The Cuyahoga County Child Fatality Report
Twentieth Edition

Protecting Our Future

Child Fatalities 2016

The Cuyahoga County
Child Fatality Review Board
Armond Budish, Cuyahoga County Executive

Invest in Children
Cuyahoga County

The Cuyahoga County
Office of Early Childhood
Invest in Children

Table of Contents

We dedicate this report to all the families who mourn the death of their child.

The community honors their memory by pledging itself to a course of action that strives to prevent the death of another.

Recommendations 1

Technical Glossary 2

An Overall Look at 2016 3

Taking a Closer Look 5

Peer County Comparisons 7

Racial and Economic Disparities 8

Infant Mortality 10

- Prematurity 13
- Sleep Related Deaths 16

Child Deaths (1 to 17 years) 20

- Unintentional Injury Deaths 21
- Intentional Injury Deaths 23

Child Abuse and Neglect 25

Community Actions 2016-2017 26

Data Tables 30

Appendix A - City of Cleveland with First Ring and Outer Ring Suburbs 34

Appendix B - Fetal Infant Mortality Review Program 35

Footnotes 37

Review Board Membership 39

Contact Information . . . . . Back Cover

Recommendations

The purpose of the Cuyahoga County Child Fatality Review Board is to decrease the number of preventable child deaths. The Board reviews the deaths of all children less than 18 years old who live in Cuyahoga County. This confidential review is conducted by an interdisciplinary team who identifies the contributing causes, risk factors, and trends. The Board makes data-driven recommendations to protect the health and safety of all children in the community.

Infant Mortality and Disparities

1. Actively support the mission and key priorities of First Year Cleveland to reduce infant deaths and racial disparities.
2. Promote the strategies of the Ohio Institute for Equity in Birth Outcomes to eliminate racial disparities and improve birth outcomes in Cuyahoga County.

Prematurity

1. Support the efforts of the March of Dimes in the areas of research and public awareness regarding the causes, risk factors, and lifelong effects of prematurity. Continue to educate women and expectant parents about the warning signs of preterm labor, the importance of interconception care, and the significance of a "Life Course Perspective" to decrease the risks of preterm births.
2. Support promising and evidence-based practices that decrease preterm births, such as CenteringPregnancy® and the use of progesterone for high-risk women.
3. Encourage child and family serving agencies to incorporate interconception care and a reproductive life plan as core components of their programs.
4. Promote a seamless system for perinatal services that also addresses the complex needs of many pregnant women by linking them to services for chronic health problems, drug treatment, and mental health counseling.

Birth Defects

1. Encourage programs encompassing a "Life Course Perspective", that identify and modify medical, social, environmental, and behavioral risks throughout a woman's life that can impact future pregnancies.

Sleep Related Deaths

1. Partner with family serving agencies to provide safe sleep education to other infant caregivers, such as grandparents, relatives, and friends, with a focus on providing a safe sleep environment in any location.
2. Continue to educate childbirth instructors and staff at maternity and pediatric hospitals in Cuyahoga County about the importance of role modeling safe sleep in the hospital, educating all caregivers, and having conversations with families about barriers to safe sleep. Encourage the development of hospital safe sleep policies and a review of safe sleep discharge teaching.
3. Increase family serving agencies' awareness of the components of a safe infant sleep environment by providing staff training on risk factors, local sleep related fatality data, and the most recent American Academy of Pediatrics safe sleep recommendations.
4. Promote the Ohio safe sleep campaign and its educational resources to hospitals and agencies in Cuyahoga County.
5. Support the Ohio law that requires hospitals to provide safe sleep education and to assess for a safe sleep environment at home before discharge.

Medically Related Deaths

1. Reinforce the importance of a medical home for children with chronic illnesses and assess for barriers to compliance with the treatment plan.

Unintentional Injuries

1. Support the Greater Cleveland Safe Kids / Safe Communities Coalition in their comprehensive efforts to prevent injuries and educate the community on safety issues that include child passenger seats/restraints; teen drivers; pedestrian, bus, and bicycle safety; unintentional poisoning; and fire, water, and sports safety.
2. Partner with child/family agencies to disseminate the message stressing the importance of adequate and appropriate adult supervision of children in homes, around water, and in neighborhoods.
3. Reinforce the importance of gun safety in the home– unloaded, locked, and out of the reach of children.
4. Monitor the opioid epidemic in Cuyahoga County to identify how and where it is affecting the health, welfare, and safety of children.

Homicide

1. Promote the use of 24-hour parenting hotlines as a safe and confidential resource for parents in crisis.
2. Support educational programs that assist parents and guardians in understanding age appropriate behaviors, using alternative methods of discipline, and choosing suitable caregivers.
3. Support domestic and teen dating violence education and programs that: help families identify warning signs; outline actions to take, especially for escalating behaviors; provide access to counseling and emergency shelter; and initiate early intervention to limit the effects on children in the home.
4. Advocate for community-based safe haven centers for teens, to provide supervised activities and programs after school and on weekends.

Suicide

1. Support school programs for depression awareness, bullying, and suicide prevention that also include resources for assistance.

Technical Glossary

Infant – A person under 1 year of age.

Neonatal Period – The time period for all infants from their date of birth through the 27th day of life.

Postneonatal Period – The time period for all infants from the 28th day of life until the day before their 1st birthday.

Child – A person who has not yet reached their 18th birthday (all references to "child" in this report specify which age group/range is being discussed).

Cause of Death – Event that causes a physical problem, no matter how brief or prolonged, that leads to a child's death.

Manner of Death – Description of circumstances under which a child died. There are five categories for manner of death:

1. **Natural:** the death is a consequence of natural disease.
2. **Accident:** unintended and essentially unavoidable death, not by a natural, suicidal, or homicidal manner.
3. **Suicide:** death caused by self, with some degree of conscious intent.
4. **Homicide:** death caused by another human.
5. **Undetermined:** not enough evidence, yet or ever, to determine the manner of death.

Sleep Related Deaths – Deaths to infants under the age of 1 year that occur while sleeping. They can be classified as the following three types:

1. **Sudden Infant Death Syndrome (SIDS):** a sudden, unexplained death of an infant less than 1 year old. It is a diagnosis of exclusion, meaning that after an extensive review of the infant's medical history, a complete autopsy, and a death scene investigation, no cause can be identified.
2. **Accidental Suffocation:** a result of another person lying on the baby, wedging of the baby, or the baby's face, in a soft surface such as a pillow, blanket, or bumper pad.
3. **Sudden Unexplained Infant Death (SUID)/ Undetermined:** ruled as the cause of death when an exact reason cannot be found, but the scene investigation indicates that there were dangers in the baby's sleep area.

White – A person having ancestry in any of the original peoples of Europe, the Middle East, or North Africa. It includes people who self-report their race as "white" on demographic documents.

Black – A person having origins in any of the black racial groups of Africa. It includes people who self-report their race as "black" on demographic documents.

All Other Races – A person who does not have ancestry in any of the original peoples of Europe, the Middle East, or Africa. It includes people who indicate their race is not "white" or "black," such as American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander, as well as ethnicities such as Hispanic.

Rate – Measure that indicates how often an event is occurring during a certain time period; it is calculated by taking the count of an event during a specific time period and dividing this number by the population that is at risk for experiencing the event during the time period. Rates are often expressed in units of 10, such as per 100, per 1,000, or per 100,000.

Example: *The infant death rate is expressed as the number of deaths that occurred among infants 1 to 364 days old who were born alive during a given year, divided by the number of live births that occurred in the same year, multiplied by 1,000. Therefore, if 200 infants died during 2016, and there were 16,000 live births during the same year, the infant death rate would be 12.5 per 1,000 live births (calculated by taking 200 divided by 16,000 and multiplying by 1,000).*

Disparity – Term used to describe the difference or inequity between two groups.

Example: *If the infant death rate was lower in whites compared to the infant death rate in blacks, a racial disparity exists because one racial group (blacks) has a higher rate of infant deaths compared to another racial group (whites).*

Ratio – Comparison made between two things; the fraction formed by the division of one amount by another.

Example: *The population of Anytown, USA, was 100,000. It had 40,000 dwelling units. The ratio of people to dwelling units was 2.5 (100,000 divided by 40,000 equals 2.5).*

Trend – Term used to describe the general direction in which data are headed over a period of time. It often is demonstrated by placing a line in a chart. There needs to be a minimum of two data points to start a trend line, but as a general rule, most researchers prefer a minimum of six data points to predict a trend.

First Ring Suburbs of Cleveland – Municipalities whose borders touch some portion of the city of Cleveland. See Appendix A.

Outer Ring Suburbs of Cleveland – Municipalities whose borders don't touch some portion of the city of Cleveland. See Appendix A.

There were 172 child deaths in 2016, second-lowest total number of deaths in the last ten years.

In 2016, the total number of child deaths decreased by 28 from the 2015 total of 200. Deaths in children ages 1 to 9 years old decreased by 40% and infant deaths decreased by 17%. A 45% increase occurred in child deaths between 10 and 17 years old. The total number of child deaths for 2016 included 128 infants, 15 children from 1 to 9 years old, and 29 children from 10 to 17 years old. (**Table 1**).

Table 1 Annual Number of Deaths by Age Group

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Under 1 Year	162	171	141	140	144	131	133	121	155	128	**1,426**
1 - 9 Years	33	30	42	16	23	30	31	18	25	15	**263**
10 - 17 Years	35	39	30	22	20	21	22	26	20	29	**264**
Total	**230**	**240**	**213**	**178**	**187**	**182**	**186**	**165**	**200**	**172**	1,953

There were 27 fewer infant deaths in 2016.

One hundred twenty-eight infants died in 2016. This was the second-lowest number of infant deaths in the last ten years. Prematurity related deaths decreased by 18 (from 87 in 2015 to 69 in 2016). Sleep related causes had six fewer deaths, while homicide, infection, and other medical causes all had two fewer deaths. Accidental injury related deaths decreased by one. Other perinatal complications had two more deaths. Birth defects and undetermined other category had one more death.

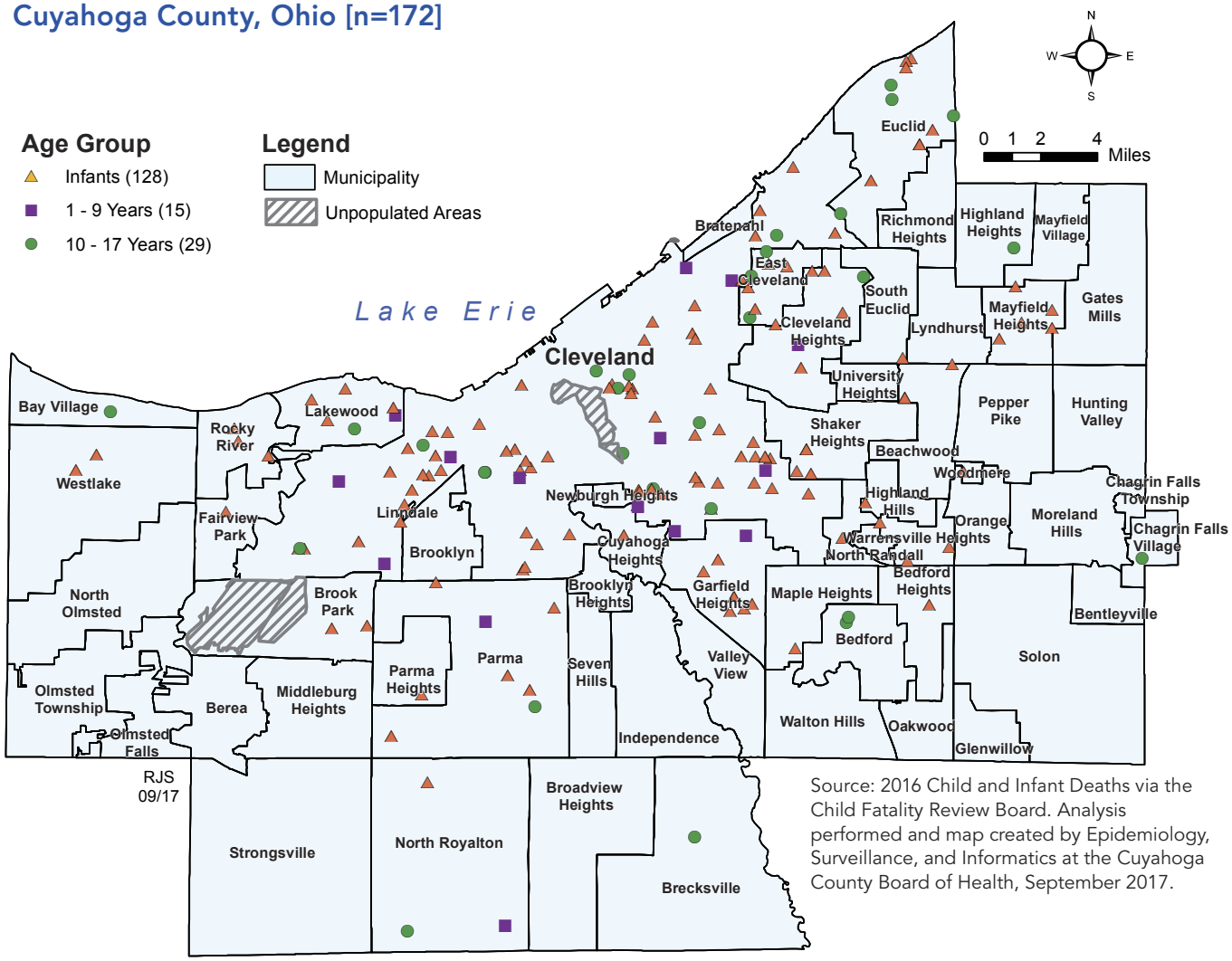
There were ten fewer deaths among children between 1 and 9 years.

Fifteen children between 1 and 9 years of age died in 2016. This was the lowest number of deaths in this age group in the last ten years. Other medical causes had the biggest decrease with five fewer deaths (from seven in 2015 to two in 2016). Homicide had three fewer deaths, while accidental injury related, cancer, and drowning all decreased by two deaths. Undetermined other decreased by one death. Motor vehicle accident caused three more deaths, while other perinatal complications and poisoning had one more death.

There were nine more deaths among children between 10 and 17 years.

Twenty-nine children ages 10 to 17 years died in 2016. This was the highest number of deaths in this age group in the last seven years. Three more deaths occurred in each of the following categories, birth defects, motor vehicle accidents, and other medical causes. Homicide had two more deaths, and accidental injury related increased by one death. There were two fewer deaths as a result of suicide, while infection decreased by one.

Map 1
2016 Child Deaths by Age Group
Cuyahoga County, Ohio [n=172]



Source: 2016 Child and Infant Deaths via the Child Fatality Review Board. Analysis performed and map created by Epidemiology, Surveillance, and Informatics at the Cuyahoga County Board of Health, September 2017.

