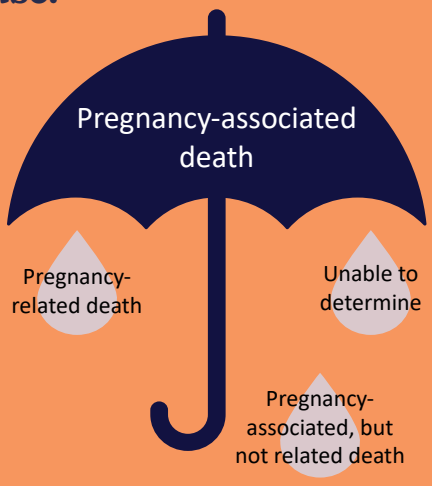
Pregnancy-Associated Death

This infographic was derived from the Kansas Maternal Mortality Report, which can be found here.

A pregnancy-associated death refers to the death of a woman while pregnant or anytime within one year of pregnancy regardless of cause.[1]

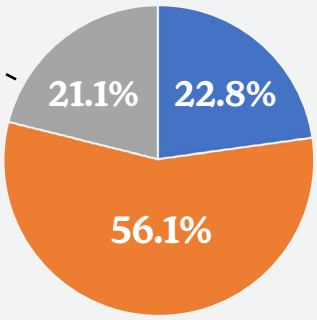
- **Pregnancy-related death.** The death of a woman during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.
- **Pregnancy-associated, but not-related death.** The death of a woman during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy.
- **Pregnancy-associated but unable to determine pregnancy relatedness.** The death of a woman while pregnant or within one year of pregnancy, due to a cause that could not be determined to be pregnancy-related or not pregnancy-related.



The Kansas maternal mortality rate of 14.8 (2014-2018) is 29.8% higher than the Healthy People 2020 goal of 11.4 maternal deaths per 100,0000 live births (follows the World Health Organization definition).[2] This underscores more work is needed and indicates the need to conduct maternal mortality review to gain insight into the medical and social factors leading to these events and to prevent further occurrences. In 2018, KDHE established the Kansas Maternal Mortality Review Committee (KMMRC). At any given time, the committee consists of 25-40 geographically diverse members representing various specialties, facilities, and systems that interact and impact maternal health. Within the population of women of reproductive age, maternal mortality is an indicator monitored by the Kansas Department of Health and Environment pursuant to K.S.A. 65-177.

Of the 75 identified deaths that occurred in Kansas (regardless of whether the person was a Kansas resident) in 2016-2018, the KMMRC determined that 57 deaths were pregnancy-associated. Pregnancy-associated deaths were then subcategorized as 1) pregnancy-related, 2) pregnancy-associated but not related, or 3) pregnancy-associated but unable to determine the pregnancy-relatedness. **Of the 57 pregnancy-associated deaths reviewed, the KMMRC determined:**

12 deaths were pregnancy-associated but unable to determine the pregnancy-relatedness



13 deaths were pregnancy-related

32 deaths were pregnancy associated but not related

50 deaths per every 100,000 live births occurred in Kansas.

During 2016-2018, there were **57 pregnancy-associated deaths**, which translated to a pregnancy-associated mortality ratio (PAMR) of **50 deaths per every 100,000 live births occurred in Kansas.**

Most pregnancy-associated deaths occurred among:

Women with a **high school education or less** were **more than four times** as likely to die within one year of pregnancy as women who had more than a high school education.

Women on **Medicaid during pregnancy or for delivery** were **more than three times** as likely to die within one year of pregnancy as women with private insurance.

Unmarried women were nearly **four times** as likely to die within one year of pregnancy as married women.

Disparities in pregnancy-associated deaths:

Non-White minority women were nearly **two times** as likely to die within a year of pregnancy as non-Hispanic White women.

Women who did not enter prenatal care during the first trimester were nearly **twice as likely** to die within one year of pregnancy as women who entered prenatal care during the first trimester.

