



CITY OF CINCINNATI INFANT MORTALITY 5-YEAR ANALYSIS

April 26, 2022

City of Cincinnati Infant Mortality Report

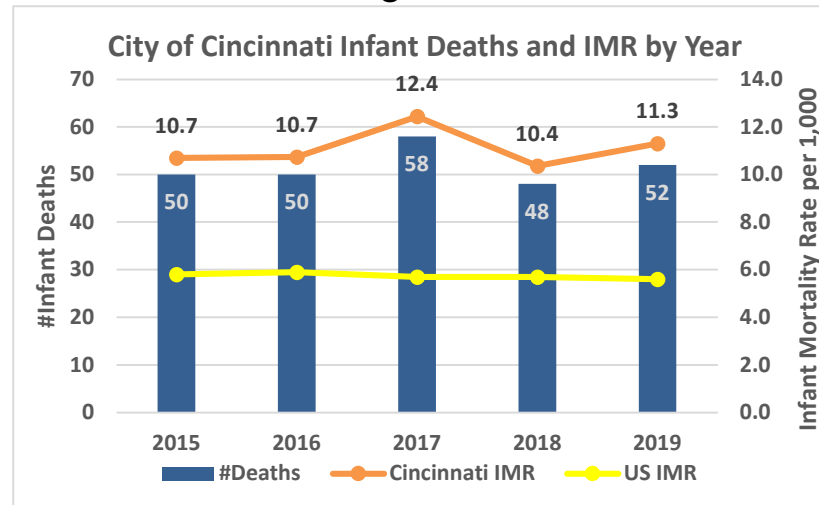
5yr Analysis (2015 – 2019)

Infant mortality – or the death of a baby before his/her first birthday - is a critical indicator of community health. Every year in Hamilton County, approximately **100 babies** die before their first birthday with the City of Cincinnati accounting for about **half** of infant deaths. While national infant mortality rates are decreasing, Ohio ranked **7th worst** in the nation for overall infant mortality between 2015 - 2019. Additionally, black babies in Ohio are dying at over **twice the rate** of white babies. In the City of Cincinnati and Hamilton County, much of this disparity is driven by babies being born too soon and too small, as well as babies being placed to sleep on an unsafe sleep surface. This annual report provides a snapshot of the most up-to-date data on infant death and selected birth indicators over the last 5 years.

Between 2015-2019,
258 babies died out of
23,234 live births

Infant Mortality Rate

The infant mortality rate from 2015 – 2019 is **11.1 infant deaths per 1,000** live births, which is above the HP¹ 2030 goal of ≤ 5.0



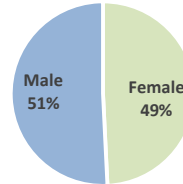
*All current and historical figures are preliminary and subject to change as new/updated information is received.

*Current and preliminary death data is provided by the Cincinnati Health Department Office of Vital Records.

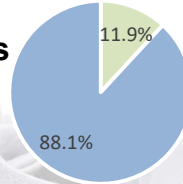
*Analysis is completed by the Office of Epidemiology at the Cincinnati Health Department

23,234 babies were born, of which...

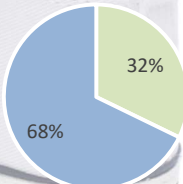
11,438 were female and
11,796 were male



11.9% were preterm births
*HP¹ 2030 goal: $\leq 9.4\%$



68% were breast fed at
the time of discharge



Notations:

¹Based on the Healthy People (HP) 2030 goals. Healthy People provides science-based, 10-year national objectives for improving the health of all Americans. More information on HP and HP 2030 measures can be found at <https://health.gov/healthypeople/objectives-and-data/browse-objectives/infants>

Definitions:

Low Birth Weight Birth- A baby weighing less than 2,500 grams at the time of birth.

Preterm Birth- A baby born less than 37 completed weeks of gestation.

Questions and Comments:

Please forward questions and comments to Andrew Lovell, MHI, Epidemiologist, Cincinnati Health Department via phone: 513-357-7349 or by email: Andrew.Lovell@cincinnati-oh.gov

Infant Mortality Rates by Race and Neighborhood

Black to White Racial Disparity in Infant Mortality:

Black babies die at 2-3 times the rate compared to white babies as shown in figure 2. The Healthy People 2020 goal (Reduce the rate of all infant deaths) was 6.0. White babies reached this goal in Cincinnati 3 out of the last 5 years while black babies never reached the HP 2020 goal.

