

Annual Wisconsin Birth and Infant Mortality Report

20

17

June 2019 Release

TABLE OF CONTENTS

● <u>Preface</u>	2
● <u>Introduction</u>	3
● <u>Executive Summary</u>	4
● <u>Births</u>	6
● <u>Health Care Characteristics</u>	9
● <u>Birth Outcomes</u>	11
● <u>Infant Death</u>	14

PREFACE

The Department of Health Services (DHS) provides annual reports on vital statistics as a service to the people of Wisconsin and others interested in Wisconsin. The *Annual Birth and Infant Mortality Report, 2017*, is one of those reports, containing key findings and descriptive information collected by the State Vital Records Office. This report is published annually and replaces two earlier report series: *Wisconsin Births and Infant Deaths* and *Births to Teens in Wisconsin*. Technical notes are available at <https://www.dhs.wisconsin.gov/stats/births/index.htm>.

Additional health-related statistical information for Wisconsin is available on the DHS site at <https://www.dhs.wisconsin.gov/stats/index.htm>. Wisconsin Interactive Statistics on Health (WISH) is an online data query system, located at <https://www.dhs.wisconsin.gov/wish/index.htm>, which includes birth and infant death data for multiple years and geographic areas in Wisconsin.

This publication was prepared by the Office of Health Informatics, Division of Public Health, Wisconsin DHS. The findings in this report were compiled by Erica Garcia-Lago, Cory Steinmetz, and Laura Ninneman in the Office of Health Informatics. Draft review was provided by staff in the Bureau of Community Health Promotion, Division of Public Health. The report was prepared under the supervision of Oskar Anderson, director of the Office of Health Informatics; Lisa Walker, state registrar of the Wisconsin Vital Records Office; and Milda Aksamitauskas, section chief of the Health Analytics Section.

Comments, suggestions, and request for further information may be addressed to:

Office of Health Informatics
Division of Public Health
1 W Wilson St, Rm 118
Madison, WI 53701
Telephone: 608-266-0377
Email: dhshealthstats@dhs.wisconsin.gov

INTRODUCTION

This report presents statistical information about Wisconsin residents' births, fetal deaths, and infant deaths that occurred in 2017. Information from previous years is also presented to show changes over time. The statistical tables from which the information in this report is presented can be found in the [accompanying detailed tables](#). This report includes information on the number and rate of live births, characteristics of the mother, characteristics of the medical care received during pregnancy and delivery, birth outcomes, and infant deaths.

DHS is committed to promoting health equity in Wisconsin and reducing differences in health outcomes that are preventable, unjust, or unfair. Thus, many of the statistics provided in this report are presented for each major racial and ethnic group and other social groups to inform efforts by our partners in addressing health inequities in birth outcomes.

In 2011, Wisconsin began collecting birth data from hospitals using a new web-based data-entry system. The new system adopted the 2003 U.S. Standard Certificate of Live Birth, replacing the previous version from 1989. Many changes were made to the data collection process with this change. In this report, we made very careful decisions for how to compare 2017 data and data from years prior to 2011. Other longitudinal comparisons of data from before 2011 to data after 2011 should be made with great caution. Please refer to the Technical Notes for a description of changes.

Data used in the report include resident birth data, matched infant birth-death data, fetal death data, and induced abortion data. All data refer to Wisconsin residents unless otherwise noted. Poverty statistics at the block group level from the U.S. Census Bureau's American Community Survey were incorporated to present birth outcome patterns by neighborhood poverty.

Geographic information presented is based on place of residence. This means that events have been assigned to the area where the person lives (usually legal residence) regardless of where the events occurred. For births, the reference is to the residence of the mother. For infant deaths, the reference is to the residence of the infant at the time of death. For example, if a person gave birth at a hospital in La Crosse County but resided in Monroe County, the birth will appear in the data for Monroe County.

Births



There were 2.4% fewer births in 2017 than 2016.

The general fertility rate has decreased by 4.1 live births per 1,000 women of reproductive age since 2008. Births among women under 30 are on the decline, but are increasing among women over 30. This is partly due to women waiting longer to have children (the average age of first-time mothers increased from 25.3 in 2008 to 26.8 in 2017), and a growing number of mothers having four or more children. The teen birth rate is less than half of what it was 10 years ago.

Health Care Characteristics



79% of mothers received an adequate amount of prenatal care in 2017.

Women with more education and women who live in low poverty areas were more likely to receive adequate prenatal care than women with less education or those who live in high poverty areas. Both urban and rural parts of the state had lower prenatal care utilization than suburban or medium metro areas. Medical factors for poor birth outcomes, such as previous preterm birth or previous Cesarean delivery, affected 41% of Wisconsin births.

Birth Outcomes



The proportion of low birthweight infants has increased among black, American Indian, and Hispanic mothers.

Large inequities in poor birth outcomes by race or ethnicity and education persist. Statewide, about one out of every 10 births is born premature, but prematurity occurs more frequently for black mothers (one out of every seven births) and less frequently for Laotian or Hmong mothers (one out of every 15 births). The statewide increase in low birthweight since 2011 was only reflected by increases among black, American Indian, and Hispanic mothers, indicating a growing disparity in low birthweight.

Infant Mortality



Our black infant death rate is 3 times that of the white rate and is getting worse.

Preterm birth (birth before 37 weeks gestation) is a leading driver of neonatal death, and the rate of neonatal deaths due to preterm birth is 27% higher in Wisconsin than the nation as a whole.

The death rate for infants born to black mothers is the highest in the nation and is getting worse. Infant deaths are trending upwards for black, American Indian, and other Asian or Pacific Islander mothers indicating growing racial and ethnic disparities.

