

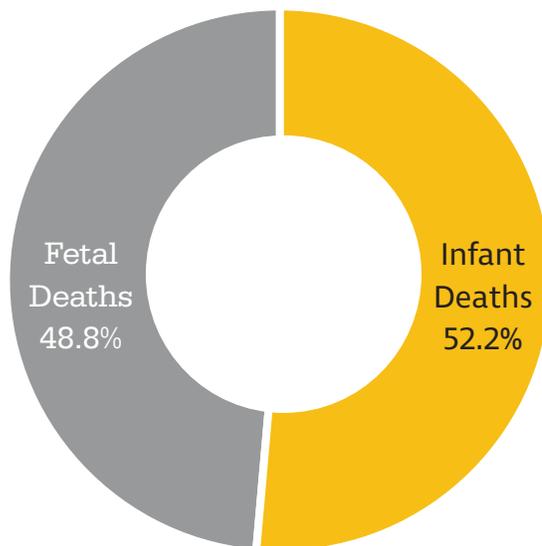
2018

Ohio Fetal Mortality Brief

Key Findings

1. The number of fetal deaths is approximately the same as the number of infant deaths in Ohio.
2. Total fetal mortality rates have stayed the same over the past decade.
3. Half of all reportable fetal deaths occurred between 20 and 27 weeks of gestation.
4. Black women are more than two times as likely to experience a fetal death than white women, particularly during the late period (28 to 36 weeks). The disparity was more prevalent in 2018 than during 2017.
5. More than a quarter of fetal deaths in 2011-2017 were caused by complications of the placenta, cord, and/or membrane.

Figure 1: Fetal and Infant Deaths, Ohio 2018



Fetal death is the spontaneous intrauterine death of a fetus, also known as stillbirth. The fetus must be of 20 or more weeks gestation for a death to be reportable in Ohio. In 2018, 893 fetuses died in Ohio.

This brief provides findings from the Ohio Department of Health's (ODH's) investigation into fetal deaths using Vital Statistics records and identifies areas for prevention.

Fetal deaths represented 48.8% of all reportable pregnancy and infant losses in 2018 (Figure 1). In 2018, there were 893 fetal deaths in Ohio, 28 more than in 2017 (865 fetal deaths). This is nearly the same as the 938 infant deaths (in the first year of life) that occurred in 2018 (Figure 1).¹

Total fetal mortality rates have stayed the same over the past decade.

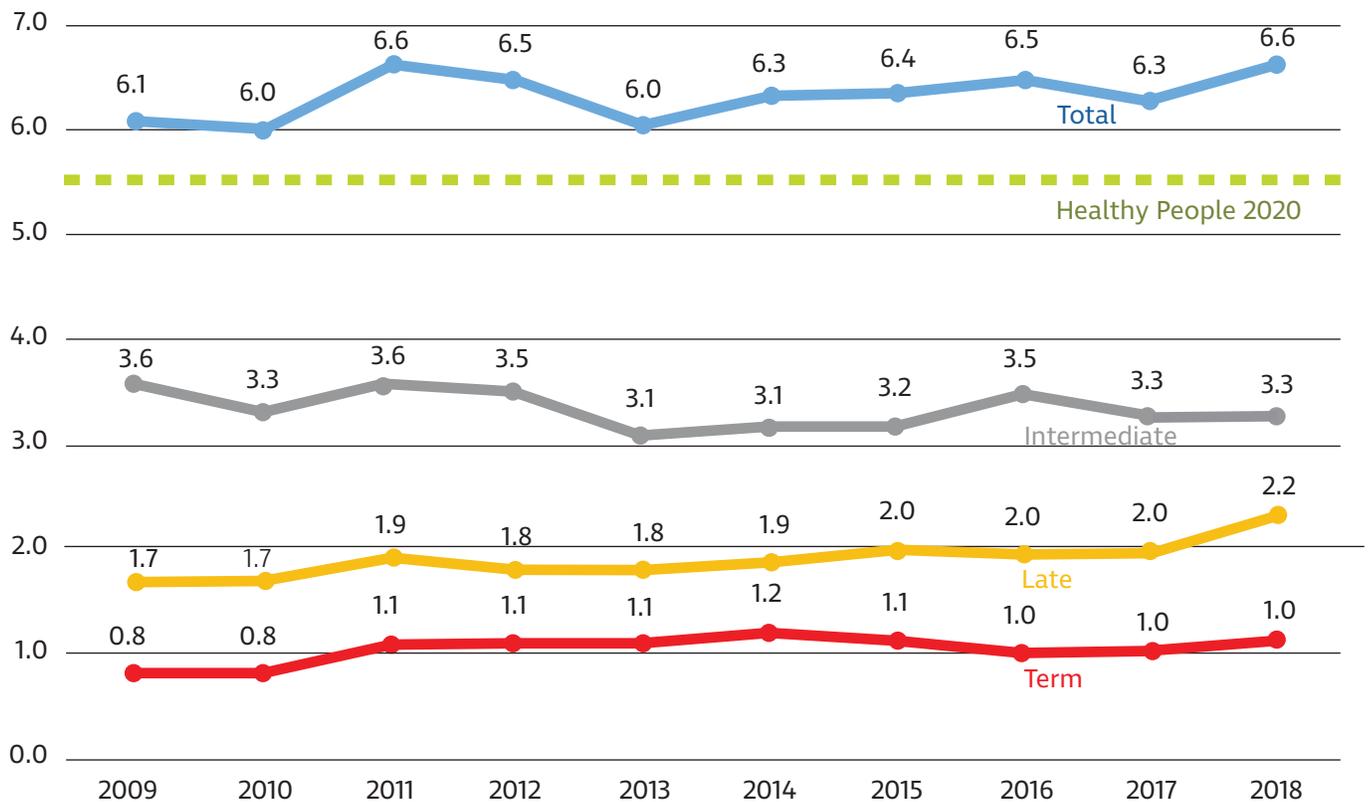
The fetal mortality rate (FMR) is defined as the number of fetal deaths at 20 weeks or more gestation per 1,000 fetal deaths and live births.² Fetal deaths are categorized into three groups, defined by the gestational age at which they occur: intermediate (20 to 27 weeks), late (28 to 36 weeks), and term (greater than or equal to 37 weeks). Fetal deaths that occur during the early period (before 20 weeks gestation) are not reportable in Ohio.

