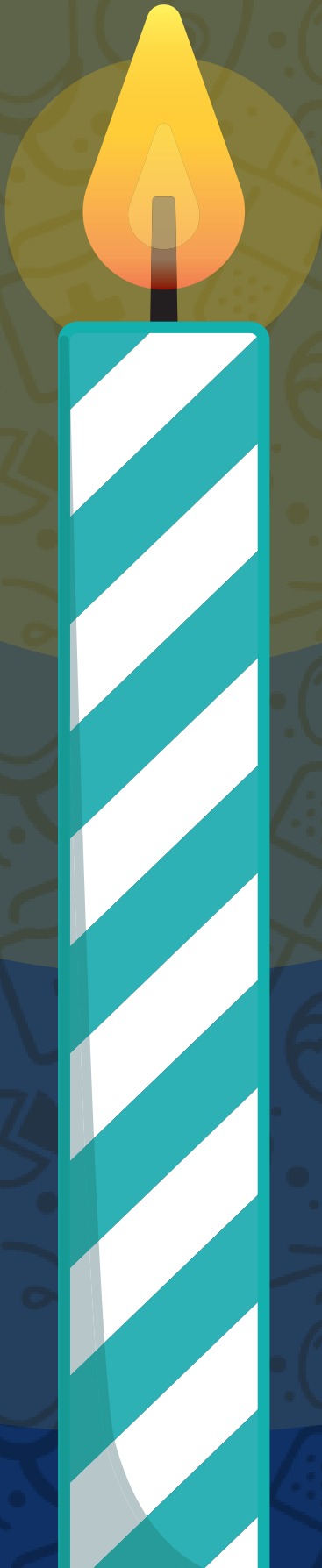




2025

Fetal Infant Mortality Review (FIMR)



CITY OF MILWAUKEE
HEALTH DEPARTMENT

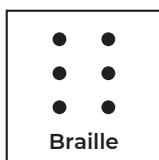


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Letter from Mayor Johnson and Commissioner Totoraitis

Dear Friends,

The infant mortality rate is an important measure of the overall health of a community. In Milwaukee, infants continue to die at an unacceptable rate. While the infant mortality rate has declined slightly over the past two decades, progress has slowed in recent years. At the same time, large racial disparities remain. In Milwaukee, Black infants continue to die at a much higher rate than White infants. These disparities highlight the current need for urgent action.

The City of Milwaukee Health Department (MHD) has overseen Milwaukee's Fetal and Infant Mortality Review (FIMR) project for more than two decades. Since its inception, FIMR has provided Milwaukee with guidance and recommendations to address the factors that contribute to stillbirth and infant death.

The FIMR project reviews the lives and deaths of Milwaukee infants, as well as those who are never born. We commend the FIMR Case Review Team for their diligence, grace and the dignity they give to these infants while reviewing cases and making recommendations.

The goal of this report is to provide the story, data and recommendations to continue and focus our efforts to prevent infant and fetal deaths.

While all the recommendations in this report should be implemented, as a city and community, we must recognize the factors which profoundly impact a baby's chance to be healthy and go well beyond health care and individual behavior. We must address poverty, employment, economic opportunity, housing instability, educational attainment and racism to fully address the root causes of infant mortality and poor maternal outcomes. These root causes affect the infant mortality rate of our neighborhoods and city.

Thank you to everyone in Milwaukee who has made the reduction of infant mortality and stillbirths a priority. We need more of you. We need to act on all levels, from one-on-one conversations to promote safe sleep, to health care interventions to improve women's health before conception and beyond birth and to policy to address institutional and historical racism and poverty.

No one organization can do this alone. We must collectively do everything we can to address infant mortality. The lives of our most precious community residents depend on it.

Sincerely,

Cavalier Johnson

Mayor

Mike Totoraitis, PhD

Commissioner of Health

Letter from the Authors

Dear Readers,

Thank you for taking the time to read the Milwaukee FIMR report. As members of the MHD team responsible for preparing this document, we would like to provide some context for the report and what readers can expect.

In this edition, we took the opportunity to refresh several aspects of the report. Milwaukee has many professionals and community members who closely follow infant mortality data, and we aimed to present the information in clearer, more accessible ways. Where possible, we maintained continuity with past reports to allow readers to track trends over time. At the same time, we streamlined sections to reduce repetition and highlight the most meaningful data and findings.

FIMR remains an important tool for understanding the circumstances surrounding fetal and infant deaths in our community and identifying opportunities to prevent future losses. We are grateful for the patience and continued engagement of our partners and community members as this report was prepared.

We would also like to acknowledge the contributions of Milwaukee expert Dr. Emmanuel Ngui. In appreciation of the substantial guidance he provided throughout the development of this report, he will also be recognized as an author.

Thank you for your commitment to improving birth outcomes and supporting families across Milwaukee.

Sincerely,

Mallory Krumrei, MPH

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Terms and Definitions

Below are key terms used throughout this report:

Birth outcomes

Refers to whether a pregnancy resulted in a live birth, fetal death (miscarriage or stillbirth), or infant death. Birth outcomes also include characteristics such as birth weight, gestational age (prematurity), birth defects or congenital anomalies, and admission to a neonatal intensive care unit (NICU). Birth outcomes can be positive or negative.

Congenital anomalies

Structural or functional conditions that develop during pregnancy. These may include physical conditions, such as heart defects or limb differences, or chromosomal abnormalities. Some congenital anomalies can lead to physical or intellectual disabilities. Some can be identified during pregnancy, while others are not discovered until after birth. Certain congenital anomalies are often or always fatal.

Health disparity

Differences in health outcomes between population groups. Some health disparities affect populations that already face social or economic disadvantages and are widely considered unfair.¹

Infant mortality

The death of an infant before their first birthday.

Infant mortality rate

The number of infant deaths divided by the total number of live births within a specific time period. This is usually reported as the number of deaths per 1,000 live births.

Maternal age

The age of the birthing person at the time of delivery.

Miscarriage

Pregnancy losses that occur before 20 weeks of pregnancy or when the fetus weighs less than 350 grams at birth. While miscarriage affects many families, these losses are outside the scope of this report and are not included in the data analysis.

Preterm or premature birth

These terms are used interchangeably. They refer to an infant born before 37 weeks of pregnancy.

SIDS / SUID

Sudden Infant Death Syndrome and Sudden Unexpected or Unexplained Infant Death. These terms refer to infant deaths where the cause is not immediately clear. Some of these deaths may be related to unsafe sleep environments.

Social determinants of health

Non-medical factors that influence health outcomes. These include the conditions in which people are born, grow, live, work, play, and age.

Stakeholder

Any person or organization with an interest in a specific issue. In this report, stakeholders are individuals or organizations working to improve birth outcomes and the health of pregnant people, infants, and families.

Stillbirth (fetal death)

The delivery of a baby showing no signs of life such as no heartbeat or breathing, after at least 20 weeks of pregnancy or with a birth weight of at least 350 grams. "Stillbirth" and "fetal death" are used interchangeably.

Stillbirth rate

The number of stillbirths divided by the total number of births (live births plus stillbirths) during a specific time period. This is usually reported as the number of stillbirths per 1,000 total births.

Note on Language

Throughout this report, both "woman/women" and "birthing person/people" are used. MHD recognizes that pregnancy, birth, and the postpartum period are experienced by people of diverse gender identities.

The term "woman/women" is used when reflecting the terminology used in data sources and when discussing gender-related health disparities that affect people who identify as women. The use of this term is not meant to exclude individuals who identify differently.²

Other Data Considerations

This section explains several concepts used in the data analysis portions of this report.

What data MHD uses

This report primarily uses datasets requested from the Wisconsin Department of Health Services (DHS) for fetal and infant loss analysis. These datasets are released with a delay, which is why the most recent years are not included.

Results in this report may differ slightly from other state-level reports or data tools. DHS datasets go through multiple rounds of reconciliation, where numbers may be corrected or updated. Some updates may occur after MHD receives the data. As a result, the same statistic may vary slightly depending on the data source.

In some parts of the report, we use other data sources. When this occurs, the source is clearly noted in the report.

Whenever possible, the MHD FIMR team uses official ICD-10 codes to determine the cause of fetal or infant death. These codes were used to group causes of death for both stillbirths and infant deaths in this report.

Some of the causes of death represent specific medical conditions (such as placental abruption or cervical insufficiency). Others represent groups of related conditions, such as congenital anomalies, complications of labor and delivery, infections, or SIDS/SUID/accidental suffocation. In some cases, broader categories are used to group multiple related causes of death, such as accidental deaths, external causes, or maternal risk factors. Descriptions of all cause-of-death categories are provided in the appendix.

Why MHD uses three-year rolling averages

In several places in this report, MHD shows rates using three-year rolling averages. These averages combine data from three consecutive years to create a single rate. Each year in the dataset is included in multiple three-year periods.

This method helps smooth out year-to-year changes in the number of infant deaths or stillbirths. As a result, it is easier to see broader trends over time.

Why MHD uses rates

A rate is calculated by dividing the number of events being studied by the total population during a specific time period. Rates help standardize data across years and locations. This makes it easier to compare outcomes between cities with different population sizes or between different years.

For example, Chicago, IL, reports a larger number of infant deaths than Milwaukee. However, Chicago also has a much larger population. Using rates instead of raw numbers allows us to make fair comparisons between the two cities.

Race and ethnicity in this report

In this report, race is used as a proxy for racism, which has negative consequences for health outcomes and access to health care for impacted communities.

Race does not have a biological basis.³ It is a social construct and is closely connected with factors such as socioeconomic status, nationality, and ethnicity. Because of this, race is an imperfect measure, and the broader social context should always be considered when interpreting the data.⁴

In this report, outcomes for racial and ethnic groups are often compared to non-Hispanic White populations. This comparison is not meant to present White populations as the standard or ideal. Instead, it helps highlight the inequities that exist in Milwaukee.

The race and ethnicity categories used in this report are based on the data received from DHS. The race or ethnicity of an infant or stillbirth is based on the mother's race as recorded on birth records or infant and fetal death records. These records do not consistently include information about the father, so maternal race is used for consistency.

To follow Wisconsin vital records privacy guidelines, racial or ethnic groups with fewer than five individuals in a category are not shown separately in tables. In some cases, these smaller populations may be combined into an "Other" category to allow them to be included in analysis while still protecting privacy.

The "Hispanic" category includes anyone identified as Hispanic or Latino on birth or death records, regardless of their reported race. As a result, this category includes individuals from multiple racial backgrounds.

MHD also recognizes that poor birth outcomes disproportionately affect American Indian and Alaska Native (AIAN) populations. However, due to the small size of the AIAN population in Milwaukee, the number of cases are often too small to report while maintaining privacy protections.

MHD acknowledges the importance of recognizing these disparities and does not wish to contribute to the erasure of AIAN communities. At the same time, MHD must follow data privacy standards when reporting results.

Confidentiality

Protecting the privacy of families who have experienced pregnancy or infant loss is a top priority for the FIMR program and MHD.

All records associated with FIMR cases are securely maintained by MHD. Only authorized FIMR staff can access these records.

Before case summaries are shared with the FIMR Case Review Team, all identifying information is removed. Case Review Team members must also sign confidentiality agreements stating they will not discuss case details outside of official FIMR meetings.

Acknowledgements

MHD thanks the members of the Milwaukee FIMR Case Review Team for their dedication, expertise, and ongoing commitment to this work. Their contributions help identify solutions and strategies to improve birth outcomes and reduce disparities in Milwaukee.

This effort is collaborative and depends on the support of many partners across our community. MHD would especially like to thank the charter-signatory members for their continued engagement and guidance.

The MHD FIMR team also honors and recognizes the bereaved and resilient mothers, birthing people, and families who have experienced these losses. Its work is driven by a commitment to ensure that all infants in Milwaukee have the opportunity to be born healthy and thrive.



Suggested Citation

Seidl, M., Xiong, K., Krumrei, M., Ngui, E. 2025 City of Milwaukee Fetal and Infant Mortality Review Report, 2019-2022. City of Milwaukee Health Department, published June 2026.

Citations

- 1) [What Are Health Disparities and Health Equity? We Need to Be Clear](#) (Paula Braveman, 2014)
- 2) Language adapted from the Illinois Dept. Of Public Health [Fetal and Infant Mortality Data Report, September 2024](#) (page 4)
- 3) [How Present-Day Health Disparities for Black People are Linked to Past Policies and Events](#) (Samantha Artiga, Latoya Hill, and Marley Presiado, 2024)
- 4) Language adapted from the Illinois Dept. Of Public Health [Fetal and Infant Mortality Data Report, September 2024](#) (page 4)

Executive Summary

* State-level data in this section were sourced from the DHS WISH (Wisconsin Interactive Statistics on Health) Query System, unless otherwise noted.

Background

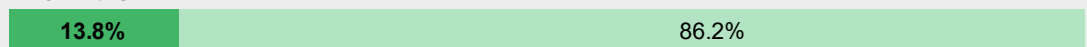
The 2025 Fetal and Infant Mortality Review (FIMR) Report provides an overview of stillbirths and infant deaths that occurred in Milwaukee between 2019 and 2022. This report includes summary statistics on stillbirths and infant deaths, analysis by race and ethnicity, contributing factors to these losses, and recommendations to reduce preventable infant deaths and racial disparities in birth outcomes.

Key Findings and Summary Data

Between 2019 and 2022, Milwaukee made up only 13.8% of all live births in Wisconsin, yet the city accounted for a disproportionately high share of poor outcomes: **22.3% of all infant deaths** and **16.8% of all stillbirths** statewide.

City of Milwaukee's Share of Wisconsin Birth outcomes, 2019-2022

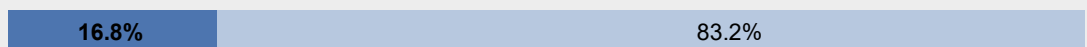
Live Births



Infant Mortality



Stillbirths



Summary Totals for Milwaukee

33,984 Average of
Live births 8,496 / year

313 Average of
Infant deaths 78 / year

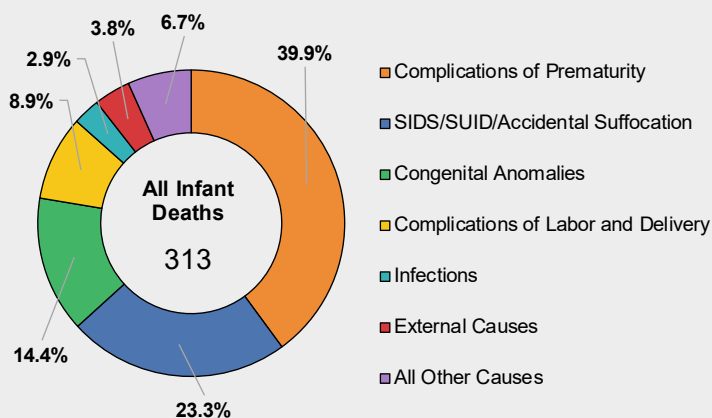
207 Average of
Stillbirths 52 / year

Leading Causes of Infant Death

The three leading causes of infant death in Milwaukee were:

- Complications related to prematurity (39.9%)
- SIDS, SUID, or accidental suffocation (23.3%)
- Congenital anomalies (14.4%)

Leading Causes of Infant Death in Milwaukee, 2019-2022

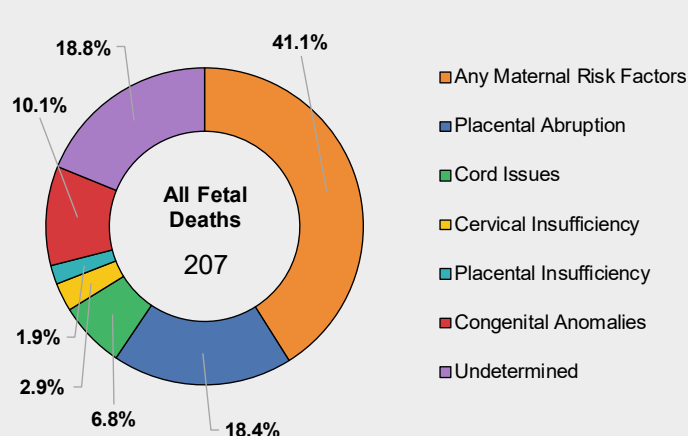


Leading Causes of Stillbirth

The three most common causes of stillbirth were:

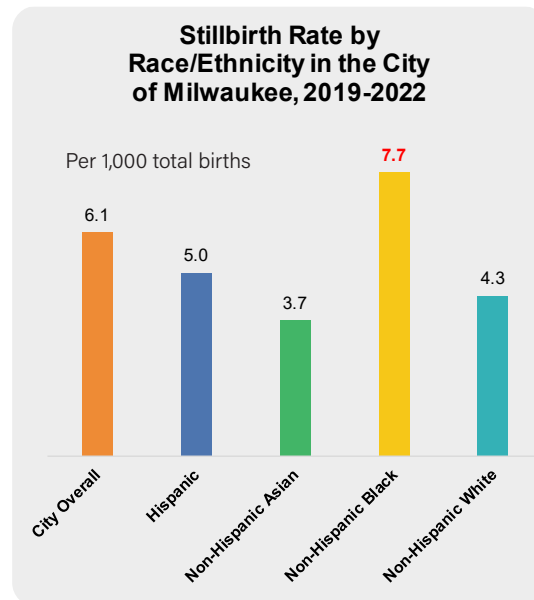
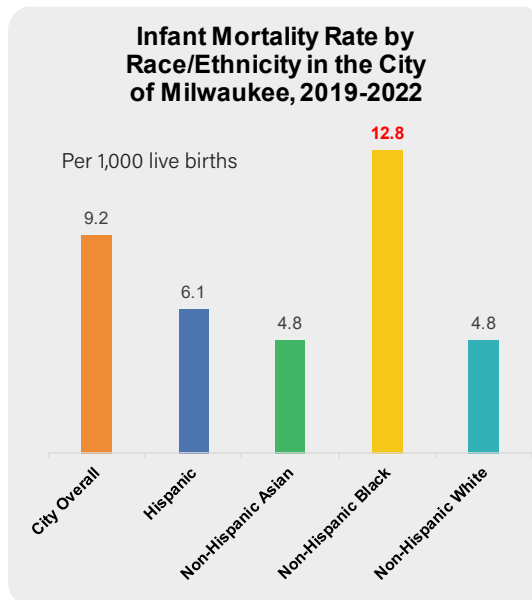
- Maternal risk factors (41.1%)
- Undetermined causes (18.8%)
- Placental abruption (18.4%)

Leading Causes of Fetal Death in Milwaukee, 2019-2022



Race and Ethnicity

When looking at infant mortality and stillbirth rates broken down by race and ethnicity (see graphs), **Non-Hispanic Black infants had the highest rates of both.**



Prevention Recommendations

The Milwaukee FIMR team developed several recommendations to help prevent stillbirths and infant deaths. These recommendations include actions individuals can take, steps organizations can consider, and system-level changes.

