HAMILTON COUNTY

Maternal and Infant Health Monthly Surveillance Report

August 2022

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HAMILTON COUNTY PUBLIC HEALTH

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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 provided by the Ohio Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations or conclusions. Death and birth data in this report were collected from Ohio Public Health Information Warehouse on September 22, 2022.

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
- Number of sleep-related deaths
- Current two-year infant mortality rate moving average
- 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

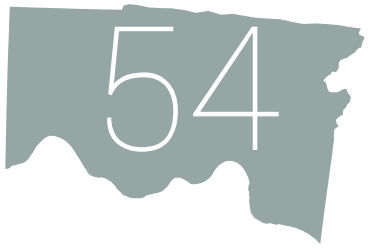
INFANT MORTALITY SURVEILLANCE

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 health[1]. 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 2030 Goals are made when possible. Healthy People 2030 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 A.

1. Centers for Disease Control and Prevention. *Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group*, MMWR, September 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 August 2022, there were 9 infant deaths in Hamilton County. Table 1 displays the provisional number of infant deaths and births for each month in 2021 and 2022.



Infant Deaths, Hamilton County 2022 Year-to-date

Table 1. Number of Infant Deaths and Births, Hamilton County, 2021-2022

	2021		2022	
	Infant Deaths	Live Births	Infant Deaths	Live Births
January	7	761	7	811
February	6	769	6	720
March	9	854	8	902
April	5	788	6	838
May	2	897	5	842
June	6	904	9	842
July	8	889	4	874
August	5	910	9	904
September	3	875		
October	5	853		
November	4	839		
December	6	926		
Total	66	10,265	54	6,733

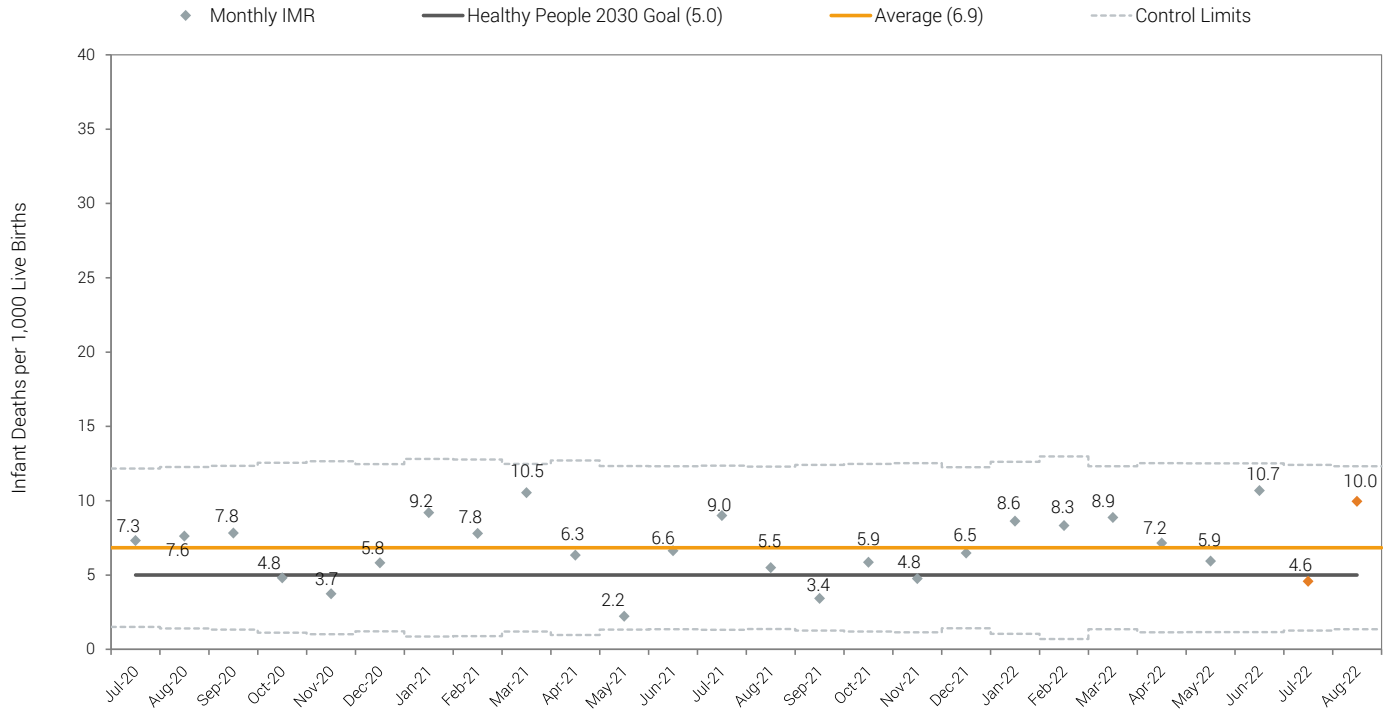
INFANT MORTALITY RATES

10.0 per 1,000
August 2022 IMR
This provisional rate was higher than the Healthy People 2030 goal (5.0)

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 of overall babies being born.

