

Maternal and Infant Health Assessment Chartbook

March 2014

Butler County Health Department

301 South Third Street | Hamilton, OH 45011

## Acknowledgements



#### **Lead Team\* and Other Supporters**

Jenny Bailer RN, MS, APHN-BC, Co-Lead, Butler County Health Department\* Cindy Meale RD, LD, CLC, Co-Lead, Primary Health Solutions, Butler County WIC\* Suzanne Prescott Med, LSW, Former Co-Lead, Butler County Educational Service Center Jennifer Carter CCHW, High Hopes, Butler County Health Department\*

Madeline Marquardt, Primary Health Solutions Larissa M Loufman MPH, RD, LD, CLC, Primary Health Solutions, Butler County WIC\*

Heather Wells MSW, LSW, Butler County Families and Children First Council

Toni King RN, Student Nurse Midwife, Frontier School

Laura Theiss MSW, LSW, Butler County Educational Service Center

Debbie Mickey MA Ed, Butler County Educational Service Center

Jennifer Seifert, Butler County Educational Service Center

Rebecca Teklitz, Butler County Educational Service Center

Dr. Robert Lerer, Health Commissioner, Butler County Health Department

Pat Burg, Health Director, Butler County Health Department

Marc Bellisario, CEO, Primary Health Solutions

#### **Five Founding Organizations**

Butler County Health Department
Butler County Educational Service Center
Primary Health Solutions
Butler County WIC
High Hopes Program/Butler County Health Department

#### 'First Wave Partners'

Butler County Families and Children First Council
City of Hamilton Health Department
City of Middletown Health Department
Sojourner Recovery Service
Butler County Commissioner, Cindy Carpenter
McCollough-HydeMemorial Hospital
Atrium Medical Center
Abilities First
Butler County Board of Developmental Disabilities

Planned Parenthood
Miami University, Department of Nursing
Cincinnati Children's Hospital Medical Center

#### **Medicaid Support Received From**

CareSource
United Health Care Community Plan

Sponsors, Patrons, and Donors

Premier Health, Atrium Medical Center
Cincinnati Children's Hospital Medical Center
Primary Health Solutions
Miami University, Department of Nursing
United Health Care Community Plan
Hill Day Care and Family Center
Patty and Mike Pratt
Jeff Gambrel
Mayor Robert Routson

We are grateful to Hamilton County Public Health, Division of Epidemiology and Assessment who assisted us in understanding and interpreting our community's infant mortality data.

Thomas Boeshart MPH, Epidemiologist David Carlson MPH, Senior Epidemiologist Craig Davidson MS, RS, Director of Epidemiology and Assessment

We are grateful to CityMatCH and the Ohio Department of Health for assisting us in developing strategies for addressing our community's needs

Numerous additional partner agencies, organizations, and individuals have attended our community meetings and supported this effort in many ways. We appreciate your interest in working with us to impact this important health issue, and we look forward to further collaboration in the future! ~The Lead Team

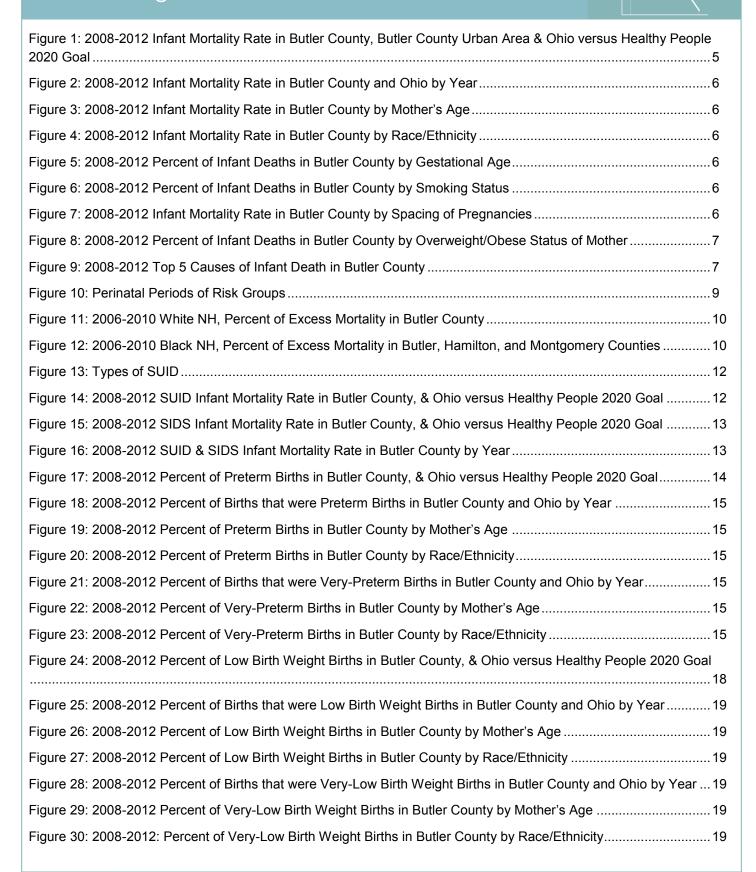
# Table of Contents



Acknowledgements	i
Table of Contents	ii
Index of Figures	iii
Introduction	1
Contact Information	4
Infant Mortality	5
Perinatal Periods of Risk	9
Sudden Unexplained Infant Death	12
Prematurity	14
Low Birth Weight	18
Summary/Where Do We Go From Here?	22
Limitations	24
Data Tables	25
References	38



# Index of Figures



## Introduction



## **Background:**

Infant Mortality, defined as the death of a baby before his/her first birthday, is one of the most sensitive measures of the overall health of a community. When infant mortality rates are high they indicate that the overall health of the entire community is poor. The causes of high infant mortality are similar to the causes of overall health in a community. Infant mortality may be described using a number, or a rate (the number of infant deaths divided by the number of live births x 1000, for the same period of time).

A review of Ohio and Butler County infant mortality data shows the following:

- Ohio's overall infant mortality rate is one of the worst in the country
- Ohio is second only to Indiana for having the worst black infant mortality rate in the nation (preliminary data, 2012)
- Butler County's urban area of Hamilton, Middletown, and Fairfield ranks among the ten worst urban areas in the state of Ohio for infant deaths
- In Butler County, deaths are not equal across races: black and Hispanic babies are dying nearly twice as often as white babies
- According to the Coroner's report the number of Butler County infant deaths in 2013 has exceeded the number of 2012 infant deaths

In July 2013, Butler County Health Department was asked to join a new group addressing infant mortality that includes nine other urban counties in Ohio, the Ohio Department of Health, and CityMatCH, a nationally recognized infant mortality reduction organization. Using a Train-the-trainer approach, CityMatCH provides local community Lead Teams with consultation, expertise, training, support, data analysis, strategic planning, monthly conference calls and site visits to assist them in addressing their own community's unique issues around infant mortality.

#### Who we are:

The Butler County Lead Team consists of community leaders from these agencies:

- Butler County Health Department
- Primary Health Solutions
- Butler County WIC
- Butler County Educational Service Center
- Butler County Family and Children First Council

## **Our Community Partners:**

Over 150 individuals and agencies from Butler County have joined this partnership in the six months since it began. Partners are 'traditional' (health care organizations, medical providers, epidemiologist, educational groups, social service agencies) as well as 'non-traditional' (religious, recreational, and civic groups, law enforcement, and interested individuals).

## Introduction



### What we Propose:

The Butler County Partnership to Reduce Infant Mortality will utilize a data-driven, evidence-based approach to develop community partners, examine local data, assess local capacity, and, with input from key stake-holders, will implement and evaluate broad-scale, measurable, community based interventions to reduce infant mortality in our county. Interventions chosen will have lasting impact. Findings/results will be disseminated in the community and will be published.

## Who will benefit/how this will help:

Those who will benefit most from this initiative are infants and their families. However, reducing infant mortality has been shown to have wide-spread positive effects on families. When the health of families improves, the health of entire communities improves. The underlying causes of infant mortality are often causing poor health for the overall population

#### Plan:

This partnership is a three year initiative which began in July of 2013. At the end of the three years, our findings, along with those of the entire Ohio equity Initiative, will be published, and made available to other communities across the United States. A sustainability plan will be developed for ongoing efforts beyond the three year initial period of study and intervention.