Although Ohio's fetal mortality rate was higher in 2018 than in 2017, there was no statistically significant change in overall rates over the past decade (Figure 2). From 2009 to 2018, Ohio's rates consistently were higher than the U.S. Department of Health and Human Services' Healthy People 2020 target of 5.6.³

Similarly, there was no significant change in fetal mortality rates for the intermediate and term periods from 2009 to 2018.

Late period fetal mortality rates have significantly increased at an average of 2.5% each year from 2009 to 2018.

Figure 2: Trends in Fetal Mortality Rates (per 1,000 fetal deaths and live births) by Period, Ohio 2009-2018

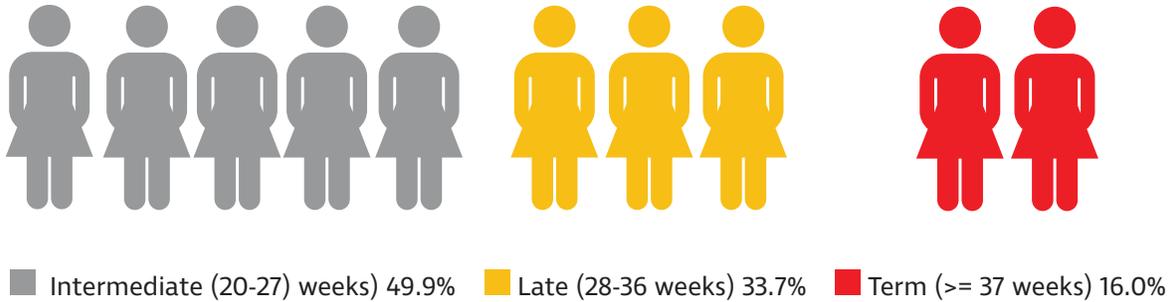


Joinpoint software models were used to test the statistical significance of changes in trends ($p < 0.05$). From 2009 to 2018, no change in trend was observed for total rates, or for rates in the intermediate and term periods. A statistically significant annual percent increase of 2.51 was observed among late-period rates.

Half of reportable fetal deaths occurred between 20 and 27 weeks of gestation.

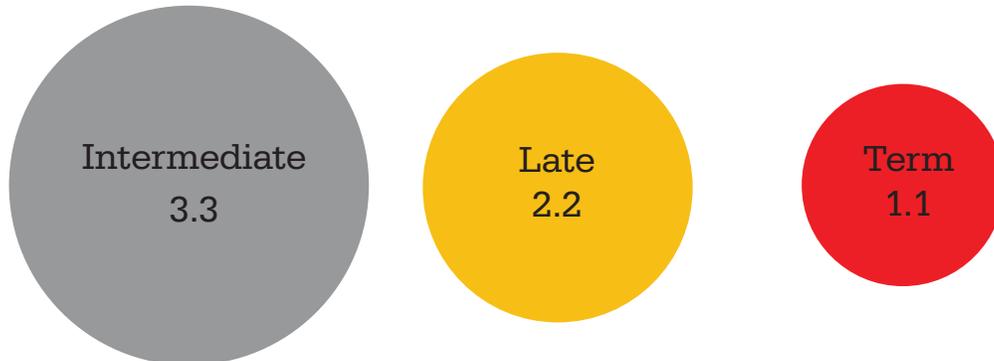
Most fetal deaths in 2018 happened during the intermediate period (49.9%), with 33.7% occurring during the late period, and 16.0% during term pregnancies (Figure 3).

Figure 3: Intermediate, Late, and Term Fetal Deaths, Ohio 2018*



*Early period fetal deaths (<20 weeks) are not reportable in Ohio.

