

HAMILTON COUNTY

Maternal and Infant Health Monthly Surveillance Report

March 2017

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**HAMILTON COUNTY
PUBLIC HEALTH**

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cradle cincinnati

every baby, every day

INTRODUCTION

The Maternal and Infant Health Monthly Surveillance Reports are part of work throughout Hamilton County to improve the health of women and infants, and to lower the number of infant deaths. In order to improve the health and safety of infants in Hamilton County, it is important to identify, describe, and track the problems and people at risk. This report shows the current state of infant mortality in Hamilton County.

The data for these reports has been enhanced to improve the monthly tracking process. The Ohio Department of Health (ODH) provides monthly death data to Hamilton County Public Health that is used to improve the timeliness and accuracy of the monthly data. These data were provided by the Ohio Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations or conclusions. These data are provisional and are numbers only; they do not include any additional information from birth or death certificates (**Appendix A**). Future reports will provide improved validity of these estimates (**Appendix A**). Death data in this report were collected from ODH on August 24th, 2017 and August 10th, 2017; birth data were collected from the Ohio Public Health Information Warehouse on August 28th, 2017.

The Maternal and Infant Health Monthly Surveillance Report will include the following topics:

- Number of infant deaths by month
- Current monthly infant mortality rate
- Current monthly neonatal mortality rate
- Current monthly preterm, very preterm, and <23 weeks gestation birth rate
- Current monthly small for gestational age birth rate
- Percentage of pregnancies spaced <18 months
- Maternal smoking rates
- Number of sleep-related deaths
- Current two-year infant mortality rate moving average
- Comparison of "Filed" and "Unfiled" data

INFANT MORTALITY SURVEILLANCE

Public Health surveillance is the ongoing systematic collection, analysis, interpretation and dissemination of data regarding health-related events for use in public health action to decrease sickness and death, and improve health¹. The Maternal and Infant Health Surveillance System is designed to better understand infant health in Hamilton County, track infant deaths and determine whether the ongoing work in Hamilton County to prevent infant deaths are effective. The charts used within this report are surveillance charts, which are tools to monitor infant health in Hamilton County. Comparisons to the national Healthy People 2020 Goals are made when possible. Healthy People 2020 Goals are a set of nationwide goals that support prevention efforts to create a healthier nation. These goals are released every 10 years from the US Department of Health and Human services. For more information about how to understand the surveillance charts, please read the General Guidelines for Using Surveillances Charts in **Appendix B**.

1. Centers for Disease Control and Prevention. *Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group*, MMWR, July 27,2007, Vol. 50 No. RR-13.

NUMBER OF INFANT DEATHS

One way to look at infant health is to track the number of infant deaths in Hamilton County per month. Infant deaths are the death of a child before his or her first birthday. In March 2017, there were 6 infant deaths in Hamilton County. Two of the infant deaths that occurred in March 2017 in Hamilton County, occurred among Cincinnati residents. Table 1 displays the provisional number of infant deaths and births for each month in 2016 and 2017. To learn more about provisional death data and its limitations, please see **Appendix A** on Page 13.

Table 1. Number of Infant Deaths and Births, Hamilton County, 2016-2017

	2016		2017	
	Infant Deaths	Live Births	Infant Deaths	Live Births
January	12	884	6	896
February	6	901	6	788
March	5	864	6	888
April	3	888		
May	7	882		
June	12	941		
July	12	908		
August	9	955		
September	6	896		
October	10	895		
November	11	864		
December	5	856		
Total	98	10,734	18	2,572



Infant Deaths,
Hamilton County
2017 Year-to-date



Infant Deaths,
Cincinnati
2017 Year-to-date

INFANT MORTALITY RATES

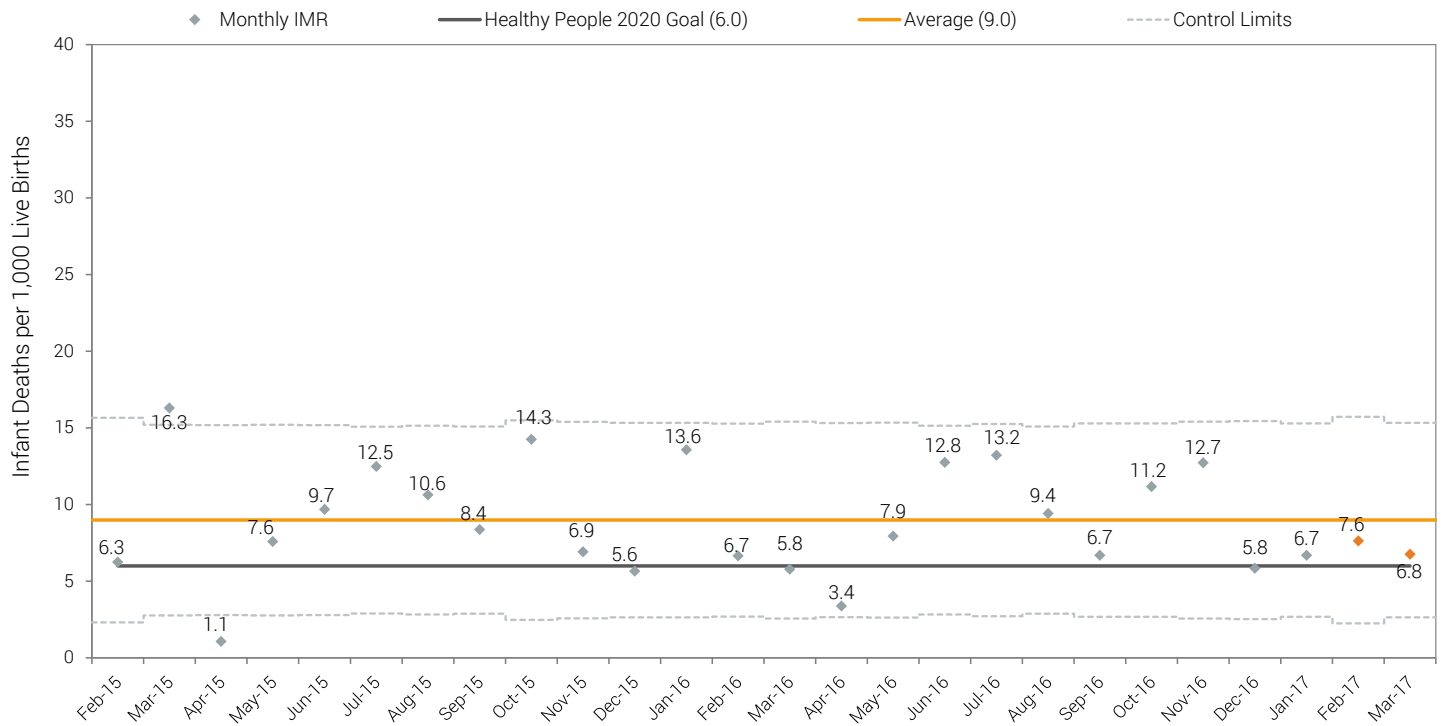
6.8 per 1,000
March 2017 IMR

This provisional rate was
higher than the Healthy
People 2020 goal (6.0)