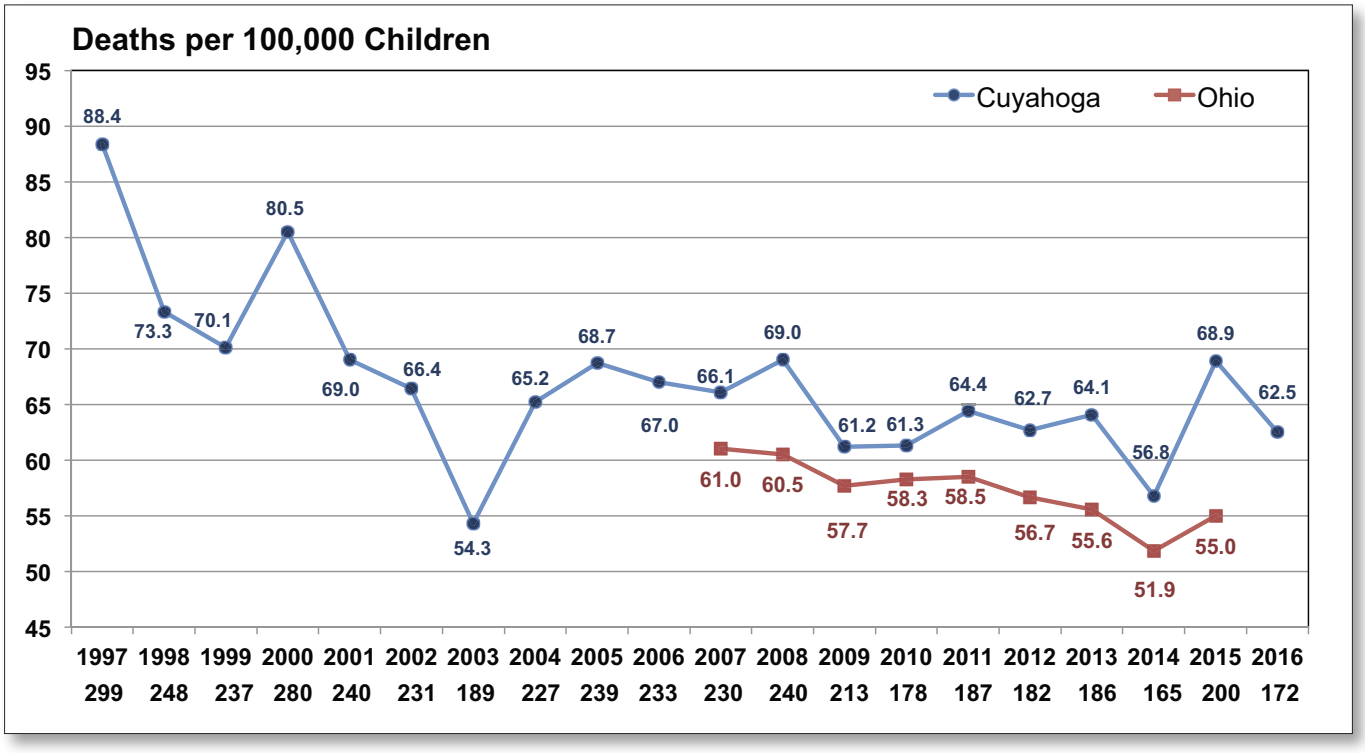
Map 1 shows the number of all child deaths in 2016. The majority of deaths (51%) occurred within the city of Cleveland which has less than one-quarter (23%) of the child population in Cuyahoga County (**Table 6**). Deaths of children in the first ring suburbs accounted for 33% and the remaining 16% of child deaths occurred in the outer ring suburbs (**Appendix A**).

Child death rate decreased by 9% in 2016.

Figure 1 gives a historical perspective over the last 20 years in Cuyahoga County, and shows the state of Ohio rate from 2007 to 2015[1-3] (most recent data available). From 2007 to 2015 the county death rate has been consistently higher than the state of Ohio. The figure also shows the decrease in the county rate of child deaths in 2016. Twenty-eight fewer deaths in 2016 led to a 9% decrease in the rate of child deaths in Cuyahoga County. A significant decrease in the number of infant deaths was a major factor in the overall decrease in the child death rate.

[Note – All child rates starting in 2016 will use the 2011-2015 5-Year American Community Survey child population estimate from the U.S. Census because of significant decrease in the number of children between this estimate (275,151) and the 2010 decennial census estimate (290,262).]

Figure 1 Total Child Deaths (age 0–17) Cuyahoga County (1997–2016) and State of Ohio (2007–2015)



Taking a Closer Look

Table 2 provides a breakdown of the leading causes of death by age group. It shows that a majority (73%) of deaths continue to be rooted in medical causes such as prematurity, birth defects, cancer, infection, and other medical conditions (**Table 9**). Infants accounted for 74% of all child deaths. The significant decrease in prematurity deaths led to the lowest number of child deaths in the last ten years. The leading cause of death in the 1- to 9-year-old age group was birth defects. Death due to other medical causes was the leading cause of death in the 10- to 17-year-old age group.

Table 2 Leading Causes of Death by Age Group in 2016

Cause of Death	Under 1 Year	1 - 9 Years	10 - 17 Years	Total
Prematurity	69	0	0	**69**
Birth Defect	22	4	4	**30**
Sleep Related	21	0	0	**21**
Other Medical Causes	2	2	7	**11**
Homicide	2	1	6	**9**
Motor Vehicle Accident	0	3	6	**9**
Other Perinatal Complications	6	1	0	**7**
Infection	5	0	0	**5**
Accidental - Injury Related	0	1	2	**3**
Cancer	0	2	1	**3**
Suicide	0	0	2	**2**
Drowning	0	0	1	**1**
Poisoning	0	1	0	**1**
Undetermined - Other	1	0	0	**1**
Total	**128**	**15**	**29**	**172**

There were 18 fewer prematurity deaths. Sleep related deaths decreased by six (from 27 in 2015 to 21 in 2016), and other medical causes had four fewer deaths. Homicide and infection had three fewer deaths, while cancer, drowning, other perinatal complications, and suicide decreased by two deaths.

There were six more deaths caused by motor vehicle accidents (from 3 in 2015 to 9 in 2016), and birth defects increased by four deaths. There were 3 additional deaths due to other perinatal complications, and one more poisoning death.

Fast facts:

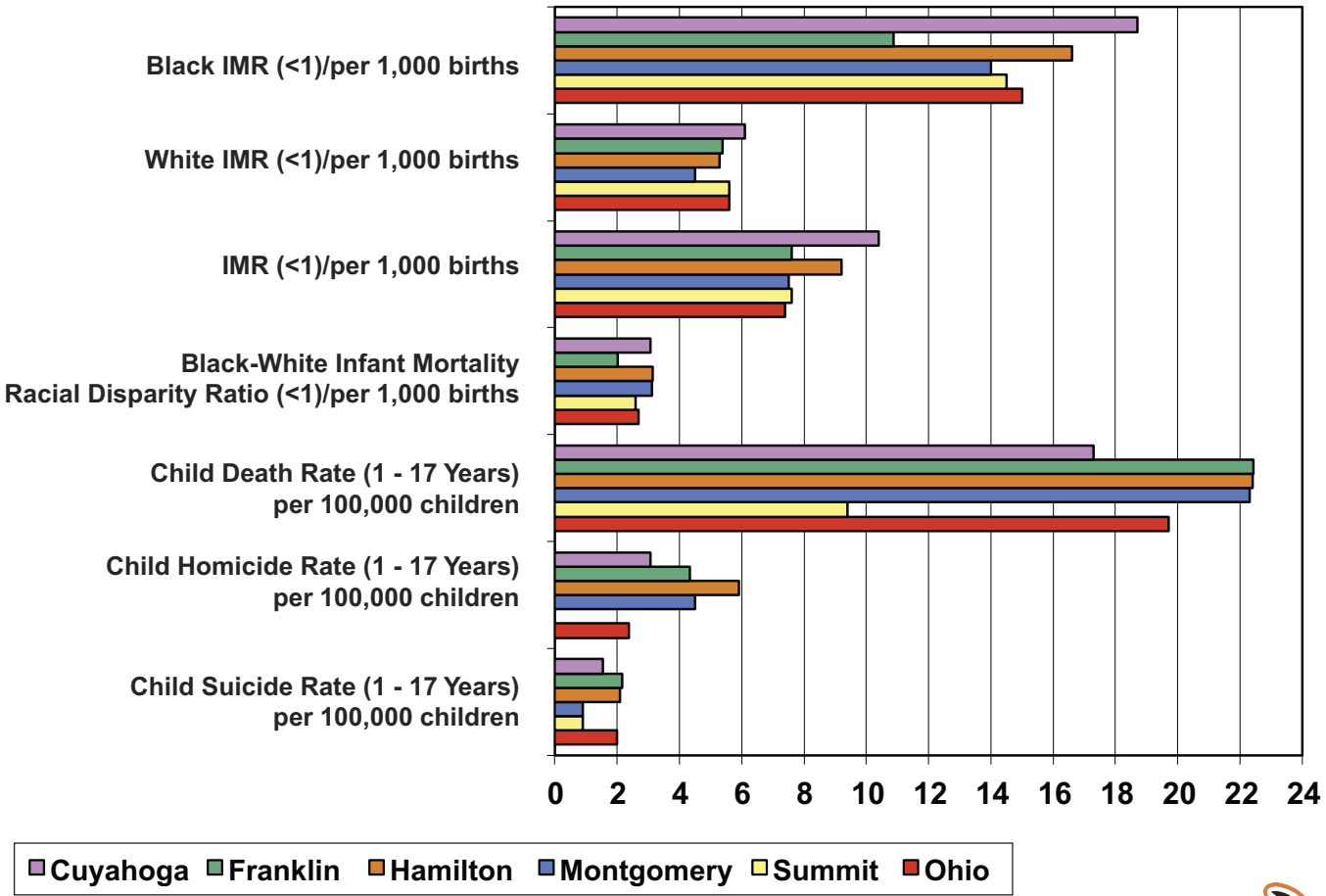
- ***28 fewer children died in 2016.***
- ***Top 3 causes of child death are prematurity, birth defects, and sleep related.***

Cuyahoga County had the highest infant mortality rate in 2015.

The Child Fatality Review Board [4] sought data sources that allowed direct comparisons to other large, urban areas in Ohio focusing on child death and infant mortality rates (IMR). The other four counties include Franklin [5] (Columbus area), Hamilton [6] (Cincinnati area), Montgomery [7] (Dayton area), and Summit [8] (Akron area), as well as the state as a whole [9]. The 2015 data were the most current data available.

Cuyahoga had the highest total IMR (10.4), black IMR (18.7), and white IMR (6.1) of the five largest counties in Ohio (**Figure 2**). The Black-White infant mortality racial disparity ratio of 3.1 tied for the highest with Hamilton and Montgomery. Cuyahoga had the second-lowest overall child death and child homicide rates. The suicide rate of 1.5 put Cuyahoga in the middle, having a better rate than Franklin and Hamilton.

Figure 2 Peer County Comparisons in 2015



Black children nearly three times more likely to die than white children.

The black-white child death racial disparity slightly decreased with a ratio of 2.8 in 2016, which is the second-lowest ratio in the last ten years (**Figure 3**). The ratio decreased because the black child death rate decreased by 13%, while the white rate decreased by 7%. The black rate of 109 was the third-lowest rate in the last ten years (**Table 8**). The white rate of 39 tied for the fourth-highest rate over the same time period.

It is important to look at the racial disparity for infants and children separately, as illustrated in **Figure 4**. The graph shows that the child black-white racial disparity ratio of 2.1 is the third-lowest in the last ten years.

The graph also shows the racial disparity of infant deaths (2.9) was tied for the fourth-lowest ratio in the last ten years. The 2016 infant death racial disparity ratio in the state of Ohio is 2.7[10] and the 2015 US ratio (most recent data available) is 2.4.[11]

2016 Fast Facts:

- *2.9 black infants died for every 1 white infant.*
- *Majority of deaths occurred in areas of high poverty.*

Figure 3 Child Death Rates by Race (age 0-17)

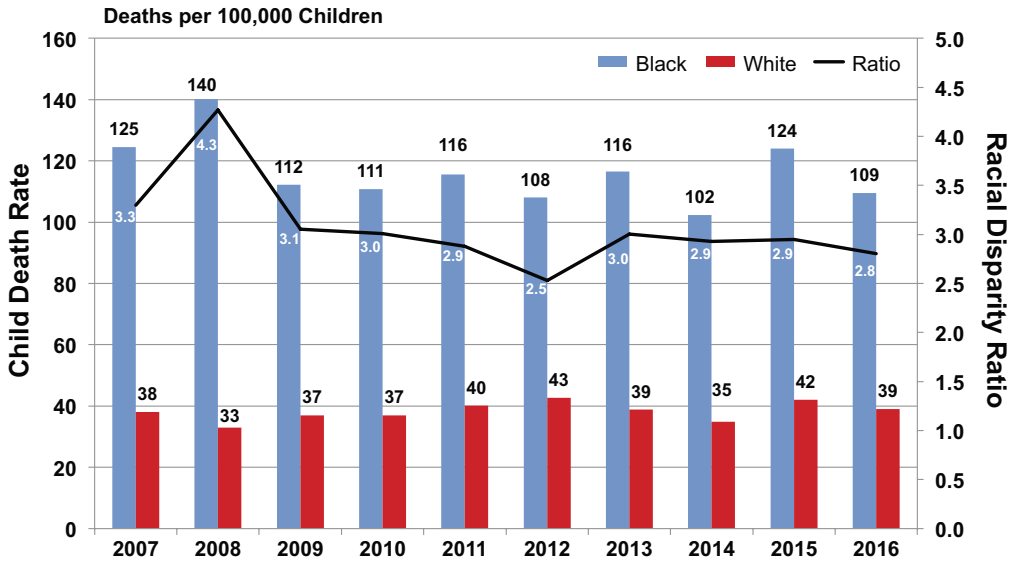
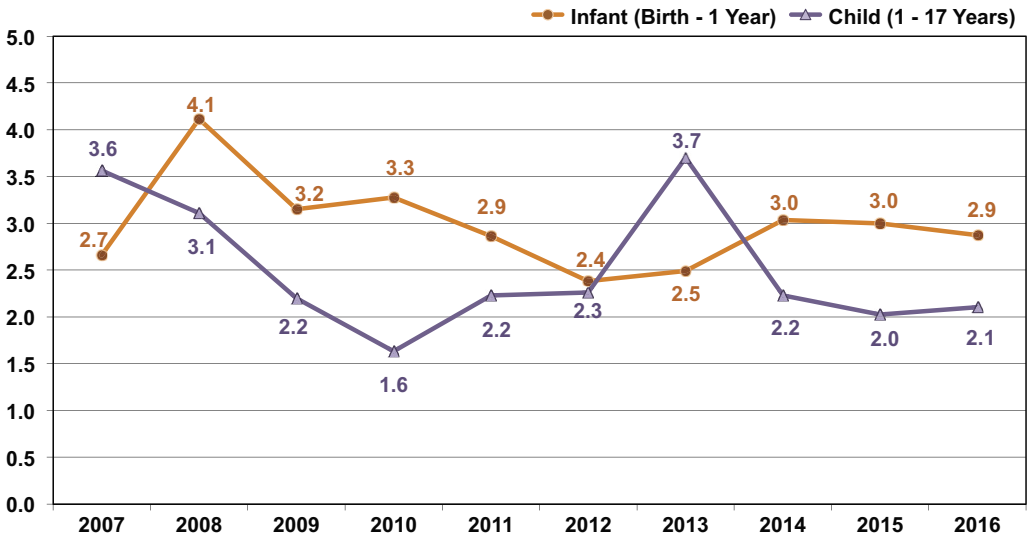
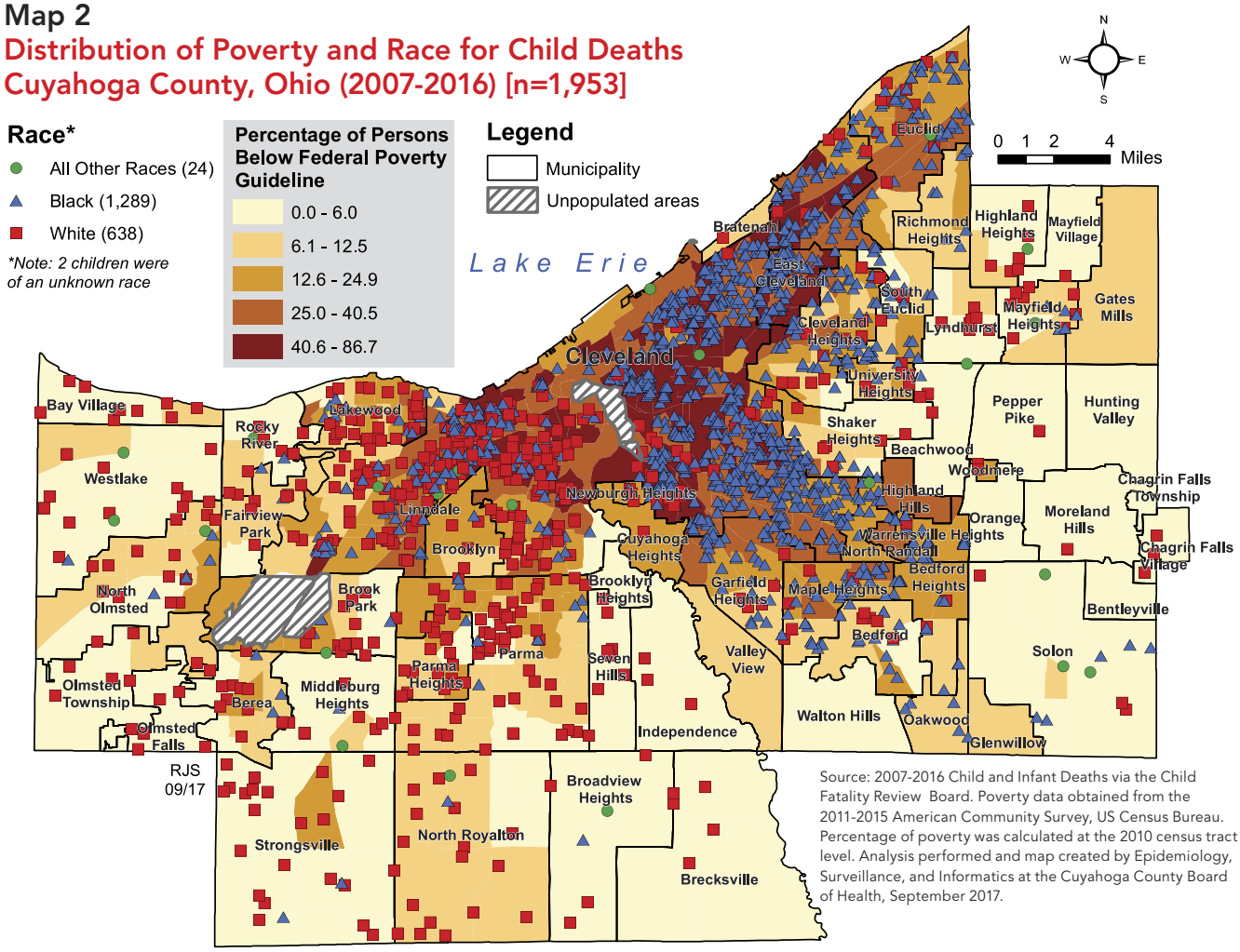


Figure 4 Infant and Child Black-White Racial Disparity Ratio



Map 2
Distribution of Poverty and Race for Child Deaths Cuyahoga County, Ohio (2007-2016) [n=1,953]



Source: 2007-2016 Child and Infant Deaths via the Child Fatality Review Board. Poverty data obtained from the 2011-2015 American Community Survey, US Census Bureau. Percentage of poverty was calculated at the 2010 census tract level. Analysis performed and map created by Epidemiology, Surveillance, and Informatics at the Cuyahoga County Board of Health, September 2017.

