

Annual Wisconsin Birth and Infant Mortality Report

2018

Wisconsin Department of Health Services
Division of Public Health
Office of Health Informatics

Table of Contents

● <u>Preface</u>	<u>2</u>
● <u>Introduction</u>	<u>3</u>
● <u>Executive Summary</u>	<u>4</u>
● <u>Births</u>	<u>5</u>
● <u>Health Care Characteristics</u>	<u>8</u>
● <u>Birth Outcomes</u>	<u>10</u>
● <u>Infant Death</u>	<u>13</u>

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, 2018*, 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 for this report are available on the [DHS webpage for Births and Infant Deaths](#).

Additional health-related statistical information for Wisconsin is available on the [DHS Data and Statistics webpage](#). The [Wisconsin Interactive Statistics on Health \(WISH\)](#) is an online data query system, 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 Laura Ninneman and Ousmane Diallo in the Office of Health Informatics. Draft review was provided by staff in the Office of Health Informatics and the Bureau of Community Health Promotion, Division of Public Health. The report was prepared under the supervision of Huong Nguyen-Hilfiger, director of the Office of Health Informatics and Lynette Childs, state registrar of the Wisconsin Vital Records Office.

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INTRODUCTION

This report presents statistical information about Wisconsin residents' births, fetal deaths, and infant deaths that occurred in 2018. Information from previous years is also presented to show changes over time. The statistical tables used for this report 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.

The Department of Health Services (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 2018 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, see the [technical notes](#) for more information on the poverty measures used in this report.

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. Events occurring outside of Wisconsin to Wisconsin residents are also included in this report. When describing births or fetal deaths, the mother's residence is used. When describing infant deaths, the decedent's residence is used. 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 64,143 births in 2018.

The general fertility rate has decreased by 4.1 live births per 1,000 women of reproductive age since 2009. Births among women under 30 are declining, 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 25.4 in 2009 to 27.2 in 2018), and a growing number of mothers having four or more children. The teen birth rate is half of what it was 10 years ago.

Health Care



79% of mothers received an adequate amount of prenatal care in 2018.

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. See the technical notes for a definition of adequate prenatal care. 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 43% 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, 9.9% of births are born premature, but prematurity occurs more frequently for Black mothers (15.6%) and less frequently for Laotian or Hmong mothers (7.7%).

Compared to 2017, there were increases in low birthweight among mothers of all races except white indicating a growing disparity in low birthweight.

Infant Mortality



Wisconsin's Black infant death rate is 3 times that of the white rate.

In 2018, there were 389 deaths to infants less than 1 year old. The infant mortality rate is 6.1 deaths per 1,000 live births compared to 6.3 in 2017. There are 315 fetal deaths in 2018. 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 21% higher in Wisconsin than the nation.

The death rate for infants born to Black mothers is one of the highest in the nation. Wisconsin has a long history of health inequities in infant mortality with no consistent improvement over the past few decades.

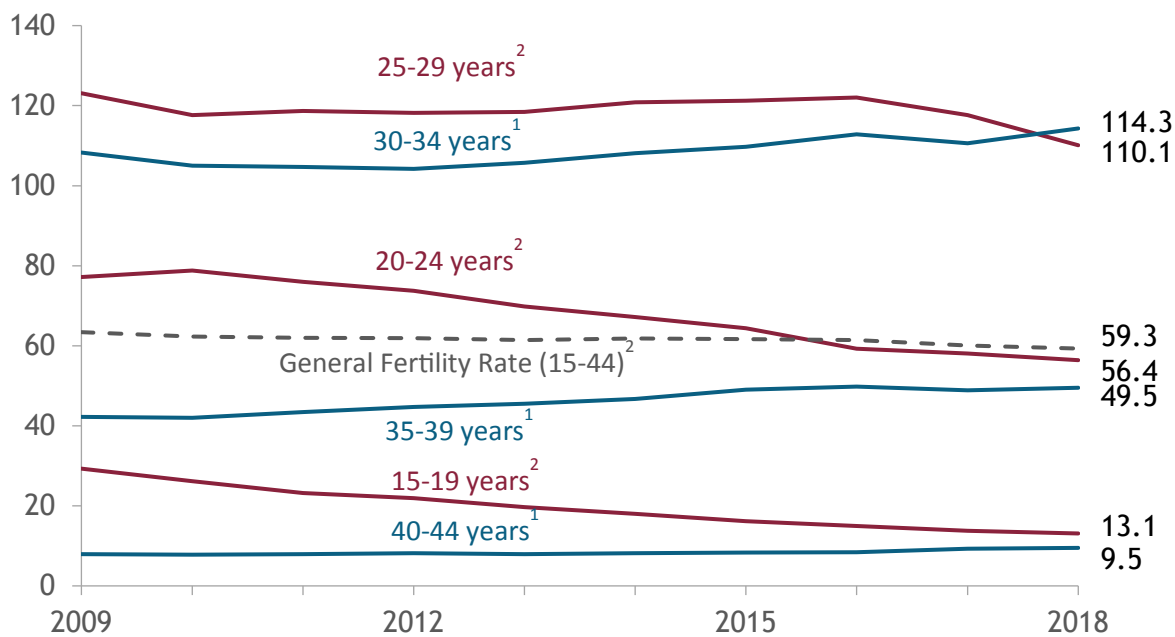
KEY POINTS

- The birth rate for women over 30 is increasing but is decreasing for women under 30.
- Over the last 10 years, there has been a 55% drop in the teen birth rate.
- Compared to 2009, 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 2009 and 2018.