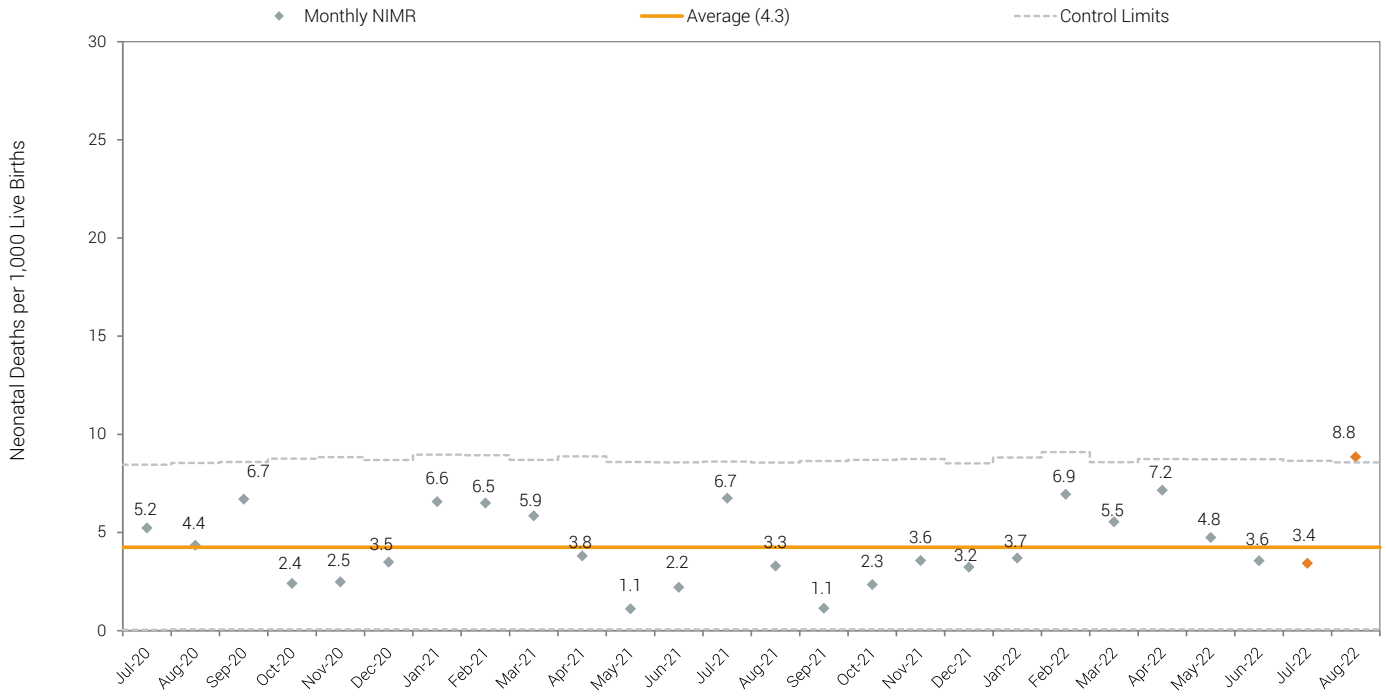
The IMR for August 2022 was 10.0 infant deaths per 1,000 live births (Figure 1). The August IMR is higher than the Healthy People 2030 goal of 5.0 infant deaths per 1,000 live births as shown in Figure 1. The August 2022 NIMR was 8.8 neonatal deaths per 1,000 live births (Figure 2). Neonatal deaths make up 63% of infant deaths in Hamilton County from January 2021 - August 2022.

Figure 1. Infant Mortality Rate Surveillance Chart, Hamilton County, July 2020 - August 2022*



NOTE: The mean is calculated using two years of data from July 2020 - June 2022. Orange points are more likely to change in future reports.
*Data for 2021 & 2022 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.