Contributing Factors for Racial Disparities in Infant Mortality:

What contributes to the difference in racial infant mortality rates?

Racial differences can be attributed to the racial/ethnic disparities associated with various social and economic factors. Creating an equitable population will lead to better health outcomes for the community, especially mothers and infants.

Difference in Infant Mortality Rates by Neighborhood:

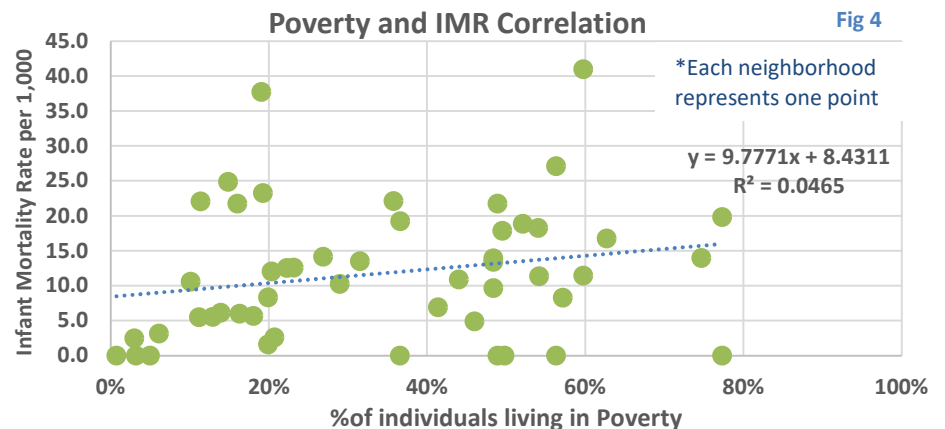
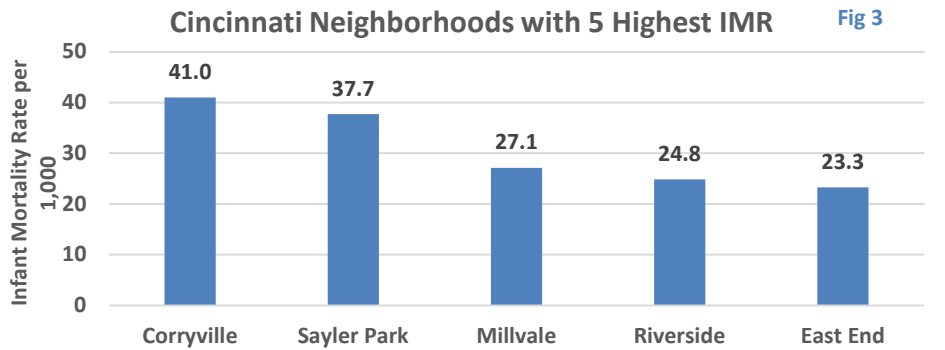
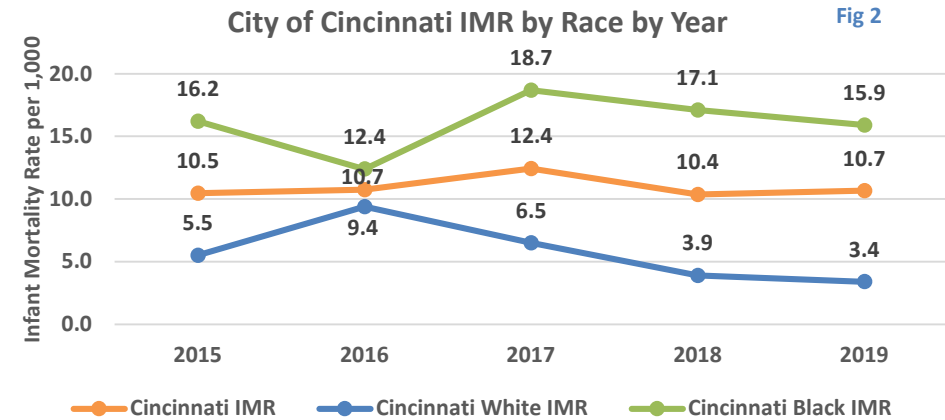
Infant mortality rates are often associated with the overall health of a community. Analyzing child and maternal health in each community provides information on the most vulnerable areas. Corryville had the highest IMR amongst Cincinnati neighborhoods with a rate of 41.0 followed by Saylor Park (37.7), Millvale (27.1), Riverside (24.8), and East End (23.3).