#### **Year 1:**

- Year 1 consists of getting to know our community's needs and our data including evaluating what is in place to address the problem, building community partnerships, examining local data utilizing Perinatal Period of Risk (PPOR) analysis and cause of death analysis exploring priorities with our community, and finally exploring possible interventions
- Accomplishments thus far
  - The initiative is in the middle of its first year and has hosted seven, large monthly community-wide meetings designed to build awareness. In order to gain a thorough understanding of our community's unique situation, a PPOR and cause of death analysis was completed. Along with our community partners, we are currently working on defining and exploring priorities for interventions. This chartbook is our first 'report to the community' of our data findings.

#### Years 2 and 3:

In years 2 and 3, the partnership will create mission and vision statements, develop a logic model for interventions, implement community-wide intervention strategies, evaluate the impact of the interventions, and finally, publish our results.

#### **Target Population:**

Our target population is infants and their families in Butler County. Special interest will be



given to those with the highest infant mortality rates in our county: those living in urban areas and Black and Hispanic infants.

#### **Objectives:**

The objective of this initiative is to reduce infant mortality and increase the number of healthy babies being born through interventions in the areas of sleep-related deaths and prematurity.

#### **Results:**

Decreasing infant mortality and increasing the number of healthy babies results in improvement in the overall health and well-being of families and the community at large. The reduction of infant deaths and premature births will result in positive economic gains as well as decreased costs, including medical costs. Data from the Institute of Medicine (2007) indicates that the medical costs for just one preterm birth was \$33,210.

#### **Percent Medicaid:**

It is estimated that 70% of the target population has received assistance via Medicaid

#### **Financial Information:**

- This is a three year project with a required local share from community partners of \$20,000 per year for training and expertise provided by CityMatCH. We have received local share funding to cover Year 1, but must raise \$20,000 for each of Years 2 and 3.
- The total project budget is \$120,000. \$60,000 is required for three years of training and partnership with CityMatCH. The \$60,000 will be spent over three years for costs of implementing interventions in the community.
- Funding was not received from the United Way. We have received in-kind support from governmental and private agencies that allow their staff to serve on the Lead Team. We have received funding for Year 1 from the Ohio Department of Health, and the Butler County Health Department.

#### **Framework:**

Below is the framework for the Ohio Equity Institute/Butler County partnership.



# Contact Information



## **Additional Questions?**

If you have additional questions about this chartbook or the Ohio Equity Initiative Butler County Plan/ Partnership please contact:

## **Butler County Health Department**

Butler County Health Department 301 South Third Street, Hamilton, Ohio 45011 BOH@butlercountyohio.org

P: 513.863.1770





## What is Infant Mortality?

The death of a baby before his/her first birthday is known as infant mortality<sup>1</sup>. The infant mortality rate is one of the most common ways that the infant health of a community is measured. The infant mortality rate (IMR) is defined as the number of deaths among children less than one year of age per 1,000 live births<sup>1</sup>.

## Why is infant mortality important?

Infant mortality is one of the most important indicators of the health of a community. The infant mortality rate is used as an indicator to reflect the apparent associations in the causes of infant mortality and other factors that influence the health status of a community, e.g. maternal health, quality of medical care, access to medical care and socioeconomic conditions<sup>2,3</sup>.

### What is Butler County's Infant Mortality Rate?

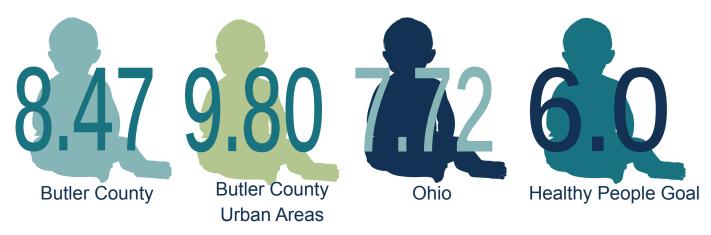


Figure 1: 2011-2012 Infant Mortality Rate\* in Butler County, Butler County Urban Areas & Ohio versus Healthy People 2020 Goal

### What is Healthy People?

Healthy People are a set of nationwide health-promotion and disease-prevention goals which supports prevention efforts to create a healthier nation. These goals are set forth every 10 years by the U.S. Department of Health and Human Services. The current revision is Healthy People 2020.

\*Rate is per 1,000 live births



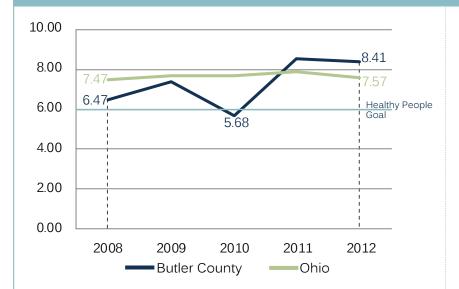


Figure 2: 2008-2012 Infant Mortality Rate\* in Butler County and Ohio by Year

< 20 Years	10.81
20-24 Years	8.74
25-29 Years	6.25
30-34 Years	4.30
35-39 Years	7.46
40+ Years	4.47

Figure 3: 2008-2012 Infant Mortality Rate\* in Butler County by Mother's Age

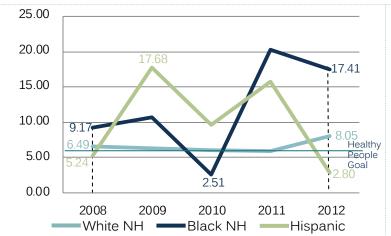


Figure 4: 2008-2012 Infant Mortality Rate\* in Butler County by Race/Ethnicity

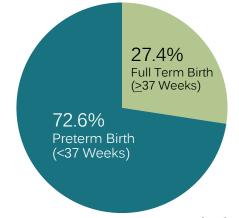


Figure 5: 2008-2012 Percent of Infant Deaths in Butler County by Gestational Age

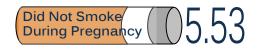




Figure 6: 2008-2012 Infant Mortality Rate\* in Butler County by Smoking Status

\*Rate is per 1,000 live births

Adequately Spaced Pregnancy
(>18 Months from Birth to Conception)

1336 Shortly Spaced Pregnancy (<18 Months from Birth to Conception)

Figure 7: 2008-2012 Infant Mortality Rate\* in Butler County by Spacing of Pregnancies





Figure 8: 2008-2012 Percent of Infant Deaths in Butler County by Overweight/ Obese Status of Mother

Extreme Low Birth Weight or Extreme Immaturity or Preterm Birth	20.9%
Congenital Anomalies	16.5%
Newborn Affected by Complications of Placenta, Cord & Membranes	9.2%
Accidental Suffocation & Strangulation in Bed	8.3%
Newborn Affected by Maternal Compli-	5.8%

Figure 9: 2008-2012 Top 5 Causes of Infant Death in Butler County

### What does this mean?

The Infant mortality rate in Butler County for 2011-2012 is 8.47 per 1,000 live births. This rate is above the Healthy People 2020 national goal of 6.0 per 1,000 and above the Ohio infant mortality rate of 7.72 per 1,000 live births. Infants who were born to Butler County mothers under the age of 25 accounted for approximately 43 percent of the infant deaths from 2008-2012. A Butler County mother who is less than 20 years old is 2.5 times more likely to experience an infant death than a mother who is 30-34 years of age. Women who are Non-Hispanic White accounted for 67.6 percent of infant deaths, however had the lowest infant mortality rate of 6.26 per 1,000 live births. Non-Hispanic Black women are 1.74 times more likely to experience an infant death than Non-Hispanic White women. Hispanic women are also 1.7 times more likely to experience an infant death than Non-Hispanic White women in Butler County. Over 72 percent of infant deaths in Butler County were infants who were considered to be a preterm birth, or born before 37 weeks of gestation. Very-preterm births, born less than 32 weeks gestation and a sub-category of preterm births, account for over 59 percent of infant deaths. Preterm births are a significant risk factor of infant mortality and many other adverse health outcomes.

Tobacco use, and other forms of substance abuse during pregnancy are not only extremely harmful to the mother's health, but can be extremely harmful to a developing baby. In Butler County, 28.9 percent of infant deaths were to mothers who reported smoking at any time during her pregnancy. The rate of infants who died to mothers who smoked during pregnancy was double that of mothers who did not smoke during pregnancy, 5.53 per 1,000 live births.



Smoking is not the only risk factor of an infant death, having inadequately spaced pregnancies can also contribute to infant death. It has been shown that waiting 18 months between giving birth to one baby and conceiving the next gives a woman the best chance to have a healthy, full-term baby. Not waiting 18 months or more is strongly associated with premature birth, a factor in over two thirds of Butler County's 2008-2012 infant deaths. Mothers who had shortly spaced pregnancies of less than 18 months from birth to conception had an infant mortality rate of 13.36 per 1,000 live births. Shortly spaced pregnancies infant mortality rate is nearly 3 times higher than that of mothers who had adequately spaced pregnancies (4.73 per 1,000 live births). Maternal obesity also increases the overall risk of an infant death. Maternal obesity is defined as a pregnancy body mass index (BMI) that is  $\geq 30 \text{kg/m}^2$ . Approximately 60 percent of infant deaths in Butler County were to mothers who were classified as being overweight/obese.

