Department of Children & Youth

Ohio Stillbirth Report

2023

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Note on Terminology

Fetal death is the loss of a baby before or during delivery (spontaneous intrauterine death of a fetus). Fetal deaths at 20 or more weeks gestation are commonly called stillbirths, whereas fetal deaths occurring at less than 20 weeks gestation are commonly called miscarriages. In Ohio, fetal deaths are reportable when they occur at 20 or more weeks gestation. While miscarriages, or fetal deaths less than 20 weeks gestation, affect many families – about 10 to 15% of known pregnancies are affected – they are not reportable in Ohio, and therefore are not included in this brief. Throughout this report, the terms “stillbirth” and “fetal mortality rate” refer to fetal losses of 20 or more weeks gestation.

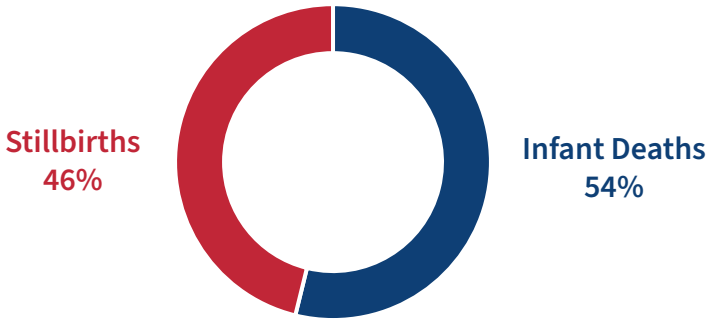
Key Findings

- The fetal mortality rate in 2023 was 6.1 per 1,000 live births and stillbirths, up from 5.8 in 2022. Despite this uptick, the fetal mortality rate has been trending downward. Since 2014, an average annual decrease of 1.1% per year has occurred.
- Racial disparities exist in fetal mortality. Non-Hispanic Black (NH Black) mothers experienced a fetal mortality rate of 10.9, more than double that of non-Hispanic White (NH White) mothers (5.0 per 1,000) and nearly double that of Hispanic mothers (6.2 per 1,000).
- Cause of death was unknown for 31% of stillbirths.
- NH Black mothers experienced cause-specific fetal mortality rates at least double that of NH White mothers for complications of the placenta, cord, and membranes (2.2 per 1,000 and 1.1 per 1,000 respectively) and maternal conditions unrelated to pregnancy (3.0 per 1,000 and 0.7 per 1,000). NH Black mothers also experienced a cause-specific fetal mortality rate more than four times that of NH White women for maternal complications of pregnancy (1.5 per 1,000 and 0.4 per 1,000).
- Smoking, hypertension prior to pregnancy, and diabetes prior to pregnancy were associated with increased fetal mortality rates.
- Women who participated in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) experienced lower fetal mortality rates than women who did not participate in the program (3.5 per 1,000 and 6.5 per 1,000 respectively).

In 2023, 775 stillbirths occurred in Ohio, an increase from 745 stillbirths in 2022. While infant mortality – the death following a live birth of an infant prior to their first birthday – is often a focus of attention on reproductive loss, stillbirths made up 46% of all reportable fetal and infant losses in 2023 (Figure 1). Overlapping risk factors exist between stillbirths and infant mortality, such as maternal race and ethnicity, maternal age, maternal smoking status, and certain conditions such as diabetes and hypertension[1,2]. Women with a previous history of stillbirth and other adverse pregnancy outcomes have been observed to have an increased risk of recurrence[1], as well as increased risk of infant mortality[2].

This brief provides findings from analysis of stillbirths by the Ohio Department of Children and Youth (DCY) using data from vital statistics records and the 2020-2023 Ohio Study of Associated Risks of Stillbirth (SOARS).

Figure 1. Stillbirths made up almost half of all reportable fetal and infant losses



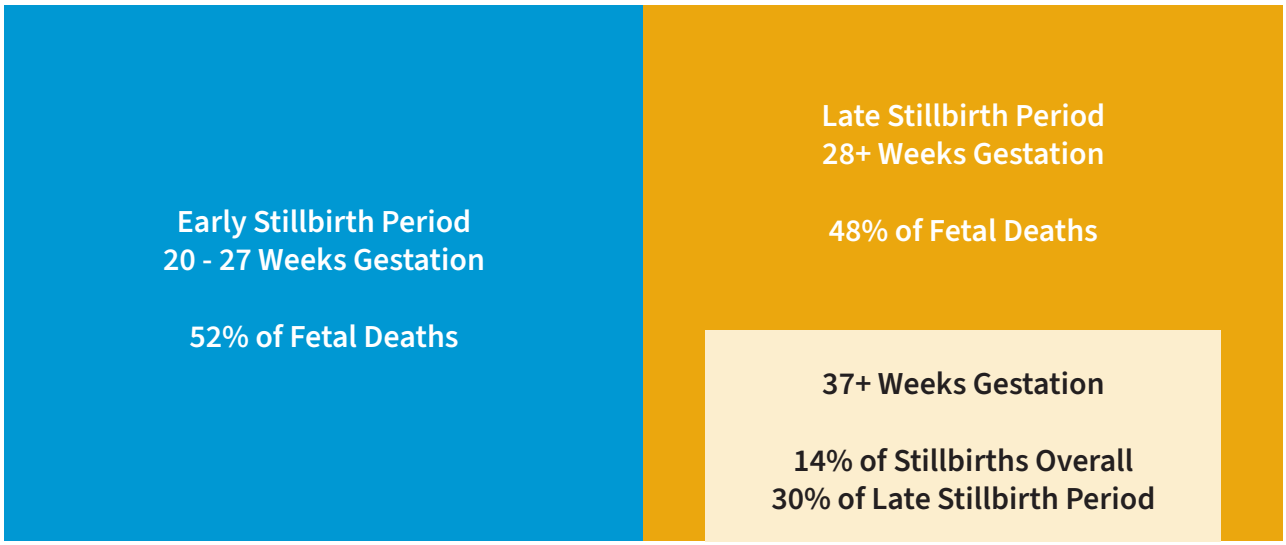
Data Source: Fetal Death and Period Linked Infant Mortality Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023

Stillbirths are categorized into two groups based on gestational age.

