



# Infant Mortality

## Executive Summary

Infant mortality is the death of a child within the first year of life. Infant mortality is a nationwide public health issue and a key indicator of population health and quality of health care. The infant mortality rate in Missouri is higher than the national average rate and is the 17th highest infant mortality rate in the nation. There are evident disparities in the risk of infant mortality including socioeconomic status, ethnicity and race, and access to maternal care education. Programs and initiatives can reduce the risk of infant mortality when they include interventions that improve health disparities and infant care.

## Highlights

- Missouri's infant mortality rate is 6.1 deaths per 1,000 live births, down from 7.5 deaths per 1,000 live births in 2005.
  - Black Missourians are at two times greater risk for infant mortality than White Missourians.
- The top five causes of infant mortality include: birth defects; preterm delivery and low birth weight; unintentional injuries; sudden infant death syndrome (SIDS); and maternal pregnancy complications.
- Missouri has participated in numerous programs and initiatives at the local, state, and federal level to reduce infant mortality rates.

## Limitations

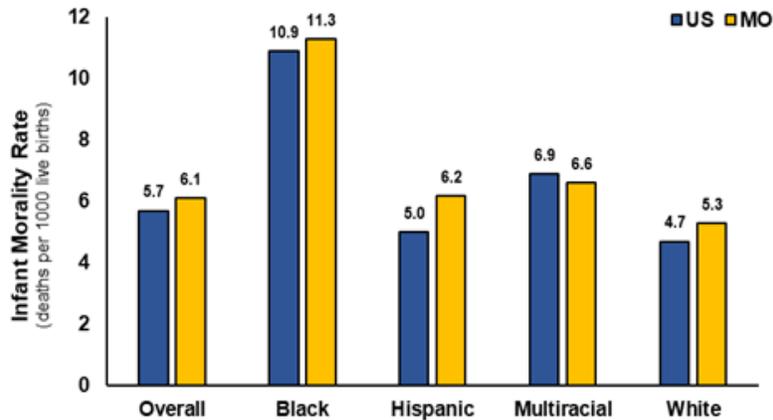
- Infant and maternal mortality are strongly linked; only one recent report has specifically evaluated maternal mortality in Missouri. Therefore, it is challenging to identify failures, problems with quality care, and other social determinants of health without more data.

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## Research Background

### Infant Mortality Rates

Infant mortality is the death of a child within the first year of life, often due to premature birth and a low birth weight. Infant mortality remains a key indicator of population health and quality of health care. In the United States, infant mortality rates have decreased 15% from 7.1 deaths per 1,000 live births in 2005 to 5.7 deaths per live births in 2019.<sup>1</sup> In Missouri, infant mortality rates are currently 6.1 deaths per 1,000 live births, down from 7.5 deaths per 1,000 live births in 2005.<sup>1</sup> At both the national and state level, race is associated with infant mortality rates (**Figure 1**).<sup>2,3</sup> Specifically, the infant mortality rate among Black Missourians is 11.3 deaths per 1,000 live births compared to 5.3 deaths per 1,000 live births for White Missourians.



**Figure 1.** Infant mortality rates by race in Missouri and United States. Figure adopted from Academy Health Rankings.<sup>2,3</sup>

In addition to contributing to infant mortality, most recent estimates associated with premature birth is \$25.2 billion, or an average of \$76,153 per premature birth. These costs almost double when an infant also has low weight (less than 5.5 lbs).<sup>4,5</sup>

### Physical Determinants of Infant Mortality

For Missouri, the five leading causes of infant mortality in 2018 were the following:

1. **Birth defects:** Birth defects are structural changes present at birth that can affect any part of the body (e.g., heart, brain, lungs).<sup>3</sup>
2. **Preterm birth and low birth weight:** Preterm birth is when a baby is born before 37 weeks of pregnancy. Low birth weight is when a baby is born weighing less than 5.5 pounds. The two are often associated.<sup>3,5</sup>
3. **Unintentional Injuries:** Leading causes of child unintentional injury include motor vehicle crashes, suffocation, drowning, poisoning, fires, and falls.<sup>3,6</sup>
4. **Sudden infant death syndrome (SIDS):** SIDS describes the sudden, unexpected death of a baby less than 1 year old in which the cause was not obvious before investigation. Approximately 90% of SIDS cases occur within the first 6 months of life.<sup>3,7</sup>
5. **Maternal pregnancy complications:** Complications of pregnancy are health issues that can involve the mother's health, the baby's health, or both. Common maternal health conditions include anemia, urinary tract infections, mental health problems (e.g., depression), hypertension (preeclampsia), and gestational diabetes (diabetes onset during pregnancy).<sup>3,8</sup> For more information on maternal pregnancy complications, please see our previously published Science Note: [Maternal Mortality and Health Disparities](#).