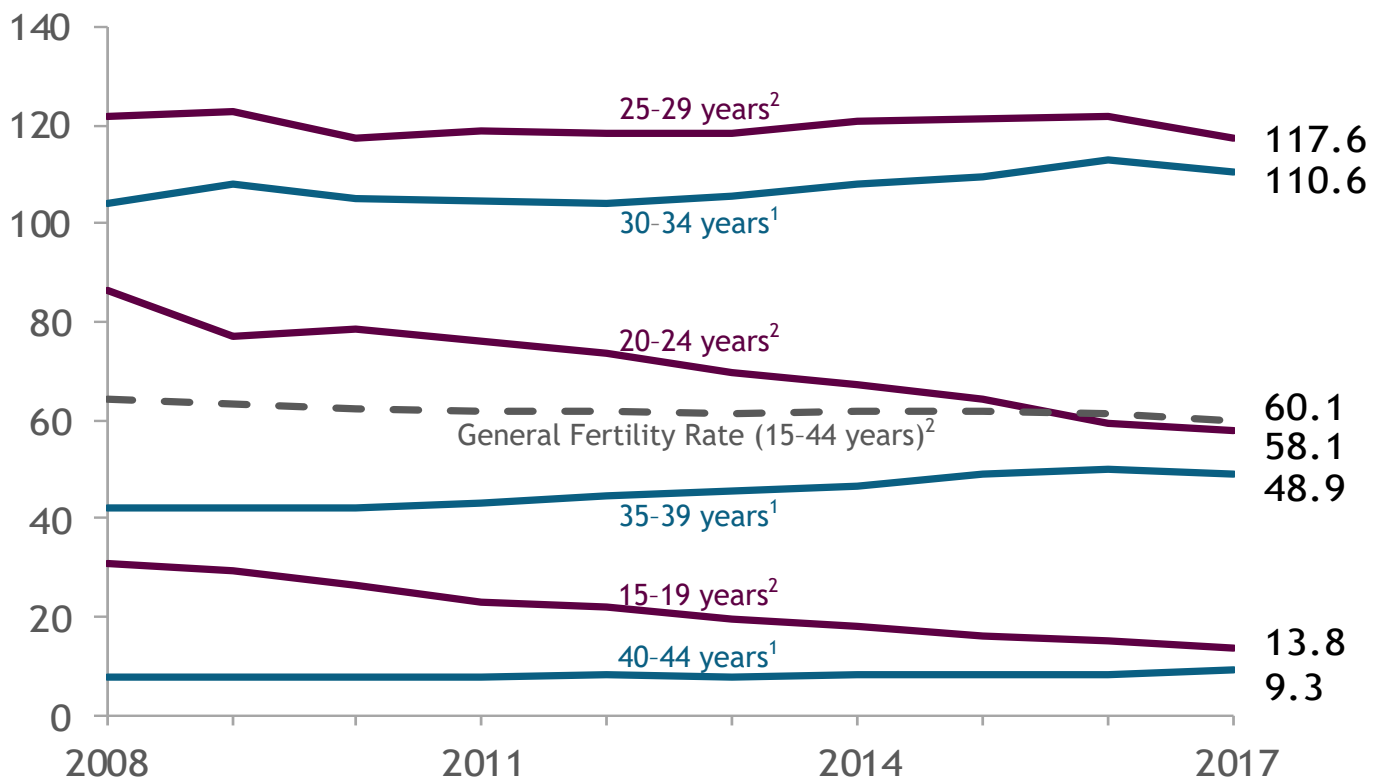
KEY POINTS

- The birth rate for women over 30 is increasing but is decreasing for women under 30.
- The teen birth rate is less than half what it was 10 years ago.
- Compared to 2008, fewer births were to first-time mothers, and more births were to mothers with three or more previous births.

Age

Fertility rates **decreased** among women under 30 and **increased** among women 30 and older between 2008 and 2017.

Figure 1. Fertility rate per 1,000 women by age group, Wisconsin, 2008-2017



¹Significantly increasing trend for 2008-2017 ($p < 0.01$).

²Significantly decreasing trend for 2008-2017 ($p < 0.01$).

Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

In 2017, there were 64,994 live births to Wisconsin residents, a 2.4% decrease from 2016 (66,593).

The 2017 general fertility rate was 60.1 births per 1,000 Wisconsin females ages 15-44. This rate has slowly decreased from 64.2 in 2008. The 2017 Wisconsin general fertility rate was very similar to that of the U.S. (60.2).

The steady downward trend for the teen birth rate and births to women ages 20-24 continued in 2017. The birth rates for women ages 25-29, 30-34, and 35-39 also decreased from 2016 to 2017, even though they had been stable or

increasing in recent years. The only age group for which the birth rate increased in 2017 was women ages 40-44. Consistent with the trends in age-specific fertility rates, the average age of first-time mothers has increased by 1.5 years in the past decade, from 25.3 years old in 2008 to 26.8 years old in 2017.

Wisconsin counties experienced a wide range of general fertility rates in 2017. Pierce (43.7) and Iron (46.1) counties had the lowest general fertility rates in 2017. Menominee county had the highest rate (115.9), which was almost two times the state rate.

Demographics

In 2017, most births among Wisconsin residents occurred to white women (71.2%) followed distantly by births to black (10.5%) and Hispanic women (9.8%). Because white, black, and Hispanic women made up 77.5%, 8.5%, and 8.5% of all women of reproductive age, respectively, in 2017 it is apparent that white women had lower fertility rates than black and Hispanic women. (See Technical Notes for an explanation of race and ethnicity categories.) About one out of every 10 births was to a Wisconsin mother who was born outside of the U.S., unchanged in recent years.

In 2017, about one in 10 Wisconsin women (10.4%) who gave birth had not finished high school, and more than one in three mothers (35.1%) had achieved a bachelor's degree or higher. In 2008, these percentages were 14.8 and 30.9, respectively, indicating a trend towards higher educational attainment among mothers.

Three out of every eight Wisconsin births (37.5%) were to unmarried mothers in 2017, and this proportion has remained fairly steady for the past 10 years.

