Kansas Severe Maternal Morbidity and Maternal Mortality, 2016-2023

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Kansas Department of Health and Environment, Bureau of Family Health will release the *2016-2023* Kansas *Severe Maternal Morbidity, Pregnancy- Associated Deaths, and Pregnancy-Related Deaths* reports in Spring 2026. To view the full reports, please visit https://kmmrc.org/.

Executive Summary

The issue of maternal morbidity and mortality is complex. While severe maternal morbidity (SMM) occurs nearly 100 times more frequently than maternal death, it represents only the "tip of the iceberg" of adverse maternal outcomes.[1] Death certificates alone do not provide sufficient information to fully assess the proximate and contributory causes of maternal mortality, determine whether deaths were directly related to pregnancy, or assess preventability. Nationally, data from the Centers for Disease Control and Prevention (CDC) Pregnancy Mortality Surveillance System (PMSS) show that the pregnancy-related mortality ratio (PRMR) in the United States increased from 7.2 deaths per 100,000 live births in 1987 to 24.9 in 2020 at the onset of the COVID-19 pandemic, peaking at 33.2 in 2021.[2] The ratio then declined to 18.7 in 2023, it remains above pre-pandemic levels, underscoring the need for sustained efforts to improve maternal health and address persistent disparities.

In Kansas, the maternal mortality rate was 23.1 deaths per 100,000 live births in 2019-2023 (combined), which is 47.1% higher than the Healthy People 2030 goal of 15.7 maternal deaths per 100,000 live births, based on the World Health Organization definition (deaths related to or aggravated by pregnancy, but not due to accidental or incidental causes, and occurring within 42 days of the end of a pregnancy).[3]

The Kansas Department of Health and Environment (KDHE) identifies all pregnancy-associated deaths – defined as deaths occurring during pregnancy or within a year of pregnancy – to support maternal mortality surveillance. KDHE works with the Kansas Maternal Mortality Review Committee (KMMRC), a multidisciplinary committee that conducts comprehensive reviews of pregnancy-associated deaths occurring in Kansas, regardless of maternal residency. The KMMRC reviews both clinical and non-clinical information to better understand the causes and circumstances surrounding each death, determine pregnancy-relatedness and preventability, and develop statewide recommendations to prevent future maternal deaths.[4]

Key Findings

Severe Maternal Morbidity

Analysis of Kansas hospital discharge data, provided by the Kansas Hospital Association, using the CDC-developed definition of SMM (excluding cases identified by blood transfusions alone)[5], shows that SMM increased significantly from 56.1 cases per 10,000 delivery hospitalizations in 2016 to 72.5 in 2023, reflecting a sustained upward trend in maternal complications.

For the combined years 2019-2023, among 157,020 delivery hospitalizations of Kansas residents, 1,095 involved one or more SMM, resulting in a rate of 69.7 cases per 10,000 delivery hospitalizations - approximately one in every 143 women who gave birth.

- The most frequently observed SMM indicators were disseminated intravascular coagulation, acute renal failure, acute respiratory distress syndrome, sepsis, hysterectomy, and eclampsia (15.5, 14.1, 11.7, 11.7, 8.5, 8.3 per 10,000 delivery hospitalizations, respectively).
- Among deliveries complicated by shock, nearly one in five (18%) required hysterectomy.
- SMM rates varied by maternal age, with the highest rate among women aged **40 years and older** (147.1 per 10,000 delivery hospitalizations) and the lowest among women aged 25-29 years (56.4).
- Although a downward trend in SMM was observed among **non-Hispanic Black women** from 2019 to 2023, their overall rate (110.7 per 10,000 delivery hospitalizations) remained **significantly higher** than other groups: 78.8% higher than non-Hispanic White women (61.9), 40.6% higher than Hispanic women (78.7), and 39.7% higher than non-Hispanic Asian/Pacific Islander women (79.2). *Note: The number of non-Hispanic American Indian women was too small to calculate a stable rate.*
- Women enrolled in **Medicaid** (79.4 per 10,000 delivery hospitalizations) or those living in **low-income ZIP codes** (88.9) experienced significantly higher rates of SMM than women with private insurance (61.0) or those residing in higher-income ZIP codes (52.6).
- SMM rates were significantly higher among women living in urban counties (73.9 per 10,000 delivery hospitalizations) compared with those in rural counties (60.3).