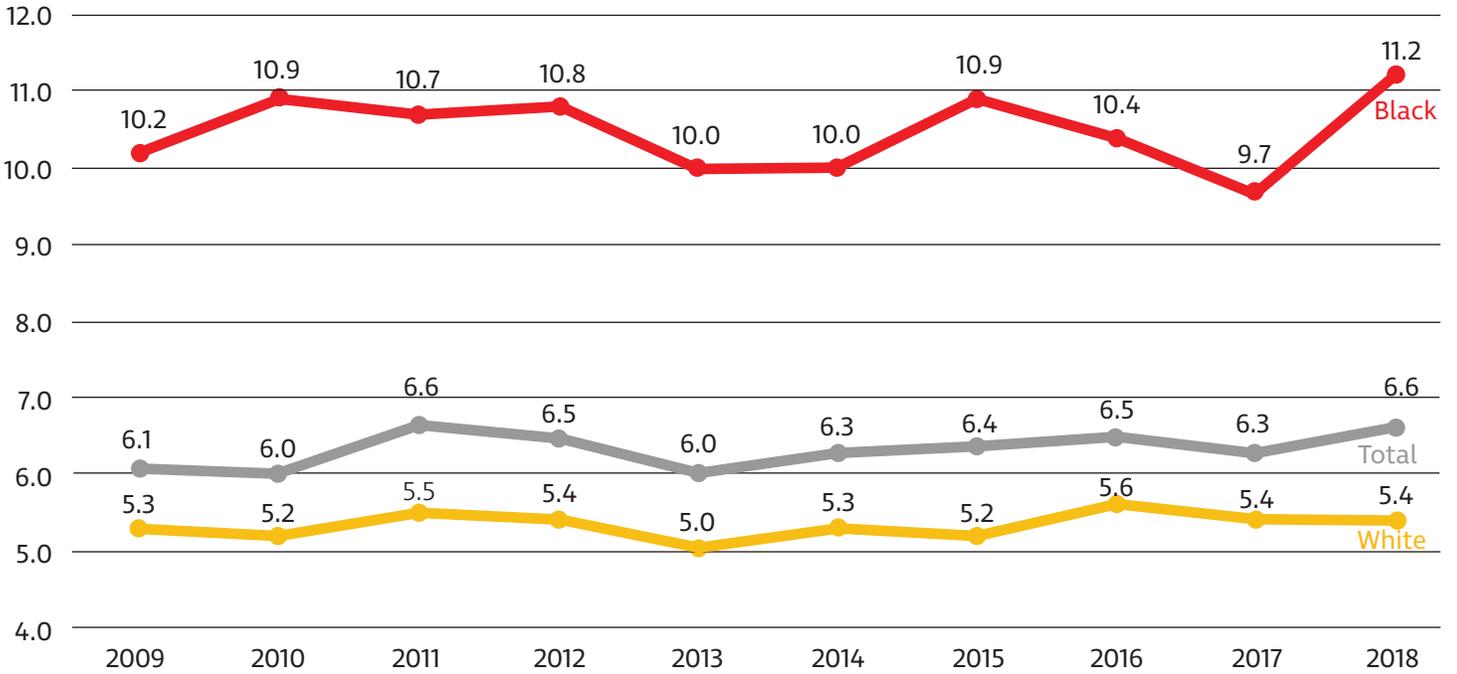
Figure 4: Fetal Mortality Rate (per 1,000 fetal deaths and live births) by Period, Ohio 2018



Fetal mortality rates for the intermediate period were approximately 50% higher than the late period and triple the rates at term (Figure 4).

Black women are more than two times as likely as white women to experience a fetal death. (Figure 5)

Figure 5: Fetal Mortality Rates (per 1,000 fetal deaths and live births) by Race, Ohio 2009-2018