Figure 1. Fertility rate per 1,000 women by age group, Wisconsin, 2009-2018



¹Significantly increasing trend for 2009-2018 (p<0.01).

²Significantly decreasing trend for 2009-2018 (p<0.01).

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

In 2018, there were 64,143 live births to Wisconsin residents, a 1.3% decrease from 2017 (64,994).

The 2018 general fertility rate was 59.3 births per 1,000 Wisconsin females ages 15-44. This rate has slowly decreased from 63.4 in 2009. The 2018 Wisconsin general fertility rate was similar to that of the U.S. (59.1).

The steady downward trend for the teen birth rate and births to women ages 20-24 continued in 2018. The birth rates for women ages 25-29 decreased while women ages 30-34, 35-39, and 40-44 increased from 2017 to 2018.

Consistent with the trends in age-specific fertility rates, the average age of first-time mothers has increased by 1.8 years in the past decade, from 25.4 years old in 2009 to 27.2 years old in 2018.

In 2018, general fertility rates varied greatly between Wisconsin counties. Pierce (41.4) and Dunn (44.4) counties had the lowest general fertility rates in 2018. Menominee County had the highest rate (112.0), which was almost two times the state rate.

Teen Births

In 2018, there were 2,431 live births to mothers under age 20, representing 3.8% of all Wisconsin births. The 2018 teen birth rate of 13.1 births per 1,000 females ages 15-19 was down 55% from a rate of 29.3 in 2009. The rate for mothers ages 15-17 was 4.9 and the rate for mothers ages 18-19 was 25.0.

The estimated pregnancy rate among Wisconsin teens in 2018 was 16.2 pregnancies per 1,000 females ages 15-19, compared to 16.7 in 2017. (This rate incorporates reported births, fetal deaths, and reported induced abortions among teens.)

The teen birth rate declined among all major racial and ethnic groups from 2017 to 2018; however, there remained large differences between groups. In 2018, the teen birth rate was 36.1 among Black teens, 21.7 among Hispanic teens, 25.1 among American Indian teens, 10.0 among Asian teens, and 7.1 among white teens.

Demographics

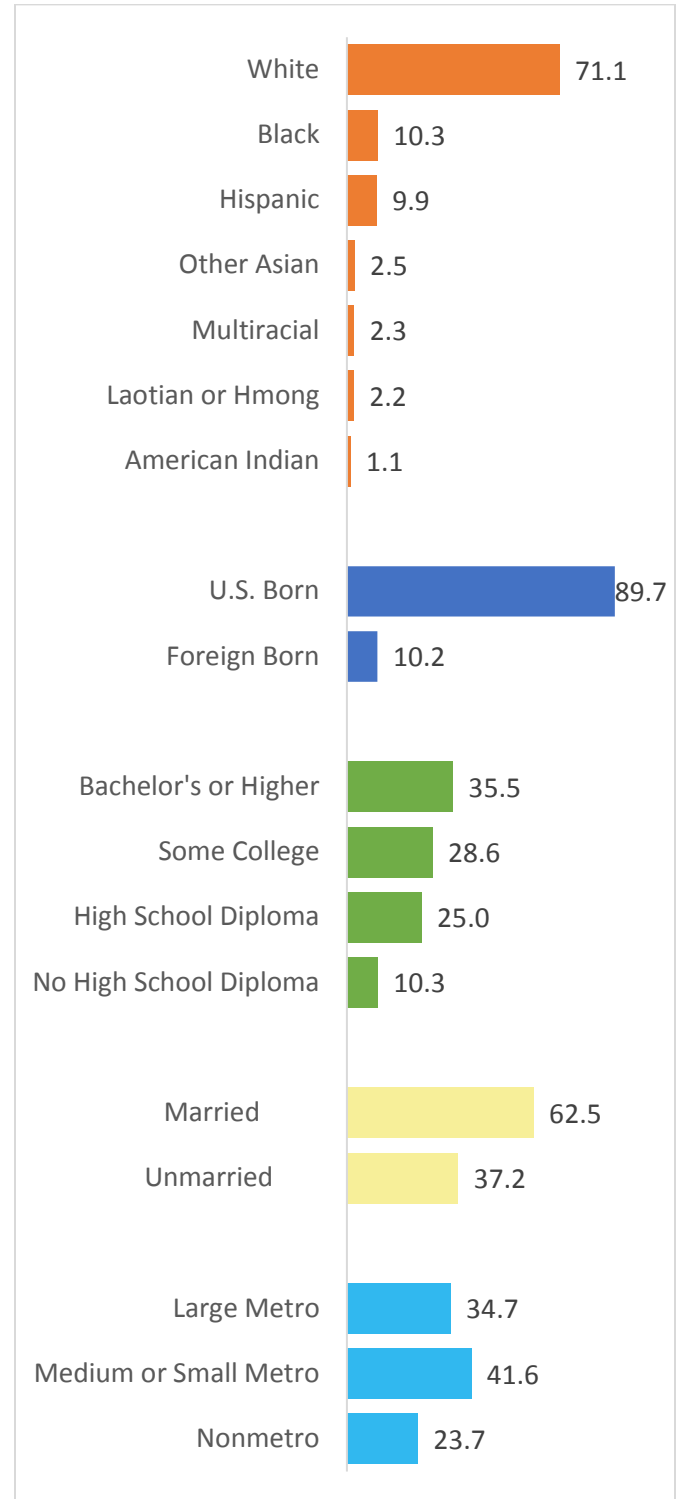
In 2018, most births among Wisconsin residents occurred to white women (71.1%) followed distantly by births to Black (10.3%) and Hispanic women (9.9%). (See Technical Notes for an explanation of race and ethnicity categories.)