Another way to measure infant health is to track the Infant Mortality Rate (IMR) per month. An infant mortality rate is the number of infant deaths for every 1,000 live births. The Neonatal Infant Mortality Rate (NIMR) is a specific IMR for neonates (infants who are younger than 28 days). A neonatal infant mortality rate is the number of neonatal deaths for every 1,000 live births. An infant mortality rate is highly sensitive to changes in the number of births within a community, and it may not be surprising to have an increase in the number of infant deaths if there is also an increase in the number overall babies being born.

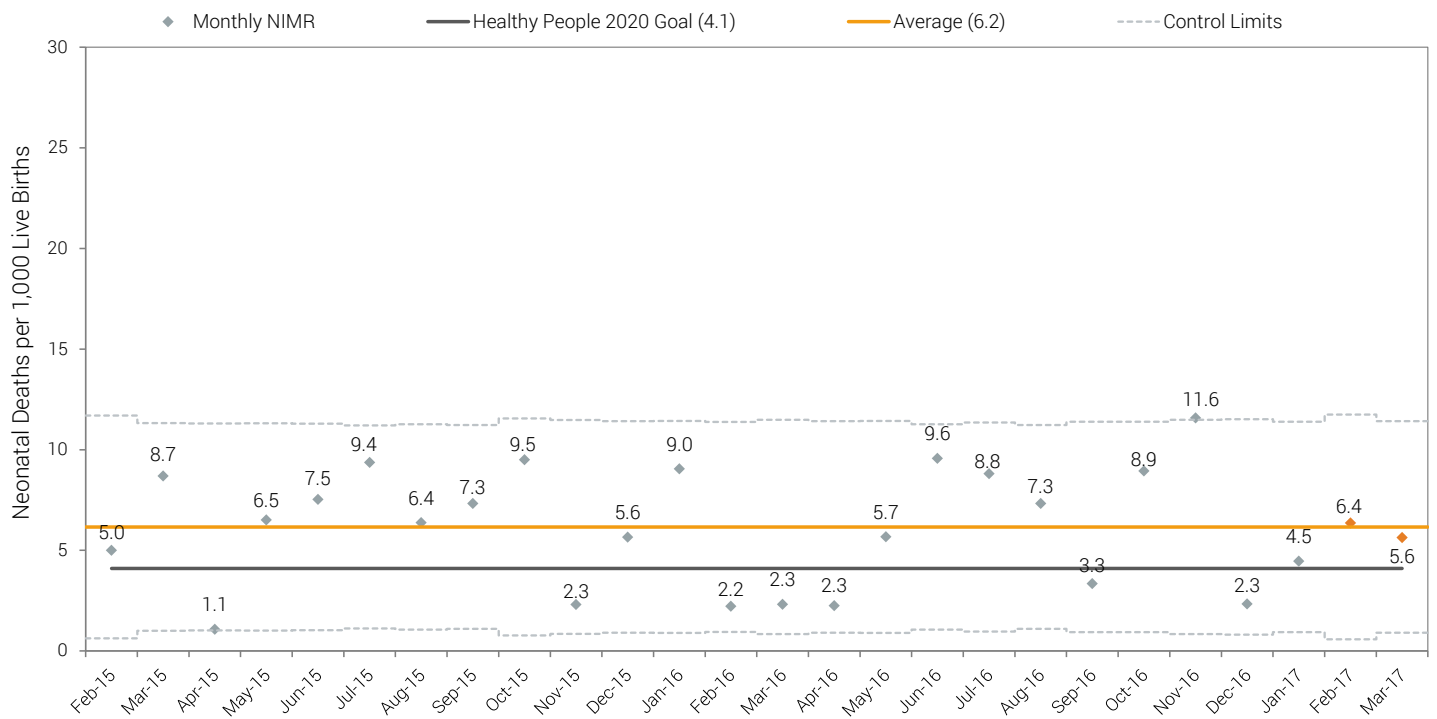
The IMR for March 2017 was 6.8 infant deaths per 1,000 live births (Figure 1). The February IMR is higher than the Healthy People 2020 goal of 6.0 infant deaths per 1,000 live births as shown in Figure 1. The March 2017 NIMR was 5.6 neonatal deaths per 1,000 live births (Figure 2). The February NIMR was higher than the Healthy People 2020 goal of 4.1 neonatal deaths per 1,000 live births. Neonatal deaths make up 69% of infant deaths in Hamilton County from January 2016 - March 2017. As can be seen from comparing Hamilton County rates and national infant health goals, Hamilton County is experiencing problems within the community regarding maternal and infant health.

Figure 1. Infant Mortality Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
 *Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.
 Data Source: ODH Vital Statistics

Figure 2. Neonatal Mortality Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
 *Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.
 Data Source: ODH Vital Statistics

PRETERM, VERY PRETERM, & <23 WEEKS GESTATION BIRTH RATES

A preterm birth is the birth of a baby that happens more than three weeks before the baby is due. A preterm birth rate is the percent of babies who are born before the start of the 37th week of pregnancy. The very preterm birth rate is the percent of babies who are born before the start of the 32nd week of pregnancy. The <23 weeks gestation birth rate is the percent of babies who are born before the start of the 23rd week of pregnancy. The <23 weeks gestation birth rate is important to track as approximately 1/3 of all infant deaths in Hamilton County each year are from babies who are born before the start of the 23rd week of pregnancy. Preterm birth increases the chance for infant death and many other poor health outcomes.