Figure 2. Neonatal Mortality Rate Surveillance Chart, Hamilton County, July 2020 - August 2022*



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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.

11.6%
August 2022 Preterm Birth Rate

2.3%
August 2022 Very Preterm Birth Rate

The preterm birth rate for August 2022 (11.6%) is higher than the average preterm birth rate in Hamilton County (11.1%). The very preterm birth rate for August 2022 (2.3%) was higher than the Hamilton County average (1.9%).
The <23 weeks gestation birth rate for August 2022 is 0.55% which is higher than the Hamilton County average (0.13%).

Figure 3. Preterm Birth Rate Surveillance Chart, Hamilton County, July 2020 - August 2022*

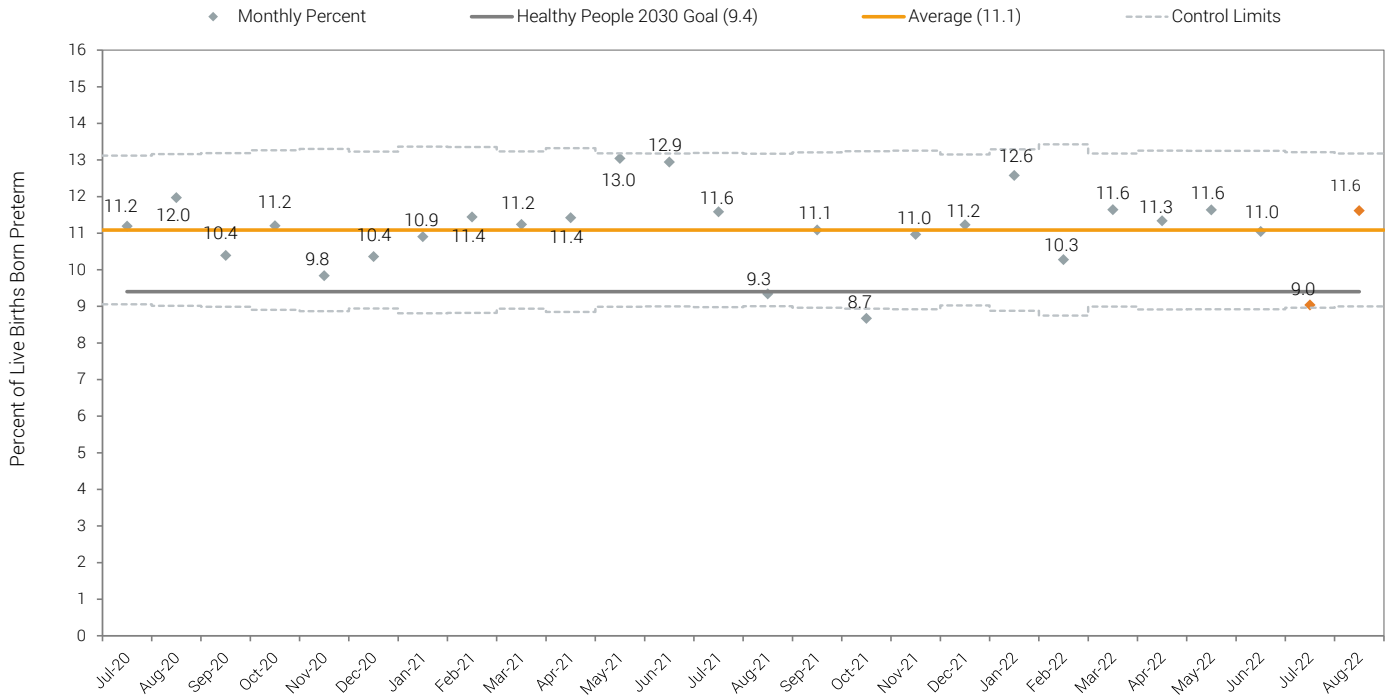

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Figure 4. Very Preterm Birth Rate Surveillance Chart, Hamilton County, July 2020 - August 2022*