Map 2 illustrates the close relation between poverty, race, and child deaths.[12,13] Fewer than 5% of people are living below the federal poverty guideline in the lightest shaded area, while the poverty rate ranges from 40% to 87% for people who reside in the darkest shaded areas. The 2016 Cuyahoga County poverty rate was 18.1%,[14] which was almost 25% higher than the national poverty rate of 14.0%.[15] During the same time period, 31.8% of black people in Cuyahoga County lived in poverty, compared to only 11.1% of white people.[16] The 2016 federal poverty guideline for a family of four was $24,300.[17]

In the last ten years, almost twice as many black children died than all other children in Cuyahoga County. The majority of black child deaths occurred on the eastern side of the county, whereas the largest portion of white child deaths occurred on the western side of the county.

Community Actions*:

First Year Cleveland

First Year Cleveland's mission is "to mobilize the community through partnerships and a unified strategy to reduce infant deaths including racial disparities". There are three key priorities which include reducing racial disparities, addressing extreme prematurity, and eliminating sleep related infant deaths. Race and its effects on long-term stress in addition to structural racism will be examined to understand the impact this has on infant mortality. The leadership team of First Year Cleveland has participated in the Racial Equity Institute training.

* Community Actions footnote:
A full list of community actions is available online at http://protectingourfuture.cuyahoga.us

Cuyahoga County's infant mortality rate (IMR) is the second-lowest in the last ten years.

The 2016 Cuyahoga County IMR is 8.7 infant deaths per 1,000 live births, the second-lowest rate in the last ten years (**Figure 5**). The current rate is based on 128 infant deaths among 14,748 live births, according to birth data received from the Ohio Department of Health (ODH) (Table 6).[18] The local IMR of 8.7 remains significantly higher than the Ohio IMR of 7.4,[19] and the provisional US IMR of 5.85[20]. In order for Cuyahoga County to match the 2016 United States IMR, 41 infants who died in 2016 would have needed to live.

Figure 5 Infant Mortality Rate (IMR) per 1,000 Live Births

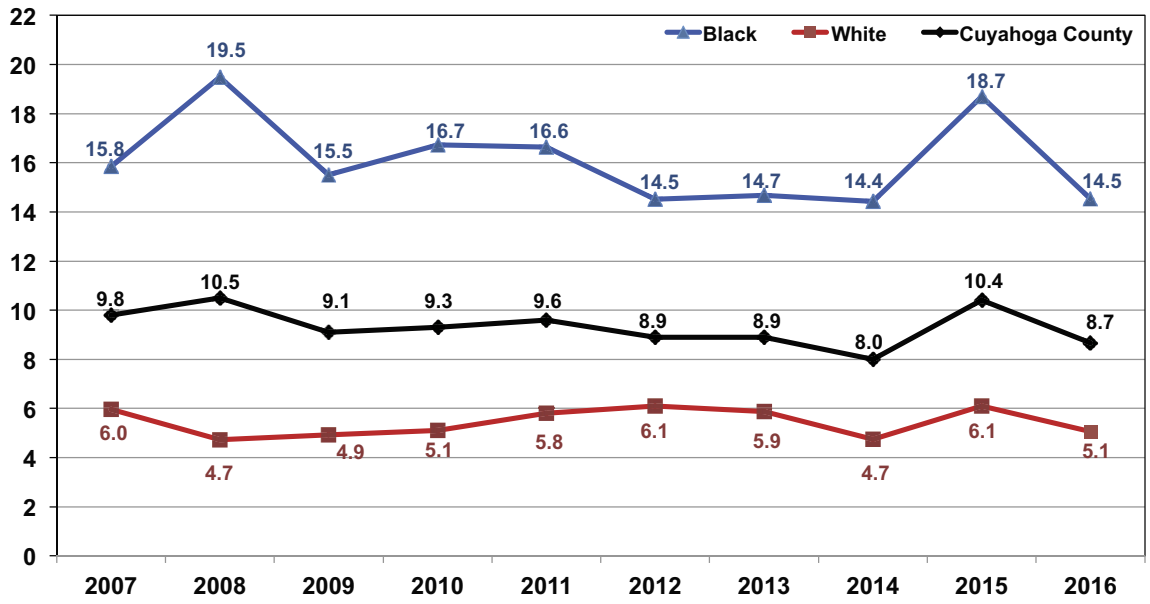
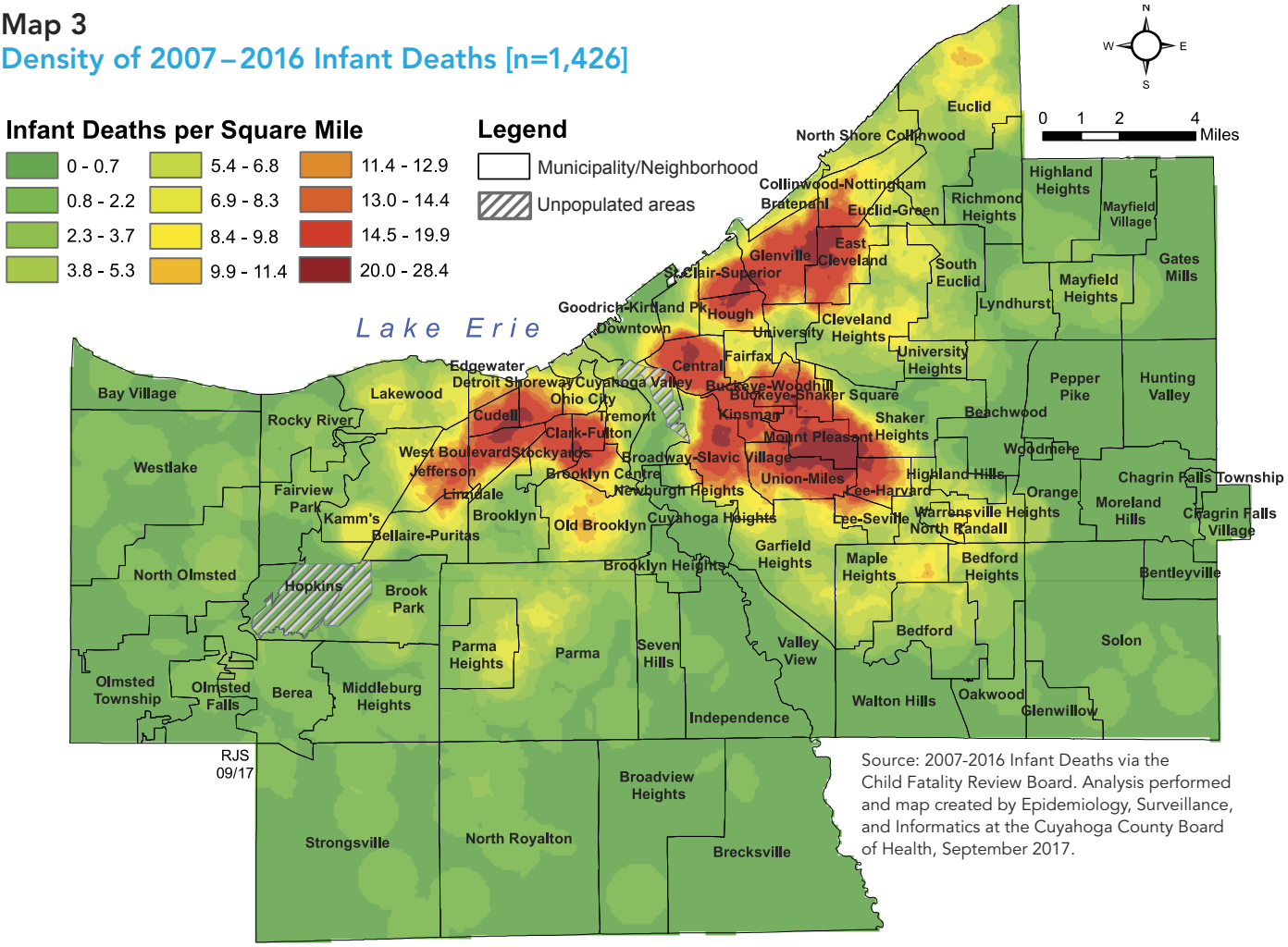


Figure 5 shows that the black IMR of 14.5 is the second-lowest rate in the last ten years and 22% lower than 2015. The white IMR of 5.1 decreased by 16%. The overall IMR of 8.7 indicates that 27 fewer infants died in 2016. While the county rate has improved in 2016, this rate is more than 90% higher than the 2020 US Health and Human Services Secretary Advisory Committee on Infant Mortality goal of 4.5.[21]

The most frequent causes of infant death continued to be prematurity (69), birth defects (22), and sleep related deaths (21) (Table 2). These top three causes accounted for 88% of all infant deaths. Of the 16 remaining infant deaths, 13 were medically related, 2 were homicides, and 1 was ruled as undetermined.

Birth defects overtook sleep related causes as the second-leading cause of death. Almost two-thirds of all deaths were due to congenital abnormalities. The majority of these deaths had heart and/or brain malformations. Neural tube defects had the highest total in the last five years. While the exact causes of neural tube defects are not known, research studies have found that getting enough folic acid before and during pregnancy can greatly reduce the risk of spina bifida and other neural tube malformations.[22]

Map 3
Density of 2007–2016 Infant Deaths [n=1,426]



Source: 2007-2016 Infant Deaths via the Child Fatality Review Board. Analysis performed and map created by Epidemiology, Surveillance, and Informatics at the Cuyahoga County Board of Health, September 2017.

Map 3 shows the density of infant deaths for the last ten years. The highest level of density occurred in several neighborhoods in the city of Cleveland and a portion of East Cleveland. These "hot spots" include areas with at least 20 infant deaths per square mile. The location with the highest density is in the Mount Pleasant neighborhood with 28 infant deaths per square mile.

Community Actions:

Ohio Equity Institute (OEI) for Equity in Birth Outcomes Initiatives

The **Cuyahoga County Board of Health (CCBH)**, the **Cleveland Department of Public Health,** and **ODH** are members of OEI. This initiative explored public health strategies to eliminate health inequities in birth outcomes and improve local and state infant mortality rates. The Cleveland/Cuyahoga County OEI team selected best practice strategies that include:

- Upstream Approach – decrease unplanned pregnancies with the increased use of long acting reversible contraceptives (LARC).
- Downstream Approach – expand CenteringPregnancy® or group prenatal care.
  - As a result of these efforts, 90% of clinicians are able to provide same-day insertion of a LARC and 100% of the hospitals provide CenteringPregnancy® or group prenatal appointments as a standard of care.
- In August of 2016, OEI organized the second community event, "One Life, One Voice, One Community: Every baby deserves a 1st birthday," to raise awareness of infant mortality and connect community members with resources.
- In 2016, a documentary titled "One Life" focused on the many factors that contribute to infant mortality. This video has been shared with family serving agencies and the community (https://vimeo.com/164384561).
- A Fetal Infant Mortality Review (FIMR) Committee was established to review the root causes of fetal and infant deaths in Cuyahoga County (**Appendix B**).
- As an OEI county, the Ohio Department of Medicaid awarded First Year Cleveland 4.9 million dollars to expand programs and services to address infant mortality that include:
  - Moms and Babies First to serve an additional 300 families in the first ring east side suburbs.
  - Birthing Beautiful Communities to provide support to neighborhoods in Cleveland and first ring east side suburbs for an additional 100 families.
  - MomsFirst to integrate community liaisons at neighborhood community centers.
  - Centering Pregnancy at two additional federally qualified health centers.
  - Nurse Family Partnership to serve an additional 50 families.
  - Bootcamp for New Dads to serve an additional 200 fathers.
  - Safe sleep ambassadors to work within 50 churches in high-risk communities.

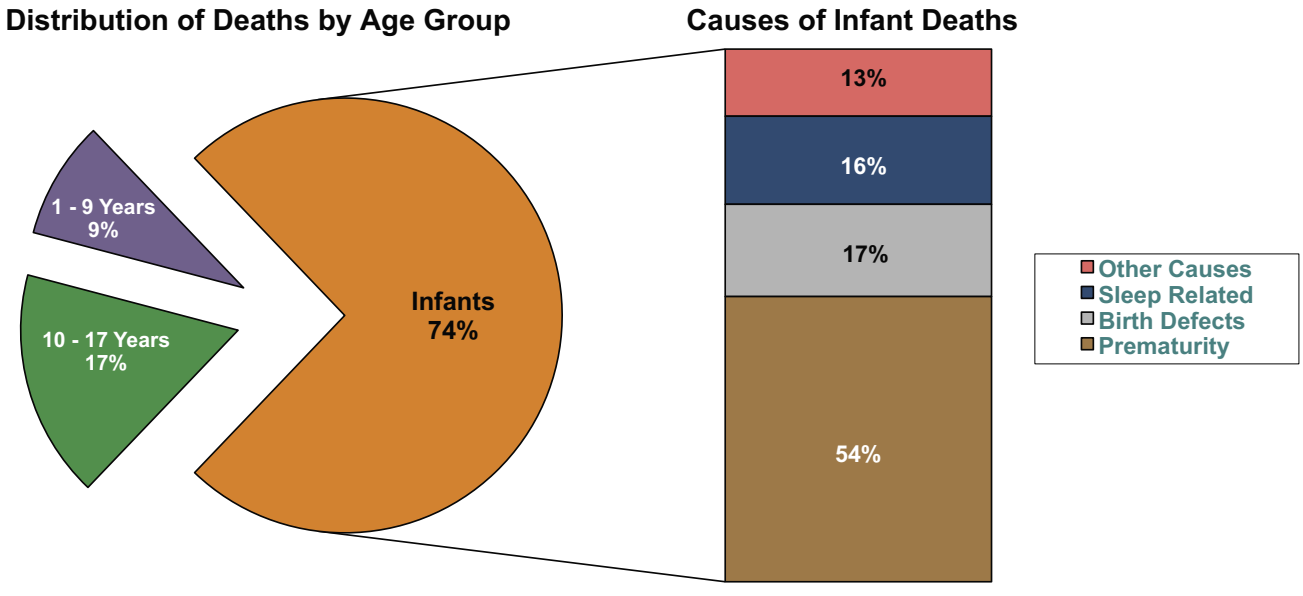
2016 Fast Facts:

- ***27 fewer infants died in 2016.***
- ***1 infant died every 3 days in 2016.***

Record low number of prematurity related deaths in 2016.