When an individual dies, a cause of death is assigned. The cause of death is the actual mechanism by which the death occurred. For the years 2008-2012, extremely low birth weight or extreme immaturity or preterm births was the top cause of death category, accounting for 20.9 percent of infant deaths. Congenital anomalies was the second leading cause of infant deaths, accounting for 16.5 percent of infant deaths. Complications of the placenta, cord & membranes accounted for 9.2 percent of infant deaths in Butler County. Accidental suffocation and strangulation in bed, a very preventable death, accounted for 8.3 percent of infant deaths in Butler County. The fifth leading cause of death in infants in Butler County was maternal complications of pregnancy, which accounted for 5.8 percent of deaths. While four of the top five causes of infant deaths in Butler County are medical conditions, some of these cases may have been prevented through early screening and detection, consistent and early prenatal care and counseling. However, not all medical conditions can be prevented, early and appropriate detection and education, however, can aid in the prevention of the death of an infant due to a medical condition.

## Perinatal Periods of Risk (PPOR)



### What is Perinatal Periods of Risk (PPOR)?

Perinatal Periods of Risk or PPOR is a comprehensive approach that can be used to help reduce infant mortality within a community. PPOR is designed to be used in cities within the US that have high infant mortality rates, which brings together community stakeholders to develop a consensus and partnership based on local data<sup>4</sup>. PPOR classifies infant and fetal deaths into one of four different Perinatal Periods of Risk. These groups are based on both the birth weight and age of the child at the time of death. These four periods of risk are useful as causes of death tend to be similar in each. Figure 10 illustrates the four different Perinatal Periods of Risk; Maternal Health/Prematurity, Maternal Care, Newborn Care, and Infant Health along with the as-

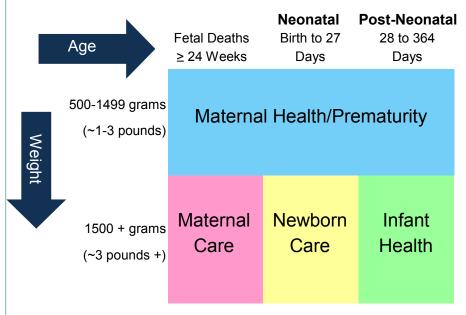


Figure 10: Perinatal Periods of Risk Groups

sociated age and weight for each period. The period of Maternal Health/Prematurity includes prevention factors such as preconception health, health behaviors and perinatal care. The second period of risk, Maternal Care, includes prevention factors of prenatal care, high risk referral and obstetric care. Perinatal management, neonatal care, and pediatric surgery are prevention factors of the Newborn Care risk peri-The final risk period, Infant Health, includes prevention factors of sleep-related deaths, injuries, accidents and infections.

A mortality rate is calculated for each of the four periods, allowing for

the comparison of populations within a community to examine trends over time, and to compare the data to other cities or a reference group<sup>4</sup>. The reference group used is a population of mothers who have near optimal birth outcomes, which provides a benchmark that a community can strive to achieve. If the outcomes are considered to be attainable, the reference group can be used to estimate the excess mortality for each period of risk. Excess mortality is the approximate number of deaths that could have been prevented. A period of risk that has the largest excess mortality, or preventable deaths, will become the focus area for the community to further study and develop interventions to decrease the infant mortality in their community.

# Perinatal Periods of Risk (PPOR)



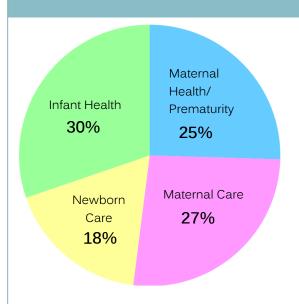


Figure 11: 2006-2010 White NH, Percent of Excess Mortality<sup>%</sup> in Butler County<sup>†</sup>

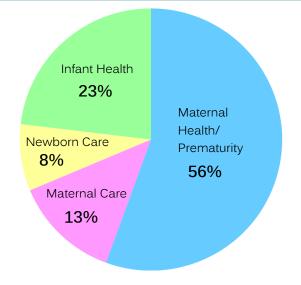


Figure 12: 2006-2010 Black NH, Percent of Excess Mortality<sup>%</sup> in Butler, Hamilton, and Montgomery Counties<sup>+</sup>

#### What does this mean?

The Perinatal Periods of Risk or PPOR can be used to help reduce the infant mortality in a community. Butler County had a PPOR completed for non-Hispanic White and non-Hispanic Blacks. A reference group is used to compare the infant mortality rates at each period. The reference group is women who are 20 years of age and older, with 16 years or more of education who are non-Hispanic White and were an Ohio resident at the time of the baby's birth. Using this reference group excess mortality is then determined, which is the number or percent of deaths that the community is experiencing that could have been prevented to achieve the rates of the reference group.

When the PPOR final analysis was completed for non-Hispanic Whites, the Infant Health period had the highest percentage of excess deaths, 30 percent. The Maternal Care period for non-Hispanic Whites had 27 percent of excess deaths when compared to the reference group. Twenty-five percent of excess deaths in non-Hispanic Whites occurred in the Maternal Health/ Prematurity period.

When the PPOR was calculated for non-Hispanic Blacks in Butler County, it was found that 28

<sup>\*</sup>Reference Group: 20+ years of age; 16+ years of education; NH White; Ohio resident at time of baby's birth
\*Note: Excess mortality percentages are from PPOR final analysis between the reference group and race groups. To view the PPOR rates for each of the four periods of risk please refer to Tables 9,10 and 11 in the Data tables section.

# Perinatal Periods of Risk (PPOR)



infant deaths to non-Hispanic Blacks occurred from 2006 to 2010. With this number being a small number of deaths, an accurate and stable calculation and comparison to a reference group for obtaining the excess mortality was unable to be completed. To circumvent the small number issue, Butler County infant deaths to non-Hispanic Blacks was combined with infant deaths to non-Hispanic Blacks in Hamilton and Montgomery Counties.

The PPOR final analysis for non-Hispanic Blacks in Butler, Hamilton and Montgomery Counties was compared to the same reference group. The Maternal Health/Prematurity period had the highest percent of excess infant deaths, 56 percent, when compared to the reference group. Infant Health had the second largest percentage of excess deaths, with 23 percent of infant deaths during this period that are excess deaths.

# Sudden Unexplained Infant Death (SUID)



#### What is SUIDS?

Sudden unexplained infant death is an infant death that occurs suddenly and is unexpected. SUID may be caused by biological, environmental, or behavioral factors that act either together or separately to cause the death of an infant. Examples include:

- Biological factors such as cardiac or brain abnormalities<sup>6</sup>
- Environmental factors that are preventable or accidental such as soft bedding, or cigarette smoke near a baby<sup>6</sup>
- Behavioral factors of parents or caregivers that are preventable or accidental such as placing infants on their stomachs to sleep, putting an infant to sleep in a place other than a crib (couch, adult bed) and co-sleeping or bedsharing that can lead to roll-overs or suffocation of an infant by a person of a larger size<sup>6</sup>



Figure 13: Types of SUID

### What is SIDS?

Sudden infant death syndrome (SIDS) is one of the main causes of SUID. SIDS is an infant death which is sudden, and remains unexplained after a thorough case investigation, including a complete autopsy, examination of the death scene, and review of the clinical history of the infant<sup>6</sup>. In this case there is no explanation found for the death.

## What is Butler County's SUID Mortality Rate?

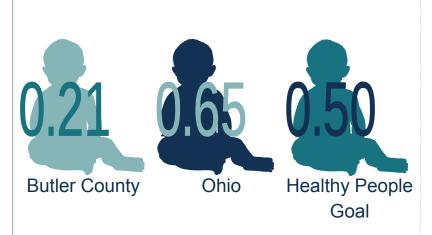


Figure 14: 2008-2012 SUID Infant Mortality Rate\* in Butler County, & Ohio versus Healthy People 2020 Goal

\*Rate is per 1,000 live births

# Sudden Unexplained Infant Death (SUID)





SUIDS		SIDS
1.18	2008	0.59
1.02	2009	0.20
0.22	2010	0.00
1.53	2011	0.00
0.86	2012	0.22

Figure 15: 2008-2012 SIDS Infant Mortality Rate\* in Butler County, & Ohio versus Healthy People 2020 Goal

Figure 16: 2008-2012 SUID & SIDS Infant Mortality Rate\* in Butler County by Year

#### What does this mean?

The Sudden Unexplained Infant Death (SUID) rate in Butler County for 2008-2012 is 0.97 per 1,000 live births. This includes deaths due to sleep-related factors such as suffocations, rollovers, stomach sleeping, sleeping in a place not a crib. The rate for Butler county is 1.2 times the national goal set forth in Healthy People 2020 of 0.84 per 1,000 live births. Butler County's SUID rate is lower than that of the State of Ohio's rate of 1.17 per 1,000 live births. The percentage of infant deaths due to SUIDS from 2008-2012 was 13.3 percent.