Women who resided in ZIP Codes with the lowest median household income (quartile 1, poorest) were more than **two times** as likely to die within one year of pregnancy as women who lived in the highest median household income (quartile 4, wealthiest).

Pregnancy-associated deaths can happen to women of any race and ethnicity. However, in Kansas during 2016-2018, racial and ethnic minority women were disproportionately affected (Figures 1). Figure 1 shows that the percent of deaths that occurred among **non-Hispanic Black women (14.0%), Hispanic women (21.1%) and women of other races (8.8%) far exceed their representation** among the population of women giving birth (7.1%, 16.2%, 6.8%, respectively) in Kansas.

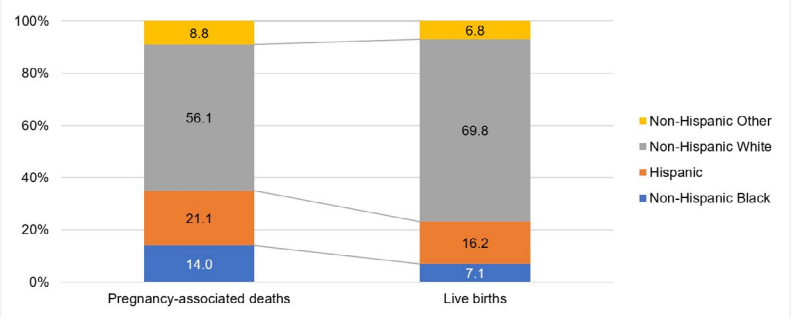
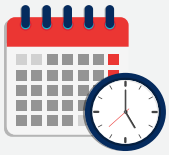


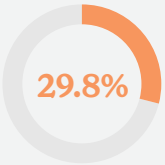
Figure 1

Chart Title: *. Percent of Pregnancy-associated deaths and live births by race and ethnicity, Kansas, 2016-2018*
Source: *Kansas Maternal Mortality Review Committee; Kansas Department of Health and Environment, birth data (occurrence)*

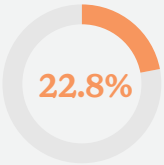
It is important to understand who is most affected by pregnancy-associated death in order to target interventions and resources.[3] It is important to identify the differences in pregnancy-associated deaths.



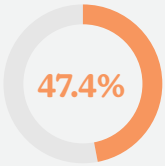
Timing of death:



17 deaths occurred during pregnancy.



13 deaths occurred within 42 days of the end of pregnancy.



27 deaths occurred 43 days to one year after the end of pregnancy.

These data show that tracking pregnancy-associated deaths to one year postpartum is essential, rather than the traditional measure of the first 42 days, as **nearly half (47.4%) of all pregnancy-associated deaths occurred after 42 days postpartum.** Furthermore, in considering policy initiatives, since so many of the pregnancy-associated deaths involved health care and occurred months after parturition, these data suggest that extending Medicaid coverage for pregnant women from 60 days to 12 months postpartum, which would allow women access the care they need to address health concerns well after their pregnancy ends. This would be a first and important step toward closing gaps in access to care and improving outcomes.[3] In Kansas, among non-Hispanic Black women, a greater proportion of pregnancy-associated deaths occurred during pregnancy (62.5%). **If Medicaid continues in effect for one year postpartum rather than 60 days, it presents opportunities to ensure access to quality healthcare for this at-risk population, before, during, and after pregnancies, and to provide coordinated care between pregnancies to prevent pregnancy-associated deaths.[4]**

Underlying Causes of Death

Underlying cause refers to the disease or injury that initiated the chain of events leading to death or the circumstances of the accident or violence which produced the fatal injury.[1]

The leading causes of death were (in order):

19.3% (11 deaths)
Motor vehicle crash

14.0% (8 deaths)
Homicide

10.5% (6 deaths)
Poisoning/overdose

8.8% (5 deaths)
Infection

The combination of the underlying cause of death determined by KMMRC and the underlying cause field on the death certificate were used to categorize the type of pregnancy-associated death (Figure 2).