About one out of every 10 births was to a Wisconsin mother who was born outside of the U.S., this percent is unchanged in recent years.

In 2018, 10.3% of Wisconsin women who gave birth had not finished high school, and 35.5% had achieved a bachelor's degree or higher. In 2009, these percentages were 14.1 and 31.4, respectively, indicating a trend towards higher educational attainment among mothers.

About a third of Wisconsin births occurred in counties near large metro areas, over 40% occurred in counties near 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.)

Figure 2. Percent of all births by maternal demographics, Wisconsin, 2018

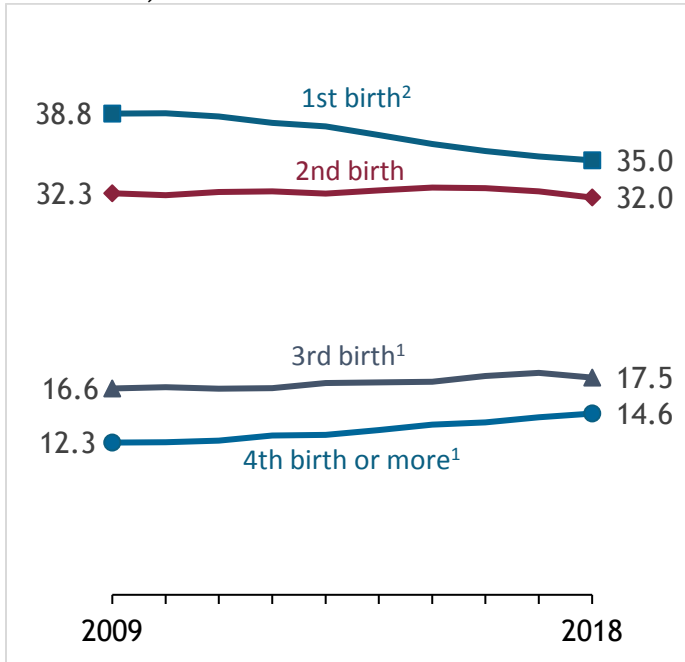


Notes: Hispanic includes all races. All other racial groups are non-Hispanic.
 Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services

Birth Order and Spacing

The proportion of births to first-time mothers **decreased** between 2009 and 2018.

Figure 3. Percentage of births by birth order, Wisconsin, 2009-2018



¹Significantly increasing trend for 2009-2018 ($p < 0.01$).

²Significantly decreasing trend for 2009-2018 ($p < 0.01$).

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 3.8 percentage points (a 10% decrease), and the proportion of births to mothers having their fourth or subsequent child increased by 2.3 percentage points (a 19% 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.

Birth spacing, or the interpregnancy interval (IPI), is the number of months between the conception of this live birth and the previous 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 2018, 32.2% of non-firstborn births had short IPIs, and 5.5% had very short IPIs. Laotian or Hmong mothers had the highest percentage of short (43.2%) and very short (14.2%) IPIs, and mothers who identified as another Asian or Pacific Islander racial group had the lowest percentage of short (21.4%) and very short (3.8%) 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 race and ethnicity, Wisconsin, 2018

	1-6 months	7-11 months	12-17 months
Laotian or Hmong	14.2	14.3	14.7
American Indian	12.6	9.3	11.3
Black	9.6	10.8	11.4
Multiracial	9.3	12.2	12.6
Hispanic	6.5	9.1	10.9
White	4.2	10.3	18.6
Other Asian	3.8	5.8	11.8

Note: Only includes second and higher order births.

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

KEY POINTS

- 43% of mothers had one or more medical risk factors.
- A larger proportion of mothers who live in low poverty areas receive adequate prenatal care compared to mothers who live in high poverty areas.

Risk Factors

Forty-three 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, 7% 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 32% of white mothers had any medical risk factors noted, but 43% of Black mothers had risk factors noted.