Early stillbirths | 20 through 27 weeks gestation
Late stillbirths | at or after 28 weeks gestation

In 2023, 52% of stillbirths occurred during the early stillbirth period, and 48% occurred during the late stillbirth period. Included within the late stillbirth period are deaths that occurred near or at term (i.e., 37 or more weeks gestation). One in seven (14%) stillbirths occurred at 37 or more weeks gestation (Figure 2).

Figure 2. Almost half of 2023 stillbirths in took place at 28 or more weeks gestation, and deaths at 37 or more weeks gestation were common among women who experienced a stillbirth.



Data Source: Fetal Death File from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

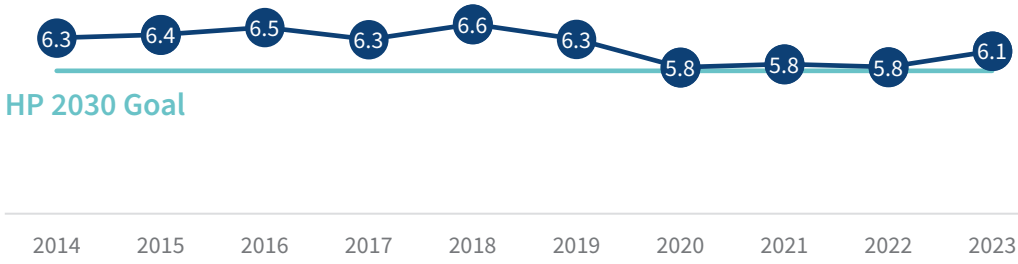
Trends of Fetal Mortality

Ohio's fetal mortality rate has been decreasing since 2014.

Fetal mortality rate (FMR) is defined as the number of stillbirths at 20 or more weeks gestation per 1,000 stillbirths and live births.

From 2020 to 2022, Ohio nearly met the national Healthy People (HP) 2030 goal of a maximum of 5.7 stillbirths per 1,000 stillbirths and live births. However, in 2023 the fetal mortality rate increased to 6.1. Despite this recent increase, an average annual decrease of 1.1% per year has occurred since 2014 (Figure 3).

Figure 3: Despite increasing in 2023, Ohio's fetal mortality rate has been decreasing since 2014.

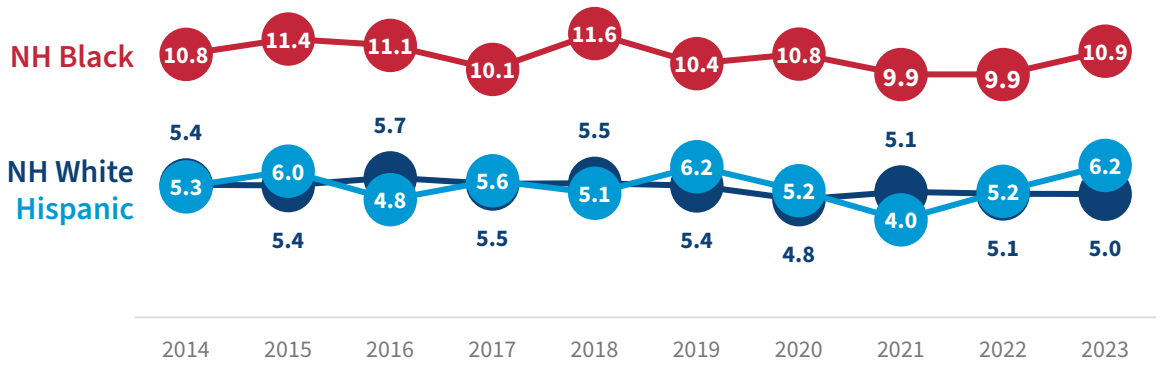


Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023

Non-Hispanic Black mothers experienced higher fetal mortality rates.

As with infant mortality, NH Black women are disproportionately impacted by fetal mortality. NH Black women were more than twice as likely as NH White women and nearly twice as likely as Hispanic women to experience a stillbirth (10.9 compared with 5.0 and 6.2, respectively) This disparity has persisted for at least the past decade (Figure 4). Since 2014, NH White women have seen a decrease in their fetal mortality rate with an average annual decrease of 1.2% per year. Neither NH Black women nor Hispanic women have experienced a decrease in their fetal mortality rates during the 10-year surveillance period.

Figure 4. Non-Hispanic Black stillbirths occur at about twice the rate of non-Hispanic White stillbirths and Hispanic stillbirths.



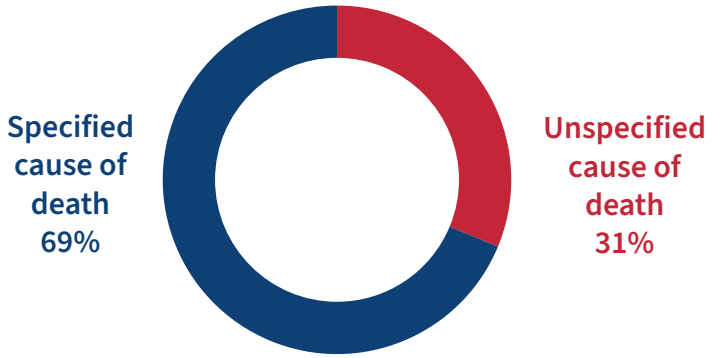
Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023

| Stillbirths by Cause of Death

About one-third of stillbirths in 2023 were due to an unspecified cause.

When examining causes for stillbirth, only about two-thirds (69%) of 2023 cases had a specified cause of death while nearly one-third (31%) were due to an unspecified cause (Figure 5). Among stillbirths where the cause of death was specified, complications of the placenta, cord, and membranes (32%) and maternal conditions unrelated to pregnancy (26%) were the leading causes of death, accounting for more than half of specified causes of death (Figure 6).