While the full list of recommendations appears later in this report, here are the top three strategies:



Mothers and pregnant people need access to health care that is available, affordable, and responsive to their needs. This includes care before pregnancy, during pregnancy, and between pregnancies. It also includes services such as contraception, preventive care, and other supports that help people make informed decisions about if and when they want to have children.

Preventing stillbirths and infant deaths requires action at many levels, from individual care to system-level change. From public agencies and health care providers to local organizations and community members, we all have a role in improving birth outcomes in Milwaukee.

- 1** Improve access to quality health care and community-based services across all stages of life
- 2** Ensure every person and family can plan their families and access the care that supports those decisions
- 3** Address the root causes of poor birth outcomes and strengthen the conditions that allow families to thrive

Introduction

What is the Fetal Infant Mortality Review (FIMR)?

FIMR is a multidisciplinary process that reviews the circumstances surrounding a stillbirth or infant death. The goal of this process is to improve maternal and infant health outcomes and help prevent future losses. A FIMR program typically includes two teams:

Case Review Team (CRT)

The CRT reviews individual cases of stillbirth and infant death. The team identifies gaps in care and develops recommendations to help prevent similar losses in the future.

Community Action Team (CAT)

The CAT reviews the recommendations from the Case Review Team and works to develop plans to implement those strategies in the community.

These teams are community-oriented and include members from many professions and roles, including medical providers, public health professionals, social service organizations, academics, and community members. This diverse membership helps ensure that multiple perspectives inform the FIMR process.

The Case Review Process

Milwaukee's FIMR program includes most municipalities within Milwaukee County, and information is collected for every stillbirth and infant death. The first step in the process is completed by the internal MHD FIMR team. Staff first confirm that the case meets eligibility requirements, including residency and age at the time of death. Once eligibility is confirmed, staff conduct case abstraction, which involves reviewing records and collecting key information about the pregnancy, birth, and infant.

This process includes gathering demographic information, details about the pregnancy and delivery, and information about the infant's health and circumstances surrounding the loss. These details help identify challenges or risk factors the family may have faced. After abstraction, a portion of cases are selected for more detailed review by the CRT. For these cases, staff prepare a chronological case summary describing the pregnancy, birth, and loss.

The CRT then reviews these summaries and discusses the circumstances of each case. The team's goal is to identify factors that may have contributed to the loss and highlight opportunities to improve health care, services, and community systems that support pregnant people, infants, and families. The CRT also develops prevention strategies and recommendations to reduce future losses.

The Community Action Team

The role of FIMR's Community Action Team is to take the strategies and recommendations from the CRT, combine them with data analysis from the MHD FIMR team, and start to identify which strategies are feasible, impactful, and relevant to Milwaukee. MHD just launched its CAT in late 2024. MHD has not historically had this component, and its absence made the FIMR process incomplete: the CRT would have productive discussions, come up with recommendations, but there was no dedicated team or reliable process to move towards implementation.

After several months of planning and preparation, followed by weeks of outreach to invested partners and stakeholders, the first Milwaukee FIMR CAT meeting was held in October 2024. At the time of this report, several more meetings have been held, the team is continuing to grow, and the CAT team is beginning the process of prioritizing the list of strategies.

FIMR At a Glance

MHD FIMR team

Health department staff collect cases and gather records and information related to each loss.

Case Review Team (CRT)

Reviews case summaries (with all identifying information removed) and develops prevention strategies.

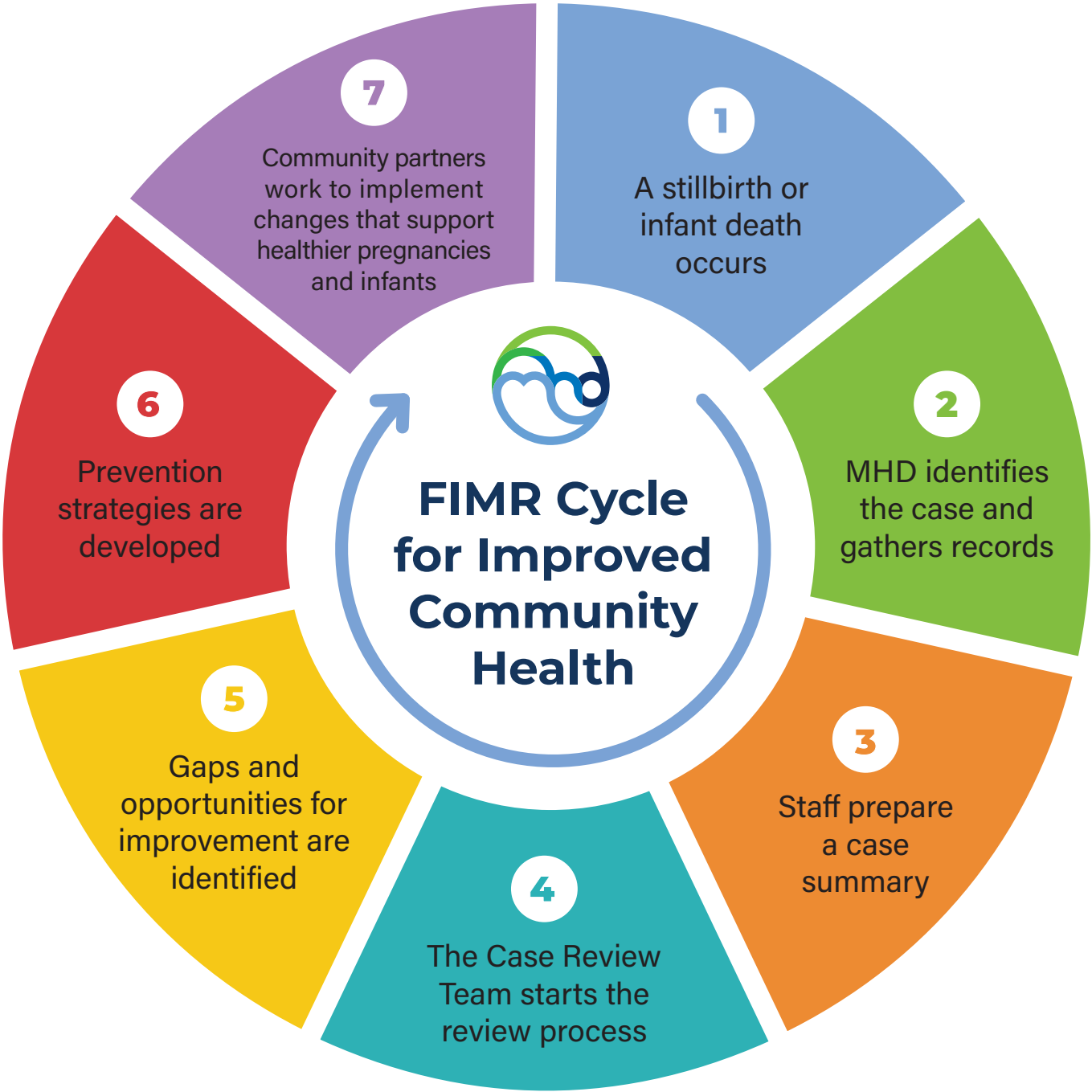
Community Action Team (CAT)

Uses the prevention strategies and additional data to develop plans for community and systems improvements.

The FIMR Process Cycle

The FIMR process includes several steps, shown in the graphic below. These steps generally fall into four phases: data collection and analysis, case review, community action, and system change.

The process is cyclical. As new losses occur, cases continue to be reviewed while prevention strategies are developed and implemented. This ongoing process helps ensure that recommendations are informed by data and community experience. The goal of this cycle is to strengthen systems and improve birth outcomes over time.



Data Overview

* MHD uses the [Stockholm classification system](#) to categorize stillbirths based on underlying conditions and associated diagnoses. This system includes an "undetermined" category.

Infant Mortality and Stillbirth Data Overview

This report examines infant mortality and stillbirths within the City of Milwaukee between 2019 and 2022. Unless otherwise noted, all statistics presented in this section reflect this four-year period.

Infant mortality and stillbirth are widely used indicators of the overall health and well-being of a population. Examining these outcomes helps identify disparities in maternal and infant health and can guide prevention efforts. The infant mortality rate (IMR) is the number of infant deaths per 1,000 live births during a specific period of time.

Stillbirths (fetal deaths) are defined in Wisconsin as babies who die before taking their first breath, are born without a heartbeat, and weigh at least 350 grams or are at least 20 weeks' gestation at delivery. The stillbirth rate is calculated as the number of stillbirths per 1,000 total births (live births plus stillbirths) during a given period of time.

Stillbirths occur nearly as often as infant deaths but are often overlooked when discussing birth outcomes. They can have significant emotional and health impacts for families. Stillbirths are also believed to be underreported, which makes it important to consider them alongside other birth outcomes.¹

Like infant mortality, stillbirth rates vary across different populations. Understanding both types of loss helps identify strategies to improve maternal and infant health.

Miscarriages can also have a significant impact on families. However, pregnancy losses that occur before 20 weeks of gestation are outside the scope of this report.

Summary of Infant Death and Stillbirth Rates for the City of Milwaukee:

2019-2022 compared to 2016-2018

	Infant Mortality		Stillbirths	
	2016-2018 (3 years)	2019-2022 (4 years)	2016-2018 (3 years)	2019-2022 (4 years)
Total live births	28,373	33,984	28,373	33,984
Average live births per year	9,458	8,496	9,458	8,496
Total deaths	309	313	165	207
Average deaths per year	103	78	55	52

Death Rate (per 1,000 live births)

Overall Rate	10.9	9.2
Non-Hispanic Black Rate	15.9	12.8
Non-Hispanic White Rate	5.7	4.8
Hispanic Rate	6.3	6.1
Non-Hispanic Asian Rate	5.7	4.8
Non-Hispanic Multi-Race Rate	9.1	8.0

Stillbirth Rate (per 1,000 total births)

5.8	6.1
7.8	7.7
3.3	4.4
5.5	5.0
4.1	3.7
N/A	N/A

* The difference in the total number of live births between this report and the previous report is due to the number of years included. The previous report analyzed three years of data, while this report includes four years.

Key Findings

Between 2019 and 2022, there were:

33,984
live births

313
infant deaths

207
stillbirths

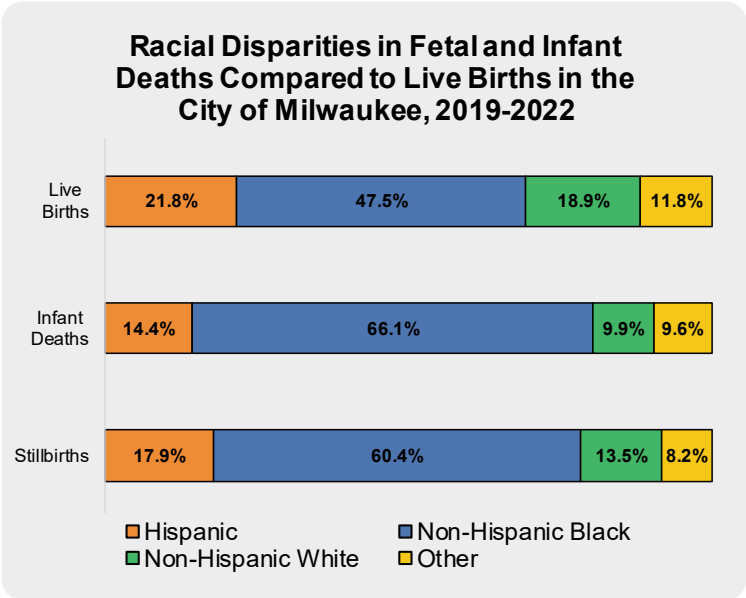
During this period, the infant mortality rate in Milwaukee was 9.2 deaths per 1,000 live births. The stillbirth rate was 6.1 deaths per 1,000 total births. Compared with the previous FIMR report, the overall infant mortality rate decreased. Infant mortality rates also declined across all racial and ethnic groups presented in the table.

During the same period, the overall stillbirth rate increased slightly. This increase was primarily driven by an increase in stillbirths among non-Hispanic White birthing people, while stillbirth rates decreased for other racial and ethnic groups.

Despite improvements in some measures, infant and fetal losses continue to affect populations in Milwaukee differently. These disparities are most visible when comparing birth outcomes among racial and ethnic groups.

Racial and Ethnic Disparities in Birth Outcomes

The graph above shows the disproportionate impact of infant deaths and stillbirths compared with the distribution of live births across racial and ethnic groups in Milwaukee between 2019 and 2022.



Non-Hispanic Black infants account for just under 50% of all live births in Milwaukee and REPRESENT APPROXIMATELY 66% of infant deaths and stillbirths.

In contrast, non-Hispanic White infants account for nearly 20% of live births and REPRESENT ABOUT 10% of infant deaths and stillbirths.

Non-Hispanic Black mothers were nearly 3x MORE LIKELY to experience an infant death than non-Hispanic White mothers.

Non-Hispanic Black mothers were nearly 2x AS LIKELY to experience a stillbirth than non-Hispanic White mothers.

Compared with Hispanic and Asian mothers:

Non-Hispanic Black mothers were MORE THAN 2x AS LIKELY to experience an infant death.

Non-Hispanic Black mothers were 1.5 - 2x MORE LIKELY to experience a stillbirth.

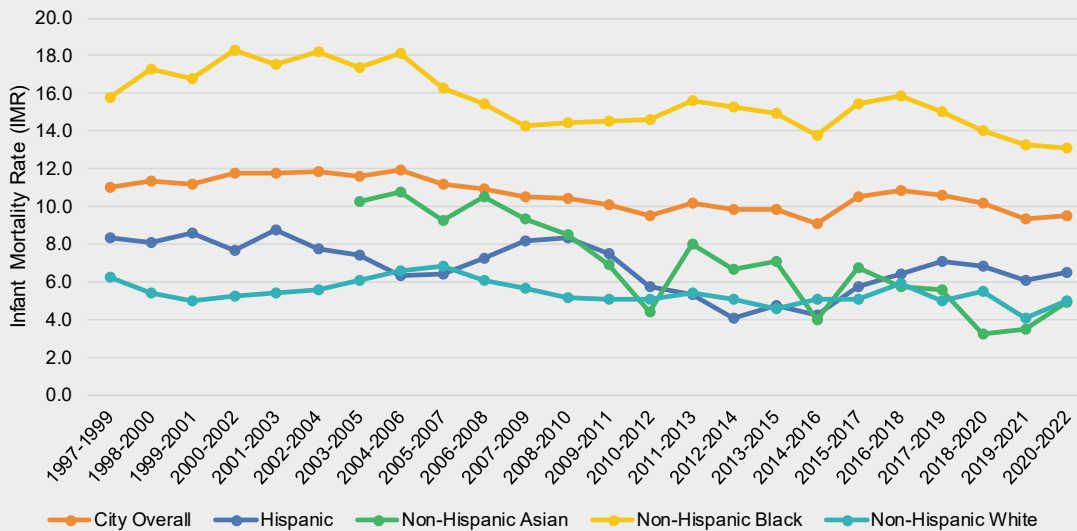
Citations

1) Lens, Jill Wieber, Counting Stillbirths (March 25, 2022). Available at <http://dx.doi.org/10.2139/ssrn.4066782>

Infant Mortality

The death of an infant is a significant event that impacts a family and their community. It is often considered a measure of a community's overall health, social, and economic well-being.¹

City of Milwaukee 3-Year Rolling Infant Mortality Rate by Race/Ethnicity



American Indian/Alaska Native infant mortality rate for 2013-2022:

14.8 per 1,000 live births *

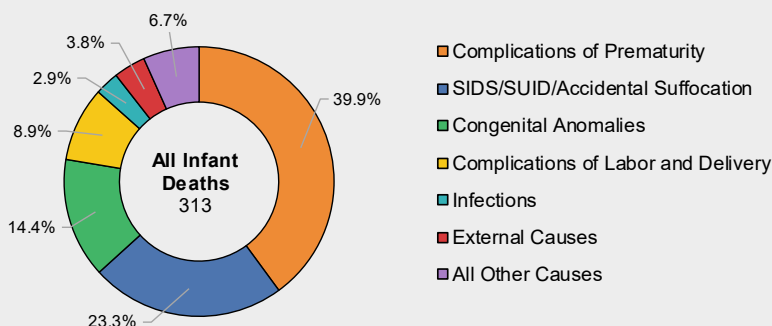
Due to small numbers, the American Indian/Alaska Native (AIAN) population cannot be included in the data visualizations in order to protect privacy. A longer time range was used to improve the accuracy of the rate, though there is still notable uncertainty. DHS WISH data was used for this calculation.