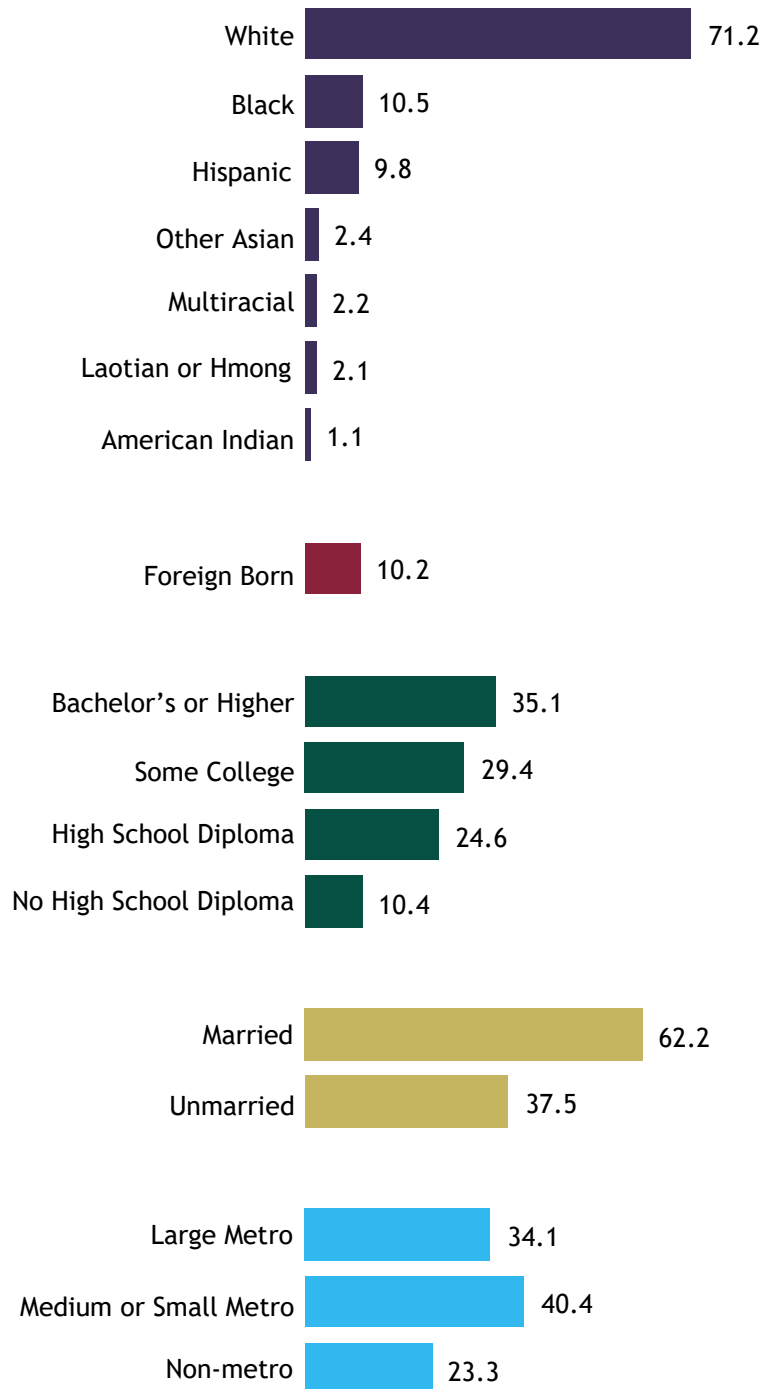
About a third of Wisconsin births occurred in counties near large metro areas, over 40% occurred in counties belonging to medium or small metro areas, and a little under a quarter of births occurred in non-metro counties. The distribution of births by urbanicity is relatively unchanged from 10 years prior. (See Technical Notes for an explanation of urban-rural categories.)

Teen Births

In 2017, there were 2,591 live births to mothers under age 20, representing 4.0% of all Wisconsin births. The 2017 teen birth rate of 13.8 births per 1,000 females ages 15-19 was down 55% from a rate of 30.9 in 2008. The rate for mothers ages 15-17 was 5.4 and the rate for mothers ages 18-19 was 26.4.

The estimated pregnancy rate among Wisconsin teens in 2017 was 16.7 pregnancies per 1,000 females ages 15-19, compared to 18.1 in 2016. (This rate incorporates reported births, fetal deaths, and reported induced abortions among teens.)

Figure 2. Percent of all births by maternal demographics, Wisconsin, 2017

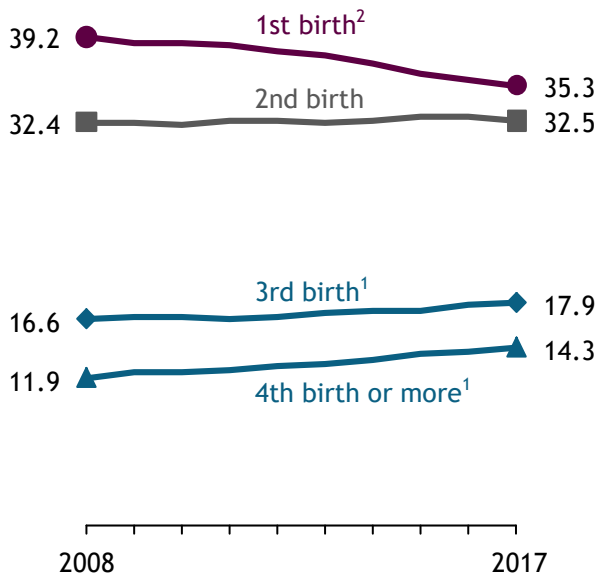


Notes: Hispanic includes all races. All other racial groups are non-Hispanic.
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

The teen birth rate declined among all major racial and ethnic groups from 2016 to 2017; however, there remained large differences between groups. In 2017, the teen birth rate was 38.1 among blacks, 29.2 among Hispanics, 27.6 among American Indians, 9.9 among Asians, and 7.7 among whites.

Birth Order and Spacing

The proportion of births to first-time mothers **decreased** between 2008 and 2017. Figure 3. Percentage of births by birth order, Wisconsin, 2008-2017



¹Significantly increasing trend for 2008-2017 ($p < 0.01$).

²Significantly decreasing trend for 2008-2017 ($p < 0.01$).

Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

In the past 10 years, the proportion of births to first-time mothers decreased by 3.9 percentage points (a 10% decrease), and the proportion of births to mothers having their fourth or subsequent child increased by 2.4 percentage points (a 20% increase). The proportion of mothers having their third child also increased even though the total number of third birth order infants decreased. Each of these trends was statistically significant. In other words, fewer women are starting families each year, but there are more women growing large families. This trend may partially explain the changing age distribution of mothers as well.

Pursuit of higher education and entering the workforce may explain why many women are delaying starting families or not having kids at all. The growing number of larger families could be due to the growing Amish and Mennonite populations, which often have high fertility families, or could be due to changes in other demographic and cultural groups.

Birth spacing, or the interpregnancy interval (IPI), is the number of months between a live birth and the conception of the next live birth. Short IPIs are associated with increased risk of adverse birth outcomes, such as preterm birth and placental abruption. Pregnancies with very short IPIs (i.e., 1-6 months) are at the highest risk, but all IPIs less than the recommended 18 months are considered short. In 2017, 31.1% of non-firstborn births had short IPIs, and 5.6% had very short IPIs. Laotian or Hmong mothers had the highest percentage of short (39.2%) and very short (11.6%) IPIs, and mothers who identified as another Asian or Pacific Islander racial group had the lowest percentage of short (21.7%) and very short (3.4%) IPIs.

Very short birth spacing was most common among Laotian or Hmong and American Indian mothers.

Figure 4. Percentage of births with a short interpregnancy interval by six-month interval and race and ethnicity, Wisconsin, 2017

	1-6 months	7-11 months	11-17 months
Laotian or Hmong	11.6	12.6	15.0
American Indian	11.4	14.4	9.5
Black	9.7	9.4	10.7
Multiracial	8.4	11.2	12.5
Hispanic	6.8	8.1	10.7
White	4.4	9.8	17.9
Other Asian	3.4	6.8	11.5

Note: Only includes second and higher order births.

Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

HEALTH CARE CHARACTERISTICS

KEY POINTS

- 41% of mothers had one or more medical risk factors.
- A larger proportion of mothers with high socioeconomic status receive adequate prenatal care than mothers with lower status.