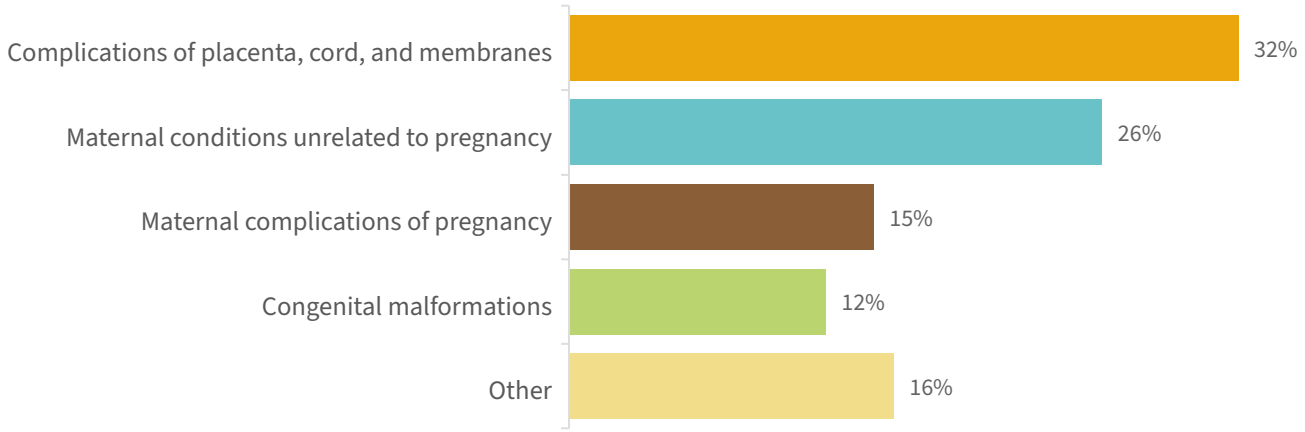
Figure 5. Nearly one-third of stillbirths had an unspecified cause of death in 2023



Data Source: Fetal Death File from the Ohio Department of Health, Bureau of Vital Statistics, 2023.
Note: There were 17 stillbirths where cause of death data was unavailable.

Unspecified cause accounted for almost one-third (31%) of stillbirths. This figure is similar to the observed proportion of stillbirths that were unspecified (31.3%) across 38 states and the District of Columbia in 2023[3]. Perceptions of importance, physician engagement, and a less-robust knowledge base about stillbirth, compared to infant death, have been suggested as possible reasons for lack of a specific cause noted on fetal death reports[4]. The identification of a cause of death is more difficult when using only clinical and laboratory information. Utilization of placental pathologic examination and/or fetal autopsy when determining cause of death has been found to result in fewer deaths being classified as unspecified cause.

Figure 6. Complications of placenta, cord, and membranes and maternal conditions unrelated to pregnancy accounted for more than half of stillbirths in 2023 when the cause of death was specified.



Data Source: Fetal Death File from the Ohio Department of Health, Bureau of Vital Statistics, 2023.
Note: In 17 stillbirths, the cause of death data was unavailable.

Complications of the placenta, cord, and membranes accounted for 22% of all stillbirths and 32% of stillbirths with a specified cause of death, the most of any single specified cause of death. Complications of the placenta, cord, and membranes were more than twice as likely among NH Black mothers when compared to NH White mothers (Figure 7).

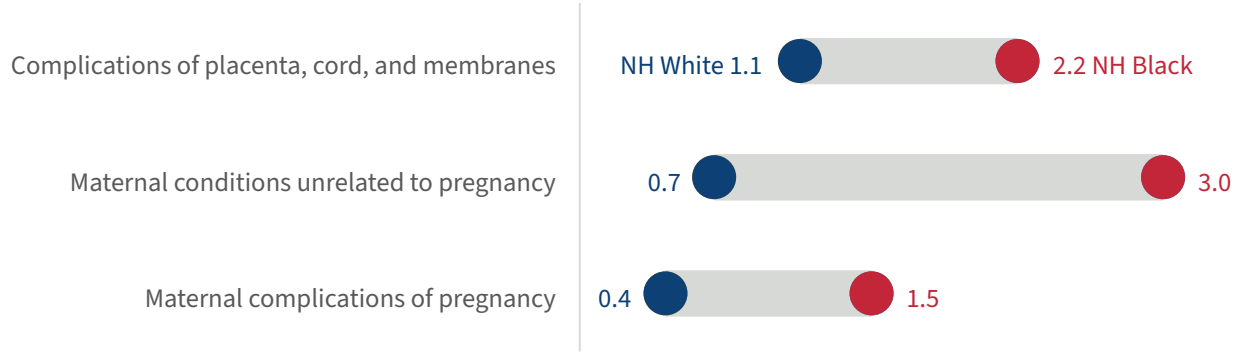
Maternal conditions unrelated to pregnancy accounted for 18% of all stillbirths and 26% of stillbirths with a specified cause of death. Maternal conditions unrelated to pregnancy were more than four times as likely among NH Black mothers when compared to NH White mothers (Figure 7). Examples of these conditions include maternal hypertensive disorders, renal and urinary tract diseases, maternal infectious diseases, nutritional disorders, and maternal injury, among other maternal health conditions and diseases.

Maternal complications of pregnancy accounted for 10% of all stillbirths and 15% of stillbirths with a specified cause of death. These deaths primarily occurred during the early period (20-27 weeks), which accounted for 82% of deaths due to maternal complications of pregnancy. This cause of stillbirth was 3.8 times as likely among NH Black mothers when compared to NH White mothers (Figure 7). Examples include incompetent cervix, premature rupture of membranes, oligohydramnios, ectopic pregnancy, multiple pregnancy, maternal death, and other complications.

Congenital malformations, deformations, and chromosomal abnormalities accounted for 11% of all stillbirths and 12% of stillbirths with a specified cause of death. Seventy-three percent (73%) of these deaths were to fetuses of NH White mothers.