- Nearly **half** (25 deaths, 43.9%) were **related to medical causes of death**, such as infection, cardiovascular and coronary conditions, embolism, or preeclampsia and eclampsia.
- About **one-third** (19 deaths, 33.3%) were **caused by homicide, suicide, mental health conditions, or unintentional poisoning/overdose.**
- The remainders were caused by motor vehicle crash and fire or burn accidents (13 deaths, 22.8%).

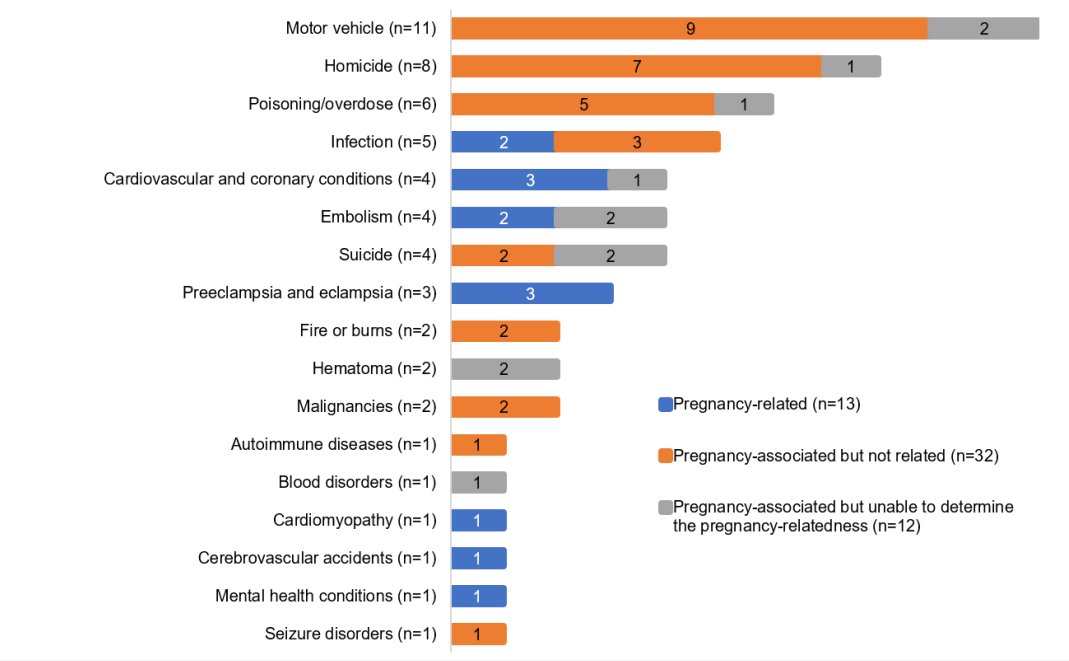


Figure 2

Chart Title: *. Number of underlying cause of death for pregnancy-associated deaths by pregnancy-relatedness, Kansas, 2016-2018*
Source: *Kansas Maternal Mortality Review Committee*

KMMRC determinations on circumstances surrounding death were:

Obesity
contributed to 15.8%

Mental Health Conditions
contributed to 19.3%

Substance Use Disorder
contributed to 29.8%

- Obesity contributed to about **one in six deaths** (9 deaths, 15.8%).
- Mental Health Conditions contributed to about **one in five deaths** (11 deaths, 19.3%).
- Substance Use Disorder contributed to about **one in three deaths** (17 deaths, 29.8%).