In 2016, 69 infants died due to prematurity, accounting for 54% of all infant deaths (**Figure 6**). The cause-specific IMR for prematurity is 4.7 deaths per 1,000 live births.[23] This rate is the lowest in the last ten years (Table 6). Prematurity remains the leading cause of death for children of all ages (40% of the total).

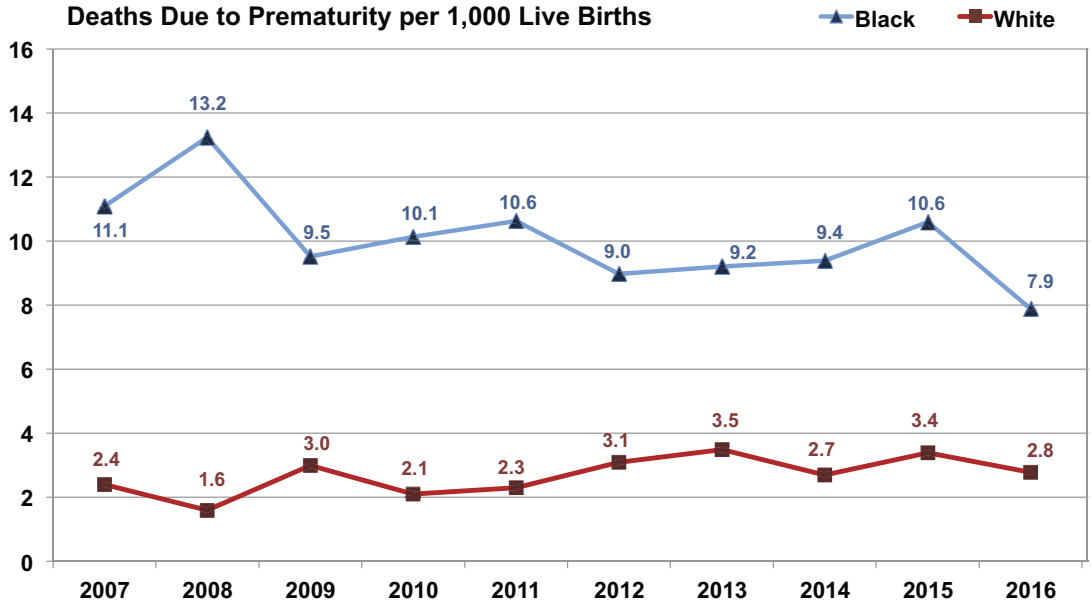
Figure 6 The Impact of Prematurity on Child Deaths in 2016



The percentage of preterm births in Cuyahoga County decreased from 12.1% in 2015 to a rate of 11.9% in 2016.[24] The 2016 Ohio preterm births rate of 10.4%, was slightly higher than the 2015 rate of 10.3%.[25] Similarly, there was an increase in the preliminary 2016 US preterm rate (9.8%) compared to the 2015 rate of 9.6%.[26] Cuyahoga County would have needed 300 fewer preterm births in 2016 to equal the US rate.

The prematurity-related infant death rates by race are illustrated in **Figure 7**. The black prematurity death rate of 7.9 is the lowest in the last ten years and 25% lower than the 2015 rate of 10.6. The white rate decreased by 18% (from 3.4 in 2015 to 2.8 in 2016). The black-white racial disparity rate of 2.8 is the second-lowest in the last ten years. If the 2016 black prematurity rate was equal to the white rate, the overall black IMR would have decreased from 14.5 to 9.5.

Figure 7 Rates of Infant Death Due to Prematurity by Race



Economic, medical, and social risk factors that occurred in at least 10% of prematurity-related deaths are listed for 2016 (**Table 3**). Poverty, the most common risk factor, was noted in 68% of the cases. Chorioamnionitis was the second-most common risk factor, found in 51% of the prematurity fatalities. Mom with a chronic health condition, premature rupture of membranes (PROM), and previous fetal loss were three risk factors noted in at least 35% of all preterm deaths. Obesity was the leading risk factor in the category "Mom with a chronic health condition". Over 45% of the mothers whose infants died from prematurity were obese. Placental abruption had the largest year-over-year increase (from 12% in 2015 to 29% in 2016). Among those deaths due to prematurity where drug use was a risk factor, marijuana was the most commonly used drug.

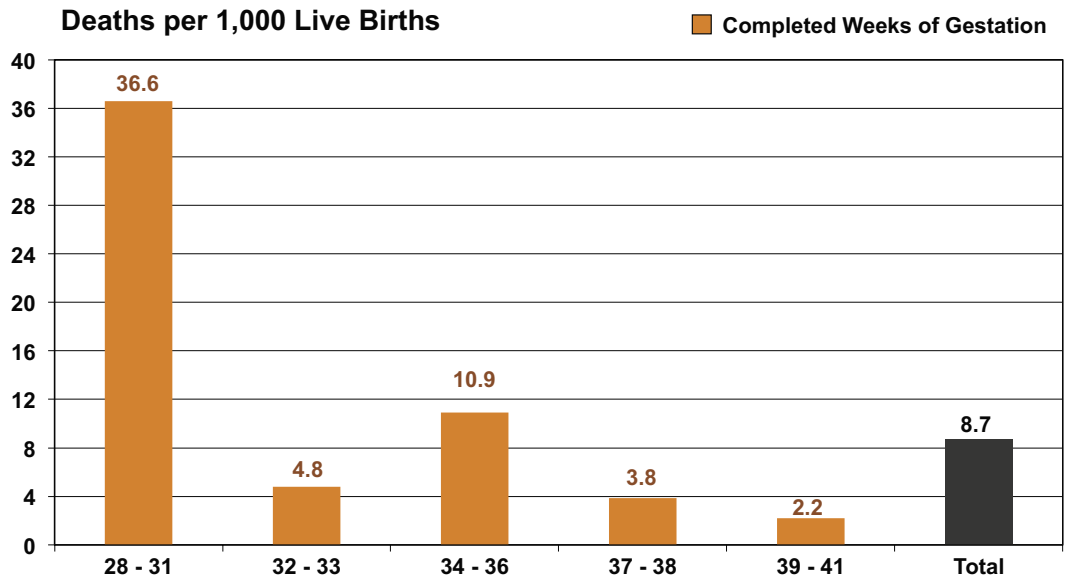
Table 3 Common Risk Factors Associated with 69 Deaths Due to Prematurity in 2016

Risk Factor	#	%
Poverty	47	68.1
Chorioamnionitis	35	50.7
Mom with a chronic health condition	34	49.3
Premature rupture of membranes (PROM)	31	44.9
Previous fetal loss	25	36.2
Placental abruption	20	29.0
Cervical insufficiency	19	27.5
Maternal history of mental health problems	18	26.1
Parental tobacco use	18	26.1
Unplanned pregnancy	17	24.6
Intrauterine tobacco exposure	16	23.2
Sexually transmitted infections - past history	16	23.2
Previous preterm delivery	15	21.7
Late entry into prenatal care	12	17.4
Parental illicit drug use	12	17.4
Birth spacing - Less than 18 months	11	15.9
No prenatal care	11	15.9
Intrauterine drug exposure	10	14.5
At-risk maternal age - 35 years old or older	9	13.0
Parental education less than high school	9	13.0
Sexually transmitted infections - during pregnancy	8	11.6

Of the 69 infant deaths caused by prematurity, 39 (57%) were male and 45 (65%) were black. Nearly half (46%) lived in the city of Cleveland, 42% lived in a first ring suburb, and only 12% lived in an outer ring suburb. The first ring suburb percentage is the highest in the last five years. Almost 80% of the infants were born so early that they lived less than 12 hours, and only 8 (12%) survived more than seven days. Over 70% were born at less than 23 weeks gestation, 7% were born at 23 weeks, and the remaining 22% were born between 24 and 31 weeks.

Figure 8 illustrates the 2016 IMR by gestational age (stated in completed weeks of gestation) for infants born 28 weeks or more. The graph shows the IMR of infants 28 to 31 weeks (36.6) was more than 7.6 times that of infants 32 to 33 weeks (4.8).[27] The IMR for infants 34 to 36 weeks was more than twice as high as the IMR for infants 32 to 33 weeks. Full term infants (37 weeks or more gestation) were 13 times more likely to survive than those born at 28 to 31 weeks.

Figure 8 Infant Mortality Rate by Gestational Age



2016 Fast Facts:

- *Black prematurity rate lowest in last 10 years.*
- *Prematurity accounted for 54% of infant deaths.*

Six fewer sleep related deaths in 2016.

There were 21 sleep related deaths in 2016 (**Table 4**). While sleep related deaths had a 22% decrease from 2015, it was the second-highest number in the last six years. Eight sleep related deaths were ruled as accidental suffocation, the second-highest number in the last ten years. Thirteen were ruled SUID/undetermined due to potential hazards in the sleep environment. Thirteen deaths involved surface sharing, which tied for the third-highest number in the last ten years. All sleep related deaths involved some type of sleep hazard (such as soft bed surface, position baby was placed for sleep, pillows, blankets, and other items in the sleep environment).

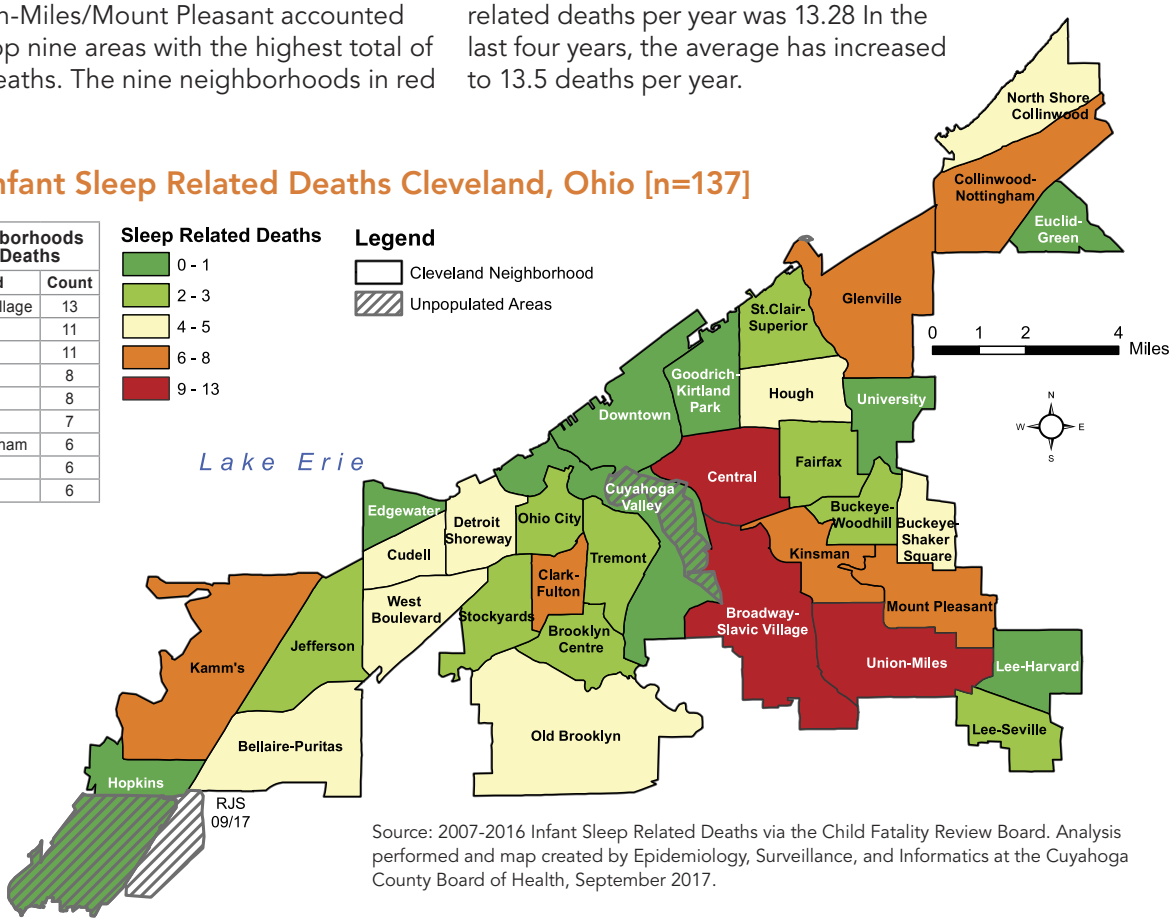
Table 4 Number of Sleep Related Deaths by Type and Presence of Risk Factors

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Totals
SIDS	5	0	0	0	0	0	0	0	1	0	**6**
SUID/Undetermined	10	18	18	23	12	15	10	17	16	13	**152**
Accidental Suffocation	7	4	2	5	7	3	6	2	10	8	**54**
Total Number of Deaths	**22**	**22**	**20**	**28**	**19**	**18**	**16**	**19**	**27**	**21**	**212**
Risk Factors Present											
Surface sharing at time of death	12	11	11	18	9	13	11	10	17	13	**125**
Hazards in sleep area	20	22	20	28	19	18	16	19	27	21	**210**
Total Number of Risk Factors	**32**	**33**	**31**	**46**	**28**	**31**	**27**	**29**	**44**	**34**	**335**

Map 4 illustrates the distribution of sleep related deaths in Cleveland neighborhoods over the last ten years. The five connected neighborhoods around Central to Union-Miles/Mount Pleasant accounted for five of the top nine areas with the highest total of sleep related deaths. The nine neighborhoods in red and orange accounted for 55% of all sleep related deaths in Cleveland. In the 2013 edition of this report, using 2005 to 2012 data for Cleveland, the average number of sleep related deaths per year was 13.28 In the last four years, the average has increased to 13.5 deaths per year.

Map 4
2007-2016 Infant Sleep Related Deaths Cleveland, Ohio [n=137]

Rank of Top 9 Neighborhoods by Sleep Related Deaths		
Rank	Neighborhood	Count
1	Broadway-Slavic Village	13
T-2	Central	11
T-2	Union-Miles	11
4	Clark-Fulton	8
5	Glenville	8
6	Kinsman	7
T-7	Collinwood-Nottingham	6
T-7	Kamm's	6
T-7	Mount Pleasant	6



Source: 2007-2016 Infant Sleep Related Deaths via the Child Fatality Review Board. Analysis performed and map created by Epidemiology, Surveillance, and Informatics at the Cuyahoga County Board of Health, September 2017.

Table 5 shows the demographics of the 212 infants who died in a sleep environment in the last ten years. Almost 65% of all sleep related deaths occurred in Cleveland (137), with 26% in first ring suburbs (55), and 9% in outer ring suburbs (20). The five deaths that occurred in the suburbs in 2016 tied with 2014 for the lowest number in the last ten years. Cleveland accounted for over 75% of all sleep related deaths in 2016.

Table 5 Sleep Related Death Demographics [n=212]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Neighborhood											
Cleveland	13	15	14	18	11	12	7	14	17	16	**137**
First Ring	6	6	3	7	6	4	8	4	7	4	**55**
Outer Ring	3	1	3	3	2	2	1	1	3	1	**20**
Infant's Sex											
Female	13	13	9	11	6	6	8	11	14	10	**101**
Male	9	9	11	17	13	12	8	8	13	11	**111**
Mom's Age											
< 20 Years	3	7	3	5	1	3	3	7	5	2	**39**
20 - 29 Years	14	12	12	15	12	11	11	10	15	17	**129**
30 - 39 Years	2	2	4	7	5	4	1	2	5	2	**34**
≥ 40 Years	0	0	1	0	0	0	1	0	2	0	**4**
Unknown	3	1	0	1	1	0	0	0	0	0	**6**
Infant's Race											
Black	10	16	16	21	12	14	12	16	21	15	**153**
White	12	6	4	7	7	4	4	3	6	5	**58**
Other	0	0	0	0	0	0	0	0	0	1	**1**
Placed Sleep Position[1,2]											
Back	14	13	10	18	9	12	10	8	13	12	**119**
Stomach	2	7	5	7	6	4	2	7	8	5	**53**
Side	6	2	5	3	4	2	4	3	5	3	**37**
Crib Availability[3]											
No	N/A	4	3	8	4	7	5	4	4	3	**42**
Yes	N/A	16	17	20	14	10	10	15	21	18	**141**
Unknown	N/A	2	0	0	1	1	1	0	2	0	**7**

[1] One case in 2014, 2015, and 2016 had unknown sleep position.
[2] Self-reported during medical examiner's death scene investigation.
[3] Crib, bassinet or portable crib.