Contributing Factors for Neighborhoods

What contributes to high infant mortality rates in some neighborhoods?

There are many cofactors, but there is often a correlation between IMR and poverty rates (figure 4). On average, for every 10% increase in poverty rates, IMR increases by 1.0. Other factors include the mother's health status and access to pre-natal care. Social Vulnerability Index (SVI) also had a correlation with infant death as demonstrated in table 1.

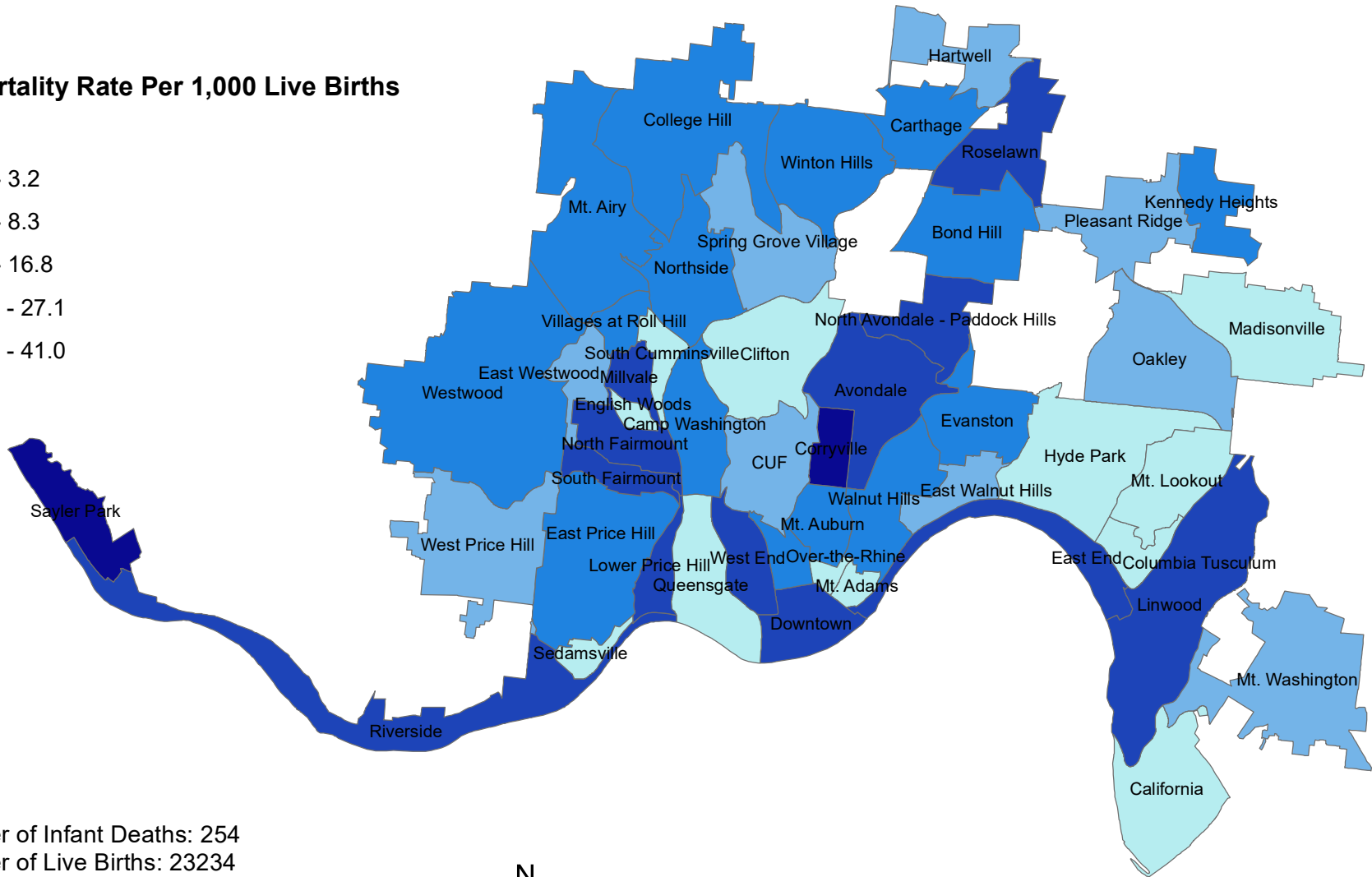
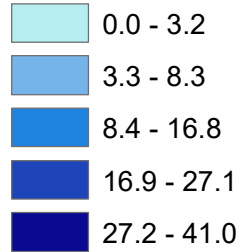
"Infant mortality is a community mirror, reflecting our collective capacity to promote and protect the health and well-being of our very youngest and most vulnerable." (City Lights, 9:2, p1)