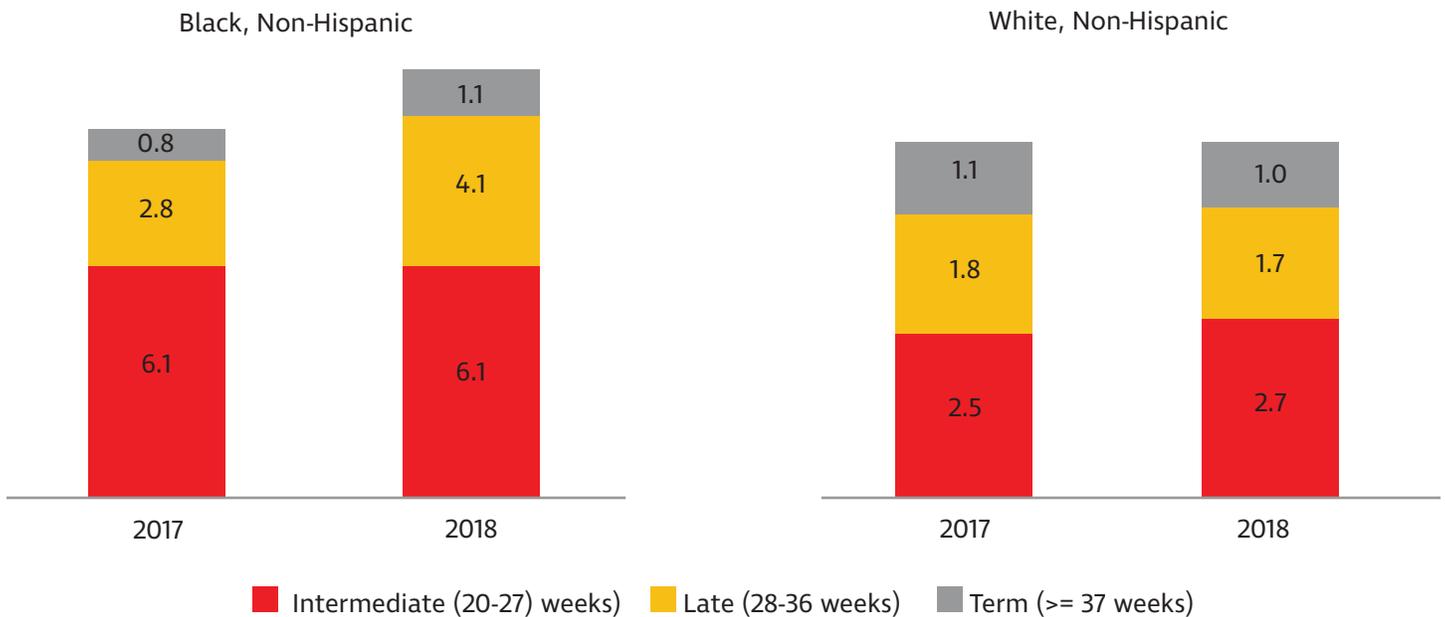
Joinpoint software models were used to test the statistical significance of changes in trends ($p < 0.05$). No change in trend was observed for total rates or among rates for black and white fetal deaths from 2009 to 2018.

More black women experienced fetal deaths during the late period (28 to 36 weeks) in 2018 than in 2017.

The black fetal mortality rate during the late period increased by **almost 50%** from 2017 to 2018. The black fetal mortality rate during the late period was 2.8 in 2017 and 4.1 in 2018. In comparison, the white fetal mortality rate during the late period stayed nearly the same (1.8 in 2017 and 1.7 in 2018).

The racial disparity in fetal mortality rates was largely driven by more black women experiencing fetal deaths during the intermediate and late periods (Figure 6). In 2018, the black fetal mortality rate was 6.1 (per 1,000 fetal deaths and live births) during the intermediate period and 4.1 in the late period. These rates are more than **double** the white fetal mortality rates for the same periods (2.7 and 1.7, respectively). However, black and white women experienced similar fetal mortality rates during the term period.

Figure 6: Intermediate, Late, and Term Fetal Mortality Rates (per 1,000 fetal deaths and live births) by Race, Ohio 2017-2018*