The data noted in 2016 is consistent with previous years. Over 70% of sleep related deaths occurred among black infants. A slight majority (52%) of deaths occurred to males, and 40% percent of infants placed in a known sleep position were put on their stomach or side. Although 12 infants were placed on their back, all had other risk factors noted such as surface sharing or extra bedding. For those cases with known crib availability since 2008, over 75% had a safe place for their baby to sleep. Yet two-thirds (67%) of these babies were not placed in a safe sleep location. They were placed in an adult bed, air mattress, couch, or other unapproved sleeping surface. For the remaining 23% of known cases that did not have a crib or equivalent available, 88% slept on a bed, air mattress or couch. These data suggest that sleep position, surface sharing, sleep location, and sleep hazards are modifiable risks that, if removed, can significantly reduce the most preventable type of death for children under the age of 18 in Cuyahoga County.

Figure 9 illustrates the age of infants when sleep related deaths occurred over a ten-year span. Over 85% of all sleep related deaths occurred when the infant was five months old or younger. Almost 60% of all sleep related deaths happened when the infant was one month to three months old, the peak for sleep related deaths. Unfortunately, 10 sleep related deaths occurred to older infants (6 to 11 months old) in the past two years. Sleep related is the number one cause of postneonatal deaths, accounting for almost 50% of these deaths.

Figure 9 2007–2016 Sleep Related Deaths by Age of Infant [n=212]

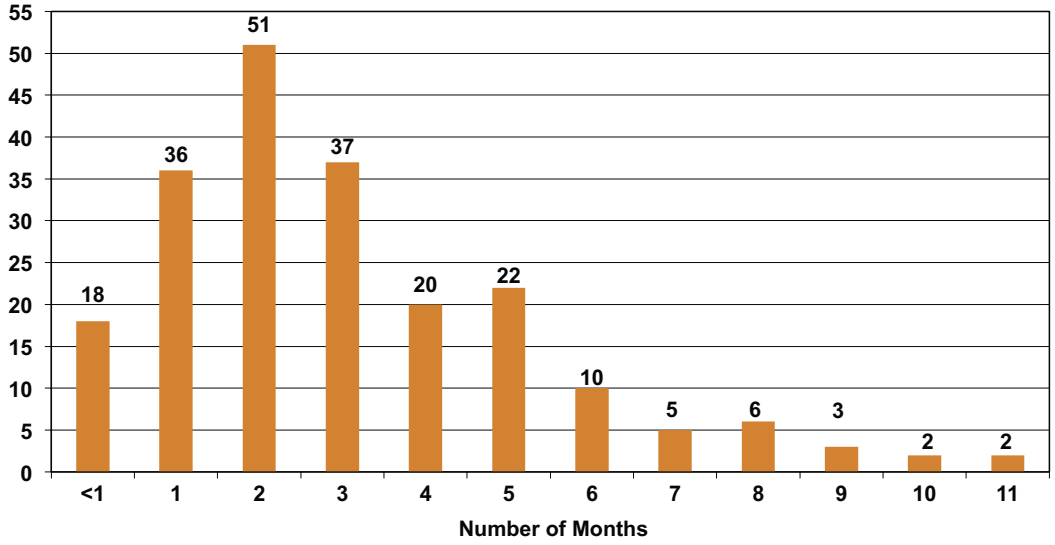
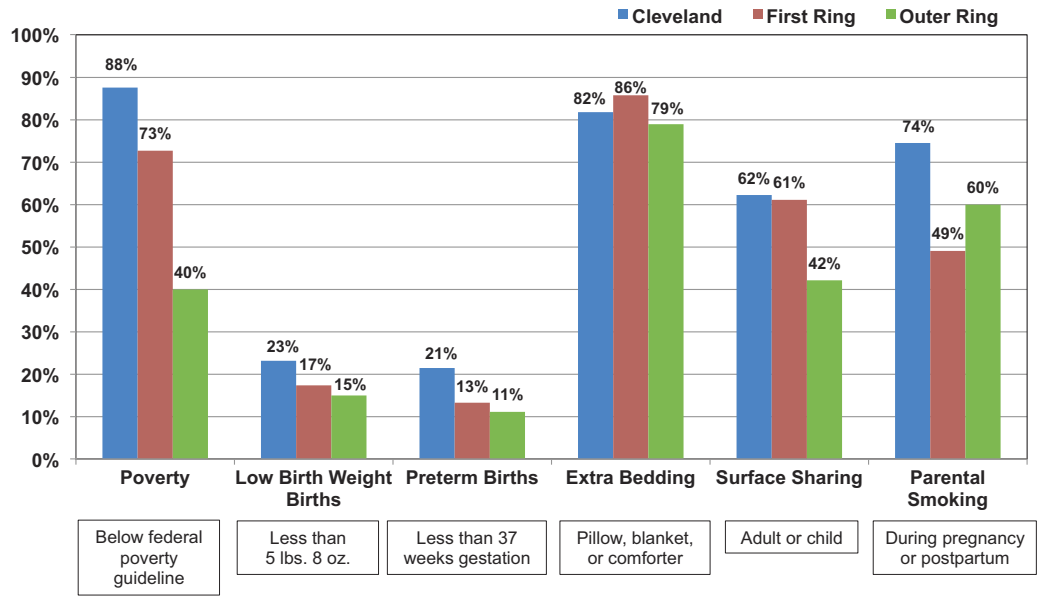


Figure 10 examines the economic, environmental, and medical risk factors that may contribute to a sleep related death by geographic location. In the last ten years, nearly 80% of the infants who died from sleep related causes lived in poverty, and that rate increased to 94% in the last five years. Less than 20% of infants were born prematurely, and only 21% of infants were considered low birthweight (less than 2,500 grams, or 5 pounds 8 ounces, at birth). While low birthweight and prematurity are noted risks for increasing the chance of SIDS[29], Cuyahoga County data suggest that these medical risk factors are not the primary cause of sleep related deaths.

Figure 10 2007–2016 Sleep Related Risk Factors by Neighborhood



Environmental risk factors (extra bedding, parental tobacco use, and surface sharing) were commonly found in these cases. In the last ten years, extra bedding was found in 82% of all sleep related deaths, and in 92% of the deaths in the last five years. In 2016, 86% of the infants had at least one piece of extra bedding in the sleep environment. Two-thirds of the deaths had environmental smoking as a risk, and that rate was 72% for the last five years. From 2007 to 2016, more than 60% of infants shared their sleep surface with another child or adult. The data suggest that environmental and economic risk factors far outweigh the impact of medical risk factors for sleep related deaths in Cuyahoga County.

Community Actions:

How is the safe sleep message getting to all caregivers?

- Boot Camp for New Dads® is an interactive infant care class taught by experienced dads that is offered at all the hospital systems in Cuyahoga County.
- A safe sleep video was produced in partnership with the Cuyahoga County Office of Early Childhood and the Cuyahoga County Fatherhood Initiative targeting fathers and male caregivers.
- Funding through the Ohio Department of Medicaid will support training for churches to employ safe sleep ambassadors to provide education and support to congregations and community members.

Safe Sleep Education

- The Cuyahoga County Division of Children and Family Services (DCFS) evaluates safe sleeping arrangements when conducting home visits or safety checks. All DCFS-involved families with children under the age of 2 receive a presentation by their DCFS worker on how to practice safe sleep. Pack-n-plays are also distributed to families identified as needing a safe sleep environment.
- "Safe sleep cards" with the message, "Alone, on my Back, in a bare naked Crib," local data about sleep related deaths, and a picture of a safe sleep environment, continue to be circulated throughout Cuyahoga County. They have been distributed to hospitals, home visiting programs, community recreation centers, neighborhood clinics, churches, and family serving agencies.
- CCBH developed an infant safe sleep policy for the agency to ensure consistent safe sleep messaging and content in all department programs and activities.
- CCBH partnered with Starting Point to provide safe sleep education and the development of an agency safe sleep policy for the providers of in-home daycares and the staff of daycare centers.
- CCBH is a leading Cribs for Kids® pack-n-play distribution center for low-income families in need of a safe sleep environment.

2016 Fast Facts:

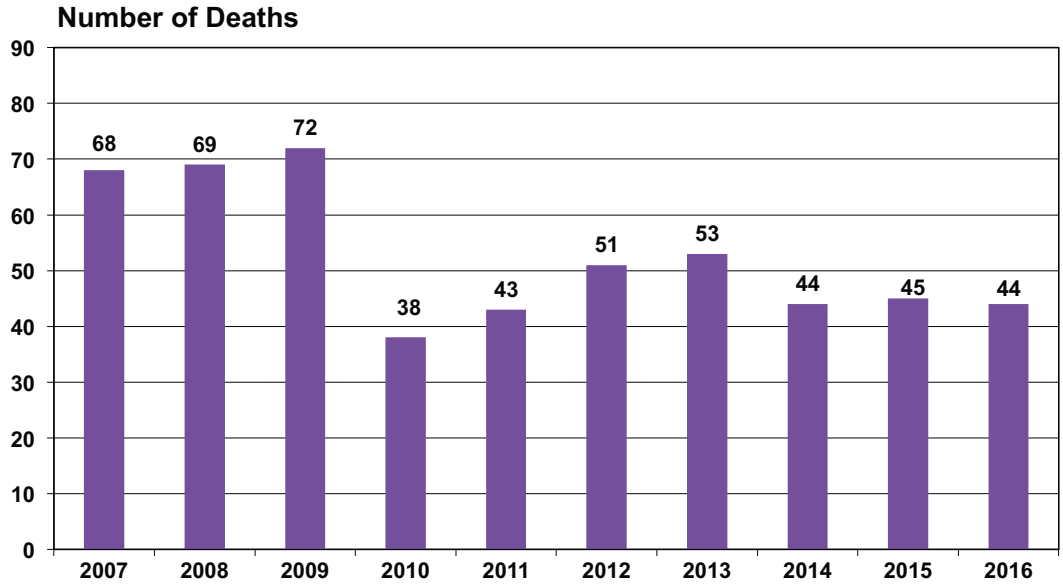
- ***21 infants died in unsafe sleep situations.***
- ***80% had smoking and extra bedding noted as risk factors.***

Child Deaths (1 to 17 Years)

Total number of child deaths lower than the ten-year average.

Forty-four children aged 1 to 17 died in 2016, which was 1 fewer death than 2015, and significantly lower than the ten-year average of 53 (**Figure 11**). From 2007 to 2011, the five-year average number of child deaths in this age group was 58, but the 2012 to 2016 five-year average was only 47, a 19% decrease. The 2016 county child death rate (1 to 17 years) of 16.9 per 100,000 was lower than the 2015 rates for the state of Ohio (19.7) and the United States (20.0) (most recent data available).[30-32]

Figure 11 Total Child Deaths per Year (age 1-17)



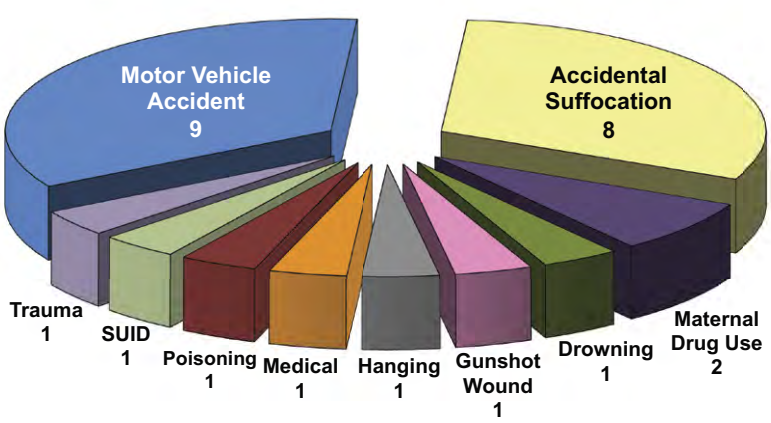
In 2016, 23 injury related deaths accounted for 52% of all fatalities among 1- to 17-year-olds (Table 9). The 2016 Cuyahoga County injury death rate of 8.8 per 100,000 children 1- to 17 years is 15% lower than the 2015 rates for the state of Ohio (10.4) and the United States (10.4) (most recent data available).[33-35] These injury related deaths were attributed to: motor vehicle accidents (9), homicide (7), accident injury related (3), suicide (2), drowning (1), poisoning (1), and undetermined other (1) (Table 2). The number of children who died as a result of accident injury related, drowning, homicide, suicide, and undetermined other, decreased in 2016, while motor vehicle accidents and poisoning deaths increased.

The number of medical related deaths (21) tied for the second-lowest in ten years (Table 9). The causes of death included other medical causes (9), birth defects (8), cancer (3), and other perinatal complications (1) (Table 2). Cancer, infection, and other medical causes decreased, while birth defects and other perinatal complications increased in 2016.

Highest number of unintentional injury deaths in the last ten years.

In 2016, 26 children of all ages died as a result of unintentional injuries. This is three more deaths than 2015, and was the highest number in the last ten years. Of the 26 children, 17 were black (65%) and 14 were female (54%). The causes for the 26 unintentional injury deaths are illustrated in **Figure 12**. All 8 accidental suffocation deaths were related to unsafe sleep. The 2016 rate for unintentional deaths was 9.4 per 100,000.[36,37] This rate is significantly higher than the 2015 rates (most recent data available) for Ohio (7.5), and the United States (7.6).[38,39]

Figure 12 Unintentional Injury Deaths in Cuyahoga County in 2016 [n=26]



Case reviews revealed that the most common risk factors identified in these deaths were poverty (21), parental tobacco use (16), child or parent illicit drug use (14), maternal history of mental illness (11), suspected history of abuse/neglect as a child (11), and parental criminal history (10).

Figure 13 Total Motor Vehicle Deaths by Age Group per Year

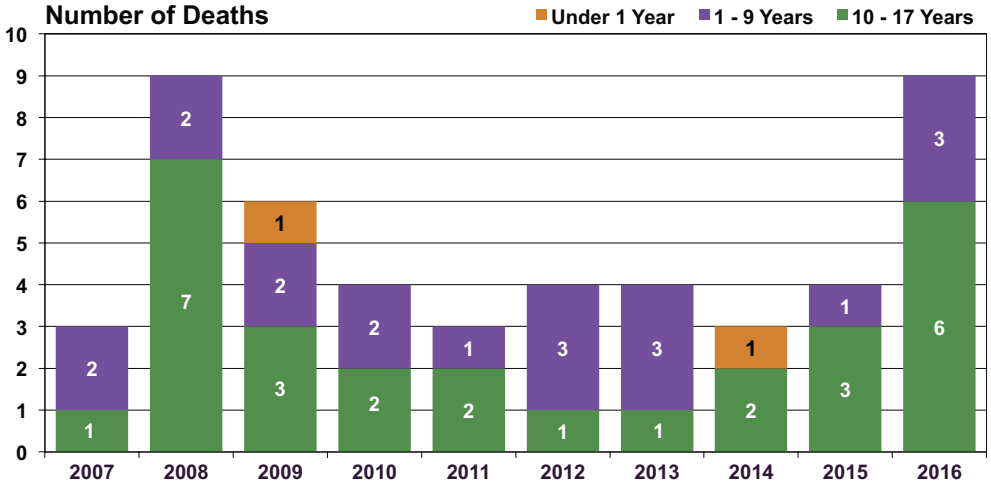


Figure 13 gives a historical perspective of the age distribution for traffic related fatalities. This year tied with 2008 for the highest number of MVAs in the last ten years. The 2016 total of children 10- to 17 years (6) is equal to the combined total number of deaths from 2013 to 2015. There were 3 deaths in the 1- to 9-year age group, which tied for the highest number in this age group in the last ten years. There were no infant deaths for the eighth time in the last ten years.

Unintentional Injury Deaths

Of the 9 motor vehicle deaths, 6 were passengers and 3 were pedestrians hit by a vehicle. Five passengers were not wearing a seatbelt and information regarding seatbelt use for the sixth passenger related case is unknown. Three of the passenger fatalities occurred in the same accident. All 4 passenger-related accidents noted speeding as a risk factor. In 3 of the 4 accidents, drugs, alcohol, and excessive speed were identified as risk factors. Of the 3 pedestrian related accidents, one child was hit while accompanied by a parent when crossing the road outside the crosswalk zone. One child ran into the street while being chased by a dog. The other accident involved a child who was running from an assailant and was hit crossing the street.