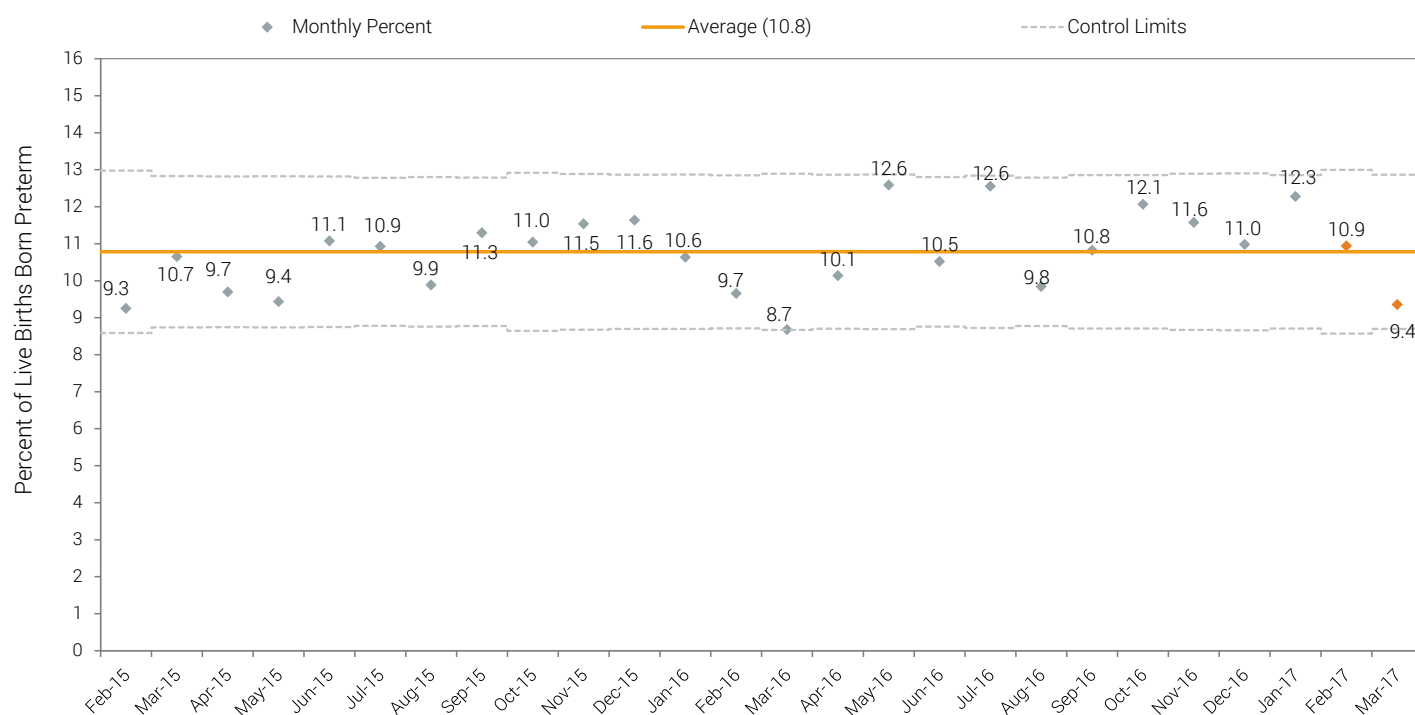
The preterm birth rate for March 2017 (9.4%) is lower than the average preterm birth rate in Hamilton County (10.8%). The very preterm birth rate for March 2017 (1.5 %) was lower than the Hamilton County average (2.1%). The <23 weeks gestation birth rate for March 2017 is 0.34%, which is slightly lower than the Hamilton County average (0.35%).

The method for determining preterm birth has been updated using a new standard. The new measure, the obstetric estimate of gestation at delivery replaces the measure based on the date of last normal menses used in previous reports. Because of the new method Healthy People 2020 goals are not able to be used due to the goals for preterm birth using the previous methods

9.3%
March 2017
Preterm Birth Rate

1.5%
March 2017
Very Preterm
Birth Rate

Figure 3. Preterm Birth Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*

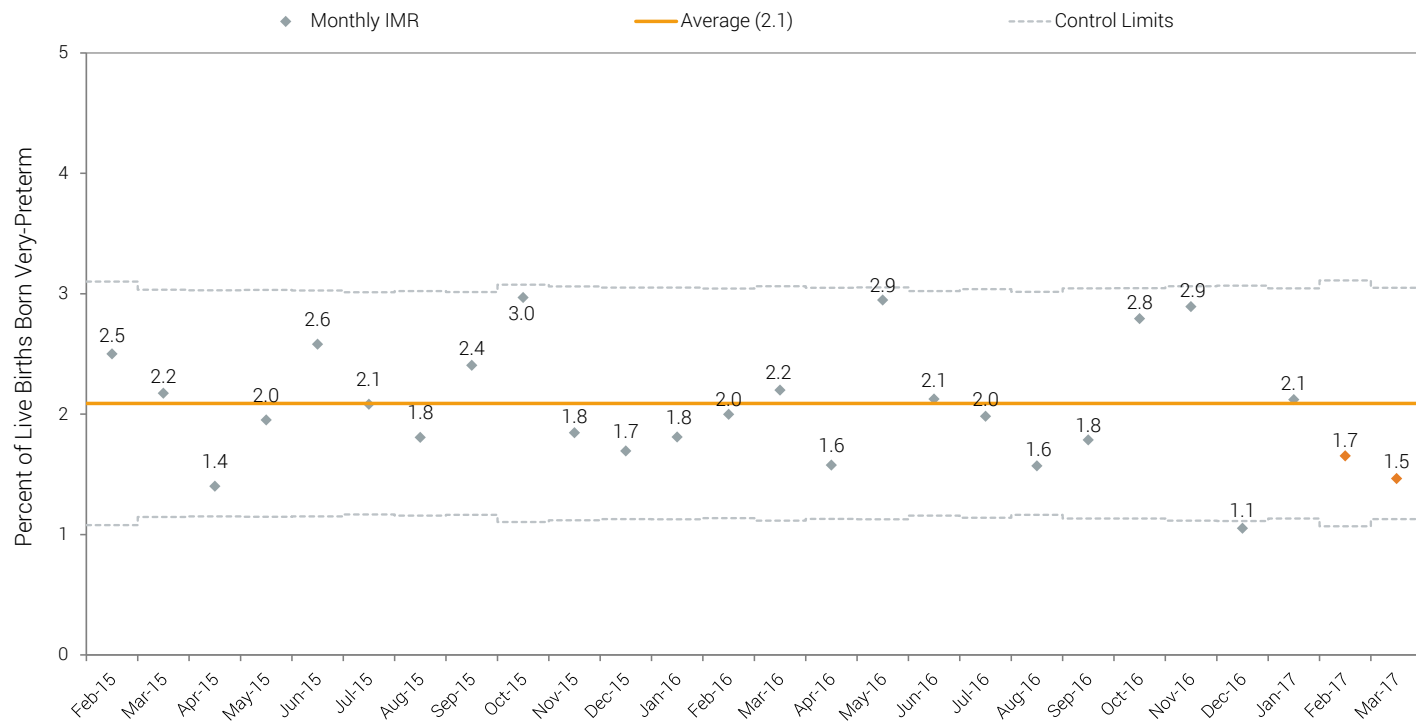


NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.

*Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.

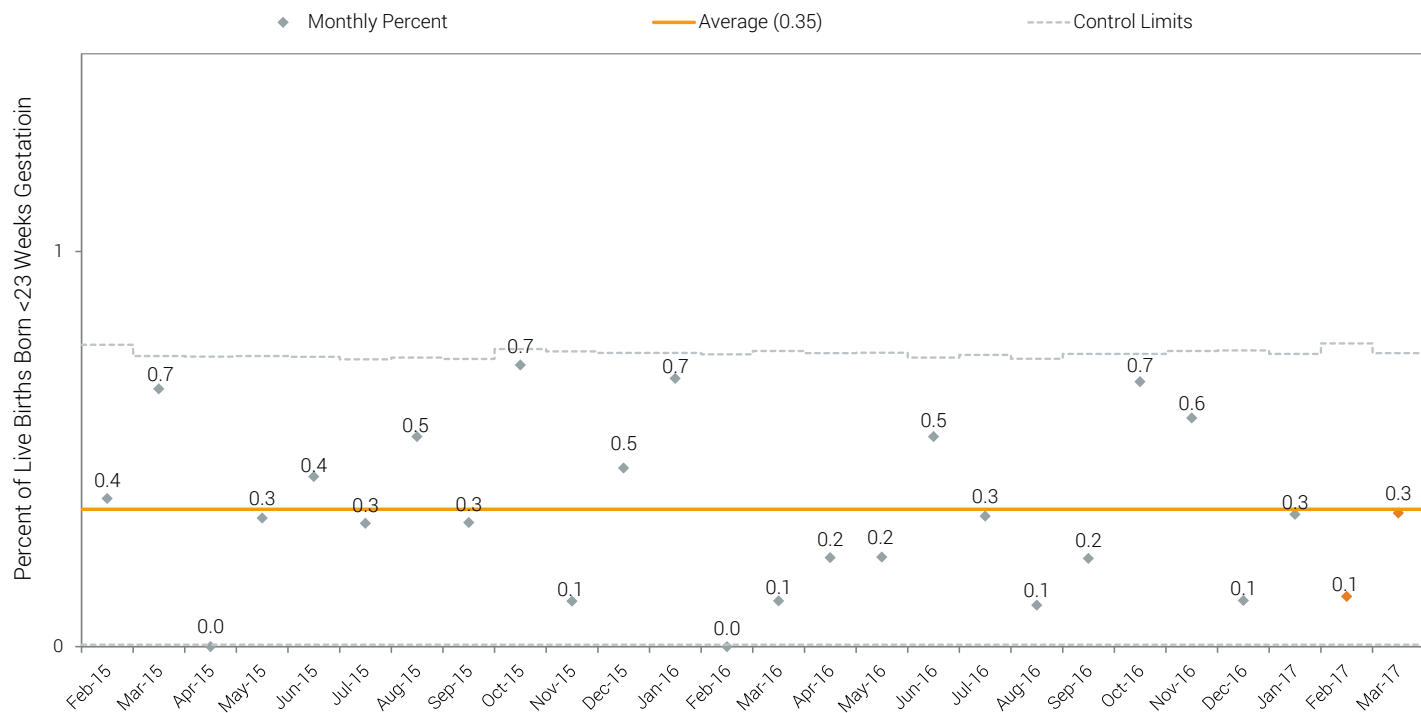
Data Source: ODH Vital Statistics

Figure 4. Very Preterm Birth Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
 *Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.
 Data Source: ODH Vital Statistics

Figure 5. <23 Weeks Gestation Birth Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
 *Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.
 Data Source: ODH Vital Statistics

SMALL FOR GESTATIONAL AGE BIRTH RATE

Small for gestational age (SGA) birth rate is the percent of births where only one baby was born whose weight at birth is at or below a set value (10th percentile) for the week of pregnancy they were born at². SGA compares the birth weight of an infant to a national distribution of live births so the weights are specific to infants of the same gestational age. The value for the 10th percentile of birth weight was adopted from the live births for 1990 in the United States³. The health of the mother and social factors prior to pregnancy can influence if a child is born small for their gestational age². SGA can have an impact on the health of the infant throughout childhood and into adulthood². Babies who are born small for their gestational age have an increased risk for infant death and illness, permanent lack in growth, reduction or impairment of cognitive function, and the development of adult chronic disease². The SGA birth rate in March 2017 is 12.3%, which is higher than the average SGA birth rate in Hamilton County (11.3%).