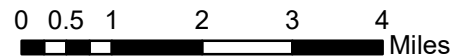
Infant Mortality Rate by Neighborhood 2015-2019

Infant Mortality Rate Per 1,000 Live Births

IMR



Total Number of Infant Deaths: 254
 Total Number of Live Births: 23234
 Total Number of Unmatched Deaths: 0
 Total Number of Unmatched Births: 749



Data Source; Ohio Public Health Information Warehouse

*IMR should be interpreted carefully to account for small sample size and unmatched addresses

Cincinnati Birth Comparisons (2015 – 2019)

Figures 5 and 6 display the difference between all birth data compared to birth data for infants that did not reach their first birthday. The majority of total births in Cincinnati were normal birth weight (83%) while the majority of infant deaths were low birth weight (68%). There were also significant differences between the number of *prenatal visits, when prenatal care began, and smoking rates among mothers.

Preconception health – refers to the health of women and men during their reproductive years, which are the years they can have a child. The health of a baby begins before pregnancy even starts. Whether pregnancy is planned or unplanned, choosing healthy habits early will decrease the risks of preterm birth (born too early), low birth weight, and birth defects.

Prenatal care – medical checkups during and even before pregnancy. Prenatal care can inform you on steps to take to ensure a healthy pregnancy and birth. It is never too late to seek prenatal care to reduce birth risks of both the mother and infant.

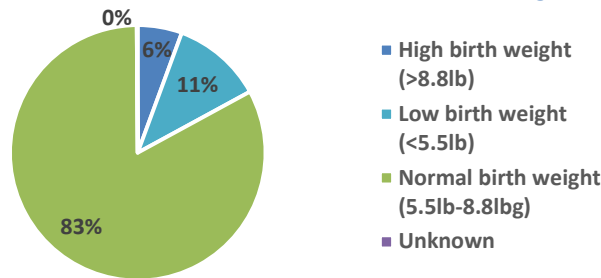
“We’re not there until we’re ALL there.”

– Wanda D. Barfield, MD, MPH

22,980 babies survived their first birthday, of which...

- The average birth weight was **6.9 pounds**

Cincinnati Birth Weight Category Fig 5



Prenatal Visits

- The average # of *prenatal care visits was **11**

Prenatal Care

- Prenatal care on average started in the **3rd month** of pregnancy

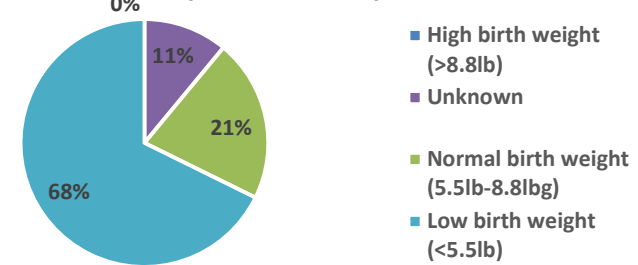
Smoking

- **17%** of mothers smoked either before or during pregnancy

258 babies died before their first birthday, of which...

- The average birth weight was **3.1 pounds**

Cincinnati Birth Weight Category (Infant Deaths) Fig 6



Prenatal Visits

- The average # of *prenatal care visits was **9**

Prenatal Care

- Prenatal care on average started in the **6th month** of pregnancy

Smoking

- **22%** of mothers smoked either before or during pregnancy

*Prenatal care visits excludes births with <27 weeks gestation (not all mothers had the opportunity to reach the recommended #visits if born premature)

Cincinnati Infant Mortality Summary (2015 – 2019)

What are the leading causes of infant death?

The leading causes of death in Cincinnati from 2015-2019 was prematurity and related conditions (e.g., preterm birth before 37 weeks gestation, low birth weight, etc.), congenital anomalies/birth defects, sudden unexpected infant death (SUID), obstetric conditions, and perinatal infections.