Motor vehicle accident related deaths in the US accounted for nearly 40% of all unintentional injury deaths.[40] In 2015 (the most recent data available), deaths from motor vehicle accidents among children in the United States were 3.0 per 100,000.[41,42] Cuyahoga County's 2016 rate was slightly higher than the national rate, at 3.3 per 100,000 children.[43]

Drowning and accidental fire deaths are two other types of unintentional injuries. In 2016 Cuyahoga County had 1 drowning death and no accidental fire related deaths. The last accidental fire death in Cuyahoga County occurred in 2013. The United States had 755 drowning deaths and 246 accidental fire deaths in 2015 (most recent data available).[44] The national child drowning death rate in 2015 (1.02 per 100,000) is almost three times as high as the 2016 Cuyahoga County rate (0.36 per 100,000).[45-47]

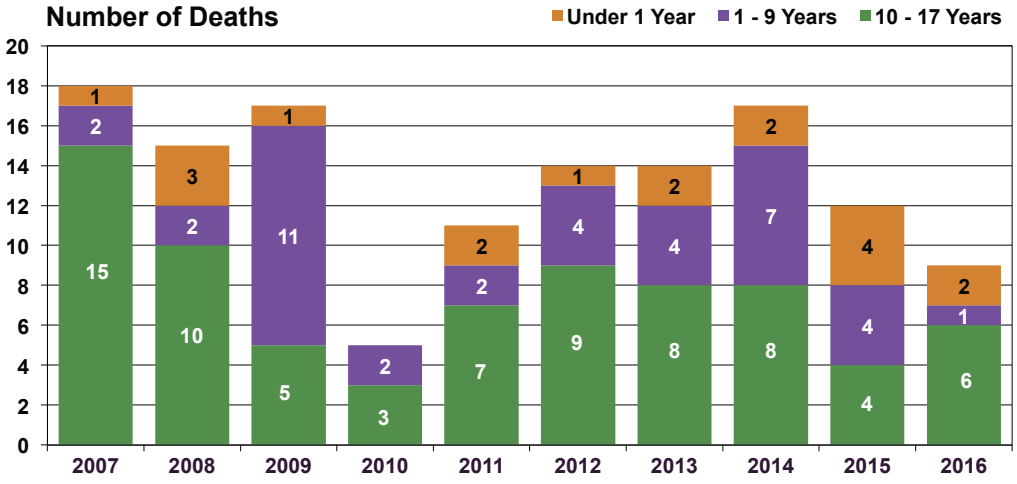
Community Actions:

The Rainbow Injury Prevention Center teen traffic safety programs include: "Science of Attention," which focuses on the dangers of distracted driving, "Drive To Stay Alive," and "Click it or Ticket," which encourage safe driving and seat belt use.

Second-lowest number of homicides in the last ten years.

Intentional injury deaths include homicide and suicide. The 9 homicides in 2016 was the second-lowest total in the last ten years. **Figure 14** illustrates that 2 infants, 1 child age 1 to 9 years, and 6 children ages 10 to 17 years died due to homicide. The 1 child death among children age 1 to 9 years was the lowest in the last ten years. Six deaths among children ages 10 to 17 years was the second-lowest total in the last six years.

Figure 14 Total Child Homicide Deaths by Age Group per Year



Homicide tied with motor vehicle accidents for the fifth-leading cause of death in 2016. Homicide among children age 1 to 9 years decreased 75% (from 4 in 2015 to 1 in 2016). For the 1-17 years age group, homicide was the fourth-leading cause of death in Cuyahoga County and United States, but the second-leading cause of death in Ohio.[48]

Of the 9 homicide victims this year, 8 lived in the city of Cleveland, 6 were boys, and 5 were black children. The ages of the children were less than 1 year (2), 3 years (1), 14 years (1), 15 years (1), 16 years (3), and 17 years (1). Five of the six homicides in the 10-17 years age group were gun related. The three homicides to children under 10 years of age were due to physical abuse by parents or their partners.

Tied for the leading risk factor associated with homicide were poverty and history of reports for suspected domestic violence. Negative influences of family and friends, at-risk child, child abuse, and suspected parental child abuse or neglect were the next most common risk factors.

Figure 15 Total Firearm Deaths by Manner per Year

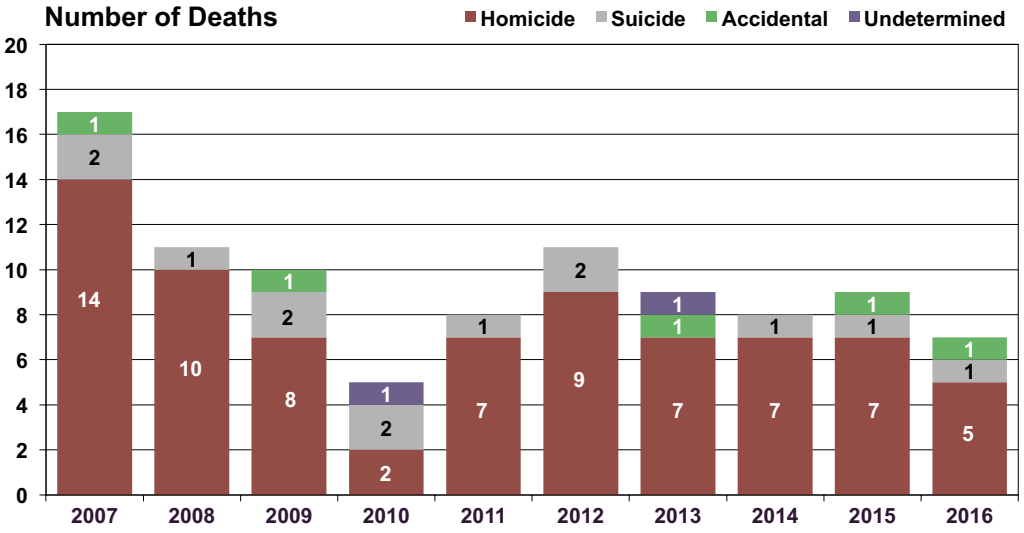
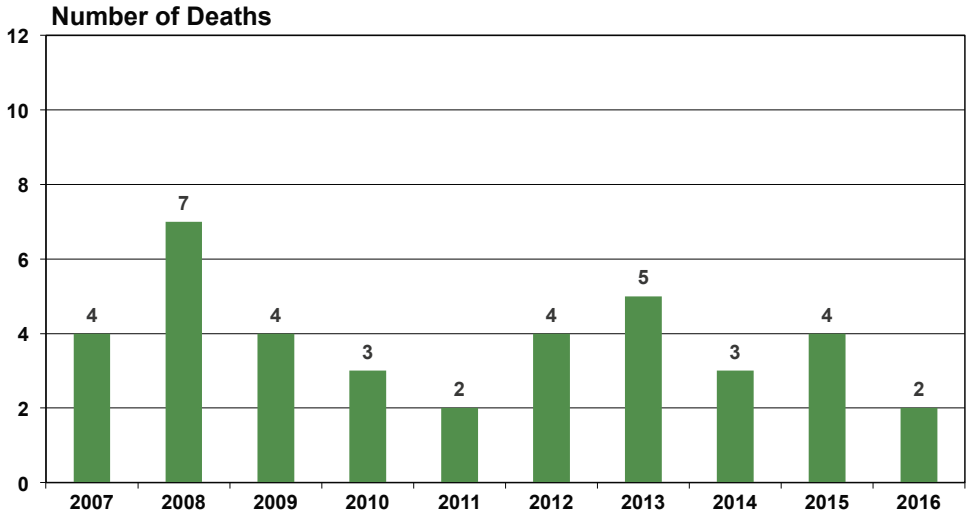


Figure 15 portrays the number of firearm deaths by manner (homicide, suicide, accidental, and undetermined) over a ten-year span. In 2016 there were 7 firearm deaths, the second-lowest number in the last ten years. Five deaths were homicides, 1 suicide, and 1 accidental. The gun related homicides and suicide were among children 15 to 17 years old. The accidental gun death occurred to a child who found his parent's gun that was not safely locked and stored.

Figure 16 Total Child Suicide Deaths per Year



There were 2 suicides in 2016, which tied with 2011 for the lowest number in the last ten years (**Figure 16**). Both children were white and 16 years of age. One suicide was by hanging and one was a self-inflicted gunshot wound.

According to the CDC, in 2015 (most recent data available), suicide was the third-leading cause of death among 1- to 17-year-olds in the United States and the fourth-leading cause in the state of Ohio.[49-50] The US and Ohio rate (2.0 per 100,000) was 2.5 times higher than the Cuyahoga County rate (0.8 per 100,000).[51] According to the Cuyahoga County Youth Risk Behavior Survey in 2016, more than one in eight middle school students had seriously considered attempting suicide within the last year.[52]

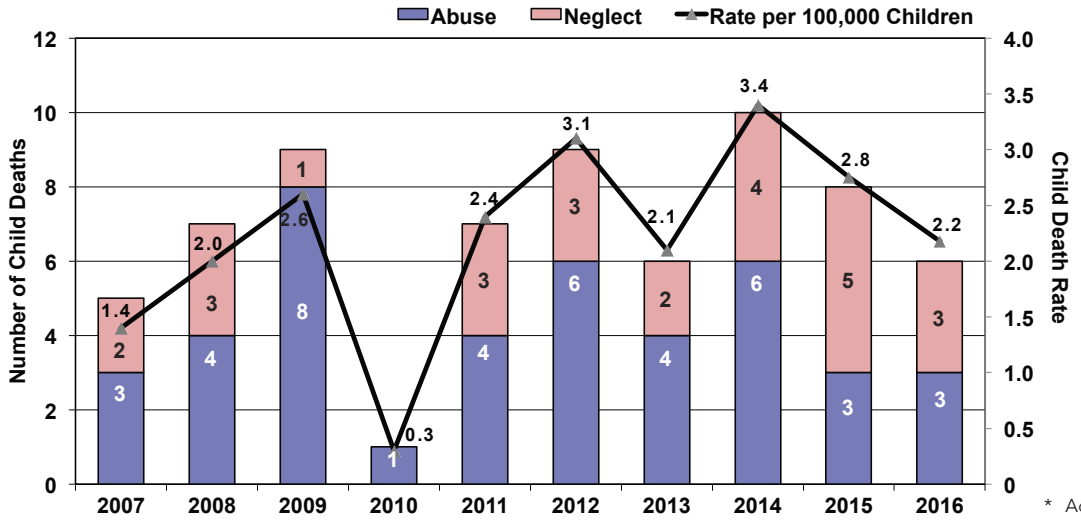
Community Actions:

- The Alcohol, Drug Addiction and Mental Health Services (ADAMHS) Board of Cuyahoga County conducts a suicide prevention awareness campaign. The county campaign promotes the 24-hour Suicide Prevention Hotline, Crisis Text, Crisis Chat, and online behavioral health screenings. There is also a social media campaign that includes targeted ads to youth on Facebook and Twitter.
- The ADAMHS Board contracts with Frontline Services for the Children's Crisis Response Team to ensure that the unique needs of children are addressed in the community. It provides child-specific emergency service that responds to acute psychiatric, crisis situations, in addition to suicidal ideations.

In 2016, there were 6 abuse or neglect related child deaths, which is tied with 2013 for the lowest in the last six years. The county rate of child abuse or neglect deaths was 2.2 per 100,000 children, and was a 21% decrease from 2015 (**Figure 17**). The national rate for child fatalities due to abuse or neglect was 2.2 per 100,000 children in 2015 (the most recent data available).[53]

Of the 6 child abuse or neglect victims, 4 were females and 5 were residents of Cleveland. The ages ranged from 6 weeks to 12 years old, with 5 of the deaths occurring to children 3 years of age or younger. Of the 3 neglect cases, 1 involved a child ingesting an opioid medication, 1 was a child shooting himself with an unsecured gun, and 1 was medical neglect of a child with an acute illness. All 3 of the abuse, homicide cases were due to blunt trauma. The risk factors most often found in the 6 abuse and neglect related deaths included missed medical appointments for the child victim (5), parental tobacco use (5), maternal history of mental illness (4), and poverty (4).

Figure 17 Child Deaths Due to Abuse and Neglect



* Additional 2015 case added to neglect total.

Community Actions:

- The Medical Investigations Unit of DCFS assists families with medically fragile children or those who have suffered from severe abuse. This unit has advanced training and experience with complex medical issues and develops relationships with the medical providers to ensure that the children's needs are being met.
- DCFS contracts with Bellfaire to provide a medical case management program for medically neglected, non-custody children. Services include individual service plans, case management to eliminate barriers, and care coordination to link with appropriate resources.
- DCFS utilizes multiple programs to help parents of any age improve their parenting skills and learn how to engage with their child in an appropriate, safe, and nurturing manner.
  - Nurturing Parenting is an evidence based parenting program for the treatment of child abuse and neglect. It fosters positive parenting skills and child-rearing practices. It has home-based services and group sessions.

Community Actions 2016–2017

The following community actions represent ongoing efforts to reduce preventable deaths in children, while others represent new initiatives that build and strengthen existing outreach, education, and service delivery systems.

Prematurity and Infant Mortality

- Beginning with prenatal care through an infant's second year of life, the Cleveland **MomsFirst** project is designed to improve birth outcomes and ensure a healthy start for babies by providing support to high-risk pregnant women and teens. Core services include outreach, case management, health education, and interconception care. The project also provides screening and referral for perinatal and postpartum depression, substance/alcohol abuse, toxic stress, and intimate partner violence.
- The goal of MomsFirst is to reduce disparities in infant mortality. The participants are primarily high-risk African American pregnant women and teens. Cleveland's preliminary 2016 overall infant mortality rate (IMR) was 10.2 infant deaths per 1,000 live births with a white IMR of 5.4 and a black IMR of 13.5. MomsFirst's IMR for participants in 2016 was 5.4. Given that MomsFirst participants are reflective of those women at the highest risk for poor birth outcomes, these data provide strong evidence of a successful program to reduce infant mortality.
    - All MomsFirst sites hold neighborhood consortia meetings to educate the community at large about the following topics: preterm labor, safe sleep, smoking cessation, substance abuse, family planning, STD/HIV/AIDS prevention and testing, intimate partner violence, and perinatal depression.
    - The women served by MomsFirst are at an elevated risk for depression due to both pregnancy and socioeconomic factors. Depression can affect a pregnant woman's functional status and her ability to obtain prenatal care, eat properly, and avoid dangerous behaviors. Untreated depression during pregnancy is associated with spontaneous abortion, preterm delivery, and other adverse effects. The **Cleveland Regional Perinatal Network** developed a system-wide approach to screen and refer women identified as at risk for perinatal depression by establishing universal screening and referral protocols at several health care institutions and community agencies. As a result of these protocols, there has been a significant increase in referrals to perinatal mental health providers.
    - MomsFirst also has protocols to address toxic stress, intimate partner violence, and substance abuse among their participants, and refer to appropriate agencies.
- The mission of the **March of Dimes** is to improve the health of babies by preventing birth defects, premature birth, and infant mortality. The campaign focus is to improve health equity, reduce the preterm birth rate, address the health of women before and between pregnancies, advance perinatal quality improvement, and expand preterm birth research. Additionally, March of Dimes grants are awarded to programs and research that focus on this mission.
    - In 2017, the Ohio March of Dimes provided funds to expand CenteringPregnancy® at MetroHealth Medical Center, the Cleveland Clinic Foundation, and University Hospitals MacDonald Women's Hospital.
- **Invest In Children** funds organizations that work with pregnant parents to improve birth outcomes and reduce infant mortality. They also provide newborn visits to low income families. Messages for parents are woven throughout all of their programs, including information about prenatal and interconception health, safe sleep, and environmental tobacco smoke.
- The **Cuyahoga County Board of Health (CCBH)** provides training sessions for MomsFirst clients on the topics of infant mortality, preterm labor, prematurity, and safe sleep.
- CCBH provides presentations about health, equity, and infant mortality to staff at hospitals in the county in order to highlight the link between population health, policy, medical care, and the community.

Sleep Related Deaths

- In 2016-2017, the **Cuyahoga County Board of Health (CCBH)**, as outreach for the Child Fatality Review Board, continued to provide safe sleep education for medical and nursing staff at maternity and pediatric hospitals throughout the county.
- The **WIC Program** continues to provide safe sleep information to their clients and has incorporated documentation of the education in the client's chart.
- The **Rainbow Injury Prevention Center** designed a safe sleep postcard that is given to new parents at University Hospitals MacDonald Women's Hospital as a part of the hospital's child safety rounding project. During 2016, the staff visited over 2,500 new mothers. Portable cribs were also distributed to needy families.
- **MomsFirst** provides safe sleep education to all participants in the program, with over 1700 families served in 2016. The project continues to assist families in need of a safe sleep environment in obtaining a pack-n-play.
- Safe sleep fliers continue to be included with birth certificates mailed to parents.
- **Bright Beginnings (formerly Help Me Grow)** staff provides safe sleep education and materials to their clients.