While these three conditions may not have caused the death, they may have contributed to the death. The association between these three conditions and mortality is complicated, because these conditions do not directly cause death.[3] Obesity serves as an underlying factor that may result in death associated with chronic disease complications. Mental health and/or substance use disorder serves as an underlying factor that may result in suicide, accidental death, and death due to accidental drug intoxication or homicide.[5]

References:
1. *Centers for Disease Control and Prevention. Division of Reproductive Health. Building U.S. Capacity to Review and Prevent Maternal Deaths Program. Maternal Mortality Review Committee Decisions Form v20. October 13, 2020. https://reviewtoaction.org/content/maternal-mortality-review-committee-decisions-form.*
2. *Maternal and Child Health Bureau. Federally Available Data (FAD) Resource Document. July 2, 2020; Rockville, MD: Health Resources and Services Administration. National Outcome Measure 3 - Maternal mortality rate per 100,000 live births. https://mchb.tvisdata.hrsa.gov/uploadedfiles/TvisWebReports/Documents/FADResourceDocument.pdf.*
3. *Illinois Department of Public Health. Illinois Maternal Morbidity and Mortality Report. October 2018. http://dph.illinois.gov/sites/default/files/publications/publicationsowhmaternalmorbiditymortalityreport112018.pdf.*
4. *Louisiana pregnancy-associated mortality review, 2017 report. July 2020. https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/maternal/2017_PAMR_Report_FINAL.pdf.*
5. *Building U.S. Capacity to Review and Prevent Maternal Deaths. 2018. Report from nine maternal mortality review committees. https://reviewtoaction.org/Report_from_Nine_MMRCs.*

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WHAT WE'RE DOING ABOUT IT

The KMMRC and KDHE Maternal and Child Health (MCH) team are closely monitoring any emerging patterns or trends identified because of case reviews.

State Perinatal Quality Collaboratives (PQCs) and MMRCs function to improve maternal and perinatal health (investing in the mother's health leads to a healthier birth/pregnancy outcomes)

- PQCs: Focus on efforts during the maternal and perinatal periods intended to improve birth outcomes and strengthen perinatal systems of care for mothers and infants.
- MMRCs: Focus on reviewing pregnancy-associated deaths to identify gaps in health services and make actionable recommendations to prevent future deaths, improving maternal and perinatal health.
- Lessons learned over time have resulted in the national recommendation (CDC) for states to intentionally and strategically align the review efforts (MMRC) with the action/quality improvement (QI) efforts (PQC), creating a "culture of safety".

Kansas will enroll in the Alliance for Innovation on Maternal Health (AIM) initiative when ready and implement a safety bundle pilot: **Postpartum Discharge Transition**, which is currently in development, in partnership with the KPQC and KMMRC (tentatively March-April 2021).

- AIM is a national data-driven maternal safety and QI initiative for states and hospitals and partners from participating states (focus on consistent obstetric practices).
- AIM is based on proven implementation approaches to improving maternal safety and outcomes in the United States.
- AIM works through state teams and health systems to align national, state, and hospital level QI efforts to improve maternal and perinatal health outcomes.
- Any state can join AIM as part of a state-level PQC QI efforts/initiatives.
  - Access to "Patient Safety Bundles"
  - Access to "Patient Safety Tools"
  - Access to "Education and Engagement Tools
  - Access to the AIM Community of States
- **Fourth Trimester Initiative** – KPQC Initiative based on KMMRC findings and recommendations
- **The well-woman toolkit** – which addresses barriers to care, including provider bias. We are working on developing supplements for the toolkit that would focus specifically on how to reach and serve Hispanic and Non-Hispanic Black women in KS
- **Post-birth warning signs campaign and provider training with the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN)** (and using the CDC's Hear Her materials)
- **Pregnancy intention training (One Key Question)** – which includes training on provider bias

DATA to ACTION: As of October 2019, a total of 37 pregnancy-associated deaths had been reviewed by the KMMRC. 10 (36%) of the 28 pregnancy-associated, but not-related deaths were the result of a motor vehicle crash. Frequently, the **women were not wearing seat belts and were ejected from the vehicle.** Deaths occured during pregnancy and the postpartum period. An action alert discussing proper seat belt use during and after pregnancy was created and disseminated. The action alert can be found at: kmmrc.org/action-alerts/.