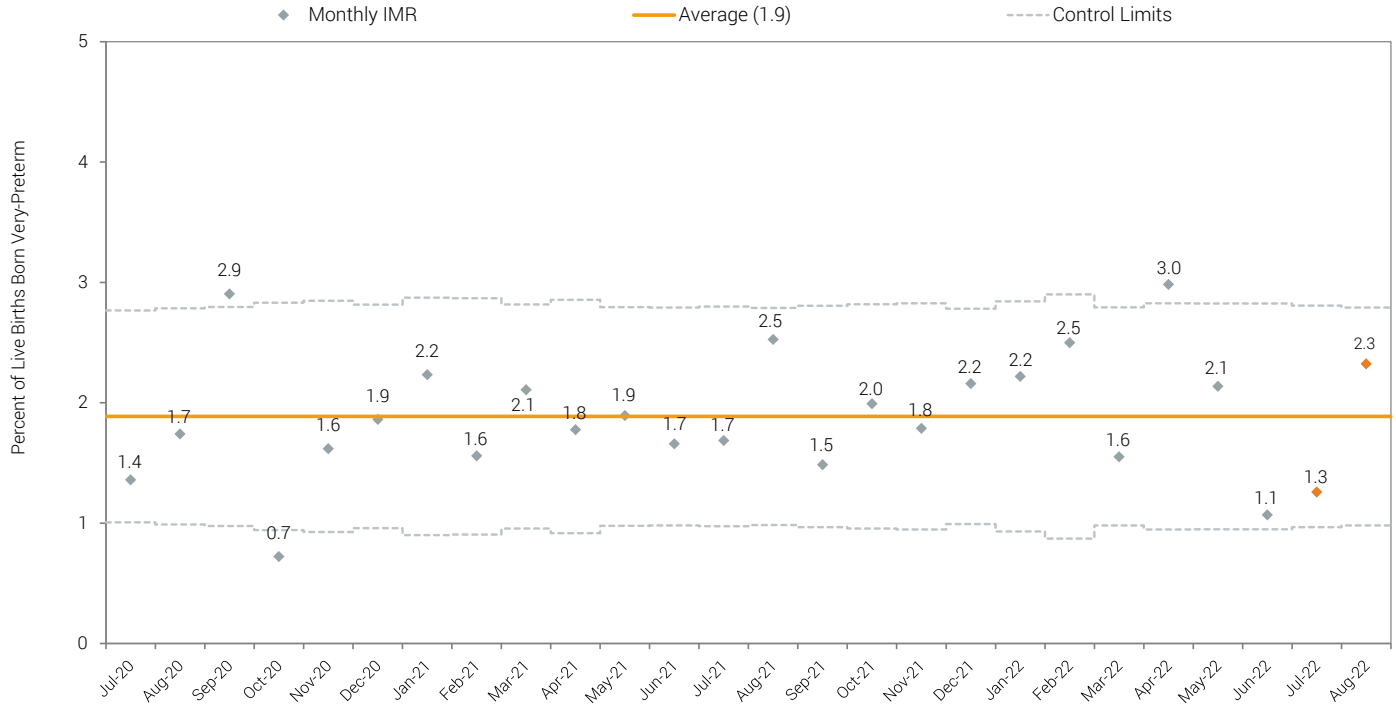

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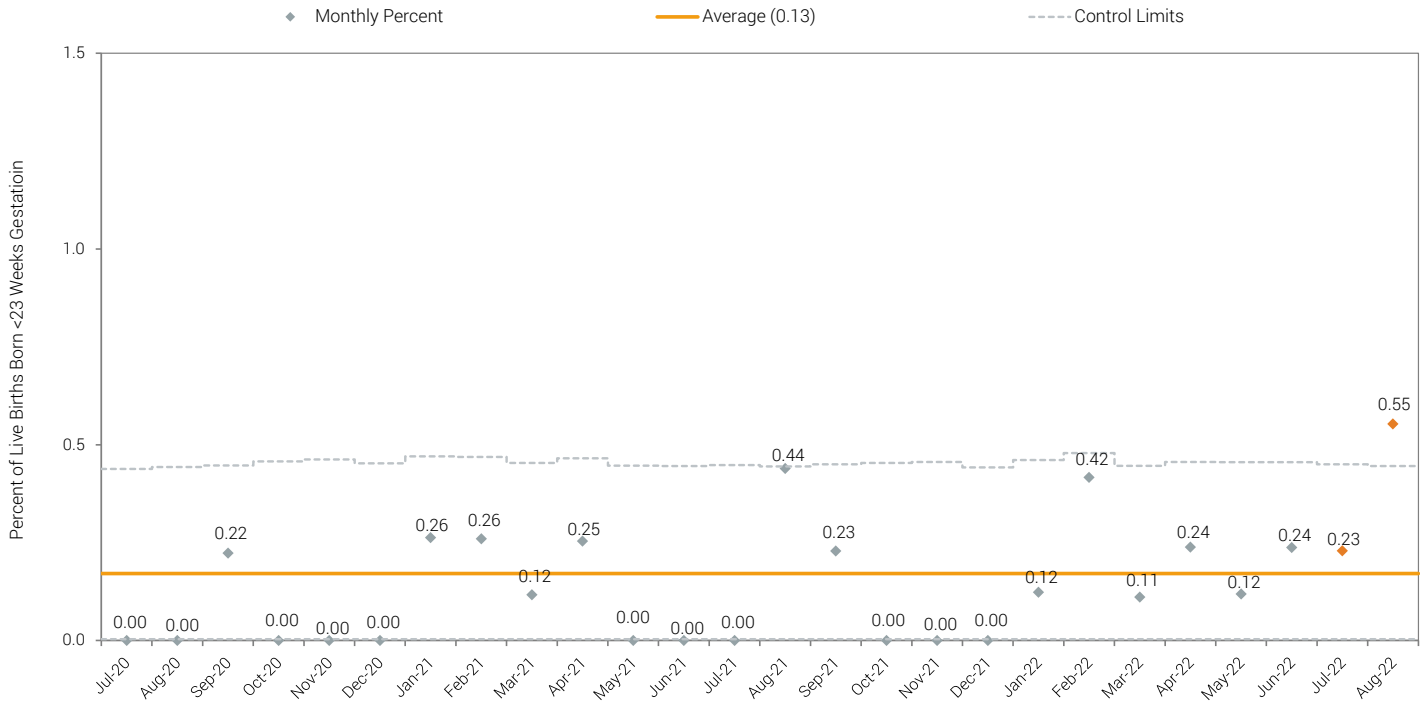
Figure 5. <23 Weeks Gestation Birth Rate Surveillance Chart, Hamilton County, July 2020 - August 2022*



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SMALL FOR GESTATIONAL AGE BIRTH RATE