Although the rates have fluctuated over time, they have not significantly improved for any racial or ethnic group since 2010. Notably, the rate for non-Hispanic Black infants has remained significantly higher than that of all other racial and ethnic groups throughout this entire period.

Leading Causes of Infant Deaths in Milwaukee

The leading causes of infant death in Milwaukee (graph below) include complications of prematurity (39.9%), SIDS/SUID/accidental suffocation (23.3%), referred to in this report as SUID, congenital anomalies (14.4%), and complications of labor and delivery (8.9%).

Leading Causes of Infant Death in Milwaukee, 2019-2022



Compared to the previous report, several changes appear in the leading causes of death:

- Prematurity remains the leading cause of infant death but has decreased slightly since the last report (2021 Report: 49.2%; this report: 39.9%).
- Congenital anomalies remain the third leading cause and have also decreased since the last report (2021 Report: 19.1%; this report: 14.4%).
- Losses due to complications of labor and delivery doubled since the last report (2021 Report: 4.2%, this report: 8.9%).

* Explanations of cause-of-death categories can be found in Appendix C.

This report also introduces a category called “All other causes.” This category includes causes of infant death that are relatively rare and affect only one or a few individuals.

These deaths are generally related to medical conditions that do not fit within existing categories. Rather than misclassifying these deaths or excluding them entirely, MHD created this category to more accurately reflect the data.

A second new category in this report is “External causes.” This category includes accidental deaths such as motor vehicle crashes, drownings, and exposure to extreme temperatures. It also includes deaths due to homicide, which may involve neglect, maltreatment, or assault. These causes are relatively rare and difficult to report separately due to privacy concerns. Because they are external to the infant’s health and immediate environment, MHD chose to follow ICD-10 categorization ² and combine them into a single category.

Causes of Infant Death by Race/Ethnicity

Overall Infant Mortality Rate by Race/Ethnicity

Infant mortality rates vary substantially by race and ethnicity. The highest overall infant mortality rate is among non-Hispanic Black infants at 12.8 deaths per 1,000 live births, which is more than two and a half times higher than the rate among non-Hispanic Asian and non-Hispanic White infants.

Visualizing Cause-Specific Contributions to Infant Mortality Rates (IMR)

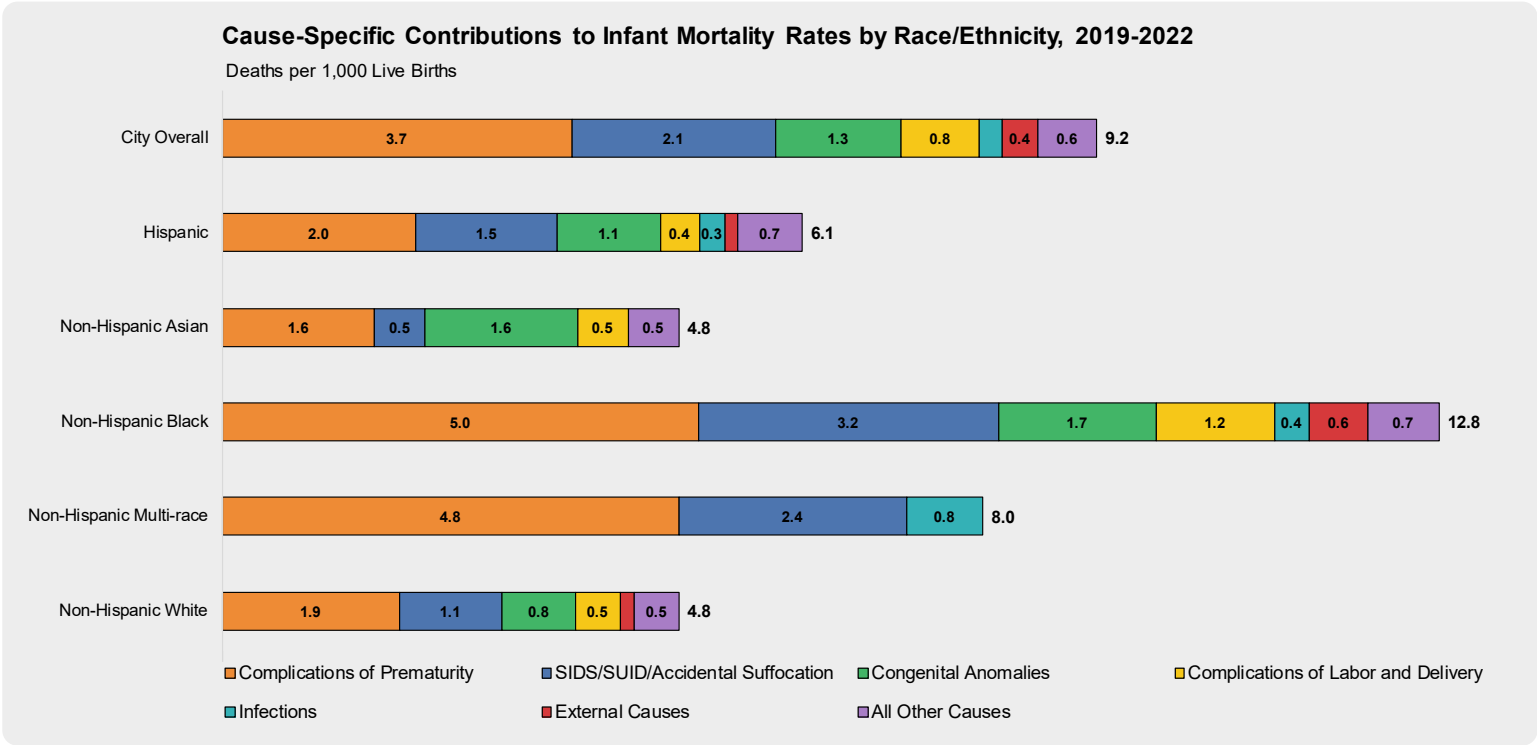
Each bar in the graph represents the infant mortality rate per 1,000 live births for a given racial or ethnic group. The bold number to the right of each bar shows the overall infant mortality rate for that group. Longer bars represent higher infant mortality rates, while shorter bars represent lower rates.

The segments within each bar show how different causes contribute to the total infant mortality rate for each racial or ethnic group. Larger segments indicate causes that contribute more to the overall rate. Unlike proportions, cause-specific infant mortality rates show the absolute risk of each cause within a group. This allows comparisons both within and across racial and ethnic groups and helps identify disparities.

Leading Causes of Infant Mortality by Race/Ethnicity

Across all racial and ethnic groups, complications of prematurity are the largest contributor to infant mortality. The prematurity-related infant mortality rate is highest among non-Hispanic Black infants, followed closely by non-Hispanic multi-race infants (5.0 and 4.8 deaths per 1,000 live births, respectively).

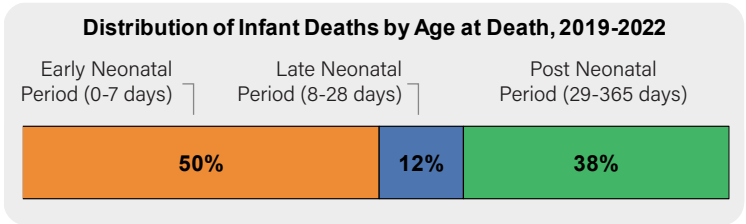
For most racial and ethnic groups, SIDS / SUID / accidental suffocation is the second largest contributor to infant mortality. While it accounts for the highest proportion of deaths among non-Hispanic multi-race infants (about 30% of deaths), the highest absolute SUID infant mortality rate occurs among non-Hispanic Black infants (3.2 per 1,000 live births). In other words, non-Hispanic Black infants experience the highest overall risk for SUID-related deaths.



Among non-Hispanic Asian infants, congenital anomalies contribute to infant mortality at roughly the same rate as complications of prematurity and more than SUID. The congenital anomalies-specific infant mortality rate among non-Hispanic Asian infants (1.6 per 1,000 live births) is nearly the same as the rate among non-Hispanic Black infants (1.7 per 1,000 live births), even though the overall infant mortality rate among non-Hispanic Black infants is about 2.5 times higher. This means congenital anomalies account for a larger proportion of deaths among non-Hispanic Asian infants.

Although a smaller contributor overall, complications of labor and delivery disproportionately affect non-Hispanic Black infants. The infant mortality rate from these complications is 1.2 per 1,000 live births, while other racial and ethnic groups cluster around 0.5 per 1,000 live births. External causes, though rare, are also important to highlight. These include deaths related to motor vehicle crashes, drownings, and homicide. The infant mortality rate from external causes is highest among non-Hispanic Black infants.

While the proportions of causes may shift from year to year, three causes (prematurity, congenital anomalies, and SUID) have remained the leading contributors to infant mortality overall and across racial and ethnic groups. Understanding these patterns helps inform prevention strategies.



The neonatal period, or the first 28 days of life, is a very fragile time period for infants—especially among those born premature or with congenital anomalies.³ Nearly two-thirds (62%) of infant deaths in Milwaukee from 2019–2022 occurred during this period, and half of all infant deaths occurred within the first 7 days of life (graph above). The remaining 38% of infant deaths occurred during the post-neonatal period, which ranges from 29 days of life to the infant’s first birthday.

Additional Information on External Causes of Infant Death

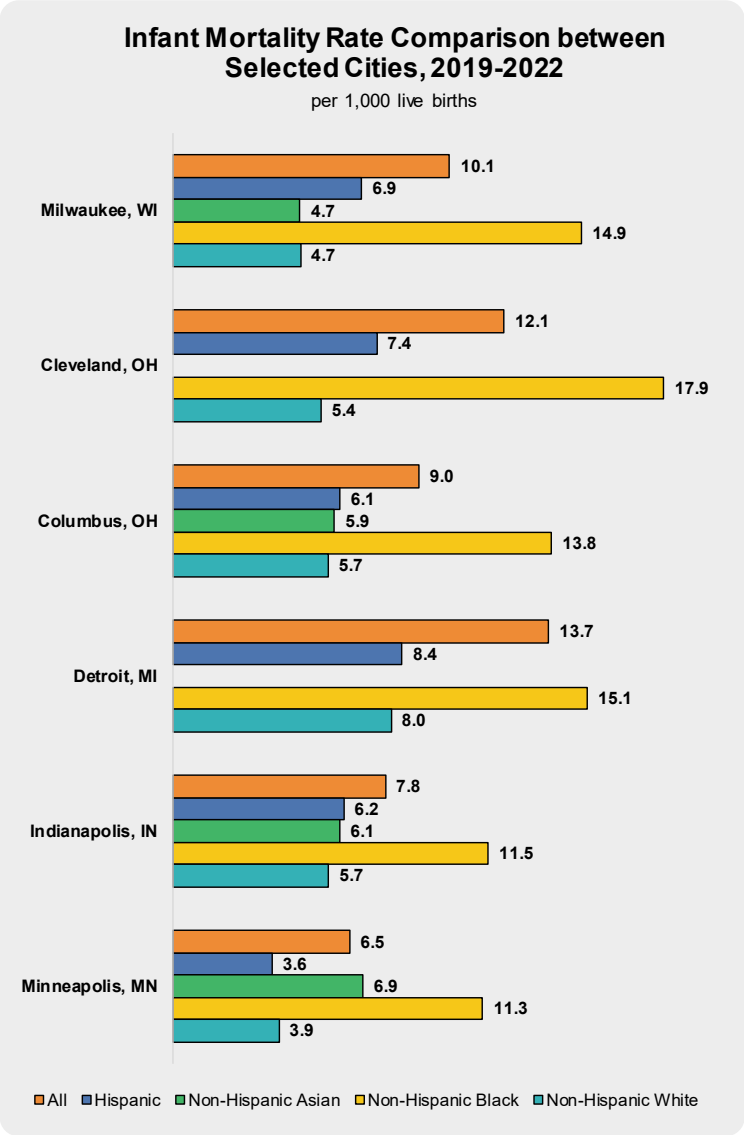
Accidents (such as motor vehicle crashes and drownings) and homicides are both concerning causes of infant death, but they are also relatively rare. Over the four years covered in this report, these causes accounted for 1–3% of infant deaths individually and 3.8% combined. Because these numbers are small, it is difficult to identify consistent trends.

Accidental deaths occurred across multiple racial and ethnic groups, while homicides occurred only among the non-Hispanic Black population during this time period. This pattern differs from the previous report, indicating that trends are not consistent.

Both accidental deaths and homicides occurred across maternal age groups, but homicides were more likely among infants born to mothers under age 25.

The graph below compares infant mortality rates in Milwaukee with those in selected cities in the Midwest. Between 2019–2022, Milwaukee’s non-Hispanic Black infant mortality rate was most comparable to rates in Columbus and Detroit. Infant mortality rates among Hispanic mothers in Milwaukee were similar to those in Columbus and Indianapolis.

Overall, Milwaukee’s infant mortality rate during this time period falls in the middle of the five comparison cities. Among these cities, Milwaukee had the lowest non-Hispanic Asian infant mortality rate.



Graph data from [Big Cities Health Coalition](#)

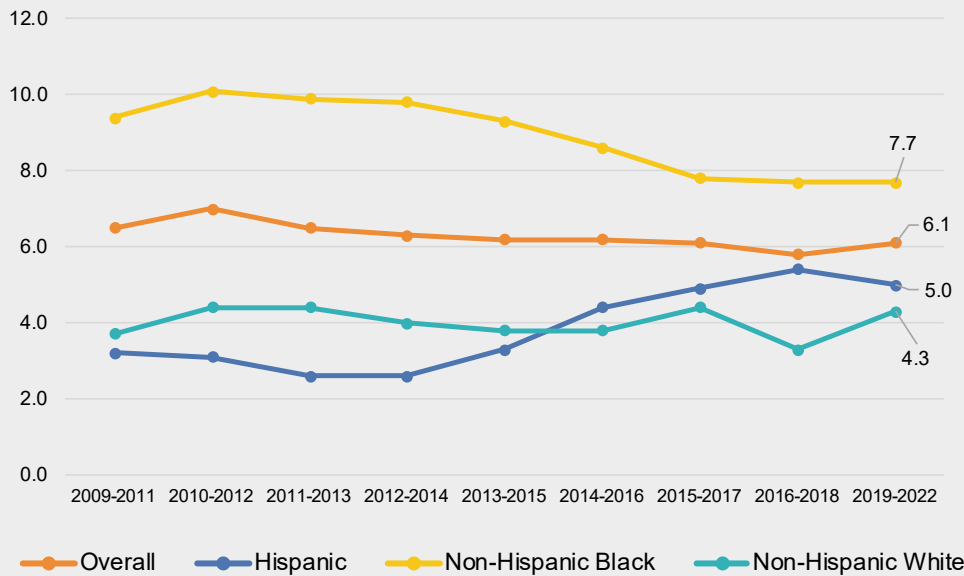
Citations

- 1) [Accelerating Upstream Together: Achieving Infant Health Equity in the United States by 2030](#) (Michael D. Warren, Ashley H. Hirai, and Vanessa Lee, 2022)
- 2) [International Statistical Classification of Diseases and Related Health Problems, 10th Revision](#) (World Health Organization, version 2019)
- 3) [Newborn Mortality](#) (World Health Organization, 2025)
- 4) [The Big Cities Health Inventory Data Platform](#) (Drexel University Urban Health Collaborative, accessed January 2026)

Stillbirths (Fetal Deaths)

Stillbirths (also referred to as fetal deaths) do not always receive the same level of attention as infant deaths, but they can have significant health, financial, and emotional impacts on the pregnant person and their family.

City of Milwaukee 3-Year Rolling Stillbirth Rate by Race/Ethnicity



The left graph presents three-year rolling average stillbirth rates in Milwaukee from 2009–2022. Although stillbirth rates among non-Hispanic Black mothers declined after a peak more than 12 years ago, they remain notably higher than rates among other racial and ethnic groups.

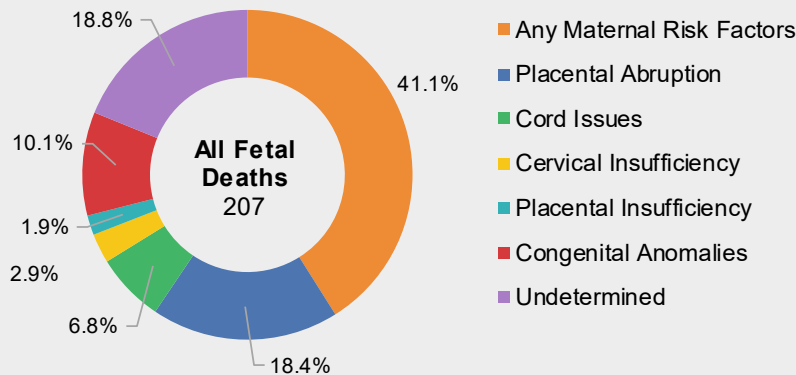
Over the past 20 years, Milwaukee has made progress in reducing stillbirth rates overall. However, during the past 10 years, rates have increased among the Hispanic population. Similar to patterns seen in infant mortality, non-Hispanic Black pregnancies remain disproportionately affected when compared with other groups.