From 2008, Butler County had a Sudden Infant Death Syndrome (SIDS) rate of 0.21 per 1,00 live births. This includes deaths that were completely unexplainable. Butler County is meeting and exceeding the national Healthy People 2020 goal of 0.50 per 1,000 live births. Butler County is also experiencing 3 times fewer SIDS than the State of Ohio, who has a SIDS rate of 0.65 per 1,000 live births. While SIDS rates are still below the State of Ohio and the national goal, there are still infants who are dying from SIDS in Butler County each year.

## Prematurity



### What is Prematurity?

Prematurity is also known as a premature or preterm birth. A premature birth is a birth of that is at least three weeks before the baby's due date. This means the infant is born prior to 37 weeks gestation<sup>7</sup>. A premature birth can also be known as being very-preterm or very-premature. A very preterm birth is a birth that is prior to 32 weeks gestation.

### Why is Prematurity Important?

Preterm birth is a significant risk factor of infant mortality along with other adverse health outcomes. The earlier a baby is born, the more severe his/her health problems are likely to be<sup>7</sup>. More infants die from problems related to preterm birth than from any other single cause<sup>7</sup>.

### What is the Rate of Prematurity in Butler County?

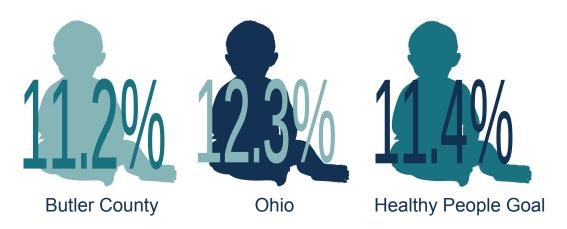


Figure 17: 2008-2012 Percent of Preterm Births in Butler County, & Ohio versus Healthy People 2020 Goal

## Prematurity



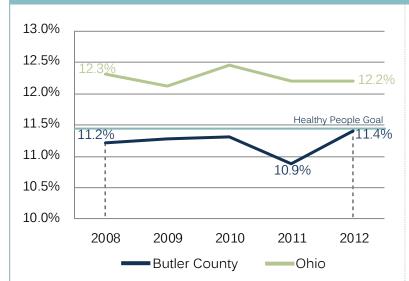


Figure 18: 2008-2012 Percent of Births that were Preterm Births in Butler County and Ohio by Year



Figure 19: 2008-2012 Percent of Preterm Births in Butler County by Mother's Age

10.8% 15.5% 12.5%

White, NH Black, NH Hispanic

Figure 20: 2008-2012 Percent of Preterm Births in Butler County by Race/Ethnicity

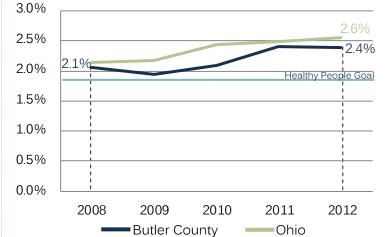


Figure 21: 2008-2012 Percent of Births that were Very -Preterm Births in Butler County and Ohio by Year



Figure 22: 2008-2012 Percent of Very-Preterm Births in Butler County by Mother's Age

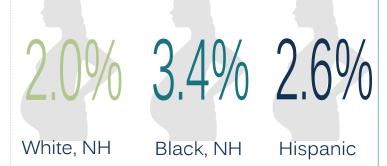


Figure 23: 2008-2012 Percent of Very-Preterm Births in Butler County by Race/Ethnicity



#### What does this mean?

#### **Preterm Births:**

The percent of births in Butler County that are preterm births (born before 37 weeks gestation) was 11.2 percent of births from 2008-2012. The percent of preterm births in Butler County is slightly below the Healthy People 2020 national goal of 11.4 percent. Since 2008, the percent of preterm births has been relatively stable, with 2011 experiencing a decrease to 10.9 percent. Butler County mothers who are 40 years of age and older have the largest percentage of preterm births. When compared to women who are between 30 to 34 years of age in Butler County, women who are 40 years of age and older are 2.06 times more likely to have a preterm birth. Mothers who are between the ages of 35-39 are 1.41 time more likely than mothers who are 30-34 years of age to have a preterm birth. Younger mothers, such as women who are 20 to 24 years of age, are only 1.14 times more likely to experience a preterm birth when compared to women who are between the ages of 30-34. Women who are older are more likely to have a preterm birth because they are more likely to have other conditions, such as diabetes and high blood pressure, that can cause complications during pregnancy causing a preterm delivery<sup>10</sup>. Women who are younger than 20 years of age are also at an increased risk to have a preterm birth. Mothers who are younger than 20 years of age are 1.43 times more likely to experience a preterm birth than mothers who are 30-34 years of age.

The age of the mother is not only a risk factor for preterm birth, but the race/ethnicity of the mother is also associated with an increased risk for preterm birth. Preterm births occur more often in certain racial and ethnic groups. Infants of Black/African American mothers are more likely to be born preterm than infants to white mothers<sup>10</sup>. In Butler County, Black non-Hispanic mothers are 1.56 times more likely to have a preterm birth than White non-Hispanic mothers. Hispanic Butler County mothers are 1.23 times more likely than White non-Hispanic mothers to have a preterm birth.

## **Very-Preterm Births:**

Preterm births can be further classified as very-preterm births, which are births less than 32 weeks gestation. The percent of very-preterm births in Butler County has remained relatively stable from 2008 to 2012 (2.1 percent and 2.4 percent respectively). For the five year span of 2008 to 2012, 2.2 percent of births born were very-preterm births. Butler County's percent of very-preterm births is above the Healthy People 2020 goal of 1.8 percent. Mothers who are between the ages of 20 to 24 years of age comprise the largest group of very-preterm births,

## Prematurity



with 3.3 percent of births to mothers between 20 to 24 years of age being very preterm births. Mothers in this age group are 1.55 times more likely than mothers who are between the ages of 30-34 to experience a very-preterm birth. As seen with preterm births, as the age of the mother increases, the risk of have a very-preterm birth also increases. Butler County mothers who are 35 to 39 years of age are 1.61 times more likely to experience a very-preterm birth. While mothers who are 40 years and older are 1.69 times more likely than mothers 30 to 34 years of age to experience a very-preterm birth. Mothers who are between the ages of 25 to 29 years of age are 1.15 times more likely to experience a very-preterm birth when compared to mothers who are between 30 to 34 years of age. As the mother's age drops, the likelihood of having a very-preterm birth also increases. Mothers in Butler County who are less than 20 years of age are 1.53 times more likely to have a very-preterm birth.

White non-Hispanic mothers in Butler County have the smallest percentage of births that are very-preterm: 2.0 percent. Non-Hispanic Black mothers have the largest percentage of births that are very-preterm with 3.4 percent of births being very-preterm births. Non-Hispanic Black mothers are also 1.64 times more likely to experience a very-preterm birth than a non-Hispanic White mother. Hispanic mothers are 1.03 times more likely to have a very-preterm birth than non-Hispanic White mothers.

## Low Birth Weight



### What is Low Birth Weight?

Low birth weight is when a baby is born weighing less than 2,500 grams or approximately 5 pounds, 8 ounces<sup>8</sup>. Low birth weight can be caused by a preterm birth (a birth less than 37 weeks gestational age) or due to a slow prenatal growth rate (the baby doesn't gain the weight he/she needs prior to birth)<sup>8</sup>. A low birth weight birth can be further classified into a very-low birth weight. Very-low birth weight is when a baby is born weighing less than 1,500 grams or approximately 3 pounds, 5 ounces.

### Why is Low Birth Weight Important?

Low birth weight is closely associated with fetal and infant death and a significant determinant of postneonatal mortality<sup>9</sup>. Low birth weight infants who survive are at an increased risk for serious health problems such as respiratory disorder, and neurodevelopmental disabilities<sup>9</sup>.