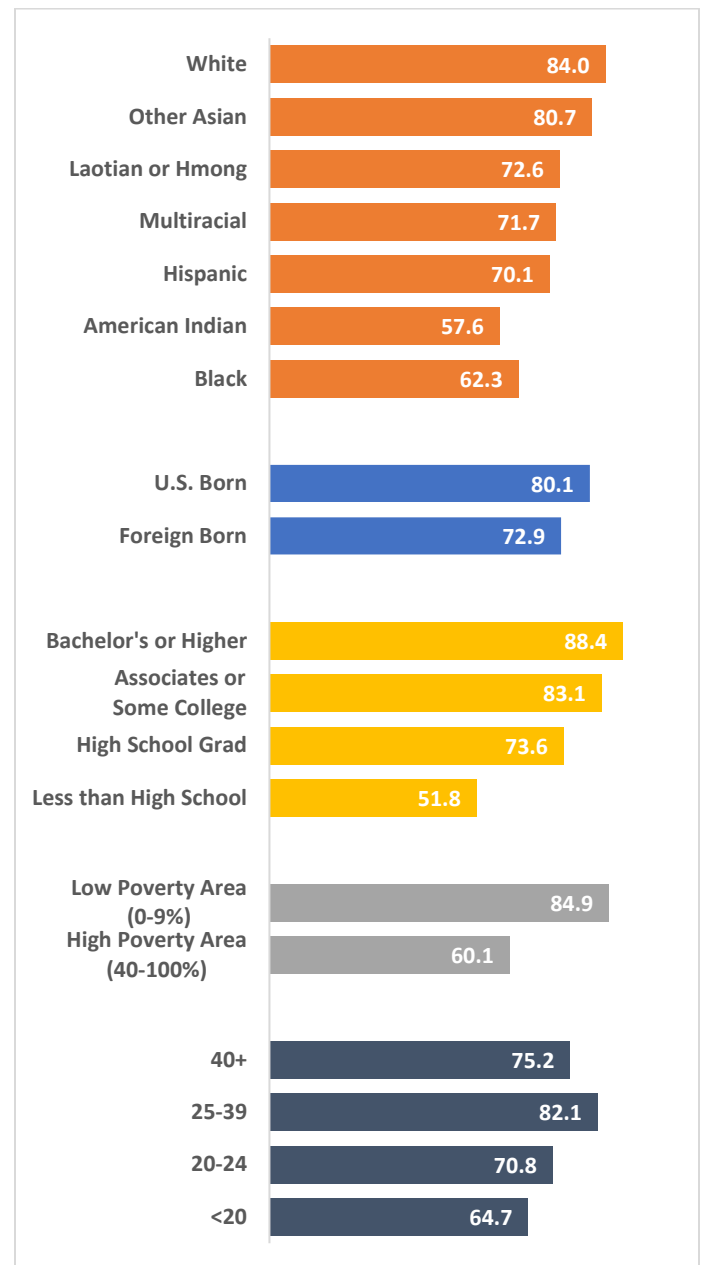
The proportion of mothers who were obese at the time they became pregnant was 30.6% and the proportion of Cesarean deliveries was 26.6%.

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 2018, 79.3% of mothers received an adequate amount prenatal care.

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 those who were less than 20 years old.

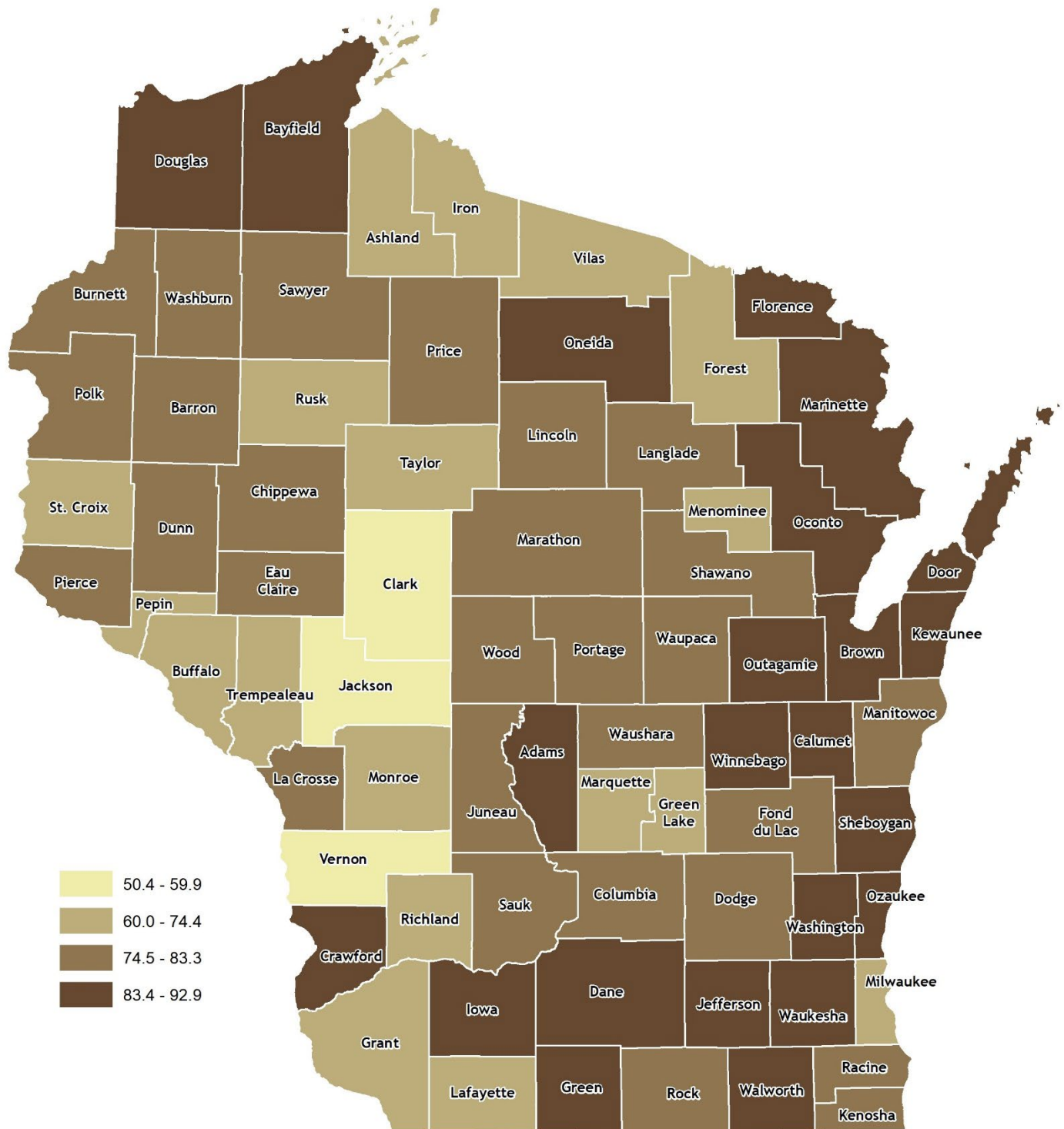
Figure 5. Percent of Mothers who received Adequate Prenatal Care, Wisconsin, 2018



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, 2018



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 Florence and Washington Counties, in which nine out of 10 mothers received adequate prenatal care.