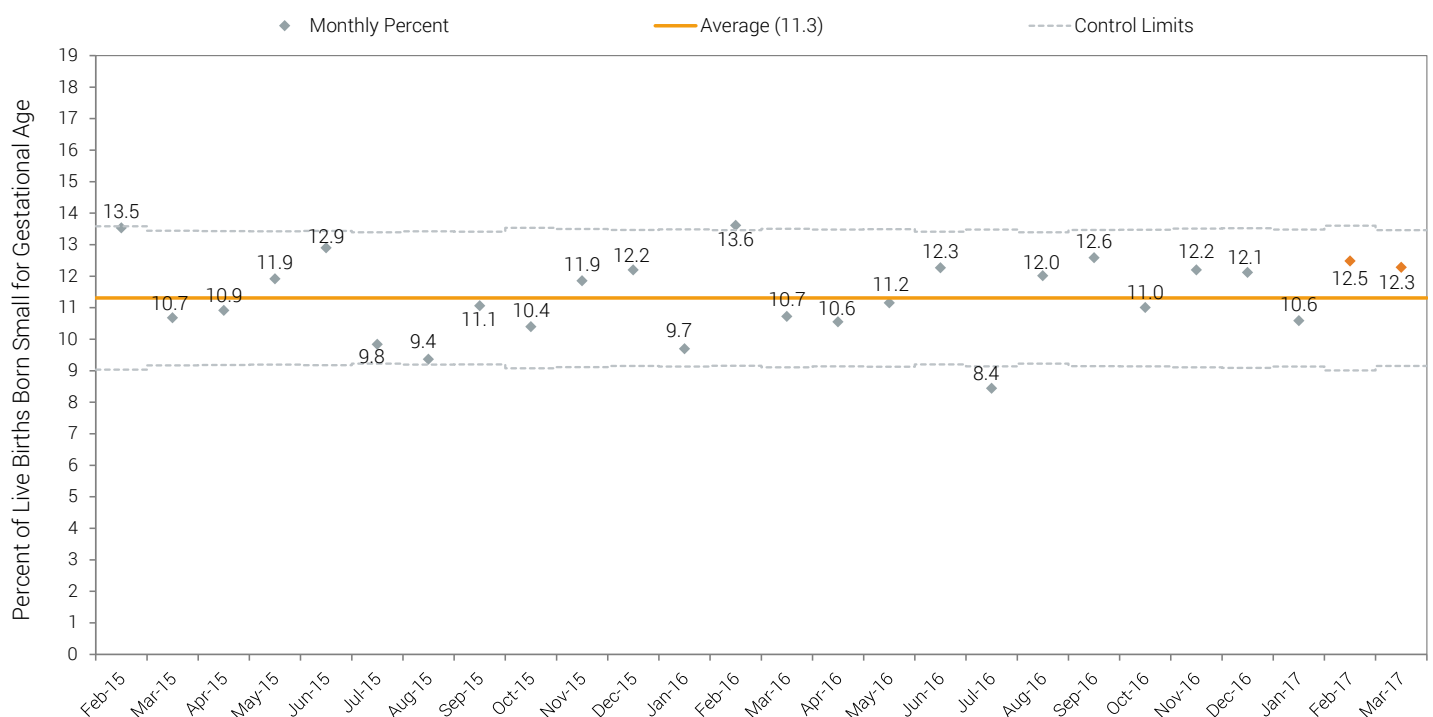
12.3%
March 2017
SGA Birth Rate

2. Association of Maternal & Child Health Programs. *Life Course Indicator: Small for Gestational Age*, 2014.

3. Oken E, Kleinman KP, Rich-Edwards J, Gillman MW. *A nearly continuous measure of birth weight for gestational age using a United States reference*. BMC Pediatric. 2003; 3:6. doi: 10.1186/1471-2431-3-6.

NOTE: SGA Percent illustrated in Figure 6 is calculated using gender-specific small for gestational age 10th percentile cut-off for more accurate measures

Figure 6. Small for Gestational Age Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
*Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.

Data Source: ODH Vital Statistics

PREGNANCY SPACING

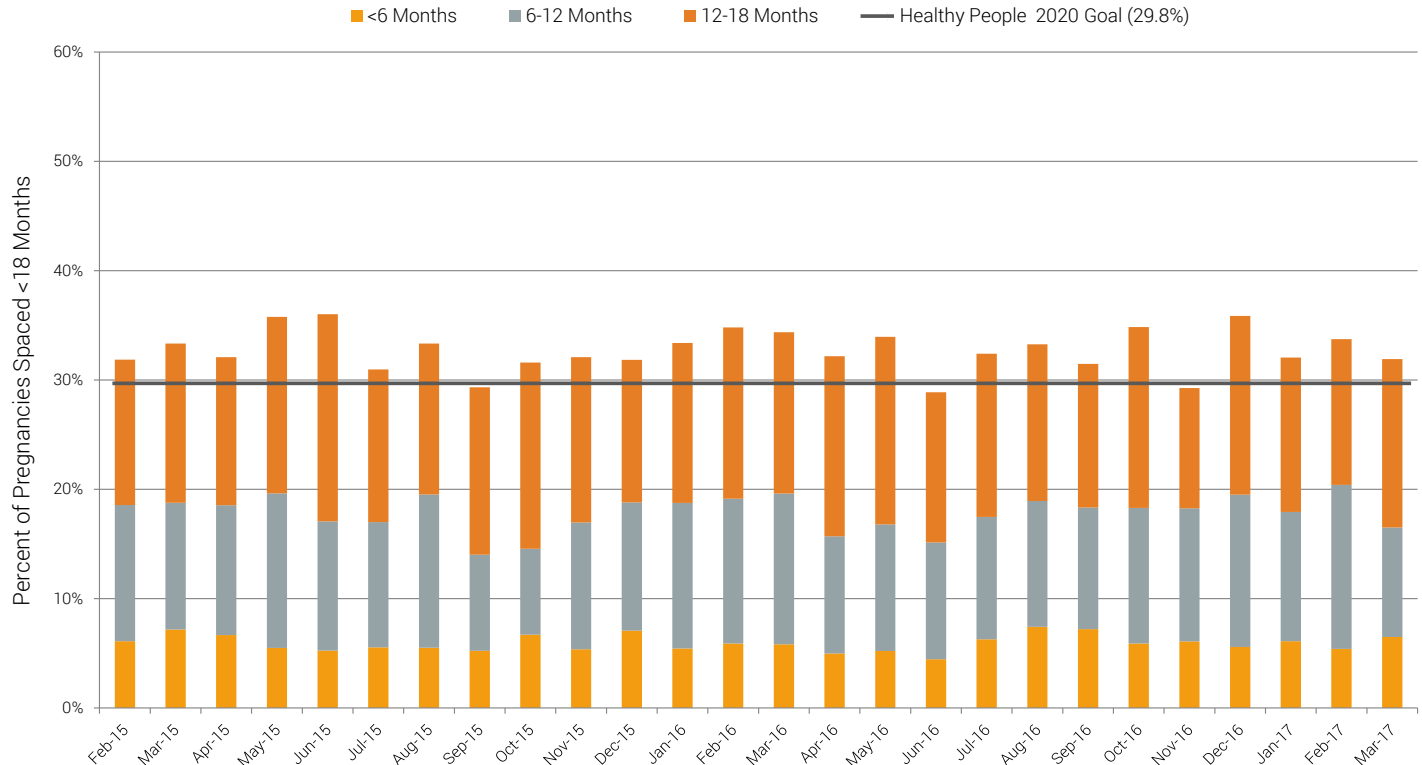
Pregnancy spacing is the number of months between the live birth of a previous child and the conception of the next pregnancy. It has been shown that short spacing between pregnancies, less than 18 months from the previous live birth to conception of the next pregnancy, can lead to harmful outcomes for both mothers and newborns. Mothers with short pregnancy spacing have an increased risk for developing pre-eclampsia (a condition that can cause blood pressure to rise and put mothers at risk for health issues including death), while the infant is more likely to be born prematurely. Pregnancies spaced between 18 and 59 months are considered optimal pregnancy spacing, as recommended by the World Health Organization⁴. Optimal spacing can lead to better outcomes for both the mother and the infant. However, for women of older ages, short pregnancy spacing may be part of the intended family building; in these cases women should talk with their doctor to weigh the health benefits of longer spacing between pregnancies and the health risks of short spacing between pregnancies.