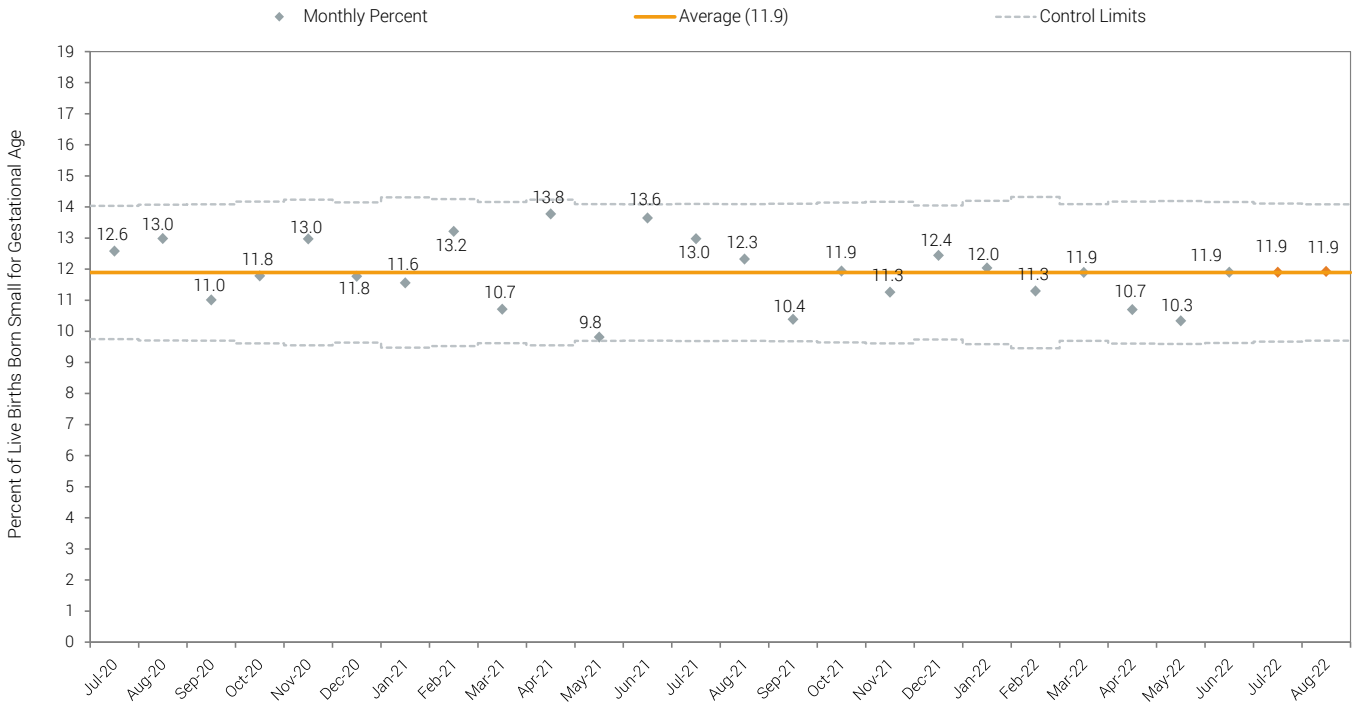
11.9%
August 2022
SGA Birth Rate

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 at[2]. 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 States[3]. The health of the mother and social factors prior to pregnancy can influence if a child is born small for their gestational age[2]. SGA can have an impact on the health of the infant throughout childhood and into adulthood[2]. 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 disease[2]. The SGA birth rate in August 2022 is 11.9%, equal to the average SGA birth rate in Hamilton County (11.9%).

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, July 2020 - August 2022*



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PREGNANCY SPACING