Unintentional Injuries

- The **Rainbow Injury Prevention Center** is dedicated to preventing unintentional injuries.
  - As Greater Cleveland's child passenger safety experts, the staff operates free Car Seat Inspection Stations; provides low-cost car seat distribution for income-qualified families; offers infant car seat consultations for expectant parents; develops educational campaigns to keep children rear facing until at least 2 years of age; conducts free car seat checkup events; leads booster seat promotion efforts; and designs seat belt promotion and driver attention campaigns aimed at tweens and teens.
  - The Center develops programs to address unintentional injuries with topics about bicycle, sports, pedestrian, and home safety.
  - The Rainbow Injury Prevention Center also uses Facebook and Twitter to spread safety messages to a wide audience.

Homicide

- The **Cuyahoga County Division of Children and Family Services (DCFS)** incorporates many programs to best serve their clients.
  - DCFS uses neighborhood collaboratives to support children and families who struggle with social and economic challenges. Services offered include food pantries, emergency rent assistance, budgeting classes, parent support groups, and after school programs. These partnerships play a vital role in prevention efforts that allow children and families to be served safely in their home.
  - The Special Investigation Unit at DCFS, in conjunction with the Practice Evaluation Unit, continues to perform a comprehensive record review for all fatalities in which the deceased child was involved with the agency at the time of the fatality, and/or during the previous 12 months. Lessons learned from investigations contribute to ongoing staff development throughout the agency, particularly in the areas of safety planning and prevention.
  - DCFS uses Trauma Focused Cognitive Behavior Therapy to help children and families that have been impacted by abuse or violence in the home or community. DCFS utilizes a trauma screening to determine if a child or family could be best served through the program. The most common types of violence reported were sexual abuse and domestic violence.
  - The **Cuyahoga Tapestry System of Care** is designed for children and youth with severe emotional, behavioral, or mental health difficulties and their families. It is a team-based planning process intended to provide individualized and coordinated family-driven care. The focus is on building a team of natural and formal supports in the community to "wrap around" the family and develop a plan of care.
- The **Cuyahoga County Witness/Victim Service Center (WVSC)** is one of eight communities under the US Department of Justice's **Defending Childhood Initiative**. This project seeks to not only prevent violence, but also to identify and treat children who are experiencing trauma as a result of exposure to violence in their homes, schools, or communities. More than 150 professionals have been trained to assess for trauma in children and over 35,000 children have been screened to determine if services for evidence-based treatment are needed.

  - WVSC manages the **Children Who Witness Violence** program, which provides immediate crisis stabilization to children in the aftermath of exposure to violence.
  - WVSC promotes child and family safety by being an application assistant for **Safe at Home**, which is an address confidentiality program. It allows victims of crime, violence, and abuse to apply for a confidential address, in order to shield their residence address from public records due to safety concerns.
  - WVSC is the lead agency for the **Family Justice Center (FJC)** which is a partnership between Cuyahoga County and the City of Cleveland. The FJC provides collaboration of services to victims of crime, violence, and abuse in a single location through multiple partnerships.
- The **Cleveland Division of Police** has made it a policy to refer all children who witness any violent situation to the Children Who Witness Violence program.
- **Northern Ohio Trauma System**, **MetroHealth Medical Center**, and the **Cleveland Peacemakers Alliance** started a pilot program to use violence interrupters in the hospital to provide conflict resolution, case management, and referrals to outreach workers.
- MetroHealth Medical Center has received funding to collaborate with the **May Dugan Center** to initiate a victim of crime advocacy and recovery program.
- The **Cuyahoga County Family Drug Court** works with parents whose children are alleged to be abused or neglected and who are at risk of losing their children because of drug dependency. This intensive program is designed to reduce the time that a child may spend in placement while the parent receives treatment.
- In concert with the Defending Childhood Initiative, the **Alcohol, Drug Addiction and Mental Health Services (ADAMHS) Board of Cuyahoga County** has a network of adolescent treatment agencies specializing in services to teenagers, in addition to its school-based and community prevention programming.
- The **Cuyahoga County Juvenile Court** has many interventions and programs to assist youth who are in their system.
  - The Juvenile Detention Alternatives Initiative is a nationwide program that is being used in Cuyahoga County to develop options other than the use of a detention center for court-involved youth.
  - Effective Practices in Community Supervision is a new intervention method used by probation officers to help offenders make positive changes in their thinking and behavior so they will be less likely to commit a new crime.
  - Juvenile Court has a School-Based Probation Unit. In this partnership with the schools, school-based probation officers provide control, supervision, and incentives that delinquent youth often need to attend school regularly and comply with school rules.
  - The CALM program is an assessment and referral service for youth that are low-risk domestic violence offenders. It provides an alternative to detention. In 2017 this program was expanded to all of the Cleveland police districts.
  - The Gun Prevention Program is a means to reduce recidivism and gun violence among youth. It offers discussion of state and federal laws, strategies for decision making, and selection of alternative choices.

Suicide

- The **Alcohol, Drug Addiction, and Mental Health Services Board of Cuyahoga County** is the lead agency for the coordination of school-based mental health and prevention services. The social-emotional needs of the students are addressed with services and referrals as needed.
- **Cuyahoga County Juvenile Court** has a Mental Health Court that is designed for youth who have been identified as having mental health issues. These children are provided intensive supervision and service coordination.
- The **Behavioral Health Juvenile Justice** program provides an intensive level of community supervision for youth diagnosed with mental illness or chemical dependence.

Interagency Actions

As a result of the Child Fatality Review Program, interagency communication and collaboration have been strengthened.

- The partnership between **Bright Beginnings (formerly Help Me Grow)** and the **Cuyahoga County Division of Children and Family Services (DCFS)** continues to strengthen protocols with DCFS. This includes strategies for engaging families who have had a case of substantiated abuse and neglect, as well as improve communication and coordination between the DCFS caseworker and the Bright Beginnings worker. An outreach initiative includes the looping of the Bright Beginnings video in the DCFS waiting room.
- The **Early Childhood Mental Health (ECMH)** centralized system is a cooperative effort with Bright Beginnings, the **Alcohol, Drug Addiction and Mental Health Services Board of Cuyahoga County**, **Invest in Children**, the **Educational Service Center,** and DCFS. This serves as a single point of entry for children, from birth to 6 years, who may be experiencing emotional, behavioral, or social problems.
- **MetroHealth Medical Center (MHMC)** hosts a quarterly meeting with DCFS to improve collaboration between the two agencies and to update policy information.
- Children in foster care are often survivors of abuse or unsafe living arrangements. To meet the needs of these special youngsters, MHMC and DCFS initiated a Medical Home for Children in Foster Care program. Children are seen by MHMC staff and enrolled in a coordinated tracking program designed to improve their current and long-term health and well-being.

Table 6 Demographic Profiles and Cause Specific Rates[1]

	2011-2015 Census Data[2]	
	Population Under 18 Years	Percent of Population Under 18
Cuyahoga County (Total)	275,151	22
Cuyahoga County (Black)	98,642	26
Cuyahoga County (White)	148,633	18
City of Cleveland	90,451	23

Annual Birth Data[3]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cuyahoga County	16,450	16,249	15,525	15,108	14,993	14,783	14,920	15,079	14,844	14,747
% Black	41.1	40.5	39.9	39.2	38.9	39.2	39.3	38.2	38.6	38.7
% White	56.1	56.0	56.3	51.9	51.7	51.1	51.2	51.7	51.5	53.6

Annual Death Data	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Child Deaths	230	240	213	178	187	182	186	165	200	172
Annual Infant Deaths	162	171	141	140	144	131	133	121	155	128
% Deaths to Infants	70.4	71.3	66.2	78.7	77.0	72.0	71.5	73.3	77.5	74.4
Child Mortality/ 100,000 Children	66.1	69.0	61.2	61.3	64.4	62.7	64.1	56.8	68.9	62.5
Annual Total Medical Death Rate	49.4	50.3	42.8	46.5	49.3	46.5	47.5	40.7	50.3	45.4
Cancer	2.9	3.2	2.6	1.7	1.4	2.1	1.4	1.7	1.7	1.1
Annual Total Injury Death Rate	16.7	18.7	18.4	14.8	15.2	15.2	16.5	16.5	18.6	17.1
Homicide	5.7	4.3	4.9	1.7	3.8	4.8	4.8	5.9	4.1	3.3
Motor Vehicle Accident	0.9	2.6	1.7	1.4	1.0	1.4	1.4	0.7	1.0	3.3
Fire	1.1	0.0	0.9	0.0	0.3	0.3	0.3	0.0	0.0	0.0
Drowning	1.1	1.1	1.7	0.0	0.7	0.7	1.4	0.3	1.0	0.4
Suicide[4]	1.2	2.1	1.2	1.1	0.7	1.5	1.8	1.1	1.5	0.8
Infant Mortality/ 1,000 Births	9.8	10.5	9.1	9.3	9.6	8.9	8.9	8.0	10.4	8.7
Neonatal Mortality/ 1,000 Births	6.8	7.2	6.5	6.4	6.4	6.5	6.7	6.2	7.3	6.1
Postneonatal Mortality/ 1,000 Births	3.0	3.3	2.6	2.9	3.2	2.4	2.2	1.8	3.2	2.6
Prematurity	5.9	6.3	5.5	5.2	5.3	5.1	5.5	5.5	5.9	4.7
SIDS Only	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
SIDS and Sleep Related	1.3	1.4	1.3	1.9	1.3	1.2	1.1	1.3	1.8	1.4

[1] Shaded boxes are 2016 birth estimates provided by the Ohio Department of Health.

[2] 2016 rates use 2011-2015 5-Year American Community Survey data. 2011-2015 rates use 2010 U.S. Census data & 2007-2009 rates use 2000 census data.

[3] Ohio Department of Health, Ohio Public Health Information Warehouse. Available online at https://odhgateway.odh.ohio.gov/EDWS/DataCatalog (accessed July 17, 2017).

[4] Suicide rate is for children 1-to-17 years. 2007-2015 rates recalculated to remove infants from calculation.

Table 7 Cause of Death by Age Group and Year

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total per Cause
Prematurity											**840**
Under 1 Year	97	102	85	79	80	76	82	76	87	69	
1 - 9 Years	1	2	1	0	1	0	1	0	0	0	
10 - 17 Years	0	0	0	0	0	1	0	0	0	0	
Birth Defect											**332**
Under 1 Year	31	31	28	20	35	25	23	13	21	22	
1 - 9 Years	6	9	6	5	2	9	9	2	4	4	
10 - 17 Years	3	3	3	4	2	1	3	3	1	4	
SIDS and Sleep Related Deaths											**212**
Under 1 Year	22	22	20	28	19	18	16	19	27	21	
Cancer and Other Medical Conditions											**271**
Under 1 Year	9	13	5	13	7	10	10	9	15	13	
1 - 9 Years	14	10	16	6	11	11	7	5	11	5	
10 - 17 Years	7	10	9	8	5	5	3	10	6	8	
Homicide											**132**
Under 1 Year	1	3	1	0	2	1	2	2	4	2	
1 - 9 Years	2	2	11	2	2	4	4	7	4	1	
10 - 17 Years	15	10	5	3	7	9	8	8	4	6	
Suicide											**38**
1 - 9 Years	0	0	0	0	0	0	0	0	0	0	
10 - 17 Years	4	7	4	3	2	4	5	3	4	2	
Motor Vehicle Accident											**47**
Under 1 Year	0	0	1	0	0	0	0	1	0	0	
1 - 9 Years	2	2	2	2	1	3	3	0	0	3	
10 - 17 Years	1	7	3	2	2	1	1	1	3	6	
Accidental Suffocation											**3**
Under 1 Year[1]	0	0	0	0	0	0	0	0	0	0	
1 - 9 Years	2	0	0	0	0	0	0	0	0	0	
10 - 17 Years	0	0	0	1	0	0	0	0	0	0	
Drowning											**26**
Under 1 Year[1]	0	0	0	0	0	1	0	0	0	0	
1 - 9 Years	2	2	2	0	1	1	3	0	2	0	
10 - 17 Years	1	2	4	0	1	0	1	1	1	1	
Fire											**10**
Under 1 Year	0	0	1	0	0	0	0	0	0	0	
1 - 9 Years	3	0	2	0	1	1	1	0	0	0	
10 - 17 Years	1	0	0	0	0	0	0	0	0	0	
Other Accidents[2]											**42**
Under 1 Year	2	0	0	0	1	0	0	1	1	1	
1 - 9 Years	1	3	2	1	4	1	3	4	4	2	
10 - 17 Years	3	0	2	1	1	0	1	0	1	2	
Total per Year	**230**	**240**	**213**	**178**	**187**	**182**	**186**	**165**	**200**	**172**	**1,953**

[1] Excludes those related to sleep environment.

[2] Includes falls, poisoning, violence of undetermined origin, and other accidents.

Table 8 Annual Number of Child Deaths by Race and Age Group[1]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Race and Age Group											
Black											
Under 1 Year	107	128	96	99	97	84	86	83	107	83	**970**
1 - 9 Years	21	20	23	12	12	17	25	10	15	9	**164**
10 - 17 Years	24	23	18	7	14	14	13	16	10	16	**155**
Total	**152**	**171**	**137**	**118**	**123**	**115**	**124**	**109**	**132**	**108**	**1,289**
White											
Under 1 Year	55	43	43	40	45	46	45	37	47	40	**441**
1 - 9 Years	10	10	19	4	11	13	6	8	9	6	**96**
10 - 17 Years	11	13	12	13	6	7	9	9	9	12	**101**
Total	**76**	**66**	**74**	**57**	**62**	**66**	**60**	**54**	**65**	**58**	**638**
Other											
Under 1 Year	0	0	2	1	2	1	2	0	1	4	**13**
1 - 9 Years	2	0	0	0	0	0	0	0	1	0	**33**
10 - 17 Years	0	3	0	2	0	0	0	1	1	1	**8**
Total	**2**	**3**	**2**	**3**	**2**	**1**	**2**	**1**	**3**	**5**	**24**
Missing Race Info	0	0	0	0	0	0	0	1	0	1	**2**
Rates of Death											**Average**
Black Crude Death Rate[2]	124.5	140.1	112.2	110.8	115.5	108.0	116.4	102.4	124.0	109.5	**116.3**
White Crude Death Rate[3]	37.8	32.8	36.8	36.9	40.1	42.7	38.8	34.9	42.0	39.0	**38.2**
Ratio of Black to White	3.3	4.3	3.1	3.0	2.9	2.5	3.0	2.9	2.9	2.8	**3.1**
Black Death Rate (excl Infants)[4]	39.0	37.2	35.4	18.9	25.8	30.8	37.8	25.8	24.8	26.9	**30.2**
White Death Rate (excl Infants)[5]	10.9	12.0	16.1	11.6	11.6	13.6	10.2	11.6	12.2	12.8	**12.3**
Ratio of Black to White (excl Infants)	3.6	3.1	2.2	1.6	2.2	2.3	3.7	2.2	2.0	2.1	**2.5**
Black Infant Mortality / 1,000 Births[6]	15.8	19.5	15.5	16.7	16.6	14.5	14.7	14.4	18.7	14.5	**16.1**
White Infant Mortality / 1,000 Births[7]	6.0	4.7	4.9	5.1	5.8	6.1	5.9	4.7	6.1	5.1	**5.4**
Ratio of Black to White IMR	2.7	4.1	3.2	3.3	2.9	2.4	2.5	3.0	3.0	2.9	**3.0**

[1] Darker yellow shaded boxes are based on adjusted estimates from unconfirmed delivery hospital data.