Maternal Mortality

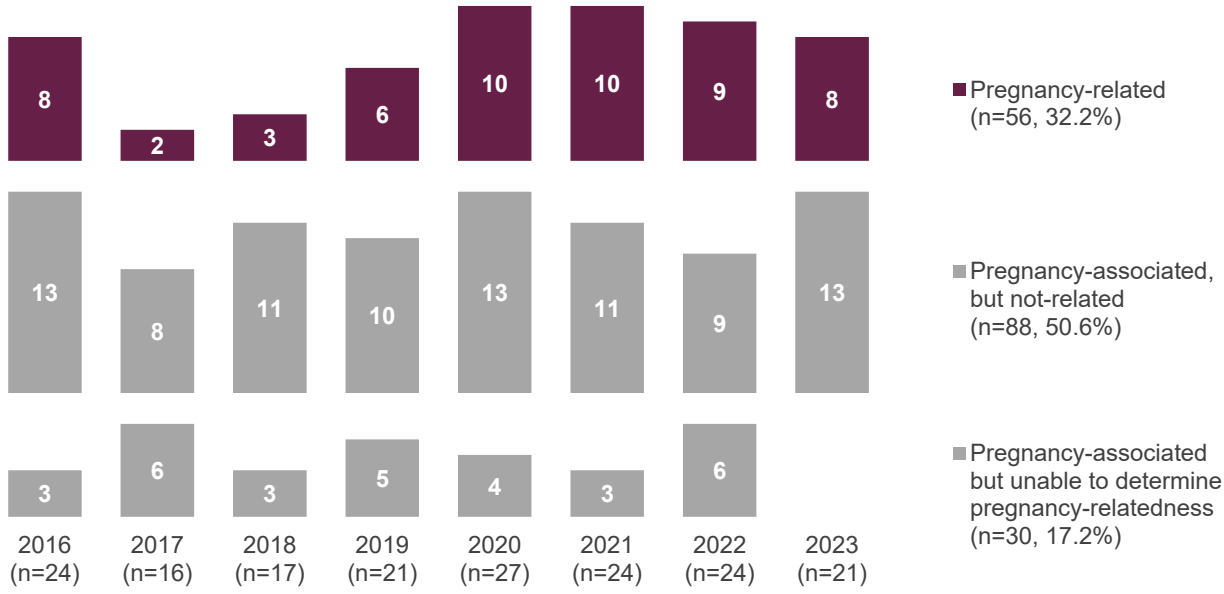
From 2016 to 2023, the KMMRC identified 224 deaths occurring in Kansas, regardless of maternal residency. Of these, 174 deaths were determined to be pregnancy-associated.

A pregnancy-associated death refers to a death that occurs while pregnant or anytime within one year after pregnancy, regardless of the cause.[6] **Pregnancy-associated deaths make up the universe of maternal mortality.** Within this group, deaths are classified as pregnancy-related, pregnancy-associated but not related, or pregnancy-associated but unable to determine pregnancy-relatedness.

Of the 174 pregnancy-associated deaths reviewed (Figure 1):

- 56 deaths (32.2%) were pregnancy-related
- 88 deaths (50.6%) were pregnancy-associated but not related
- 30 deaths (17.2%) were pregnancy-associated but unable to determine pregnancy-relatedness

Figure 1. Pregnancy-related deaths increased through 2020 and have remained stable since. Number of pregnancy-associated deaths by pregnancy-relatedness, Kansas, 2016-2023



Source: Kansas Maternal Mortality Review Committee
Note: The Kansas Maternal Mortality Review Committee (KMMRC) has a continuous, structured initiative to strengthen its review process and ensure careful and thoughtful determination of pregnancy-relatedness. For the first time since 2016, no deaths in the 2023 death cohort were classified as "pregnancy-associated but unable to determine pregnancy-relatedness," reflecting the Committee's deliberate, consistent review process and commitment to data quality, data-informed review, and continuous improvement.

Pregnancy-Associated Deaths

From 2016 to 2023, **174 deaths** were determined to be pregnancy-associated, corresponding to a pregnancy-associated mortality ratio (PAMR) of 59 deaths per 100,000 live births. Based on a three-year rolling average, PAMRs increased significantly from 49.5 in 2016-2018 to 63.6 in 2021-2023, with an annual percent change of 7.2%.

- Nearly 70% (121 deaths, 69.5%) of pregnancy-associated deaths occurred during the postpartum period, with over half (91 deaths, 52.3%) occurring between 43 and 365 days after pregnancy.
- The leading underlying causes of pregnancy-associated death were motor vehicle crashes (32 deaths, 18.4%), followed by cardiovascular conditions, including hypertensive disorders (25 deaths, 14.4%); mental health conditions, including those contributing to suicide (24 deaths, 13.9%); homicide (20 deaths, 11.5%); and unintentional poising/overdose (16 deaths, 9.2%). *Note: In 2021, three deaths were due to COVID-19 (two pregnancy-related and one pregnancy-associated but not-related). COVID-19 was not a leading underlying cause of pregnancy-associated deaths in Kansas.*
- One-third (60 deaths, 34.5%) of pregnancy-associated deaths were caused by homicide, mental health conditions (including those contributing to suicide), or unintentional poisoning/overdose.
- KMMRC determinations on circumstances surrounding death were:
    - **Obesity:** One in five deaths (37 deaths, 21.3%) involved obesity, including 7 probably contributing, highlighting the need for supportive management of chronic health conditions.