Proportion of Cincinnati Causes of Death

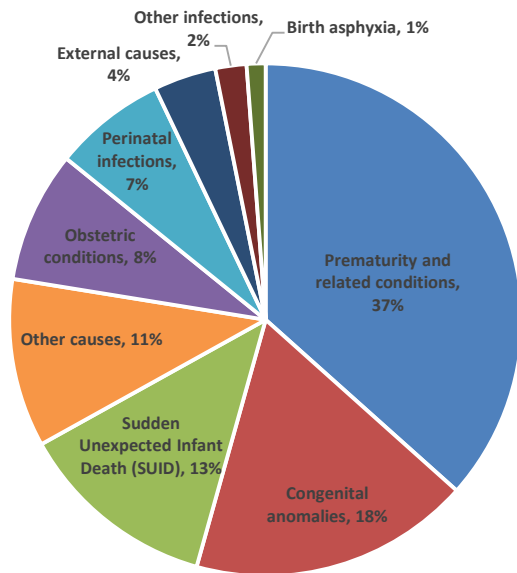


Fig 7

Cause Specific IMR by Year

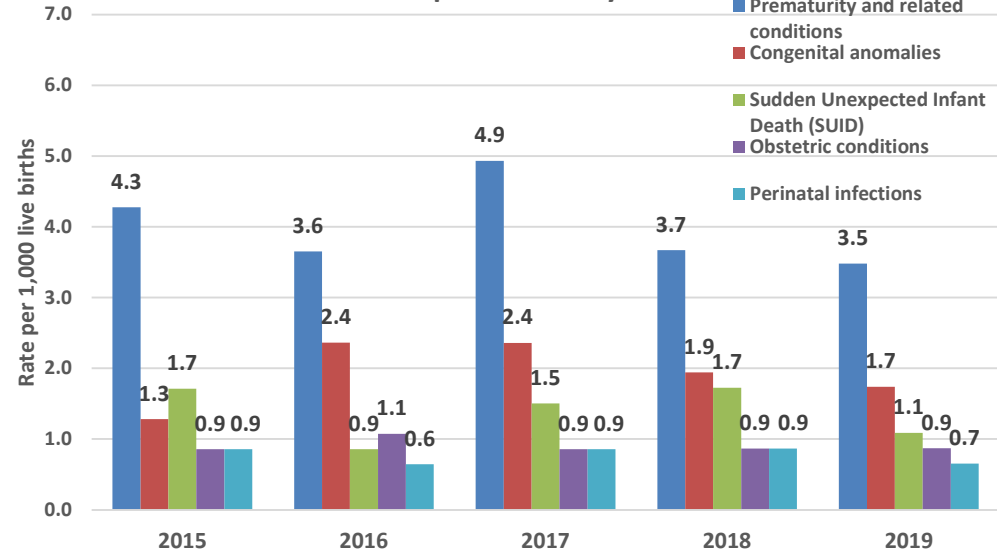


Fig 8

Sudden unexpected infant death (SUID): “a term used to describe the sudden and unexpected death of a baby less than 1 year old in which the cause was not obvious before investigation” (CDC). Investigations that analyzed the SUID deaths in Cincinnati (2015-2019) concluded that at least 24 out of the 32 SUID related deaths were sleep related.

SIDS vs. SUID

In the last several years, the terms connoting sudden infant death have become confusing, not only to parents, but also to professionals and researchers. CDC (Centers for Disease Control), in an attempt to clarify the issue, suggested that SUID (Sudden Unexpected Infant Death) be used as a broad term that encompasses all sudden infant deaths. This would include SIDS (Sudden Infant Death Syndrome), accidental deaths (such as suffocation and strangulation), sudden natural deaths (such as those caused from infections, cardiac or metabolic disorders, and neurological conditions), and homicides.

Premature Birth

Premature (also known as preterm) refers to a baby being born too early (before 37 weeks of pregnancy). 11.9% of all births in Cincinnati (2015-2019) were premature births compared to 79.5% of births that resulted in a death before the age of 1. While 79.5% of infant deaths were premature births, 46% of those were categorized as the direct cause of death.

Cincinnati Infant Mortality Supporting Data

Predictive Factors

Seven characteristics were analyzed to determine the risks associated with infant mortality in the City of Cincinnati: Age of the mother, race, smoking status, number of pre-natal visits during pregnancy, pre-term birth status, social vulnerability index, and delivery method were characteristics that were found to be statistically significant in the association with infant mortality.