Other causes of death accounted for about 1 in 10 stillbirths. This category is comprised of deaths that do not fall into the above categories, and inferences regarding this category should be made with caution.

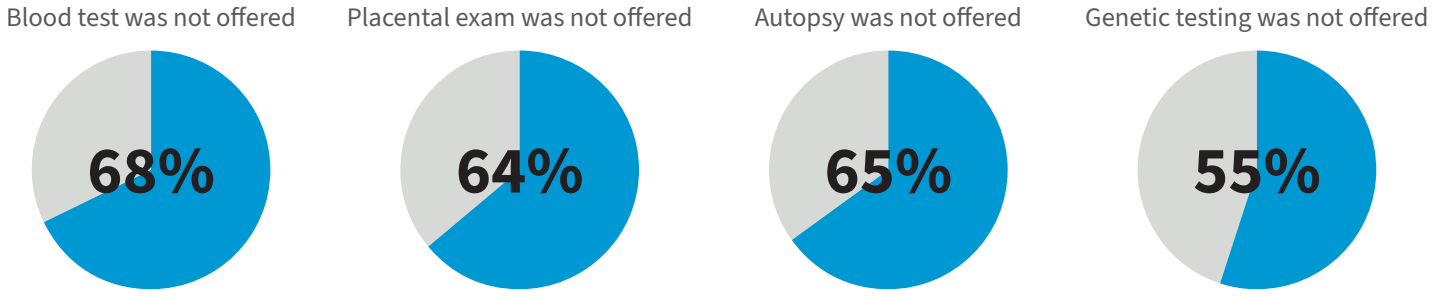
Figure 7. The non-Hispanic Black fetal mortality rate was at least double that of the non-Hispanic White rate in all specified causes of death other than congenital malformations*.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.
*Due to small numbers (<10) of non-Hispanic Black stillbirths due to congenital malformations, the rate is suppressed and excluded from this figure.

The Ohio Study of Associated Risks of Stillbirth (SOARS) is an ongoing, state-specific, population-based survey designed to collect information about maternal experiences and behaviors prior to, during, and immediately following pregnancy among mothers who have recently experienced stillbirths. According to 2020-2023 SOARS, most women who experienced stillbirth reported not being offered tests or diagnostic procedures that could be used in determining the cause of stillbirth, such as maternal blood tests, placental examination, or autopsy (Figure 8).

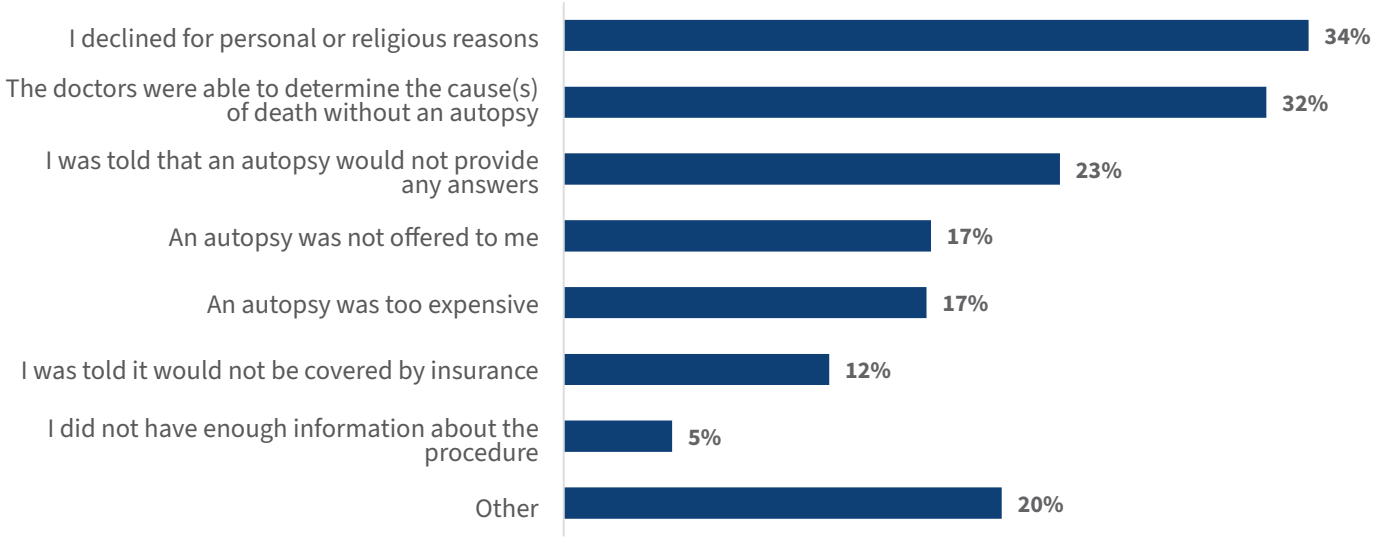
Figure 8. Most women who experienced stillbirth reported not being offered tests or procedures that could help determine cause of death.



Data Source: Ohio SOARS Survey 2020-2023

Among women who did not have an autopsy performed, the most frequently cited reason was personal or religious (34%), followed by the cause of death already being determined (32%). More than one-in-five (23%) did not believe an autopsy would provide answers to them. An autopsy not being offered and an autopsy being too expensive were both cited by 17% of respondents (Figure 9).

Figure 9. The most frequently cited reason for not having an autopsy performed was personal or religious.