BIRTH OUTCOMES

KEY POINTS

- Racial and ethnic disparities in poor birth outcomes persist with the percentage of low birthweight infants increasing for mothers of all races except white and other Asian/Pacific Islander from 2011-2018.
- One out of every 10 births was premature (less than 37 weeks gestation).

Low Birthweight

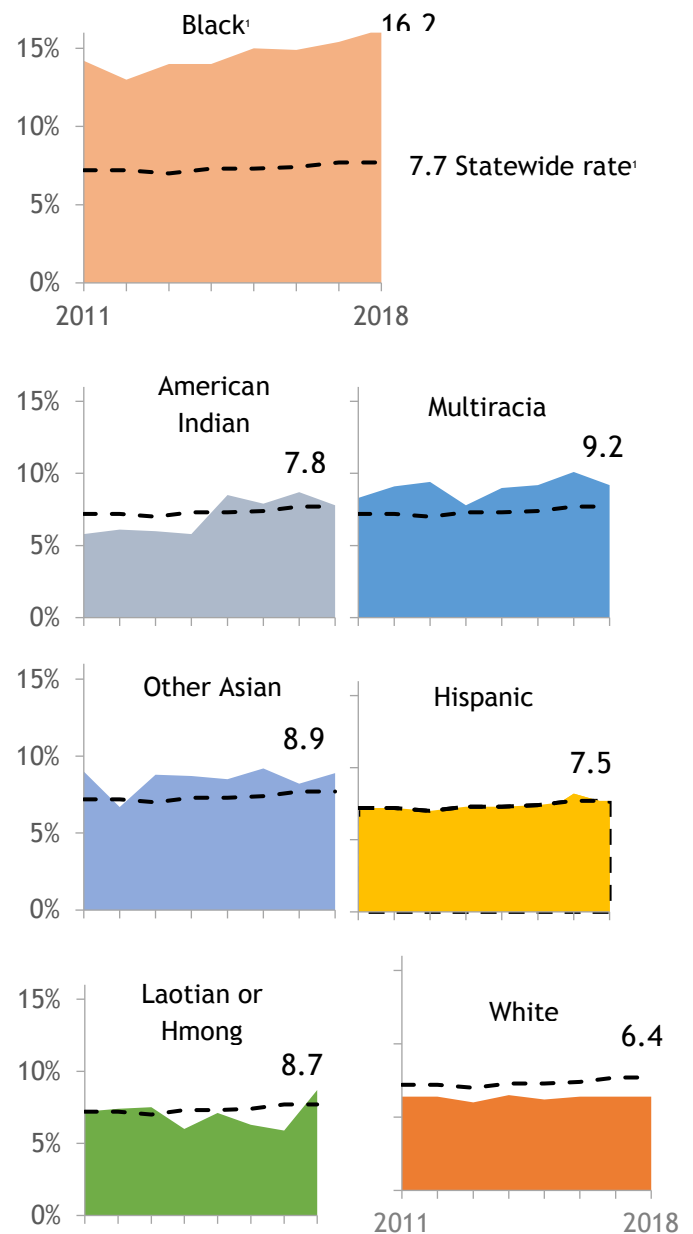
Infants born weighing less than 2,500 grams (5 pounds, 8 ounces) are considered low birthweight. Many infants with low birthweight are healthy, but some have serious health concerns, such as breathing problems, infections, and jaundice. Moreover, disorders related to short gestation and low birthweight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

In 2018, 7.7% of Wisconsin babies were born with low birthweight, which is the same percentage as 2017.

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 2018, the percentage of low birthweight infants remained steady among white infants, but increased significantly for Black infants. The percentage decreased for Laotian or Hmong infants during that same time period.

There was an increasing trend of low birthweight infants among Black, American Indian, and Hispanic mothers.

Figure 6. Percentage of low birthweight births by race or ethnicity, Wisconsin, 2011-2018



[†]Significant increasing trend for 2011-2018 (p<0.05).
Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