Risk Factors

Forty-one percent of mothers had one or more medical risk factors documented on their birth records, which put them at higher risk for pregnancy complications or poor birth outcomes. Almost 13% of mothers had previous Cesarean deliveries, over 9% had a previous preterm birth or other poor pregnancy outcomes, 6% had gestational diabetes, 6% had gestational hypertension, and about 2% of mothers had prepregnancy hypertension.

These medical risk factors noted on the birth record were not uniform across social groups. Only 39% of white mothers had any medical risk factors noted, but over half (51%) of black mothers had risk factors noted.

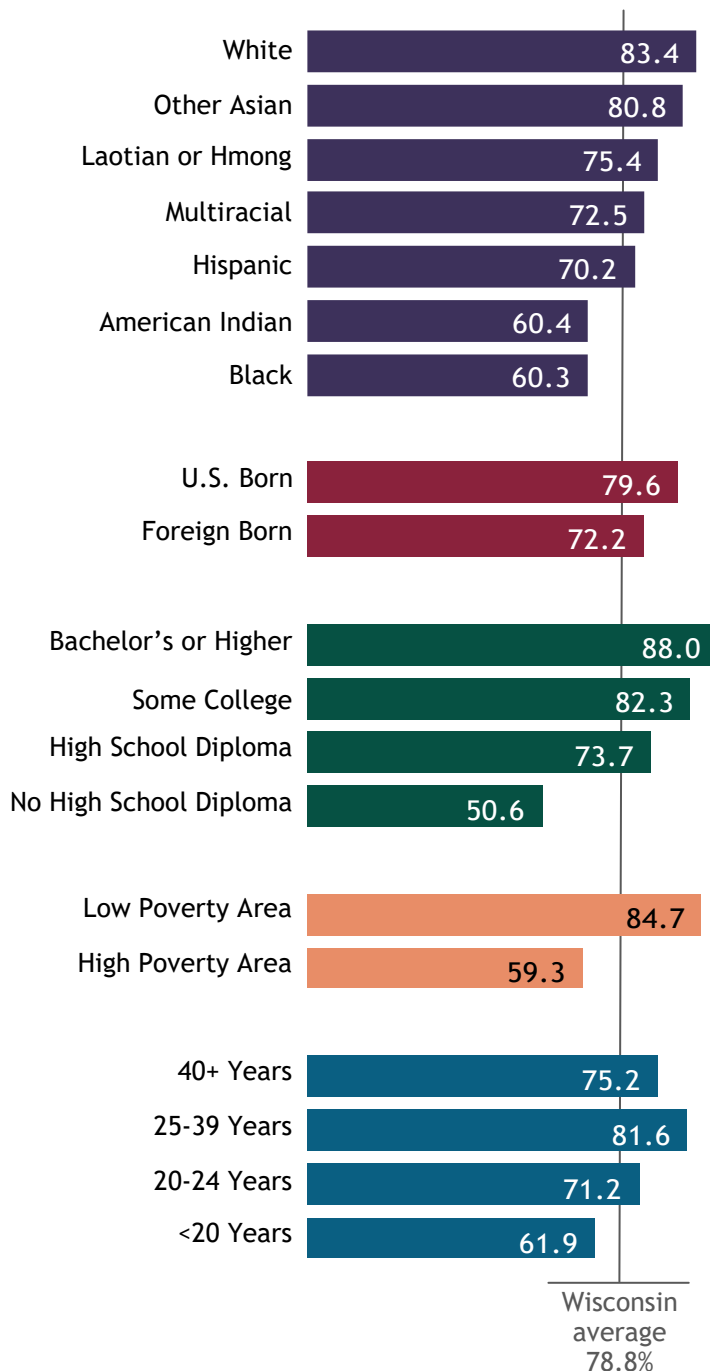
Additional risk factors include the proportion of mothers who were obese at the time they became pregnant (29.6%) and the proportion of Cesarean deliveries (26.4%).

Prenatal Care Utilization

It is important for mothers to receive medical care during their pregnancy to monitor and promote the health of both the mother and the fetus. Prenatal care utilization is considered adequate if the mother receives the initial prenatal care visit during the first four months and completes the recommended number of visits throughout the pregnancy (note that the quality of the care is not measured), which is based on the American College of Obstetricians and Gynecologists prenatal care standards for uncomplicated pregnancies. (See Technical notes for complete definition of adequate prenatal care according to the Kotelchuck index.) In 2017, 78.8% of mothers received an adequate amount prenatal care, which is similar to 79.1% in 2016.

Receipt of adequate prenatal care was lowest among American Indian and black mothers, those without a high school diploma, those who live in high poverty areas (census block groups with greater than 40% of households under the poverty level), or were less than 20 years old.

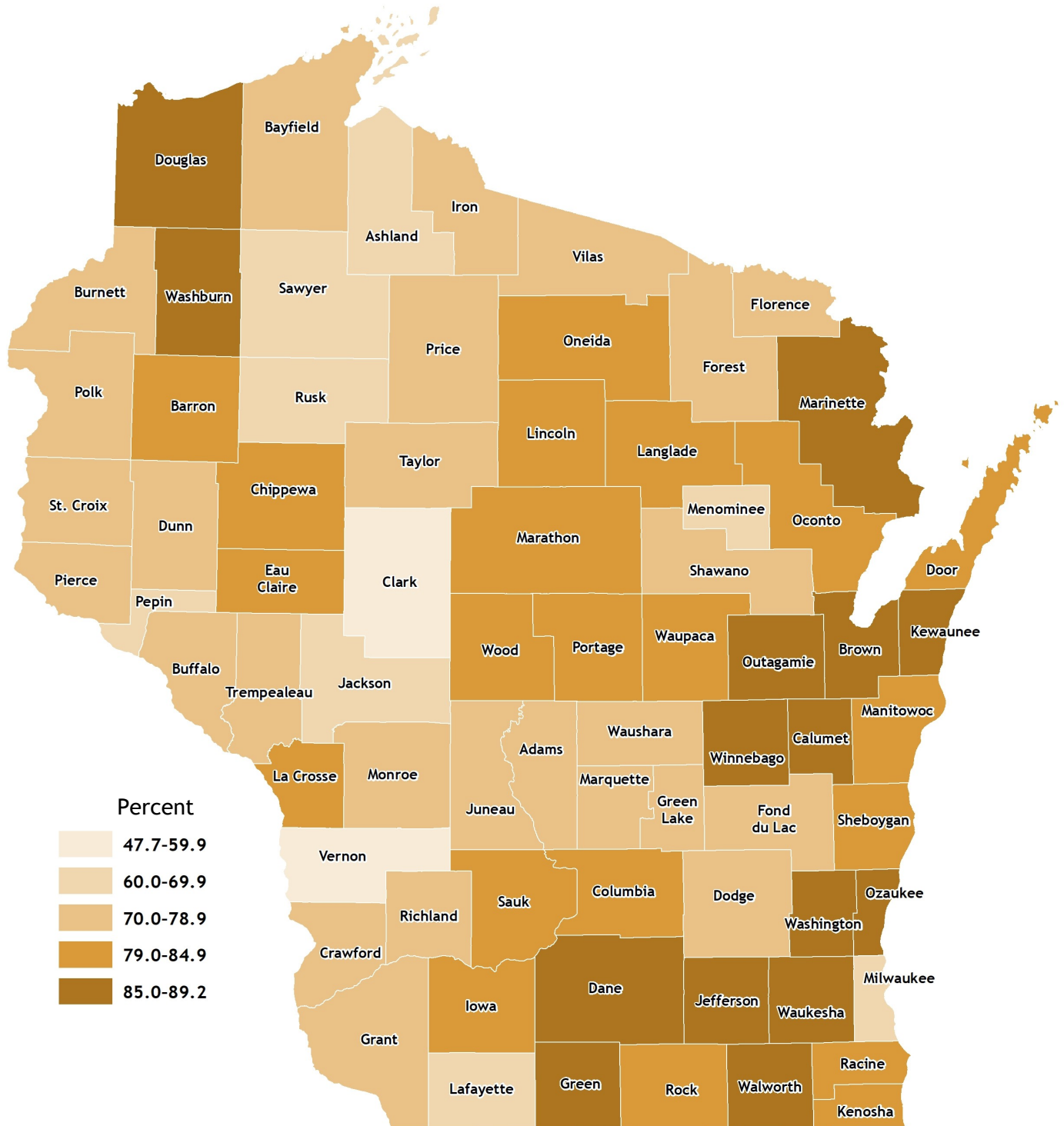
Figure 5. Percent of Mothers who received Adequate Prenatal Care, Wisconsin, 2017



Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

HEALTH CARE CHARACTERISTICS

Map 1. Percentage of adequate prenatal care by county, Wisconsin, 2017



Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

The receipt of adequate prenatal care was generally higher in the more populous eastern and southern parts of the state and lower in the western and more rural parts of the state. Milwaukee, Washburn, and Marinette counties were a few exceptions to the general trend. The percentage was lowest in Vernon and Clark Counties, with about half of mothers receiving early and frequent prenatal care, and was highest in Washington County, in which nine out of 10 mothers received adequate prenatal care.

KEY POINTS

- Racial and ethnic disparities in poor birth outcomes persist with the percentage of low birthweight infants increasing for black, American Indian, and Hispanic mothers in recent years.
- One out of every 10 births was premature.

Low Birthweight

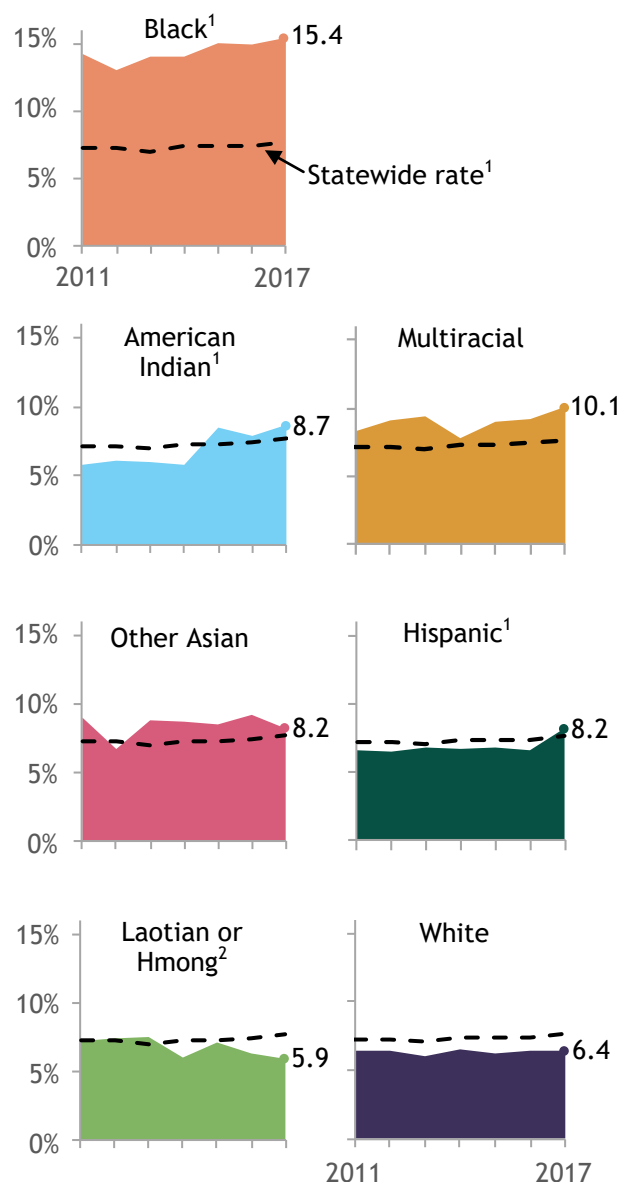
Infants born weighing less than 2,500 grams (5 pounds, 8 ounces) are considered low birthweight. Many infants with low birthweight are healthy, but some have serious health concerns, such as breathing problems, infections, and jaundice. Moreover, disorders related to short gestation and low birthweight are the leading cause of neonatal infant death (See Figure 9).

In 2017, 7.7% of Wisconsin babies were born with low birthweight, which is an increase from 7.4% in 2016 and continues a slight, yet statistically significant, increasing trend since 2011.

Some populations had a higher burden of low birthweight than others. Because prematurity is a main driver of low birthweight, the pattern of low birthweight infants across populations is very similar to that of premature births (see Figure 7). The racial and ethnic inequities in low birthweight are profound and are getting worse. From 2011 to 2017, the percentage of low birthweight infants remained steady among whites, but increased significantly for blacks, American Indians, and Hispanics. The percentage decreased significantly for Laotian or Hmong infants during that same time period.

Percent low birthweight infants trending up for black, American Indian, and Hispanic mothers.

Figure 6. Percentage of low birthweight births by race or ethnicity, Wisconsin, 2011-2017



¹Significant increasing trend for 2011-2017 (p<0.05).

²Significant decreasing trend for 2011-2017 (p<0.05).