### What is the Low Birth Weight Rate in Butler County?

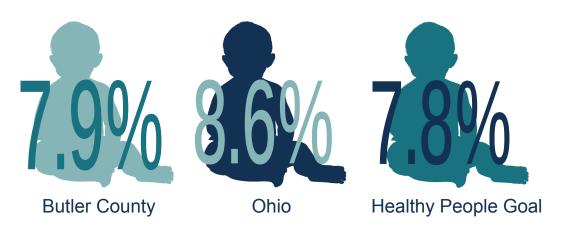


Figure 24: 2008-2012 Percent of Low Birth Weight Births in Butler County, & Ohio versus Healthy People 2020 Goal

## Low Birth Weight



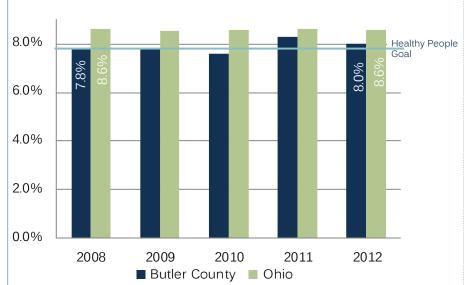


Figure 25: 2008-2012 Percent of Births that were Low Birth Weight Births in Butler County and Ohio by Year

< 20 Years	10.0%
20-24 Years	8.0%
25-29 Years	7.0%
30-34 Years	7.6%
35-39 Years	9.1%
40+ Years	8.3%

Figure 26: 2008-2012 Percent of Low Birth Weight Births in Butler County by Mother's Age

7.5% 11.7% 7.3%

White, NH Black, NH Hispanic

Figure 27: 2008-2012 Percent of Low Birth Weight Births in Butler County by Race/Ethnicity

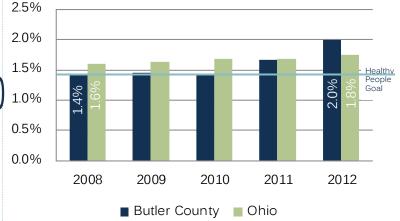


Figure 28: 2008-2012 Percent of Births that were Very-Low Birth Weight Births in Butler County and Ohio by Year

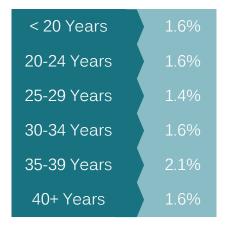


Figure 29: 2008-2012 Percent of Very-Low Birth Weight Births in Butler County by Mother's Age

1.5% 2.8% 1.6% White, NH Black, NH Hispanic

Figure 30: 2008-2012 Percent of Very-Low Birth Weight Births in Butler County by Race/Ethnicity



### What does this mean?

## **Low Birth Weight Births:**

The percent of births in Butler County that are low birth weight births (infants who weigh less than 2,500 grams at the time of birth) was 7.9 percent of births from 2008 to 2012. The percent of low birth weight births in Butler County is slightly above the Healthy People 2020 national goal of 7.8 percent. Since 2008, the percent of preterm births has gradually increased from 7.8 percent in 2008 to 8.0 percent in 2012. Butler County mothers who are 24 years of age and younger comprise the largest group of women who have low birth weight births. Mothers who are between the ages of 20 to 24 are 1.08 times more likely to have a low birth weight birth when compared to women who are between 30 to 34 years of age. Mothers who are younger than 20 years of age are 1.36 times more likely to have a low birth weight birth than mothers who are 30 to 34 years of age. Younger mothers are more likely to have a preterm birth, which is a risk factor for having a low birth weight birth. As the mother's age increases, the chance of having a low birth weight birth also increases. This is because having a preterm birth, which as a mother's age increases the risk of having a preterm birth increases, is a risk factor for having a low birth weight birth. Mothers who are between the ages of 35 to 39 are 1.23 times more likely to have a low birth weight birth than mothers who are 30 to 34 years of age. Butler County mothers who are 40 years of age and older are almost 1.5 times more likely to have a low birth weight birth.

## **Very-Low Birth Weight Births:**

Low birth weight births can be further classified as very-low birth weight births, which are infants who weigh less than 1,500 grams at the time of birth. The percent of very-low birth weight births in Butler County has also gradually increased from 2008 to 2012, 1.4 percent to 2.4 percent. For the five year span of 2008 to 2012: 1.6 percent of births were very-low birth weight births. Butler County's percent of very-low birth weight births is above the Healthy People 2020 goal of 1.4 percent. Mothers who are between the ages of 35 to 39 years of age, have the largest percentage of very-low birth weight births for any age group, with 2.1 percent of births to mothers between 35 to 39 years of age being a very-low birth weight birth. Mothers in this age group are 1.12 times more likely than mothers who are between the ages of 30-34 to experience a very-low birth weight birth. As seen with very-low birth weight births, as the age of the mother increases, the risk of have a very-low birth weight birth also increases. Butler County mothers who are 35 to 39 years of age are 1.59 times more likely to experience a very-low birth weight birth. Mothers who are 40 years and older are 1.79 times more likely than

## Low Birth Weight



mothers 30 to 34 years of age to experience a very-low birth weigh birth. Mothers who are between the ages of 25 to 29 years of age are 0.95 times more likely to experience a very-low birth weigh birth when compared to mothers who are between 30 to 34 years of age. As the mother's age drops, the likelihood of having a very-low birth weigh birth also increases. Mothers in Butler County who are less than 20 years of age are 1.05 times more likely to have a very-low birth weigh birth.

White non-Hispanic mothers in Butler County have the smallest percentage of births that are very-low birth weigh births: 1.5 percent. Non-Hispanic Black mothers have the largest percentage of births that are very-low birth weigh birth, with 2.8 percent of births being a very-low birth weigh birth. Non-Hispanic Black mothers are also 2.26 times more likely to experience a very-low birth weigh birth than a non-Hispanic White mother. Hispanic mothers are 1.02 times more likely to have a very-low birth weigh birth than non-Hispanic White mothers.

# Summary/Where Do We Go From Here?



#### Overall

- Butler County's infant mortality rate is higher than the State of Ohio and it's above the Healthy People 2020 national goal of 6.0 per 1,000 live births.
- Using the Perinatal Periods of Risk (PPOR) analysis, the Maternal Health/Prematurity, Maternal Care and Infant Health Periods are the three perinatal periods of risk that the highest percentages of excess mortality in Butler County.
- Butler County's SUID mortality rate is lower than the State of Ohio, however it's above the Healthy People 2020 national goal of 0.84 per 1,000 live births.
- Butler County SIDS mortality rate is lower than both the State of Ohio and the Healthy People 2020 national goal.

#### Impact of Premature and Very Premature Birth

- 72.7 percent of infant deaths in Butler County were preterm births.
- Butler County's rate of prematurity is lower than both the State of Ohio and the Healthy People 2020 national goal.
- Butler County's very-preterm birth rate is also lower than the State of Ohio, however, it is higher than the Healthy People 2020 national goal.
- Butler County's low birth weight birth rate was lower than that of the State of Ohio and slightly higher that the Healthy People 2020 national goal.
- Butler County's very-low birth weight rates is higher than that of both the State of Ohio and the Healthy People 2020 national goal.

#### Impact of Race

- Butler County's Black non-Hispanic infant mortality rate is 1.5 times that of the White non-Hispanic infant mortality rate in Butler County.
- The two biggest problem areas for non-Hispanic Black babies in Butler County are preterm births and SUID.
- The two biggest problem areas for non-Hispanic White babies in Butler County are also preterm births and SUID.
- Black non-Hispanics had the highest percentage of preterm births in Butler County, nearly 1.5 times that of White non-Hispanics.
- Black non-Hispanics had the highest percent of very-preterm births in Butler County, nearly 2 times that of White non-Hispanics.
- Black non-Hispanics had 1.5 times the percent of low birth weight births than both White non-Hispanics and Hispanic mothers.
- Black non-Hispanics had nearly 2 times higher percentages of very-low birth weight births than that of both White non-Hispanic and Hispanic mothers.

#### Impact of Age

- Older mothers (40+) had the highest percentage of preterm births in Butler County.
- Younger mothers (20-24) had the highest percentage of very-preterm births in Butler County
- Younger mothers (<24 years) had the highest percent of low birth weight births (10% for mothers <20 years)</p>
- Mothers who were 35-39 years of age had the highest percentages of very-low birth weight births (2.1 %)

## Summary/Where Do We Go From Here?



#### Impact of Preventable Factors

- The infant mortality rate in women who smoked during pregnancy is 2 times that of mother's who didn't smoke during their pregnancy.
- Mothers who had a short spaced pregnancy had an infant mortality rate nearly 3 times that of mothers who had adequately spaced pregnancies.
- Over half the infant deaths in Butler County were to mothers who were overweight/obese.