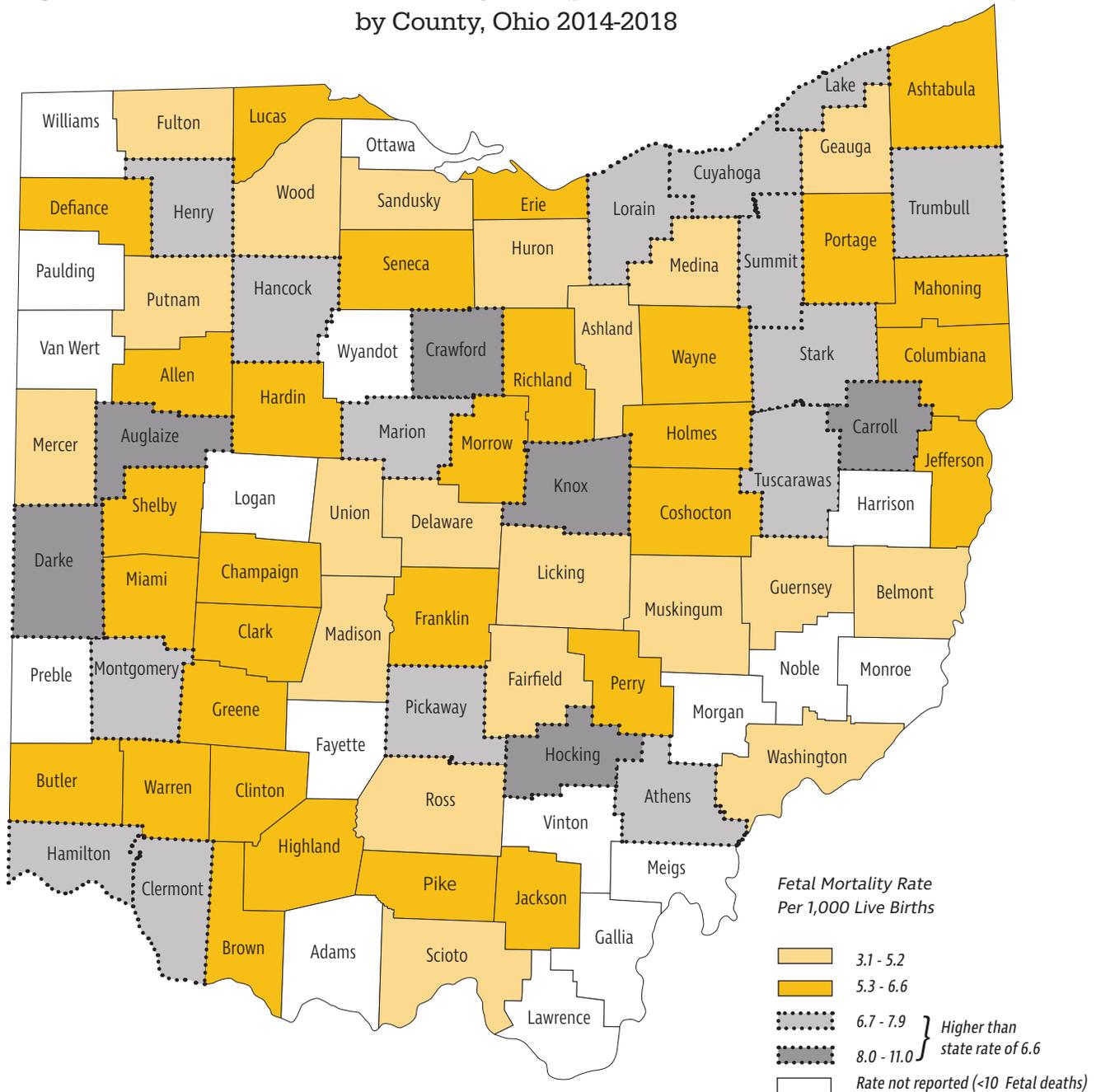


*Early period fetal deaths (<20 weeks) are not reportable in Ohio.

About a quarter of Ohio counties have Total Fetal Mortality Rates greater than the state rate.

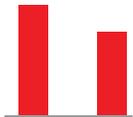
To calculate a stable fetal mortality rate for most Ohio counties, fetal death numbers were combined from 2014 to 2018. During this time period, 21 counties had a fetal mortality rate greater than the state rate of 6.6 fetal deaths and live births. Additionally, the highest rates during this timeframe are observed in Auglaize, Carroll, Crawford, Darke, Hocking, and Knox counties (Figure 7).

Figure 7: Five-Year Total Fetal Mortality Rate (per 1,000 fetal deaths and live births) by County, Ohio 2014-2018



Pre-pregnancy health is important in identifying women at risk of experiencing a fetal death.

Women with health concerns prior to pregnancy had higher rates of fetal deaths. Optimizing health before pregnancy is important for all women (Figure 8).⁴



Pregnant women who smoked three months before pregnancy experienced fetal deaths at a rate of 8.3 per 1,000 live births plus fetal deaths. This is 25% higher than the rate of 6.2 fetal deaths among women who did not smoke three months before pregnancy. The U.S. Preventive Services Task Force (USPSTF) recommends that providers screen all pregnant women about tobacco use and provide pregnancy-tailored counseling throughout pregnancy. The American College of Obstetricians and Gynecologists (ACOG) recommends the 5As (see page 17) as a smoking cessation intervention that is effective when initiated by providers.⁵



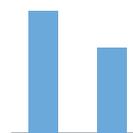
Obese women experienced fetal death rates of 8.0, more than 50% higher than women with normal pre-pregnancy weights (4.6). ACOG recommends providers work with women who are obese or overweight to lose weight and manage their health before becoming pregnant.⁶ Regardless of the patient's weight, providers should counsel all women and their families on healthy eating, physical activity, and healthy maternal and child growth. Additionally, providers should recommend and provide breastfeeding training and support to prevent child obesity. Clinics should also establish policies, such as requiring all employees to be trained in weight-bias prevention,⁷ to avoid weight-bias and discrimination.



In 2018, women with pre-pregnancy hypertension experienced fetal death rates of 13.6, twice as high as women without pre-pregnancy hypertension (6.3). ACOG recommends providers monitor and treat women with pre-pregnancy hypertension prior to getting pregnancy.⁸ Providers should also screen all women for pre-eclampsia and monitor blood pressure throughout pregnancy and postpartum.⁷