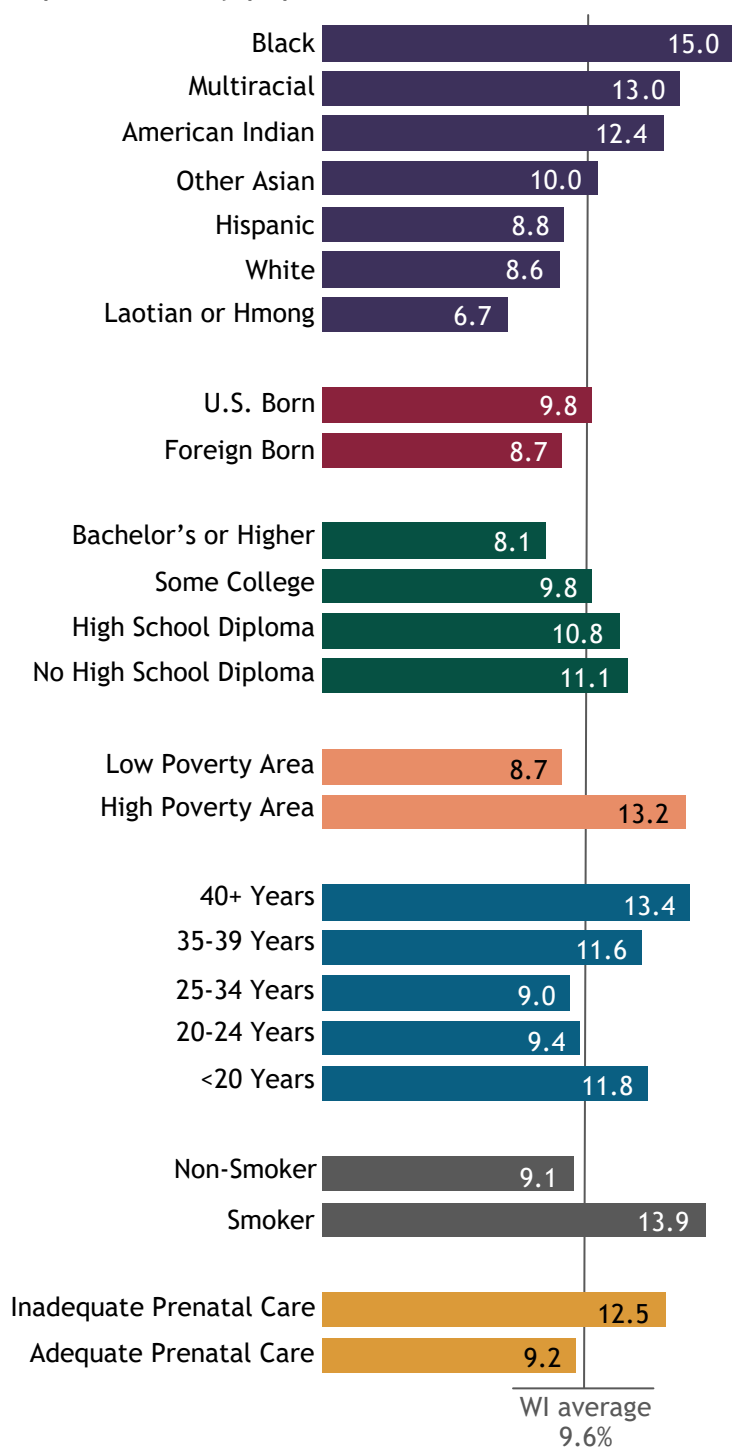
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

Premature Births

In 2017, 6,257 Wisconsin infants were born prematurely, or before full term (less than 37 weeks gestation). This total represented 9.6% of all births, which was unchanged from 2016. Premature birth is a concern because disorders related to short gestation and low birthweight is the leading cause of neonatal infant death, and it can lead to life-long health consequences for the infants that survive.

The burden of premature birth was not spread evenly across populations. The highest rates of prematurity were among black mothers (15.0%), and the lowest rates were among Laotian or Hmong mothers (6.7%). Mothers born outside of the U.S., with a Bachelor’s degree or higher, living in low poverty areas, with adequate prenatal care, and 20-34 years old had lower preterm birth rates than the state average. Mothers who had less education, smoked, were over age 35 or under 20, did not receive adequate prenatal care, or lived in high poverty areas had higher preterm birth rates.

Figure 7. Percentage of births that are premature by population, Wisconsin, 2017



Notes: Smoker refers to mothers who reported smoking a cigarette at any time during pregnancy.
 Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