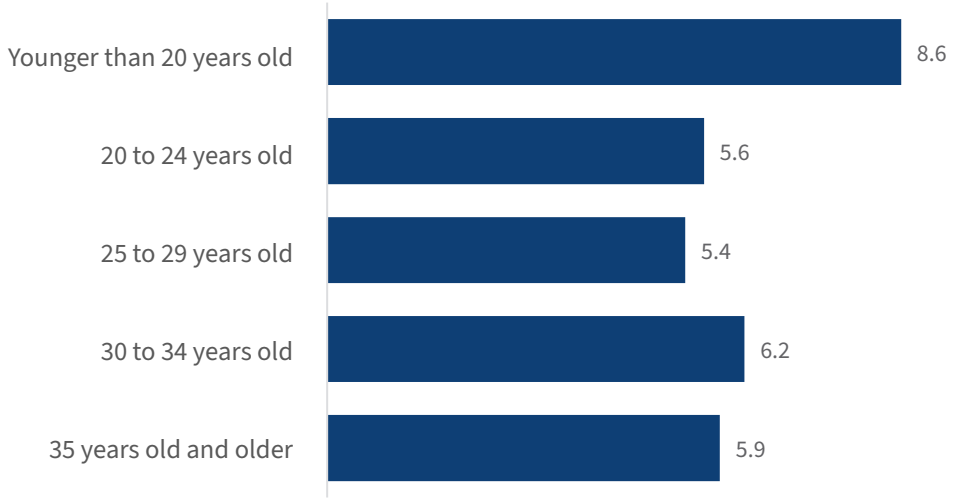
Data Source: Ohio SOARS Survey 2020-2023

| Demographics and Associated Risks of Stillbirth

Women younger than 20 years old, women with less than a high school education, and women in low-income households were more likely to experience stillbirth.

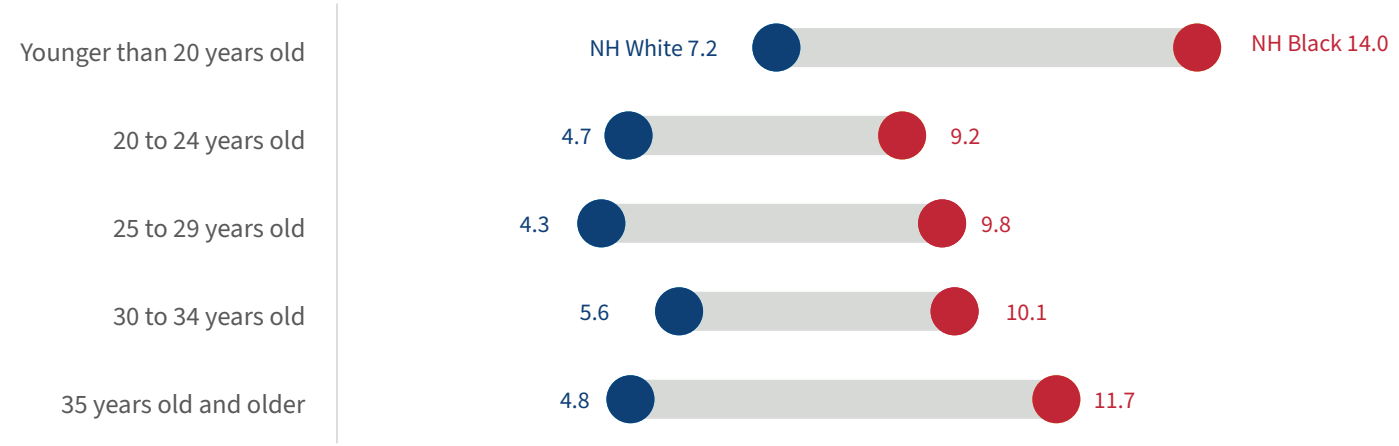
Women younger than 20 years old experienced a higher rate of fetal mortality at 8.6 per 1,000 live births and stillbirths, with women 30 to 34 years old experiencing the second-highest fetal mortality rate at 6.2, and women 35 and older experiencing the third-highest rate at 5.9 (Figure 10). NH Black women consistently saw fetal mortality rates nearly double or higher than those experienced by NH White women across all age groups (Figure 11).

Figure 10. Women younger than 20 years old and women 30 years and older experienced the highest fetal mortality rates.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

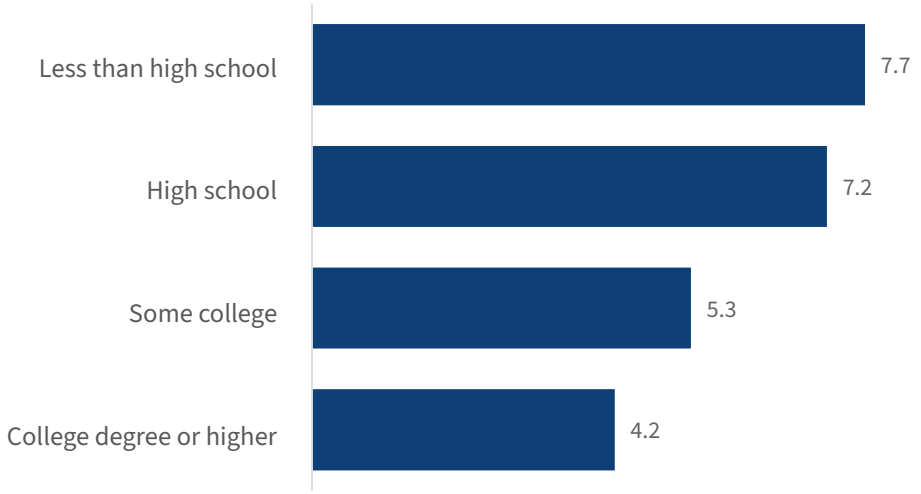
Figure 11. Non-Hispanic Black women 35 years and older experienced the highest fetal mortality rate.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

Maternal education level may influence infant health in several ways, including better access to prenatal care, better health behaviors during pregnancy, and increased access to economic and social resources[5]. Overall, as maternal educational attainment increases, the rate of fetal mortality decreases. Women with less than a high school education experienced the highest rate of fetal mortality at 7.7, while women with college degrees or higher experienced the lowest rate at 4.2 (Figure 12).