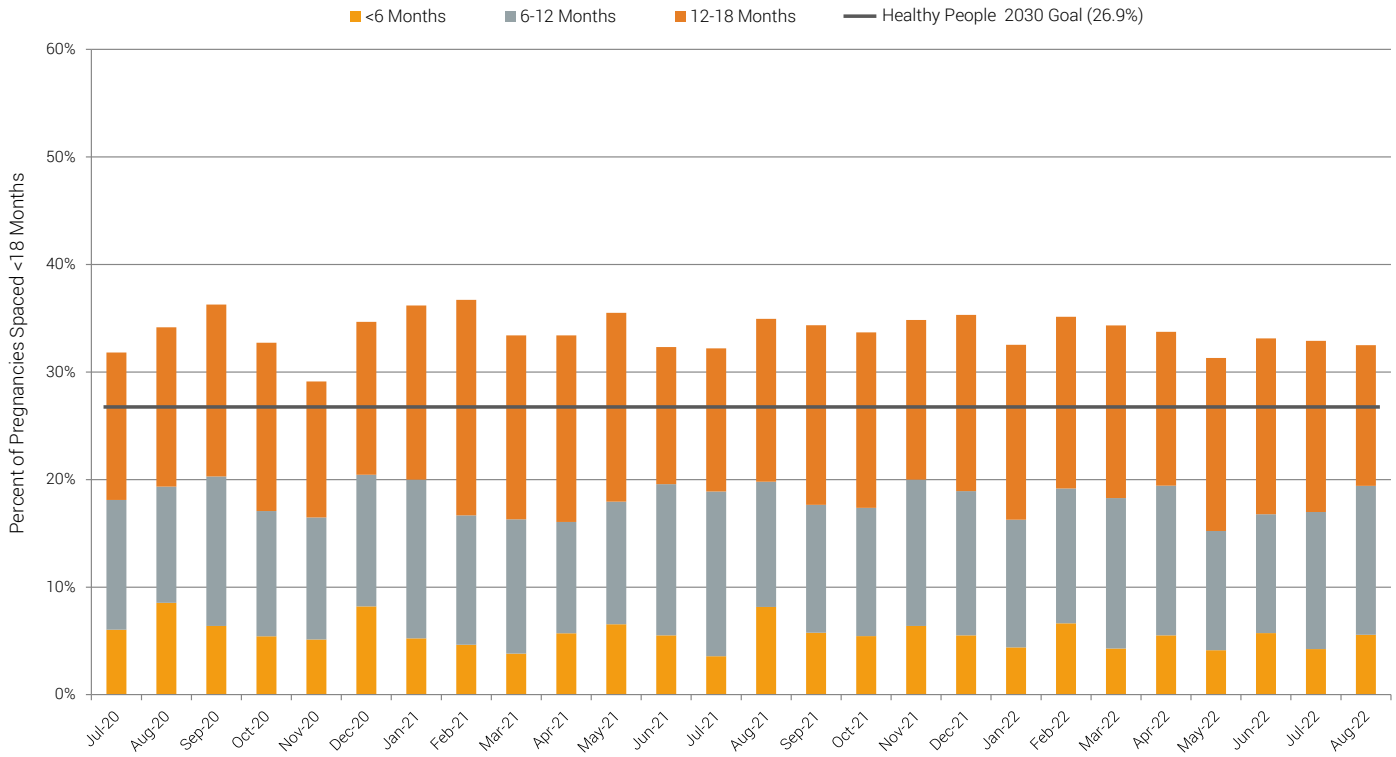
Pregnancy spacing is the number of months between the live birth of a previous child and the conception of the next pregnancy. It has been shown that short spacing between pregnancies, less than 18 months from the previous live birth to conception of the next pregnancy, can lead to harmful outcomes for 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 Organization[4]. 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 August 2022 is 32.5%; this percent is higher than the Healthy People 2030 goal of 26.9% of all pregnancies spaced less than 18 months. Of the pregnancies spaced less than 18 months between January 2020 and August 2022, 46.1% 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, July 2020 - August 2022*