#### Where Do We Go From Here?

The Butler County Partnership for Infant Mortality Reduction is a long term project. We won't decrease infant deaths overnight. In fact, there will always be some infant deaths, but we want our community to have as few as possible!

In this first year we have gathered together a strong partnership of people from all walks of life, who are interested in, or impacted by infant mortality. We have spent nearly a year gathering data and studying the issues in our count around infant mortality. We have made great progress! For example, we would like to know more about 'place', that is, where are our infant deaths happening? Are there any patterns or areas where the number of deaths are higher? If so, why?

Our next step will be to create mission and vision statements. Shortly we will be deciding on two major projects to implement.

One project will address an Upstream Issue (aspects of the social environment that influence individual behavior, disease and health status such as poverty, discrimination, limited education, limited healthcare access, educational levels, and health insurance coverage), and another projects will address a Downstream Issue (adverse health behaviors such as smoking or obesity, or unsafe sleep). Upstream interventions focus on the wider circumstances that produce downstream maladaptive behaviors.

Once we choose our two projects, we will begin to develop logic models/action plans for implementing these projects.

At the end of the three years, our findings, along with those of the entire Ohio Equity Initiative, will be published, and made available to other communities across the United States. A sustainability plan will be developed for ongoing efforts beyond the three year initial period of study and intervention.

We are looking for additional partners and agencies who can work within our community to put these projects into action. Please join us!

Improving the health of babies improves the health of families and entire communities!



Several datasets were used to provide the best possible data for each analysis. Whenever possible, a dataset containing death records of all 173 infant deaths from 2008-2012 was used. However, in order to examine maternal and infant characteristics related to birth (such as maternal age or gestational age), it was necessary to use linked birth-death dataset. A total of 164 infant deaths in the 2008-2012 period were successfully linked to the 2007-2012 birth records. Linking birth-death files affects the number of infant deaths and should be interpreted with caution. The linked data set was used to perform the odds ratio analyses of maternal risk factors and analysis of maternal characteristics.





### Please Note: Percentages may not equal 100 percent due to rounding.

Table 1: Number of Births, Infant Deaths, and Infant Mortality Rate by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Infant Deaths	33	36	26	39	39	173
Infant Mortality Rate*	6.47	7.37	5.68	8.54	8.41	7.28

<sup>\*</sup>Rate is per 1,000 live births

Table 2: Infant Mortality Rate by Mother's Age, Butler County, 2008-2012

		2008-2012	<b>3</b> ,
Mother's Age	Total Births	Infant Deaths	Infant Mortality Rate*
< 20 Years	2,221	24	10.81
20-24 Years	5,832	51	8.74
25-29 Years	7,040	44	6.25
30-34 Years	5,813	25	4.30
35-39 Years	2,413	18	7.46
40+ Years	447	2	4.47
Missing	6	9	

<sup>\*</sup>Rate is per 1,000 live births

Table 3: Infant Mortality Rate by Race/Ethnicity, Butler County, 2008-2012

		2008-2012	
Race/Ethnicity	Total Births	Infant Deaths	Infant Mortality Rate*
White, Non-Hispanic	18,702	122	6.52
Black, Non-Hispanic	2,007	24	11.96
Hispanic	1,765	18	10.20
Missing	51		

<sup>\*</sup>Rate is per 1,000 live births



Table 4: Infant Mortality Rate by Gestational Age, Butler County, 2008-2012

		2008-2012	
Gestational Age	Total Births	Infant Deaths	Infant Mortality Rate*
Full Term ( ≥37 Weeks )	21,105	45	2.13
Preterm ( <37 Weeks )	2,667	119	44.62
Very-Preterm ( <32 Weeks )	517	98	189.56
Missing		9	

<sup>\*</sup>Rate is per 1,000 live births

Table 5: Infant Mortality Rate by Smoking During Pregnancy, Butler County, 2008-2012

		2008-2012	
Smoked During Pregnancy	Total Births	Infant Deaths	Infant Mortality Rate*
Yes	4,508	50	11.09
No	19,153	106	5.53
Missing	111	17	

<sup>\*</sup>Rate is per 1,000 live births

Table 6: Infant Mortality Rate by Spacing of Pregnancies, Butler County, 2008-2012

	2008-2012				
	Total Births	Infant Deaths	Infant Mortality Rate*	Percent of Infant Deaths	
Sport Spacing ( <18 Months )	1,572	21	13.36	12.1%	
Adequate Spacing ( >18 Months )	11,639	55	4.73	31.8%	
Missing <sup>+</sup>	10,561	97			

<sup>\*</sup>Rate is per 1,000 live births

<sup>&</sup>lt;sup>†</sup>Missing also includes births to first time mothers



Table 7: Infant Mortality Rate by Overweight/Obese, Butler County, 2008-2012

	2008-2012				
Overweight/Obese	Total Births	Infant Deaths	Infant Mortality Rate*	Percent of Infant Deaths	
Yes	9,943	76	7.64	59.8%	
No	10,556	51	4.83	40.2%	
Missing	3,273	46			

<sup>\*</sup>Rate is per 1,000 live births

Table 8: Top 5 Causes of Infant Death, Butler County, 2008-2012

	2008	3-2012
Cause of Death	Number of Deaths	Percent of Infant Deaths
Extremely Low Birth Weight or Extreme Immaturity or Preterm Birth	43	20.9%
Congenital Anomalies	34	16.5%
Newborn Affected by Complications of Placenta, Cord & Membranes	19	9.2%
Accidental Suffocation & Strangulation in Bed	17	8.3%
Newborn Affected by Maternal Complications of Pregnancy	12	5.8%

Table 9: PPOR\* non-Hispanic White, Butler County, 2006-2010



<sup>\*</sup>Rate is per 1,000 live births

Table 10: PPOR\* non-Hispanic Black, Butler County, Hamilton County, Montgomery County, 2006-2010



<sup>\*</sup>Rate is per 1,000 live births



Table 11: PPOR\* Reference Group<sup>+</sup>, 2006-2010

Table 12: Non-Hispanic White Excess Mortality\*, Butler County, 2006-2010

2.45							
Maternal Health/ Prematurity							
1.80	1.40	1.45					
Maternal Health	Newborn Care	Infant Health					

\*Rate is per 1,000 live births

\*Reference Group: 20+ years of age; 16+ years
of education; NH White; Ohio resident at time of
baby's birth

0.6							
Maternal	Health/ Pre	ematurity					
0.6	0.4	0.7					
Maternal Health	Newborn Care	Infant Health					

\*Rate is per 1,000 live births

Table 13: Non-Hispanic Black Excess Mortality\*, Butler County, Hamilton County, Montgomery County, 2006-2010

5.4							
Maternal	Health/ Pre	ematurity					
1.3	8.0	2.3					
Maternal Health	Newborn Care	Infant Health					

\*Rate is per 1,000 live births

Table 14: Number, Percentage, & Infant Mortality Rate of Sudden Unexplained Infant Deaths (SUIDS) by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Infant Deaths	33	36	26	39	39	173
SUIDS Deaths	6	5	1	7	4	23
Percentage of SUIDS Deaths	18.2%	13.9%	3.8%	17.9%	10.3%	13.3%
SUIDS Infant Mortality Rate*	1.18	1.02	0.22	1.53	0.86	0.97

\*Rate is per 1,000 live births



Table 15: Number, Percentage, & Infant Mortality Rate of Sudden Infant Deaths (SIDS) by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Infant Deaths	33	36	26	39	39	173
SIDS Deaths	3	1	0	0	1	5
Percentage of SIDS Deaths	9.1%	2.8%	0%	0%	2.6%	2.9%
SIDS Infant Mortality Rate*	0.59	0.20	0.0	0.0	0.22	0.21

\*Rate is per 1,000 live births

Table 16: Number and Percent of Full Term Births by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Full Term Births ( ≥ 37 Weeks)	4,526	4,335	4,062	4,071	4,111	21,105
Percent of Births Considered Full Term	88.8%	88.7%	88.7%	89.1%	88.6%	88.8%

Table 17: Number and Percent of Full Term Births by Mother's Age, Butler County, 2008-2012

	2008-2012				
	Full Ter	m Births			
Mother's Age	Number of Full Term Births	Percent of Full Term Births			
< 20 Years	1,912	86.1%			
20-24 Years	3,734	89.2%			
25-29 Years	6,321	89.8%			
30-34 Years	5,201	89.5%			
35-39 Years	2,097	86.9%			
40+ Years	368	82.3%			
Missing	4				