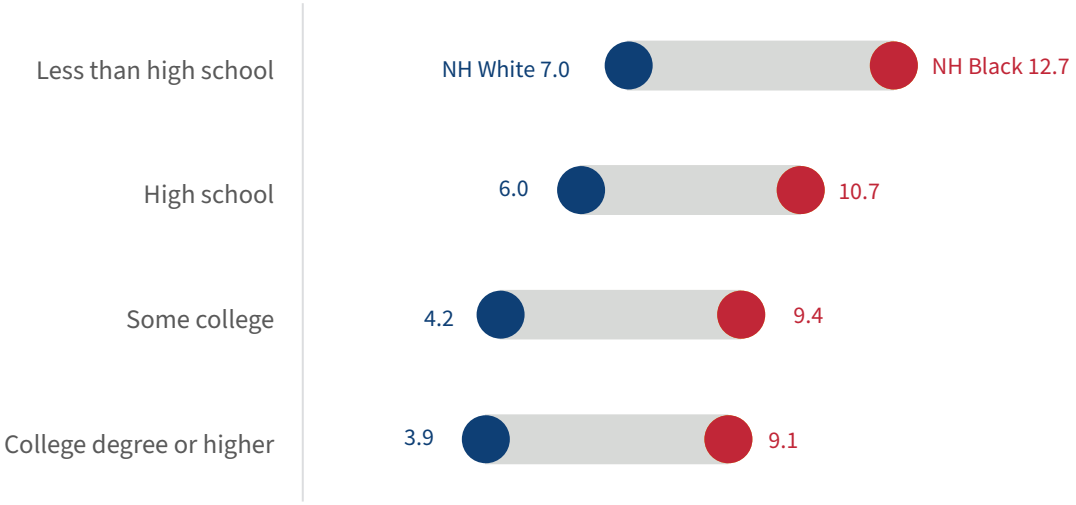
Figure 12. As maternal educational attainment increases, fetal mortality rates decrease.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

Racial disparities continue across education status. NH Black women with college degrees or greater have higher fetal mortality rates than NH White women with less than a high school education (9.1 versus 7.0) (Figure 13).

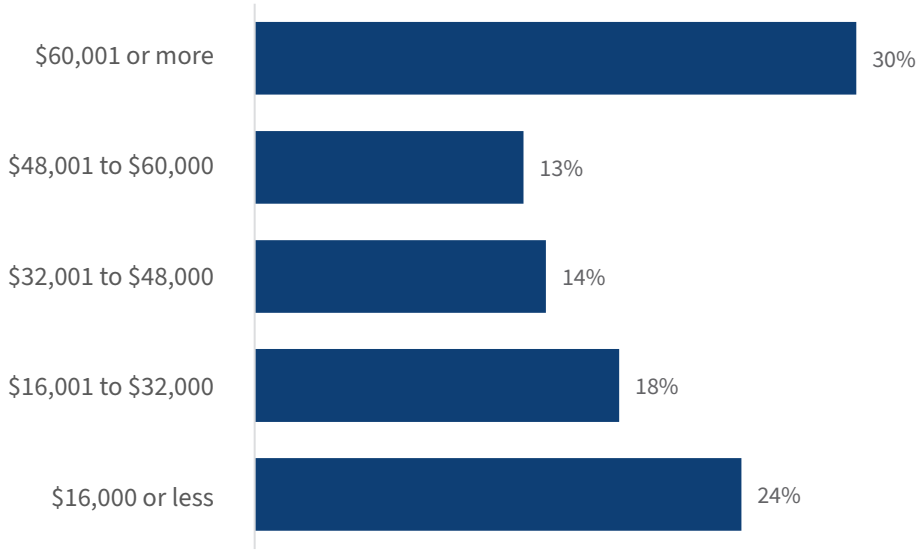
Figure 13. Non-Hispanic Black women with college degrees or higher experienced higher fetal mortality rates than non-Hispanic White women with less than a high school education.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

The distribution of household income levels among women who experienced stillbirth was skewed towards lower income. Nearly one in four (24%) women who experienced stillbirth lived in households with an annual income of $16,000 or less, and more than two-thirds (70%) of them lived in households making $60,000 or less, below the median household income of $67,769 for Ohio in 2023[6] (Figure 14).

Figure 14. Nearly 1 in 4 women who experienced stillbirth reported living in households with an annual income of $16,000 or less.

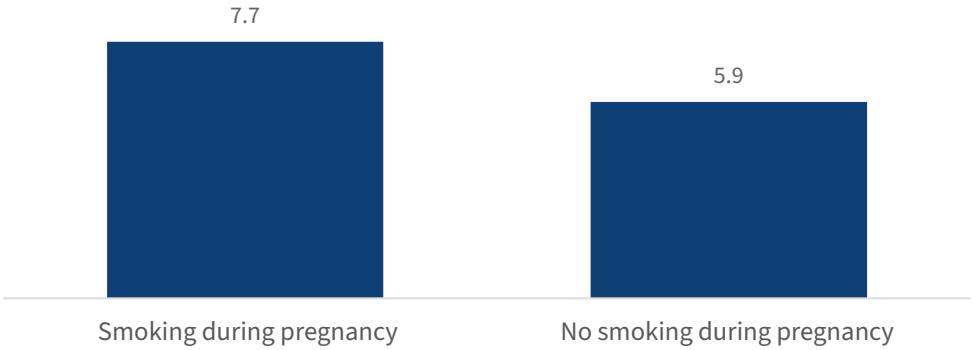


Data Source: Ohio SOARS Survey, 2020-2023

Certain chronic health conditions, behaviors, and experiences are associated with increased risk of stillbirth.

Women who reported smoking during pregnancy experienced fetal mortality rates 1.3 times that of women who did not smoke during pregnancy (7.7 and 5.9 respectively) (Figure 15).