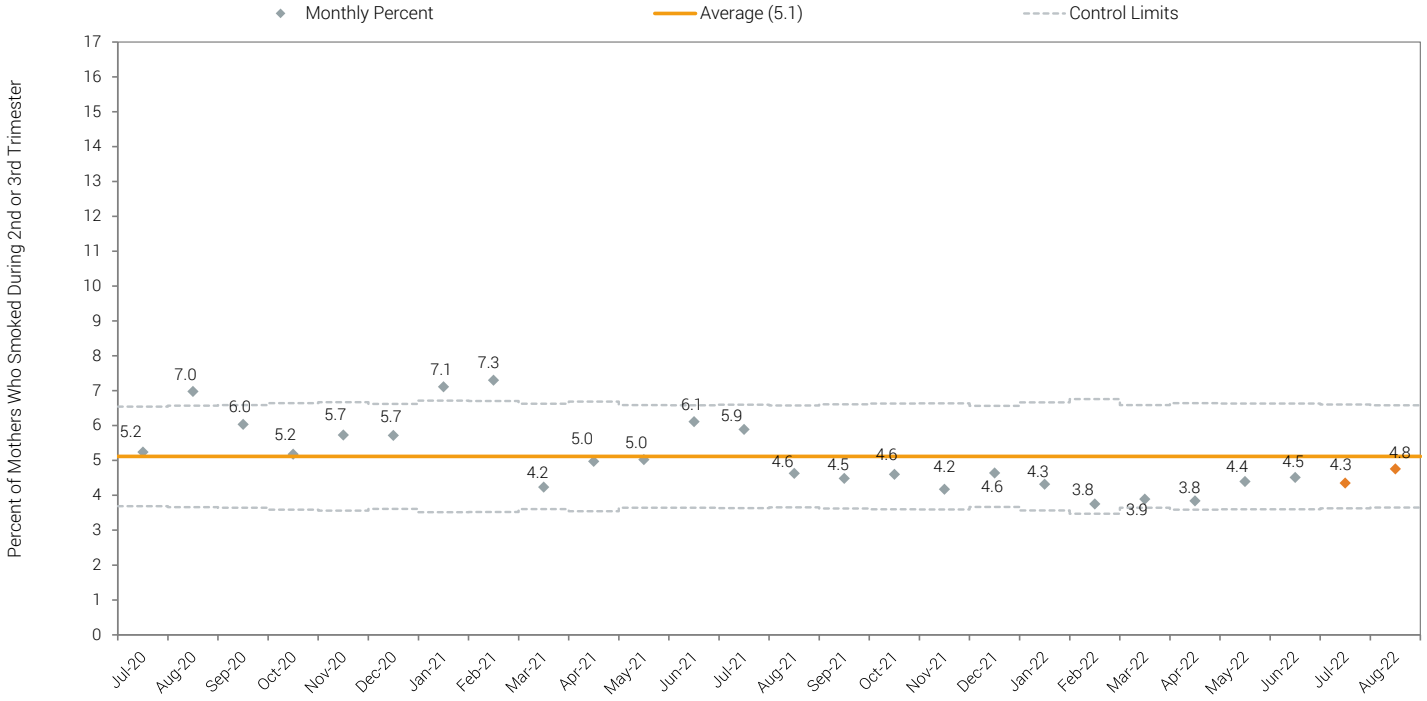


NOTE: *Data for 2021 & 2022 are provisional; ODH reconciles (i.e. finalizes) data by fall of the subsequent year.
‡ Percentage of short spaced pregnancies does not include first time mothers or pregnancies where information pertaining to previous live birth was missing/unknown
Data Source: ODH Vital 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. The percentage of births in Hamilton County where the mother smoked in the 2nd or 3rd trimester (the last 6 months of pregnancy) for August 2022 was 4.8% (Figure 8). This is lower than the average number of births to women who reported smoking in the 2nd or 3rd trimester for Hamilton County (5.1%)