- **Mental health conditions**: One in four deaths (46 deaths, 26.4%) involved mental health conditions, including 18 probably contributing, emphasizing the importance of accessible mental health services.
- **Substance use disorder:** Approximately one in three deaths (52 deaths, 29.9%) involved substance use disorder, including 7 probably contributing, underscoring the need for supportive care and treatment options.
- **Co-occurring mental health and substance use disorder:** Among those with substance use disorder, approximately three in four deaths (37 deaths, 72.2%) had co-occurring mental health conditions, highlighting the complexity of care needs for these women.
- **Discrimination:** One in ten deaths (14 deaths, 10.8%) involved discrimination, including 12 probably contributing, among 124 cases reviewed after May 29, 2022, when the CDC added a discrimination field to the Committee Decisions Form, emphasizing the importance of respectful care.

Pregnancy-Related Deaths

From 2016 to 2023, **56 deaths** were determined to be pregnancy-related, corresponding to a pregnancy-related mortality ratio (PRMR) of 19 deaths per 100,000 live births. Based on a five-year rolling average, PRMRs increased significantly from 2016-2020 to 2019-2023, with an APC of 16.3%.

- More than half (31 deaths, 55.4%) of pregnancy-related deaths occurred during the postpartum period.
- The leading underlying causes were cardiovascular conditions, including hypertensive disorders (18 deaths, 32.1%), followed by mental health conditions, including those contributing to suicide (13 deaths, 23.2%); embolism, excluding amniotic fluid embolism (6 deaths, 10.7%); and infection, including 2 deaths due to COVID-19 (6 deaths, 10.7%).
- KMMRC determinations on circumstances surrounding death were:
    - **Obesity:** Two in five deaths (23 deaths, 41.1%) involved obesity, including 1 probably contributing.
    - **Mental health conditions:** Approximately three in ten deaths (16 deaths, 28.6%) involved mental health conditions, including 3 probably contributing.
    - **Substance use disorder:** Approximately one in three deaths (17 deaths, 30.4%) involved substance use disorder, including 1 probably contributing.
    - **Co-occurring mental health and substance use disorder:** Among those with substance use disorder, seven in ten deaths (12 deaths, 70.6%) had co-occurring mental health conditions.
    - **Discrimination:** One in five deaths (9 deaths, 20.5%) involved discrimination, all probably contributing, among 44 cases reviewed after May 29, 2022, when the CDC added a discrimination field to the Committee Decisions Form.

Key KMMRC Recommendations for Action for Preventable Pregnancy-Related Deaths

Based on **44 preventable pregnancy-related deaths**, the KMMRC recommends:

- **Patient education and empowerment**
- **Screen, brief intervention, and referrals to treatment** (SBIRT) for:
    - Comorbidities and chronic illness
    - Intimate partner violence
    - Pregnancy intention
    - Mental health conditions (including postpartum anxiety and depression)
    - Substance use disorder – alcohol, illicit, or prescription drugs
    - Social determinants of health

- Better **communication and multi-disciplinary collaboration** between providers, including referrals
- Obstetric providers and facilities should implement and follow Alliance for Innovation on Maternal Health (**AIM**) **patient safety bundle** recommendations for critical clinical events.
- Promote and support culturally congruent, holistic care coordination for **all** birthing persons using midwives, doulas, community health workers (CHWs) and home visiting services as the standard of perinatal care in Kansas.
- Emphasize continuing mental health treatment, including medication-assisted treatment (**MAT**), during pregnancy.
- **Expand Medicaid** in Kansas, including coverage for mental and behavioral health.

Conclusion

Reducing maternal mortality in Kansas requires collective effort from all members of the community. The responsibility of this important work extends beyond healthcare providers and policymakers. As neighbors, family, friends, and co-workers of pregnant and postpartum individuals, we all have a role to play in supporting them during this crucial time. This involvement can take various forms, such as educating ourselves about maternal warning signs, offering emotional support to a new mother, and fostering strong community and social connections. By actively engaging in supporting pregnant and postpartum individuals, we can address the needs and recommendations identified by the committee.

Furthermore, we urge the healthcare community and allied partners to thoroughly review the data and recommendations presented in this executive summery. It is essential for each organization or facility to identify areas where they can implement training, policy revisions, and process changes to enhance health outcomes for women and families. Learn more about available resources and initiatives of the Kansas Perinatal Quality Collaboratives (KPQC), including the current Alliance for Innovation on Maternal Health (AIM) Severe Hypertension in Pregnancy patient safety bundle, and the Kansas Cuff Project, supported by the Maternal Health Innovation program in collaboration with the AIM patient safety bundle. This initiative provides at-risk individuals with personal blood pressure monitors and educational resources for home monitoring, promoting early detection and intervention to save lives.

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