Table 18: Number and Percent of Full Term Births by Race/Ethnicity, Butler County, 2008-2012

	2008-2012				
	Full Term Births				
Race/Ethnicity	Number of Full Term Births	Percent of Full Term Births			
White, Non-Hispanic	16,684	89.2%			
Black, Non-Hispanic	1,696	84.5%			
Hispanic	1,544	87.5%			
Missing	46				

Table 19: Number and Percent of Preterm Births by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Preterm Births ( < 37 Weeks)	572	551	518	497	529	2,667
Percent of Births Considered Preterm	11.2%	11.3%	11.3%	10.9%	11.4%	11.2%

Table 20: Number and Percent of Preterm Births by Mother's Age, Butler County, 2008-2012

	2008-2012					
	Prete	erm Births				
Mother's Age	Number of Preterm Births	Percent of Preterm Births				
< 20 Years	309	13.9%				
20-24 Years	630	10.8%				
25-29 Years	719	10.2%				
30-34 Years	612	10.5%				
35-39 Years	316	13.1%				
40+ Years	79	17.7%				
Missing	2					



Table 21: Number and Percent of Preterm Births by Race/Ethnicity, Butler County, 2008-2012

	2008-2012					
	Preterm Births					
Race/Ethnicity	Number of Pre- term Births	Percent of Preterm Births				
White, Non-Hispanic	2,018	10.8%				
Black, Non-Hispanic	311	15.5%				
Hispanic	221	12.5%				
Missing	5					

Table 22: Number and Percent of Very-Preterm Births by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Very-Preterm Births ( < 32 Weeks)	105	95	96	110	111	517
Percent of Births Considered Preterm	2.1%	1.9%	2.1%	2.4%	2.4%	2.2%

Table 23: Number and Percent of Very-Preterm Births by Mother's Age, Butler County, 2008-2012

	2008-2012				
	Very-Pre	term Births			
Mother's Age	Number of Very- Preterm Births				
< 20 Years	55	2.5%			
20-24 Years	144	2.5%			
25-29 Years	137	1.9%			
30-34 Years	107	1.8%			
35-39 Years	65	2.7%			
40+ Years	9	2.0%			



Table 24: Number and Percent of Very-Preterm Births by Race/Ethnicity, Butler County, 2008-2010

	2008-2012				
	Very-Preterm Births				
Race/Ethnicity	Number of Very- Preterm Births	Percent of Very- Preterm Births			
White, Non-Hispanic	380	2.0%			
Black, Non-Hispanic	69	3.4%			
Hispanic	46	2.6%			
Missing	1				

Table 25: Number and Percent of Low Birth Weight Births by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Low Birth Weight Births ( <2500 Grams )	399	382	348	380	372	1,881
Percent of Births Considered Low Birth Weight	7.8%	7.8%	7.6%	8.3%	8.0%	7.9%

Table 26: Number and Percent of Low Birth Weight Births by Mother's Age, Butler County, 2008-2012

	2008-2012					
	Low Birth Weight					
Mother's Age	Number of Low Birth Weight Births	Percent of Low Birth Weight Births				
< 20 Years	221	10.0%				
20-24 Years	469	8.0%				
25-29 Years	494	7.0%				
30-34 Years	444	7.6%				
35-39 Years	219	9.1%				
40+ Years	37	8.3%				



Table 27: Number and Percent of Low Birth Weight Births by Race/Ethnicity, Butler County, 2008-2012

	2008-2012				
	Low Birth Weight				
Race/Ethnicity	Number of Low Birth Weight Births	Percent of Low Birth Weight Births			
White, Non-Hispanic	1,410	7.5%			
Black, Non-Hispanic	234	11.7%			
Hispanic	128	7.3%			
Missing	3				

Table 28: Number and Percent of Very-Low Birth Weight Births by Year, Butler County, 2008-2012

	2008	2009	2010	2011	2012	2008-2012
Total Births	5,098	4,886	4,580	4,568	4,640	23,772
Very-Low Birth Weight Births ( <1500 Grams )	73	71	65	76	93	378
Percent of Births Considered Very-Low Birth Weight	1.4%	1.5%	1.4%	1.7%	2.0%	1.6%

Table 29: Number and Percent of Very-Low Birth Weight Births by Mother's Age, Butler County, 2008-2012

	2008-2012					
	Very-Low Birth Weight					
Mother's Age	Number of Very-Low Birth Weight Births	Percent of Very-Low Birth Weight Births				
< 20 Years	35	1.6%				
20-24 Years	92	1.6%				
25-29 Years	98	1.4%				
30-34 Years	95	1.6%				
35-39 Years	51	2.1%				
40+ Years	7	1.6%				



Table 30: Number and Percent of Very-Low Birth Weight Births by Race/Ethnicity, Butler County, 200-2012

	2008-2012				
	Very-Low Birth Weight				
Race/Ethnicity	Number of Very-Low Birth Weight Births	Percent of Very-Low Birth Weight Births			
White, Non-Hispanic	274	1.5%			
Black, Non-Hispanic	56	2.8%			
Hispanic	28	1.6%			
Missing	2				

Table 31: Odds Ratio: Risk of Infant Death Associated with Race/Ethnicity, Butler County, 2007-2011

Reference Group = White, Non-Hispanic

	Odds Ratio	95% Confidence Interval
Black, Non-Hispanic vs White, Non-Hispanic	1.74	(1.11,2.73)*
Hispanic vs White, Non-Hispanic	1.70	(1.04,2.76)*

<sup>\*</sup>Statistically Significant Confidence Interval

Table 32: Odds Ratio: Risk of Infant Death Associated with Mother's Age, Butler County, 2007-2011

Reference Group = 30-34 Year Olds

	Odds Ratio	95% Confidence Interval
<20 Years Old vs 30-34 Year Olds	2.57	(1.42,4.66)*
20-24 Year Olds vs 30-34 Year Olds	2.51	(1.52,4.15)*
25-29 Year Olds vs 30-34 Year Olds	1.67	(0.99,2.82)
35-39 Year Olds vs 30-34 Year Olds	2.37	(1.29,4.36)*
40+ Years Old vs 30-34 Year Olds	1.80	(0.54,6.06)

<sup>\*</sup>Statistically Significant Confidence Interval



Table 33: Odds Ratio: Risk of Preterm Birth Associated with Race/Ethnicity, Butler County, 2007-2011

Reference Group = White, Non-Hispanic

	Odds Ratio	95% Confidence Interval
Black, Non-Hispanic vs White, Non-Hispanic	1.56	(1.38,1.77)*
Hispanic vs White, Non-Hispanic	1.23	(1.06,1.41)*

<sup>\*</sup>Statistically Significant Confidence Interval

Table 34: Odds Ratio: Risk of Preterm Birth Associated with Mother's Age, Butler County, 2007-2011

Reference Group = 30-34 Year Olds

	Odds Ratio	95% Confidence Interval
<20 Years Old vs 30-34 Year Olds	1.43	(1.24,1.65)*
20-24 Year Olds vs 30-34 Year Olds	1.14	(1.01,1.28)*
25-29 Year Olds vs 30-34 Year Olds	1.04	(0.93,1.17)
35-39 Year Olds vs 30-34 Year Olds	1.41	(1.22,1.63)*
40+ Years Old vs 30-34 Year Olds	2.06	(1.60,2.64)*

<sup>\*</sup>Statistically Significant Confidence Interval

Table 35: Odds Ratio: Risk of Very-Preterm Birth Associated with Race/Ethnicity, Butler County, 2007-2011

Reference Group = White, Non-Hispanic

	Odds Ratio	95% Confidence Interval
Black, Non-Hispanic vs White, Non-Hispanic	2.20	(1.73,2.79)*
Hispanic vs White, Non-Hispanic	1.31	(0.96,1.80)

<sup>\*</sup>Statistically Significant Confidence Interval



Table 36: Odds Ratio: Risk of Very-Preterm Birth Associated with Mother's Age, Butler County, 2007-2011

Reference Group = 30-34 Year Olds

	Odds Ratio	95% Confidence Interval
<20 Years Old vs 30-34 Year Olds	1.53	(1.10,2.13)*
20-24 Year Olds vs 30-34 Year Olds	1.55	(1.19,2.01)*
25-29 Year Olds vs 30-34 Year Olds	1.15	(0.88,1.50)
35-39 Year Olds vs 30-34 Year Olds	1.61	(1.16,2.23)*
40+ Years Old vs 30-34 Year Olds	1.69	(0.92,3.11)