Figure 8. Maternal Smoking Rate Surveillance Chart, Hamilton County, June 2020- July 2022*



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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 are 4 sleep-related deaths in Hamilton County in 2022 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, 2022

= 1 sleep-related death

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

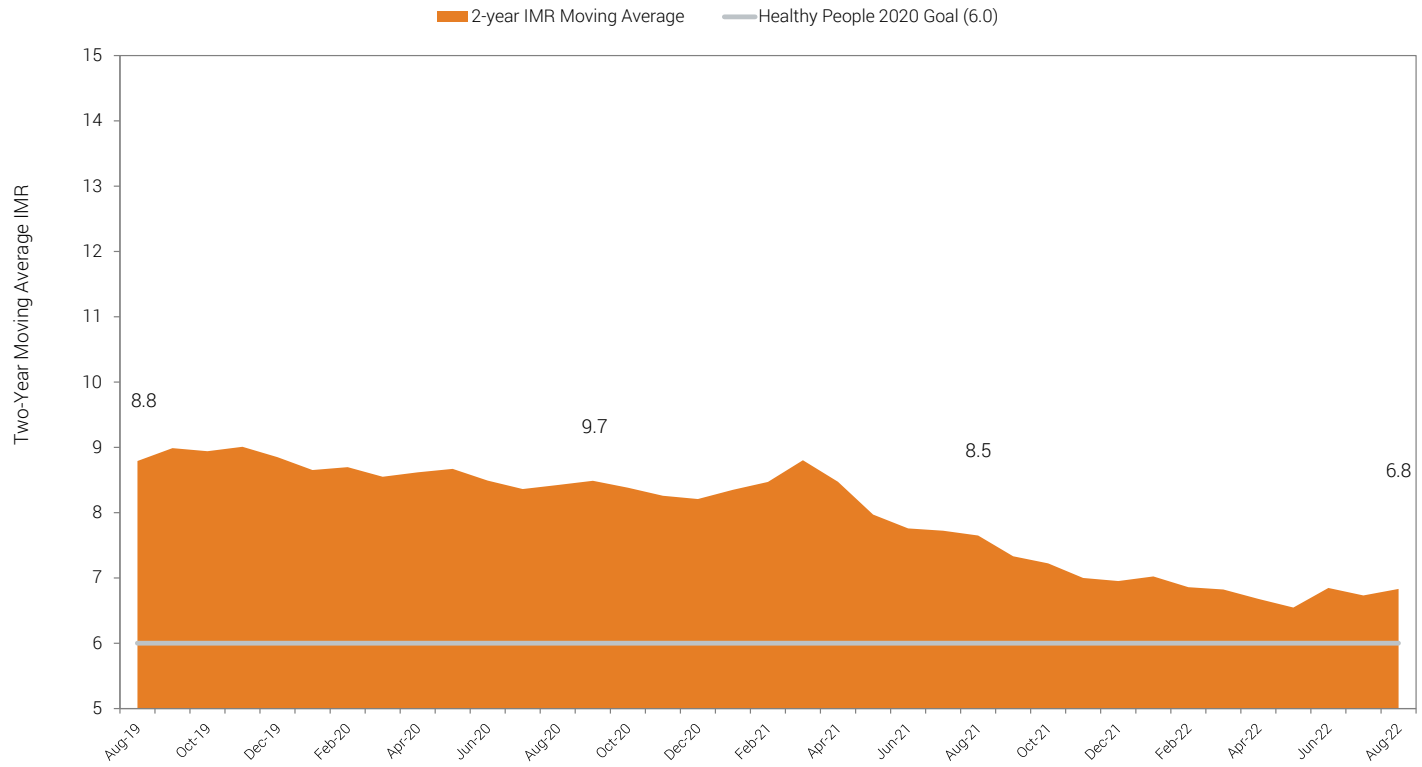
Alone Back Crib

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 decreased from August 2019 (8.8) to August 2022 (6.8) 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, August 2019 - August 2022*



NOTE: The infant mortality rate for each month in the average of the 24 months immediately prior to and including the last month.
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Data Source: ODH Vital Statistics

APPENDIX A
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:

A baseline - the center line which is the average number of deaths per month over the preceding two years,

A goal line which shows the goal that has been established by the community,

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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Thank you to the Ohio Department of Health, Center for Public Health Statistics and Information for providing data for this report.

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