[2] Total Black deaths/98,642 x 100,000 (2011-2015 census data in Table 6)

[3] Total White deaths/148,633 x 100,000 (2011-2015 census data in Table 6)

[4] Total Black deaths (excl Infants)/98,642 minus Black live births x 100,000 (2011-2015 census data in Table 6)

[5] Total White deaths (excl Infants)/148,633 minus White live births x 100,000 (2011-2015 census data in Table 6)

[6] Total Infant Black deaths/total Black live births x 1,000 (annual birth data in Table 6)

[7] Total Infant White deaths/total White live births x 1,000 (annual birth data in Table 6)

Table 9 Annual Number of Child Deaths Due to Injury and Medical Causes by Age Group

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Total Injury Related Deaths											
Under 1 Year	21	30	27	28	22	20	18	23	31	24	**244**
1 - 9 Years	12	9	19	5	9	10	14	11	10	6	**105**
10 - 17 Years	25	26	18	10	13	14	16	13	13	17	**165**
Total	**58**	**65**	**64**	**43**	**44**	**44**	**48**	**47**	**54**	**47**	**514**
Total Deaths from Medical Causes											
Under 1 Year	141	141	114	112	122	111	115	98	124	104	**1,182**
1 - 9 Years	21	21	23	11	14	20	17	7	15	9	**158**
10 - 17 Years	10	13	12	12	7	7	6	13	7	12	**99**
Total	**172**	**175**	**149**	**135**	**143**	**138**	**138**	**118**	**146**	**125**	**1,439**
TOTAL ALL CAUSES	**230**	**240**	**213**	**178**	**187**	**182**	**186**	**165**	**200**	**172**	**1,953**

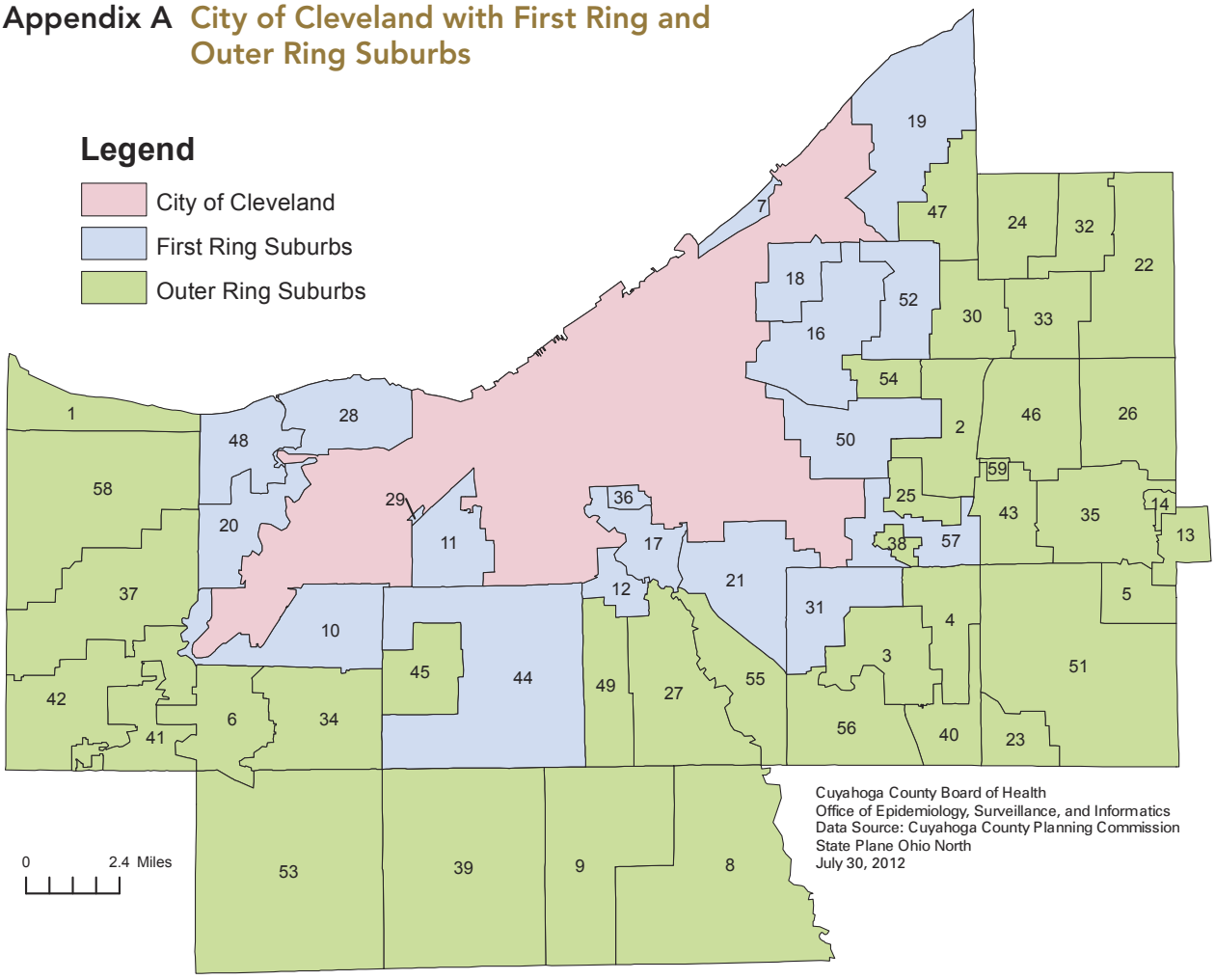
NOTE: Injury related deaths include sleep related accidental suffocation and "undetermined" deaths of infants, but not SIDS deaths.

Table 10 Annual Number of Child Deaths by Sex and Age Group

	2007	2008	2009	2010	2011*	2012*	2013	2014*	2015	2016	Total
Sex and Age Group											
Male											
Under 1 Year	93	94	74	71	81	78	69	71	85	71	**787**
1 - 9 Years	16	15	26	6	11	12	16	8	19	7	**136**
10 - 17 Years	26	24	15	15	15	11	14	16	13	18	**167**
Total	**135**	**133**	**115**	**92**	**107**	**101**	**99**	**95**	**117**	**96**	**1,090**
Female											
Under 1 Year	69	77	67	69	63	52	64	49	70	57	**637**
1 - 9 Years	17	15	16	10	11	18	15	10	6	8	**126**
10 - 17 Years	9	15	15	7	5	10	8	10	7	11	**97**
Total	**95**	**107**	**98**	**86**	**79**	**80**	**87**	**69**	**83**	**76**	**860**
TOTAL ALL	**230**	**240**	**213**	**178**	**186**	**181**	**186**	**164**	**200**	**172**	**1,950**

* In 2011, 2012, and 2014, one infant had unknown sex.

Appendix A City of Cleveland with First Ring and Outer Ring Suburbs



Number	Municipality	Number	Municipality	Number	Municipality
1	Bay Village	22	Gates Mills	41	Olmsted Falls
2	Beachwood	23	Glenwillow	42	Olmsted Township
3	Bedford	24	Highland Heights	43	Orange
4	Bedford Heights	25	Highland Hills	44	Parma
5	Bentleyville	26	Hunting Valley	45	Parma Heights
6	Berea	27	Independence	46	Pepper Pike
7	Bratenahl	28	Lakewood	47	Richmond Heights
8	Brecksville	29	Linndale	48	Rocky River
9	Broadview Heights	30	Lyndhurst	49	Seven Hills
10	Brook Park	31	Maple Heights	50	Shaker Heights
11	Brooklyn	32	Mayfield	51	Solon
12	Brooklyn Heights	33	Mayfield Heights	52	South Euclid
13	Chagrin Falls	34	Middleburg Heights	53	Strongsville
14	Chagrin Falls Township	35	Moreland Hills	54	University Heights
16	Cleveland Heights	36	Newburgh Heights	55	Valley View
17	Cuyahoga Heights	37	North Olmsted	56	Walton Hills
18	East Cleveland	38	North Randall	57	Warrensville Heights
19	Euclid	39	North Royalton	58	Westlake
20	Fairview Park	40	Oakwood	59	Woodmere
21	Garfield Heights				

CUYAHOGA COUNTY FIMR
FETAL INFANT MORTALITY REVIEW

Program Description:

The Cuyahoga County Board of Health implemented the first county-wide Fetal Infant Mortality Review (FIMR) Program in 2014. This initiative was made available through the Ohio Equity Institute with funding provided by the Ohio Department of Health in collaboration with CityMatCH. The FIMR Program examines local infant mortality issues through the review of infant deaths and fetal deaths, 20 weeks gestation and above.

Cuyahoga County Fetal Death Data:

2015: 132 Fetal Deaths

2016: 108 Fetal Deaths

Figure 1A Gestational Age of Fetal Deaths (2015–2016) [n=240]

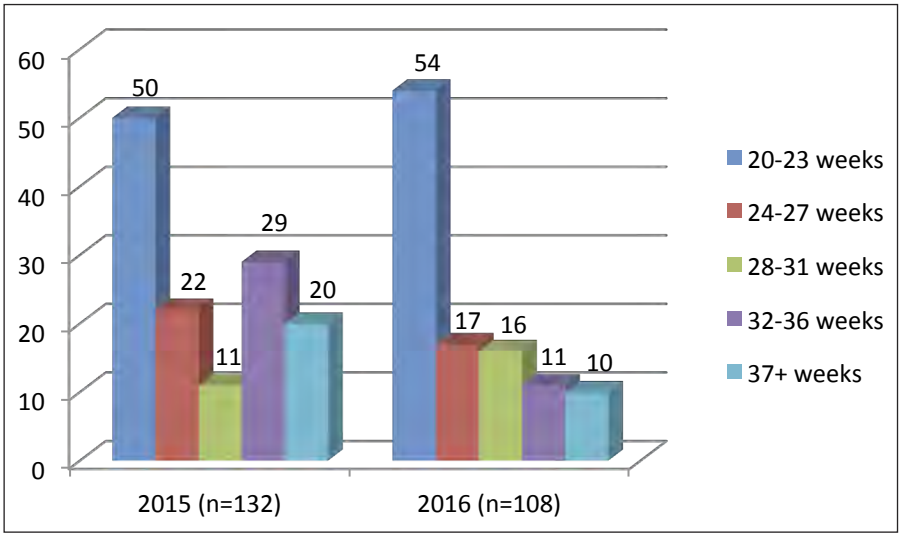


Figure 1A shows the gestational age of all fetal deaths in 2015 and 2016. Combining both years indicates that 40.4% of fetal deaths occur before the age of viability (24 weeks gestation), but 56.6% of fetal deaths were at 24 weeks or later. Looking closer, 40.4% of fetal losses occurred in the third trimester (beginning at 28 weeks), a time when babies have a high survival rate. 2016 shows an 11.2% decrease in third trimester losses as compared to 2015.

Figure 1B Fetal Deaths by Race of the Mother (2015–2016) [n=240]

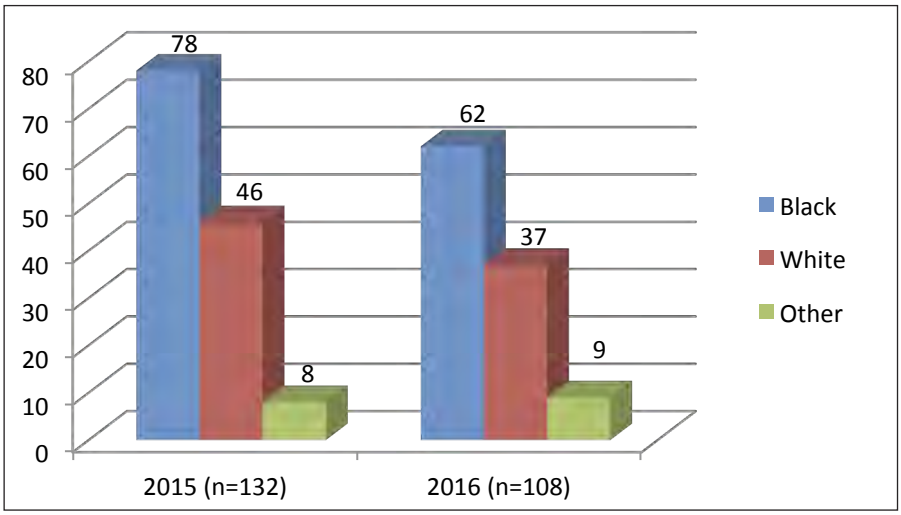


Figure 1B illustrates the racial disparity between black, white, and all other race fetal deaths in Cuyahoga County. The data demonstrates that fetal deaths are more likely to occur to black women (58.3%) than white and all other race women (41.6%).

Appendix B

Table 1A shows the most common risk factors documented on fetal death certificates.

Table 1A Common Risk Factors Associated with 240 Fetal Deaths in 2015–2016

Risk Factor	#	%
Chronic maternal conditions (asthma, diabetes, hypertension, obesity, sickle cell disease)	77	32.0
Poverty (received WIC services)	56	23.3
Advanced maternal age (35 years or older)	52	21.6
Fetal anomaly	47	19.5
Maternal tobacco use three months before or during pregnancy	45	18.7
Previous preterm birth	38	15.8
Previous poor pregnancy outcome (perinatal death, intrauterine growth restriction)	38	15.8
No or limited prenatal care	36	15.0
Premature rupture of membranes (PROM)	35	14.5
Maternal education less than high school	34	14.1
Umbilical cord issues	29	12.0

2015 and 2016 Program Progress:

- Over 450 family support letters were mailed to parents in Cuyahoga County that experienced a fetal or infant loss. The mailings included a county-wide resource brochure that the program developed.
- 18 family interviews were conducted (**Table 1B**).
- 8 FIMR Case Review Team meetings were convened in which 16 cases were reviewed and 46 recommendations were developed.
- The Community Action Team (CAT) conducted their first meeting in March 2017. The role of CAT is to prioritize recommendations, develop solutions, implement action plans, and monitor progress. The 46 recommendations were reviewed and three were selected for the team's initial focus (**Table 1C**).

Table 1B FIMR Home Interview Demographics in 2015–2016

Type of Loss	
Fetal	**9**
Infant	**9**
Insurance	
Medicaid	**8**
Private	**10**
Mother's Race*	
Black	**9**
White	**8**

*1 Mom was of Hispanic ethnicity.

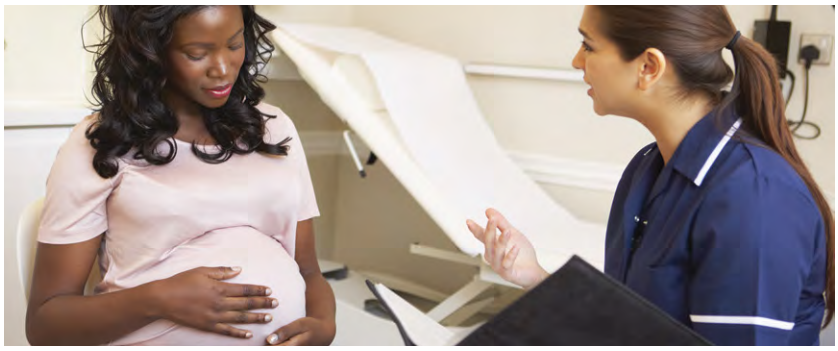


Table 1C 2017 FIMR Community Action Team Recommendations

2017 FIMR Community Action Team Recommendations
Develop and implement a community education awareness campaign for 17P that also addresses access issues.
Integrate the "One Key Question" in community locations to encourage preconception health and family planning.
Educate the public about the importance of first trimester prenatal care and ensure access to health care providers.

Footnotes

[1] CDC, National Center for Injury Prevention & Control, Web-based Injury Statistics Query and Reporting System (WISQARS). Leading causes of death reports, 1999-2015, for national, regional, and states (restricted). Available online at https://webappa.cdc.gov/sasweb/ncipc/leadcause.html (accessed October 19, 2017).

[2] US Census Bureau. 2000 Census of population and housing: Summary file 1. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml (accessed October 19, 2017).

[3] US Census Bureau. 2010 Census of population and housing: Summary file 1. Available online at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml (accessed July 3, 2014).

[4] Cuyahoga County Child Fatality Review - The Cuyahoga County Child Fatality Review Board. Protecting our future: Child fatalities for 2015 (19th ed.). (2016). Available online at http://protectingourfuture.cuyahogacounty.us/en-US/annual-reports.aspx (accessed July 25, 2017).

[5] Franklin County Child Fatality Review. 2015 Child and infant deaths (received July 31, 2017).

[6] Hamilton County Child Fatality Review. 2015 Child and infant deaths (received August 11, 2017).

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[8] Summit County Child Fatality Review. 2015 Child and infant deaths (received August 10, 2017).

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Cuyahoga County Div. of Children & Family Services

Danei Chavez
Alcohol, Drug Addiction & Mental Health Services Board

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