Pre-term at birth had the highest risk among the 7 characteristics with an odds ratio of 21.9% meaning an infant born pre-term (<37 weeks gestation) was 21.9 times more likely to die compared to a full-term baby. The number of pre-natal visits during pregnancy was also significantly associated with infant mortality. Mothers who had less than 8 pre-natal care visits were 8.9 times more likely to suffer an infant death compared to those who received 8 or more visits.

Social vulnerability index (SVI) was also determined to have a significant correlation with an odds ratio of 1.9. SVI uses U.S. Census data to determine the relative social vulnerability of every census tract to determine an overall value of vulnerability. Factors affecting this value include socioeconomic status, household composition, minority status, and transportation.

Other risk factors found to be correlated with infant mortality are listed in table 1. Table 2 displays the odds ratios of 2010-2014.

2015-2019 odds ratios

Table 1

Characteristic	Crude odds ratio (95% CI)	Deaths	Live Births
Maternal Age, Years			
<20	1.5 (1.0 - 2.3)	25	1626
>=20		222	21605
Race			
Black	2.8 (2.1 - 3.7)	189	11777
Race other than black		65	11327
Smoking Status (prior or during pregnancy)			
Smoked	1.4 (1.0 - 1.8)	54	3863
Did not smoke		200	19346
#Pre-natal visits during pregnancy			
<8 visits	8.9 (6.8 - 11.8)	164	4489
>=8 visits		76	18590
Pre-term status			
Pre-term at birth	21.9 (16.3 - 29.2)	183	2761
Not pre-term at birth		62	20439
Social Vulnerability Index (SVI)			
High SVI (0.68-1)	1.9 (1.4 - 2.5)	179	13619
Low to moderate SVI (<0.68)		60	8660
Delivery Method			
C-section delivery	1.2 (1.0 - 1.6)	89	7270
Vaginal delivery		158	15956

*Unknowns are excluded from odds ratios

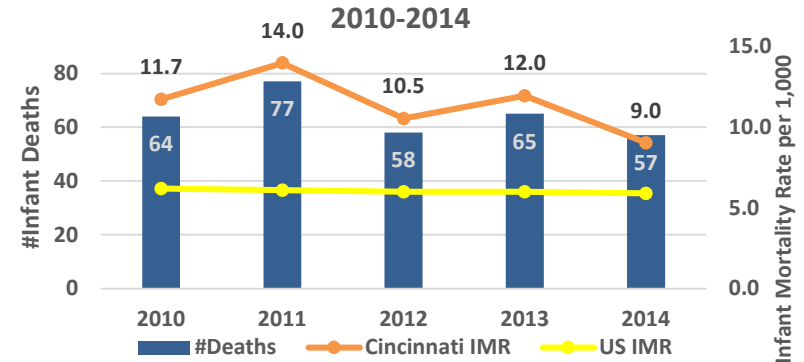
Cincinnati Infant Mortality 5-yr Comparison

How does 2015-2019 compare to 2010-2014?

There were 321 infant deaths in Cincinnati between 2010-2014 with an IMR of 11.4 compared to 258 deaths (11.1 IMR) from 2015-2019.

Comparing odds ratios from both 5-year time periods, the risk of infant death for all 7 characteristics were less significant than 2015-2019. Two of which were not statistically significant (smoking and delivery method). Despite the difference in risk, there is still a strong association with pre-term status and the number of pre-natal visits.

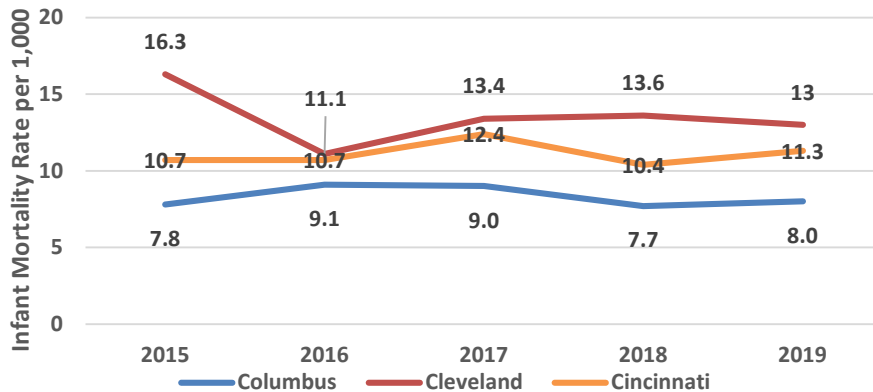
City of Cincinnati Infant Deaths and IMR Fig 9



How does Cincinnati compare to other Ohio cities?