The percentage of pregnancies in Hamilton County that were spaced less than 18 months for March 2017 is 31.9%; this percent is higher than the Healthy People 2020 goal of 29.8% of all pregnancies spaced less than 18 months. Of the pregnancies between February 2015 and March 2017, 45.4% of pregnancies were spaced between 12 and 18 months.

By educating mothers about the importance of properly spacing pregnancies, the risk for poor health complications for both mother and infant could be reduced.

4. World Health Organization. *Report of a WHO Technical Consultation on Birth Spacing*, 2006

Figure 7. Percent of Pregnancies Spaced <18 Months, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017.

*Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.

† Infant deaths to mothers with a previous live birth

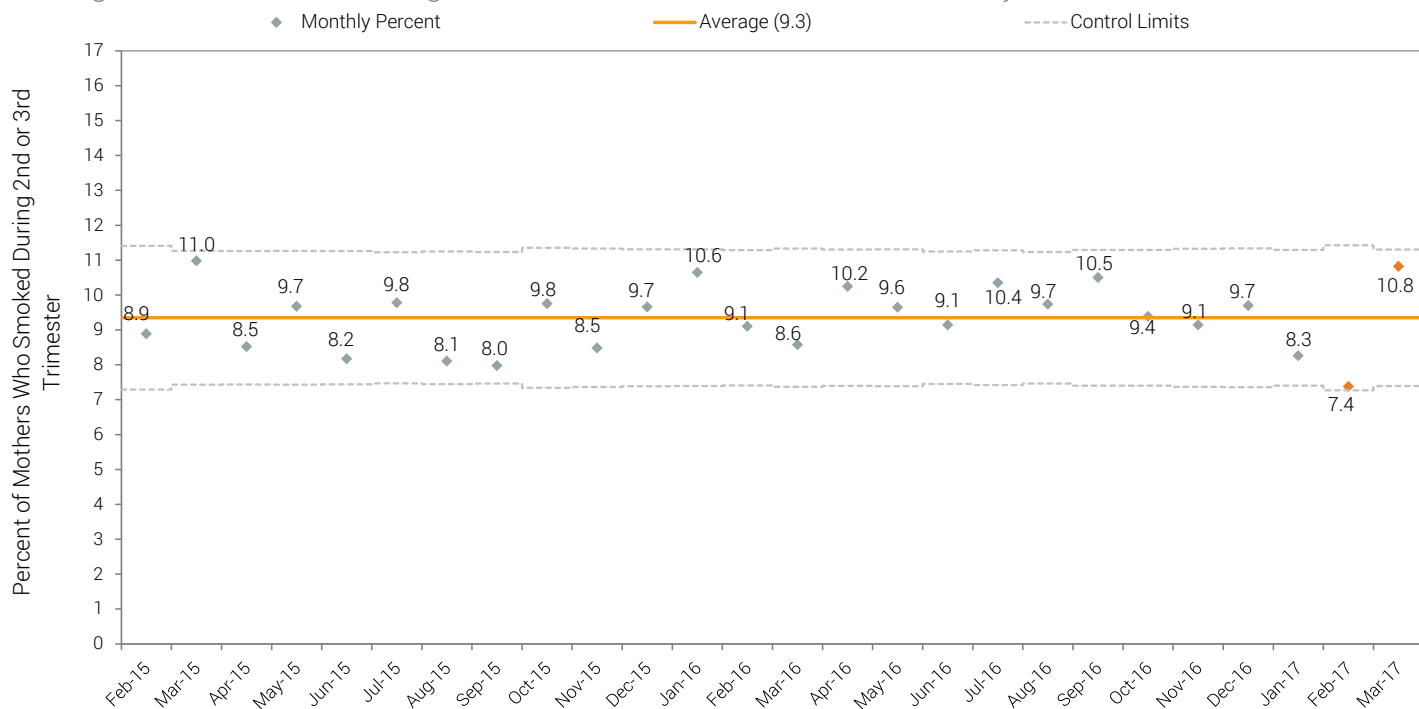
‡ Percentage of short spaced pregnancies does not include first time mothers or pregnancies where information pertaining to previous live birth was missing/unknown

Data Source: ODH Vital Statistics

MATERNAL SMOKING RATE

Smoking, tobacco use, and other forms of substance use and abuse during pregnancy can be extremely harmful to a developing baby. Women who smoked during pregnancy in Hamilton County were 44% more likely to experience an infant death. The percentage of births in Hamilton County where the mother smoked in the 2nd or 3rd trimester (the last 6 months of pregnancy) for March 2017 was 10.8% (Figure 8). This was higher than the average number of births to women who reported smoking in the 2nd or 3rd trimester for Hamilton County (9.3%)

Figure 8. Maternal Smoking Rate Surveillance Chart, Hamilton County, Feb 2015 - March 2017*



NOTE: The mean is calculated using two years of data from Feb 2015 - Jan 2017. Orange points are more likely to change in future reports.
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 Data Source: ODH Vital Statistics



SLEEP-RELATED DEATHS

A sleep-related death is the death of an infant due to unsafe sleeping environments. A safe sleeping environment is one in which the infant is sleeping alone, on their back, and in a crib. Unsafe sleeping environments can consist of co-sleeping (a parent, adult or older child sharing a bed with an infant), an infant sleeping on a couch, an infant sleeping in a crib filled with blankets or pillows, or an infant being put to sleep on his/her stomach. There has been 3 sleep-related deaths in Hamilton County in 2017 so far. However, as further iterations of the report are published, the number of sleep-related deaths may change as records become finalized and complete.

Sleep-Related Deaths in Hamilton County, 2017 Year-to-Date



ALWAYS FOLLOW THE ABC'S OF SAFE SLEEP, EVEN DURING NAP TIME.