The top three leading causes account for 50% of infant deaths. Birth defects account for 22% of all infant deaths. Approximately 17% of infant deaths were due to prematurity and low birth weight, and 11% were due to unintentional injuries such as accidental suffocation and strangulation in bed. SIDS and maternal pregnancy complications each comprised 5% of infant deaths. All other causes make up the remaining 40%.<sup>9</sup>

Nationally, the prevalence of the top five causes of infant death are much higher in minority populations compared to White populations. In 2020, the rate of preterm birth among Black women (14.4%) was about 50% higher than the rate of preterm birth among White (9.1%) or Hispanic (9.8%) women. In 2018–2019, unintentional injury death rates were highest among American Indian, Alaska Native, and Black children. Despite overall decreases in child unintentional injury death rates from 2010 to 2019, rates increased among several minority groups while rates decreased among White populations.<sup>6</sup> Furthermore, while the SIDS rate has declined since the 1990s, significant disparities associated with race/ethnicity persist.<sup>7</sup> Additionally, Black women are roughly 1.7 times more likely than White women to experience maternal pregnancy complications.

### **Social Determinants of Infant Mortality**

Social determinants of health are the environmental conditions and available resources in which people are born, live, and age, which affect a multitude of health risks and quality-of-life outcomes. This includes: the availability of resources to meet daily needs, access to education and health care services, social norms, and attitudes (i.e., discrimination and racism).<sup>10</sup> Minority populations are more likely to live in underserved communities and experience discrimination. Inequities in food security and housing, reduced health literacy and education, lack of health insurance, and distrust of the health care system may decrease access to prenatal and postpartum care increasing the risk of both maternal and infant mortality.<sup>11,12</sup> Moreover, minority populations have less information and educational services available regarding breastfeeding, which has been associated with increased risk of infant mortality in premature babies.<sup>13,14</sup>

Socioeconomic factors are also associated with infant mortality; rural counties with low socioeconomic status have higher infant mortality rates.<sup>15</sup> Research shows that higher state and local government expenditures on education, social services, environment, and housing are associated with lower infant mortality rates among high-risk populations.<sup>16</sup> Additionally, research suggests Black infant mortality is reduced when infants share the same race with their physician, as it can reduce outgroup biases, improve communication, and increase physician-patient trust.<sup>17</sup>

### **Active and Expired Missouri Programs to Address Infant Mortality**

MO Title V: Maternal Child Health (MCH) Block Grant (active): Funds from this grant are distributed among a number of programs which target the improvement of the health of women and infants, children and adolescents, and children with special health care needs.<sup>9</sup> Programs include home visitation programs, safe crib and sleeping education, newborn screenings, special needs programs, and working with local public health agencies to reduce sleep-related deaths.<sup>9</sup> Additionally, RSMo [191.331](#) and [191.332](#) (effective 2007 and 2017) require all babies born in Missouri to be screened for over 70 different disorders, including auditory issues and congenital heart disease.

Show Me Healthy Babies (active): Beginning in 2016, the *Show Me Healthy Babies* program (RSMo [208.662](#)) provides insurance coverage to unborn children by expanding health coverage to mothers. The program covers all prenatal and pregnancy-related care that benefit the health of the unborn child and promote a healthy delivery process.

Missouri-based Philanthropic Foundation Programs (active): Missouri-based philanthropic foundations have also developed initiatives to reduce infant mortality in the state. Missouri Foundation for Health established the [Infant Mortality Reduction Collaborative Initiative](#) in 2013 to address the disproportionately high rates of infant death in portions of St. Louis ([FLOURISH St. Louis](#)) and the six counties within Missouri's Bootheel ([Bootheel Babies and Families](#)).

Missouri Task Force on Prematurity and Infant Mortality (expired): In 2011, the Missouri State Legislature established the *Missouri Task Force on Prematurity and Infant Mortality* (RSMo [210.105](#) | [HB630](#)) which expired in 2015. Investigatory results from 2013 indicated smoking was a significant predictor of maternal complications, the leading behavioral contributor to premature births, and associated with increased risks of birth defects and SIDS. In 2018, the smoking rate for Missouri's pregnant women was 15.3%, more than double the national rate of 7.2%.<sup>18</sup>

Strong Start for Mothers and Newborns Initiative (expired): Through the Centers for Medicare and Medicaid Services (CMS), Signature Medical Group participated in the *Strong Start for Mothers and Newborns Initiative*, supporting the greater Kansas City and St. Louis areas between 2012-2015.<sup>19</sup> The goal was to reduce preterm births and improve outcomes for newborns and pregnant women through two strategies: 1) an awareness campaign to reduce early elective deliveries prior to 39 weeks; and 2) to test the effectiveness of specific enhanced prenatal care approaches (e.g., risk assessments, nutrition support, home-based assessments).<sup>19</sup>

### **Strategies to Reduce Infant Mortality rates (other states)**

Strategies to reduce infant mortality rates within states focus on home visits and increased access to prenatal care. In 2012, Michigan passed legislation to standardize and support home visiting measures similar to the federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program, which funds states and territories to develop evidence-based home visiting programs to support pregnant women and young children up to kindergarten entry.<sup>20</sup> The goal of this legislation was to improve infant and maternal mortality and reduce the rate of preterm births. By 2017, 87% of Michiganders enrolled in the home visitation program delivered their babies full term.<sup>20</sup>

Additionally, 46 states have incorporated the Centering Pregnancy Model.<sup>20</sup> This model brings together expectant mothers for a series of enhanced prenatal visits including guidance about nutrition, breastfeeding, labor and delivery while building community and peer support networks.<sup>20</sup> The program has been shown to be effective at reducing the rate of preterm births and low-birth weights.<sup>20</sup>

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