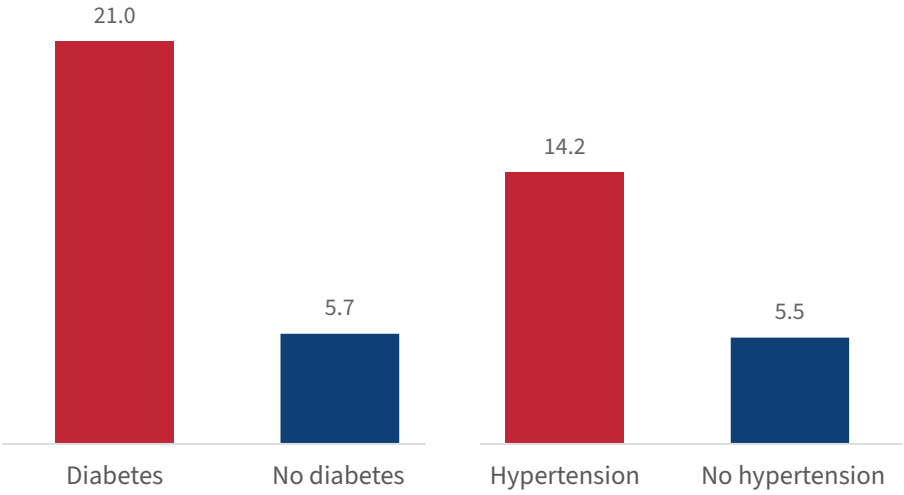
Figure 15. Women who smoked during pregnancy experienced higher rates of fetal mortality when compared to women who did not smoke during pregnancy.



Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

Women with diabetes prior to pregnancy experienced fetal mortality rates 3.7 times that of women without diabetes (21.0 and 5.7 respectively). Women who had high blood pressure (hypertension) prior to pregnancy experienced fetal mortality rates 2.6 times that of women without hypertension prior to pregnancy (14.2 and 5.5 respectively) (Figure 16).

Figure 16. Women with diabetes prior to pregnancy experienced fetal mortality rates nearly four times that of women without diabetes prior to pregnancy.

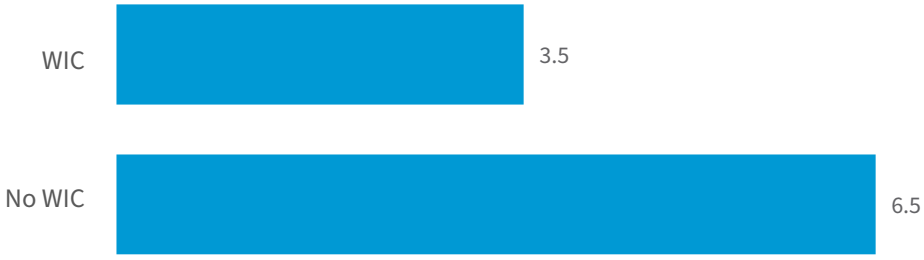


Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023

Fetal mortality rates were lower among women who participated in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Program.

WIC serves low-income women and families. Women who received WIC services experienced fetal mortality rates that were nearly half that of women who did not utilize WIC (3.5 and 6.5 respectively) (Figure 17).

Figure 17. Women who received WIC services were less likely to experience stillbirth.

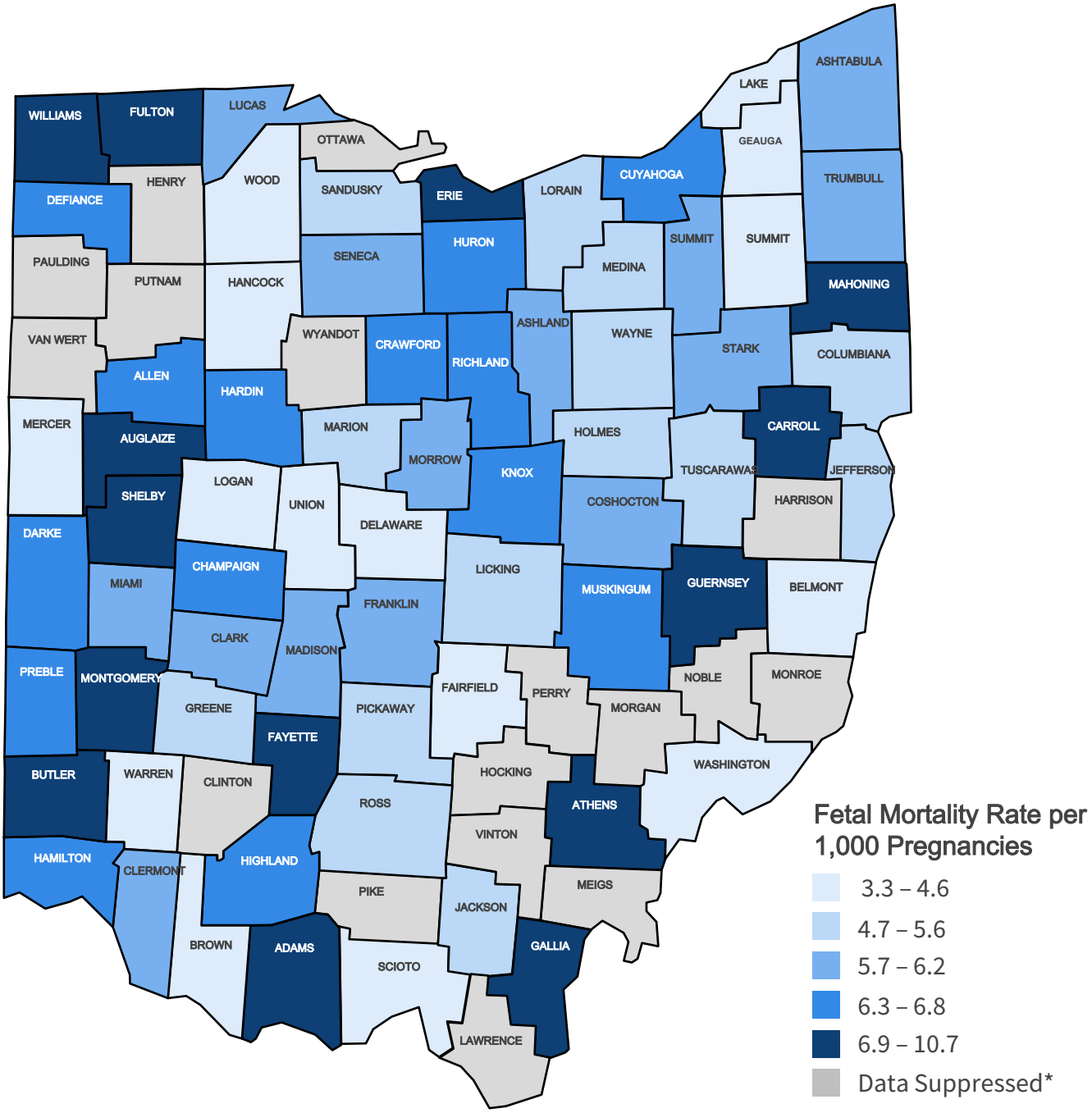


Data Source: Fetal Death and Birth Files from the Ohio Department of Health, Bureau of Vital Statistics, 2023.

