berrien County	10	10	8	8	11	8	9	6	2	2	9
Branch-Hillsdale-St. Joseph	12	12	5	8	5	10	6	6	13	13	6
Calhoun County	13	13	10	9	7	8	5	8	4	12	7
Central Michigan District	3	7	2	10	5	7	7	9	4	8	10
Chippewa County	1	-	-	3	2	1	1	-	1	1	2
City Of Detroit	123	114	98	80	104	87	80	81	76	86	99
Delta & Menominee	1	3	2	1	4	1	4	1	-	1	4
Dickinson-Iron District	2	2	2	-	-	4	1	-	-	1	3
District #10	14	11	12	13	18	12	17	8	12	9	7
District #2	2	3	2	2	3	-	4	1	-	3	3
District #4	1	-	2	2	3	1	2	3	1	5	4
Genesee County	27	34	19	22	19	25	23	29	31	15	19
Grand Traverse County	7	3	3	-	3	-	1	7	4	3	2
Ingham County	22	14	12	16	16	20	15	11	5	8	14
Ionia County	-	1	2	1	-	2	2	2	2	1	3
Jackson County	11	7	9	8	3	10	5	7	12	7	4
Kalamazoo County	13	20	17	8	17	11	11	11	5	25	11
Kent County	48	42	32	40	38	28	37	38	45	31	29
Lapeer County	3	6	4	-	1	4	3	1	4	3	2
Lenawee County	9	8	11	3	6	4	5	4	5	3	1
Livingston County	6	9	6	9	7	3	9	5	3	7	3
Luce-Mackinac-Alger-Schoolcraft	5	1	-	-	-	-	1	2	3	-	-
Macomb County	40	52	39	43	40	52	34	43	38	52	33

Table 21-A
Number of Neonatal Deaths by Local Health Department and
State of Michigan,
Michigan Residents, 2008-2018

Health Department	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Marquette County	2	2	1	3	–	2	–	1	1	–	1
Mid-Michigan District	4	6	11	8	5	8	6	7	4	4	1
Midland County	1	3	2	2	3	4	3	–	1	2	1
Monroe County	5	3	4	2	6	10	2	8	3	10	3
Muskegon County	9	9	16	11	11	14	9	7	15	11	9
Oakland County	62	60	63	45	61	69	66	53	55	55	64
Ottawa County	19	10	17	17	14	20	10	12	9	9	10
Bay County	3	7	9	6	4	–	5	4	1	5	2
Saginaw County	10	15	10	8	8	13	11	12	16	4	12
Shiawassee County	–	2	2	1	2	2	1	1	2	4	2
St Clair County	4	6	4	6	10	2	3	6	7	4	5
Van Buren–Cass County	8	9	3	5	6	4	8	3	8	4	7
Washtenaw County	14	18	11	10	14	12	23	10	15	10	14
Wayne County	74	58	60	71	68	60	67	63	53	69	60
Benzie–Leelanau District	–	–	3	–	–	2	1	1	3	1	–
Northwest Michigan Community Health	6	2	9	5	2	5	2	3	2	1	2
Western Upper Peninsula District	4	1	5	1	2	4	3	1	5	4	1
Tuscola County	–	2	4	1	4	1	–	3	–	1	2
Huron County	–	3	1	1	–	–	–	–	1	1	2
Sanilac County	1	2	–	–	1	1	3	3	4	3	1
Unknown	–	–	–	–	–	1	–	1	4	–	1

Notes: **Neonatal Death:** Deaths occurring to individuals less than 28 days of age.
 -: A dash indicates quantity zero.

Source: 2008-2018 Michigan Resident Death Files,
 Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services

**Table 21-B
Number of Postneonatal Deaths by Local Health Department and
State of Michigan,
Michigan Residents, 2008-2018**

Health Department	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Michigan	286	281	268	248	243	255	260	267	256	256	241
Allegan County	2	2	–	2	1	6	5	1	2	1	1
Barry–Eaton District	7	5	5	1	4	5	4	2	2	2	3
Berrien County	6	7	6	10	3	6	6	3	8	6	7
Branch–Hillsdale–St. Joseph	4	1	8	2	8	3	3	3	5	2	5
Calhoun County	1	7	8	6	3	3	4	6	2	3	4
Central Michigan District	1	5	8	3	2	3	2	4	4	5	6
Chippewa County	–	–	2	1	–	1	1	–	–	–	–
City Of Detroit	52	52	48	50	47	47	50	58	49	51	59
Delta & Menominee	1	1	–	1	1	–	–	1	3	–	–
Dickinson–Iron District	–	1	2	1	–	–	1	–	2	–	2
District #10	8	4	9	6	5	3	12	6	3	7	7
District #2	3	3	3	2	3	1	1	–	2	3	3
District #4	1	6	2	1	2	–	1	1	1	1	2
Genesee County	19	17	11	18	19	15	18	14	17	22	8
Grand Traverse County	1	2	–	1	1	–	5	2	2	–	3
Ingham County	3	6	2	5	6	8	6	10	16	8	5
Ionia County	1	–	3	2	1	3	1	1	2	1	3
Jackson County	3	5	2	3	4	5	3	3	5	7	3
Kalamazoo County	9	9	13	3	2	15	5	9	3	10	4
Kent County	21	14	22	19	12	11	15	18	11	15	12
Lapeer County	1	5	3	–	1	–	2	3	–	–	–
Lenawee County	2	1	4	3	2	5	4	2	3	2	1
Livingston County	4	3	5	3	1	4	4	2	1	1	3
Luce–Mackinac–Alger–Schoolcraft	2	1	–	–	–	–	1	1	1	–	–
Macomb County	22	26	9	10	12	15	14	17	15	16	17

Table 21-B
Number of Postneonatal Deaths by Local Health Department and
State of Michigan,
Michigan Residents, 2008-2018

Health Department	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Marquette County	-	2	1	1	2	-	1	4	1	1	1
Mid-Michigan District	5	3	5	1	2	2	5	5	4	3	4
Midland County	2	2	-	2	3	3	2	3	-	-	1
Monroe County	6	6	5	1	3	5	1	1	4	1	1
Muskegon County	7	6	7	4	7	5	6	11	5	4	3
Oakland County	26	17	21	25	32	21	17	18	17	16	15
Ottawa County	4	5	3	4	4	6	2	9	7	2	3
Bay County	5	1	3	3	1	2	5	2	-	2	2
Saginaw County	15	11	2	9	5	6	10	7	11	6	7
Shiawassee County	1	-	2	-	1	1	2	3	4	1	1
St Clair County	4	9	2	5	3	4	6	3	4	3	2
Van Buren-Cass County	6	2	3	2	6	5	-	6	2	2	6
Washtenaw County	3	4	9	4	6	6	5	4	7	5	5
Wayne County	26	24	27	29	19	23	21	20	27	39	27
Benzie-Leelanau District	-	-	1	1	-	1	2	1	-	-	-
Northwest Michigan Community Health	-	3	-	2	3	3	3	1	-	3	3
Western Upper Peninsula District	1	-	-	-	-	1	1	-	3	2	-
Tuscola County	1	2	1	1	-	1	2	1	1	1	2
Huron County	-	-	-	1	3	-	-	-	-	2	-
Sanilac County	-	1	1	-	3	1	-	1	-	-	-
Unknown	-	-	-	-	-	-	1	-	-	-	-

Notes: **Postneonatal Death:** Deaths occurring to individuals 28-364 days of age.
 -: A dash indicates quantity zero.

Source: 2008-2018 Michigan Resident Death Files,
 Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services