** Other race/ethnicities have insufficient numbers for analysis*

Leading Causes of Stillbirths in Milwaukee

The leading causes of fetal deaths in Milwaukee include maternal risk factors (41.1%), undetermined causes (18.8%), placental abruption (18.4%), and congenital anomalies (10.1%).

Leading Causes of Stillbirths in Milwaukee, 2019-2022



Although the four leading causes of stillbirth remain the same as in the 2021 FIMR report, several changes are notable:

- Maternal risk factors, the leading cause of stillbirth, have decreased since the last report (2021 report: 46.1%; 2025 report: 41.1%).
- Placental abruption now represents a larger share of losses (2021 report: 10.3%; this report: 18.4%).
- Placental insufficiency has decreased substantially since last reported (2021 report: 7.3%, 2025 report: 1.9%).

** Explanations of cause of fetal death categories can be found in Appendix C.*

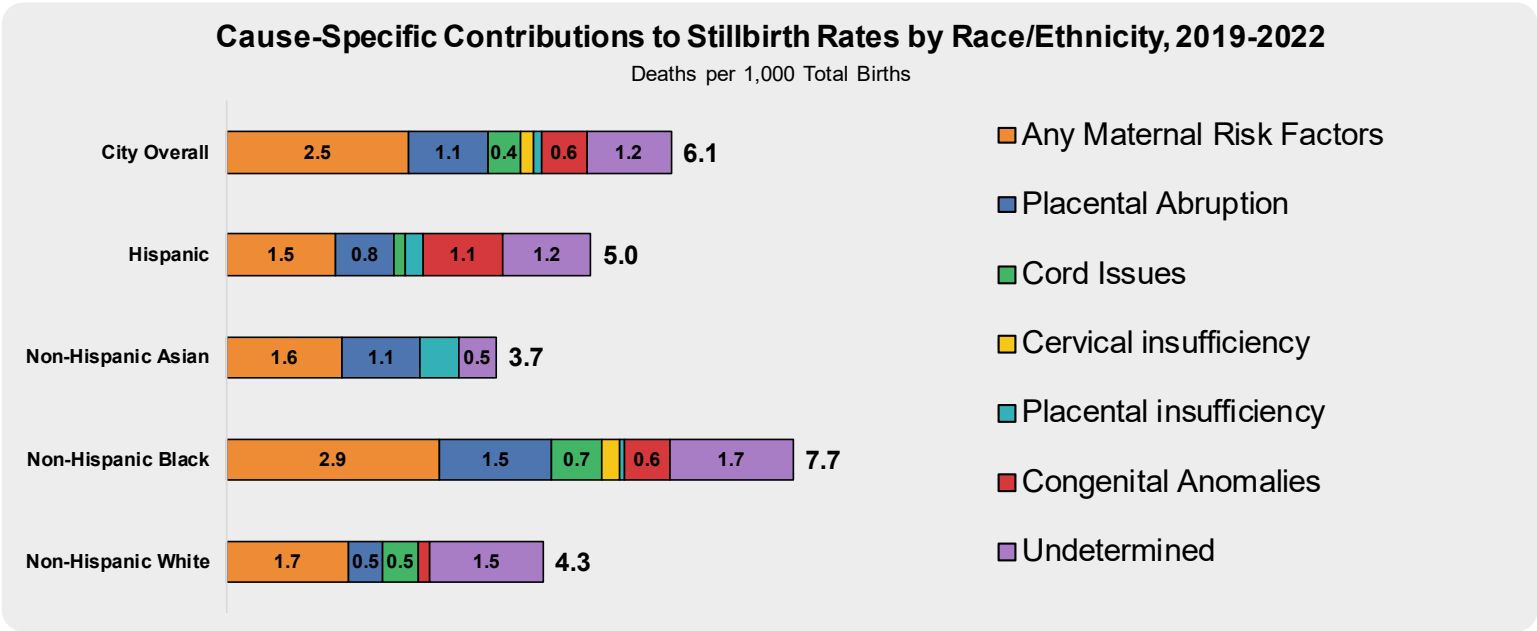
Causes of Stillbirth by Race/Ethnicity

Visualizing Cause-Specific Contributions to Stillbirth Rates

The graph below shows cause-specific contributions to stillbirth rates by race and ethnicity in Milwaukee from 2019–2022. The total length of each bar represents the overall stillbirth rate, which is shown in bold to the right of each bar. The segments within each bar show how specific causes contribute to the total stillbirth rate.

Overall Stillbirths Rates

Overall stillbirth rates vary by race and ethnicity, ranging from 3.7 deaths per 1,000 total births among non-Hispanic Asian pregnancies to 7.7 deaths per 1,000 total births among non-Hispanic Black pregnancies. In general, stillbirth rates are lower than infant mortality rates in the city of Milwaukee.



Leading Causes of Stillbirth by Race/Ethnicity

Across all racial and ethnic groups, maternal risk factors are the largest contributor to stillbirth. Rates related to maternal risk factors are similar among Hispanic, non-Hispanic Asian, and non-Hispanic White pregnancies (1.5, 1.6, and 1.7 deaths per 1,000 total births, respectively). The rate among non-Hispanic Black pregnancies is nearly twice as high (2.9), indicating a higher absolute risk of stillbirth associated with maternal risk factors.

Placental abruption is another important contributor across these groups. The risk is lowest among non-Hispanic White pregnancies (0.5 deaths per 1,000 total births) and highest among non-Hispanic Black pregnancies (1.5 deaths per 1,000 total births). Placental abruption is the third largest contributor to stillbirth among non-Hispanic Black pregnancies.

Congenital anomalies contribute more to the stillbirth rate among Hispanic pregnancies than among other racial or ethnic groups. Cord-related stillbirth rates are highest among non-Hispanic Black pregnancies (0.7 per 1,000 total births).

Placental insufficiency and cervical insufficiency are generally the smallest contributors to stillbirth rates, although some disparities exist. Placental insufficiency–related stillbirth risk is highest among non-Hispanic Asian pregnancies, while cervical insufficiency–related risk appears only among non-Hispanic Black pregnancies. A significant share of stillbirths across all racial and ethnic groups are classified as undetermined causes, which makes it more difficult to fully understand the underlying reasons for these losses.

As noted earlier in this chapter, placental abruption accounts for a larger share of stillbirths than in the previous report, both overall and across several racial and ethnic groups. However, not all trends are consistent. For example, stillbirths from undetermined causes decreased among the non-Hispanic Black population but increased among the Hispanic population.

Because many stillbirths fall into the undetermined cause category, identifying the most important underlying health or social factors can be difficult. In addition, the leading category, maternal risk factors, includes a wide range of different conditions. This makes it challenging to identify single interventions that can broadly reduce stillbirths.

Addressing stillbirths will require collaboration across multiple sectors to better understand these causes and develop effective prevention strategies.

Understanding Maternal Risk Factors

Maternal risk factors refer to a range of health conditions and behaviors affecting the pregnant person. These include conditions such as prenatal infections, obstetric procedures during pregnancy, diabetes, hypertension, and other health concerns. These factors are described in greater detail in the Risk Factors chapter.

Risk Factors

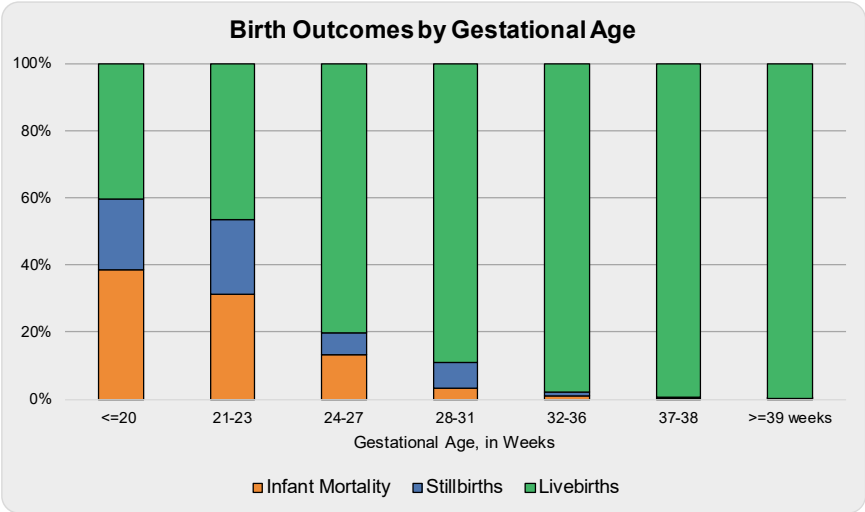
Risk Factors Associated With Infant Death and Stillbirth in Milwaukee

There are many risk factors associated with higher rates of infant death and stillbirth. Some are related to behaviors of the pregnant person, some are maternal or infant health conditions, and others are related to the pregnancy itself. Environmental factors can also play a role.

Birth Outcomes by Gestational Age

Complications related to preterm birth (delivery before 37 weeks' gestation) are one of the leading causes of infant mortality, and most stillbirths occur before a pregnancy reaches full term. Examining gestational age at delivery helps reveal important patterns.

The right graph shows birth outcomes by gestational age at delivery. In Milwaukee, about 60% of deliveries occurring before 24 weeks result in a stillbirth or infant loss. After 24 weeks, outcomes improve significantly, with survival increasing steadily as gestational age approaches full term. By 32 weeks and beyond, nearly all births result in live infants who survive beyond their first year of life.



Maternal Risk Factors (Behaviors and Health Conditions)

The table on the right shows the proportion of infant deaths and stillbirths that occurred among birthing people with a particular risk factor. It is important to note that multiple risk factors may occur during the same pregnancy, so the table totals may exceed 100%.

Some of these risk factors are health conditions (which may be genetic, chronic, lifestyle-related, or pregnancy-related), while others involve maternal behaviors. Many of these factors are associated with an increased risk of stillbirth, infant death, or other adverse birth outcomes.

These risk factors often have different underlying causes. Many are modifiable or can be mitigated with appropriate care and support. Additional information on how these factors affect pregnancy outcomes can be found in Appendix A.

	Infant Deaths	Stillbirths
Previous Preterm Birth	19.5%	17.4%
Maternal Hypertension - Chronic - Pregnancy-related	10.5% 5.4% chronic, 5.1% pregnancy-related	22.7% 11.1% chronic 11.6% pregnancy-related
Maternal Diabetes - Chronic - Gestational	3.5% 1.0% chronic 2.5% gestational	10.6% 7.2% chronic 3.4% gestational
Maternal Sexually Transmitted Infections	6.1%	5.8%
Maternal Tobacco Use During Pregnancy	12.5%	14%
Late Prenatal Care*	31.2%	27.5%
Maternal WIC Use**	32.3%	24.2%

* Late prenatal care is defined as care beginning in the second or third trimester.

** WIC use is used as a proxy for limited income; participation in WIC itself can be beneficial for pregnant people and mothers.

Maternal Education

This table shows the education levels of mothers who experienced an infant death or stillbirth, broken down by racial and ethnic groups.

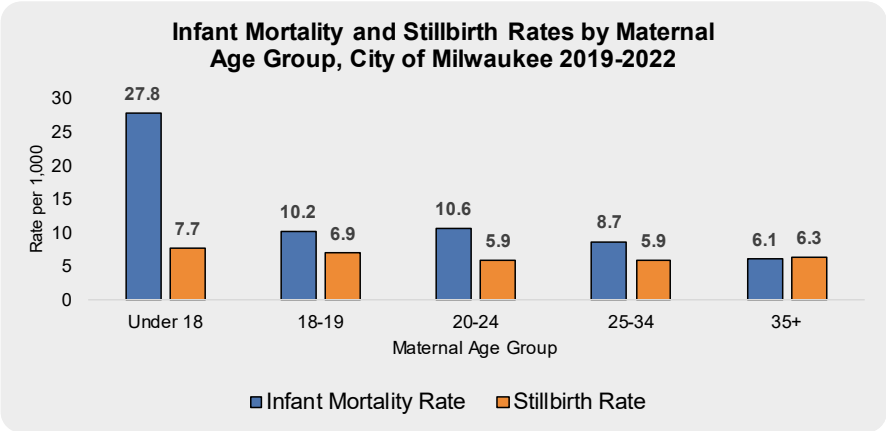
	Less than High School		High School		More than High School	
	Infant Deaths	Stillbirths	Infant Deaths	Stillbirths	Infant Deaths	Stillbirths
Black	21.3%	14.4%	37.7%	39.2%	18.4%	17.6%
White	6.5%	7.1%	35.5%	14.3%	35.5%	53.6%
Hispanic	31.1%	29.7%	20.0%	29.7%	31.1%	27.0%
Other	22.2%	17.6%	22.2%	17.6%	29.6%	11.8%

* Maternal education is not known for all cases, so totals may not add up to 100%

Maternal Age

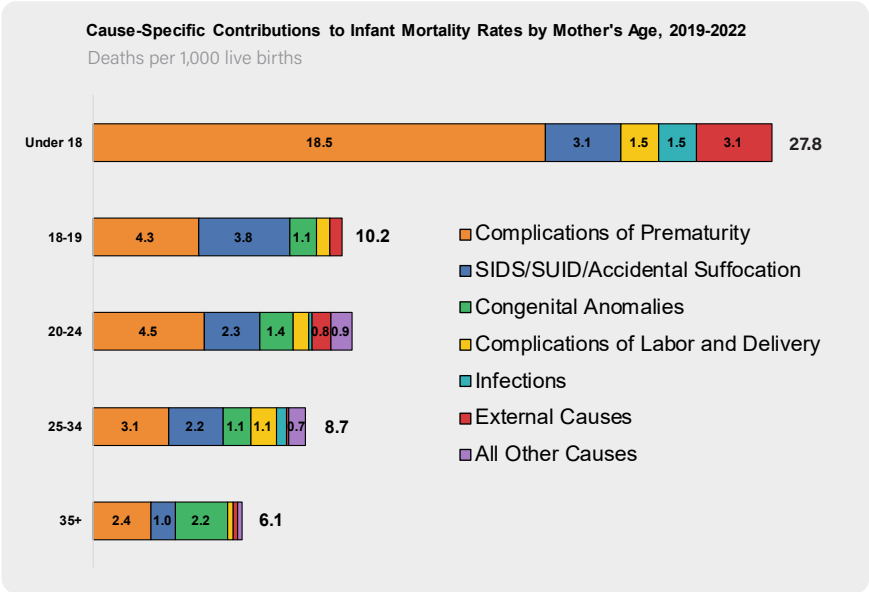
The age at which a person becomes pregnant can influence pregnancy outcomes. Certain causes of loss occur more frequently in specific age groups, particularly among mothers under age 20 and over age 35.

However, as shown in the graph to the right, the youngest and oldest age groups account for a relatively small proportion of losses in a given year because most pregnancies occur among people between the ages of 25 and 34. As a result, outcomes among the youngest and oldest age groups may show greater year-to-year variation and may not reflect broader trends.



Visualizing Cause-Specific Contributions to Infant Mortality Rates by Maternal Age

The graph below shows cause-specific contributions to infant mortality by maternal age. The total length of each bar represents the overall infant mortality rate, shown in bold to the right of the bar. The segments within each bar represent the contributions of different causes to the total rate.



Overall Infant Mortality Rate by Maternal Age

Infant mortality rates vary substantially by maternal age. The highest infant mortality rate occurs among mothers under age 18, at 27.8 deaths per 1,000 live births. Although births to this age group represent a small share of total births and losses, these pregnancies face a higher risk of adverse outcomes.

Younger mothers may have fewer resources, including education, employment opportunities, and financial stability. They may rely on parents or family members for support or may have limited support systems. In addition, younger mothers may have less experience navigating healthcare systems or insurance coverage. These factors can make it more difficult to achieve healthy pregnancy outcomes. Among mothers age 20 and older, stillbirth rates are more consistent across age groups. Infant mortality rates generally decline as maternal age increases.

Leading Causes of Infant Death by Maternal Age

Across all age groups, complications of prematurity are the largest contributor to infant mortality. However, this cause plays a much larger role among births to mothers under age 18, with 18.5 deaths per 1,000 live births, more than four times the rate observed in any other age group.