Both Cleveland and Columbus had similarly high rates from 2015-2019, all of which were above the Healthy People 2020 goal: IMR <6.0 per 1,000 births.

OH Cities IMR by Year



*Columbus and Cleveland IMR data provided by Columbus Public Health and Cleveland Department of Public Health

2010-2014 odds ratios Table 2

Characteristic	Crude odds ratio (95% CI)	Deaths	Live Births
Maternal Age, Years			
<20	1.3 (0.9-1.8)	36	2763
>=20		263	25442
Race			
Black	2.7 (2.1-3.5)	234	13893
Race other than black		87	13956
Smoking Status (prior or during pregnancy)			
Smoked	1.0 (0.8-1.3)	70	5938
Did not smoke		251	21759
#Pre-natal visits during pregnancy			
<8 visits	7.1 (5.4-9.4)	159	5269
>=8 visits		74	17433
Pre-term status			
Pre-term at birth	21.1 (16.1-27.7)	230	3434
Not pre-term at birth		69	21724
Social Vulnerability Index (SVI)			
High SVI (0.68-1)	1.7 (1.3-2.2)	194	14916
Low to moderate SVI (<0.68)		73	9498
Delivery Method			
C-section delivery	1.0 (0.8-1.2)	93	9048
Vaginal delivery		205	19140

Cincinnati Health Department Initiatives

[Cribs for Kids](#)

Contact: Eric Washington 513-357-7347 or email cribsforkids@cincinnati-oh.gov

Serving as the hub for Hamilton County, the Cincinnati Health Department provides cribs to babies whose caregivers cannot afford them and educate them about the dangers of unsafe sleep environments. We not only educate the public about the importance of infant safe sleep, but we make sure that every baby has a safe sleeping environment. We provide FREE cribettes, portable crib sheets, and Halo Sleep Sacks.

Versatile and compact, our Cribette features infant safe sleep messaging that coordinates with nearly any style with the multi-color print fabric. It is constructed from made-to-last materials to ensure safety, stability, and longevity. This compact design is easy to transport and effortlessly converts from a full-size bassinet to a safe sleep space for infants up to one year of age.

[Sweet Cheeks Diaper Bank/Tidal Babe Program](#)

Contact: Eric Washington 513-357-7347 or email cribsforkids@cincinnati-oh.gov

Sweet Cheeks Diaper Bank partners with local social service agencies to provide free diapers to low-income families while raising awareness of the basic health need for diapers. Their vision is to eliminate the existence of diaper need in our community so that ALL babies have a chance to be healthy, happy, and safe.

The Cincinnati Health Department is an active partner with SCDB and through this partnership we can provide families with monthly allotments of diapers and potty-training kits for any children in the household under the age of 4. Through the Tidal Bank Program CHD supplies menstrual kits for ALL females in the household who have a menstrual cycle.

Families can receive 50 diapers per month per child, one potty training kit per child (potty seat, underwear, coloring books and crayons), and 25 pullups for each child that is at the potty-training stage. Each female can receive either pad or tampon kits, or a menstrual cup with pantyliners.

[Women, Infants, and Children \(WIC\) Program](#)

Contact: Cincinnati Health Department 513-821-7012

WIC stands for Women, Infants, and Children. It is a special supplemental nutrition and education program for eligible women who are pregnant, breastfeeding, or postpartum and infants & children up to age 5.

WIC provides: nutrition education, breastfeeding support, nutritious food, and infant formula.

[Nursing Services/Home Health](#)

Contact: Community Health Nursing 513-357-7400

Our Community Health Nursing Program has a long tradition of providing comprehensive nursing services to Cincinnati residents. We are one of two organizations in the Greater Cincinnati area to become an established Medicare-certified home care agency.

Home health services offers services to all ages including mothers and infants that encompass maternal/infant, pediatric, and lactation.

All information above can be found online at <https://www.cincinnati-oh.gov/health/cincinnati-health-department-programs/>