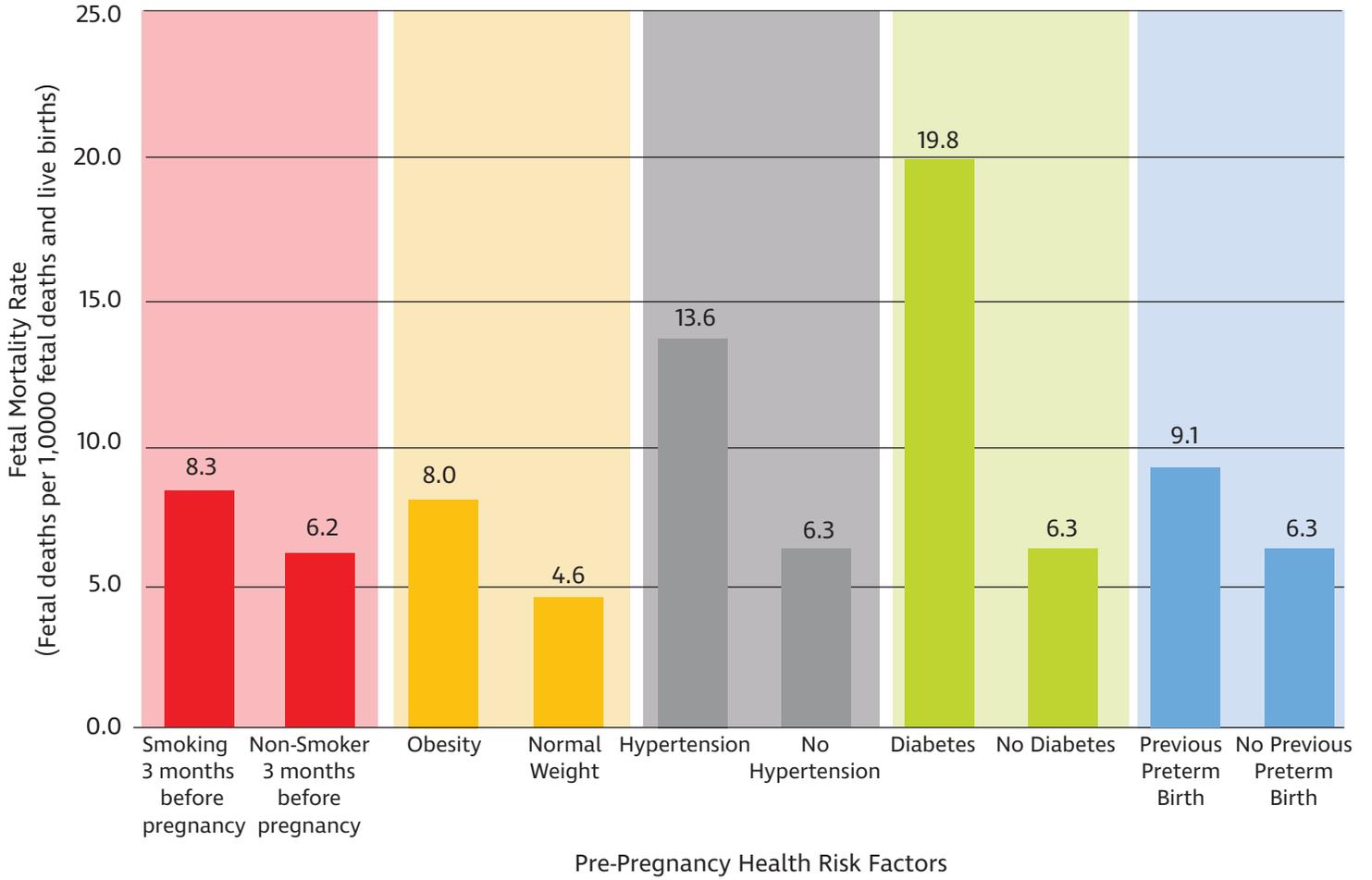


Among women with pre-pregnancy diabetes, the overall fetal mortality rate was 19.8 per 1,000 live births plus fetal deaths. This rate is more than three times higher than both those without pre-pregnancy diabetes (6.3) and the overall Ohio fetal mortality rate (6.3). According to the Centers for Disease Control and Prevention (CDC), it is important that women with diabetes receive care to manage and control their diabetes prior to pregnancy.⁹ Additionally, providers should screen all pregnant women for gestational diabetes and provide adequate treatment.⁷



Women with a previous preterm birth had a higher risk of experiencing a fetal death (9.1 deaths per 1,000 live births plus fetal deaths) than women with no previous preterm birth (6.3). A thorough obstetrical history is important to identify women with a previous preterm birth and other risk factors. Medical providers should discuss previous pregnancy problems and experiences with women and counsel them on preterm birth prevention strategies.¹⁰

Figure 8: Fetal Mortality Rates by Pre-Pregnancy Health Risk Factors, Ohio 2018



More than a quarter of fetal deaths in 2011-2017 were caused by complications of the placenta, cord, and membrane.

In Ohio, data on the cause of fetal deaths are available for 2011-2017. During that time, there were a total of 6,214 fetal deaths. More than a quarter of the deaths (1,690) were caused by complications of the placenta, cord, and membrane (Figure 9).

In Ohio, the five **leading** causes of fetal death in 2011-2017 were:

Complications of the placenta, cord, and membrane

account for **27%** (1,690 deaths) of fetal deaths. Of these deaths, 41% occurred during the intermediate period, 35% during the late period, 24% during the term period.



Maternal Conditions unrelated to pregnancy

account for **12%** (759 deaths) of fetal deaths. Of these deaths, 54% occurred during the intermediate period, 35% during the late period, 11% during the term period.



Maternal Complications of pregnancy

account for **11%** (695 deaths) of fetal deaths. Of these deaths, 81% occurred during the intermediate period, 14% during the late period, 5% during the term period.



Congenital Malformations

account for **10%** (645 deaths) of fetal deaths. Of these deaths, 56% occurred during the intermediate period, 31% during the late period, 12% during the term period.