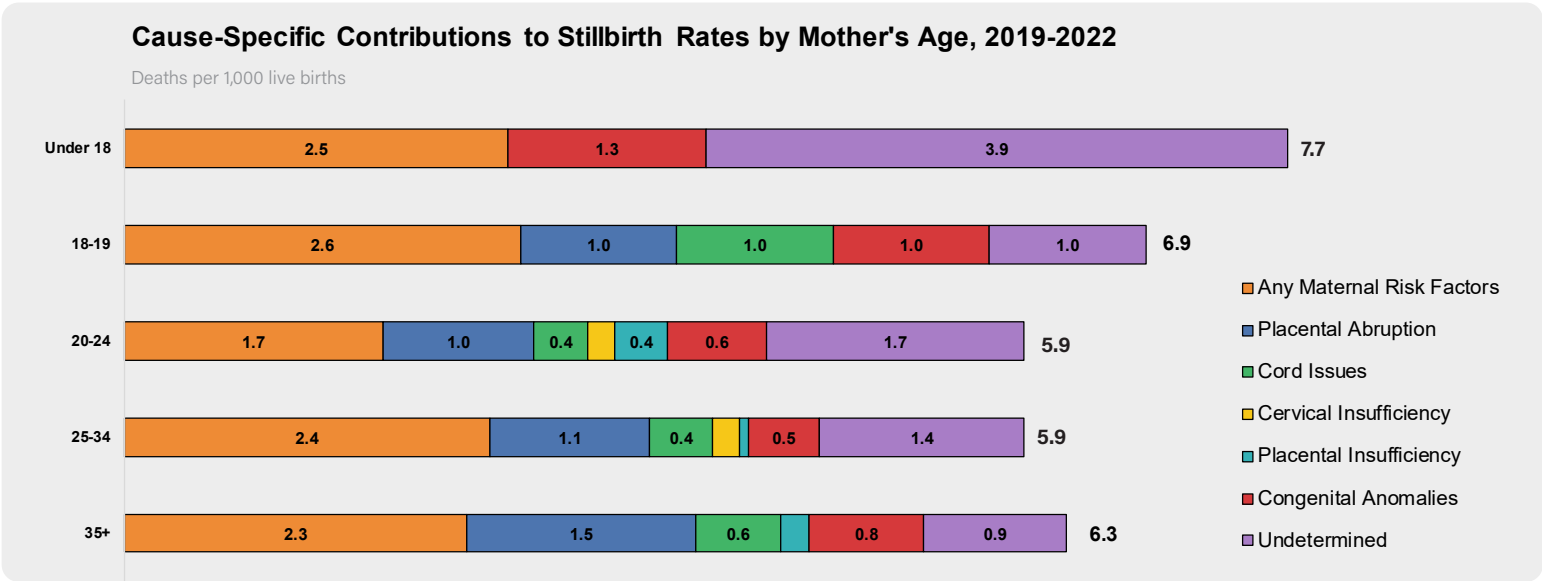
SUID deaths are the second largest contributor to infant mortality across most age groups, except for the 35+ age group, where SUID is the third largest contributor. SUID-related infant mortality is especially high among teen mothers aged 18-19 and mothers under age 18 (3.8 and 3.1 deaths per 1,000 live births, respectively).

Although SUID represents a smaller proportion of deaths among mothers under 18 (11% of infant deaths in this group), the absolute risk remains high because the overall infant mortality rate for this group is significantly higher.

Congenital anomaly-related infant mortality generally increases with maternal age and is highest among birthing persons age 35 and older, as advanced maternal age is a known risk factor for congenital anomalies.¹ External cause-related infant mortality is highest among mothers under age 25, particularly among those under age 18.

Visualizing Cause-Specific Contributions to Stillbirth Rates by Maternal Age

The graph below shows cause-specific contributions to stillbirth rates by maternal age in Milwaukee from 2019–2022. The total length of each bar represents the overall stillbirth rate, shown in bold to the right of each bar. The segments within each bar show how specific causes contribute to the overall stillbirth rate.



Overall Stillbirth Rates by Maternal Age

Overall stillbirth rates vary slightly by maternal age group, though not to the same extent as infant mortality rates. The under 18 age group has the highest stillbirth rate, at 7.7 per 1,000 total births. Rates are lowest among the 20–24 and 25–34 age groups (both 5.9 per 1,000 total births), which represent the most common childbearing years.

Leading Causes of Stillbirth by Maternal Age

Maternal risk factors are a major contributor to stillbirth across all age groups. Rates are fairly consistent across age groups and account for roughly one-third of each group's overall stillbirth rate. Placental

abruption is another important contributor to stillbirth in most age groups. The absolute risk is highest among those age 35 and older and is notably absent in the under 18 age group.

Congenital anomalies are present in all age groups, though the youngest and oldest age groups show higher risk compared with those ages 20–34. Among those under age 18, undetermined cause is the largest contributor to stillbirth (3.9 per 1,000 total births). This rate is more than twice as high as any other age group.

Short Interval Pregnancy

A short pregnancy interval is typically defined as less than 12 months between the end of one pregnancy and the beginning of the next. Short intervals between pregnancies are associated with higher risks of preterm birth, intentional or unintentional injuries, and sudden infant death (SUID). ²

Among women who experienced a stillbirth between 2019 and 2022, more than one-third were experiencing their first delivery. Another one-third experienced a stillbirth after waiting 18 months or more between pregnancies. Among those who experienced an infant death, about 30% occurred in first births, while roughly 40% occurred in pregnancies spaced 18 months or more apart. Short interval pregnancies were more common among those who experienced a stillbirth.

** Birth interval is defined as the time between the end of the mother's previous pregnancy resulting in a live birth and the estimated conception date for the current pregnancy, as defined in DHS WISH.*

**Birth interval is not known for all cases, so totals may not add up to 100%*

Distribution of Birth Intervals for Mothers Who Experienced a Stillbirth or Infant Loss, 2019-2022

	All Births	Infant Deaths	Stillbirths
First Pregnancy	36.1%	29.1%	37.2%
Short interval (1-11 months)	12.0%	5.1%	14.1%
Moderate interval (12-17 months)	7.8%	8.9%	4.4%
Fully spaced (18+ months)	38.8%	40.6%	33.3%

Sleep Related Deaths

**The following SUID and sleep-related infant death data comes from the Children's Health Alliance of Wisconsin's SUID Case Registry System.*

There are several notable risk factors associated with sleep-related infant deaths. These are discussed in more detail below.

SUID as a Cause of Death

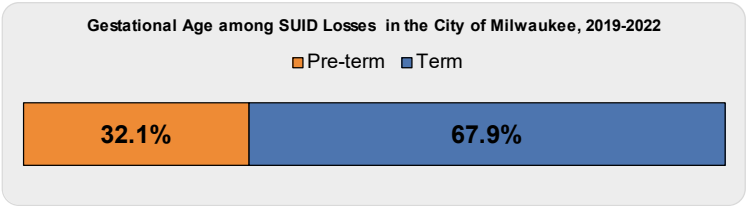
SUID (Sudden Unexpected Infant Death) is an umbrella term that includes:

- Sudden Infant Death Syndrome (SIDS)
- Sudden Unexpected Death in Infancy (SUDI)
- deaths classified as accidental suffocation
- other sleep-related infant deaths

Between 2019 and 2022, SUID accounted for 23.3% of all infant deaths in Milwaukee. Because many of these deaths are preventable, they are a major focus of infant mortality prevention efforts.

Infant Gestational Age

In Wisconsin, about 10% of infants are born preterm. In Milwaukee, that proportion increases to 12%. However, among SUID losses, 32% of infants were born preterm. Infants born prematurely may not reach full physiological development before birth. As a result, they may experience challenges related to breathing, temperature regulation, and other physiological functions. Prematurity can also be associated with additional medical conditions that may increase vulnerability during infancy.



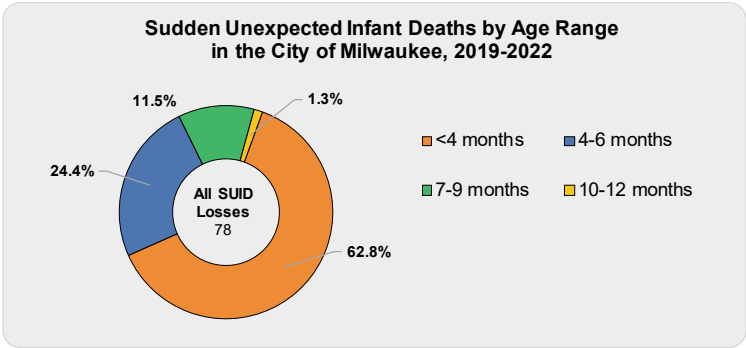
Low Birthrate

Low birthweight (defined as birth under 2500 grams - about 5½ pounds), which is closely associated with prematurity, is also overrepresented among SUID losses.

- In Wisconsin, 7.7% of infants are born with low birthweight
- In Milwaukee, 11% of infants are born with low birthweight
- Among SUID losses in Milwaukee, 38.9% of infants had low birthweight

Infant Age

Nearly two-thirds of SUID deaths occur before an infant reaches four months of age. Many of these deaths are related to unsafe sleep conditions. Infants in this age range have limited neck strength and airway control. Because of this, it is especially important that infants are placed on a firm, flat sleep surface. If an infant's neck tilts forward or downward while sleeping, it can restrict airflow and make breathing more difficult.



Additional Factors Associated with SUID

Several other factors are frequently observed in SUID cases:

- 88.5% of infants were enrolled in Medicaid, an indicator of low income (compared with 70.7% of all live births in Milwaukee)
- 11.5% of cases involved a caregiver who was impaired at the time of the loss
- 26.9% of infants had a NICU stay of at least one day (compared with 13.4% of all live births)
- 58.9% of infants were exposed to secondhand smoke

Proportion of SUID losses by race/ethnicity:

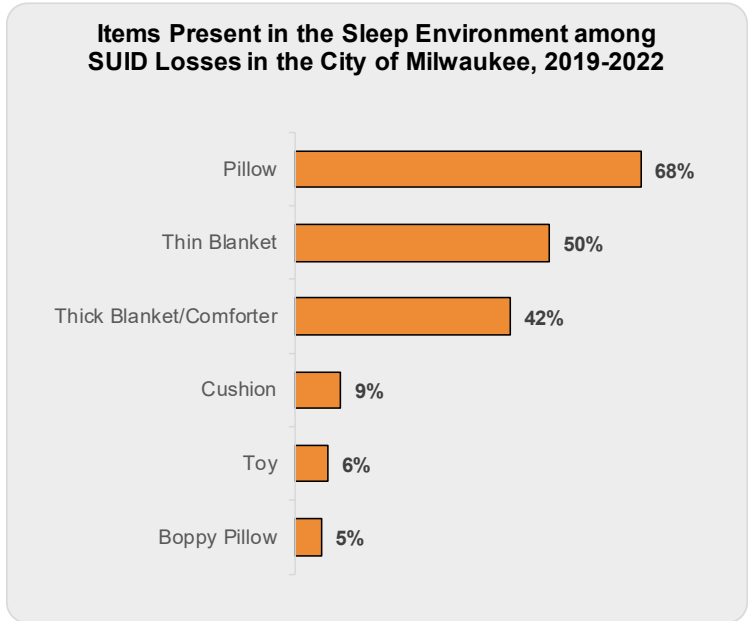
- Non-Hispanic Black: 70.5% (compared with 47.5% of all live births)
- Hispanic: 19.2% (compared with 21.8% of all live births)
- Asian: 3.8% (compared with 5.6% of all live births)
- Multi-racial: 3.8% (compared with 3.7% of all live births)
- Non-Hispanic White: 2.6% (compared with 18.9% of all live births)

Infant Sleep Environment

The sleep environment plays an important role in infant safety. Most SUID deaths involve items in the infant’s sleep environment that are not firm or flat, such as:

- Pillows
- Thin blankets
- Thick blankets or comforters

92% of SUID losses involved at least one soft or loose bedding item in the sleep environment. ** If an infant lies on or near these items, they can compress around the infant’s face and restrict breathing. If placed nearby in a crib or bassinet, infants may roll onto them but be unable to move their face away. Removing loose items from the sleep environment is an important step in preventing sleep-related deaths.

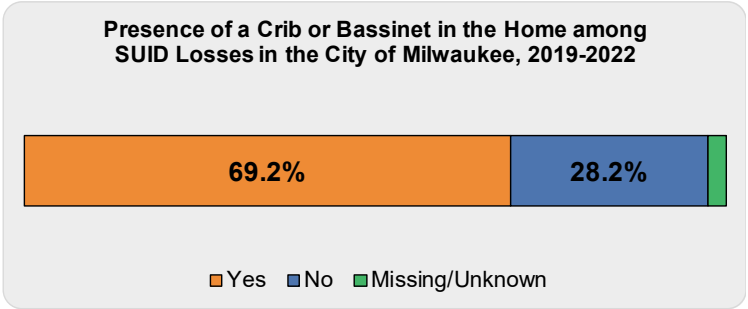


* Multiple items may be present in the same sleep space, so totals may exceed 100%.
** Additional data from the CHAW SUID Case Registry System

Presence of a Crib or Bassinet

A firm, flat sleep surface is the safest place for an infant to sleep. Cribs or bassinets are the easiest way to provide a safe sleep location. However, nearly 3 in 10 families who experienced a SUID loss did not have a crib or bassinet in the home.

Sometimes sleep-related deaths occur when families are away from home, such as visiting friends or relatives who do not have a crib or bassinet available. Developing sleep plans for these situations can help ensure infants always have a safe place to sleep.



Additional factors associated with SUID include:

Sleep Location

- 83.4% of deaths occurred in a non-recommended sleep location:
 - 62.8% occurred in an adult bed
 - 9% occurred on a couch or futon
 - 3.9% occurred in a car seat or stroller (safe for transportation, but not recommended extended sleep)

Infant Positioning

29.4% of infants were placed on their stomach or side (infants are safest when placed on their backs to sleep)

Co-sleeping

65.4% of deaths involved co-sleeping (sharing a sleep surface with another adult, child, or multiple people)

Making Infant Sleep Safer

Caregivers are encouraged ³ to share a room, not a bed, with their infants, and follow the [ABCs of Safe Sleep](#):

A = Alone

The infant sleeps alone, with no other people or items in the space.

B = on their Back

Place the infant on their back for sleep.

C = in a Crib

Use a crib, bassinet, Pack ‘n Play, or other approved infant sleep surface with no pillows, blankets, or toys.

S = in a smoke-free environment

Avoid tobacco or marijuana smoke exposure.

A Harm Reduction Approach to Safe Sleep

Close physical contact with caregivers can benefit infants. Skin-to-skin contact may help regulate an infant's breathing, temperature, and heart rate. Physical closeness may also reduce fussing and crying in the first months of life. In addition, sleeping close to a caregiver may facilitate breastfeeding, which also benefits infant health.⁴

Because some families practice co-sleeping, MHD recognizes the importance of harm reduction strategies to help make infant sleep as safe as possible.⁵ If co-sleeping occurs, families can reduce risk by:

- Avoiding loose sheets or blankets
- Wearing warmer clothing instead of using blankets
- Creating a nighttime feeding plan
- Ensuring the mattress is firm and level
- Keeping pillows away from the infant
- Placing a crib or bassinet next to the bed when possible

If the sleeping environment cannot meet these safety standards, caregivers should avoid co-sleeping and place the infant in a crib or bassinet instead.

Additional safety practices include:

- Ensuring another sober caregiver is present if someone has consumed alcohol or other substances
- Ensuring an impaired caregiver does not share a sleep surface with the infant
- Planning safe sleep arrangements when traveling
- Creating a safe temporary sleep space if needed (such as a firm, flat container like a laundry basket when safer options are unavailable)
- Sleeping separately if a caregiver or infant is ill
- Ensuring all caregivers understand the infant's safe sleep plan

These precautions focus on preventing obstruction of the infant's airway, which is the primary risk in sleep-related deaths.

Safe Sleep Environment

Make sure that everyone who will be caring for the infant is educated about the safe infant sleep plan; that includes extended family members, siblings, babysitters, family friends, etc. Infants do not need the same sleep environment as adults. While adults and older children often use pillows and blankets, infants should sleep on a firm surface without extra bedding.

A safe sleep setup typically includes:

- A firm mattress
- A fitted sheet only
- Appropriate sleep clothing (such as a onesie or sleep sack)

Access to Safe Sleep Resources

Families who do not have access to a crib or bassinet may be eligible for programs that provide Pack 'n Plays or other safe sleep equipment.

MHD and partner organizations help provide these resources so every family can create a safe sleep environment for their infant.

If your family can't get a crib or bassinet on your own, many agencies (including MHD) have programs to provide families with Pack-n-plays so that every family can provide a safe sleep environment for their infant.



Citations

- 1) [Very young and advanced maternal age strongly elevates the occurrence of nonchromosomal congenital anomalies: a systematic review and meta-analysis of population-based studies](#) (Boglarka Petho, Szilard Vancsa, Alex Varadi, Gergely Agocs, Akos Matrai, Franciska Zaszkaliczky-Iker, Zita Balogh, Ferenc Banhidy, Peter Hegyi, Nandor Acs, 2024).
- 2) [Interpregnancy intervals in the United States: Data from the birth certificate and the National Survey of Family Growth](#) (Casey Copen, Marie Thoma, and Sharon Kirmeyer, 2015)
- 3) [Safe to Sleep campaign](#), led by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).
- 4) [Academy of Breastfeeding Medicine \(ABM\) Clinical Protocol #37: Physiological infant care – Managing Nighttime Breastfeeding in Young Infants](#) (Deena Zimmerman, Melissa Bartick, Lori Feldman-Winter, and Helen Ball, 2023)
- 5) [Remembering Safe Sleep Practices is as Easy as ABC](#) (Safe Sleep Academy of Akron Children's Hospital and The Molly Ann Gries Foundation, 2024).

Social Determinants of Health

Social determinants of health (SDoH) refer to the conditions in which people are born, grow, live, work, and age, and the larger systems that shape those conditions.¹ These factors include things such as income, education, housing, neighborhood environment, access to health care, and experiences of discrimination. Health behaviors are often influenced by these broader conditions.

Many of the factors that influence birth outcomes in Milwaukee are complex and have historical roots. Systems such as residential segregation and the unequal distribution of resources were established decades ago but continue to shape health outcomes today.



SDoH Example: Eating Unhealthy Food

Consider a family with young children who is preparing to welcome a new baby. The family may rely on frozen meals and rarely have fresh fruits or vegetables available. While the recommendation might be to eat healthier foods, several structural factors may influence these choices:

- Both parents work minimum-wage jobs
- The family cannot afford a car and relies on public transportation
- There are no grocery stores within walking distance, so the family shops at gas stations or corner stores with limited food options, or they must take long bus trips to reach larger grocery stores
- If a family member is pregnant, additional time may be spent attending medical appointments or preparing for the baby, leaving less time for grocery shopping or meal preparation

These conditions shape the choices families are able to make.