Premature Births

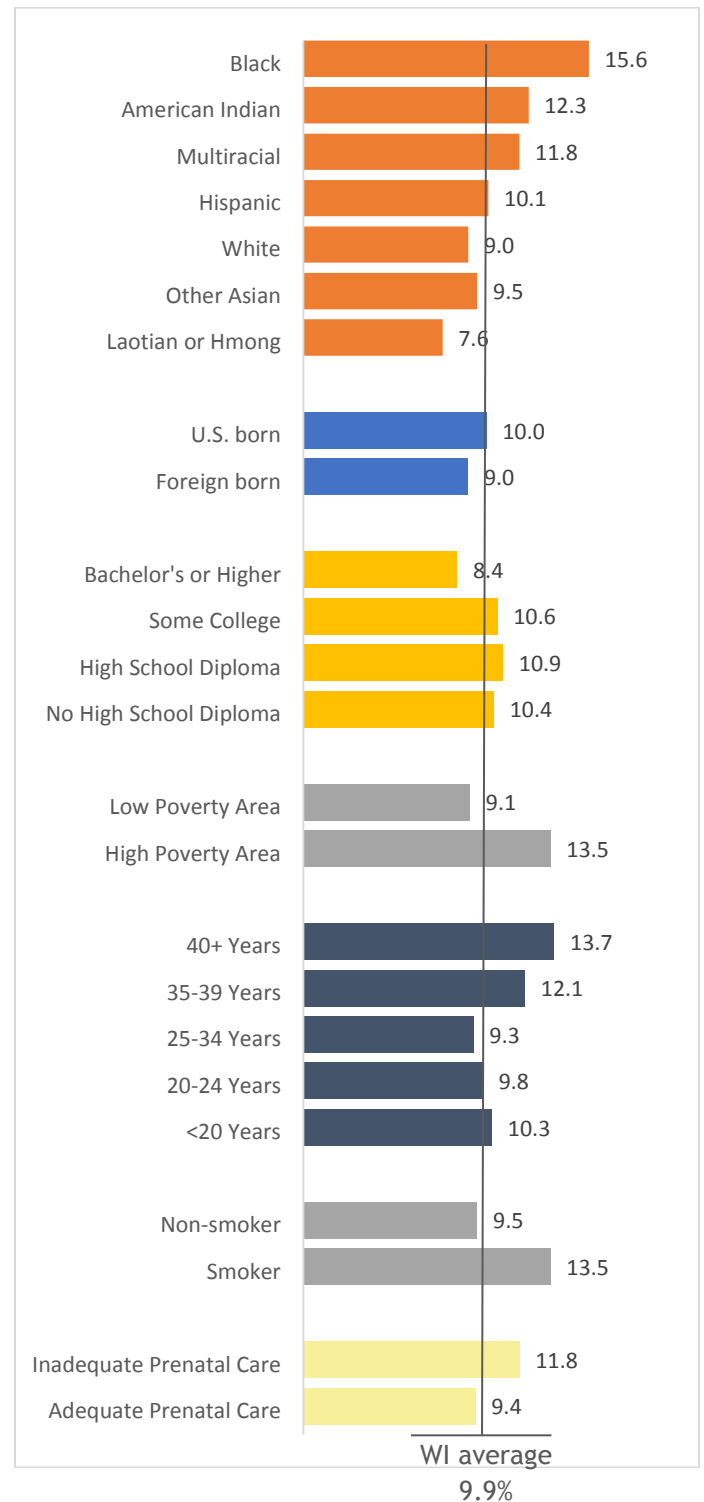
In 2018, 6,344 Wisconsin infants were born prematurely (less than 37 weeks gestation). This total represented 9.9% of all births, compared to 9.6% in 2017. Premature birth is a concern because disorders related to short gestation and low birthweight is the leading cause of neonatal infant death, and 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 (15.6%), and the lowest rates were among Laotian or Hmong mothers (7.7%). Mothers born outside of the U.S., with a bachelor’s degree or higher, living in low poverty areas, with adequate prenatal care, or 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.

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 and racism 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.

Figure 7. Percentage of births that were premature by selected characteristics, Wisconsin, 2018