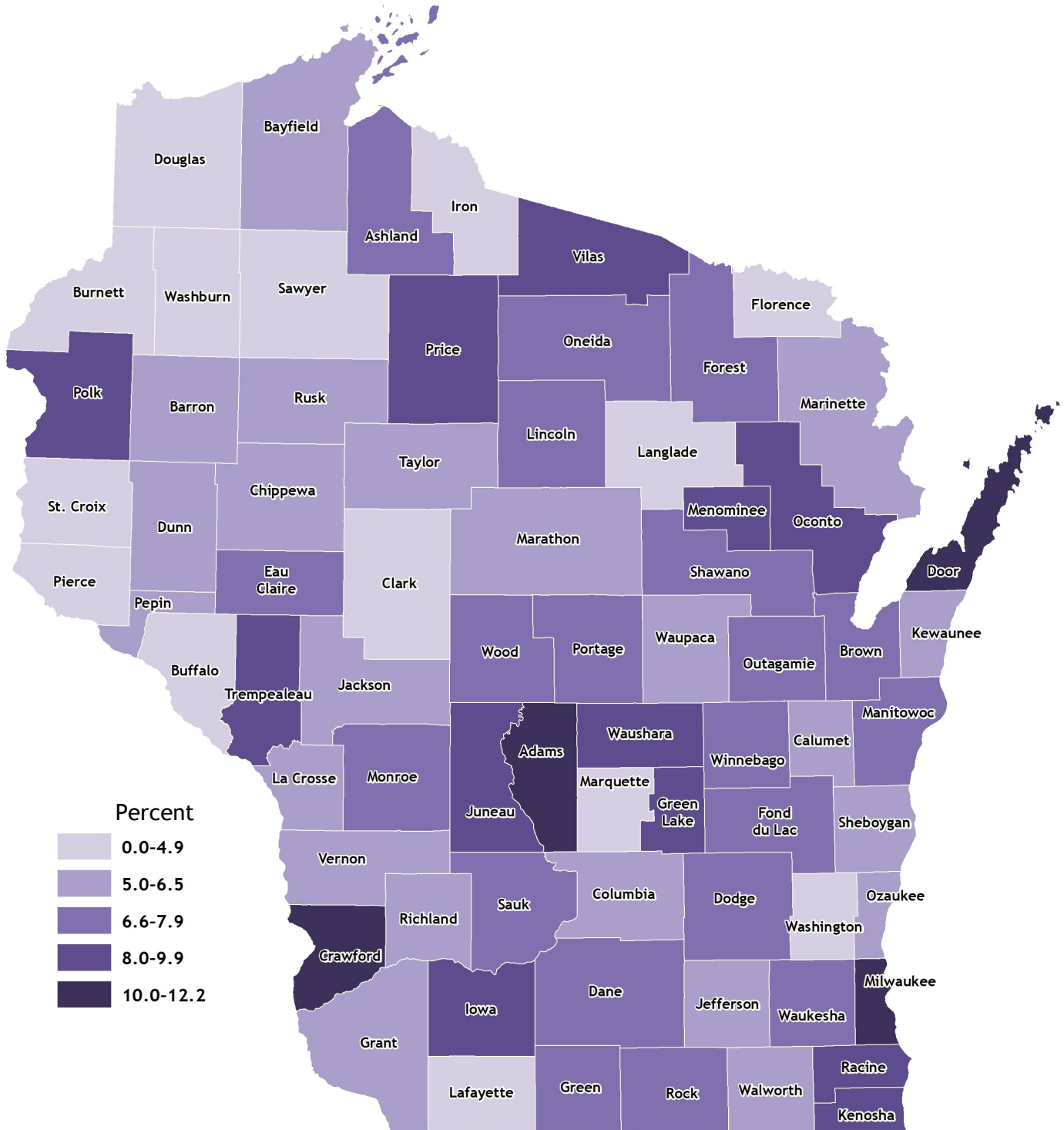
Poverty and Premature Births

The association between high poverty areas and preterm birth rates is likely due to a combination of social, economic, environmental, medical, and behavioral factors. One important link is the chronic stress induced by the social and economic challenges of living in an impoverished neighborhood. Chronic stress increases the hormonal stress levels in expectant mothers, which, in turn, can cause mothers to go into labor prematurely.¹ Undue stress from neighborhood poverty and other forms of discrimination may contribute to higher preterm birth rates for mothers in racial or ethnic minority groups who disproportionately and unfairly tend to live in high poverty areas.

1. Latendresse, G. (2009). The Interaction Between Chronic Stress and Pregnancy: Preterm Birth from A Biobehavioral Perspective. *Journal of Midwifery & Women’s Health*, 54: 8-17. doi:[10.1016/j.jmwh.2008.08.001](https://doi.org/10.1016/j.jmwh.2008.08.001)

BIRTH OUTCOMES

Map 2. Percent low birthweight by county, Wisconsin, 2017



Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

There was a wide range in the percentage of low birthweight infants across Wisconsin from less than 1% in Florence and Iron counties to over 12% in Adams county. There is not a clear geographic pattern of low birthweight across the state, but the counties most affected tend to have larger minority populations, less access to medical care, or more poverty than less affected counties.

KEY POINTS

- The black infant mortality rate in Wisconsin is the worst in the country and may be getting worse.
- Disorders related to short gestation and low birthweight are the leading cause of neonatal death, and the rate is much higher than the national average.

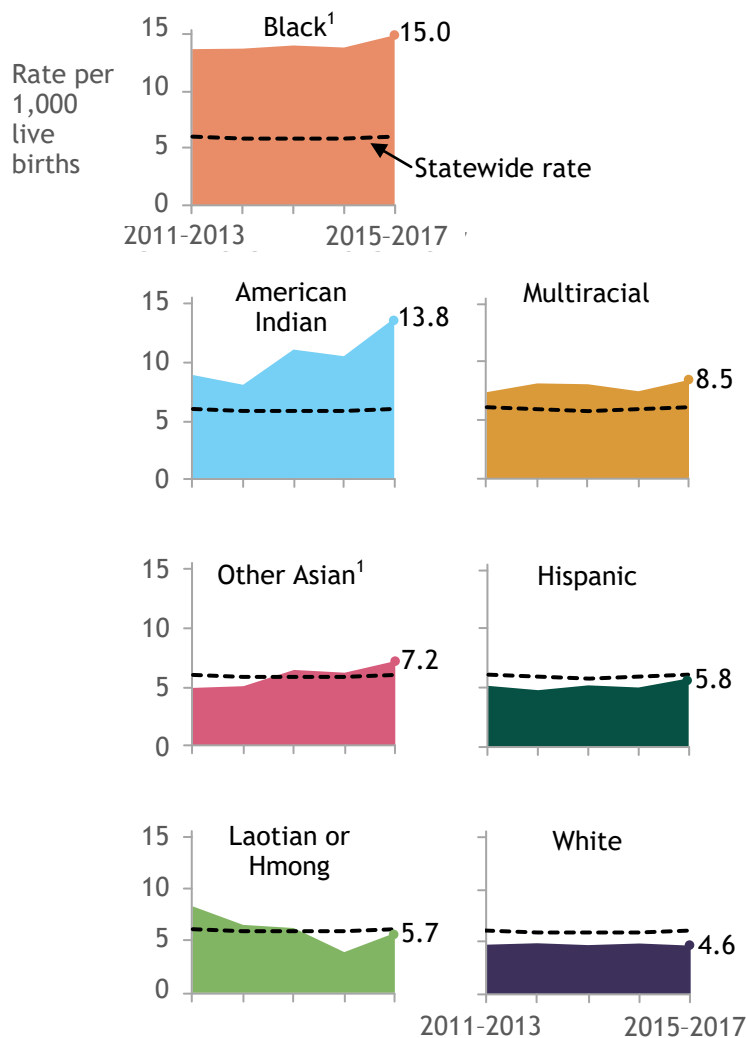
In Wisconsin, 408 infants under the age of one year died in 2017. The 2017 infant death rate was 6.3 infant deaths per 1,000 live births, which has been relatively stable since 2011. Our infant death rate was higher than the U.S. rate of 5.8 infant deaths per 1,000 live births.

Three-year rolling average infant death rates were calculated for the major racial and ethnic groups. The patterns and trends of infant death rate by race and ethnicity (see Figure 8) are very similar to the patterns and trends observed for low birthweight (see Figure 6) because infants born with low birthweight are at elevated risk for death. During 2015-2017 the infant death rate for

infants born to black mothers was 15.0 infant deaths per 1,000 live births, which was more than three times the rate for whites (4.6).

Racial disparities in infant death persist and may be growing.