The results in this section of the report emphasize the importance of pre- and inter-conception care among women. All women can experience stillbirth; however, it is important to note that not all women have the same opportunities, and some experience disparities in social determinants of health, including housing stability, food security, education attainment, living with poverty, and employment opportunities that contribute to differences in health status and pregnancy outcomes.

5-Year County Fetal Mortality Rates, 2019-2023

Figure 18. From 2019-2023 Ohio's average FMR was 5.9 per 1,000 live births and stillbirths.



*Data for counties with fewer than 10 infant deaths in the five-year period (2019-2023) is suppressed due to insufficient reliability and confidentiality requirements.

Data Sources and Methods

Methodology Update for 2023 Regarding Race/Ethnicity Classification
Starting in 2023, the methodology in the Department of Children and Youth's (DCY) annual Fetal Mortality reports will vary from previous published reports. The race classifications used in this report are now based on single-race as opposed to bridged-race estimates used in the past. DCY is no longer able to access the bridged-race variable in the Vital Statistics (VS) fetal death records because the National Center for Health Statistics (NCHS) discontinued the algorithm used to generate the bridged-race variable. Beginning in 2022, NCHS ceased providing bridged-race variables for vital statistics records (i.e., birth, death, and fetal death certificates). As a result of no longer having access to the bridged-race variables, DCY modified the 2023 Fetal Mortality Report race/ethnicity methodology to align with other states and national fetal mortality reporting methodology, which leverage the mother's self-reported race and ethnicity on the fetal death certificate. These updates will allow greater comparability between rates and data included in this report to other states and national statistics. The race and Hispanic-origin groups included in this report are single-race Black non-Hispanic, single-race White non-Hispanic, and Hispanic. The 10-year trends presented in this report reflect the new methodology to allow for comparison across years. However, race-specific rates for previous years presented in this report will vary from previous reports.

Calculation of Rates and Trends
This report contains data from several data sources. Resident birth and fetal death data sets are from Ohio's Vital Statistics System. The resident birth data set contains all live births reported from birth certificates. The fetal death data set includes deaths of all fetuses 20 weeks gestation or older reported to the ODH Bureau of Vital Statistics. Only Ohio residents are included in the birth and fetal death data sets. The fetal death data set is the primary data set for analyzing fetal mortality trends and patterns in Ohio and mirrors the system used nationally. It is also the primary source for examining fetal mortality by race and Hispanic origin and for examining factors related to the death. Race and Hispanic origin are self-reported by the mother and are included in the birth and fetal death data sets. Vital records also include data on additional maternal demographics, characteristics, behaviors, and conditions during pregnancy.

In 2020, ODH administered the first iteration of SOARS, which surveys women who experienced stillbirth to better understand the risks of stillbirth. SOARS is structured similarly to the Ohio Pregnancy Assessment Survey (OPAS), which surveys women who experienced live birth. Women who share their experiences through these surveys provide information not available through vital records or medical records, including life experiences before and during pregnancy, social support and stress, and services and medical tests offered.

Definitions

Complications of the placenta, cord, and membranes: This cause of stillbirth is based on the International Classification of Diseases (ICD-10) codes including placenta previa, placental separation and hemorrhage, placental transfusion syndromes, prolapsed cord, chorioamnionitis, and other abnormalities of the placenta, cord, and membranes.

Congenital malformation: This cause of stillbirth is based on ICD-10 codes including congenital deformations, disorders, and chromosomal anomalies.

Fetal death: The ICD-10 defines fetal death as "death prior to the complete expulsion or extraction from its mother of a product of human conception ... which after such expulsion or extraction does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles." Fetal deaths do not include induced terminations of pregnancy. In Ohio, only fetal deaths occurring at 20 weeks of gestation or later are reported.

Fetal mortality rate (FMR): The number of stillbirths in a specific year divided by the number of stillbirths and live births within that same year, multiplied by 1,000.

Fetal mortality rate - Early: The number of stillbirths at 20-27 weeks gestation in a specific year divided by the total number of stillbirths and live births within that same year, multiplied by 1,000.

Fetal mortality rate - Late: The number of stillbirths at 28 weeks gestation or more in a specific year divided by the total number of stillbirths and live births within that same year, multiplied by 1,000.

Infant death: The death of a live-born baby before his or her first birthday.

Infant mortality rate: The number of infant deaths in a specific year divided by the number of live births within that same year, multiplied by 1,000.

Maternal complications of pregnancy: This cause of stillbirth is based on ICD-10 codes including incompetent cervix, premature rupture of membranes, oligohydramnios, ectopic pregnancy, multiple pregnancy, maternal death, and other maternal complications of pregnancy.

Maternal conditions unrelated to pregnancy: This cause of stillbirth is based on ICD-10 codes including maternal hypertensive disorders, renal and urinary tract diseases, maternal infectious diseases, nutritional disorders, maternal injury, and other maternal health conditions and diseases.

Race/ethnicity: Stillbirth data is based on maternal race and ethnicity. For the purposes of this report, mothers who reported Hispanic ethnicity on the stillbirth report were categorized as Hispanic, regardless of race. Data presented by race is categorized by self-reported race and ethnicity.

References

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Suggested Citation:

Ohio Department of Children and Youth. (2025). 2023 Fetal mortality report.