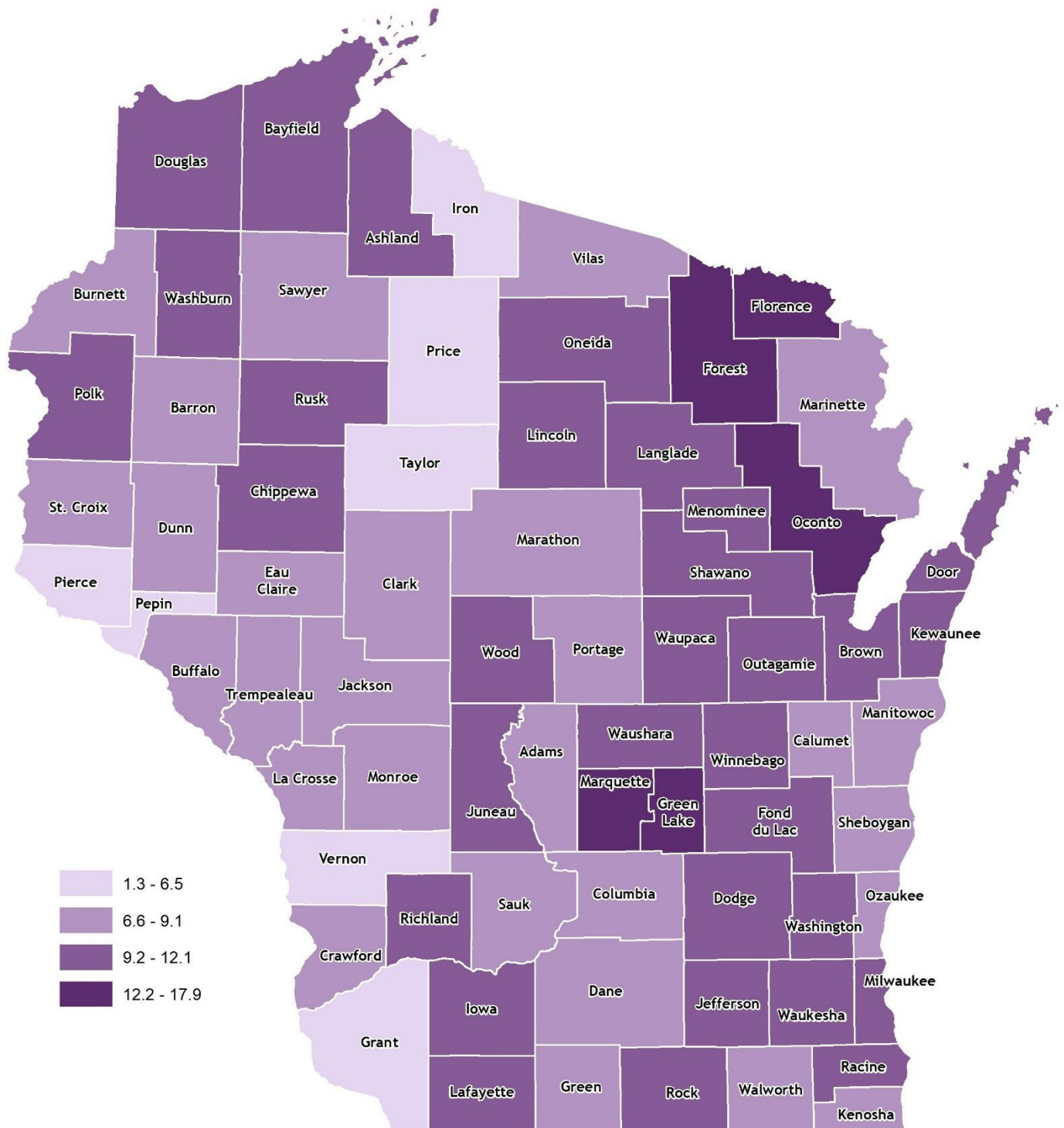


Notes: Smoker refers to mothers who reported smoking a cigarette at any time during pregnancy.
 Source: Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

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

BIRTH OUTCOMES

Map 2. Percent premature births county, Wisconsin, 2018



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

There was a wide range in the percentage of premature births across Wisconsin from around 1% in Pepin County to 18% in Florence County. There is not a clear geographic pattern of premature births across the state.

INFANT DEATHS

KEY POINTS

- The Black infant mortality rate in Wisconsin is one of the worst in the country.
- From 2014-2018, disorders related to short gestation and low birthweight are the leading cause of neonatal death, and Wisconsin's rate is much higher than the national rate (121.0 compared to 98.0).

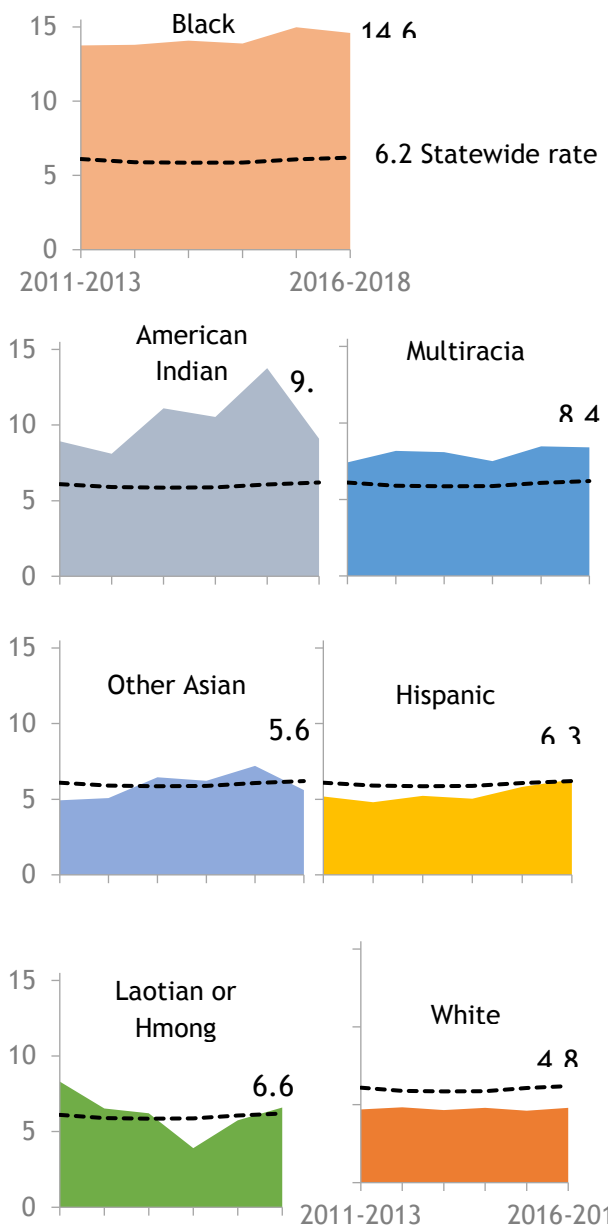
In Wisconsin, 389 infants under the age of one year died in 2018. The 2018 infant death rate was 6.1 infant deaths per 1,000 live births, which has been relatively stable since 2011. Our infant death rate was higher than the U.S. rate of 5.7 infant deaths per 1,000 live births.

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 2016-2018 the infant death rate for infants born to Black mothers

was 14.6 infant deaths per 1,000 live births, which was more than three times the infant death rate for white mothers (4.8).