Racial Disparities in Fetal/Infant Losses

Race is often used in public health data as a proxy for the effects of racism. Race itself is not a biological factor, and Black infants are not biologically more likely to die during their first year of life. Instead, racial disparities in infant mortality reflect differences in social conditions, access to resources, and experiences within health care systems. Race is closely connected to many social determinants of health, including income, housing, employment opportunities, and access to health care. Historical and ongoing racism has shaped these conditions over time.

As a result, families of color, particularly non-Hispanic Black families, often face additional barriers when accessing health care, employment opportunities, and other resources that support healthy pregnancies and infants.^{2,3,4} Research shows that infant mortality disparities persist for non-Hispanic Black women across education levels, pointing to the effects of structural racism, unequal access to quality care, and chronic stress – not differences in education or individual behavior.⁵

Experiences of discrimination and chronic stress can also affect health outcomes. Long-term exposure to stress can increase levels of hormones such as cortisol and adrenaline, which are associated with higher risks of health conditions including high blood pressure, weight gain, and anxiety or depression.⁶

These physiological effects can contribute to complications during pregnancy. Pregnant individuals reporting high levels of psychosocial stress have been shown to have a 25–60% higher risk of preterm birth, a leading cause of infant mortality and stillbirth.⁷

Historical structural racism in Wisconsin and Milwaukee has also contributed to long-term patterns of segregation, lower educational attainment, higher incarceration rates, and disparities in housing quality.⁸ These structural conditions continue to influence health outcomes across generations.

Maps of Stillbirth and Infant Death by Zip Code

The following maps display infant and fetal mortality rates by ZIP code in the City of Milwaukee. ZIP codes are grouped into five shades of blue based on how their mortality rates compare with other ZIP codes in the city, with each grouping representing 20% of zip codes (or quantiles). In both maps, the darkest blue shade represents the ZIP codes with the highest mortality rates, although the rate ranges are not identical between the infant mortality and stillbirth maps.

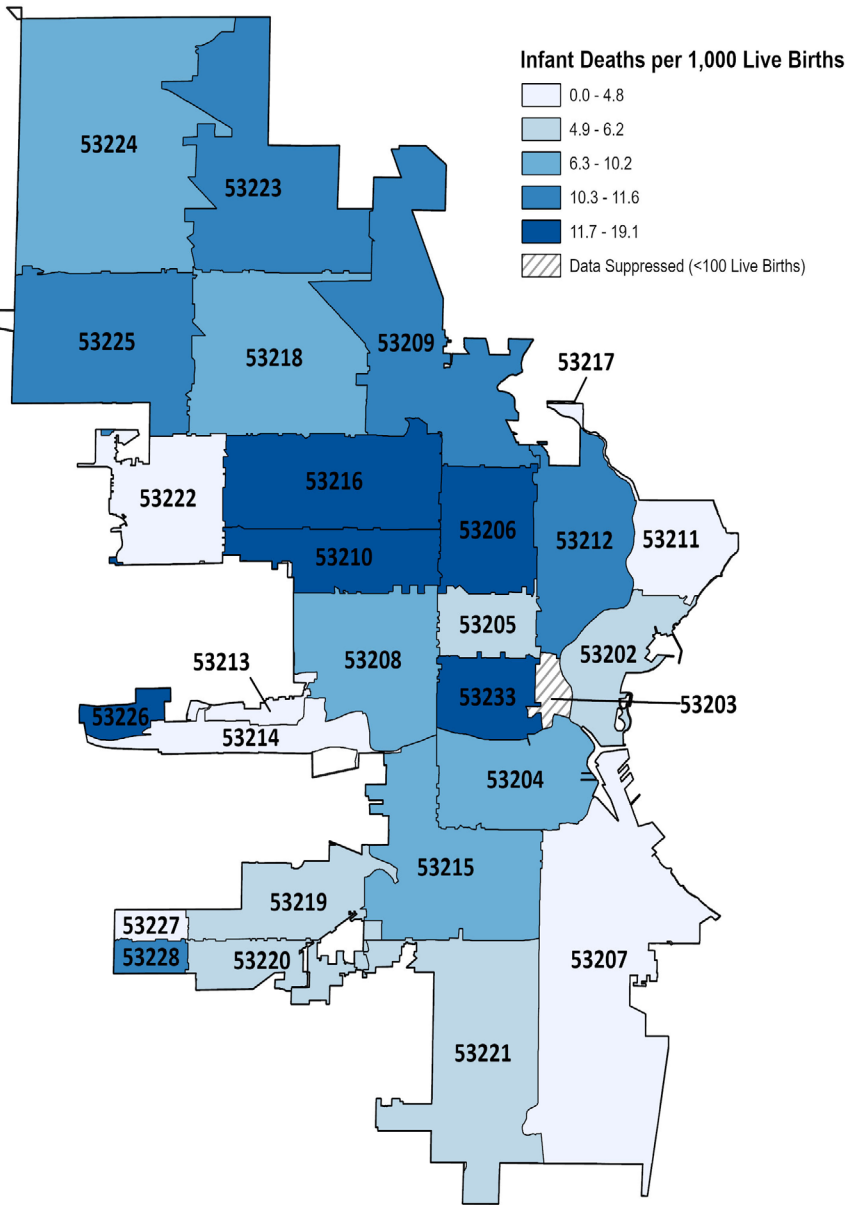
A list of the specific rates for each ZIP code can be found in Appendix D. ZIP codes shown with gray slanted lines indicate areas where there was insufficient data to calculate a reliable rate.

Infant Mortality by ZIP Code

Several organizations establish benchmarks for improving birth outcomes. [The statewide Wisconsin infant mortality rate](#)⁹ for 2020-2022 was 5.7 deaths per 1,000 live births. [The Healthy People 2030](#)¹⁰ target set by the U.S. Department of Health and Human Services is 5.0 deaths per 1,000 live births. Currently, six Milwaukee ZIP codes (shown in the lightest two shades of blue) have either met or are close to the Healthy People 2030 target.

As in the previous FIMR report, ZIP codes 53206 and 53210 continue to have among the highest infant mortality rates. More broadly, infant mortality rates remain higher in the northwest portion of the city. Some ZIP codes with the lowest infant mortality rates also had relatively small numbers of births, which limits the ability to make detailed comparisons with previous reports.

Infant Mortality Rate by Zip Code
City of Milwaukee (2019-2022)



Top 5 ZIP codes with the highest infant mortality rates:

- 1) 53206 (19.1)
- 2) 53226 (16.9)
- 3) 53216 (13.6)
- 4) 53210 (13.1)
- 5) 53233 (12.0)

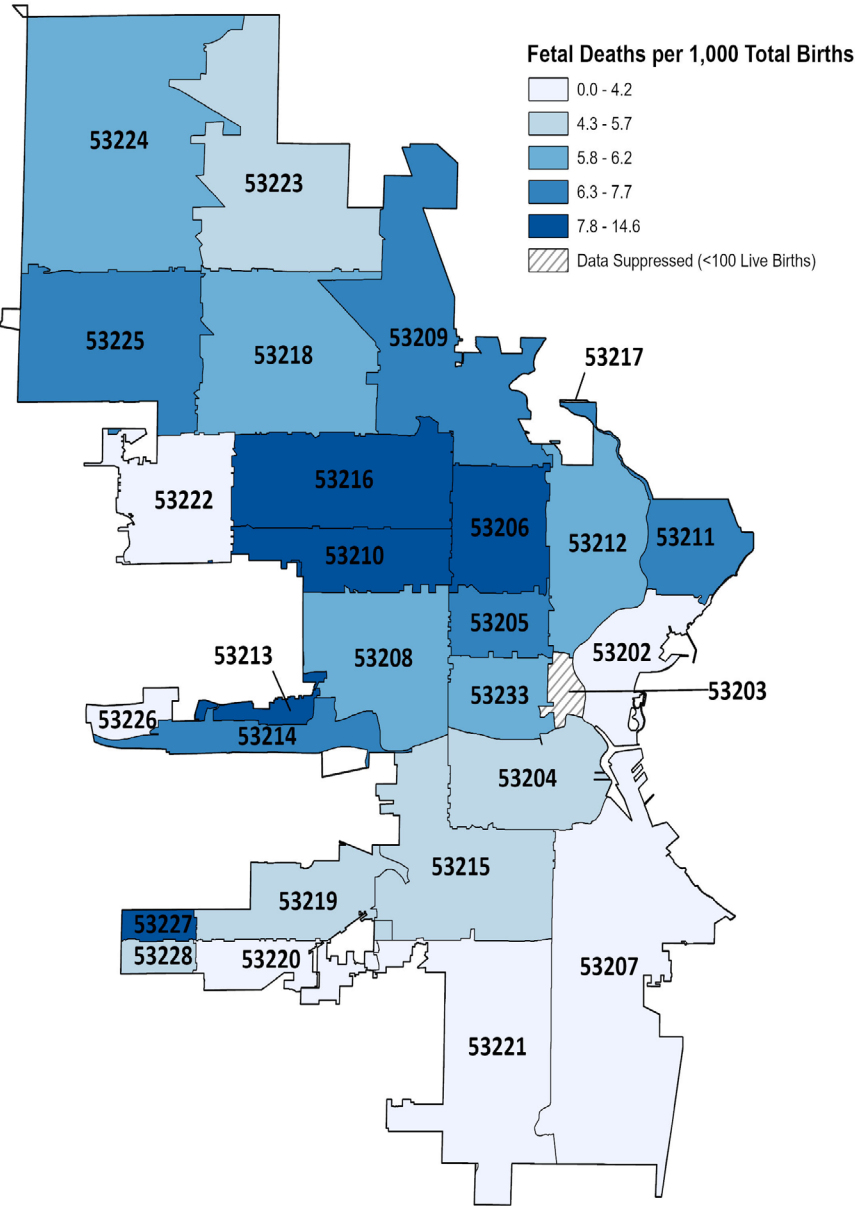
Stillbirths by ZIP Code

Stillbirths often will receive less attention than infant mortality, despite their significant impact on families and communities.

Globally, the [World Health Organization and UNICEF](#) have set a target for countries to achieve a stillbirth rate of fewer than 12 stillbirths per 1,000 births by 2030. Because this is a global target that includes low resource countries, most Milwaukee ZIP codes have already reached this benchmark.

The [Wisconsin stillbirth](#) rate is 5.36 per 1,000 births. Eleven Milwaukee ZIP codes (shown in the lightest two shades of blue) are below or close to the statewide rate. As in the previous report, ZIP codes 53216 and 53206 remain among the areas with the highest stillbirth rates. Similar to infant mortality, stillbirth rates are generally higher in the northwest area of Milwaukee.

Fetal Mortality Rate by Zip Code City of Milwaukee (2019-2022)



Top 5 ZIP codes with the highest stillbirth rates:

- 1) 53213 (14.6)
- 2) 53203 (14.3)
- 3) 53206 (13.3)
- 4) 53216 (9.7)
- 5) 53227 (8.8)

In Milwaukee, the geographic pattern of infant deaths and stillbirths closely mirrors other indicators of social inequity. Areas with higher rates of poverty, unemployment, lower life expectancy, and under-resourced schools often overlap with the neighborhoods experiencing the highest rates of infant and fetal loss.

Addressing these disparities requires action beyond individual behavior. Improving birth outcomes will require community-wide and systems-level approaches that address the broader conditions affecting families.



To explore other social determinants of health in Milwaukee, please review the 2025 Community Health Assessment (CHA).

View online at milwaukee.gov/CHA

Citations

- 1) [The social determinants of infant mortality and birth outcomes in Western developed nations: a cross-country systematic review.](#)
(Daniel Kim and Adrianna Saada, 2013)
- 2) [Health Coverage by Race and Ethnicity, 2010-2023](#)
(Latoya Hill, Nambi Ndugga, Samantha Artiga, and Anthony Damico, 2025)
- 3) [Advancing Racial Equity in U.S. Health Care: The Commonwealth Fund 2024 State Health Disparities Report](#) (David Radley, Arnav Shah, Sara Collins, Neil Powe, Laurie Zephyrin, 2024)
- 4) [Trends in Racial and Ethnic Disparities in Barriers to Timely Medical Care Among Adults in the US, 1999 to 2018](#) (Cesar Caraballo, Chima Ndumele, Brita Roy, et al, 2022)
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- 6) [Chronic stress puts your health at risk](#) (Mayo Clinic Staff, 2023).
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- 8) [The state of Black Milwaukee in national perspective: Racial inequality in the nation's 50 largest metropolitan areas in 65 charts and tables](#)
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- 10) [Reduce the rate of infant deaths – MICH-02](#) (U.S. Office of Disease Prevention and Health Promotion, Department of Health and Human Services).
- 11) [Stillbirth prevention – Overview](#) (World Health Organization).
- 12) [Wisconsin – By the numbers](#) (Count the Kicks).

Recommendations

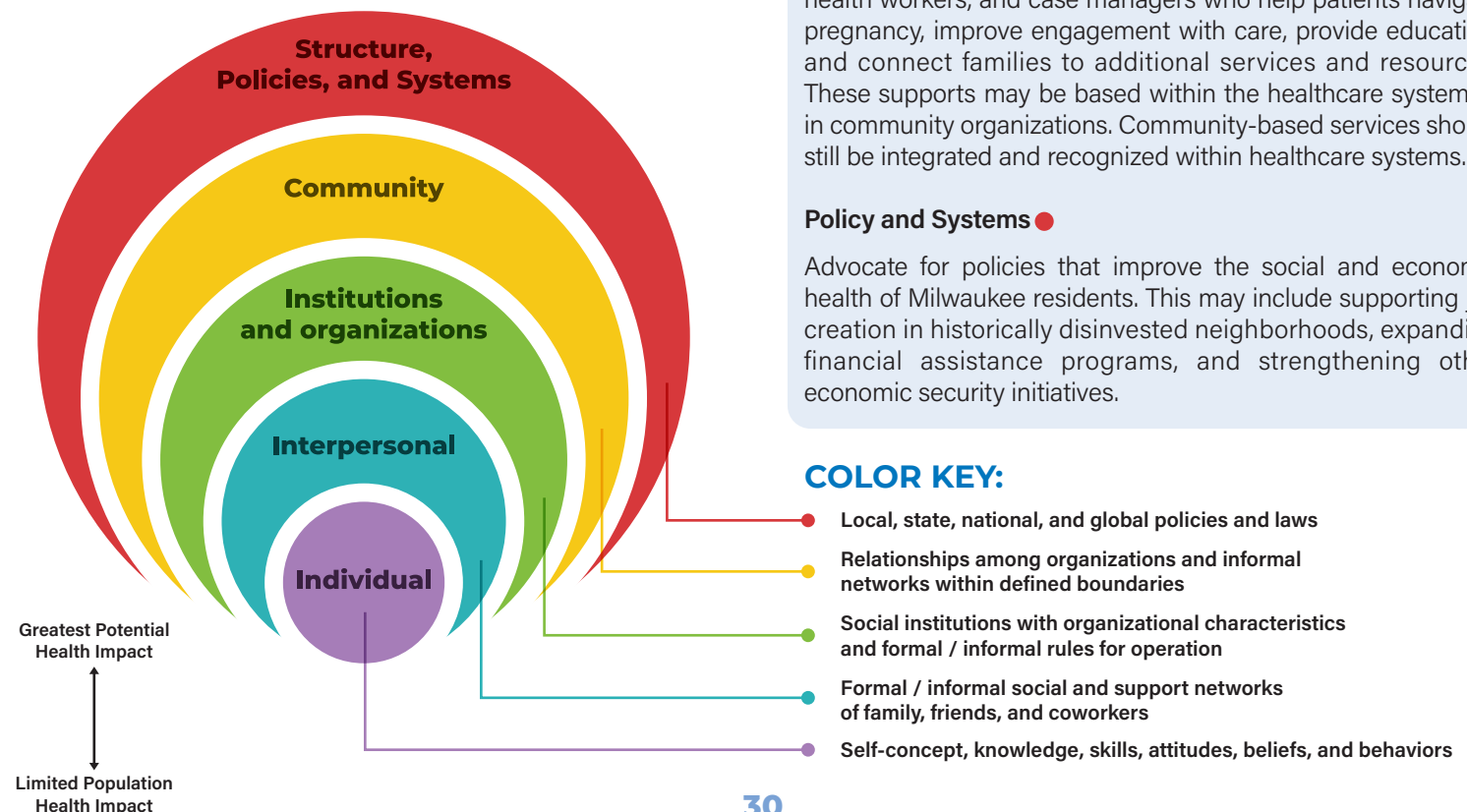
The Fetal and Infant Mortality Review (FIMR) process goes beyond reviewing individual cases and analyzing data. It also produces recommendations to improve systems, strengthen services, and reduce preventable infant deaths and stillbirths. Many of these challenges are also documented in the Community Health Assessment (CHA) and Community Health Improvement Plan (CHIP).

Using the Social Ecological Model

The following recommendations reflect multiple levels of the [Social Ecological Model](#)¹. This framework recognizes that health outcomes are shaped by factors at the systemic, community, organization, and individual levels. These factors include broader social determinants of health such as education, income, neighborhood conditions, public policy, as well as individual behavior.

Addressing infant mortality and pregnancy loss requires action across all levels of the Social Ecological Model. Solutions require collaboration across many sectors of the community, including health care and social service providers, research institutions, insurance providers, policymakers, community-based organizations, businesses, and community members directly affected by these issues.