Figure 8. Three-year infant death rates (per 1,000 live births) by race or ethnicity, 2011-2013 through 2015-2017



¹Borderline significant increasing trend, 2011-2017 ($p < 0.07$).
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

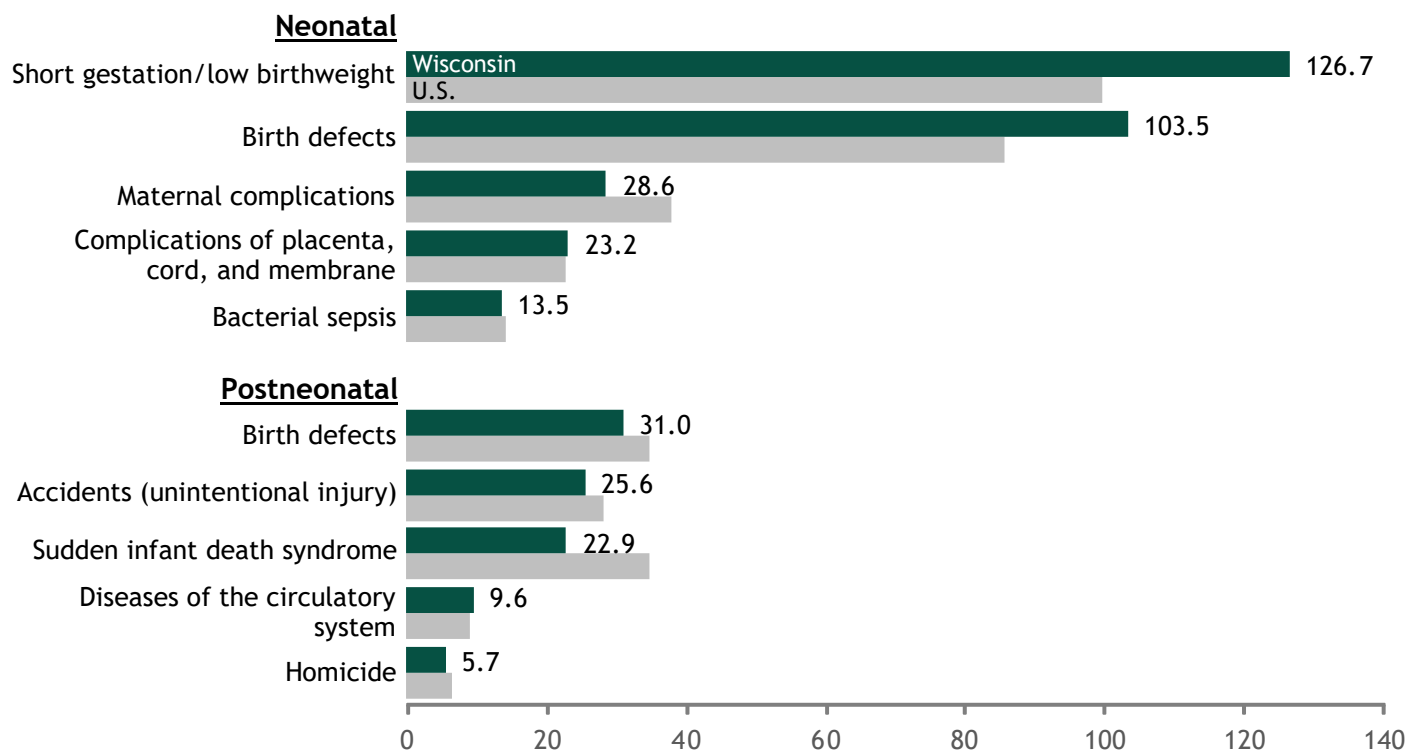
Why is the black-white difference in infant death called an inequity?

The black-white difference in infant death is considered an inequity because its causes are systemic, avoidable, and unfair. An important driver of the inequity is the different social and physical conditions in which black mothers and white mothers live and work. These living conditions have a large impact on the mothers' health before, during, and after pregnancy, which in turn affects the health of their babies.² Discriminatory policies and practices by both public and private sectors throughout history have resulted in healthier social and physical conditions for whites and less healthy conditions for blacks and other minority groups. For example, the history of legal residential racial segregation has shaped our communities so that white communities often have greater access to health care, better housing options, more job opportunities, stronger social networks, and less poverty and crime than black communities. These unequal and unfair conditions create more hardship and stress throughout the lifespan for black women, leading to worse maternal health and more adverse birth outcomes.²

2. Lu, M. C., Kotelchuck, M., Hogan, V., Jones, L., Wright, K., & Halfon, N. (2010). [Closing the Black-White gap in birth outcomes: a life-course approach](#). *Ethnicity & disease*, 20(1 Suppl 2), S2-62-76.

INFANT DEATH

Preterm birth is the leading cause of neonatal death and is higher in Wisconsin than in the U.S.
 Figure 9. Top Five Causes of Infant Death per 100,000 live births by infant age, 2013-2017



Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services and CDC Wonder.

The infant death rate for blacks in Wisconsin is the worst infant death rate in the country.³ American Indians also had a high rate of 13.8 infant deaths per 1,000 live births, which has been increasing in recent years (trend not statistically significant due to unstable estimates). Upward trends were also observed for blacks and other Asians or Pacific Islanders from 2011 to 2017 (borderline statistical significance).

Between 2013 and 2017, seven out of 10 infant deaths occurred in the first four weeks of life, and the leading causes of these neonatal deaths were different from the leading causes of postneonatal deaths (28 to 364 days old). Only birth defects, or congenital malformations, was a top five leading cause in both age groups. The neonatal death rates for preterm birth (i.e., disorders related to short gestation or low birthweight) and birth defects were 27% and 21% higher, respectively, in Wisconsin than they were nationally. Birth defects and preterm births were by far the most common causes of infant death, and together accounted for over 40% of all infant deaths in Wisconsin. Other

leading causes of infant death in Wisconsin had similar or slightly lower rates than the national rates.

Infant deaths were also patterned by age, mother's education, and area poverty level. In 2017, the infant death rate was 13.1 per 1,000 births to teens, more than twice the rate to mothers ages 20 and older (6.0). The infant death rate was almost four times higher for infants whose mothers started but did not complete high school (11.4) compared to mothers who completed college (3.0), and the rate was nearly three times higher for infants from high poverty areas (12.2) compared to low poverty areas (4.6).

There were 291 fetal deaths, or stillbirths, recorded in 2017. The fetal death rate was 4.5 per 1,000 live births and fetal deaths. The 2017 fetal death rate was just slightly lower than it has been in recent years, and reached the lowest it has been since 1990. Fetal deaths are reported if the fetus reached 20 weeks of gestation or 350 grams. (See Technical Notes for a full definition of fetal deaths.)

3. Xu JQ, Murphy SL, Kochanek KD, Bastian B, Arias E. Deaths: Final data for 2016. National Vital Statistics Reports; vol 67 no 5. Hyattsville, MD: National Center for Health Statistics. 2018. https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05.pdf

Questions or concerns about the data presented in this report?

Please email dhshealthstats@dhs.wisconsin.gov to learn more or request additional statistics.

Suggested citation:

Wisconsin Department of Health Services, Division of Public Health, Office of Health informatics. *Annual Wisconsin Birth and Infant Mortality Report, 2017* (P-01161-19). June 2019.



WISCONSIN DEPARTMENT
of **HEALTH SERVICES**