Alone **B**ack **C**rib

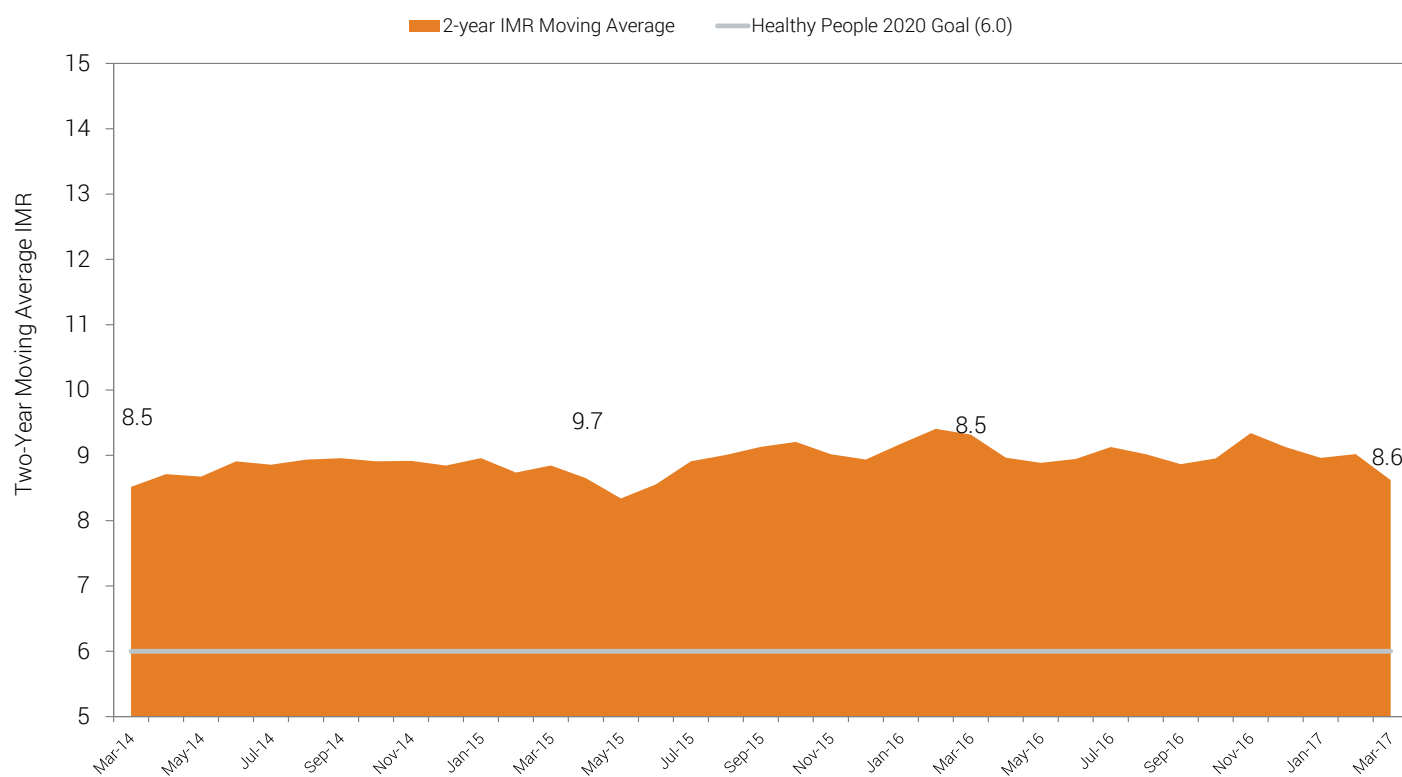
Baby sleeps safest alone, on their back, in a crib.



TWO-YEAR MOVING AVERAGE

Reviewing monthly rates is one approach used to determine whether there has been a change over time in infant deaths. However, monthly rates have a tendency to fluctuate and may hide emerging trends. An alternative measure is the un-weighted, monthly moving average, which can provide a more stable picture of evolving patterns. In Figure 10, the infant mortality rate for each month is the 24-month average of months immediately prior to and including the current month. The two-year moving average has slightly decreased from March 2014 (8.5) to March 2017 (8.6) as shown in Figure 10. Please note that the two-year moving average is subject to change based on new data, which may ultimately affect current trends. Multiple approaches are required to measure the impact of efforts to reduce infant mortality.

Figure 10. Two-Year Moving Average Infant Mortality Rate by Month, Hamilton County, Mar 2014 - Mar 2017*



NOTE: The infant mortality rate for each month is the average of the 24 months immediately prior to and including the last month.

*Data for 2017 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.

Data Source: ODH Vital Statistics



CRADLE CINCINNATI'S CORNER

Every baby needs their family to thrive. Research suggests that increased father involvement during pregnancy significantly improves infant health. Last year, Cradle Cincinnati launched Real Men Onboard, a free 12-week course in Walnut Hills that aligns fathers with resources to effectively assist moms and babies before, during and after pregnancy. Real Men Onboard includes nearly a dozen partners who connect with dads. For example, A Sound Mind Counseling talks with men about how to healthily cope with the very real stresses of fatherhood. Shining a light on common mental health challenges helps free up dads to be their best selves for their kids.



Our next class starts in September. Hamilton County men with children under the age of 3 and soon-to-be dads are eligible to participate. For more information or to sign up, visit realmenonboard.org.

For more information, check us out on-line at www.cradlecincinnati.org, and follow us on social media:

@cradlecincy



OEI CORNER

EVERY BABY MATTERS

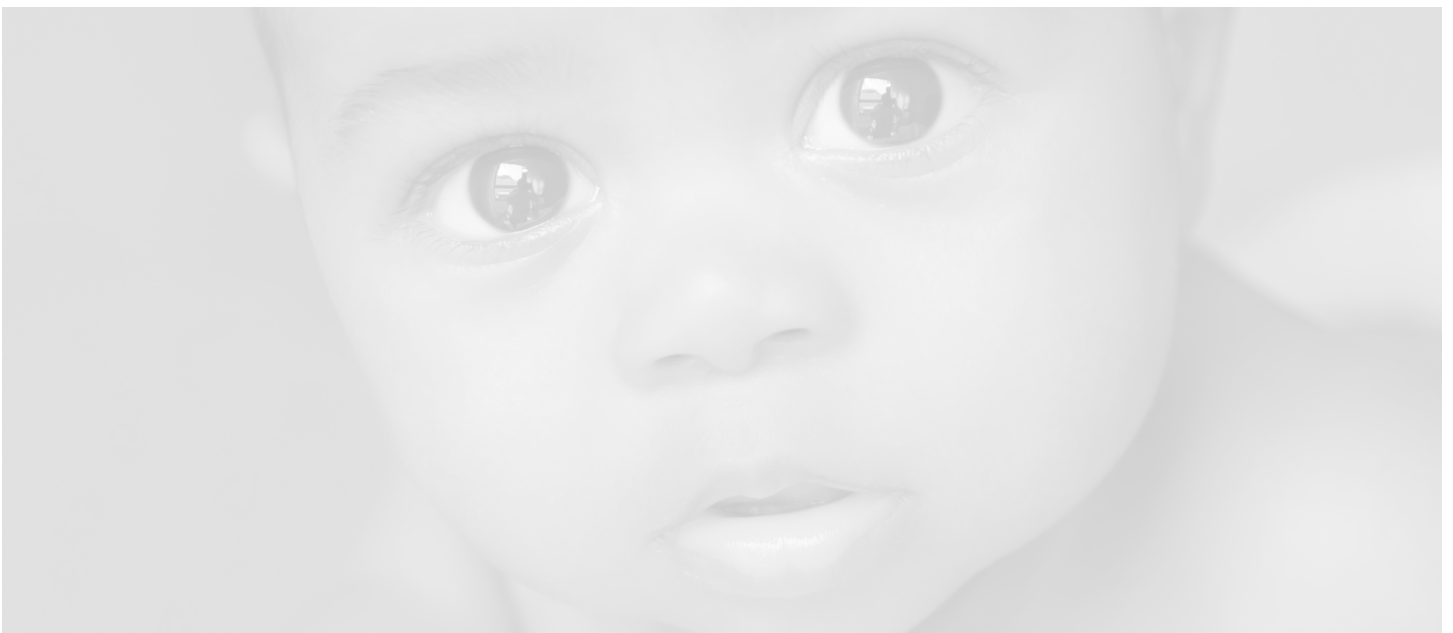


OHIO INSTITUTE FOR EQUITY IN BIRTH OUTCOMES

The Cincinnati/Hamilton County Ohio Equity Institute (OEI) team is moving forward with a variety of activities to improve infant mortality rates in Cincinnati/Hamilton County. OEI focuses their upstream and downstream initiatives in two zip codes, 45225 and 45240.

The upstream project focuses on incorporating a health education intervention into the Cincinnati Public and Winton Woods School district. This material includes prevention of unintended pregnancy, sexually transmitted infection prevention, healthy relationships, and financial goal setting. This intervention, Know Your Choices, will present vital information to students while also meeting Ohio legislated requirements for health education standards. We are awaiting approval from both districts to implement pilot projects in 10 CPS schools and with Winton Woods Middle and High School.

The downstream project includes recruitment of Peer Advocates who live in each target zip code. These Peer Advocates are trained on safe sleep education, including prevention of SIDS, demonstration of setting up and taking down a Pack'n'Play, how babies should be dressed during sleep, and how to provide resources to families in their neighborhoods. They are paid for their efforts in the community and implementation began in July of this year. Partnership with Cradle Cincinnati and Cradle Connections has created more opportunities for OEI including an award from the Baby 1st Network Mini Grant. This grant has supported the Peer Advocates conducting safe sleep education at places like Babies "R" Us, a community baby shower in Millvale, and Agape Children's Center. Upcoming events for OEI include a community baby shower in Forest Park during SIDS Awareness Month and a training of Know Your Choices with CPS health teachers in September.



APPENDIX A

DATA LIMITATIONS

There are multiple datasets that can be used to support surveillance activities associated with infant mortality. Two primary data sources are used to supply the data for the monthly Maternal and Infant Health Surveillance Reports (http://www.hamiltoncountyhealth.org/en/resource_library/reports.html). Both of these data sources are considered provisional until ODH completes data reconciliation processes each year. Provisional Data Source A (PDS-A) contains records that correspond to filed certificates and are linkable (i.e., birth to death records), whereas Provisional Data Source B (PDS-B) contains records that correspond to both filed and unfiled/pending certificates and are not linkable. PDS-A is used for more in-depth analysis of risk factors, but suffers from incompleteness due to missing unfiled/pending certificates. PDS-B is used to collect death data more expeditiously, but provides only count data, precluding more in-depth analysis of prenatal and perinatal risk factors. Data from both PDS-A and PDS-B become more accurate as the length of time increases from event to report. Annually, ODH releases a reconciled dataset that contains final cause of death information and geographic information.

PDS-B is used in this report to provide the count statistics in each section except preterm births (Figure 3-5), small for gestational age (Figure 6), pregnancy spacing (Figure 7), maternal smoking (Figure 8), and sleep-related deaths. Table 2 displays the discrepancy between the two infant mortality data sources from ODH. Please note that delayed certificates impact data quality, and therefore the integrity of findings shared in this report.

Table 2. Infant Mortality Data Source Assessment, Hamilton County, 2016-2017

Data Source	2016	2017
	Number of Infant Deaths	Number of Infant Deaths
PDS-A	98	18
PDS-B	98	18
Discrepancy	0	0



APPENDIX B

GENERAL GUIDELINES FOR USING SURVEILLANCE CHARTS

The Hamilton County Infant Mortality Surveillance System (HCIMSS) uses surveillance charts to monitor infant mortality rates, preterm birth rates, and other birth outcomes. These charts provide a method for monitoring the status of infant health over time and provide timely feedback on the effectiveness of local efforts to reduce infant deaths.

Several tools are included in the surveillance charts that help facilitate interpretation:

1. A baseline - the center line which is the average number of deaths per month over the preceding two years,
2. A goal line which shows the goal that has been established by the community,
3. Upper and lower control limits (dashed) that allow user to detect unusual events.

Annotations indicate when certain interventions began or special changes occurred.

Here are some types of unexpected events that could be detected within surveillance charts:

- A single point outside of the control limit
- A run of eight or more consecutive points below or above the center line
- Six consecutive decreasing or increasing points
- Two out of three consecutive points near a control limit.

This report was prepared by Hamilton County Public Health, Department of Community Health Services, Division of Epidemiology and Assessment in collaboration with Cradle Cincinnati.



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