Mothers and pregnant people who have experienced these losses, along with their families and communities, should be central to the development of prevention strategies. The lived experience of those directly affected by infant and pregnancy loss is invaluable, and their voices should be included. Providers must ensure the care and services they offer are high-quality and culturally competent. Only then can Milwaukee begin to turn the tide on this issue.



Social Determinants of Health

As this report shows, communities of color are disproportionately affected by infant mortality and stillbirth. This is not due to genetic factors, but rather the social determinants that influence health outcomes, such as chronic stress (especially from racism), poverty, access to quality education, unemployment, and other structural factors.

To reduce Milwaukee's infant mortality and stillbirth rates, these underlying conditions must be addressed.

Recommendations

Healthcare Providers ●

Identify the unmet social needs of pregnant patients and connect them and their families to resources and services. This could include conducting social determinants of health (SDoH) screenings in clinical settings.

Healthcare Systems and Organizations ●

Support pregnancy companions such as doulas, community health workers, and case managers who help patients navigate pregnancy, improve engagement with care, provide education, and connect families to additional services and resources. These supports may be based within the healthcare system or in community organizations. Community-based services should still be integrated and recognized within healthcare systems.

Policy and Systems ●

Advocate for policies that improve the social and economic health of Milwaukee residents. This may include supporting job creation in historically disinvested neighborhoods, expanding financial assistance programs, and strengthening other economic security initiatives.

Safe Sleep Environments

In any given year, up to 1 in 4 infant deaths may be related to unsafe sleep environments. Infants may be placed in unsafe sleep locations such as car seats, inclined sleepers, couches, or air mattresses. Unsafe items, such as pillows or blankets, may also be placed in the sleep space. In some cases, families may not have access to a safe sleep option such as a crib or bassinet.

Recommendations

Gold standard guidelines: Follow the ABCs of Safe Sleep ●

A – Alone:

Babies should sleep alone without pillows, blankets, or toys

B – Back:

Babies should always be placed on their backs to sleep

C – Crib:

Babies should sleep in a crib, bassinet, or pack-and-play

S – Smoke-Free:

Infants should live in a smoke-free environment

Individual ●

Create a sleep plan with all caregivers in the household so everyone understands safe sleep practices and follows the ABCs. This plan should also include alternatives for situations such as travel or when a caregiver has consumed alcohol or other substances.

Individual ●

Educate anyone who may care for the infant about the family's safe sleep plan, including extended family members, friends, and babysitters.

Healthcare Providers ●

Healthcare providers should educate families about safe infant sleep and discuss the family's sleep plan before delivery to help ensure it is as safe as possible.

Healthcare Systems and Organizations ●

Healthcare facilities and systems should ensure that all members of the care team provide consistent, up-to-date safe sleep education, including information on safe sleep positions, sleep surfaces, and nap environments.

Postpartum Healthcare

Postpartum care is an important part of protecting the health of the mother or birthing person after delivery. A postpartum visit should occur within 6–8 weeks after birth, but ideally there should be multiple check-ins during the first three months after delivery, with the first visit occurring within the first three weeks.²

Postpartum Care and Mental Health

In the [2022 MHD Community Health Assessment](#), 23.9% of survey respondents identified health access issues as a top priority. These concerns included affordable healthcare and access to mental health services. (pg. 8)

Postpartum Medicaid Extension

Medicaid covers 35% of all births in Wisconsin, compared to 41% nationally.³ When a person becomes pregnant, the income threshold used to determine eligibility increases. This allows more people to qualify for healthcare coverage during pregnancy. Historically, this coverage continued for only two months after delivery, ending at the end of the month in which the 60th day postpartum occurred.

Losing coverage so soon can prevent postpartum women from receiving important follow-up care, including postpartum visits, care for pregnancy-related health concerns, treatment for chronic conditions, mental health services, and other needed healthcare. In Wisconsin, 42% of maternal deaths occur after the current 60-day postpartum window, and access to a healthcare provider could have prevented some of these deaths.⁴

As of 2025, 48 states and Washington D.C. had extended the Medicaid eligibility period to 12 months postpartum, leaving Wisconsin and Arkansas as the only states without a 12-month postpartum extension at that time.^{5,6} In February 2026, while this report was being prepared, Wisconsin state lawmakers voted to pass postpartum Medicaid extension. This change will allow pregnant people in Wisconsin to remain insured during the critical postpartum period.

Recommendations

Individual ●

Ensure patients understand the importance of seeing their healthcare provider after labor and delivery.

Healthcare Providers ●

Discuss the importance of postpartum visits with patients before they leave the hospital and ensure they understand when and how to schedule follow-up care.

Healthcare Systems and Organizations ●

Expand the use of virtual and telehealth visits to make postpartum care more accessible and reduce barriers to care.

Healthcare Systems and Organizations ●

Standardize the practice of pre-scheduling postpartum appointments before patients leave the hospital after delivery. This helps reduce logistical barriers when families return home with a newborn.

Policy and Systems ●

Ensure insurance coverage for delivery includes care following a live birth, stillbirth, miscarriage, or infant death. This ensures all patients can receive follow-up care and evaluation for ongoing health concerns, regardless of birth outcome.

Mental Health

Mental health is another important factor affecting maternal and infant health outcomes. Up to 1 in 5 women in the United States experience a mental health condition during pregnancy or the postpartum period, making it one of the most common complications of pregnancy.⁷ These conditions may include perinatal depression, perinatal anxiety, perinatal obsessive-compulsive disorder, and other mental health concerns.

Mental health conditions can affect a person's ability to manage daily activities, care for a newborn or other children, and maintain overall well-being. In severe cases, they can lead to life-threatening outcomes. In 2020, 38% of pregnancy-related deaths were linked to mental health conditions, including overdose deaths.⁸

Recommendations

Individual ●

If you experience increased depression, anxiety, or other changes in your mental health during pregnancy or after birth, you do not have to face it alone. Talk with your healthcare provider and seek out available resources and support services.

Individual ●

If you are already taking mental health medications, do not stop taking them when you learn you are pregnant without consulting your provider. Some medications are safe to continue during pregnancy, while others may need adjustment. Contact your prescriber to discuss whether changes are needed and how to manage them safely.

Healthcare Providers ●

Ensure that clinicians who care for pregnant and postpartum patients are familiar with resources that provide guidance on perinatal mental health conditions and treatments. The [Periscope Project](#) offers resources for providers, including toolkits, education modules, and a phone line for real-time consultation. The program also provides resources for mothers and families.

Healthcare Systems and Organizations ●

When a patient is identified as needing mental health care, such as therapy services or medication management, systems should support warm hand-offs to ensure referrals are completed and follow-up care occurs.

Policy and Systems ●

Expand health insurance coverage for mental health services to improve access to care.

Policy and Systems ●

Social isolation can both contribute to and worsen mental health conditions. Communities and governments should support programs and policies that help individuals and families build stronger social connections.

Father and Partner Engagement

Including a pregnant person's partner or co-parent, often the father, but not always, throughout pregnancy, delivery, the hospital stay, infant care, and the grieving process after a loss is important.

Fathers and partners are part of the patient's support system. They often help with shared decision-making, participate in education about pregnancy and infant care, and experience the transition to parenthood themselves. When a loss occurs, they also experience grief and need support. Partners should be welcomed and recognized by the healthcare team and by service providers who interact with the pregnant person.

Recommendations

Individual ●

Pregnant patients should advocate for their partner or support person to be included in healthcare visits and other services whenever possible.

Individual ●

Partners or fathers should learn about the benefits available through their workplace, whether paid or unpaid, that allow them to attend prenatal visits and participate in other parts of the pregnancy process.

Healthcare Providers ●

Members of pregnancy-related care teams, such as nurses, doctors, and midwives, should directly acknowledge partners who attend visits and include them in conversations about care and education. Providers should also ask about the patient's support network when a patient attends visits alone.

Healthcare Systems and Organizations ●

Healthcare systems should standardize documentation of whether a support person is present during pregnancy-related visits. Records should include what information was discussed with that person, such as questions answered or education provided.

Policy and Systems ●

Employer policies and insurance programs should include provisions that allow partners or fathers to attend prenatal care visits, regardless of marital status.

Policy and Systems ●

Programs and services focused on pregnancy and parenting should actively create welcoming environments for partners and fathers to encourage greater participation and engagement.

[Periscope Project](#)



Emergency and Urgent Care

A study from a large, Chicago-area hospital system found that 17.5% of pregnant people sought acute care (emergency care) at some point during their pregnancy.⁹ In Indiana, a similarly-designed study showed that 13.8% of pregnant people had their first contact with the medical system at the emergency department, and those individuals were more likely to not receive adequate prenatal care.¹⁰

Both studies found that non-Hispanic Black and Hispanic patients, as well as patients covered by public insurance, were overrepresented among those seeking emergency department care during pregnancy. Strengthening coordination between emergency departments and primary/obstetric care may help improve birth outcomes.

Recommendations

Individual ●

Establish care with a healthcare provider as soon as pregnancy is confirmed. Patients should also understand how to access immediate care through their clinic or care team so they can receive the most consistent care possible.

Healthcare Systems and Organizations ●

Electronic health records (EHRs) should automatically notify a patient's primary care provider or pregnancy care provider when that patient uses an emergency department or urgent care.

EHR systems in emergency and urgent care settings should also be optimized to communicate across health systems and networks to support follow-up care.

These notifications could prompt follow-up actions such as scheduling an appointment, arranging a nurse home visit, or initiating another form of follow-up care.

Reproductive Life Planning

Short intervals between pregnancies (six months or less) are associated with increased risks for maternal health complications and adverse birth outcomes.¹¹ Families who have experienced a pregnancy or infant loss may be more likely to have a pregnancy spacing of 12 months or less, sometimes referred to as a close interval pregnancy.

The time between pregnancies can provide an opportunity to address existing health conditions, manage complications that arose during pregnancy, and support the person in achieving the healthiest possible future pregnancy.

[One Key Question® model](#)



Postpartum contraception is often discussed while the mother is still in the hospital after delivery. In some cases, the conversation begins earlier in pregnancy, but sometimes it does not occur at all. When the discussion happens only at hospital discharge, the patient may not have enough time or support to fully consider their reproductive goals. A more comprehensive approach to reproductive life planning can help patients make informed decisions about pregnancy timing and contraception.

Recommendations

Individual ●

Think about what you want your family to look like and ask your healthcare providers questions if you are unsure how to achieve those goals.

Healthcare Providers ●

Use the [One Key Question® model](#) by asking patients of reproductive age: *"Do you want to become pregnant within the next year?"*

Based on the response, providers can discuss whether the patient is satisfied with their current family planning method or whether a referral to another provider may be helpful.

Healthcare Systems and Organizations ●

Prenatal care settings should standardize conversations about postpartum contraception during prenatal visits.

If the patient wants more children:

Providers can help plan appropriate pregnancy spacing, address health concerns, and coordinate care with specialists if needed.

If the patient does not want more children:

Providers can offer more detailed counseling about contraception and pregnancy prevention.

If the patient is unsure:

Providers can discuss the importance of addressing health concerns between pregnancies and explain how different contraception methods can be started or stopped.

Healthcare Systems and Organizations ●

Expand access to long-acting reversible contraception (LARCs), including intrauterine devices (IUDs) and contraceptive implants, during the labor and delivery hospital stay. Providing these options before hospital discharge may reduce the need for additional appointments during the postpartum period.

Policy and Systems ●

Reproductive life planning should extend beyond providing contraception at hospital discharge. It should be an ongoing conversation between patients and their care teams that supports informed decisions about pregnancy timing and family planning.

Substance Use

Substance use and exposure to secondhand smoke during pregnancy can affect both maternal and infant health. Among FIMR cases, 12.5% of people who experienced an infant loss smoked during pregnancy, and 14% of people who experienced a stillbirth smoked during pregnancy, compared to 6.4% of all live births. All efforts to reduce or stop substance use during pregnancy should be supported.

Recommendations

Individual ●

If you are thinking about having children or trying to become pregnant, begin reducing or stopping substance use as early as possible. Seek help if needed by connecting with healthcare providers or organizations that offer supportive services.

Individual ●

If there is an infant in the home, encourage others in the household to quit smoking tobacco, marijuana, or vaping products. If someone does smoke, it should occur outside the home to reduce exposure to secondhand smoke.

Healthcare Providers ●

Providers should clearly explain the risks of tobacco, marijuana, and other substance use during pregnancy while maintaining supportive and nonjudgmental communication.

Mental health screenings should be conducted, and providers should discuss possible reasons for substance use so underlying needs can be addressed.

Providers should also explain what side effects may occur when reducing or quitting substances and how patients can safely manage those symptoms.

Policy and Systems ●

Ensure that resources to help people quit smoking and reduce substance use are available and accessible regardless of insurance coverage.

Citations

- 1) [The path to good health: Shifting the dialogue and promoting social ecological thinking.](#) (D. Rose Ewald, Muhsin Orsini, and Robert Strack, 2023).
- 2) [Optimizing Postpartum Care, Committee Opinion Number 736](#) (American College of Obstetricians & Gynecologists, May 2018 and reaffirmed in 2025).
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- 4) [2016-2017 Wisconsin Maternal Mortality Report](#) (WI Department of Health Services, released April 2022).
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- 11) [Interpregnancy Care: Obstetric Care Consensus Number 8](#) (American College of Obstetricians and Gynecologists, January 2019, reaffirmed 2025).

Appendix

Appendix A: Maternal Risk Factors

This is additional information on the maternal health conditions and risk factors that were included in chapter 8 (Risk Factors).

Maternal Sexually Transmitted Infections/Diseases

STI/STD infection during pregnancy are risk factors for premature birth, low birthweight, and stillbirth. They can lead to infection of the membrane that surrounds the fetus, premature rupture of membranes (water breaking early), premature labor/delivery, postpartum maternal infections, and potential complications for the infant. ¹

Maternal Tobacco Use in Pregnancy

Smoking during pregnancy is associated with an increased risk of premature birth, low birthweight even among full-term infants, and is a risk factor for several pregnancy-related complications like placenta previa, placental abruption, and fertility issues. It can also cause birth defects and put an infant at higher risk of SIDS. ²

- While the data is not available to include in this report, marijuana use in pregnancy increases the risk of miscarriage, stillbirth, premature birth, low birthweight, impaired fetal brain development, and infant death. ³
- Alcohol and other substance use data are also not available for inclusion. Drinking alcohol while pregnant is associated with miscarriage, stillbirth, and disorders like Fetal Alcohol Syndrome, which has a number of impacts on a fetus/infant. ⁴ Using other substances (like different legal or illegal drugs) can have a range of risks depending on what substance, but range from infant behavioral issues, to conditions like Neonatal Abstinence Syndrome (infant withdrawal), up to risks of premature birth, low birthweight, placenta issues, developmental abnormalities, and other poor birth outcomes. ⁵

Maternal Hypertension

Hypertension can be either chronic/pre-existing or associated with the pregnancy (gestational hypertension). High blood pressure during pregnancy can impact maternal and fetal health in multiple ways, like decreased blood flow to the placenta which restricts nutrients and oxygen (in turn effecting fetal growth and development), placental abruption, premature birth, and is a risk factor for preeclampsia which is a serious maternal health condition. ⁶

Maternal Diabetes

Diabetes can also be chronic/pre-existing (Type 1 or 2 diabetes) or pregnancy-related (gestational diabetes). Diabetes during pregnancy has been associated with increased risk of C-section, premature birth, larger than usual fetal growth, heart and spine malformations, and other fetal abnormalities. Outcomes are largely driven by blood sugars not being under control before and during pregnancy. ⁷ While these conditions are all associated with a higher risk of significant poor birth outcomes, those outcomes aren't guaranteed. These things can be managed by pregnant people and their healthcare providers, and the risks can be mitigated.

Appendix B: Citations and Sources by section

Terms and Definitions / Other Data Considerations

- 1) [What Are Health Disparities and Health Equity? We Need to Be Clear](#) (Paula Braveman, 2014)
- 2) Language adapted from the Illinois Dept. Of Public Health [Fetal and Infant Mortality Data Report, September 2024](#) (page 4)
- 3) [How Present-Day Health Disparities for Black People are Linked to Past Policies and Events](#) (Samantha Artiga, Latoya Hill, and Marley Presiado, 2024)
- 4) Language adapted from the Illinois Dept. Of Public Health [Fetal and Infant Mortality Data Report, September 2024](#) (page 4)

Introduction

- 1) Lens, Jill Wieber, Counting Stillbirths (March 25, 2022). Available at <http://dx.doi.org/10.2139/ssrn.4066782>

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- 1) [Accelerating Upstream Together: Achieving Infant Health Equity in the United States by 2030](#) (Michael D. Warren, Ashley H. Hirai, and Vanessa Lee, 2022)
- 2) [International Statistical Classification of Diseases and Related Health Problems, 10th Revision](#) (World Health Organization, version 2019)
- 3) [Newborn Mortality](#) (World Health Organization, 2025)
- 4) [The Big Cities Health Inventory Data Platform](#) (Drexel University Urban Health Collaborative, accessed January 2026)

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- 1) [Very young and advanced maternal age strongly elevates the occurrence of nonchromosomal congenital anomalies: a systematic review and meta-analysis of population-based studies](#) (Boglarka Petho, Szilard Vancsa, Alex Varadi, Gergely Agocs, Akos Matrai, Franciska Zaszkaliczky-Iker, Zita Balogh, Ferenc Banhidy, Peter Hegyi, Nandor Acs, 2024).
- 2) [Interpregnancy intervals in the United States: Data from the birth certificate and the National Survey of Family Growth](#) (Casey Copen, Marie Thoma, and Sharon Kirmeyer, 2015)
- 3) [Safe to Sleep campaign](#), led by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).
- 4) [Academy of Breastfeeding Medicine \(ABM\) Clinical Protocol #37: Physiological infant care – Managing Nighttime Breastfeeding in Young Infants](#) (Deena Zimmerman, Melissa Bartick, Lori Feldman-Winter, and Helen Ball, 2023)
- 5) [Remembering Safe Sleep Practices is as Easy as ABC](#) (Safe Sleep Academy of Akron Children's Hospital and The Molly Ann Gries Foundation, 2024).