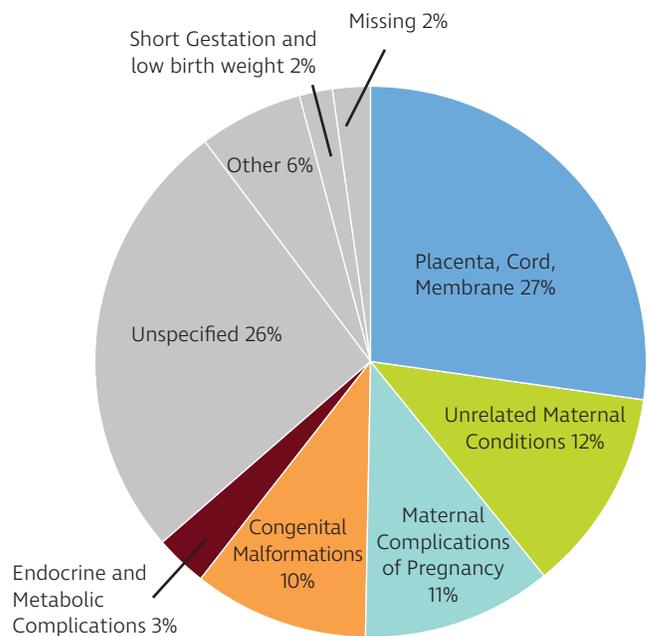
Endocrine and Metabolic Complications

account for **3%** (163 deaths) of fetal deaths. Of these deaths, 16% occurred during the intermediate period, 47% during the late period, 37% during the term period.



■ Intermediate (20-27 weeks) ■ Late (28-36 weeks) ■ Term (>= 37 weeks)

Figure 9: Cause of Fetal Deaths, Ohio 2011-2017



The Ohio Dept. of Health is currently working on intervention efforts to prevent fetal deaths.

1. Fetal Infant Mortality Review (FIMR)
2. Count the Kicks (CTK)
3. Ohio Study of Associated Risks of Stillbirth (SOARS) Survey

Fetal Infant Mortality Review (FIMR)

Fetal and Infant Mortality Review (FIMR) is an evidence-based process to examine fetal and infant deaths. FIMR is a community-owned and action-oriented process to improve service systems and resources for women, infants, and families and exists in all nine of the Ohio Equity Institute (OEI) counties (Butler, Cuyahoga, Franklin, Hamilton, Lucas, Mahoning, Dayton/Montgomery, Stark, and Summit). The FIMR process brings a multi-disciplinary community team together to review de-identified infant and fetal deaths. Composed of health, social service, and other experts, the FIMR case review team (CRT) examines case summaries, identifies issues, and makes recommendations for community change if appropriate. Community leaders representing government, consumers, key institutions, and health and human service organizations serve on the community action team (CAT), which acts to implement recommendations. Maternal interviews are completed as a key part of the FIMR processes and give insight into each mother's experience before and during pregnancy, and the time of an infant's death. Interviews convey each mother's story of her encounters with local service systems and provide understanding and information about health equity and disparities among populations in the community. In fall 2019, representatives from all nine OEI counties attended a two-day FIMR Coordinator training hosted by ODH and the National Center for Fatality Review and Prevention. The first day covered FIMR basics on processes, procedures, and data systems relevant to FIMR. The second day addressed more advanced issues related to FIMR and infant mortality reduction, such as maternal interviewing and improving racial equity in fatality review.

All nine FIMR teams now receive funding through the Maternal and Child Health Program grant, which supports FIMR activities and monthly reporting to the Ohio Department of Health. The role of the state in developing FIMR teams and continuing their success over the years includes providing technical assistance, gathering and summarizing data entered into the National Center for Fatality Review and Prevention's Case Reporting System, distributing funds, acting as a liaison between counties, and creating opportunities for education, interaction, and support between FIMR counties. Local counties use evidence gathered in reviews and by CATs to identify topics of focus to inform local activities.

As the FIMR program grows, ODH is moving forward with an emphasis on providing targeted technical assistance to ensure collection of quality data to inform local and state-level efforts to prevent fetal deaths.

Count the Kicks

In May 2018, the Ohio Department of Health began a partnership with *Count the Kicks*, a stillbirth prevention public health campaign that encourages expectant parents to track their babies' daily fetal movements during the third trimester of pregnancy. Counting a baby's kicks is important because change in movement in the third trimester may be an early sign of distress. When a mom knows what is normal for her baby, she is more alert to potential changes. The campaign empowers moms to speak with their health care professionals if they have concerns regarding a change in a baby's fetal movement.



Count the Kicks offers an app that makes it simple for Ohio expectant parents to self-monitor to improve the chance of delivering a healthy baby and reduce the chance of stillbirth. The app is free to use, available in 10 languages, and allows downloads of session results, making it easy to share with providers. Through the campaign, Ohio providers can order free patient materials such as brochures, posters, and app-download reminder cards. To date, *Count the Kicks* has distributed more than 160,000 pieces of educational materials to more than 400 Ohio providers. As a result of the campaign, more than 2,000 expectant parents in Ohio have downloaded the app.

The Ohio Department of Health has educated providers about the availability of these free resources through webinars, conference presentations, and direct outreach. Provider audiences have included obstetricians and gynecologists, midwives, doulas, nurses, labor and delivery hospital administrators, home visitors, and community health workers.