<sup>\*</sup>Statistically Significant Confidence Interval

Table 37: Odds Ratio: Risk of a Low Birth Weight Birth Associated with Race/Ethnicity, Butler County, 2007-2011

Reference Group = White, Non-Hispanic

	Odds Ratio	95% Confidence Interval
Black, Non-Hispanic vs White, Non-Hispanic	1.64	(1.42,1.89)*
Hispanic vs White, Non-Hispanic	1.03	(0.86,1.24)

<sup>\*</sup>Statistically Significant Confidence Interval

Table 38: Odds Ratio: Risk of a Low Birth Weight Birth Associated with Mother's Age, Butler County, 2007-2011

Reference Group = 30-34 Year Olds

	Odds Ratio	95% Confidence Interval
<20 Years Old vs 30-34 Year Olds	1.36	(1.15,1.60)*
20-24 Year Olds vs 30-34 Year Olds	1.08	(0.95,1.24)
25-29 Year Olds vs 30-34 Year Olds	0.91	(0.79,1.04)
35-39 Year Olds vs 30-34 Year Olds	1.23	(1.04,1.46)*
40+ Years Old vs 30-34 Year Olds	1.46	(1.06,1.99)*

<sup>\*</sup>Statistically Significant Confidence Interval



Table 39: Odds Ratio: Risk of a Very-Low Birth Weight Birth Associated with Race/Ethnicity, Butler County, 2007-2011

Reference Group = White, Non-Hispanic

	Odds Ratio	95% Confidence Interval
Black, Non-Hispanic vs White, Non-Hispanic	2.26	(1.72,2.99)*
Hispanic vs White, Non-Hispanic	1.02	(0.68,1.54)

<sup>\*</sup>Statistically Significant Confidence Interval

Table 40: Odds Ratio: Risk of a Very-Low Birth Weight Birth Associated with Mother's Age, Butler County, 2007-2011

Reference Group = 30-34 Year Olds

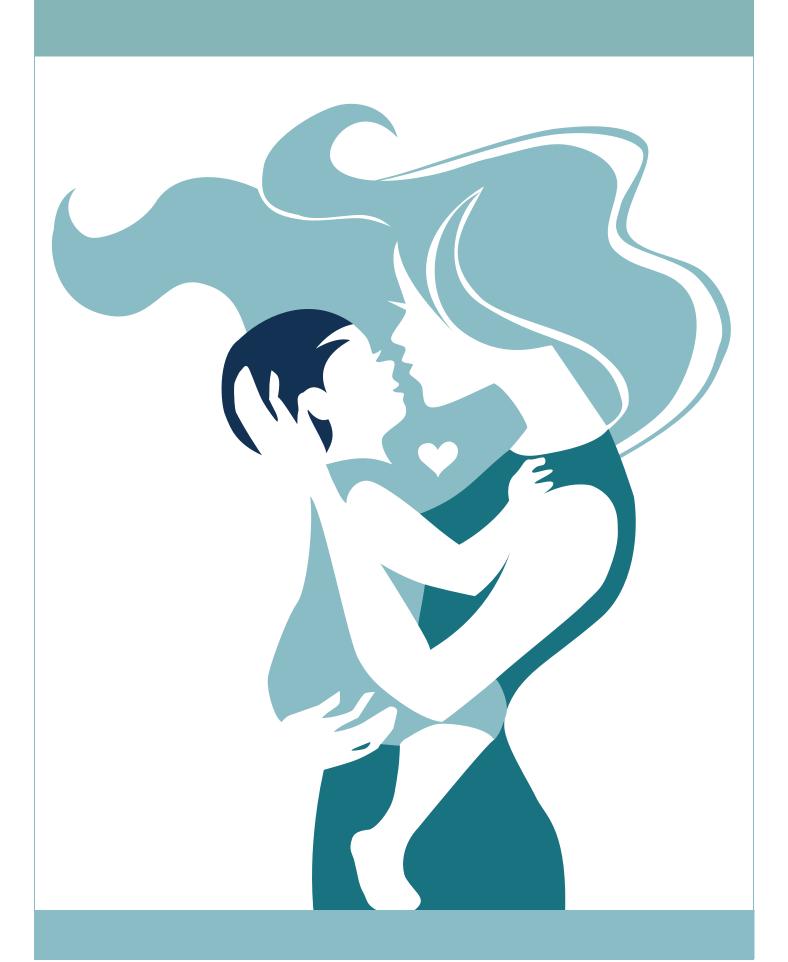
	Odds Ratio	95% Confidence Interval
<20 Years Old vs 30-34 Year Olds	1.05	(0.70,1.57)
20-24 Year Olds vs 30-34 Year Olds	1.12	(0.83,1.51)
25-29 Year Olds vs 30-34 Year Olds	0.95	(0.70,1.29)
35-39 Year Olds vs 30-34 Year Olds	1.59	(1.12,2.26)*
40+ Years Old vs 30-34 Year Olds	1.79	(0.95,3.40)

<sup>\*</sup>Statistically Significant Confidence Interval

## References



- 1. "Infant Mortality." *Reproductive Health*. Centers for Disease Control and Prevention, 2 Aug 2013. Available at URL <a href="http://www.cdc.gov/reproductivehealth/MaternalInfantHealth/InfantMortality.htm">http://www.cdc.gov/reproductivehealth/MaternalInfantHealth/InfantMortality.htm</a>
- 2. ReidPath, D, and P RAllotey. "Infant Mortality Rates as an Indicator of Population Health." *Journal of Epidemiology and Community health*. 57.5 (2003): 344-346. 20 Mar. 2014. Available at URL. <a href="http://jech.bmj.com/content/57/5/344.long">http://jech.bmj.com/content/57/5/344.long</a>
- 3. MacDorman, Ph.D., Marian, and T.J. Mathews, M.S.. "NCHS Data Brief: Recent Trends in Infant Mortality in the United States." *Publications and Information Products*. Centers for Disease Control and Prevention, Available at URL. <a href="http://www.cdc.gov/nchs/data/databriefs/db09.htm">http://www.cdc.gov/nchs/data/databriefs/db09.htm</a>
- 4. "What is PPOR." *Perinatal Periods of Risk*. CityMatCH. Available at URL. <a href="http://www.citymatch.org/">http://www.citymatch.org/</a> perinatal-periods-risk-ppor-home/what-ppor
- "What Works: Changing Knowledge and Behavior to Reduce Sudden Unexpected Infant Death." SUIDS/SIDS Research Center. Cribs for Kids - Pennsylvania Department of Health. Available at URL. http://www.cribsforkids.org/suids-sids-resource-center/
- Shaprio-Mendoza, Ph.D., MPH, Carrie, and Lena Camperlengo, RN, MPH, DrPH(c). "CDC's Sudden, Unexpected Infant Death Initiative." Keeping Kids Alive, A National Symposium of State Leaders in Maternal & Child Health, Injury Prevention, & Child Death Review. Centers for Disease Control and Prevention. Washington, DC. 20 May 2009. Lecture. Available at URL. <a href="http://www.childdeathreview.org/Symposium2009/KKA">http://www.childdeathreview.org/Symposium2009/KKA</a> Symp Wed CSM LC.pdf
- 7. "National Prematurity Awareness Month." *CDC Features*. Centers for Disease Control and Prevention, 29 Oct 2013. Available at URL. <a href="http://www.cdc.gov/features/prematurebirth/">http://www.cdc.gov/features/prematurebirth/</a>
- 8. "Your Premature Baby." *March of Dimes*. March of Dimes Foundation. Available at URL. <a href="http://www.marchofdimes.com/baby/low-birthweight.aspx">http://www.marchofdimes.com/baby/low-birthweight.aspx</a>
- 9. "What: Is low birthweight a health problem?." *Pediatric and Pregnancy Nutrition Surveillance System*. Centers for Disease Control and Prevention, 04 Nov 2009. Available at URL. <a href="http://www.cdc.gov/pednss/how">http://www.cdc.gov/pednss/how</a> to/interpret data/case studies/low birthweight/what.htm
- 10. "What are the risk factors for preterm labor and birth?." *Eunice Kennedy Shriver National Institute of Child Health and Human Development*. National Institutes of Health, 06 Nov 2013. Available at URL. <a href="https://www.nichd.nih.gov/health/topics/preterm/conditioninfo/pages/who-risk.aspx">https://www.nichd.nih.gov/health/topics/preterm/conditioninfo/pages/who-risk.aspx</a>



# Butler County Health Department

301 South Third Street | Hamilton, OH 45011