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Recommendations

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- 2) [Smoking during pregnancy](#) (March of Dimes, January 2019).
- 3) [Marijuana During Pregnancy](#) (SAMHSA, December 2025).
- 4) [Alcohol and Pregnancy](#) (Johns Hopkins Medicine).
- 5) [Substance Use While Pregnant and Breastfeeding](#) (National Institute on Drug Abuse, May 2015).
- 6) [High blood pressure and pregnancy: Know the facts](#) (Mayo Clinic, June 2025).
- 7) [Diabetes During Pregnancy](#) (CDC, May 2024).

Wisconsin Dept. of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, <https://www.dhs.wisconsin.gov/wish/index.htm>, Infant Mortality Module, accessed fall through winter 2025.

Appendix C: Cause of Death Explanations (Infant and Stillbirths) and Additional Data

Cause of Infant Death Categories used in This Report:

Cause of death categories	Explanation	Applicable ICD-10 codes
Complications of prematurity	This is a broad category that includes extreme immaturity of a newborn (where the baby was simply born too early), infections that are fatal for a premature infant (sepsis, respiratory distress syndrome), intestinal complications that occur among premature infants, complications of maternal hypertension, and more.	P072, P073, P219, P220, P229, P236, P239, P269, P280, P285, P290, P291, P293, P352, P364, P369, P523, P769, P77, P832, P916, P968
SIDS/SUID/ accidental suffocation	SUID encompasses multiple things: SUID (Sudden Unexpected Infant Death), SUDI (Sudden Unexpected Death in Infancy), SIDS (Sudden Infant Death Syndrome), accidental suffocation (which is often, but not exclusively, related to unsafe sleep), plus other sleep-related infant deaths that are often labeled as ill-defined/unknown cause of death. Many of these are related and overlapping causes of death.	R95, R99, W75, Y33
Congenital anomalies	This includes structural and functional anomalies that develop during the pregnancy, can include chromosomal disorders (trisomy 13 and 18, other syndromes), congenital heart/brain malformations, failure of certain organs to develop properly or at all, and others.	Q000, Q039, Q042, Q043, Q049, Q200, Q201, Q212, Q213, Q234, Q249, Q256, Q283, Q336, Q602, Q614, Q643, Q780, Q788, Q789, Q790, Q792, Q793, Q799, Q871, Q897, Q913, Q917
Complications of labor and delivery	These complications are largely things like the newborn being affected by chorioamnionitis (infection of the placenta/ amniotic fluid), premature rupture of membranes, other issues with the placenta/cervix, hemorrhage, etc.	P000, P010, P011, P018, P021, P027, P038, P039
All other causes	This is a new category in this year's report; it includes the causes of infant death that are fairly unique (i.e. only effected one or a few individuals and can't be shown separately) but are generally medical conditions that don't fit into another existing category. This can be things like metabolic issues, lung disorders, cerebrovascular diseases, as well as hypotension due to drugs.	C920, D761, E722, E889, G931, G936, I272, I422, I615, I678, I952, J209, J860, J984, K631, K668, N179, X590
Infections	This includes things like sepsis, disseminated organ system infections, as well as infectious diseases like Covid-19 or other respiratory illnesses.	A090, A415, A419, A488, B007, U071
External causes of death	This is a new category in this year's report; it includes the losses that are described in section 20 of the ICD-10. They are deaths due to factors that are external to the infant, family, and/or the home. The main groups of external causes of loss represented in this report are: Homicide, which includes deaths caused by neglect, abandonment, maltreatment, or assault by unspecified means, and also includes loss attributed to maternal injury Accidents, which includes deaths due to car crashes, accidental drowning, exposure to cold temperatures, or other unintentional causes Note: this category does not include losses attributed to SIDS/ SUID/accidental suffocation. Those are also documented as accidents, but are their own category	P005, Y069, Y079, Y09, V436, V476, W65, X31

Cause of Fetal Death Categories used in This Report:

Cause of death categories	Explanation	Applicable ICD-10 codes
Any maternal risk factor	This can include things like chronic health conditions (diabetes, hypertension), previous poor birth outcomes, twin pregnancies, maternal age (under 15 or over 35), or behavioral factors (smoking or drinking during pregnancy), among others.	P000, P012, P015, P027, P701
Undetermined	These are losses where there is no identifiable reason for the stillbirth, or the underlying cause of the condition that led to the loss can't be identified.	P038, P039
Placental abruption	This is when the placenta partly or completely separates from the inner wall of the uterus, depriving the fetus of oxygen and nutrients, and increasing the risk of heavy bleeding.	P011, P021, P504
Congenital anomalies	These are physical or chromosomal abnormalities of the developing fetus that lead to a stillbirth.	P832, Q000, Q019, Q039, Q046, Q248, Q0249, Q251, Q270, Q602, Q793, Q798, Q909, Q913
Cord issues	These include umbilical cord prolapse, rupture of a blood vessel in the cord, or reduced blood circulation through the cord (due to a tight spot or knot)	P002, P024 -P026
Cervical insufficiency	This is when the cervix (located at the base of the uterus) is too weak to hold the pregnancy in the womb, or begins opening before the pregnancy reaches full term.	P010
Placental insufficiency	This is when the placenta isn't working properly (due to damage, not developing well, etc) and doesn't transfer blood, oxygen, and/or nutrients effectively to the fetus.	P022

Additional Data on Causes on Infant Death/Stillbirth by Race/Ethnicity:

Cause of Infant Death	City Overall	Hispanic	Non-Hispanic Asian	Non-Hispanic Black	Non-Hispanic White	Non-Hispanic Multi-race
Complications of Prematurity	40%	33%	33%	39%	39%	60%
SIDS/SUDI/ Accidental Suffocation	23%	24%	11%	25%	23%	30%
Congenital Anomalies	14%	18%	33%	13%	16%	--
Complications of Labor and Delivery	9%	7%	11%	10%	10%	--
Infections	3%	4%	--	3%	--	10%
External Causes	4%	2%	--	5%	2%	--
All other Causes	7%	11%	11%	8%	10%	--

Cause of Stillbirth	City Overall	Hispanic	Non-Hispanic Asian	Non-Hispanic Black	Non-Hispanic White
Any maternal risk factors	41%	30%	43%	38%	39%
Placental abruption	18%	16%	29%	20%	11%
Cord issues	7%	3%	--	9%	11%
Cervical insufficiency	3%	--	--	3%	--
Placental insufficiency	2%	5%	14%	1%	--
Congenital anomalies	10%	22%	--	8%	4%
Undetermined	19%	24%	14%	22%	36%

* -- represents data suppression due to insufficient sample size

Appendix D: Detailed Rates by Zip Code

Zip Code Area	Infant Death Rate	Fetal Death Rate
53202	6.2	2.1
53203	--	--
53204	10.2	4.5
53205	6.0	7.5
53206	19.1	13.3
53207	2.6	1.3
53208	9.6	6.2
53209	10.6	6.9
53210	13.1	8.6
53211	4.8	7.2
53212	11.3	6.3
53213	0.0	14.6
53214	0.0	7.7
53215	8.6	4.5
53216	13.6	9.7
53218	9.2	5.9
53219	5.2	5.1
53220	5.1	3.4
53221	5.7	1.9
53222	1.7	4.2
53223	11.3	4.8
53224	8.0	5.8
53225	10.4	7.3
53226	16.9	0.0
53227	4.4	8.8
53228	11.6	5.7
53233	12.0	6.0

* -- represents data suppression due to insufficient sample size

Appendix E: Data Resources for General Use

Wisconsin Department of Health Services (DHS) Birth Outcomes Dashboard

<https://www.dhs.wisconsin.gov/stats/births/birth-outcomes.htm>

Wisconsin Interactive Statistics on Health (WISH) Query System

<https://www.dhs.wisconsin.gov/wish/index.htm>

Health Compass Milwaukee

<https://healthcompassmilwaukee.org/>

Big Cities Health Coalition

<https://bigcitieshealthdata.org/>

County Health Rankings & Roadmaps, 2020 State Report for Wisconsin

https://www.countyhealthrankings.org/sites/default/files/media/document/CHR2022_WI_0.pdf

Appendix F: Community Resources

General Resources for Healthy Pregnancy:

[American College of Obstetricians and Gynecologists \(ACOG\)](#)

- Provides information on new research or topics that are getting attention around pregnancy and reproductive care
- Information for patients (Every Stage Health)

[American Academy of Pediatrics \(AAP\)](#)

- Provide information on new research or topics that are getting attention around infant and child health care

[March of Dimes](#)

- A national organization focused on improving the health of moms and babies

Wisconsin Health Resources:

[Well Badger Resource Center](#)

- This platform is searchable and has navigators to help anyone in Wisconsin get connected to resources in their region (health care, social services, etc.)
 - Not limited to pregnant people

[First Breath](#) by Wisconsin Women's Health Foundation

- Smoking cessation support and resources (plus resources to help quit using other substances)

[Wisconsin Association for Perinatal Care](#)

- For stakeholders interested in improving birth outcomes and reducing disparities, WAPC provides education, quality improvement, collaboration, and advocacy

[Moms Mental Health Initiative](#)

- Focus on connecting mothers and pregnant/birthing people with mental health resources, including substance use services, in Milwaukee and Dane County
- Also offer peer support, and other support groups, including grief support

For urgent help

- National Suicide and Crisis Lifeline: dial 988
- Milwaukee County 24-Hour Crisis Line: 414-257-7222
- Sojourner Family Peace Center 24-hour domestic violence hotline: 414-933-2722 (or text 414-877-8100)

Grief and Bereavement Resources, Local and National:

[Star Legacy Foundation](#)

- Provide a wide array of support and services for Wisconsin residents who have experienced a stillbirth or infant loss, including support groups, resources, and direct telephone support
- Call: 952-715-7731 (you can refer yourself or someone you know for services)
- Referrals can also be made online via the website

Bereavement resources – Phone:

- First Candle 24-hour support hotline: 1-800-221-7437 (call)
- Postpartum Support International 24-hour helpline: 800-944-4773 (call or text)
 - Español es disponible

Bereavement resources – In person:

- [Healing Waters](#) (by African American Breastfeeding Network)
- [Horizon Grief Resource Center](#)
 - Walk-in grief counseling center that offers individual and family counseling
 - Call: 414-365-8300
- [MISS Foundation – Southeast WI Support](#)
 - Grief support for families experiencing the loss of a child
 - 3638 N 12th St., Milwaukee, WI 53206
 - Call: 414-988-2823
- [Mattie's Memory](#)
 - Provide free bereavement doula services, burial gowns, and memory kits to families
 - Email: mattiesmemoryinc@gmail.com
- [Children's WI Grief Support](#)
 - Call: 414-337-4250 or email: griefsupport@childrenswi.org
- West Allis Medical Center Infant Loss Support Group:
 - 8901 W Lincoln Ave, West Allis, WI 53227, call 414-329-5908
 - 500 W Chambers St., Milwaukee, WI 53210, call 414-447-2473

Bereavement resources – For children:

- [Kyle's Korner](#)
 - 7106 W North Ave., Wauwatosa, WI 53213, call: 414-777-1585
 - Grief support groups for children, teens, and families
- Froedtert Hospital Child Life Specialists
 - Froedtert employs staff who are dedicated to helping children navigate difficult situations in age-appropriate ways
 - Call: 414-805-1935
- [Sesame Workshop Grief Resources](#)
 - The team at Sesame Street have a number of resources available to help young children understand and navigate loss

Appendix G: Fetal and Infant Mortality Review Team Members

Since there have been team member changes since the years this report covers, and the Community Action Team was created since that time, this list will be more reflective of FIMR membership at the time this report was published. MHD still wants to thank those who have participated in this process in the past, as well as those who are currently engaged.

CASE REVIEW TEAM

Alex Alberda

Chorus Community Health Plans

Alexandra Medina

Sixteenth Street Community Health Centers

Alyson Capp

Aurora Healthcare

Amanda Weiler

United Way of Greater Milwaukee and Waukesha County

Ann White

Seeds of Health WIC Program

Anna Anklam

Aurora Sinai Midwifery and Wellness Clinic

Ashley Elkins

Ascension St. Joseph's Hospital

Ashley Kay

North Shore Health Department

Becky Litwaitis

Southwest Suburban Health Department WIC Program

Becky Rowland

North Shore Health Department

Beth Martinez

iCare, Independent Care Health Plan

Beth Nelton

Milwaukee Health Services, Inc WIC Program

Bob Leischow

Southwest Suburban Health Department

Catherine Speech

Aurora Sinai Medical Center

Candice Lovell

Private practice

Carolyn Haass

Southwest Suburban Health Department

Connie Kostelac

Medical College of Wisconsin

Cynthia Jones

Devine Women Foundation, Inc.

Daisy Grochowski

Ascension St. Joseph's Hospital

Dalvery Blackwell

African American Breastfeeding Network

David Comer

Milwaukee Health Department

DeAnna Tharpe

Wisconsin Doula's of Color Collective

Emilie Peterson

Southwest Suburban Health Department

Emily Meyer

Milwaukee Health Department

Ericka King

Wauwatosa Health Department

Evelyn Tomczak

iCare, Independent Care Health Plan

Heather Champagne

North Shore Health Department

Heather Paradis

Children's Wisconsin

Jacqueline Sills Ware

Wisconsin Department of Public Health

Janalle Goosby

Wisconsin Association for Perinatal Care

Jason Jarzembowski

Children's Wisconsin

Jay Romant

Milwaukee Health Department

Jeffrey Segar

Medical College of Wisconsin

Jen Agnello

Aurora Health Care WIC Program

Jill Denson

University of Wisconsin-Madison

Joanna O'Donnell

Children's Health Alliance of Wisconsin

Julie Merritt

Froedtert Memorial Hospital

Kara Woida

Chorus Community Health Plans

Katy Murphy

Sixteenth Street Community Health Centers WIC Program

Kelly Birmingham

Medical College of Wisconsin

Kenmikiya Terry

Milwaukee County Office of Equity

Lindsay Kohut

Aurora Health Care WIC Program

Mary Homan

Private consultant

Mary Jessen

Ascension Wisconsin

Megan Seidl

Medical College of Wisconsin

Marcella Miller

Milwaukee Health Department

Rosamaria Martinez

Milwaukee Health Department

Sara Esselman

Ascension Columbia St. Mary's Hospital

Sarah DeSmidt

Milwaukee Health Department WIC Program

Shana Brown

Molina Healthcare

Shanice Baquet

Community member

Shantell Riley

Dignity with Departure

Tamiyka Folds

Ascension Columbia St. Mary's

Tarakee Jackson

Empowerment Beyond Loss

Tricia Burkett

Advocate Aurora

Wendy Castagna

Ascension Wisconsin

** Some FIMR members are part of both case review and community action teams. Their names are listed in both sections.*

COMMUNITY ACTION TEAM

Amy Cline Children's Health Alliance of Wisconsin	Jacqueline Glover Pathfinders of Milwaukee	Robin Ware Pathfinders of Milwaukee
Clairice Robinson Community Member	Janalle Goosby Wisconsin Association for Perinatal Care	Rosamaria Martinez Milwaukee Health Department
Cynthia Jones Devine Women Foundation, Inc.	Kate Graham Milwaukee Health Care Partnership	Shana Brown Molina Healthcare
David Comer Milwaukee Health Department	Kelly Birmingham Medical College of Wisconsin	Shanice Baquet Mommy Beautiful Sunrise
Elizabeth Finseth Progressive Community Health Centers	Lakeeta Watts Essentially Empowered	Shar Shorts Pathfinders of Milwaukee
Emerald Lee University of Wisconsin-Milwaukee	Michelle Wilkins African American Breastfeeding Network	Tarakee Jackson Empowerment Beyond Loss
Hazel Jones Mattie's Memory	Nadiyah Groves Black Child Development Institute-Wisconsin	

MHD wants to give extra thanks to these FIMR team members, who provided some level of assistance on this report, such as giving early input on the first draft, doing a first round of review on the final draft, and providing expert guidance on the data analysis.

Brianna Ross Northshore Health Department	Dana Lauer United Healthcare Community Plan	Sara Garner Black Child Development Institute-Wisconsin
Catheryn Morateck Children's Health Alliance of Wisconsin	David Marshall Medical College of Wisconsin	Sheena Slade-Walker Healthy Start for Growing Families
Christina Drain Milwaukee Health Department	Emmanuel Ngui University of Wisconsin-Milwaukee	

The FIMR teams are open to new members!

Please reach out to the Milwaukee Health Department FIMR team if you or someone you know are interested in learning more: fimr@milwaukee.gov

The partners and organizations listed here, and more across the Milwaukee area, are all part of the process of working towards our shared goals of reducing stillbirths and infant mortality and moving us closer to healthy birth outcomes for Milwaukee families.

We want to thank these partners, organizations, and you for reading this report.