For more information, please visit <https://www.countthekicks.org/>. To download the app, visit <https://www.countthekicks.org/app-download/>.

Ohio Study of Associated Risks of Stillbirth (Ohio SOARS) Survey

The Ohio Study of Associated Risks of Stillbirth (Ohio SOARS) is a new state survey led by the Ohio Department of Health (ODH) and the Ohio Department of Medicaid (ODM). The development of SOARS was initiated in 2019, and the survey will take place in 2020 and occur annually. SOARS will provide critical, timely, and relevant population-based data to better understand maternal experiences and behaviors prior to, during, and immediately following pregnancy among women who have recently experienced a fetal death.



The methodology for SOARS is similar to the Ohio Pregnancy Assessment Survey (OPAS) and the Pregnancy Risk Assessment Monitoring System (PRAMS), with the difference being that OPAS and PRAMS survey a sample of Ohio women with a live birth. SOARS will survey all women who experienced a fetal death. Like OPAS and PRAMS, SOARS will contact women by mail and telephone starting two to four months after a reported fetal death. SOARS data will provide information not available from other sources about pre-pregnancy, pregnancy, and the first few months after a fetal death.

The Ohio SOARS instrument was developed jointly by ODH, ODM, and the Ohio SOARS Advisory Committee. The Ohio SOARS Advisory Committee consists of local Fetal Infant Mortality Review (FIMR) coordinators, Ohio Department of Health Bureau of Vital Statistics supervisors, health equity subject matter experts, women and families who have experienced a stillbirth, maternal fetal medicine specialists, biostatisticians, and survey experts from The Ohio State University (OSU) College of Public Health. The SOARS questionnaire will include topics such as life experiences before and during pregnancy, social support and stress, services and medical tests offered in hospitals before and after a stillborn delivery, substance use, and grief and bereavement support. Many of the questions included in the Ohio SOARS survey were developed and tested by the CDC PRAMS team. These questions are also included in the 2020 OPAS.

SOARS data will be used to identify groups of women at high risk for health problems, to monitor changes in health status, and to measure progress towards goals in improving the health of Ohio mothers and infants. Additionally, SOARS data will be available by request for researchers to investigate and learn more about fetal mortality in Ohio.

Data Sources and Methods

This report contains data from the birth and fetal death data sets, which are part of Ohio's Vital Statistics System. The birth data set contains all live births reported from birth certificates. The fetal death data set includes death of all fetuses 20 weeks gestation or older. Only residents of Ohio 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 race and Hispanic-origin fetal mortality and for examining factors related to the death. Race and Hispanic origin are self-reported by the mother/woman and are included in the birth and fetal death data sets.

Definitions

Complications of the placenta, cord, and membrane: This cause of fetal death is based on ICD 10 codes including placenta previa, placental separation and hemorrhage, placental transfusion syndromes, prolapsed cord, chorioamnionitis, and other abnormalities of the placenta, cord, and membrane.

Congenital Malformation: This cause of fetal death is based on ICD 10 codes including congenital deformations, disorders, and chromosomal anomalies.

Endocrine and Metabolic Complications: This cause of fetal death is based on ICD 10 codes including neonatal diabetes and other transitory endocrine and metabolic disorders specific to the fetus.

Fetal Death: Fetal death is defined 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 Mortality Rate: The number of fetal deaths in a specific year divided by the number of fetal deaths and live births within that same year, multiplied by 1,000.

Fetal Mortality Rate-Intermediate: The number of fetal deaths at 20-27 weeks gestation in a specific year divided by the number of fetal deaths at 20-27 weeks gestation and live births within that same year, multiplied by 1,000.

Fetal Mortality Rate-Late: The number of fetal deaths at 28-36 weeks gestation in a specific year divided by the number of fetal deaths at 28-36 weeks gestation and live births within that same year, multiplied by 1,000.

Fetal Mortality Rate-Term: The number of fetal deaths at greater than or equal to 37 weeks gestation in a specific year divided by the number of fetal deaths at greater than or equal to 37 weeks gestation 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 fetal death 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 fetal death 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.

Normal Weight: Refers to a woman's body mass index (BMI) between 18.5 kg/m² and 24.9 kg/m² before becoming pregnant.

Obese: Refers to a woman's body mass index (BMI) that was greater than 30 kg/m² before becoming pregnant.

Previous Preterm Birth: History of previous live births of less than 37 completed weeks of pregnancy.

Race: Infants and women identified as black and white race exclude those of Hispanic ethnicity.

Short Gestation and Low Birth Weight (LBW): This cause of fetal death is based on ICD 10 codes including extremely low birth weight or extreme immaturity and other low birth weight and preterm conditions.

5 A's: Evidence-based clinical smoking cessation model that includes five major steps; (1) ask the patient if he or she uses tobacco, (2) advise him or her to quit, (3) assess willingness to make a quit attempt, (4) assist those who are willing to make a quit attempt, and (5) arrange for follow-up contact to prevent relapse.

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Graphics were produced by Elsie Stiger.

Suggested Citation

Ohio Department of Health. 2018 Ohio Fetal Mortality Brief. Columbus, OH.