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 2016-2018



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

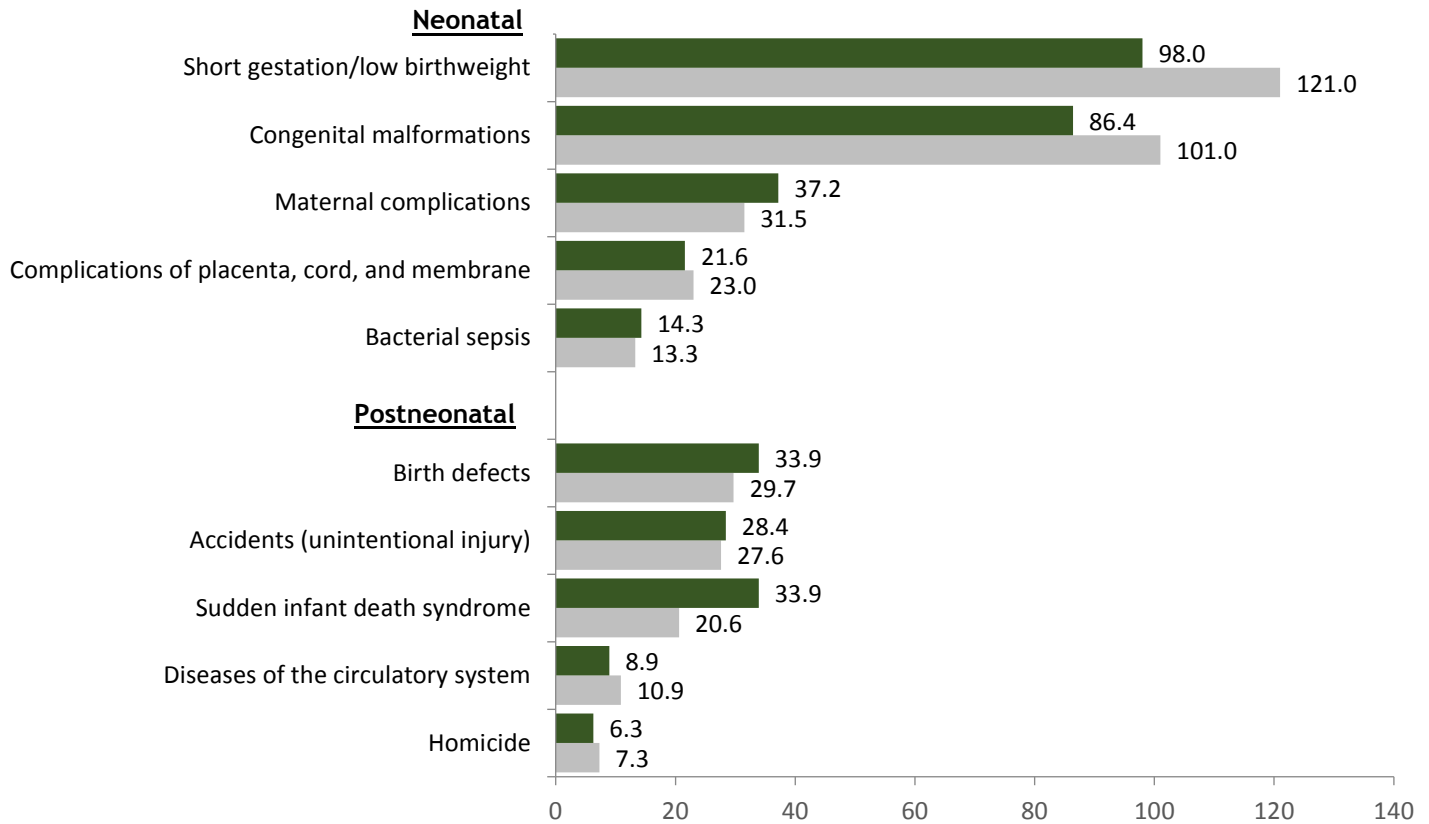
The black-white difference in infant death is considered an inequity because its causes are systemic, avoidable, and unfair. An important driver of the inequity is the different social and physical conditions in which black mothers and white mothers live and work. These living conditions have a large impact on the mothers' health before, during, and after pregnancy, which in turn affects the health of their babies.² Discriminatory policies and practices and systemic racism by both public and private sectors throughout history have resulted in healthier social and physical conditions for white people and less healthy conditions for black people 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 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.

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

INFANT DEATHS

Figure 9. Top Five Causes of Infant Death per 100,000 live births by infant age, 2014-2018



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

The infant death rate for infants born to Black mothers in Wisconsin is one of the worst infant death rates in the country (12.8 infant deaths per 1,000 live births). Compared to the state rate of 6.1, infants born to Laotian or Hmong, Hispanic, and multiple race mothers died at higher rates (7.9, 7.4, and 8.3 respectively).

Between 2014 and 2018, six 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 21% and 16% 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 42% 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 2018, the infant death rate was 11.2 per 1,000 births to teens, more than twice the rate to mothers ages 20 and older (5.9). The infant death rate was almost four times higher for infants whose mothers started but did not complete high school (10.5) compared to mothers who had a bachelor’s degree or higher (3.1), and the rate was nearly three times higher for infants from high poverty areas (13.6) compared to low poverty areas (4.8).

There were 315 fetal deaths, or stillbirths, recorded in 2018. The fetal death rate was 4.9 per 1,000 live births and fetal deaths. 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.)

Questions about the data presented in this report?

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

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